

INSTALLATIONS+ENVIRONMENT





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The Ben Franklin Readiness Center in Arden Hills, Minnesota

FOUNDATIONS OF READINESS

Journal of the Army National Guard Installations and Environment

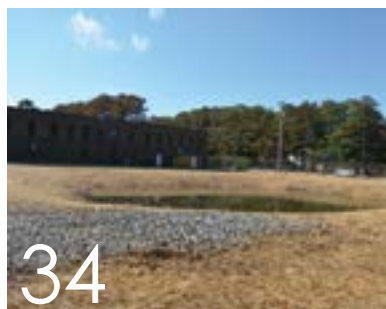
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“Our reorganization impacted our structure, but our focus remains unchanged.”

RELEVANT, RELIABLE, AND READY
OPPOSITE PAGE: Clockwise from top, left: For these Soldiers at the Brunswick Readiness Center in Maine the reorganization of the Installations and Environmental Divisions into one directorate means simplified communications; When strategically located, such as this Readiness Center in Los Alamitos in California, Readiness Centers provide disaster support; By thinking outside the box, the Camp Blanding's Natural Resources Team found a way to reclaim land left unusable by extensive mining; A nationwide study found that 26 percent of Readiness Centers nationwide are in locations that are not optimal, such as this aging Armory in Saint Michael, Alaska.

welcome to the 2017 issue of *Foundations of Readiness*, the Journal of the Army National Guard Installations and Environment (ARNG I&E) directorate.

Our organization has seen some major changes this past year. In May 2016 the Army National Guard Installations and Environmental Divisions were combined into one directorate. We underwent that reorganization to functionally align our organizational structure with that of the Army. Our new structure mirrors the Army Chief of Staff Installations Management's (OACSIM) organization, and the way we manage our Installations and Environment portfolios is now very similar to how OACSIM manages its portfolios. Our new, streamlined organization eliminated redundancies—it included a 30 percent reduction of personnel—and increased our cost efficiency. It also made us stronger, as we now speak with one, unified voice. On pages 4 and 5 of this journal you can read more about the reorganization and our work ahead as one directorate.

Our reorganization impacted our structure, but our focus remains unchanged. We still work hard to execute our projects in the year of appropriation. In recognition of the value of the ARNG to the Nation and its view that Readiness Centers (RC) are keystones of critical infrastructure to keep Soldiers operationally ready, Congress directed a study on the health of the nationwide portfolio of ARNG RCs. The Senate Armed Services Committee, in Senate Report 111-201, to accompany the National Defense Authorization Act for Fiscal Year 2011, called upon the Secretary of the Army to complete a study and report on the ARNG RCs. The Senate directed six tasks to be reviewed and analyzed, while the seventh task directed a presentation of a capital investment strategy. Over the course of three years we collected and analyzed data on our RCs across the country to assess each facility's adequacy in terms of location and size, role in training, and in the ARNG's overall mission. The resulting report, titled the Readiness Center Transformation Master Plan (RCTMP), found an aging facility inventory in need of modernization and an alarming space shortage. The RCTMP shows our RCs going from Fair to Poor condition by fiscal year 2018 and from Poor to Failing condition by fiscal year 2027. At present, the ARNG has RCs in 2,331 locations. The RCTMP sets the optimal end state at 1,689 locations, most of which already have an ARNG presence. Despite the number of locations, the ARNG suffers from a space deficit; at present, the organization is approximately 36 percent short of authorized space. On pages 10 and 11 you can read about the RCTMP's findings and its investment recommendations in order to provide premier facilities and services that are relevant, reliable, ready, and assessable, and that support the ARNG's Soldiers and our Joint Forces.

Made up of 50 states, three territories and the District of Columbia, the ARNG is a diverse organization. The conditions under which these states and territories operate vary greatly, in terms of geography, climate, force size and state finances. For the Military Construction (MILCON) program in each state, this means having to overcome a range of environmental and financial obstacles. On pages 12 to 17 you can read about the challenges our State MILCON programs face, and how they work to overcome those challenges.

Our Environmental program is carrying out some very interesting projects. Read about the work to reclaim land that had been damaged by mining at Camp Blanding in Florida and to rehabilitate native grasslands at Camp Dawson in West Virginia. Both projects have opened up new training opportunities for the Soldiers at those installations, and both were completed with very little funding and a lot of innovative thinking.

Thank you and Essayons!



ERIK GORDON

COLONEL ERIK GORDON
 CHIEF, ARMY NATIONAL GUARD
 INSTALLATIONS & ENVIRONMENT



Reorganization of Installations and Environment

IN THE SPRING OF 2016, THE ARMY NATIONAL GUARD INSTALLATIONS AND ENVIRONMENTAL DIVISIONS WERE COMBINED INTO ONE DIRECTORATE. **THE REORGANIZATION WAS PROMPTED BY A WISH TO FUNCTIONALLY ALIGN THE ARMY NATIONAL GUARD'S ORGANIZATION WITH THAT OF THE ARMY. IN THE PROCESS, THE ORGANIZATION ALSO ELIMINATED REDUNDANCIES AND INCREASED COST BENEFITS.**

“To achieve readiness, we need to ensure that training lands are accessible for Soldiers, state-of-the-art facilities are built and maintained, and sustainability projects are implemented.”

Ms. Beth Erickson
Division Chief for the Army
National Guard Installations and
Environment's Planning Division

In May of 2016 the Army National Guard (ARNG) Installations and Environmental divisions merged into one directorate, ARNG I&E. The reorganization functionally aligned the ARNG I&E with the Army Chief of Staff Installations Management (OACSIM). “The way we were organized before we were not properly aligned, and there was a discrepancy in how the Army and the ARNG managed their respective Installations and Environment portfolios,” said COL Erik Gordon, Chief, ARNG I&E. “The new structure mirrors the OACSIM's organization.”

ARNG I&E supports the ARNG's operational readiness by serving as the primary liaison for the Construction and Facilities Management Officers (CFMOs), Environment Program Managers (EPMs), and Energy Managers in the 54 States, Territories and the District of Columbia. “Our mission is to manage the ARNG's Installations, Environment and Sustainability programs in a way that supports readiness and mission execution, and provide the States with the policy guidance and resources they need to create, sustain, and operate facilities. While doing so, we provide resource accountability to the Director, ARNG (DARNG), Headquarters, Department of the Army (HQDA), Office of the Secretary of Defense (OSD), and Congress,” COL Gordon said. Ms. Beth Erickson, Division Chief for ARNG I&E's Planning Division, reiterated COL Gordon's words: “We strive to provide the States, Territories and the District of Columbia with the information and tools they need to promote readiness. To achieve readiness, we need to ensure training lands are accessible for Soldiers, state-of-the-art facilities are built and maintained, and sustainability projects are implemented in order to reduce operating costs and ensure energy and water security.”

When asked how the Installations and Environmental Divisions benefit from being one directorate, COL Gordon responded, “There are components of the Installations program that rely on components of the Environment program, and vice versa. The Installations program can't execute a Military Construction (MILCON) project unless it has land approval, or the National Environmental Policy Act (NEPA) and Environmental Conditions of Property (ECOP) processes are approved. In the past, this required a great deal of coordination. Now we've brought the two programs into one organization, which will improve the information flow, coordination, and processing of documentation and requirements. Now there's one point of contact.” External communications will also be easier in a streamlined organization. “We're stronger with a single voice,” COL Gordon said.

The reorganization resulted in a 30 percent reduction in personnel from both organizations, while the workload remained the same. Operating with a reduced workforce while facing differences between the organizations, COL Gordon expects it will take a year before the new ARNG I&E is fully integrated. “We've had some personnel losses, which has impacted the reorganization. I'd like to

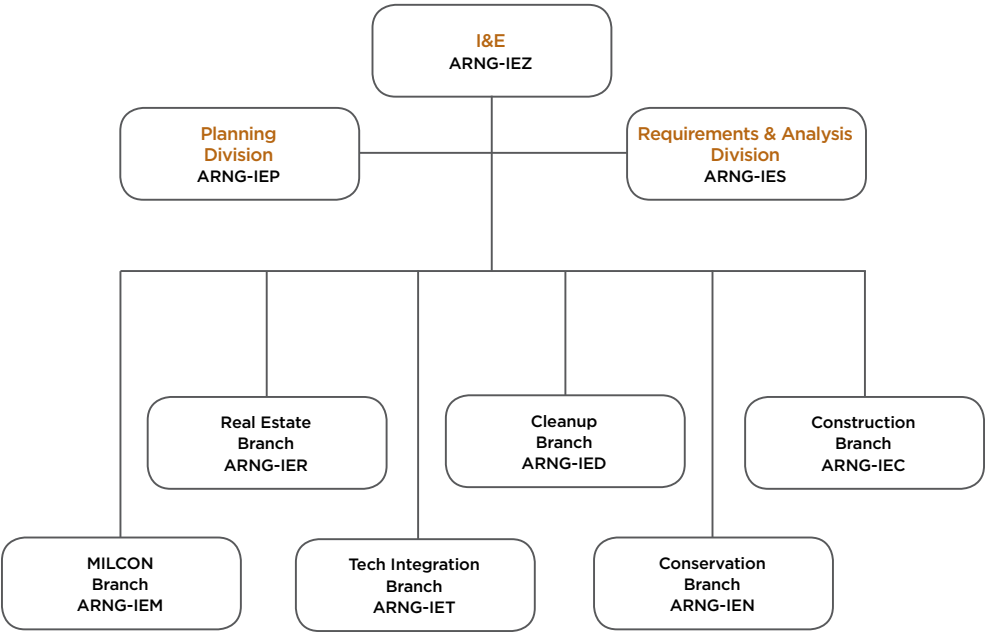
A STREAMLINED ORGANIZATION
The merger of the Installations and Environmental divisions into one directorate has reduced redundancies and improved cost benefits. As a result of the reorganization, the Army National Guard Installations and Environment saw a 30 percent reduction in personnel.



have our vacancies filled by the nine-month mark,” he said. “In the end, the result will be fewer redundancies and increased cost benefits.” When asked about his long-term vision for the new ARNG I&E, COL Gordon said, “The ARNG I&E Directorate will empower the ARNG to institutionalize sustainability as an organizing and management principle, and increase awareness, cooperation and support for sustainable practices. We will instill a sustainability attitude in Soldiers and civilians, and implement sustainable decision-making.” Sustainability in all facets of the organization is Ms. Erickson's long-term vision as well. “We will work to ensure that strategic initiatives and sustainability processes are incorporated in order to support the ARNG's role as an operational force in an array of complex environments at home and abroad,” she said.

In the end, COL Gordon sees only benefits with the reorganization. “Combining the two divisions into one directorate makes us stronger. It functionally aligns our portfolio with the Army's portfolio, which in turn gives us a stronger voice for arguing for resources,” he concluded. ●●●

Army National Guard Installations & Environment



INSTALLATIONS AND ENVIRONMENT
The leadership of the Army National Guard Installations and Environment gather for a group photo. Top row, from left: LTC Brian Saunders, Cleanup Branch; LTC Anthony Bryant, Technology Integration Branch Chief; and Mr. Steven Stadelman, Conservation Branch Chief. Middle row, from left: LTC Christopher Tatian, Sustainability Team Leader; Ms. Elizabeth Erickson, Planning Division Chief; Mr. Mark Brown, Requirements and Analysis (Acting) Division Chief; and LTC Daymon Simmons, Construction Branch Chief. Bottom row, from left: Mr. Robert McCabe, Real Estate Branch Chief; LTC Thomas McQue, MILCON Branch Chief; COL Erik Gordon, Installations and Environment (I&E) Chief; Mr. Hallet Brazelton, I&E Deputy Chief; and MAJ Donna Wu, I&E Executive Officer.

“Combining the two divisions into one directorate makes us stronger. It functionally aligns our portfolio with the Army's portfolio, which in turn gives us a stronger voice for arguing for resources.”

COL Erik Gordon
Chief, Army National Guard
Installations and Environment

Increasing Energy Security

THE HONORABLE KATHERINE HAMMACK SHARES HER
VISION FOR **A READY AND RESILIENT ARMY WITH SECURE
ACCESS TO ENERGY, WATER, AND LAND RESOURCES**

“Adopting an energy security and sustainability strategy that is built on the principle of resiliency enhances the Army’s adaptability to rapidly deploy, fight, and win wherever our interests are threatened.”

The Honorable
Katherine Hammack

Through sustainable practices, the Army ensures the availability of the energy, water, and land resources necessary to provide a ready and resilient force. *Foundations of Readiness* had the opportunity to interview the Honorable Katherine Hammack, Assistant Secretary of the Army (Installations, Energy & Environment), and ask her about her vision for an energy secure and sustainable Army.

Foundations of Readiness: The Army’s Energy Security and Sustainability (ES2) Strategy envisions a ready and resilient Army, strengthened by the secure access to energy, water, and land resources. A year after the launch of ES2, how would you sum up your achievements?

The Honorable Katherine Hammack: First of all, ES2 is really about resilience. Resiliency is the ability to anticipate, prepare for, and adapt to changing conditions, and then to withstand, respond to, and recover rapidly from disruption. ES2 is really about resiliency on Army installations.

We currently we have two installations—Fort Drum in New York and Fort Knox in Kentucky—that have demonstrated their ability to continue to operate, should the power grids that currently provide power to those two installations go down. Fort Drum does it with a biomass plant that produces as much energy as the installation needs, and then some. The extra energy that is not used by Fort Drum is sold to the community surrounding the base. In the fall of 2015, Fort Drum simulated a catastrophic grid failure and disconnected from the grid. The base was able to operate for several days entirely disconnected from the New York power grid. That’s a demonstration of resiliency.

Fort Knox did the same thing, but in a slightly different manner. Fort Knox is coordinating with a local utility company to extract natural gas from underneath the base and to place several cogeneration facilities around the base. They have simulated and practiced disconnecting from the power grid and operating in small clusters supported by the cogeneration.

We have several other bases that are working their way there. From an energy security and sustainability standpoint, we are making progress. The strategy also envisions energy optimization. One of the ways we are doing that is by leveraging expertise in the private sector through Energy Savings Performance Contracts (ESPC), where someone from the private sector comes in and installs energy-efficient equipment or upgrades in our buildings and we pay them back out of the savings.

In the first 20 years that we had the authorization to enter ESPCs, we executed about \$1 billion in contracts. In the last five years, we have dramatically increased our use of ESPCs by both simplifying the process and by increasing our focus to execute our second billion dollars’ worth of ESPCs. We are optimizing use and building resiliency at the same time.

Foundations of Readiness: The ES2 strategy is designed to guide the Army’s use of energy, water and land resources. In which areas do you see the most challenges, and why?

Ms. Hammack: One of the areas where we see the most challenges is in water. Water is becoming an increasing priority, primarily because of the unpredictability of water with the increase in droughts due to climate changes. We are seeing water prices go up, especially in areas that have suffered from droughts. The base price of water may not be very high, but to that you have to add the cost of processing and distributing the water. It requires a lot of energy to clean it up, to filter it, to pump it.

Over the last several decades, the Army has migrated to a model where most of our bases obtain their water from the public distribution networks, which are located off-base. We have decreased our usage of water from wells. We are working on ensuring that we have alternate sources of water, should these public water systems go down.

The National Guard in particular is increasing its use of alternate water sources, leveraging the use of wells for potable water usage. Alternate water sources can be rainwater collection or surface water use. These alternate sources can be used as greywater for irrigation. It’s important to use the appropriate type of water for the appropriate use. We don’t need to irrigate our yards with water that we have used energy to treat to drinking water standards, nor do we need to use drinking water to flush toilets. You can also reuse water. You can use the water from a sink to flush the toilet, or the water from cooling towers to irrigate landscaping. By using a rainwater collection system that is a gravity-set irrigation system, and by using sink water to flush toilets, and other strategies that don’t require pumps or treatment, you can decrease your energy consumption, and at the same time optimize your water use. We have to look at energy and water from an integrated standpoint to ensure that we are managing our resources as best, and as cost-effective, as possible.

When and where we use water, and what type of water we use, is something that we need to think about more strategically. I think there are a lot of opportunities as we explore distributed water systems versus centralized water systems.

Foundations of Readiness: The fifth goal of ES2 is to drive innovation to identify opportunities. Are there some innovations in particular where you see opportunities for the Army?

Ms. Hammack: Yes, there are. For instance, the Oregon Army National Guard is looking at a prototype for wave energy at Camp Rilea. Offshore wind turbines are common in many nations, but the Army hasn’t used this technology as much, even though we do have locations where we have the opportunity to utilize this technology. The cost of solar panels has come down and the technology is becoming more efficient. There are some innovative concepts for solar energy. I saw an exhibit where they were printing flexible solar panels to any size or shape. We are now seeing solar paint. In the future, every piece of equipment or building could be painted with solar paint. There is solar thread. Potentially, every Soldier’s uniform could have solar thread woven into it. As you’re out on patrol, the fabric of your uniform could recharge the batteries and the communications equipment you carry.

There are a lot of innovations out there, and the Army labs are working on developing and testing these new technologies to determine their viability and cost effectiveness, so that we can ensure energy security and resiliency.

Foundations of Readiness: The Army has seen an increase in power interruptions on its bases. What can the Army—and the Army National Guard—do to reduce risk at its bases? Is the focus on alternative energy sources to minimize the reliance on the public grid, on microgrids, on the exploration of natural resources—or all of the above?



KATHERINE HAMMACK
The Honorable Katherine Hammack is the United States Assistant Secretary of the Army, Installations, Energy and Environment. She assumed office on June 28, 2010. Ms. Hammack’s career has focused on energy and sustainability advisory services. Specifically, she has worked on the evaluation of energy conservation projects, including ventilation upgrades, room air distribution, indoor air quality, lighting efficiency, cogeneration, sustainable design, solar energy, and building operations.

“When and where we use water, and what type of water we use, is something that we need to think about more strategically.”

The Honorable
Katherine Hammack



INCORPORATING SUSTAINABILITY AND ENERGY EFFICIENCY INTO TEACHING

The United States Military Academy at West Point is integrating resource sustainability and energy efficiency into multiple classes. Over 300 classes at West Point incorporate energy in the teaching, integrating an informed energy culture into the fabric of the teaching. (Photo by Mike Strasser/USMA PAO)

“I quite often think the National Guard has more opportunities to realize innovative concepts due to its state relationships. Partnering with the state, local universities, and the Department of the Army Headquarters brings three talent pools to the table, which optimizes the solutions.”

The Honorable
Katherine Hammack

Ms. Hammack: I'll start with saying all of the above. When we look at the fourfold increase in power interruptions over the last ten years, they are not only due to power outages off-base, but also to our aging power distribution systems on our bases. The way to decrease the number of power interruptions is through distributed energy systems with renewable systems on the roofs of buildings or located near buildings, and Net Zero buildings that produce their own energy to operate. This is a distributed energy model. You can also mitigate some of the risks by burying power lines, so that they are not as susceptible to acts of nature, or acts of man. This type of resiliency requires you to look at the entire system. We have a brand new aircraft hangar that was built at Fort Carson. It was built in a very energy-efficient manner. The systems in the building, the building itself, and the renewable energy it generates were thoughtfully designed. That building came in at a lower first cost than a traditional building. It is essentially self-sustaining, so it is not going to be as susceptible to power interruptions.

When you think things through upfront and you have a thoughtful strategy for the interaction and interrelationship of system, then you can be both cost-effective on a first-cost basis and on an operating-cost basis. When we look at how to reduce risk on our bases, it really is an all-of-the-above solution, which is based on a distributed energy system.

This strategy is not just for new buildings. When you retrofit an older building, it's exactly the same strategy. We have had buildings that were over 100 years old. For instance, at Fort Knox there was a 100-year-old building that had an energy use intensity (EUI) of over 200 per square foot per year. The average EUI across the United States is around 80. After a complete renovation, the level was below 30. When you get to a level below 30, that's when your renewable energy system can pick up the energy use load and optimize your operations. I disagree with the presumption that a Net Zero building has to be a brand new building. Even a historic building can be a Net Zero building if you thoughtfully consider all the contributors to resource efficiency.

Foundations of Readiness: Recently you said that, “The Army is evolving from a historic framework that viewed resource considerations as constraints on operational effectiveness, to a perspective that considers the critical role of energy, water, and land resources as mission enablers.” How would you describe the process to get the organization to adopt this mindset?

Ms. Hammack: As engineers, we often think of explaining to people what we are doing. We're replacing an HVAC system. We're putting in better installation. We're improving the roof. This is what we are doing.

We sometimes forget to explain why—we're doing this to increase mission effectiveness, so that you will be able to operate, should the grid go down. We're doing this so that you can perform your priority mission, which is to support and defend this nation against all enemies, foreign and

domestic. When you bring it all together and explain that by us doing this, you'll be better equipped and more capable to do your mission, that changes the mind-set of many from a compliant mind-set to a mission effective mind-set. Adopting an energy security and sustainability strategy that is built on the principle of resiliency enhances the Army's adaptability to rapidly deploy, fight, and win wherever and whenever our interests are threatened. That could be while providing humanitarian assistance, responding to civil unrest, or fighting a war.

Foundations of Readiness: You've stressed the importance of educating cadets at The United States Military Academy at West Point on energy security. Can you tell our readers about the work to reach the next generation of leaders?

Ms. Hammack: One of the great things they're doing at West Point is integrating resource sustainability and energy efficiency into multiple classes. It would be hard to find a class that is just focused on energy. Instead, a physics class has an energy component to it. In mathematics, they're doing calculations on the opportunity for solar to support the needs of a building. In English, they might be writing about climate change and the impact that climate change has on the movement of a population. In a strength of materials class, they might be looking at the wall strength of a new building material used to build an energy-efficient structure.

West Point is integrating an informed energy culture into the fabric of the teaching. Over 300 classes at West Point incorporate energy information in some way, shape, or form. When an energy-informed culture is part of the education, we're all much better off.

Foundations of Readiness: The Army has made a commitment to the President to deploy one gigawatt of renewable energy by 2025. What is the outlook for meeting this commitment?

Ms. Hammack: We are well on our way. We have already met half of that goal with projects that are installed, or are in the contracting process. We have identified and are evaluating potential projects that will bring us past a level twice that goal. Sometimes opportunities come from units that have determined that there is an opportunity at their location. Sometimes opportunities are brought to us by manufacturers that have a new technology that will enable us to go beyond what we had thought was possible. Sometimes opportunities come through a scan of the land resources that the Army has, and the potential for wind or solar projects at different geographical locations.

By the end of 2016, we will have brought over 100 megawatts of renewable energy online. The majority of those projects are in Georgia, where Georgia Power is putting 30 megawatts each on Fort Gordon, Fort Stewart, and Fort Benning, and has asked us about the possibility to do more. The unique thing is this is not costing the Army anything at all. Georgia Power is financing the projects in exchange for the use of our land. The next phase is to put in a microgrid, and the third phase is to put in energy storage. Quite often, we find that the hardest step is the first step.

Foundations of Readiness: Made up of 50 states, three territories and the District of Columbia, the Army National Guard operates under different circumstances than the more centralized Army. How can the Army National Guard achieve the same readiness and resiliency with secure access to energy, water, and land resources, as outlined in the ES2 strategy?

Ms. Hammack: These strategies are not limited to the Active Army. The National Guard has quite a few innovative projects. The Michigan Army National Guard has a horizontal ground-mounted wind turbine project. The Oregon Army National Guard is partnering with Oregon State University on developing the ocean resources at Camp Rilea to generate wave energy. The California Army National Guard is partnering with a local utility company to develop a microgrid at its installation at Los Alamitos.

I quite often think the National Guard has more opportunities to realize innovative concepts due to their state relationships. Partnering with the state, local universities, and the Department of the Army Headquarters brings three talent pools to the table, which optimizes the solutions. ●●●



IMPROVING EXISTING TECHNOLOGIES

Top: The Oregon Army National Guard, in partnership with Oregon State University, is exploring new ways to harness wave energy in the waters outside of Oregon's Camp Rilea. (Photo by Pat Kight, Oregon Sea Grant)
Bottom: The New Jersey Army National Guard was one of the early adapters of sustainable energy. The organization completed its first solar project as early as 2005. The cost of solar panels has since come down and the technology has become more efficient, which will make solar panel installations, such as this installation covering one of the New Jersey Army National Guard's parking lots, more cost effective.

Facility Impact on Readiness

WHILE FAILING FACILITIES DETER FROM READINESS, **MODERN, ADEQUATELY SIZED AND SITED FACILITIES SUPPORT RECRUITMENT, RETENTION, AND TRAINING, PROVIDING A FORCE THAT IS READY TO MEET ITS DUAL MISSION.**

“Our current pace of funding a project every five to six years is not a viable plan. At this pace our typical Readiness Center will be 120 years old before it is replaced or repaired.”

COL Steven Hines
CFMO for the
Indiana ARNG

In an era of persistent and pervasive conflict, we rely on a ready force to protect us. To be able to respond to foreign and domestic emergencies, Army National Guard (ARNG) Soldiers must be trained, equipped and ready.

Unfortunately, the aging facilities to which these Soldiers are assigned often fail to meet mission requirements.

Facility impact on readiness

Readiness Centers serve as the primary locations for unit training and the staging of emergency response operations. “We view our Readiness Centers as “readiness platforms,” which are critical to maintaining our unit strength. The Readiness Centers serve as a hub of activity for daily training, drills, and readiness preparations. These facilities maintain our personnel readiness. Simultaneously, our field maintenance shops provide equipment readiness. Many of our 64 Readiness Centers in Indiana also serve as a touchstone with community leaders in support of our domestic mission,” said COL Steven Hines, CFMO for the Indiana ARNG (INARNG). “Facilities are the training backbone for the Soldiers of the Mississippi ARNG (MSARNG) and a critical component in preparing our over 9,800 Soldiers for land operations, both domestically and worldwide. Our facilities contribute to the overall readiness by supporting multifaceted

operations, such as collective training, disaster response, and family support activities,” said COL Paul McDonald, CFMO for the MSARNG.

The ARNG suffers from a space deficit nationwide. This lack of space is one of the ARNG’s most urgent challenges and it affects both training and readiness. Many of the facilities in the ARNG’s portfolio are also near or past their lifecycle. These aging facilities are unable to support modern training and lack sufficient storage space. Makeshift solutions, such as storage containers, are used to store critical equipment. New aircraft, vehicles, and sensitive equipment often cannot fit in older facilities and are stored outside, exposed to the elements. Sometimes Soldiers’ individual equipment, known as Organizational Clothing and Individual Equipment (OCIE), must be stored off-site, which impacts access. This, in turn, impacts training and readiness. “We’re experiencing a shortage of training areas for both brigade and battalion communications, and a shortage of space for computer equipment that must remain connected in a climate-controlled environment. This shortage of space and limited access to computer labs impact our Soldiers’ distance learning possibilities. We also have a shortage of military vehicle parking and storage, and storage for Soldier individual equipment,” COL Hines said. “The conditions of installations impact all areas of unit readiness,” said

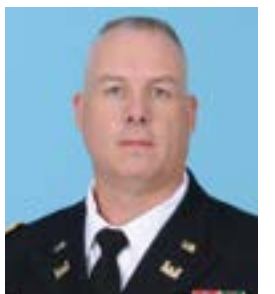
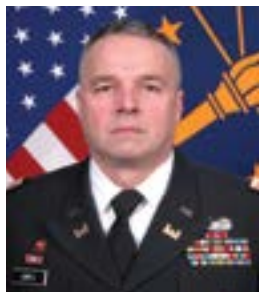
MSG (Ret.) Joseph Battisfore, former Battalion Operations Sergeant for the Michigan ARNG (MI-ARNG). “As such, funding to maintain and improve installations is an investment into all areas of unit readiness. Adequate maintenance and storage facilities ensure that unit equipment is secure, available, and maintained. Conversely, when storage and maintenance areas are inadequate, equipment accountability and maintenance is difficult, time-consuming, and all too often results in the loss of funds. An example of this is the storage of OCIE. When many of our older Armories were built, the amount of OCIE issued to a Soldier was a fraction of what is issued today, both in volume and in cost. As the amount of OCIE issued grew over the past decades, many units had completely inadequate storage space for Soldier equipment. This forced Soldiers to store some or all of their OCIE at home between drills. At best, this resulted in an inconvenience for the Soldier, but often it caused delays in training and a marked negative impact on equipment recovery during personnel transfers and discharges,” he said. The MIARNG has made the purchase and installation of larger individual equipment lockers a priority—an effort MSG (Ret.) Battisfore said has had a direct positive effect on individual equipment readiness by increasing equipment accountability, recovery, and accessibility. “However,” he continued, “equipment storage, both individual and section, remains a significant challenge for some units. Temporary storage in commercial shipping containers is one alternative that is frequently used, but one that can present issues with climate control and all-weather access.”

LACK OF STORAGE
Commercial shipping containers and simple construction buildings are often used by Readiness Centers as a make-shift solution to make up for storage shortages.



In Texas, the current level of Military Construction (MILCON) funding has compounded the lack of adequate Readiness Center space. “The Texas ARNG (TXARNG) has a 2 million-square-foot deficit in Readiness Center space, and most of the facilities do not meet the space requirements for the units assigned to those units,” said LTC John L. (Les) Davis, CFMO for the TXARNG. “These facilities cannot accommodate the growing density of female Soldiers in our units. Motor pool space is limited, and storage is generally inadequate across the state. These shortfalls make it difficult to support the requirements and demands of the assigned units. Conversely, the newer facilities, such as our new Armed Forces Reserve Centers (AFRC), provide more space and are generally better suited to support the number of personnel assigned, their equipment and missions,” he said.

The transformation of the ARNG from a strategic reserve to an operational force requires facilities that support new training and equipment requirements, but many of the ARNG’s facilities fail to meet the standards for training. Across the country, the Army National Guard faces the challenge of modernizing aging facilities to meet the needs of a modern force and to close the capability gaps that adversely impact readiness. “Training is greatly impacted by the condition of facilities. Over the past few decades, distance learning and the use of simulation systems have become an increasing requirement, and many Armories were constructed with neither of these necessities in mind. Having sufficient space and infrastructure for distance learning vastly decreases the amount of time required to accomplish mandatory training,



FACILITY MANAGEMENT
From top: MSG (R) Joseph Battisfore, former Battalion Operations Sergeant for the Michigan ARNG; LTC John L. (Les) Davis, CFMO for the Texas ARNG; COL Steven Hines, CFMO for the Indiana ARNG; and COL Paul McDonald, CFMO for the Mississippi ARNG.

increases the accomplishment rate for units, and allows more time for the hands-on training for which Soldiers arguably enlisted. Inadequate space and infrastructure for distance learning results in lower accomplishment rates, an increased burden on Soldiers outside of drill, and lowered morale. Simulation systems such as the Fire-Arms Training System, Engagement Skills Trainer, and many other valuable digital training assets require dedicated, securable space that is not always

(FIS), the Army is looking to eliminate facilities with FCI scores below 60 percent and focus on restoring all other facilities to the Army standard of 80 or higher. “The INARNG’s facilities currently rank in the mid-60s in the FCI, according to the RCTMP,” COL Hines said. LTC Davis said he and his team rely heavily on the FCI when prioritizing resources for repairs to TXARNG facilities. Thirty-one of the TXARNG’s facilities are in the “red,” or poor, category, and 28 facilities are in the “black,” or

programs in those States to ensure resources are managed responsibly and sustainably. “We work hand-in-hand with our Environmental section and we synchronize our construction and maintenance efforts to remain proactive environmentally. The INARNG Environmental team is integral in sustaining our infrastructure,” COL Hines said. The TXARNG manages over 34,000 acres of training lands. “From habitat protection and restoration to controlled burns and cultural and natural resource

functionality and pose a challenge to the units to get the job done. Our leadership embraces the opportunity to seek funding that improve our facility inventory,” COL Hines said. “So far, funding levels to support maintenance and repair activities have been adequate to keep our heads above water, but the State match requirement can be problematic at times. Our MILCON funding levels are well below the needs of the organization. At least 30 of our Readiness Centers have reached or exceeded their lifecycle, and are in need of replacement or significant upgrades in order to functionally support readiness demands. Our current pace of funding a project every five to six years is not a viable plan. At this pace our typical Readiness Center will be 120 years old before it is replaced or repaired. Base Operations Support (BOS) funding is insufficient and we cannot sustain critical Fire and Emergency Services personnel on staff at our training site, Camp Atterbury,” he said.

BOS funding is a concern in Mississippi as well. “We were funded at 75 percent of our total requirement in fiscal year 2017. That means we consistently have a funding shortfall of 25 percent or more in Facilities Operations and Sustainment, Restoration, and Modernization (SRM). Lack of BOS funding impacts critical support requirements, particularly utilities and unimproved grounds maintenance on the ranges and training areas. Sustainment funding has improved, but the lack of SRM funding inhibits our ability to bring facilities up to current mission readiness standards,” COL McDonald said. “Our leadership in Mississippi acknowledges the fact that we have a shortfall in State funding support at our facilities, and will continue to pursue appropriate funding levels, both State and federal, to prevent mission-threatening shortfalls and worsening facility conditions across the state,” he added.

The TXARNG, too, has the support of its State leadership, and in its case, the financial commitment from the State has been strong. “Our State legislature committed \$19 million per biennium to the Adjutant General’s State of Texas Armory Revitalization (STAR) Program. Coupled with federal matching funds, this five-year program will enable the TXARNG’s CFMO office to ensure 27 of the most critical facilities meet required building and safety codes and energy efficiency standards, and it will reduce future operating costs. This commitment will maximize our efforts to improve the quality rating of our facilities and slow their degradation. The \$19 million per biennium is a significant increase

“It is an undeniable fact that the level of professionalism expected of Reserve Component Soldiers has greatly increased over the past several decades.”

MSG (Ret.) Joseph Battisfore
former Battalion
Operations Sergeant for
the Michigan ARNG

FAILING FACILITIES

Failing facilities deter from readiness. The photo on the right shows the failing roof of a Texas ARNG facility in El Paso, Texas, and the photo on the opposite page the cracked and bowed brick in the façade of a facility in Fairview, Texas.



“Funding has improved, but the lack of Sustainment, Restoration, and Modernization funding inhibits our ability to bring facilities up to current mission readiness standards.”

COL Paul McDonald
CFMO for the
Mississippi ARNG

available. Additionally, the modernization of facilities at major training installations is crucial to ensuring that units accomplish realistic, challenging training to Army standards. The numerous improvements made by the Michigan National Guard to ranges and training areas at the Camp Grayling Joint Maneuver Training Center have fostered the success of recent joint and international training exercises,” MSG (Ret.) Battisfore said.

In 2014, the ARNG completed an ambitious study, titled the Readiness Center Transformation Master Plan (RCTMP), on the state of its Readiness Center. Over three years, the ARNG Installations and Environment (ARNG I&E) collected and analyzed data on its Readiness Centers across the country to assess each facility’s adequacy in terms of location and size, role in training, and in the ARNG’s overall mission. The study used the Facility Condition Index (FCI) to measure the quality of facilities. The FCI score is a percentage score, derived from what it would cost to bring a facility from the current condition to standard condition. As part of its annual Facility Investment Strategy

failing, category. “Dual-hatted as a Cavalry squadron commander and CFMO, I face numerous challenges with facilities in Texas. My headquarters facility has black mold in several offices. Water is seeping in from below the foundation. This has rendered parts of the facility unusable and will require extensive remediation,” LTC Davis said.

In Mississippi, the MSARNG’s facilities score slightly higher in terms of quality. “The statewide FCI average at MSARNG facilities is 83, which translates to fair (adequate) condition. There is an obvious and direct correlation between facility condition and age. Most building systems begin to reach the end of their useful life between 15 and 30 years. While our facilities are generally in fair condition as they have been well-maintained, the facilities require regular repair and function at a less-than-optimal level due to age. We still have many building systems that have reached, or will soon reach, the end of their lifecycle, resulting in diminished operating reliability,” COL McDonald said.

The ARNG CFMO offices around the country work closely with the ARNG environmental

management practices, the TXARNG Environmental Program ensures maximum availability and optimal use of our lands. Through these programs, the Environmental Branch ensures the readiness of our units and the sustainable management of our resources,” LTC Davis said.

Current funding levels and support of State leadership

The ARNG is organized differently from the Active Army in several aspects. One important difference is the way construction projects are funded. The current law limits the federal contribution to the construction of ARNG Readiness Centers to 75 percent, and requires the States to fund the remaining 25 percent, unless the facilities are situated on federal land. The local CFMO office is therefore dependent on good State finances and the support of the State leadership. “The Indiana senior leadership acknowledges the importance of both functionality and appearance of our Readiness Centers. They realize that leaking roofs affect the appearance, and that extremely small facilities affect the

“We’ve always answered the call to duty, whether it involved deploying overseas in support of our federal mission, or mobilizing to respond to natural disasters or local missions.”

LTC John L. (Les) Davis
CFMO for the Texas ARNG

in State contributions over previous years, and the TXARNG must work diligently to receive the federal matching share from the Army National Guard to fully implement the program. Luckily, 2016 was a great year and the TXARNG received the full federal share and all five STAR projects were fully funded. Our State and local government view the TXARNG as a vital part of our communities and rely on us for support and protection from local and global threats,” LTC Davis said.

Facility quality and location and the impact on response times, recruiting, and retention

Readiness Centers must be sited in locations that support the training and equipment requirements of units that can be mobilized at any time in response to State and national emergencies. Many of the Readiness Centers still in operation today were built in the years following World War II and are sited in locations that do not reflect recent population shifts. This impacts emergency response times, as well as recruiting and retention. In some states the population is shifting more rapidly than in others, and the CFMO offices are faced with the challenges of keeping up with changing demographic trends. “Texas is an extremely diverse state,” LTC Davis said. “Between 2015 and 2030, an estimated 18 million people will move to the area between Dallas, Houston and San Antonio. Over time, residents have migrated from the more sparsely populated regions of West Texas to this area.” The TXARNG looks at current and projected demographics when determining the sites of new facilities, but due to the lack of MILCON funding the organization faces a significant challenge to keep up with the pace of population growth and shifts. Mississippi faces a similar challenge. “In the last few decades, Mississippi’s population centers have shifted from predominantly rural to urbanized areas. The result is growing communities that do not have appropriate facilities and declining communities that have facilities that are underutilized. This has an impact on recruiting and retention efforts. The demographic changes impact Soldiers through increased commute time to their assigned facilities,” COL McDonald said.

In other states, such as Indiana, the facility portfolio is better aligned with the demographics. “We have analyzed our demographics thoroughly and we continue to monitor trends. Currently, 45 of our total 64 Readiness Centers appear to be in the correct demographic locale. This helps us maintain a community relationship and foothold

in terms of recruiting and retention. We are pretty well-suited in my opinion,” COL Hines said.

Location is important for recruiting and retention, but so is the quality of the facility. “The older and more institutional in appearance the facilities are, the more likely they are to act as a barrier between the ARNG and the community. Our newer INARNG facilities emulate other government and military facilities in the community in appearance, and are more inviting. They provide an appearance of a growing and vibrant organization,” COL Hines said. LTC Davis agreed with the importance of appearance. “Soldiers take pride in their units and their facilities. We face challenges when potential recruits see our TXARNG facilities and compare them to the newer facilities managed by other service components. The vast differences in the outward physical appearance can sometimes draw them away, but we are still able to recruit and retain quality Soldiers,” he said. “The condition of our facilities are paramount to our recruiting and retention efforts. Our facilities are the face of the MSARNG. Our challenge is that many of our facilities are beyond their useful lifespan. They may be physically located in the proper place for recruiting and retention; however, the condition of these facilities is directly correlated to recruiting, retention, and morale,” COL McDonald said. As the demands on Soldiers have increased, so have the demands on the facilities where they operate. “It is an undeniable fact that the level of professionalism expected of Reserve Component Soldiers has greatly increased over the past several decades, as they have had to increasingly deploy for war and peacetime missions alongside their Active Duty counterparts. I have had the opportunity to work both at a facility that was built at the turn of the previous century, and at a modern, multi-million dollar Readiness Center. The latter’s positive effect on Soldier morale, pride, and professionalism was undeniable,” MSG (Ret.) Battisfore said.

Readiness Centers are the foundations for building Soldier readiness. They are also the face of the ARNG in the local communities. “National Guard units have been part of their communities for many years and contribute to those communities in numerous ways. In many cases, generations of families have served in the same unit. There is still a great sense of pride and camaraderie. We’ve always answered the call to duty, whether it involved deploying overseas in support of our federal mission, or mobilizing to respond to natural disasters or local missions,” LTC Davis concluded. ●●●



Common Ground, Common Goals

SENIOR REPRESENTATIVES OF THE RESERVE COMPONENTS’ FACILITIES PROGRAMS MEET TO EXPLORE COMMONALITIES AND COLLABORATIONS THROUGH THE SENIOR ENGINEER STEERING GROUP

Twice a year, senior representatives from the facilities programs of the four Services’ six Reserve Components meet to share their experiences and best practices, and explore areas where they may be able to cooperate. The group, known as the Senior Engineer Steering Group (SESG), last met at the Navy Installations Command at the Washington Navy Yard in Washington, DC in February 2016. Col. Denise Boyer, former Deputy Director, Construction in the Office of the Assistant Secretary of Defense (OASD), described the topics discussed as “shared challenges and best practices.” She said, “The meeting was very cordial. There is a real spirit of cooperation. The members may wear different uniforms, but the work they do, day in and day out, is very similar and they face most of the same challenges.” Asked for an example of how sharing lessons learned and best business practices has helped her and the other members of the group, Col. Boyer said, “The Navy presentation on Force Protection was a “best practice” approach to risk mitigation. All the Services had to address this issue in response to a Deputy Secretary of Defense memo following the incident at Chattanooga, Tennessee [where four Marines and one Sailor died at a shooting at the Navy Operational Support Center in July 2015]. The Navy’s presentation included a cost-benefit analysis approach that could be adopted by others. That led an eye-opening discussion on insider threat based on their own history. The information our

SENIOR ENGINEER STEERING GROUP
Representatives from the four Services’ Reserve Components gather for a group photo. From left: CAPT Tony Edmonds, Director, Facilities and Environment, United States Navy; Col Julia Hunt, Assistant Chief of Staff, U.S. Marine Corps Forces Reserve Facilities; Col James Hickman, Command Civil Engineer, Air Force Reserve; COL Glenn Kiesewetter, Director, Army Reserve Installation Management Directorate; and Mr. Hal Brazelton, Deputy Chief, Army National Guard, Installations and Environment Directorate.

office presented on Joint Construction Efficiencies and recent State Facility Board results was news to some and generated lots of follow-up questions to our office in the weeks following the meeting. The ARNG presentation on their Readiness Center Transformation Master Plan generated lots of discussion on the next round of Base Realignment and Closure (BRAC). In my opinion, ARNG is ahead of the curve on being ready for the next BRAC round, when and if Congress approves of one. I think everyone walked away from the last SESG meeting with at least one golden nugget of new information to put in their tool kit.”

A forum for exploring commonalities and collaboration

The SESG was founded in 2014 by COL Patrick Briley, who was the Director of the Army Reserve’s Installation Management Directorate at the time, and COL (R) Kimberly O’Keefe, who was then the Chief of the ARNG Installations Division. A year in to the cooperation, COL Briley said he had three main goals for the SESG: to get a mapping program established or approved; more joint construction; and BRAC collaboration. Reflecting on those goals in 2016, right before he departed the Army Reserve, COL Briley said he has seen progress. “There is good news here,” he said. “The staff at the OASD, Readiness Programming and Resources (RPR), in collaboration with OASD, Energy Installations and Environment, is working on common mapping infrastructure for all states, to include all the Reserve Components. The draft maps are just wonderful. The level of detail will make our jobs much easier. Not all states are completed, but the staffs at OASD continue to work this.”

“Joint construction is moving like molasses uphill” he continued. “We have gotten buy-in from all the Reserve Components to collaborate when lobbying for military construction (MILCON) projects. The first step is the State Facility Board. The best course of action is to constantly collaborate to gain efficiency by combining construction. This leads to BRAC collaboration. We have discussed this at several meetings and the momentum is gaining in Congress. The Department of Defense continues to push for another BRAC and I believe the Services, especially the Army, can show savings that can be directly attributed to previous BRAC rounds. At the next SESG meeting we will discuss actual locations where we can consolidate our centers. The ARNG will have the biggest say, since they are the largest component. I believe there will be another BRAC, and collaboration and planning is a must” he said.

At previous meetings, the representatives from the different Reserve Components shared information on facilities in their inventory that had room for another Component. Asked if that information-sharing has resulted in any co-location agreements, COL Briley responded, “The ARNG has acquired a few of our facilities that we were disposing. The list of facilities went through the normal disposal channels, but someone at a lower level just let them go by. When I briefed the ARNG recently, there was interest and now the ARNG is acquiring a few of our sites that we deemed excessive. We must continue this process, but I realize the two largest players, the ARNG and the Army Reserve, will most likely be the only ones working out these sorts of deals. I have directed the Regional Support Command’s Department of Public Works to work with each state’s Construction Facilities Management Officer to see if any efficiencies can be gained by consolidating in centers, regardless who owns them. After all, the money comes from the taxpayer.” Col. Boyer expressed optimism that it will get easier for the Reserve Components to collaborate on these types of projects in the future. She said, “The Senior Engineer Steering Group is now formalized, as a group, in DoD Instruction 1225.08, which was

“The SESG members may wear different uniforms, but the work they do, day in and day out, is very similar and they face most of the same challenges.”

Col. Denise Boyer
Deputy Director, Construction
in the Office of the Assistant
Secretary of Defense

published on 10 May 2016. This same policy also directs the State Facility Boards to begin working more cooperatively on facility issues beyond the scope of “joint” MILCON.”

Common goals

The SESG’s charter stipulates the group will meet every six months and rotate the hosting. The group met in September 2016 at the Air Force Reserve’s headquarters at Dobbins Air Reserve Base, Georgia, and is scheduled to meet again in February 2017 at the Army Reserve’s headquarters at Fort Bragg, North Carolina. For Col. Boyer, the most important topics moving forward are declining budgets and mission, demographic and technological changes. “Declining budgets are a common concern for everyone in the group,” she said. “We all feel a deep sense of stewardship for the facilities under our care. Each of us is doing more with less. Cooperation is one of the ways we can accomplish that. Change is another big challenge and it is everywhere, from changing mission sets to changing recruiting demographics. In the Facilities and Installations world, we are always trying to keep ahead of those changes. Changes in technology drive mission changes and require new or different facilities, while changes in demographics may require stationing changes. We are working to design and build facilities that are more adaptable and can better respond to these changes in the future. The future will demand facilities and installations that are more resilient. The rate of change is also faster, requiring the

people who manage facilities to be more proactive. We simply don’t have time to wait and see and then react,” Col. Boyer said.

“Our Services are so different, but we all wear a uniform, salute our supervisors, and have the best interest of our our country at heart.”

COL Patrick Briley
former Director of the
Army Reserve’s Installation
Management Directorate

Mr. Bill Albro, Associate Director of Logistics & Installations at the Air National Guard (ANG), pointed to several areas of concern he believes the SESG needs to address. “We need to look at how to survive the degradation of facilities in declining budgets, and determine where we should spend our limited resources, so that the important facilities degrade slower than the less important facilities,” he said. “We also need to determine if we can do more in terms of sharing facilities and services. Some agencies, such as the Federal Bureau of Investigation, may be well suited, while others, such as the U.S. Department of Health and Human Services or the Internal Revenue Service, may be less so. We need to look at ways to eliminate redundancy in our communities—for example, rather than having our own security and fire protection, maybe we can pay the municipalities around us to provide what we need?” Mr. Albro also stressed the need to look ahead and plan for the mission of 15 years from now. “No one knew we would be this involved in Remotely Piloted Aircraft (RPAs) in the ANG 15 years ago. What will our mission look like 15 years from now? Will we have robotically enhanced exoskeletons? Hypersonic strike capabilities? Stealth unmanned escort aircraft? We need to look ahead at our future mission and support, enhance or sustain our facilities accordingly,” he said.

The SESG’s cooperation has both broadened and deepened since group was formally established in early 2014. Asked what he hoped the legacy of his work on the SESG would be as he transitioned out of the Army Reserve, COL Briley responded, “I believe there is great potential within the SESG and we can’t let the momentum cease or slow down. One of the SESG leaders needs to take charge and put more time into this than we have previously. A person pushing us from the Office of the Secretary of Defense is a must. I will really be happy if in a few years we can document more joint construction and more space-sharing between the Reserve Components. Our Services are so different—and so unique—but we all wear a uniform, salute our supervisors, and have the best interest of our Service members—and our country—at heart.” ●●●

Channels for Communication

WITH THE RECENT REORGANIZATION OF THE ARMY NATIONAL GUARD INSTALLATIONS AND ENVIRONMENTAL DIVISIONS INTO ONE DIRECTORATE THE ADVISORY COUNCILS FOR EACH DIVISION TAKE ON NEW AND EXPANDED ROLES.

In the spring of 2016 the Army National Guard's (ARNG) Installations and Environmental Divisions were combined into one directorate, ARNG I&E. The reorganization streamlined the organization's work and increased its cost-efficiency by eliminating redundancies. Traditionally, the Installations and Environmental Divisions have relied on two advisory councils, the Facilities Engineering Advisory Council (FEAC) and the Environmental Advisory Council (EAC), to facilitate the communication between the ARNG leadership and the member states. With the reorganization, the FEAC and the EAC will take on new and expanded roles. FEAC Chair COL Scott Ayres and EAC Chair Todd Preddy shared their thoughts on the reorganization and what it will mean for their respective advisory councils.

COL Ayres, who is also the Construction and Facilities Management Officer (CFMO) for the Iowa ARNG, describes the FEAC, which was established in 1972, as "the conduit through which CFMOs and their staff can work on issues collectively with the ARNG I&E. The conduit goes both ways, as it's also a way for the ARNG I&E Division Chief, and the ARNG I&E branches, to work on issues with the 54 CFMO offices." The EAC was formed in 1993 with a mission to "protect the training lands, so that training goes on, wherever those training areas are," according to its charter. "We are the go-to bridge on environmental issues between the states and the ARNG, and the ARNG back to the states," said Mr. Preddy, who also serves as the Geographic Information System (GIS) Manager for the North Carolina ARNG.



COL Scott Ayres



Mr. Todd Preddy

According to COL Ayres, the reorganization reflects an organizational structure that is already a reality in many states. "The reorganization combines components of the ARNG that are actually already combined in my and many of my peers' states. Many CFMO shops and Environmental offices are already integrated," he said. Mr. Preddy also stressed the cooperation that already exists between the communities. "The main difference between the EAC and the FEAC is we handle environmental issues and they handle construction and installations issues, but there is a lot of overlap," he said. "At the start of a construction project there are a lot of environmental requirements. The Environmental Condition of Property (ECOP) evaluates the history and state of the land. An environmental impact analysis, required

by the National Environmental Policy Act (NEPA), must be completed. This requires consideration of the environment, resulting in a Categorical Exclusion (CX) or additional study and documentation including an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). This is where our expertise comes in. We help the installations community navigate all of these requirements, but first they have to tell us exactly what they're going to

THE FEAC
From left: ARNG I&E Chief COL Erik Gordon, COL Steven Hines, COL Kenneth Safe, COL Philip Clayton, FEAC Chair COL Scott Ayres, COL Fred Cost, COL (Ret.) Donovan Lajoie, COL Paul McDonald, LTC Shane Martin, and COL David Mikolaities.



do and where. If we don't have a detailed scope, we can't do our job. Having said that, things change—missions change, the footprints of buildings change. We're continually having to catch up, while trying to not slow them down. It can be a difficult task at times."

There are seven standing FEAC committees: Design, Project and Contract Management; Resource Management; Facilities Management; IT and Systems Integration; Strategy, Policy, Regulations and Program Initiatives; Education and Training; and Manpower. The EAC is organized similarly to the FEAC, and has five committees under its current charter: Resources, Conservation, Compliance, GIS and Automation, and NEPA/ECOP. The council is evaluating amending its charter to include a sixth committee, Training. "Due to recent budget cuts, we haven't been able to do a whole lot of training of our full-time staff. We're trying to re-establish our training committee in order to work with people at the ARNG on developing training programs," Mr. Preddy said. Education is at the top of FEAC's agenda as well. COL Ayres sees education as an area where the two advisory councils will be able to immediately combine their work. "While both organizations have individual lanes for introductory and continuing educational requirements for employees, there are existing educational blocks that can be shared. There is organic expertise across both areas that we can utilize," he said. "The most important new role of the FEAC is to help ensure the integration of the CFMO and Environmental functions in our education activities. The CFMO community has

"We're fully one team now. "Them" is now "us." We will be better together."

COL Scott Ayres, Chair of the FEAC

traditionally focused on sustainment and construction, and pieces of both activities have required environmental stewardship. At times, a project delay could be blamed on a systematic step from the Environmental office—from "them." "Them" is now "us." We're fully one team now. We will be better together."

The FEAC and the EAC will continue to function separately, each addressing its respective areas of responsibility, but COL Ayres said he could "see a day when face-to-face meetings are scheduled so that we can watch and interact with each other's organization." The councils each have a set of issues they are working on, with the states and with the ARNG I&E leadership. For the EAC, the most pressing issue is staffing. The reorganization of the Installations and Environmental Divisions resulted in some downsizing of personnel. "The Compliance and Assessment/Evaluations (NEPA/ECOP) groups did not remain intact due to the limits on the number of allowed branches in the reorganization. At the same time there was a large turn over in Compliance personnel. Right now, an important issue for the EAC is to make sure that compliance related issues are properly addressed and managed at ARNG I&E to avoid detrimental actions," Mr. Preddy said. "The FEAC continues to work on two en-

during important issues: insufficient QDPW funds and CFMO manning," COL Ayres said, referring to accounting classification related funding activities for the Department of Public Works. "The two are interrelated and we've made a little headway into solving the issues. More importantly, our justifications are now better understood and the ARNG leadership is working to provide additional funding to address the problems. A new and important issue is the support from the Adjutants General Association of the United States (AGAUS) to publicize findings from the Readiness Center Transformation Master Plan (RCTMP)," he continued. In August 2010 the Senate sent a request to the ARNG for a review of the ARNG's Readiness Centers. Over the course of three years, the ARNG collected and analyzed data on its Readiness Centers across the country to assess each Readiness Center's adequacy in terms of location and size, role in training, and in the ARNG's overall mission. In December 2014 the ARNG delivered the final RCTMP report to the Senate. "The RCTMP shows a nationwide problem for our Readiness Centers. These facilities are on the verge of developing into poor and then failing Readiness Centers within ten years at the current forecast for funds. The report shows four funding scenarios to solve the problem, each resulting in a consolidated readiness end-state of Failing, Poor, Fair, and Good. The FEAC has been working tirelessly with our Adjutants General to develop a solution to this problem. The RCTMP will only remain current for a few more years. Any Military Construction endeavor takes years and years to develop from plan to ribbon-cutting. We're committed in our support of our nationwide Readiness Center program," COL Ayres said.

With two advisory councils now working with the ARNG I&E leadership, the time allotted and access granted to each council

"As missions change, and we're continually having to catch up, while trying to not slow the construction down. It can be a difficult task at times."

Mr. Todd Preddy, Chair of the EAC

may change. "We need to recognize that we no longer serve as the sole advisory council for ARNG I&E, and we'll need to share our time with the Directorate Chief. As a result, I see more direct communication with individual ARNG I&E branches," COL Ayres said. When asked to describe the most important areas the FEAC needs to address together with the ARNG I&E over the next year, COL Ayres responded, "Our collective annual funding pots aren't decreasing, but they're not increasing either. We continue to face increasing personnel costs that force us to operate with a smaller work force. Unfortunately, our requirements seem to continue to grow. Our organization and budgets are now set; it's up to us to get smarter and more efficient at what we do. I'm certain we can do so."

In Compliance

THE ARMY NATIONAL GUARD INSTALLATIONS & ENVIRONMENT DIRECTORATE **HELPS THE 54 ARMY NATIONAL GUARD OFFICES AROUND THE COUNTRY COMPLY WITH ALL ENVIRONMENTAL REGULATIONS.**

“The State ARNG environmental offices around the country are the ones making sure that the operations of the ARNG, at the most fundamental level, are in compliance with environmental regulations.”

Michelle Brown
EPAS Specialist for
the ARNG I&E

Before the shovels can hit the ground of a Military Construction (MILCON) project, the proposed construction site must pass a series of environmental requirements. Once the facility is built, there is another set of environmental regulatory standards with which the facility must comply. The Army National Guard Installations & Environment’s (ARNG I&E) staff ensures compliance by helping the 54 states and territories that make up the ARNG sort out the myriad of federal standards.

The ARNG is required to comply with all regulations under Title 40 of the United States Code of Federal Regulations. Title 40 comprises environmental regulations promulgated by the Environmental Protection Agency (EPA), based on the statutes of the U.S. Federal Code. “There’s a whole bevy of environmental statutes that are promulgated into the regulations in Title 40. It includes all of the environmental statutes that have been published over the last 50 plus years, such as the Clean Water Act, the Clean Air Act, and the Resource Conservation and Recovery Act, which covers hazardous waste, solid waste, and underground storage tanks. In addition, we must also comply with state and local regulations,” said Ms. Michelle Brown, Environmental Performance Assessment System (EPAS) Specialist.

To handle the compliance workload, ARNG I&E has divided up the work between its two divisions and six branches (Planning, Requirements & Analysis, Real Estate, Military Construction, Technical Integration, Cleanup, Conservation, and Construction). “There are four areas that have to be accounted for when you talk about environmental compliance. We have a section—the Conservation Branch—that handles all natural resources and cultural resource areas. The Assessment and Evaluation staffs—under the Real Estate and MILCON Branches—ensure that all real estate transactions meet the environmental code. The Compliance team, which sits under the Technical Integration

Branch and Requirements and Analysis Division, ensures that all 54 states and territories comply not only with the federal regulations, but also with Department of Defense regulations, executive orders, Office of the Secretary of Defense policies, and the state regulatory requirements. The last branch is the Cleanup and Restoration Branch. They handle a lot of the munition response work and make sure that all government properties are free of any type of munition debris,” explained LTC Brandye Williams, former Chief of the ARNG I&E’s Technical Integration Branch. The efforts to comply with regulations have evolved over time. “In the early 1990s it was harder for the Army to comply because of a lack of knowledge, but as the ARNG has evolved, we’ve created positions for environmental personnel, and that has made it easier to train Soldiers and ensure our operations are in compliance,” Ms. Brown said.

The first regulations a proposed MILCON project encounters fall under the National Environmental Policy Act (NEPA). “NEPA is a process of full public disclosure of the environmental analysis of a proposed project. NEPA is an “umbrella law,” meaning NEPA is the overarching law under which many other environmental laws fall. The Endangered Species Act and the National Historic Preservation Act have a large role in the lower levels of NEPA in the ARNG Record of Environmental Consideration Checklist,” said MAJ Donna Wu, Executive Officer for ARNG I&E.

Depending on the type of the project, a proposed MILCON project may require an Environmental Assessment (EA). An EA can take anywhere from 12 to 24 months, depending on the complexity of the environmental issues and concerns by the public. “A proposed site rarely fails the evaluation, but some EAs may be delayed due to a poorly written EA, or due to failure to follow the guidelines outlined in the ARNG NEPA Handbook. Another must-do is an Environmental Condition of Property (ECOP) review. An ECOP is a study of the land for Pre-Construction Assessment (PCA).

PCA ensures worker safety by listing any harmful substances in the land,” MAJ Wu said.

Each of the ARNG’s 54 states and territories has an environmental office that handles the compliance work, both before and after construction. “They really do the dirty work of compliance in my opinion,” Ms. Brown said. “They’re the ones on the ground making sure that the operations of the ARNG, at the most fundamental level, are in compliance with environmental regulations.”

Ms. Brown is part of the ARNG I&E’s EPAS team. The four-person team completes on-site environmental compliance audits of ARNG installations across the country. The team covers 18 states a year, circling back to each state every three years. Asked to describe what happens during an environmental audit, which typically takes one week per state, Ms. Brown said, “We identify where our regulatory risks lie by identifying instances where people are not doing what they’re supposed to do, or not complying with the regulations. I would say the area where I see the most risk is typically hazardous waste management. A large part of what we do, such as vehicle maintenance and training, generates waste. That, and petroleum management, are where we hold the majority of our risk.” Each type of facility comes with its own set of challenges. While Readiness Centers typically don’t generate as much waste as a training site, they don’t have the same consistency in personnel. To ensure the states are in regulatory compliance in between visits, the audit team trains environmental personnel in the states on how to do audits using the Army National Guard’s auditing software.

An important part of the ARNG I&E’s environmental sections’ job is to keep up with current standards, and inform the states of any changes. There is no set schedule for those changes, and it falls on the environmental sections to keep up with what is current. “Regulations can change by a way of an Executive Order. They can change by a Freedom of Information Act request. They can change as a result of new medical research that points to a problem. There really is no set timeline on how often regulations change,” LTC Williams said. “We usually get a heads up when they change. We sit in on sessions with the Department of Defense and we’re part of several steering committees, where we work with all the federal agencies and look at proposed changes to regulations. That gives us time to comment and actually influence the changes before they become official.” LTC Williams’ office shares the responsibility of sending out a monthly newsletter with updates on the changes to the ARNG offices in



the 54 states and territories. In the event of a major regulatory change LTC Williams’ office summarizes the change in an email to the states and territories. “What is different with the ARNG, compared to the Active Army, is that it is made up of 50 states, three territories and the District of Columbia. Each state has its own rules. In addition to the federal regulations, the states also have to adhere to the rules of the state. We’re not always as informed on what is happening at the state level as we are at the federal level. We rely heavily on the states to inform us of changes in their regions,” LTC Williams said.

In June each year, the ARNG I&E hosts a three-day Environmental Program Managers (EPM) Course for EPMs from around the country. The branch requires that at least two representatives from each state attend. The course ensures that the EPMs have the professional knowledge needed to support the ARNG’s environmental programs. “We choose a focus for each course, ranging from environmental compliance to environmental cleanup, or cultural or natural resources. This past June the focus was on cultural and natural resources. We encouraged the Cultural and Natural Resources Program Managers in each state to attend the course, along with the EPMs,” LTC Williams said. The ARNG I&E also offers online training. “We built an online EPM basic course. All new personnel, and those who would like additional training, can access the materials. We also developed an environmental enterprise system, which allows our state environmental personnel to do their day-to-day requirements. They can put in their funding requirements for primary permitting. They can access sample plans. It has a module for them to account for all of their hazardous waste disposals. It also addresses any environmental compliance issues. It’s a really good tool,” LTC Williams said.

By influencing new standards when it can, keeping up with new standards and changes to existing ones, and mitigating environmental risks through education and audits, ARNG I&E ensures it is in compliance. ●●●



IN TRAINING

In June every year the Army National Guard’s environmental staff hosts a three-day Environmental Program Managers (EPM) and Conservation Course for EPMs from around the country to ensure the States have the professional knowledge needed to support ARNG environmental programs. Beginning in fiscal year 2017, this training will be integrated into a combined Installations and Environment Program Guidance Course. The photos above are from the course that was held June 14-16, 2016 at the Professional Education Center in Little Rock, Arkansas.

Implementing the Readiness Center Transformation Master Plan

OVER THE COURSE OF THREE YEARS, THE ARMY NATIONAL GUARD COMPLETED A COMPREHENSIVE, NATIONWIDE STUDY ON THE STATE OF ITS READINESS CENTERS, WHICH PROVIDED THE ORGANIZATION WITH A CREDIBLE BUSINESS CASE AND A 15-YEAR BUILDOUT PLAN. NOW THE ARMY NATIONAL GUARD IS TAKING THE NEXT STEPS TOWARDS REALIZING THAT PLAN.



OLD AND NEW
Top: The Tacoma Armory, built in 1906, was in very poor condition when it was vacated and sold to a local investor. Bottom: The Pierce County Readiness Center at Camp Murray in Tacoma, Washington consolidates six units within the 96th Troop Command into an 80,770-square-foot facility and replaces the antiquated Tacoma Armory.

In December 2014, the Army National Guard (ARNG) delivered a final report on the state of its Readiness Centers to Congress. The report completed an ambitious, three-year study, titled the Readiness Center Transformation Master Plan (RCTMP). Over those three years, the ARNG Installations and Environment (ARNG I&E) collected and analyzed data on its Readiness Centers across the country to assess each facility's adequacy in terms of location and size, role in training, and in the ARNG's overall mission.

What the study found was an aging facility inventory in need of modernization and an alarming space shortage. At present, the ARNG has Readiness Centers in 2,331 locations. The RCTMP sets the optimal end state at 1,689 locations, most of which already have an ARNG presence. The ARNG's dual mission means the organization has both domestic and federal obligations. As a homeland defense force, the ARNG provides support at the local and State level in response to natural and man-made disasters. For a prompt response in the event of a disaster—as well as to maximize recruitment and retention—the ARNG's Readiness Centers need to be strategically located. The RCTMP deemed 74 percent of Readiness Centers to be in their proper location nationwide. At present, 29 percent of the ARNG's Readiness Centers are in the top tiers of mission dependency. The RCTMP's redrawn location map would put 40 percent of the Readiness Centers in the top tiers of mission dependency.

Despite the number of locations, the ARNG suffers from a space deficit; at present the organization is approximately 36 percent short of authorized space. The RCTMP envisions a buildout of space from 72.6 million square feet of existing Readiness Center space to 102.7 million square feet of authorized space. That would eliminate the space deficit and enable the ARNG to properly train its Soldier in order to ensure readiness. The investment in infrastructure would modernize the facility inventory and drop the average age of the ARNG's facilities from 39 years at present to 33 years.

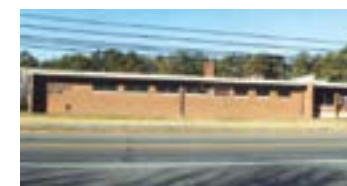
The report also found a facility inventory in a rapidly deteriorating condition. At the time of the study, the RCTMP found the average condition of Readiness Centers nationwide to be fair, but bordering on poor. A degradation analysis showed that an estimated 65 percent of Readiness Centers are expected to deteriorate from fair to poor by fiscal year 2020. The analysis also showed that over one quarter of Readiness Centers will deteriorate to failing condition by 2020, based on current funding levels.

The completed RCTMP provided the ARNG with a thorough analysis of the current state of its Readiness Centers. It also provided the organization with a business case and four scenarios for a 15-year investment plan, based on four different funding levels of Military Construction (MILCON) and Sustainment, Restoration and Modernization (SRM) funding. In the first two scenarios, based on the current funding level and a baseline funding level, the overall state of the Readiness Center portfolio would not improve. Only the third ("Affordable Readiness") and fourth ("Get to Green") scenarios, which both require a substantial investment into the ARNG's Readiness Centers, would provide a way for the ARNG to continue its mandated missions. When asked which scenario the states that make up the ARNG have decided to collectively pursue, COL Scott Ayres, Construction and Facilities Management Officer for the Iowa ARNG and Chair of the Facilities Engineering Advisory Council (FEAC) said, "The RCTMP lists four funding scenarios, to include the full funding requirement buy-out listed as Scenario 4 ("Get to Green"). The Administration will work with Congress to ultimately decide the funding level."

The funding process can take a long time, during which time the ARNG's facilities may deteriorate further. It may also affect the RCTMP's validity. "The FEAC has recommended that the RCTMP Final Report data remain unchanged for five years, which means until November 2019. We agreed to think of the RCTMP Final Report as the "macro" viewpoint, with data that accurately reflects nationwide issues, and individual state RCTMP reports as "micro" viewpoints, with data that is more of a "living document," where updates are needed at shorter intervals, perhaps as often as annually," COL Ayres said. The first state surveyed, Virginia, is also the first to be reviewed, to see how closely the data collected in 2011 reflect the current state. "The FEAC has asked ARNG I&E to conduct a review of the RCTMP report for the first state reviewed to help us determine what changes, if any, will be needed," he said. The ARNG I&E uses a reporting system called the Installation Status Report (ISR) to assess the condition

of the facilities in its inventory, by tracking each facility's condition in terms of infrastructure, services, and mission capacity. Whereas RCTMP was a one-time study, ISR's data collection is an ongoing process. "ISR will be key to keeping the information current and will be used in conjunction with state demographic and other databases. Our goal is to be ready, as needed, to prolong the report," COL Ayres said.

If RCTMP funding is authorized and appropriated by Congress, a follow-up to the study to measure the progress of the implementation process may be needed. The scope of that study will be decided at that time. "The methodology of tracking the process will derive from how Congress decides to fund the RCTMP. If Congress decides to follow the existing MILCON procedures, we anticipate ARNG I&E will work with the Army, as we've successfully done for years," COL Ayres said. ●●●



"The Adjutants General Association of the United States has agreed to pursue the "Get to Green" scenario, with the realization that Congress will ultimately decide the funding level."

COL Scott Ayres
Chair of the Facilities Engineering Advisory Council

RCTMP RECOMMENDATIONS
Top: Fort Fred Fleming in Geneva, Alabama was built in 1956 and is located in what is now the central retail area of Geneva. The Alabama ARNG plans to replace this facility with a new Readiness Center in nearby Andalusia, Alabama. Middle, left: The RCTMP recommended that the Alabama ARNG Armories in Geneva (pictured here), Daleville, Hartford and Dothan be replaced with a new facility in Dothan, Alabama. Middle, right: The New Jersey ARNG's Tuckerton Armory is only 6,144 square feet and 80 percent undersized. The RCTMP recommends that this 55 year old facility be disposed of and the unit it houses be relocated. Bottom: Built in 1957, Fort Raymond Jones in Huntsville, Alabama is roughly 11,000 square feet. Due of encroachment, the facility cannot expand to the size necessary to meet mission requirements, nor can it meet Anti-Terrorism and Force Protection standards.



Overcoming the Challenges of Location

THE MILITARY CONSTRUCTION PROGRAM IN EACH STATE MUST OVERCOME A RANGE OF ENVIRONMENTAL AND FINANCIAL OBSTACLES. **HERE, REPRESENTATIVES FROM SIX STATES DISCUSS THE CHALLENGES OF GEOGRAPHY, CONSTRUCTION COSTS, AND STATE FINANCES IN THEIR RESPECTIVE REGIONS, AS WELL AS THE OPPORTUNITIES THAT THEIR LOCATIONS HOLD.**

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ade up of 50 states, three territories and the District of Columbia, the Army National Guard (ARNG) is a diverse organization. The conditions under which these states and territories operate vary greatly, in terms of geography, climate, force size and state finances. For the Military Construction (MILCON) program in each state, this means having to overcome a range of environmental and financial obstacles. In some states, the cost of construction is much higher than in other states. In other states, environmental factors must be taken into consideration.

Environmental challenges

The most obvious differences between the states are the differences in geography and climate. “Geography is a challenge in four ways in Oklahoma,” said COL Mark Clifton, Construction Facilities Management Officer (CFMO) for the Oklahoma Army National Guard (OKARNG). “The first is garnering good subcontractors for major, multi-million dollar projects at relatively remote locations like Camp Gruber. The second is positioning Readiness Centers near population centers and viable recruiting areas. As we reposition ourselves along major transportation routes and major population centers, we risk leaving some areas of the state without immediate access to the Oklahoma National Guard. Due to a small population, Oklahoma is unable to support viable recruiting, which means the northwestern quadrant of the state does not have immediate coverage by the Oklahoma National Guard. This causes great concern for local community leaders and state leadership. To mitigate the risk, we position support assets (units) at the furthest points we deem acceptable—meaning locations that can support recruiting and where Soldiers have no more than two hours of travel time to those locations.” The third challenge is the relatively new phenomenon of seismic activity. “Oklahoma has experienced 1,521 earthquakes of magnitude-3 or higher since January 2013. Historically, seismic activity has not been a cause for great concern for construction of facilities, as it was rather infrequent. Now seismic activity is a consideration as we construct new facilities. The fourth challenge is Oklahoma weather. Oklahoma has four well-defined seasons. Facilities must react to temperature extremes that reach highs of above 100 degrees and lows of below freezing for extended periods. Oklahoma is in tornado alley and is subject to severe weather such as high winds, heavy rains, and sizeable hail. Facilities must withstand these weather impacts and maintain their functionality,” COL Clifton said. Tornadoes are a consideration in Alabama as well. “We have requirements for wind load and snow load, depending on in which end of the state the facility is located,” said the Alabama Army National Guard’s (ALARNG) CFMO, COL Philip Clayton. “The coastal zone and the tornado zone across the north both have wind load requirements. The northern part of the state also has a small snow load requirement that we have to factor in when designing the facilities. Each design is site-specific, and we’re able to overcome the unique geographical challenges that are associated with for example coastal Alabama, the Tennessee Valley or the Upper Piedmont part of the state. While they are challenges, they are not insurmountable,” he said.



TWO NEW FACILITIES IN FLORIDA
OPPOSITE PAGE: The Miramar Readiness Center in south Florida is home to four units. The 100,000-square-foot facility has the capacity to house more than 500 Soldiers.
ABOVE, RIGHT: The Florida National Guard’s 48th Civil Support Team (CST) is one of two CSTs in Florida. The 22-person team recently moved in to this \$5.7 million facility on the property of the C.W. Bill Young Armed Forces Reserve Center in Pinellas Park. The 16,200-square-foot facility includes an operations center, a medical section, secure communications sections, a decontamination area, storage rooms, and a chemical/biological testing room.

Further southeast, in Florida, hurricanes are the major concern. “What influences our construction more than anything is the threat of hurricanes,” said LTC Mark Widener, Environmental Program Manager in the Florida Army National Guard’s (FLARNG) CFMO office. “The biggest changes we’ve seen in construction and hurricane preparedness are a direct result of the hurricanes that happened in the 1990s, such as Andrew in 1992, and the hurricanes in the early 2000s, such as Charley and Ivan, both in 2004. Those hurricanes greatly influenced the rewriting of the Florida Building Codes. The codes are stringent in two areas: buildings must be able to withstand the high wind loads caused by hurricane force winds, and the building envelope must be able to withstand projectiles. During Hurricane Andrew, there were buildings that could withstand the wind loads, but when a building came apart upwind, the projectiles from that building would tear apart the buildings down the wind path. Most of our construction is done with concrete masonry units (CMU) covered with some type of veneer because of the CMUs’ ability to withstand projectiles,” he explained.

“What influences our construction more than anything is the threat of hurricanes. Even though, we’ve gone about 10 years without a direct hit of a hurricane, the question is not whether we’re going to get hit by a hurricane; it’s when are we going to get hit by a hurricane. That’s what we have to plan for.”

LTC Mark Widener
Environmental Program Manager
in the Florida ARNG’s CFMO office

LIVE FIRE TRAINING IN ALABAMA

The Live Fire Shoothouse at Pelham Range on the former Fort McClellan range complex in Alabama is a “zero surface danger zone” range facility. In this facility, a squad of Soldiers can fire live rounds in almost any direction and the bullet is contained within the A500 steel-clad, rubber-coated walls. This concept allows infantry and Special Forces Soldiers to train in a high intensity, live-fire setting and engage realistic targets with live ammunition.

The FLARNG’s readiness was tested in the October 2016 when Hurricane Matthew approached the Florida coastline—the strongest hurricane to affect northeast Florida since 1898. At the peak of the operational TEMPO the Florida National Guard (FLNG) had in excess of 3,200 Soldiers on State active duty performing a variety of missions. The FLNG forces provided military support to civil authorities, including security and high-water vehicle support, search and rescue/reconnaissance teams, aviation support, command and control support, traffic control, shelter manning, State Emergency Operations Center manning, point of distribution missions, logistics staging areas, and support to the State Logistics Response Center.

The FLNG Readiness Centers and other operational facilities sustained minimal damages. “The most significant damages were assessed to be in St. Johns County, to the FLNG Headquarters,” said COL Dwayne Jarriel, CFMO for the FLARNG. “We are in the process of conducting structural assessments on all of the facilities in the downtown area to ensure they are safe to re-occupy. Some facilities in the area experienced flooding in the ground floors due to the storm surge, and will require some renovations. One facility directly on the seawall suffered major wind damage and erosion to the foundation of the building. The most significant concern was the damage to the seawall on the Bayfront. We are requesting an assessment and feasibility study from the Army Corps of Engineers to determine damages and recommendations with assistance for repairs. A full assessment of all damages to facilities have not been completed at this time.”

In Alaska, the arctic climate and the vast expanses of tundra, accessible only by air or water, are major concerns. The Alaska Army National Guard’s (AKARNG) last MILCON project was a Readiness Center in the village of Bethel in the southwestern part of the state, built in 2009. Built on permafrost land, the 23,000-square-foot facility rests on a freeze-back system, which, combined with an anti-siphon system, keeps 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 protects the facility from the arctic environment, and like most structures in Alaska, the \$16 million facility is designed to handle earthquakes and heavy winds. “Here there is always the environmental concern that the permafrost will be disturbed,” said LTC Bill Burdett, former CFMO for the AKARNG.

Where an abundance of land, and the isolation associated with it, is a problem in one end of the country, the scarcity of land is a problem in another. “Because Florida is so built up, most of the properties we get we will have an area of wetlands that has to be mitigated and worked around,” LTC Widener said. “Pretty much everything that we build is on a slab-on-grade foundation. We don’t build anything below grade. Soil is always a challenge, because we have very sandy soil. Therefore a lot of our engineering goes into the foundation.” Build-out is one challenge; the sheer size of the state is another. Florida stretches close to 500 miles from north to south and the driving distance is from north to south even longer—close to 800 miles by road from Pensacola to Key West. “Florida is a very long state and our facilities are located in communities from Homestead, just south of Miami, all the way to Pensacola, which is just east of Mobile, Alabama. That, in and of itself, is a challenge for the CFMO staff, especially for the project manager who has to cover the projects that are in the works,” LTC Widener said.

In the state of Washington, the Washington Army National Guard (WAARNG) has to take into consideration possible volcano eruptions, earthquakes and tsunamis. Washington sits on the Cascadia Rupture Zone—a major fault line—which is expecting a 9.9 or larger earthquake in the foreseeable future. The state also has five major volcanoes: Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens, and Mount Adams. The volcanoes are part of the Cascade Range, which stretches for 1,200 miles from British Columbia to northern California and divides the state in a western and an eastern part. Each of Washington’s volcanoes is still active, and all of them, except for Glacier Peak, have erupted at some point in the last 250 years. In an eruption, high-speed flows of hot ash



and rock, lava flows, and landslides can destroy homes and infrastructure as far as 50 miles away. Mudflows of ash, debris, and melted ice—called lahars—can impact low-lying areas more than 100 miles away. A volcanic eruption or an earthquake is also likely to cause a tsunami. The Cascade Range is only about 35 miles inland from the ocean and Puget Sound—and the population in and around Seattle. “In the event of an earthquake, we could expect 15 minutes of advance warning and tsunami tidal waves of up to 40 feet high, which would severely impact our coastal areas. Water takes path of least resistance, and it would go into Puget Sound, affecting Seattle and surrounding areas,” said John Wunsch, Planning and Programming Branch Chief for the WAARNG. “In the 1940s and 1950s people never considered earthquakes and the buildings were not strengthened to withstand seismic activity,” he continued. “Most of our Readiness Centers are older facilities. They would not stand up to the shaking.” It’s possible to retrofit older facilities—a historical facility on Camp Murray was retrofitted to earthquake standard—but it is costly. “We have large areas that are subject to earthquake-initiated liquefaction. In our last earthquake—in 2000—the King County Airfield (Boeing Field) airport runway was severely damaged and put it out of action for a year, significantly impacting commercial aviation and Boeing Aircraft company activities. Today, all our buildings have to be built to highest seismic code. We build our Readiness Centers to the same code as Emergency Operations Centers,” Mr. Wunsch said, referring to the central command facilities where Army National Guard units and other first responders such as police, 911 call centers, and fire and rescue squads coordinate emergency response and disaster management. Any building over three stories high has to be built to withstand a progressive collapse, where a large part of a structure collapses as the result of damage to a relatively small part of the structure. Even in times of no seismic activity, the Cascades pose a challenge. “Four major roads traverse the Cascade Range—one freeway, one state highway, one minor state highway, and one road that is only open six months a year. All can be shut down by snow, and there is no other way across,” Mr. Wunsch said.

Alternative energy

The same environmental factors that pose a challenge to construction can be an asset in terms of alternative energy. High winds and scorching sunlight can be turned into energy by wind turbines and photovoltaic panels. Just like the geography and climate differ in different parts of the country, so do the best alternative energy solutions, and what seems obvious is not always so. “It is immediately assumed that Florida—being the Sunshine State—is ideal for solar energy projects,” LTC Widener said. “However, as much sunshine as we get here in Florida, it’s not enough. In our hot, steamy, humid environment, our sunshine is limited. By the afternoon, most of the state clouds up. It’s not to say that solar can’t work in Florida, but these are challenges that we face when implementing solar projects. We are exploring several solar initiatives and we feel these initiatives could be very advantageous when it comes to reducing our energy costs, but we do have to work around the fact that the sun doesn’t shine all day, unlike the American southwest, where the sun burns all day long out in the desert,” he said.

In southcentral United States, sustained winds provide optimal conditions for wind turbines. “Wind and geothermal energy are the best renewable solutions for Oklahoma,” COL Clifton said. “However, due to the low energy prices in Oklahoma, it is tough to meet the payback standards of the Life-Cycle Cost Analysis (LCCA). There are renewable energy sources we draw upon. Wind energy provides 18.4 percent of in-state energy production in Oklahoma, or the equivalent of powering 1.3 million homes. There are 2,915 wind turbines in Oklahoma, and 35 additional wind projects underway. When we buy electricity from the public grid, a percentage of that electricity comes from renewable sources. So, while LCCA pay-back prevents on-site renewable equipment, there are renewable sources the OKARNG may draw from for its energy requirements.” The OKARNG currently has one geothermal heat pump at the chapel at Camp Gruber.

In Alabama, the greatest success has come from geothermal systems. “We’ve had some success with photovoltaic systems. We’ve also had limited success with wind turbines. Where we’ve really had great success from one end of the state to the other is in geothermal,” COL Clayton said. “Geothermal seems to work well for us regardless of whether it’s down in the sandy soils of the coast or up in the rocky, clay hills of the upper end of the state. We’ve been trying to focus less on alternative energy sources like photovoltaic and wind and go with our guaranteed return on investment

“We’ve had some success with photovoltaic systems. We’ve also had limited success with wind turbines. Where we’ve really had great success from one end of the state to the other is in geothermal.”

COL Philip Clayton
CFMO for the Alabama ARNG



BEFORE AND AFTER
The Alabama Army National Guard’s Athens Readiness Center was in dire need of restoration. The top photo shows part of the crumbling ceiling, and the bottom photo the exterior of the restored facility.

“This state is facing what could be its most severe economic challenge to-date. Coming up with the matching state funds has been a huge problem and will be for some time.”

LTC Bill Burdett
former CFMO for the Alaska ARNG



ACT OF NATURE
In May 2015 the Oklahoma City metro area was hit by multiple tornados, flash flooding and hail that ranged from pea-sized to softball-sized. The storm damaged the Range Maintenance Building at Camp Gruber Training Center, destroying the overhead door (top photo). The storm also destroyed the bleacher enclosure at the training center's LAW Range (bottom photo).

in form of geothermal. The thermal conductivity is predictable. It's pretty steady year round. It only changes a degree or two from summer to winter. The upfront cost of photovoltaic panels is low, but the return on investment is much, much greater with geothermal energy. We currently have four sites with geothermal systems, and a fifth one under design," he said.

Cost of construction

Most of the Midwestern and Southern states enjoy reasonable construction costs. In other parts of the country, particularly the territories and the states located outside the continental United States, construction cost factors are a major consideration when planning a MILCON project. In Alaska, construction cost factors are a great concern, and have been so for many years. "For years Alaska was complaining, much like Guam and some of the other territories, that the cost of construction here is far beyond the cost in other states. It's finally been recognized that it is at least twice as expensive to build in places like Anchorage as it is to build in the continental United States. In smaller villages, like Bethel, the cost of construction is four times as expensive as in the continental United States," LTC Burdett said. What really brings up the construction cost factors is the absence of roads and local resources. Alaska has 640 square miles of land for every mile of paved road, compared to for example Texas, which has 20 square miles of land for every mile of paved road. Only 20 percent of Alaska's roads are paved versus an average 91 percent of roads in the other 49 states. During the long, cold grip of winter, Alaskans build ice roads to traverse rivers and ground that is otherwise too soft to drive on. "The limiting factor is there are no roads up here. A lot of people don't realize that. There are three primary highways in the state, which covers an area larger than Texas, California, and Montana combined. If you want to get to a village, you have to either fly or take a boat," he said. Transporting materials by barge is the primary option in most locations. The barge schedule and the climate limit the construction period to just a few months in the summer. "We can only build certain months of the year. The other months we're snowed in. A typical year we're not able to start until May and then around late September, early October we're done. That's the only building period we get," LTC Burdett said.

Down the coast from Alaska, in Washington, Mr. Wunsch described the construction cost factors as fairly costly. "We also have very stringent environmental regulations, which adds to the cost. California may have the toughest laws, but we have our fair share, which drives up the cost," he said. In other states, the outlook was much more positive. "Our cost factors are friendly to our budget. What costs \$2 in Alaska and \$1 in Chicago costs us between 84 and 86 cents in Alabama," COL Clayton said. Oklahoma as well has reasonable construction cost factors. "Oklahoma is fortunate to have a reasonable cost of living, compared to other states. The cost of MILCON projects here is relatively low compared to what my CFMO counterparts experience on the East and West coast," said COL Clifton. In Florida, LTC Widener said the construction cost per square foot range from about \$280 per square foot in the Miami-Dade area in the south, to around \$180 per square foot in the more rural areas in the Panhandle and the north-central part of the state. But in Florida, just like in Washington, permitting can drive up the cost. "There are some indirect costs of construction that have become quite challenging and that is in the area of permitting. Especially in areas such as Miami-Dade, the permitting process is very long and can be very tedious. Any changes to a project will kick you back into the permitting loop, which is time-consuming," he said.

State match

The law limits the federal contribution to the construction of ARNG Readiness Centers to 75 percent, and the states are required to fund the remaining 25 percent. There are a couple of exceptions to the requirement. Modernization and transformation of units by the Active Army are two circumstances where the state share of cost is waived. There is also no state share when a Readiness Center is built on federal land, or for joint facilities, such as Armed Forces Reserve Centers. The state match requirement poses an obstacle for many fiscally constrained states. "It used to be almost impossible for me to come up with a state match," Vermont Army National Guard (VTARNG) CFMO COL Robert Gingras said. "Now, my state has grown my program a little bit, so we're in better shape, even if my program is not as large as I'd like. We couldn't take on a \$10 million project right now and ask the state legislature for a \$2.5 million match. We could do a minor construction project and that's it. Our

biggest issue has been that the federal MILCON has just dried up. There's a lot of things that we could be doing if the federal MILCON program would grow." Before the construction of a Field Maintenance Shop in 2015, the VTARNG had not had a MILCON project since a minor project in 2011.

Other states echo Vermont's concerns. "Meeting the state requirement has been a problem in Washington. Lately, our MILCON projects in Washington have been 100 percent federal, but that limits where we can build. We have prepared briefings for our state leadership on the MILCON process. The better they understand the process, the more likely we are to get the support. They had the process backwards; they would tell us that if we could get a project on the FYDP they would find the money, where we need to secure the funds first, before getting the project on the FYDP," Mr. Wunsch



said, referring to the Future Years Defense Program (FYDP), which is the program that summarizes the plans and programs associated with Department of Defense operations that have been approved by the Secretary of Defense. COL Clifton of Oklahoma said it's been difficult for his office to secure the 25 percent state share for MILCON projects as well. "Fortunately, many of the units that we will house in new Readiness Centers are currently under transformation through Modified Table of Organization and Equipment, which precludes the need for a state match. For example, it would have been difficult for the state to match 25 percent, equal to \$5.5 million, of the Ardmore Readiness Center this upcoming fiscal year.

More important to us is the state match for sustainment and restoration, which is needed to maintain and improve existing facilities. MILCON state matches are one-time requirements, whereas sustainment and restoration funding is critical to maintaining the existing facility inventory," COL Clifton said.

The problems Vermont, Washington, and Oklahoma face pale in comparison with those of Alaska. "This state is facing what could be its most severe economic challenge to-date," LTC Burdett said about Alaska. "When the price of oil dropped, Alaska just lost everything. Coming up with the matching state funds has been a huge problem. Because the cost of construction is so much higher in Alaska than in the continental United States, a standard Readiness Center, which would be around \$20 million elsewhere in the United States, can be twice as much, or even more, in Alaska." As the cost of construction goes up, so does the amount the state has to cover—the same splits still apply. With finances in the red, the state of Alaska would have a hard time coming up with \$5 million to cover the 25 percent share of a \$20 million Readiness Center. Coming up with \$10 million for the same share of a \$40 million facility would be impossible.

In regards to state finances, Alabama and Florida are luckier. "Thus far the state of Alabama has been able to fund the state requirements. It has not been a significant challenge. Always a concern, but not a challenge," COL Clayton said. "With the implementation of the Readiness Center Transformation Master Plan (RCTMP) and an increase in military construction projects, that might become an issue," he said, referring to a nationwide assessment of the ARNG's Readiness Centers carried out over the course of three years to determine each Readiness Center's adequacy in terms of location and size, role in training, and in the ARNG's overall mission. "In my opinion, one of the looming challenges we face in the future, if/when RCTMP is implemented, is the ability to secure free land from willing property owners or state funding to purchase land. Amid Florida's past success of receiving state funding for our Readiness Center upgrades (FARP) it will be difficult to go back to our state representatives and request additional funding for land purchases," COL Jarriel said. Securing land may become an issue in the future, but so far, the FLARNG has been successful in meeting the state match requirement. "We've not had a difficulty with the state match in Florida," Mr. Widener said. "We have tremendous support from our state legislature for our programs. The most important thing we can do to help the legislature help us is to inform them well in advance so they can get the project into the budget cycle. We were successful in getting the state match for the Palm Coast Readiness Center."

The MILCON program in each state faces its own set of challenges. By using the approaches best suited to their regions state CFMO offices manage to overcome those challenges to construct the facilities they need to meet their joint mission to defend the Nation at home and abroad. ●●●

“In my opinion, one of the looming challenges we face in the future, if/when RCTMP is implemented, is the ability to secure free land from willing property owners or state funding to purchase land. It will be difficult to go back to our state representatives and request additional funding for land purchases.”

COL Dwayne Jarriel
CFMO for the Florida ARNG

A NEW READINESS CENTER IN WASHINGTON
The state of Washington's latest MILCON project is the Information Operations Readiness Center (IORC) at Joint Base Lewis-McChord. The two-story, 127,172-square-foot facility houses four units, and large special classified work spaces. With a budget of \$33 million, it was 100 percent federally funded.

A Cold War Legacy

DURING THE COLD WAR, THE ALASKA ARMY NATIONAL GUARD'S SCOUT BATTALIONS HAD AN IMPORTANT MISSION TO PATROL THE COUNTRY'S NORTHERNMOST TERRITORY TO DETECT AND DETER ANY ESPIONAGE FROM THE OTHER SIDE. **NOW THE FEDERAL SCOUT ARMORIES THAT HOUSED THOSE UNITS HAVE LOST THEIR PURPOSE AND THE ALASKA ARMY NATIONAL GUARD WOULD LIKE TO RETAIN THE FACILITIES THAT ARE STILL VIABLE AND PROPERLY DISPOSE OF THOSE THAT NO LONGER SERVE THE ARNG MISSION.**

Soon after World War II, the once cooperative relationship between the United States and the Soviet Union turned cold. As the Cold War escalated, tensions rose in border areas. Because of its proximity to the Soviet Union, the Alaska Territory, which the United States had purchased from Russia in 1867, found itself on the frontline of a global conflict. On some remote Alaskan islands the enemy was less than three miles away.

Alaska had been eye to eye with the enemy before. During World War II battles between Japanese and American forces on the Aleutian islands of Kiska, Attu and Unalaska heightened the concern for enemy penetration deeper into American soil. To guard the thousands of miles of western Alaskan coastline and the American islands precariously situated in the Bering Sea the Alaska Territorial Guard (ATG) was formed in 1942. Most of the over 6,000 ATG members—all volunteers who served without pay—were Native Yupik, Inupiaq and Tlingit people.

The ATG was disbanded in 1947. By 1948, Alaska was the only part of the United States not served by a National Guard unit. The following year, in 1949, the Alaska Army National Guard (AKARNG) was formed. It grew quickly. By 1951, the AKARNG had 1,302 members. That number, equal to one percent of the total population of the territory, was still not enough to guard a territory nearly as big as the United States east of the Mississippi River. Alaska required a different model than the one applied to other states. To protect the territory and to detect and deter any espionage from the other side, the Department of the Army decided to scatter units throughout small communities along the Bering and Arctic Seas. And so, the Scout Battalions were formed.

The Scout Battalions of the AKARNG's 297th Infantry were small, unique units, composed mostly of Native Alaskans. The unique skills that native and local people had acquired to survive in the harsh arctic environment became invaluable to military training in the Cold War era. Supported by the 176th Tactical Airlift Group, Alaska Air National Guard, the Scout Battalions patrolled the vast Alaskan tundra. Operating from small villages in Northern and Western Alaska, the Scout Battalions observed the coastline of the Bering and Arctic Seas and often provided significant intelligence information. During the Cold War, the AKARNG Scout Battalions were one of the United States' first lines of defense against Soviet aggression.

A building campaign to construct close to 100 Armories

The Scout Battalions needed facilities in which to train and mobilize. In 1959, the same year that Alaska became the United States' 49th state, the AKARNG began the construction of several

REMNANTS FROM A DIFFERENT TIME

OPPOSITE PAGE: Clockwise from top, left: The bright green, steel-sheeted Federal Scout Armory on the island of Little Diomedede, Alaska was built in 1959 as a look-out post. The Armory was recently demolished after the roof collapsed, but similar, small, isolated facilities still stand, posing a challenge to the Alaska Army National Guard in terms of maintenance and proper disposal; Members of the Alaska Army National Guard's 207th Engineer Utility Detachment conduct avalanche beacon training in Snowhawk Valley, Alaska (Photo by Staff Sgt. Jack Carlson III); Little Diomedede sits 2.4 miles west of Big Diomedede, which belongs to Russia; Little Diomedede, with a total area of 2.8 square miles, has a population of about 150 (Photo by Brad Schram).



Photo courtesy of Brad Schram



“The purpose, the size, and the locations—it’s all wrong. None of the Federal Scout Readiness Centers meet any of the criteria for National Guard facilities.”

LTC Bill Burdett
former CFMO for
the Alaska ARNG

Federal Scout Armories (FSAs) in remote locations throughout the state. Beginning in 1959, 48 buildings were constructed, financed 100 percent via \$1,200,000 in federal funds. The first 48 buildings all had the same, standardized design; they were 20-foot by 60-foot “Garco” metal buildings, manufactured by the Garceau Steel Structures Corporation of Spokane, Washington and delivered to the U.S. Army Corps of Engineers by the general contractor, the Manson-Osberg Company of Seattle, Washington. Constructed on wood skid foundations, the gable-roofed buildings were clad in corrugated metal. The building interiors featured rolled felt floors and wood or gypsum board walls and ceilings, with a central open room for training and small side rooms for storage and offices. Each building was outfitted with two space heaters and a generator to ward off the cold. The FSAs were designed to host a maximum 20 Scout personnel, and the cost for each remote FSA was around \$23,000.

Additional armories and units were added during a second building campaign in the early 1960s and a third campaign in the early 1970s—almost all in remote locations. Of the approximately 100 FSAs built throughout Alaska during the Cold War era, only seven were accessible by road. All others required air or water transport. Commonly, the buildings were transported to the villages by barge, dog teams and walrus-skinned, wooden boats called umiak. The FSAs served as training facilities for local AKARNG members, as well as elite military units from other states that came to train in the harsh arctic climate. Due to difficulties of travel in the vast expanses of Alaska, each village with an AKARNG unit had its own small armory, unlike other states where rural units were, and still are, consolidated into larger armories. The siting of a FSA was based simply on the fact that a remote village with a unit existed in that location.

The process of divestment

Today the AKARNG is nearly absent in the rural villages, with active units more centrally located in larger towns. A product of the Cold War, the FSAs have lost their mission. Presently, 95 FSAs remain in communities throughout the state. Some remote FSAs have been leased to various entities in the local communities. Some have been abandoned, but maintained, while others show signs of disrepair, neglect and vandalism. Of little use and with costs associated with their upkeep, the AKARNG has

decided to divest the majority of the FSAs. That, however, has proved to be more difficult than it sounds. “For decades, these buildings have served no purpose. There’s nobody using them, and they’re just sitting there. We’re paying for utilities for empty buildings, and we’re spending money on repairs. We would like to divest 95 buildings at 64 sites. That would leave 17 sites, in accordance with our stationing plan, which was approved last year. Of those 17 sites, only a handful are FSAs,” said LTC Bill Burdett, former Construction and Facilities Management Officer (CFMO) for the AKARNG.

The majority of the FSAs were constructed using federal funds. The key question, however, is not the ownership of the buildings, but the original ownership of the land. When a building such as a Readiness Center is divested, the land must be addressed separately from the building. Some FSAs sit on federal land, while others are on state land. “Depending on if the land is federal or state

land, we have to treat the buildings completely differently,” LTC Burdett said. “If a building is on state property everything has to go through the state.” The process is rarely straightforward—it often-times involves three or four state agencies and a lot of paperwork to determine the original owner of the land.

Most of the FSAs were built on federal land. To start the process of divestment of a federal site, a state has to bring a request to the Army National Guard. The Army National Guard’s Real Estate Branch then tasks the United States Army Corps of Engineers with the divestment. The Corps of Engineers works directly with the CFMO office throughout the process, which is funded by federal appropriated funds. The Corps of Engineers office in Alaska is very small, and it doesn’t have the capacity to divest more than eight to 10 sites a year. “The limiting factor isn’t the money,” LTC Burdett said. “The limiting factor in this case is the Corps of Engineers, which is the only agency authorized to divest these facilities.”

The AKARNG also has to consider claims from local individuals or villages when divesting land. Alaska has several laws to protect the rights of the 219 tribes that make up the state. The Alaska Native Claims Settlement Act was signed in 1971 to resolve long-standing issues surrounding Alaska Native land claims. The settlement established Alaska Native claims to the land by transferring titles to twelve Alaska Native regional corporations and over 200 local village corporations. “Unlike other states with native populations, there are no reservations in Alaska. Instead, the federal authorities created corporations to empower the villages. When you deal with a village here, you’re actually dealing with a company, which adds another dynamic to the process,” LTC Burdett said.

The Corps of Engineers only divests the land. It’s up to the state ARNG to coordinate the sale, disposal, or transfer of the actual buildings. When asked if the FSAs are in good enough condition to be repurposed, or if they will likely be demolished, LTC Burdett said, “The AKARNG did a pretty good job at maintaining these buildings over the years, given the resources they had, and I foresee no issues with transferring or selling these buildings.”

After the land ownership has been sorted out and the land has been divested, there are still other matters to address before the ownership of a building can be transferred. “There’s a multitude of things you have to do before you can divest a building. You have to meet a list of historical requirements before



NEW AND OLD

Most of Alaska’s population is focused in Anchorage, Juneau and Fairbanks, and the majority of the Alaska Army National Guard’s 1,700 Soldiers are stationed at Readiness Centers near these population centers. Completed in 2011, the 23,000-square-foot Bethel Readiness Center houses 75 troops (top). The first 48 Federal Scout Armories cost an average \$23,000 per building and all had the same, standardized design; they were 20-foot by 60-foot gable-roofed buildings clad in corrugated metal (above left and right).

you’re allowed to transfer the ownership. That’s really the thing that’s holding us up right now. We’ve been working on this for over a year,” LTC Burdett said. “Then there are environmental issues to consider. I’ve made a little bit of progress; I got four buildings off the books, but that was only because they were easy targets.”

The FSAs were once very strategically located, overlooking what was then the Soviet Union. When asked how he would describe the strategic value of these locations now, LTC Burdett said, “The purpose, the size, and the locations—it’s all wrong. None of these buildings meet any of the criteria for National Guard facilities. Most of Alaska’s population is focused in Anchorage, Juneau and Fairbanks. There are approximately 1,700 assigned Soldiers in the state, compared to six, seven, even 10,000 Soldiers in other states. It’s very difficult to recruit enough Soldiers to fill units in those remote locations.”

The locations, the size and the configuration of the FSAs are inadequate to support the AKARNG’s modern mission. Understandably, the AKARNG would like to divest these facilities to focus its resources on facilities that directly support its mission. Although the FSAs have lost their value to the AKARNG, they still represent a value to the communities. “In most instances, the FSA is the best building in the whole village. The buildings are just sitting there, and nobody has been able to figure out the red tape to get rid of them,” LTC Burdett said. ●●●



A LOST MISSION
Presently, 95 Federal Scout Readiness Centers remain in communities throughout Alaska. The Alaska Army National Guard would like to divest the majority of those facilities.

In the Green

BY EMBRACING SUSTAINABILITY, THE ARMY NATIONAL GUARD IS IMPROVING ITS COST EFFICIENCY. **THAT, IN TURN, IS LEADING TO INCREASED OPERATIONAL FLEXIBILITY, A BETTER QUALITY OF LIFE FOR THE ORGANIZATION'S SOLDIERS, AND A CLEANER ENVIRONMENT.**

The ARNG I&E's Sustainability Team is made up of seven people and handles work related to energy security, water security, renewable energy, water reduction, and solid waste reduction.

In an effort to conserve precious resources and maximize energy security, the Army has embraced a range of sustainability initiatives. The Army National Guard (ARNG) has followed the Army's lead. In some instances the organization has taken its sustainability initiatives even further than the Army in order to improve its cost efficiency, operational flexibility and the work and natural environments of its Soldiers.

LTC Christopher Tatian serves as the chief of the ARNG I&E's Sustainability Team. The team, which is structured under the Planning Division, is made up of seven people and handles work related to energy security, water security, renewable energy, water reduction, and solid waste reduction. "The most important thing that we do is we provide the states with guidance on how to meet the Army's goals or federal requirements for energy, water, and solid waste. We also provide funding through the Army's budgeting process to fund projects in the states to help them meet those goals. We review their project proposals to make sure they've addressed everything that they need to address. All projects need to be what is called lifecycle cost-effective. We help them with their lifecycle cost analysis to make sure that the project will provide the maximum benefit to the ARNG," LTC Tatian said.

In addition to the hands-on help in deciphering regulations, and locating grants and reviewing proposals, the ARNG I&E Sustainability Team also provides training to the states at the annual ARNG I&E Programming Guidance Course (PGC) at the National Guard Professional Education Center located on Camp Robinson, North Little Rock, Arkansas. The team also assists in teaching courses through the Construction and Facilities Management Officer (CFMO) Certification program, which is open to



TOWARDS NET ZERO
Innovative projects to capitalize on the sun's power, such as this photovoltaic project at Camp Williams in Draper, Utah (above), and efforts to reduce water consumption, such as at this Nevada ARNG facility in Las Vegas (opposite page), are necessary to meet Net Zero directives.

CFMOs and their staff and consists of seven one-week classes spread over 12 months. The Sustainability Team found that there was a need for more, and more frequent, training than the annual PGC workshops could provide. That resulted in a monthly webinar. "We have a fair amount of turnover at the state energy manager level," LTC Tatian said. "We were looking at ways to provide new energy managers with guidance on how to manage their programs. With limited travel funds, we had to find a way to support them remotely. That resulted in a monthly webinar with the states. Our team members teach most of the sustainability classes for the webinars and then for some of the webinars we invite program managers from the states to present their best practices to their peers. Lastly, after

about a year's worth of work, we recently published the ARNG's Energy Manager Handbook, which is a comprehensive handbook for energy, water, and solid waste programs. We are the first organization in the Army to publish one," he said.

The most comprehensive of the Army's sustainability initiatives is the Net Zero Installations Strategy. Announced in early 2011 by the Honorable Ms. Katherine Hammack, Assistant Secretary of the Army for Installations, Energy and Environment, the Net Zero Installations Strategy is part of the Army's overall effort to conserve precious resources and maximize energy security. A Net Zero site is an installation that consumes only as much water and energy as it produces, and recycles its solid waste, eliminating the need for landfills. The initiative's goal is an effective Net Zero rate for energy and water consumption and waste generation for all installations. Net Zero's initial target date was 2020. The Department of the Army Headquarters changed that date to 2025.

Net Zero touches on many different aspects of the ARNG I&E's work, such as facility management, procurement and logistics. ARNG I&E does not have staff dedicated solely to Net Zero. Instead, all



staff work towards Net Zero within their respective projects. Some states, notably Oregon and Minnesota, have had great success with their Net Zero projects, while other states have struggled to meet the Net Zero goals. "The ARNG as a whole has had mixed results on Net Zero," LTC Tatian said about the initiative's progress. "Renewable energy can be a challenge for us at smaller facilities, and that ties back to what we call the lifecycle cost analysis. Renewable energy is more cost-effective when you do it on a larger scale. It's a good fit for the major training areas, because they can do something large enough to provide them with something that's economically beneficial to them. An example of that would be Camp Ripley in Minnesota. Minnesota

Power is installing solar arrays with a capacity to produce 10 megawatts per year on a hundred acres of land," he said.

Some installations are lucky in that they sit on deposits of natural gas or other natural resources. But what can a small installations that doesn't sit on a treasure trove of natural resources do in order to meet the Net Zero goals? "The best thing a small installation can do is to employ a mix of technologies that take advantage of the environment where the facility is situated. If an installation has a lot of sunlight it can go with photovoltaic cells. If it has access to old natural gas wells, such as Camp Grayling in Michigan, it can take advantage of that. Each installation's staff needs to be creative and look at the environment of the installation in order to craft a strategy for reducing energy and water consumption. Usually there is no one silver bullet, and the best approach is a mix of technologies," LTC Tatian said.

The states and territories report their energy and water consumption and solid waste generation to a couple of central databases on a quarterly basis. The ARNG I&E Sustainability Team reviews the entries quarterly for errors or omissions. Once the states have completed their end-of-year reporting, the Sustainability Team consolidates those entries into a report that is submitted to Ms. Hammack's office. LTC Tatian acknowledged it will be a challenge to meet the Net Zero goals. "Meeting the goals will require an investment in infrastructure, both in new renewable energy projects and in the restoration of older facilities to make them more energy efficient. How realistic it is to meet the goals will depend on how well we're resourced. In general, I think it will be harder to achieve Net Zero for energy than for water or waste. I also think that we focus on energy because it's our biggest cost," he said.

When asked how meeting the Net Zero goals can benefit the ARNG as an organization in areas such as finances, operational flexibility, and quality of life, LTC Tatian responded, "The most important thing for us is to reduce the operating costs of our facilities. By doing so, we will have more money available for training and operations, and that will increase our readiness. Sustainability boils down to making sure that we operate our facilities as efficiently as possible. Some of the indirect benefits of operating more efficiently are a better quality of life for the people that work in our facilities, increased operational flexibility for the states as a result of being more energy and water secure, and a cleaner environment due to less emissions." ●●●



CLOSER TO THE GOAL
Alternative energy projects, such as at these photovoltaic arrays at installations in Arizona (top photo) and Guam (bottom photo) help push the ARNG closer to its sustainability goals.

"The most important thing for us is to reduce the operating costs of our facilities. Sustainability boils down to making sure that we operate our facilities as efficiently as possible."

LTC Christopher Tatian
Chief, Sustainability
for the ARNG I&E



Restoring the Watershed

THROUGH ITS PARTICIPATION IN THE CHESAPEAKE BAY WATERSHED IMPLEMENTATION PLAN, **THE ARMY NATIONAL GUARD IS DOING ITS PART TO RESTORE THE WATERS IN THE CHESAPEAKE BAY.**

The Chesapeake Bay Watershed includes much of Virginia and Maryland, as well as parts of West Virginia, Delaware, Pennsylvania and New York, and all of Washington, DC.

As storm water flows over pavement and other impervious surfaces, it sweeps up pollutants such as oils, chemicals, pathogens and sediments. Sometimes, storm water runoff carries and discharges those pollutants directly into waterways, negatively impacting water quality and aquatic animal life. Sewage treatment plants, development sites, and agricultural operations are other culprits for polluting waters and watersheds. In the Chesapeake Bay, phosphorous, nitrogen and sediments in the watershed have negatively affected sensitive organisms. The Chesapeake Bay's oyster and crab populations have suffered, which in turn has impacted the economies of the communities on the Bay that depend on the income from the fishery and tourism sectors.

Covering an area of almost 65,000 square miles, the Chesapeake Bay Watershed is the largest watershed of the Atlantic Seaboard. The watershed includes much of Virginia and Maryland, as well as parts of West Virginia, Delaware, Pennsylvania and New York, and all of Washington, DC. In an effort to reduce the pollutants in the Chesapeake Bay and restore the fragile ecosystem all public and private entities are required to participate in the Chesapeake Bay Watershed Implementation Plan (WIP), which is part of the larger Chesapeake Bay Total Maximum Daily Load (TMDL) initiative. "TMDL is unique because of the extensive measures the Environmental Protection Agency (EPA) and the jurisdictions have adopted to ensure accountability for reducing pollution and meeting deadlines for progress. The accountability framework includes the WIPs, two-year milestones, EPA's tracking and assessment of restoration progress, and specific federal actions if the jurisdictions do not meet their commitments," explained LTC Brandye Williams, former Chief of the ARNG I&E's Technical Integration Branch. "The WIPs are the next step towards a restored Chesapeake Bay. These plans consider such things as ecological restoration and sustainability, while allowing for greater transparency and accountability for improved performance. Each of the seven Chesapeake Bay watershed jurisdictions will create a WIP that documents how the jurisdiction will partner with federal and local governments to achieve and maintain water quality standards," she said.

Twenty-three federal facilities in the District of Columbia, Maryland, Pennsylvania and Virginia are impacted by WIP, and the ARNG's participation is required by law. Executive Order 13508, "Strategy for Protecting and Restoring the Chesapeake Bay Watershed," requires the federal government to lead the efforts to restore and protect the Chesapeake Bay. "The ARNG is unique in that operates on both federal and state levels. Since the ARNG has federal facilities within the Chesapeake Bay area, we are a part of this initiative," LTC Williams said.

The United States Army Corps of Engineers oversees the Army's and the ARNG's efforts. The Virginia Army National Guard (VAARNG) began working with the Corps of Engineers on WIP in

2011 by mapping out facilities and storm water systems in its inventory that may contribute to the problem. "Most of our facilities are Readiness Centers and maintenance shops. There are no large training installations around the Chesapeake Bay. We don't have streams flowing directly through our land and into the Chesapeake Bay. We deal mostly with surface water. At present, most of our work is compliance-related. We review any plans for new storm water infrastructure to make sure the projects are in compliance," said Pamela Coleman, Environmental Program Manager for the VAARNG.

The affected states are not required to use the same process for the clean-up project. The EPA is the lead federal agency governing the Chesapeake Bay initiative. However, the agency allows the environmental offices in each state or territory to oversee the work requirements and development their own implementation strategy, if they choose not to adopt the recommendations of EPA. The District of Columbia, New York and Pennsylvania have opted to use the EPA default method. Maryland established protocols for its urban stormwater sectors only. West Virginia is using a hybrid approach that establishes permits, and in areas where no permits exist the state will follow the EPA default method. The Virginia Department of Environmental Quality (VADEQ) set targets as total pounds of each pollutant by facility. The VADEQ employs the Municipal Separate Storm Sewer System (MS4) process to manage its Chesapeake Bay requirements. A MS4 is any conveyance or system of conveyances (such as streets, ditches, curbs, gutters, and storm drains) that is owned by a municipality or other public body responsible for the disposal of sewage, industrial wastes, storm water and other wastes. A MS4 is designed or used for collecting or conveying storm water, and it is not part of a combined sewer or a publicly-owned treatment works. "The MS4 process tends to be used in urbanized areas. What process is used is really locality-driven," Ms. Coleman explained. While the requirements in the affected states may differ, one state's solutions might be applicable to other states. All Department of Defense components collaborate and share their Best Management Practices on a quarterly basis. In addition, each year the U.S. Navy compiles an update on the different components' progress for a report that goes to Congress and the EPA.

The MS4 will limit the amount of phosphorous, nitrogen, and sediments that the VAARNG can discharge into the Chesapeake Bay. "The next step will be to figure out how to treat the storm water on our sites in order not to exceed the permitted thresholds. This will be the biggest piece for us as an organization. It will likely be done through additional storm water infrastructure, such as storm ponds. It could involve quite a large funding requirement. When you're building a new facility, you can capture that in your new building permit and in the cost of the building. Retrofitting an older facility, on the other hand, can be expensive," Ms. Coleman said. The ARNG's participation in WIP is mandatory, but there are no funds set aside for the initiative. The project is funded through existing operational and management funds, as available.

Farm run-off containing pesticides and fertilizers may be the first that come to mind when one thinks of watershed pollutants, but Ms. Coleman said the problem is more multi-faceted. "There is a large farming component, but we all play a role," she said. "If you live in one of the affected areas and your car is leaking oil, or if you use fertilizers or pesticides in your back yard, or if you've paved your parking area and you've increased your surface storm water runoff, then you play a part in the pollution of the Chesapeake Bay. The homeowners are the hardest to regulate." Part of the VAARNG's work through MS4 will be outreach activities. "That outreach could be within the ARNG. It could be educating our Soldiers on the impact they have on the environment, both at work and at home, because most of our Soldiers live in or near the communities they serve," she said.

What makes the ARNG unique is that it is present in so many different communities. "Compared to the Active Army, our installations don't play a large role in the overall cleanup. We do, however, play a large role in many smaller communities. It's important for us to identify what and where we contribute, so that as the communities develop their plans for how to execute the WIP, we're included at an appropriate level," Ms. Coleman said. A target of 2025 has been set for the project's completion. "At this stage, the project leadership is still fine-tuning the models by identifying what types of land-cover each stakeholder has. It will be years before the work is completed," she said.



STORM WATER CLEAN-OUT IN VIRGINIA BEACH
A project to clean out the storm water basin at the VAARNG's Readiness Center in Virginia Beach successfully restored the facility grounds. The photo on the opposite page shows the restored grounds and the photos above show how the area around the Readiness Center looked before and during the restoration.

"The next step will be to figure out how to treat the storm water on our sites in order not to exceed the permitted thresholds. This will be the biggest piece for us as an organization."

Pamela Coleman
Environmental Program
Manager for the VAARNG



Cooperation across Borders

THROUGH THE DEFENSE ENVIRONMENTAL INTERNATIONAL COOPERATION, **THE ARMY NATIONAL GUARD IS SHARING ITS BEST PRACTICES AND LESSONS LEARNED WITH COUNTRIES IN THE CARIBBEAN AND CENTRAL AND SOUTH AMERICA.**

About 60 full-time environmental staff work at the ARNG headquarters. At the ARNG offices around the country, there are over 700 full-time environmental personnel.

The Army National Guard's (ARNG) environmental programs have long relied on cooperation across state borders to improve its programs through the exchange of experiences and best practices. Over time, the ARNG extended

that cooperation across national borders, to countries in the Caribbean and Central and South America, through its State Partnership Program (SPP).

In 2014, the Southern Command (SOUTHCOM), which is based in Florida, approached the ARNG about participating in Defense Environmental International Cooperation (DEIC) program, a tool available for the Office of the Secretary of Defense and the Combatant Commands to use in security cooperation engagement activities with other nations. DEIC supports projects that focus on defense-related environmental themes, with special priority placed on projects that promote the sustainment of mission capability and the creation and enhancement of strategic partnerships and partner capabilities.

"SOUTHCOM had seen what we had done through our SPP, which is another Office of the Secretary of Defense (OSD) program, and they thought the two programs could complement each other. We already had relationships with several countries in the Caribbean and Central and South America.

SOUTHCOM asked us to use our SPP platform to make more inroads in that region," said Mr. Monsoor Rashid, Special Projects/Strategic Plans Manager for the ARNG.

The year SOUTHCOM approached the ARNG, the DEIC program had a budget of close to \$1.7 million. Despite the relatively small budget and the challenges of executing an international program with funding available only incrementally, DEIC's reach was extensive. Some 500 representatives from 57 nations participated in DEIC-funded projects over the course of the year. The program also leveraged close to \$1 million in additional funds from other sources to execute the projects. The year before SOUTHCOM approached the ARNG, the Corps of Engineers had requested funding for several projects in the region, which had been approved. "For various reasons they couldn't execute the projects, so SOUTHCOM asked us to execute them instead, based on our experience and the relationships we had developed through the SPP. We were already in those countries, and it worked out really well. We hosted our first DEIC workshop in El Salvador in June 2015. Then we expanded to Honduras," Mr. Rashid said.

From there, the engagements increased. Mr. Rashid's team went to Colombia three times in

BUILDING PARTNERSHIPS
In 2014, the Southern Command approached the ARNG about participating in the Defense Environmental International Cooperation (DEIC) program. Here, former ARNG Environmental Division Chief COL William Myer speaks to troops in El Salvador in June 2015.

2016, and he and his team are now preparing for a trip to Trinidad and Tobago. "We went to Trinidad and Tobago last year to help them with their Environmental Management Systems. This year we're going back to develop their first-ever natural disaster debris removal plan. They don't have

any training on debris removal in the event of a hurricane or an earthquake. We're going to develop a plan with the help of the local stakeholders on what to do if a hurricane or an earthquake strikes the islands, and we'll implement that plan throughout the whole country," Mr. Rashid said.

Mr. Rashid is quick to point out that the cooperation is an exchange, where all parties learn from each other. "What we typically do when we go to these countries is we talk about our capabilities. We talk about our best management practices and our lessons learned. We don't want to tell anyone how to do his or her job. What we want to do is share is our knowledge of running an environmental program at headquarters and in the states. We say, 'This is some of the stuff that we've tried that has worked out well for us. You may be interested in something like this.' Some of the countries are very advanced, and some less so. We have the expertise, not just at the ARNG headquarters, where we employ 60 full-time environmental people, but also in the states. We have about 700 or so full-time environmental folks in the states. Depending on the issue, I leverage different people in the states," Mr. Rashid explained.

When asked what benefits the cooperation between nations on DEIC projects can bring, aside from the obvious benefits to the environment, Mr. Rashid responded, "Because it's a true exchange, we benefit, too. We learn what they do right. Colombia, for example, is much more advanced than the United States in a lot of environmental aspects. The Colombian military has a military occupational specialty (MOS) for environmental work, where the U.S. military does not. In the ARNG, or even in the Army, we don't have Soldiers who are subject matter experts in the environmental field. Our Soldiers are generalists rather than specialists. It takes them about a year or so to learn their job. By the time

they've learned the job, they've already moved on to the next assignment. In Colombia, that's not the case. They are environmentalists by trade, by degree, and by experience. They move from location to location, but they always work in the environmental division. That's something we took back and thought we should propose to the ARNG. That's just one small example of where we can learn from them."

A year in advance, there is a call-out for projects. Mr. Rashid's team submits its proposals, which the SOUTHCOM board then reviews and submits to OSD for final approval. When asked how he and his team decide on what projects to propose, and how DEIC decides which projects to fund, Mr. Rashid said he looks at what his superiors have stated as their priorities. "Right now, climate change is a big deal. A lot of countries, for example Honduras, are going to be tremendously impacted by climate change. In addition, the U.S. military has certain countries it considers to be priority. Honduras happens to be one of those countries. I submitted about seven or eight projects last year. All of them were approved and funded for this year," he said. Multilateral cooperation is another priority. "The OSD wants value for its money. For example, if we propose something in Trinidad and Tobago, we seek to bring in other countries in the Caribbean with similar issues," Mr. Rashid said.

SOUTHCOM focuses solely on the countries in the Caribbean and in Central and South America, and all of Mr. Rashid's proposed projects are in those countries. Although the initial engagement with those countries was through the SPP, all the projects Mr. Rashid now administers are funded through DEIC. "I don't rely at all on the SPP for funding," he said.

Like many other government programs, DEIC has seen its funding reduced in recent years. SOUTHCOM is becoming increasingly strategic about who and what to fund. The program may be shrinking, but for the ARNG, at least, the program is catching momentum. "Even though the program itself is shrinking, we're doing a lot more engagement. We're being careful not to take on more than we can handle. Our full time job is to first and foremost support our Guard mission; this is a nice initiative and it helps a lot of countries. I want to make sure that I don't burn people out by asking them to take on more than they can or projects outside of their scope of work. Having said that, my bench is getting deeper and deeper, because people around the country are hearing about DEIC and they want to be part of this initiative," Mr. Rashid said. ●●●



SHARING EXPERIENCES
Through DEIC, the ARNG has had the opportunity to share its experiences and best practices with several countries, such as (from the top) Colombia, Trinidad and Tobago, and Honduras.

"We want to share with the countries we visit our knowledge of running an environmental program at headquarters and in the states."

Monsoor Rashid
Special Projects/Strategic
Plans Manager for the
ARNG I&E



Keeping Track

THE INSTALLATION STATUS REPORT ASSESSES INSTALLATION FACILITIES, OPERATIONAL CAPACITIES, AND SUPPORT SERVICES FOR ALL THE ARMY COMPONENTS. **FOR THE ARMY NATIONAL GUARD, THAT MEANS COLLECTING MILLIONS OF PIECES OF DATA ON THE QUALITY AND FUNCTIONALITY OF THE ORGANIZATION'S FACILITIES AND SERVICES TO CREATE A MACRO VIEW OF FUNDING REQUIREMENTS AND CONSEQUENCES.**

Every day, the Army National Guard's (ARNG) Soldiers and civilians provide a range of services to support the ARNG's mission—from the high-profile to the more mundane. In cases where an outside vendor is more cost-efficient, the ARNG contracts the services from the outside.

The Army uses a system called the Installation Status Report (ISR) to track the cost and performance of those services. Initially conceived by the Department of the Army to track the quality, quantity and mission impact of the facility inventory Army-wide, the ISR now also includes two other modules that track services and mission capacity. Combined, the information from the three modules provides Army leaders with the data they need to build requirements and develop facility investment strategies to support Army readiness.

The three components are measured based on Army-wide standards: ISR-Infrastructure, ISR-Services and ISR-Mission Capacity. To facilitate comparisons and funding decisions, the ARNG uses the same rating system as the Active Army and the Army Reserve. The quality rating ranges from Q1 to Q4, with Q1 being the best and Q4 the worst. Typically, the rating is displayed as either green (Q1), amber (Q2), red (Q3), or black (Q4). The mission rating, which applies to infrastructure, assesses how well a facility meets the tenant's functional needs, ranges from F1 to F4, with F1 being the best and F4 the worst.

"The services module evaluates how well we're performing a specific Army service, such as grounds maintenance or refuse removal," said Arun Pankaj, ISR Program Manager for the ARNG at the national level. Mr. Pankaj and his team analyze the data sent by ARNG staff in all States, Territories and the District of Columbia to create a macro view of the ARNG's service performance—and the costs associated with those services. Their analysis of the ISR data helps the ARNG build and justify its requirements. "The services are rated along a similar scale as facilities, Q1 through Q4," Mr. Pankaj continued. "When we analyze the data we look not only at the performance rating, but also at the cost to perform that service. With both of those pieces of data, we can determine how well a state is performing a service at a given funding level. If its performance is rated Red, it's likely they're going to need additional funds to bring that service up to the Army standard of Amber. Conversely, if the state is performing a service at the green level, it might be considered for a funding cut."

Mr. Pankaj's team has been focusing on increasing the accuracy of the performance measures. "Every year we go through all of our performance measures with subject matter experts. We tweak the measures to provide a more accurate representation of how to assess the quality of a service," he said. The performance measures are answered either quarterly or annually, or a combination of both. When asked if the quality of a service is easier to evaluate than the quality and mission of a facility, Mr. Pankaj said, "I think so.

MILLIONS OF DATA POINTS

The Installations Status Report tracks data on the cost and performance of services that support the ARNG's mission. (Illustration courtesy of dirkcuyts)

It takes less time. Typically, you can pull the numbers from a database outside of ISR or from internal logs. You might look at the number of applications processed compared to the number of applications received. It's more tangible, and therefore easier."

The performance side is pretty straightforward, but the cost side is a bit more complicated. "We have a couple of different accounting systems, and all of those numbers have to flow into ISR," Mr. Pankaj explained. "We have a system called GFEBS, which stands for General Fund Enterprise Business System and is the Army's web-enabled financial, asset and accounting management system that standardizes, streamlines and shares critical data across the Active Army, the ARNG and the Army Reserve. We also have an older system called STANFINS, which stands for Standard Finance System and is the Army's most widely used installations accounting system. We're transitioning from STANFINS to GFEBS. Unfortunately, GFEBS is not ideal for the way the ARNG is set up. However, since it is a system that the whole Army uses, the ARNG has adapted it to fit its purposes, but at a cost. There is a lot of manual manipulation of the data that has to be done to get it from the GFEBS format into a format that can be tracked through ISR. We've noticed a lot of errors when the reallocation of cost occurs. Over the last year, we put a big emphasis on reviewing the data and making sure it is accurate. We've seen significant improvements in how costs are reported at the State level."

To handle the workload, Mr. Pankaj's team is slowly growing. The team added one staff member this past year to track mission capacity. "The third and newest ISR module is Mission Capacity. When the Army is staffing a unit or a new mission, it needs to place the Soldiers on a base that has the capacity and the capability to take on those new Soldiers, or the training land to take on that new mission. Mission capacity looks at the constraints of a training site. For example, does it have enough air space to conduct additional missions? Does the site have enough training land? Is the site encroaching on property outside of the gate and would not be able to expand if needed?" Mr. Pankaj explained.

ISR was initially created to track the facility inventory Army-wide. For the ARNG, most of the ISR work involves tracking the quality, quantity and impact on mission of over 50,000 assets. In fiscal year 2014, 60 percent of the organization's facilities were rated Q1 and Q2, and 40 percent were in the failing categories, Q3 and Q4. The situation has gotten worse. In 2015, about 50 percent of the ARNG's facilities were Q3 or Q4, up from about 40 percent the year before. The Mission ratings—the F ratings—have been more steady. The percentage of facilities that are failing in mission—with F3 and F4 ratings—went from about 68 percent in 2014 to 70 percent in 2015. "There are two reasons for that," Mr. Pankaj said. "One is that the current level of funding limits the amount of improvement we can make. The second reason is that our ratings are getting more accurate. In our training courses we've emphasized tools and techniques that ensure inspections are done correctly, and that has

led to more accurate ratings. I think more of our facilities should be in the Q3 and Q4 category, but there's a tendency out there to over-inflate the ratings, and rate facilities as "green" when they should be "amber" or "red." I think that's part of the Army mentality, where even if you don't get exactly what you need, you work with what you have and get the job done. That carries over to the facility side. We're trying to break that culture and get the states to rate the facilities the way they actually are. I think that message is getting across, because our Q ratings have dipped," he said. When asked what is being done to remediate the facilities rated Q3 or Q4, failing in quality, and F3 or F4, failing in mission, Mr. Pankaj said, "We're still trying to increase our funding. We're showing the Army leadership our data, which shows that our facilities are getting worse. We have developed a Facilities Degradation Model, which shows that if the current funding levels continue, our average facility will be in the Q3/Q4 category by 2023."

Mr. Pankaj's team provides a virtual training course for facility inspectors, which has improved the accuracy and consistency of the inspections. "We're seeing our enrollment numbers increase in those courses. Every year, we go through the process of updating the infrastructure inspection workbooks. Every refinement makes the workbooks stronger and easier to use, and that, in turn, leads to more accurate ratings. We haven't made any major changes to the virtual training course, but we now offer on-site training about two to three times a year. Typically, the state ISR managers attend those trainings. They then go back to their home states and train their staff," he said. Almost every state has its own state-specific training for its inspectors. "As a supplement to that state-specific training, the state ISR managers can direct the inspectors to the virtual training course to give them an idea of what's involved in an inspection. I think typically the state-specific training and the virtual training course are used together," Mr. Pankaj said.

In the past, few states had an ISR manager solely devoted to managing the ISR program. Starting in fiscal year 2009 and for a total of three years, the ARNG funded an ISR manager in each State. After the three years it was up to the states to continue to fund the position. Most states have chosen to do so. As the work for Mr. Pankaj's team increases, so does the work for the states. "We're asking more and more of the state ISR managers as these new modules come on and as these new requirements show up, but we're not providing them any additional support. It's making it very tough for the states to handle all the requirements," Mr. Pankaj concluded. ●●●

"Over the last year, we put a big emphasis on reviewing the data and making sure it was accurate. We've seen significant improvements in how costs are reported."

Arun Pankaj
ISR Program Manager
for the ARNG I&E

A Problem in One Area, a Solution in Another

BY COMBINING A PROJECT TO PROTECT A RIVERBED AND A PROJECT TO RESTORE THE ECOSYSTEM ON FORMERLY MINED LAND **THE NATURAL RESOURCES TEAM AT CAMP BLANDING JOINT TRAINING CENTER MANAGED TO REDUCE THE TIMELINE OF THE LATTER PROJECT BY TEN YEARS.**

Years of extensive mining with now banned methods had left a large swath of land unusable at Camp Blanding Joint Training Center, a 73,000-acre military training installation located in northeast Florida. In the early 2000s, the installation's Natural Resources Team started looking at ways to remediate that land so that it could support an ecosystem—and eventually the installation's mission by providing new training grounds for the Soldiers that come there to train from across the state.

Owned and managed by the State of Florida Department of Military Affairs on behalf of the Florida Army National Guard (FLARNG), Camp Blanding Joint Training Center specializes in training for light infantry and serves as a logistical support base during federal and state emergencies, such as hurricanes and wildfires. Of the installation's total acreage, just over 10,000 acres are leased to DuPont Corporation for sand mining and mineral recovery. The installation also includes 1,000 acres of previously mined sites, which were in use between the 1950s and the early 1970s. Across 500 acres of that 1,000-acre swath, early techniques to mine titanium dioxide had created a moonscape with 30- to 40-foot deep pockets in the sand with virtually no organic material or nutrients to support plant life—a stark contrast to Camp Blanding's tremendous biodiversity. As they were, these areas served no purpose and could not support the installation's mission.

Camp Blanding's Natural Resources Team knew that the key to reclaiming these sites was the reintroduction of organic material. A severe hurricane season in 2004 left a tremendous volume of tree and plant debris in county landfills. The Natural Resources Team recognized an opportunity: working closely with the county, the team collected debris, spreading it over 217 acres. Spreading the mulch, however, was only the first step; to create functional soil, the top layer had to be regularly tilled as the mulch broke down, driving nutrients below the surface to render the sand into functional soil. While effective, this process is slow; it takes five to ten years before the new soil can support plantings.

Over time, the storm debris stockpiles shrunk. Biomass energy production also became more prevalent, making organic debris a commodity rather than a waste stream. The Natural Resources



Team recognized it needed a new approach. That opportunity arose with Camp Blanding's participation in efforts to protect the St. Johns River and watershed.

In 2013, the Camp Blanding began participating in a multi-agency effort to protect and repair the St. John's River watershed, which had initially begun in 2007. As part of that effort, Camp Blanding was tasked by the Florida Department of Environmental Protection (DEP) with remediating 88 miles of swales on post. When it rains, these swales capture runoff soils. The soils can not only themselves increase turbidity in the river if they are swept into the water, but they also contain nitrogen and phosphorous as a result of agriculture in the region. When levels of nitrogen and phosphorous grow too high, algae blooms occur in the river, harming water quality and wildlife. While the nutrient and fertilizer loads in those swale soils cannot be attributed to Camp Blanding's operations, the installation could nonetheless be held accountable by DEP for watershed impacts. If Camp Blanding could not find a way to remediate the swales it could face compliance issues or, at the very least, the costs of storing those soils under leach-proof conditions or outright disposal costs.

The Natural Resources Team quickly realized that while the dirt that needed to be removed from the swales was harmful to the river, it was also uniquely rich soil infused with potent fertilizers. Rather than remediate the swales in a conventional manner and disposing of the soil, the team proposed transferring the swale soil to the mining site. Following testing to ensure that the soils were not contaminated with other materials, the swale soil was tilled into the sand in untreated areas.



INTO THE WOODS
These aerial photographs from 1997, 2007 and 2015 (from left to right) show trees taking root on the 217 acres of formerly mined land on Camp Blanding Joint Training Center that were covered with hurricane debris and swale soil from the project to protect and restore the St. John's River watershed.

RESTORATION AT WORK
A member of the Camp Blanding Joint Training Center's Natural Resources Team burns mulch as part of the efforts to restore formerly mined land on the training site.

Bringing the two initiatives together meant a dramatic leap forward in the restoration timeline. The richness of the sand-soil combination has meant a dramatic reduction in the time between tilling and planting, cutting the wait time by three to six years over the wait time for mulch to naturally break down. "When we start putting in swale dirt it basically pumped up our project timeline by about five to seven years," said Mr. Matthew Corby, Conservation Program Manager at Camp Blanding. In fiscal year 2014, the restoration team planted the first round of trees on the mining sites. Based upon early surveys, the trees are thriving with a survival rate of around 80 percent. A minimum of 25,000 trees will be planted at the site as part of the second round, and the installation is pursuing a grant that could allow for an additional 75,000 trees each year for four years.

It will take 15 to 30 years before a fully functional ecosystem will emerge on the formerly mined sites—but it will emerge from what was a virtual wasteland. Fire management will be introduced to the newly forested sites in 12 to 15 years. Eventually, timber could be harvested on the sites. "The goals for these formerly mined areas is one, to provide training opportunities, two, to restore economic function, and three, to pull out some of the trees for forest health and product return—in that order of priority. There will be some revenue, but that will happen after we meet our other objectives," Mr. Corby said.

Since the two projects were combined, the installation has recaptured the soil from 88 miles' worth of swales. The utilization of swale soil has sped up the recovery of the formerly mined sites threefold over previous remediation techniques, shortening the projected recovery by ten years in those areas treated with swale dirt.

What is perhaps most impressive about these efforts is that they have been completed within the sphere of normal operations and have made use of free and reusable remediation resources. Whereas a conventional mining site restoration can cost anywhere from \$2,000 to \$10,000 per acre remediated, the restoration staff

has restored 500 acres of some of the most depleted land at no external costs. Now in the phase of re-establishing vegetation, the restoration staff is making use of existing tree planting budgets, as well as pursuing grant funds that will triple Camp Blanding's current planting resources for the project.

Camp Blanding still has 3,000 to 3,500 acres of formerly mined areas that have not yet been reclaimed. "The areas we started on were the absolute worst. Most the remaining areas need some sort of soil amelioration, through some sort of organic matter, such as hurricane debris, mulch or dirt," Mr. Corby said. However, repeating the success with the swale soil is not an option. "We don't anticipate doing this again. This was a one-time project for reductions in the total maximum daily load as part of the Basin Management Area Plan Camp," he said.

The successful project has not gone unrecognized: in 2015, the Camp Blanding Joint Training Center's Natural Resources Team received an Army National Guard Environmental Security Award in the category Environmental Restoration—Installation. The Natural Resources Team numbers 17 people. When adding in contractors and staff from another program called Integrated Training Area Management there are a total 22 people doing environmental work at Camp Blanding. Mr. Corby pointed out that it's the collective effort of those people that made the project a success. "We have an incredible team here. There's a lot of work that goes in to making a project like this happen, including moving the dirt and driving dump trucks. Our team members do amazing things, well beyond their scope of work—simply because it's the right thing to do," he said.

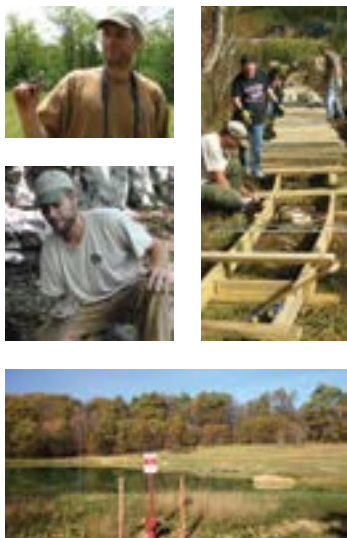
For Camp Blanding's Soldiers, the formerly mined sites were unusable. Now that they are becoming forested, the sites open up opportunities for new training activities. "One of the areas where we are the weakest is in actual areas for maneuvers. With this restored land, we may be able to meet some of our obligations acreage-wise to be a heavy maneuver area. Before the land was restored there was no shade and no cover. Nobody ever went there. Now, we have units training there. It has also become a popular place for dove hunting. Providing training areas for our troops is our number one priority, but it is neat to take something that was once sterile and useless and turn it into something ecologically beneficial," Mr. Corby said. ●●●



Camp Dawson's prescribed fire program and associated training is conducted in-house. NRC staff is trained as wildland firefighters and complete prescribed burns on site.

Double Victory

THE WEST VIRGINIA ARMY NATIONAL GUARD'S CONSERVATION WORK AT CAMP DAWSON ARMY TRAINING SITE IS RECOGNIZED BY BOTH
THE SECRETARY OF THE ARMY AND THE SECRETARY OF DEFENSE



CONSERVATION AT WORK

Clockwise from top, left: Camp Dawson's NRC Manager prepares to release a banded Golden-winged warbler after taking a DNA sample from the bird; Local volunteers help construct a half-mile long wetland boardwalk at Camp Dawson; The completed pond project at Camp Dawson provides recreational and training opportunities, and serves as a fire suppression source for the nearby range; Camp Dawson's NRC Manager holds an adult Allegheny woodrat prior to release.

The West Virginia Army National Guard's (WVARNG) Camp Dawson Army Training Site's Natural Resources Conservation (NRC) program has been recognized nationally for its work to conserve, restore and enhance the 5,000-acre training site. The program received the 2015 Secretary of the Army Environmental Security Awards in the category of Natural Resources Conservation – Small Installation, as well as the Secretary of Defense Environmental Award in the category of Natural Resources Conservation, Small Installation. The projects singled out were a pond construction project, which serves as wildlife habitat as well as a fire suppression source for an adjacent modified record firing range; an interpretive wetland boardwalk; and a 100-acre stripmine rehabilitation project, which restored native grasslands and created new drop zones and bivouac areas for training.

Camp Dawson's NRC team consists of only four people: a forester, an environmental manager, a biologist, and a geographic information systems and data mapping specialist. "Because we're such a small office and because we're so diversified, we're all leaning on each other to make these projects work," said the team's environmental manager, Mr. Rick Chaney. The team's skill set is supplemented by a paid internship program with West Virginia University's (WVU) Department of Forestry and Wildlife.

The NRC program has been exceptionally successful in launching new projects with limited resources, and seeking out grant funding and volunteer opportunities; the new recreation area on post was created entirely with volunteer labor and around \$30,000 in National Public Lands Day funds over a five-year period. The WVU internship program also represents a cost savings, providing the installation with high-quality fieldwork. Most importantly, though, the NRC program has focused on bringing more and more activities in-house, making use of the skills within the WVARNG. Without this approach, the NRC budget would have to be increased substantially to achieve the same goals with contract labor.

Over the past two years, the NRC program has completed projects that directly enhance training capabilities while improving ecosystems on post. The rehabilitation of native grasslands and elimination of invasive species, for instance, has opened up training opportunities in sites that were previously inaccessible or otherwise closed to activity. New drop zones to support rotary wing training and bivouac sites have all been created as a result of this grassland restoration. The NRC program's monitoring protocols help to demonstrate that WVARNG can sustain training without harm to the environment. "We look at our projects in terms of how we can work towards a favorable impact on our training mission. We're a small installation, and we're always looking at different ways to conserve and restore the land that we have in order to enhance training opportunities," Mr. Chaney said. ●●●

"If it's a long race, start earlier"

BY SECURING THE NECESSARY PERMITS AHEAD OF TIME, THE VERMONT ARMY NATIONAL GUARD OUTPERFORMS ITS COUNTERPARTS AND RECEIVES
THE FRED ARON AWARD FOR EXCELLENCE IN FACILITIES PROGRAMS

Each year, the Army National Guard Installations & Environment (ARNG I&E) determines the best-performing facilities program in the nation by evaluating the performances of the 54 states and territories in eight different areas—Military Construction (MILCON) Program Execution, Financial Management, Budget Estimate, Real Property Management, Construction Facilities Management Officer (CFMO) Certification, Energy Management, ESS Program, and Installations Status Report submission—and tallying up the scores. The facilities program with the highest score is presented with the Fred Aron Award for Excellence in Facilities Programs. In fiscal year 2015, that recognition went to the Vermont Army National Guard (VTARNG).

Upon receiving the award, VTARNG's CFMO, COL Robert Gingras, attributed his team's success to an accelerated timeline, which he and his team managed to achieve by investing state funds to secure the necessary permits. "Our 2015 MILCON project—the construction of a Field Maintenance Shop—was the first one obligated that year. By the time the funds were obligated, we had already secured our land, our National Environmental Protection Act (NEPA) permits, and our local permits. We had the architect lined up. The construction was 100 percent federal, but we used state funds in order to accelerate the timeline for the project. By investing state dollars to cover the costs associated with evaluating the site and pursuing the NEPA permit and other permits, we were ready to hit the ground running once the MILCON funds were obligated," he said.

The ARNG recently completed an assessment, known as the Readiness Center Transformation Master Plan (RCTMP), of each ARNG facility's adequacy in terms of location and size, role in training, and in ARNG's overall mission. The RCTMP identified facility deficiencies based on various criteria. These deficiencies, while shared by many, are unique to each state's facility makeup. Vermont's facilities were found to be in optimal locations, but the quality of these facilities must be improved to maintain the desired level of operational readiness. Asked about the RCTMP's major findings and recommendations for Vermont, COL Gingras said, "The RCTMP showed that most of our armories have no capacity for growth, in terms of square footage. A normal unit of about 80 people requires a 30,000 to 40,000 square-foot building. Right now, most of our units that size operate out of buildings of around 10,000 square feet. We just don't have the land to construct additions to those buildings, because they're on small lots. When my predecessors purchased land it was common for them to purchase a two- or three-acre lot. With today's anti-terrorism force protection measures, we really need to buy 16- to 17-acre lots. In order to find land like that, you have to go outside of town, and then you're not close to your population centers, which may impact recruiting and retention." For its size, Vermont has a proportionally large National Guard. "We have 2,800 to 2,900 VTARNG members in a state with a population of 626,000. Proportionally, I think we have one of the largest forces, after the Dakotas. Our National Guard is almost the size of Colorado's—a state with a population 10 times larger than ours," COL Gingras said.

Faced with the challenges of construction, COL Gingras draws on over 30 years in the field. By starting the process to secure land, permits, and historic preservation approval early, COL Gingras and his team has built a successful facilities program. "If it's a long race, start earlier," he concluded. ●●●



AWARD RECIPIENTS

Top: ARNG I&E Chief COL Erik Gordon presents the Fred Aron Award to Vermont ARNG CFMO COL Robert Gingras. Bottom: The ARNG I&E also presents regional awards to the seven states with the highest score in their respective regions. Here, COL Gordon (far right) poses with the 2015 regional award recipients: (from left) MAJ James King (Maryland), LTC Les Davis (Texas), COL Ed Hallenbeek (Michigan), MAJ John Barger (Kentucky), Ms. Terry Kockler (Montana), COL Robert Gingras (Vermont), and COL Craig Jones (Colorado). A final award, known as the Bill Troumbley Award, honors the memory of a long-term employee and his vision of continuous improvement. In 2015, that award was given to Texas.



WEST VIRGINIA

THE 249TH ARMY BAND RECEIVES A STATE-OF-THE-ART PERFORMANCE AUDITORIUM

In July 2015, the West Virginia Army National Guard (WVARNG) cut the ribbon on a new Readiness Center, replacing a 1970s-era Armory that lacked adequate administrative, storage, training, and maintenance areas. The 58,000-square-foot facility in Morgantown serves as the new home for elements of the WVARNG and support training and logistical missions for the 249th Army Band, Battery B, 1/201st Field Artillery Battalion and elements of the 1201st FSC. State additions include office space for the Veterans' Administration, a performance auditorium, and commercial-sized kitchen.

To efficiently create the stage and performance area, the design team utilized a variety of dual function spaces. The stage is actually a large rehearsal space with an adjacent elevated recording area. Two large operable partitions are used; one separates the rehearsal area from the remainder of the stage and auditorium, while the other separates the auditorium from the drill hall. This configuration allowed the design team to maximize the WVARNG's investment by utilizing federally-authorized space to also function as a large performance area. Acoustically, the challenge was met by creating a drill hall with an irregular shape that was contained in a rectilinear, sloped barrel arch form. The geometry was complimented by acoustically-engineered interior surfaces and finishes to create a vibrant and rich auditorium. The Morgantown Readiness Center is also a sustainable building. The U-shaped layout of the facility improves access to daylighting and views, while also limiting public access to the WVARNG's administrative and storage areas. Additional sustainable features include a reflective roof, the use of regional materials, and efficient lighting and HVAC systems.



A NEW PLACE TO PRACTICE AND PERFORM

The stage at the new Readiness Center in Morgantown is actually a large rehearsal space with an adjacent elevated recording area. Two large operable partitions are used; one separates the rehearsal area remainder of the stage and auditorium, while the other separates the auditorium from the drill hall.



MAINE

HARVESTED RAINWATER AND A PLANT-COVERED ROOF HELP MAKE THE BRUNSWICK READINESS CENTER A "GREEN" FACILITY

The Maine Army National Guard officially opened the Brunswick Readiness Center on September 12, 2015 during an invitation-only ceremony at the new 59,500-square foot facility built on the former Brunswick Naval Air Station. The \$23.5 million readiness center took approximately three years to build and is home to approximately 200 Soldiers from three separate units within the 133rd Engineer Battalion- the Headquarters Company, Forward Support Team, and the 1035th Survey and Design Team. In addition to the main building, there are two unheated storage facilities and a controlled waste handling building, which all have been constructed to be environmentally sustainable with low-flow fixtures, a 16,000-square foot roof with plants growing on it, rainwater harvesting to operate the toilets, 36 geothermal wells for heating as well as 160 solar photovoltaic panels rated at 38 kilowatts to supplement the facility's electrical needs. The readiness center carries the U.S. Green Building Council's Leadership in Energy and Environmental Design "Silver" designation, which is awarded to facilities that meet requirements of design and construction that maximize efficient use of energy, water, and building materials, while providing a long-term benefit to occupant health and reduced impact on the environment.



ALL GREEN
The Brunswick Readiness Center includes many sustainable features, such as 160 solar photovoltaic panels rated at 38 kilowatts to supplement the facility's electrical needs.



UTAH

SWITCH THE SWITCH' PROGRAM SAVES MONEY AND REDUCES EMISSIONS

The Utah National Guard has taken significant strides towards meeting state and federal energy mandates and reducing utility costs through the 'Switch the Switch' energy program. At the heart of the program is a series of seven solar projects across the state. To-date, 2.75 megawatt of capacity has been installed, including 1,400 solar panels on the roof of the Guard's headquarters building in Draper, Utah. Once completed, the projects will save an estimated \$10 million over the next 20 years, and reduce carbon dioxide emission equivalent to removing 10,000 cars from the road. The Utah National Guard Adjutant General MG Jeff Burton expressed the motivation behind the program, "We seek to be good stewards of our precious resources and will continue as an organization to seek innovative ways to conserve and reduce our footprint."



REDUCING THE FOOTPRINT
The photovoltaic arrays at Camp Williams, seen from the ground and from the air, have a capacity of 1,275 kilowatts.



SOUTH DAKOTA

THE READINESS CENTER AND JOINT FORCES HEADQUARTERS FACILITY IN RAPID CITY ACCOMMODATES 15 DIVISIONS

The South Dakota National Guard has a new 141,000-square-foot Readiness Center and Joint Forces Headquarters facility located in Rapid City that will accommodate the missions of 15 divisions of the South Dakota Army and Air National Guard. The facility will provide the National Guard with a state-of-the-art asset and support services. The headquarters features high-level office and administrative space, along with an assembly hall and technologically advanced classrooms/training rooms. Other support functions consist of a cafeteria with a full kitchen, a fitness center, lockers, showers, and arms storage. The site includes parking areas for military vehicles, refueling stations, a wash platform, two loading platforms, and force protection measures with security fencing. The design, construction, and daily operations of this building are guided by the Leadership in Energy and Environmental Design (LEED) Rating System to reduce its impact on the environment. The building, which is LEED Silver Certified, is the crown jewel of the Guard Camp and is one of the most advanced of its kind.



THE CROWN JEWEL
Readiness Center and Joint Forces Headquarters facility features high-level office and administrative space, along with an assembly hall and technologically advanced classrooms/training rooms.

WASHINGTON

THE INFORMATION OPERATIONS READINESS CENTER ON JOINT BASE LEWIS-MCCHORD CONSOLIDATES FOUR UNITS IN A SINGLE FACILITY

In September 2015, the Washington Army National Guard held a ribbon cutting ceremony for the Information Operations Readiness Center, a two-story, 128,000-square-foot facility located on Joint Base Lewis-McChord in Tacoma, Washington. The facility is designed to augment functions (assembly hall, vehicle maintenance, auditorium, classroom and parking) of the Aviation Readiness Center located across the street. Built to Leadership in Energy and Environmental Design Silver Certification, the facility provides modern and high tech work space for a variety of units in the Intelligence, Information Operations, and Special Forces communities. This single facility co-locates four units (56th Theater IO Group, the 156 Theater IO Battalion, the 341 MI Battalion and the Special Operations Detachment-Pacific) in a single facility from five outdated buildings, while reducing the overcrowding of Soldiers in the state. The facility was the first Washington Army National Guard Military Construction project constructed in partnership with the United States Army Corps of Engineers Seattle District. The facility boasts the largest secure area in the National Guard inventory, and is the first newly constructed facility in the National Guard to be built using the Intelligence Community Standard 705 criteria.



CALIFORNIA

THE NEW READINESS CENTER IN LOS ALAMITOS REPLACES DILAPIDATED AND OVERCROWDED FACILITIES FROM THE 1940s

Opened in August 2014, at the Joint Forces Training Base (JFTB), Los Alamitos, this 75,000-square-foot Readiness Center is the new home to 830 personnel of the HHC, 40th Infantry Division, DET 3, Headquarters State Area Command (STARC) of the California Army National Guard, and the DET 1, HHC, 40th ID STB, units of the California ARNG. In addition, it will also house the Headquarters 63d Regional Support Command, 416 Engineer Evaluation Team, 8th PERSCOM, and the 78th Legal Support Organization of the U.S. Army Reserve. The Readiness Center replaced 1940s-era facilities that were built to temporary construction standards, were over 60 years old, and well past their life-cycle, dilapidated and overcrowded. Construction of the new facility followed Leadership in Energy and Environmental Design (LEED) guidelines and is Silver Certified. As a LEED project, this construction project included a reinforced concrete foundation and floor slabs, earthquake-resistant structural framing, masonry, steel, and structural glass veneer and insulated standing seam metal roof. The building includes state-of-the-art mechanical, electrical, telecommunications, security equipment, pre-wired workstations, and kitchen equipment. Cost-effective energy conserving features were incorporated into the design, including energy management control systems and high efficiency motors, lighting, and HVAC systems.



MAINE

ARMY AVIATION SUPPORT FACILITY'S COMBINED HEAT AND POWER SYSTEM SECURES ENERGY SAVINGS AND ENERGY STAR RECOGNITION

The Maine Army National Guard was recently awarded the Environmental Protection Agency's 2016 Energy Star CHP Award for their natural gas-fired 75-kilowatt combined heat and power (CHP) system in Bangor, Maine. Otherwise known as cogeneration, the CHP system recovers otherwise-wasted heat to produce hot water for the Army Aviation Support Facility (AASF) at approximately 500,000 British thermal units per hour. The cost of the project was approximately \$400,000, with estimated total energy savings for fiscal year 2016 projected to exceed \$63,000. With an operating efficiency of 73 percent, the CHP system requires approximately 32 percent less fuel than a typical energy-supply system with similar output. Based on this comparison, the CHP system avoids nearly 100 metric tons per year of carbon dioxide emissions. Moreover, by generating electricity on-site and displacing grid-supplied power, the CHP system increases the reliability and resilience of the facility's energy supply.



MINNESOTA

ENERGY-EFFICIENCY MEASURES AT THE NEW TRAINING AND MAINTENANCE FACILITY IN ARDEN HILLS RESULT IN SIGNIFICANT ENERGY SAVINGS

The Minnesota Army National Guard's new \$15.5 million training and maintenance facility in Arden Hills is designed to reduce energy consumption, consolidate previously scattered operations, and help prepare Soldiers for their missions. The new federally funded, 64,500-square-foot Ben Franklin Readiness Center opened in January 2016.

The Readiness Center consolidated and integrated the complete functions of the Headquarters Support Company and Company A units, 834th Aviation Support Battalion on the new Arden Hills Army Training Site (AHATS). The facility includes administrative offices, classroom, training simulation, assembly hall, fitness area, locker room, unit storage, weapons vault, and maintenance bay spaces. The total project will support 14 full-time staff, 277 total personnel, and unit vehicles. The facility has received a Leadership in Energy and Environmental Design (LEED) New Construction Silver Certification. Due to Anti-Terrorism/Force Protection setbacks, the project uses a series of depressed landforms and rain gardens to enhance the design standard. Energy efficiency measures implemented include proper siting, the installation of huge windows to maximize daylighting, continuous thermal insulation, low-e glazing, a ground source heat pump with a vertical geothermal well field, low-flow plumbing fixtures, and energy-efficient light fixtures. These strategies resulted in an energy saving of 49 percent, as compared with baseline design.



HIGHLY EFFICIENT
Energy-efficiency measures implemented at the Ben Franklin Readiness Center have resulted in an energy saving of 49 percent, as compared with baseline design.



KENTUCKY

THE NEW READINESS CENTER IN BURLINGTON SERVES AS A RECRUITING BASE FOR THE NORTHERN KENTUCKY REGION AND REGIONAL EMERGENCY OPERATIONS CENTER

The Kentucky Army National Guard had an opening day ceremony for its newest \$20-million Readiness Center in Burlington on May 10, 2013. It is the home of the 2061st Multi-Role Bridge Company and the 2112th Transportation Company, as well as the Kentucky Division of Emergency Management, totaling over 350 personnel. Sitting on 34.7 acres of land, the facility boasts more than 86,000 square feet of state-of-the-art training space that is comprised of administrative offices, storage vaults, classrooms and an assembly hall. The Readiness Center serves as a recruiting base for the Northern Kentucky region and also provides limited veteran support, such as ID cards, Red Cross assistance, veterans' benefits and other services, to all branches of service. The center also serves as a Regional Emergency Operations Center, providing homeland security support in multiple arenas, including augmenting law enforcement during civil disturbances, as well as hosting joint missions utilizing both the Army and Air National Guard personnel and equipment. Its proximity to the airport greatly enhances the rapid response capability and enables the Kentucky National Guard to respond to emergencies such as natural disasters that happen somewhere in the nation, or in the local communities.



MINNESOTA

MICROGRID PROJECT BRINGS ENERGY SECURITY AND RESILIENCE TO CAMP RIPLEY TRAINING CENTER

The Minnesota National Guard (MNNG) has undertaken an ambitious microgrid project at Camp Ripley Training Center (CRTC) that will deliver enhanced energy security through a dependable and uninterrupted supply of energy. Once complete, the microgrid will allow the installation to operate without power from outside sources for an indefinite length as a disaster response location or as a continuity of government location away from the State capitol of Saint Paul.

CRTC is a 530,000-acre training site located in central Minnesota with over 400 active and transient buildings that can house up to 3,600 personnel all seasons, and 8,200 personnel three seasons in time of need. It is also home to the Minnesota Homeland Security and Emergency Management Training Center.

In 2014, MNNG conducted a microgrid assessment, which recommended the repair and replacement of CRTC's 30-year-old electrical infrastructure. This process began with a \$2 million effort focused on the replacement of aging infrastructure, including transformers and an electrical substation. Phase Two of the project is currently underway, including a \$2.9 million effort to replace the remaining substations and high voltage switchgear.

The next two phases of the project are planned for the next several years, and will include \$1 million for the procurement and implementation of the Supervisory Control and Data Acquisition (SCADA) system that will allow for real-time management and control of the base's power generation and distribution. The SCADA, combined with a planned 4 megawatts (MW) of distributed generation and a 10MW solar photovoltaic array built by Minnesota Power, will allow for 'islanding', which would provide power to CRTC in the event of a public grid outage and ensure critical systems remain operational in the face of disruptive events. In addition to enhanced energy security, the new infrastructure, SCADA, rate structure changes, and onsite generation has the potential to reduce CRTC's monthly electric bill by almost 15 percent, or approximately \$10,000 per month.



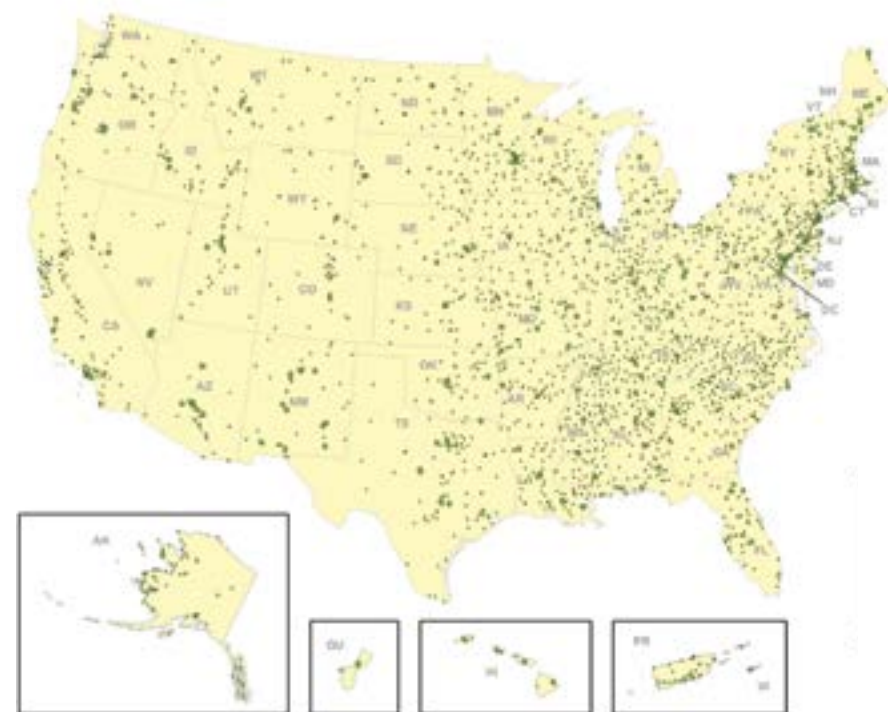
POWERED BY THE SUN
Minnesota Power's 10MW solar photovoltaic array at Camp Ripley Training Center will be able to provide energy to the Minnesota National Guard in the event of a grid outage. The top photos show the arrays and the transformers, and the bottom photo the control room at Camp Ripley Training Center.



ARMY NATIONAL GUARD INSTALLATIONS AND ENVIRONMENT

ACROSS THE UNITED STATES, 172 MILLION SQUARE FEET OF FACILITIES ON TWO MILLION ACRES OF LAND

The Army National Guard (ARNG) maintains facilities in 2,488 communities in 50 States, three Territories, and the District of Columbia. There are 2,969 active ARNG sites, and 139 enclave sites. There is no standard facility, as all structures are tailored to the unique needs of the units. The organization's total 3,202 land parcels include 2,331 Readiness Centers/Armed Forces Reserve Centers, 2,299 Training Buildings, 814 Ground Vehicle Maintenance Buildings, 302 Aviation Support Buildings, 4,095 Warehouse Storage Buildings, 2,931 Barracks, and 475 Dining Buildings. The ARNG buildings just above 172 million square feet. The total plant replacement value of the ARNG facilities is \$52.7 billion.



INSTALLATIONS AND ENVIRONMENT

The Army National Guard Installation and Environment Directorate gather for a group photo together with Installations and Environment Chief COL Erik Gordon (front row, middle).



2,969 SITES IN 2,488 COMMUNITIES
2,331 Readiness Centers/ Armed Forces Reserve Centers
2,299 Training Buildings
814 Ground Maintenance
302 Aviation Support Facilities
2,931 Barracks
475 Dining Facilities
2,098 Administrative Facilities
4,095 Warehouse Facilities
9,927 Other Facilities

(Larger dot indicates NGR 5-3 Training Center)

TOTAL FACILITY FOOTPRINT

172.4 million square feet
2 million acres
\$52.7 billion plant replacement value



Large photo: Alaska Army National Guard (AKARNG) Soldiers assigned to the 207th Engineer Utility Detachment conduct avalanche beacon training in Snowhawk Valley, Alaska. The commander for the 207th is 1LT Jennifer Nutt, who is also the Environmental Program Manager in the AKARNG's Construction Facilities Management Office. (AKARNG photo by Staff Sgt. Jack Carlson III)

Front cover inset photos: The AKARNG's Federal Scout Armories in Newtok, Buckland, Teller, Hope, Gambell, Meykoryuk, Kotlik, Nulato, Saint Michael, Savoonga, and Shaktoolik, Alaska.



NATIONAL GUARD BUREAU
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