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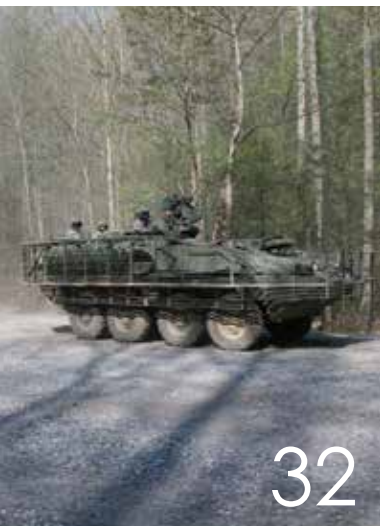
INSTALLATIONS

2016

THE FOUNDATIONS OF READINESS



contents2016

Exterior view of the Nebraska National Guard's Atlas Readiness Center in Mead, Nebraska, built in 2013.

FOUNDATIONS OF READINESS

Journal of the Army National Guard Installations Division

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STATE ACTIVE DUTY

Welcome to the 2016 issue of *Foundations of Readiness*, the Journal of the Army National Guard (ARNG) Installations Division (ILI).

When I took on the role as the Chief, ARNG-ILI in January 2015, my top priority was to provide timely and transparent support to the 50 States, three Territories, and the District of Columbia. I sought to develop and maintain parity with the Army regarding our Military Construction (MILCON) and Facilities, Sustainment, Restoration, Modernization (FSRM) programs, and find ways to mitigate funding shortfalls within our FRSM accounts, specifically Base Operations Services (BOS). I aimed to support the Readiness Center Transformation Master Plan (RCTMP), a comprehensive, nationwide study on the state of the ARNG's Readiness Centers, which you can read more about on page 6 of this journal. Finally, I sought to accelerate the divesting of the ARNG's excess facilities, a process which is described on page 11 of this journal.

A year into the job, my priorities remain unchanged. However, I've learned that it takes time to affect change within a program or system, and that it requires a focused effort to ensure that data input and output is timely and accurate. On page 14 you can read about the revamped training program and the streamlined processes that played a crucial part in the improvements of the accuracy of our inventory reporting.

The ARNG Military Construction (MILCON) program continues to be a success. The ARNG executed 95 percent of its 2015 program in the year of execution, leading all three components of the Army. For seven of the last eight years, the ARNG has executed above the 90 percent threshold. Despite severe fiscal constraints in 2015, ARNG-ILI, with the support of selected States, completed training for 431 individuals in support of our Construction Facility Management Officer (CFMO) Certification Course and our Program Guidance Course. ARNG-ILI completed over 150 real estate actions and reviewed and validated over 300 detailed MILCON project submissions. ARNG-ILI also assisted the States with executing over $800 million in the FSRM program. Through due diligence and hard work, the ARNG-ILI team has updated planning and programming criteria within the Real Property Planning and Analysis System (RPLANS), which has successfully increased the ARNG MILCON total obligation authority in the later years of the Program Objective Memorandum (POM).

Funding shortfalls within the Military Construction (MILCON) and the Base Operations Services (BOS) programs continue to be a great concern to the 50 States, three Territories, and the District of Columbia. The Army is taking a risk within its Facility Investment Strategy (FIS). The FIS is approved by the Army leadership, and supports the Army's needs through the best use of limited resources. The FIS is a holistic approach to determine the best solutions for all facility requirements across the Army, in priority of highest need. You can read more about the FIS and the current priorities on page 4.

My goal for the ARNG-ILI is to ensure premier facilities and services today and in the future that are relevant, reliable, ready, and assessable, and that support the ARNG's Soldiers and our Joint Forces. This vision will be achieved by coordinating with stakeholders and interested parties, while maintaining open lines of communication to ensure that our efforts are in line with the strategic guidance of the Director, ARNG, as outlined in the Director's 'Balanced Readiness,' 'Ready Forces,' and 'Resilient Communities' documents. My immediate focus this coming year is to maintain parity with the Army across the MILCON and FSRM programs, and assist the Guard Nation in finding solutions to mitigate funding shortfalls within the BOS program.

Thank you and Essayons!

LIEUTENANT COLONEL ERIK GORDON
DIVISION CHIEF
ARMY NATIONAL GUARD INSTALLATIONS DIVISION

"My goal for the ARNG-ILI is to ensure premier facilities and services today and in the future that are relevant, reliable, ready, and assessable, and that support the ARNG's Soldiers and our Joint Forces."

AROUND THE COUNTRY

OPPOSITE PAGE: Clockwise from top, left: Soldiers at the Windsor Readiness Center in Winsor, Colorado; a helicopter hovers over the Alaska ARNG's facility in Newtok, Alaska; exterior view of the Santa Fe Aviation Readiness Center in Santa Fe, New Mexico; and interior view of the Atlas Readiness Center in Mead, Nebraska, built in 2013.

An Investment Strategy **for the Future**

IN ORDER TO EFFECTIVELY MEET STATE AND NATIONAL DEFENSE REQUIREMENTS, THE ARMY NATIONAL GUARD'S FACILITIES NEED TO BE ADEQUATELY SIZED, CORRECTLY CONFIGURED, AND STRATEGICALLY LOCATED. **THE ARMY'S FACILITY INVESTMENT STRATEGY IDENTIFIES THE FACILITY INVESTMENT PRIORITIES FOR THE ARMY AS A WHOLE. AMONG THOSE PRIORITIES ARE IMPROVING THE ARMY NATIONAL GUARD'S READINESS CENTERS, WHICH HAVE BEEN RESOURCE-CONSTRAINED IN RECENT YEARS**

The Army National Guard has nine still-operational Armories built in the late 1800s.

The Army National Guard's (ARNG) facilities are crucial to our Nation's defense. These facilities are where our Soldiers train, and where State and Federal response missions are staged. In order to effectively meet State and National Defense requirements, the facilities need to be adequately sized, correctly configured, and strategically located. This, in turn, requires an overarching strategy for facilities investment.

Annually, the United States Army issues a Facility Investment Strategy (FIS), which identifies investment priorities and highlights underfunded areas in the Active Component's (AC), the Army Reserve's (USAR) and the ARNG's facilities portfolio. The FIS for fiscal year 2017 (FY17) was approved by the Army and the previous Vice Chief of Staff of the Army (VCSA) in November 2011, and endorsed by the Army and current VCSA in May 2013. The most important aspects of the FIS FY17 can be summed up as a) disposal of unneeded properties, b) sustainment and improvement of enduring facilities, and c) buildout of deficits with the most significance to the Army as a whole. This focus and direction continues, substantially unchanged.

Sustainment and improvement of enduring facilities

Funds to construct and sustain the AC's, the USAR's and the ARNG's facilities are divided into two programs. The Military Construction (MILCON) program funds the construction, acquisition, expansion, and conversion of facilities for the training and administration of Soldiers. The Sustainment, Restoration and Modernization (SRM) program provides the necessary funding to sustain, restore, and modernize the components' real property.

The Army's goal is to fund at least 90 percent of the critical SRM requirements. In FY14, 66 percent of the Army's SRM requirements were executed. In FY15, that share was 70 percent. For an extended period of time, the ARNG's SRM funding has been inadequate to properly sustain its real property, which has led to a dramatic decline in facility conditions.

The ARNG designs most of its facilities to last approximately 55 years, but many of the facilities in its inventory are much older than that, including nine still-operational Armories built in the late 1800s. These aging facilities were designed and built for horse-drawn artillery and cavalry units. Since then, the equipment storage requirements have greatly outgrown the available space. The training requirements have changed from drill floors to modern live-fire automated and digitally instrumented training ranges and classrooms with full connectivity for online training. With little funds available for new construction, the ARNG must find ways to extend the service life of its current facilities. Without adequate SRM funds, not only does the investment that went into constructing a new building slip away as the facility is not properly maintained, but extending the service life of older facilities becomes impossible.

Readiness Centers and other training and logistics facilities are the ARNG's connection with the community. Readiness Centers shape the first impression the community and potential recruits have of the ARNG. In many cases, the current condition of the ARNG's Readiness Centers does not reflect the professionalism of the organization. Additional funding for repair, maintenance, and minor construction will not only improve the ARNG's representation within the community and attract quality recruits, but it will also reduce future construction costs.

The status quo is not an option; the ARNG cannot afford delays. Without additional funding, ARNG Soldiers and civilians will continue to work in substandard areas with leaking roofs, broken heating and air conditioning, frequent power outages, and overcrowding. MG Al Aycock, Director of Operations, Office of the Assistant Chief of Staff for Installation Management (OACSIM), said in a speech that sustainment is a cornerstone of proper facility stewardship, and that the Army will take a multi-pronged approach to mitigate reduction in sustainment funding through aggressive requirements analysis.

Buildout of deficits

The Army is entering a period of strategic reset, which will affect the MILCON program of both the Active Army and the Reserve Components. Recognizing these circumstances, Senate Report 113-48 nonetheless voices concerns about the substandard condition of many Readiness Centers, caused by fiscal constraints and other strategic priorities, and urges the Army to prioritize the construction of new and replacement Readiness Centers. In FIS FY17, the Army recognizes the need to build out Reserve Component readiness facilities, which includes ARNG Readiness Centers. The FIS also prioritizes the buildout of other critical facility shortfalls, which include facilities that impact the training mission, vehicle maintenance, the organic industrial base, and operations of the Army as a whole.

Whereas the Army as a whole has significant excess space, that picture looks very different if you look at only the ARNG. Across the country, the ARNG has a space shortage of authorized space. The ARNG, nationwide, has less than two-thirds, or 64 percent, of the authorized space for Readiness Centers. Even with the announced troop downsizing that will bring the Army to its lowest manpower level since before World War II, and even with the new facilities the ARNG has built in recent years, the ARNG is still not close to its authorized square footage. In order to fulfill both its national and domestic missions the ARNG needs to be able to properly train its Soldiers and store its equipment. Building out the ARNG's authorized space is imperative.

The FIS addresses requirements as much as six or seven years out, which means a lot can change in the time between the strategy's inception and implementation. Among the factors that impact the FIS are changes to the force structure and funding levels. In the case of FIS FY17, there were drastic reductions to both the force structure and the funding levels. MG Aycock said that while the FIS remains a valuable guiding document, the current fiscal environment necessitates careful consideration of how to most efficiently and effectively manage the drawdown, along with Budget Control Act resource reductions.

Less than two-thirds, or 64 percent, of the Army National Guard's authorized space for Readiness Centers is met nationwide.

As budgets tighten, the ARNG will work closely with Army leadership to continue the commitment to build out the ARNG's Readiness Centers. Without these facilities, the ARNG is unable to fulfill its mission.

Disposal of unneeded properties

The quality of a facility is measured by the Facility Condition Index (FCI), which represents a percent of cost to bring the facility to standard. As part of the FIS, the Army will strive to eliminate FCI < 60 and restore 60 – 80 percent to standard. This will be done either by Restoration or Modernization of viable Q3 facilities, or through various means of disposal of Q4 facilities (and any facilities not directly contributing to Readiness), including demolition when appropriate, as funding permits. As part of this plan, the Army is conducting a Facilities Reduction Program that is based on a return on investment. An FY14 data call identified approximately $256 million worth of facilities planned for disposal. This is predominately Q4 facilities which are beyond cost effective restoration, but also some facilities no longer needed. ●●●

A Readiness Center **for the Future**

THE ARMY NATIONAL GUARD COMPLETES A COMPREHENSIVE, NATIONWIDE STUDY ON
THE STATE OF ITS READINESS CENTERS TO DETERMINE A WAY FORWARD

Over the course of three years, the Army National Guard (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, as part of the ambitious Readiness Center Transformation Master Plan (RCTMP). The RCTMP examined where new facilities need to be constructed and which facilities need to be renovated or divested to meet the organization's future mission. In the end, the completed RCTMP provides the ARNG with a thorough analysis of the current state of its Readiness Centers. It also provides the organization with a business case and four scenarios for a 15-year investment plan, based on four different funding levels, and makes recommendations on the ARGN's strategic infrastructure direction.

A dual mission critical to the Nation

The ARNG is a community-based operational force with a dual mission, which 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. With proximity that enables prompt response, knowledge of local conditions, tactical flexibility, and close association with State and local officials, the ARNG is generally the first military uniformed responder on the ground in the event of a disaster.

Under Title 10, U.S. Code, the ARNG is obligated to maintain properly trained and equipped units that are ready for prompt mobilization when the requirements exceed the capabilities of the Active components. With training and capabilities on par with the Active Army, the ARNG rapidly and competently expands the operational capacity of the U.S. Army by providing ready Soldiers to serve in critical combat and humanitarian operations across the globe. The ARNG currently provides 39 percent of the total Army force, and ARNG Soldiers are serving in Afghanistan, Kuwait, Qatar, Djibouti, Honduras, Guantanamo, the Sinai, the Philippines, and the Balkans.

Across the country, over 2,500 Readiness Centers in more than 2,100 locations serve as a base for the ARNG's operations. The Readiness Centers serve as distribution points, command and control hubs, and staging bases for first responders. Integrated into the communities they serve, the facilities also provide shelter and vital services for displaced civilians during emergency events that overwhelm local resources. As an operations and training platform, Readiness Centers are critical to developing, training and delivering a combat-ready force by providing the base for training, communicating, logistics, storage, and administrative activities.

Recognizing the value of the ARNG to the Nation, Congress directed the Secretary of the Army and the National Guard Bureau (NGB) to complete a study on the state of ARNG Readiness Centers. RCTMP, as the study became known, resulted in a comprehensive, dynamic and adaptive facility strategy and master plan that includes recommendations on how to create a nationwide Readiness Center portfolio that will enhance overall Soldier readiness and mission support capabilities in a cost-effective manner.

The state of the ARNG's Readiness Centers

Over the course of three years, the RCTMP collected extensive information from State leadership and staff charrettes, objective and independent facility assessments, thousands of individual Soldier surveys, and numerous nationwide ARNG databases and Army models of

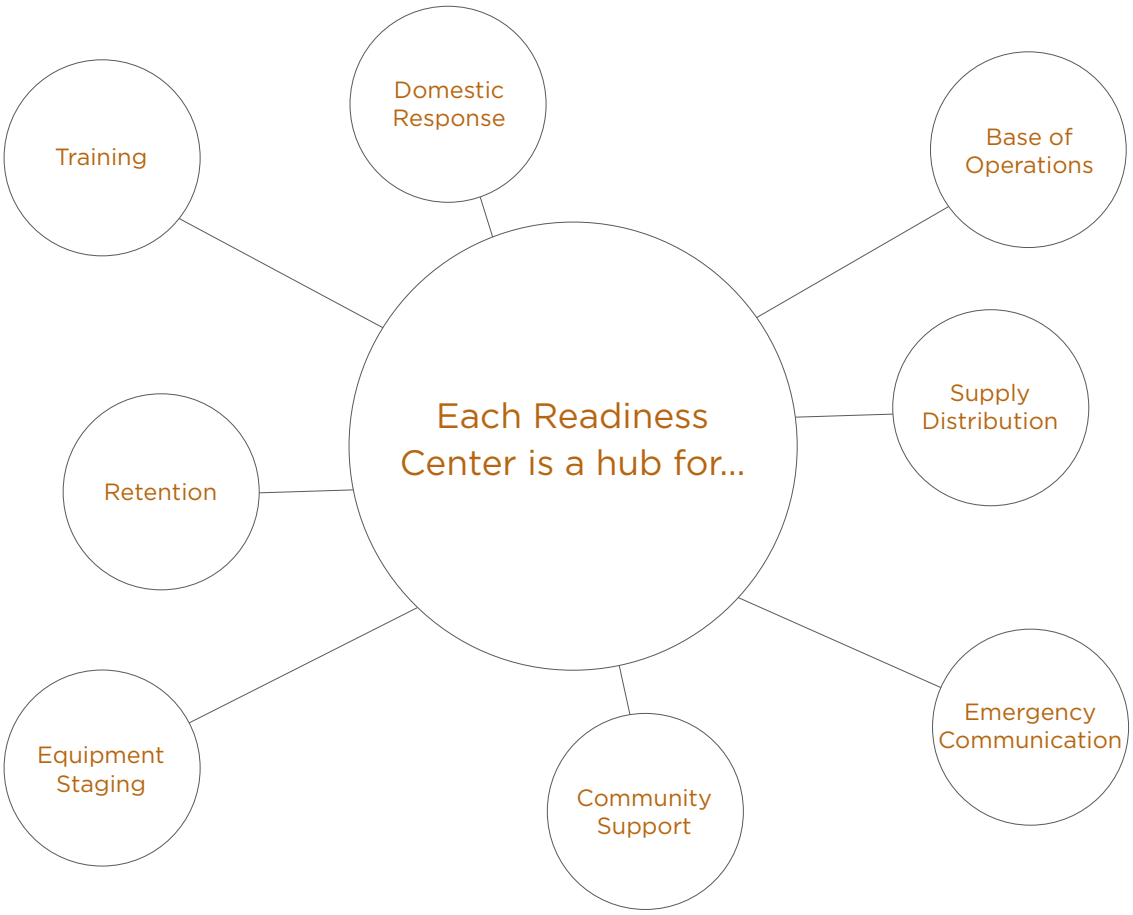
A MODEL FACILITY

OPPOSITE PAGE AND RIGHT: The Titan Readiness Center near Mead, Nebraska addresses many of the challenges associated with classroom space, storage, and infrastructure that many of the ARNG traditional facilities experience. The facility was built in 2014.

record to derive key findings. “Frankly, the sheer enormity of the task was daunting. We lacked sufficient financial resources to meaningfully address the full scope of the problem and do what Congress had directed us to do. As time progressed, and as we developed and nurtured the study framework, we garnered more leadership commitment and the ARNG-ILI leadership committed the full resources to examine the whole Nation,” said Mr. E. Sherrell Crow, former Deputy Chief of the ARNG-ILI’s Construction Branch and the RCTMP program manager at the ARNG.

Most of the findings pointed to an outmoded Readiness Center portfolio with inadequate storage, information technology and electrical-mechanical infrastructure that does not support emergency communications, non-code compliancy, and poor energy efficiency. The RCTMP found that the average condition of Readiness Centers nationwide is fair, but bordering on poor. An estimated 65 percent of Readiness Centers are expected to deteriorate from fair to poor by fiscal year 2020. The degradation analysis also showed that over one quarter of Readiness Centers will deteriorate to failing condition by 2020, based on current funding levels. Despite the seemingly low ratings, Mr. Crow was happily surprised by the findings: “My biggest surprise was how well the ARNG community maintains our facilities given the scarce sustainment resources the States are afforded. To see a condition index (on a scale of one to100 percent) in the low 80s is remarkable. I believe that the Construction Facilities Management Officer (CFMO) community has gotten very adept at maintaining our facilities—and migrating projects into minor construction where applicable—in order to meet the incredible demands and pressures to expand our operations to meet our present mission. I am encouraged to see how tirelessly everyone works and how professional the field staff is day-in and day-out in responding to the needs of the operational units. This is a herculean task and I don’t believe that the CFMO staff gets the credit that it deserves from the leadership.”

For a Readiness Center to be strategically located, a variety of factors must be considered, including geographic coverage and demographic density. After an evaluation of demographic patterns, recruitment and retention capabilities, and geographic coverage, the study deemed 74 percent of Readiness Centers to be in their proper location nationwide. “I was intrigued that the demographic problem was not as large as I originally



imagined," Mr. Crow said. "With the shift towards urban areas, we only have about 20 percent of our inventory left in areas that cannot be adequately recruited and manned. Soldiers are resilient and seem to be willing to drive over an hour to attend drill if required. Even after years of perpetual deployments, the ARNG remains committed."

Further, the RCTMP found that the ARNG suffers from a shortage of space nationwide. Less than two-thirds, or 64 percent, of the required space for Readiness Centers is met nationwide. Mr. Crow said he was encouraged to see just how adept ARNG Soldiers are at working around the space deficit, which he described as a large problem nationwide. Maintenance support space, training classrooms, and storage for critical equipment have the most significant space shortage, which significantly impacts the ARNG's mission readiness. Collectively, the findings justify a modernization of the Readiness Center portfolio to meet the modern mission.

The Rockville Reserve Center in Rockville, Indiana (above, left and right) was constructed in 1956. The facility is in dire need of modernization. The ARNG constructs its facilities to last approximately 55 years. Many facilities in the ARNG's inventory, such as the Rockville Reserve Center, are much older than that.

The way forward

The RCTMP evaluated and grouped all Readiness Centers in the portfolio on mission criticality. Facilities were split into three levels of importance to mission: mission critical, mission dependent, and mission support. State Joint Forces Headquarters (JFHQs) stakeholders defined what each tier represented based upon State-specific requirements, stationing, and operations. The vast majority of Readiness Centers recommended for divestiture by the States were in the lowest tier of mission dependency.

Based on the findings, the RCTMP outlined a plan that enhances overall Soldier readiness and mission support capabilities through sound investment in the underlying infrastructure, technology, and State and national force structure planning. The plan prioritized facilities with the most critical and specialized missions, and suggested divesting locations that are no longer demographically viable or have skyrocketing maintenance costs. Divesting those facilities would decrease the overall number of Readiness Center locations from 2,170 to 1,680 over a 15-year period. RCTMP also outlined plans for renovating and reconfiguring other Readiness Centers to better meet mission requirements.

The RCTMP showed that funding MILCON and Sustainment, Restoration and Modernization (SRM) at current levels would continue to compound facility and equipment degradation, space shortfalls, and other risks to mission readiness. A National Capital Investment Strategy (CIS) that efficiently improves facilities and increases mission readiness requires both MILCON and SRM funding. SRM funding must be used strategically in order to maintain facilities and sustain the mission of the ARNG until MILCON projects are executed.

The RCTMP presented four investment scenarios, based on varying levels of MILCON and SRM funding, to demonstrate the effects each level of funding would have on the Readiness Center portfolio over the 15-year period. 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 required a substantial investment into the ARNG's Readiness Centers, provided a way for the ARNG to continue its mandated missions. The Get to Green scenario would result in the optimal outcome for the ARNG Readiness Center portfolio, but it is also the costliest, requiring an estimated $18.7 billion in MILCON funds to fully modernize the nationwide portfolio. After the modernization process in the Get to Green scenario, the Readiness Center portfolio would be aligned with both State and national operational requirements.

The third scenario, Affordable Readiness, would maintain the current state of the existing Readiness Centers and reverse the degradation patterns projected by the RCTMP, resulting in a modernized footprint that meets 80 percent of the space requirements at the end of the 15-year plan. "There is a divergence of opinion on which investment scenario to pursue," Mr. Crow said. "Our staff here at NGB believes that the third scenario, Affordable Readiness, will get at the most critical requirement, because it will get our most critical Readiness Centers to good condition, while keeping our next-most important band of facilities at an adequate condition over the 15-year investment period. The report also proposes the third scenario, Affordable Readiness, but the field is upholding the fourth scenario, Get to Green, as the right solution as our field staff believes that funding the full requirement is the more advantageous scenario in the longer term. Either way, if funded it will mean a strong investment in our critical facilities."

While the substantial investment that Get to Green suggests would be optimal for the ARNG Readiness Center portfolio, in these times of fiscal constraints and limited resources, Affordable Readiness may be the solution that defines the best value for investment in the ARNG's Readiness Centers. While the Readiness Center portfolio would not be completely modernized under the plan, 53 percent of required projects would be executed. The benefits associated with the Affordable Readiness scenario are evident: a reasonable level of funding to increase operational readiness, the enhancement of domestic response operations, the alignment of facilities with the correct tier of mission criticality, the strengthening of the Readiness Center network by relocating Readiness Centers in areas with changing demographics, and the enhancement of energy security. Under Affordable Readiness, the most critical portfolio shortfalls nationwide would be addressed, with mission-critical projects at the top of the list.

Asked if there will be a follow-up to the study to measure the progress of the implementation of the study's recommendations, Mr. Crow said, "There is a need and a staff commitment to measure the results of the study. However, a meaningful mechanism to do that has not been constructed. There is a reporting model mandated by Congress through the National Guard and Reserve Equipping Act (NGREA). It requires the publication of an annual report that provides a transparent review on what is accomplished yearly with NGREA funding.

The photos above show the windows (top) and the motor pool, maintenance building, and parking (bottom) at the South Carolina ARNG's Hemingway Readiness Center, which was built in 1956.

I believe that such a report of RCTMP investment funds will provide a measure of transparency to Congress with any monies that may be provided."

Readiness Centers are the backbone of the ARNG force structure. The facilities are critical to preparing ARNG Soldiers to respond to complex civilian and military challenges. They are also vital as staging bases for first responders. This, in turn, is vital to the Nation's security, as a crisis of any type requires an immediate and effective response from the ARNG. As the ARNG defends the Nation at home and abroad, it does so affordably and with accountability. Through the RCTMP's Affordable Readiness, the ARNG has found a way to ensure functional facilities in strategic locations that are critical to domestic response at an excellent value for investment. ●●●

Armory **Divestitures**

THE ARMY NATIONAL GUARD'S STUDY OF ITS READINESS CENTERS FOUND SOME FACILITIES IN CONDITIONS BEYOND REPAIR AND OTHERS IN LOCATIONS OF LITTLE STRATEGIC VALUE TO THE ORGANIZATION. **HOWEVER, DIVESTING FACILITIES IS NOT AS SIMPLE AS JUST CLOSING THE DOORS**

As part of a three-year long project called the Readiness Center Transformation Master Plan (RCTMP), the Army National Guard (ARNG) thoroughly examined its Readiness Center facility inventory and assessed each Readiness Center's adequacy in terms of location and size, role in training, and in ARNG's overall mission. In the end, the RCTMP recognized, with leadership concurrence, that a number of facilities in its portfolio need to be divested.

The facilities were recommended for divestiture for a variety of reasons. Some were deemed to be in locations of little strategic value to the ARNG. Others were in such poor condition that divestiture was determined to be the only option. Divesting the facilities deemed inadequate by the RCTMP would decrease the overall number of Readiness Center locations from 2,170 to 1,680 over a 15-year period. However, it's not as simple as just closing the doors. There are costs associated with divestiture and the Soldiers currently stationed at those facilities must have somewhere to go.

"This is a critical component of the RCTMP's recommendations, but it is one that will be advised by the amount of investment that is afforded to each State. The RCTMP calls for the divestiture of over 600 facilities, but that comes with a price tag. We cannot divest facilities while we have a substantial space deficit. We cannot move units out of poor facilities if they have no place to go. We simply cannot afford to walk away, because we need the space," said Mr. E. Sherrell Crow, former Deputy Chief of the ARNG-ILI's Construction Branch and the RCTMP program manager at the ARNG.

The RCTMP's recommendation of 600 closures is contingent on the construction of 132 new facilities and the consolidation of the rest of the operations into expanded and renovated existing locations. "The master plan was driven by operational considerations," Mr. Crow continued. "The federal study could not dictate to the Governor and Adjutant General in each State where to station the State's militia. That is a constitutional issue. There were some cases where a Readiness Center needed major investment, yet the planners had no choice but to leave it as an enduring location, because there was an operational need to do so. In some communities the ARNG Readiness Center is the only public facility capable of providing a platform for local response in an emergency event. The RCTMP simply provided a rational business process to examine and make recommendations where a compelling need exists to close a facility."

Asked to describe the process of divestiture Mr. Crow said, "In almost every case, a Readiness Center or Armory has a reversionary clause, should it lose its military significance. Most often in these cases, the land and structures will belong to the local or State public interest. It is an easy transaction to remove federal support for the building and real property, but it is quite another to deal with environmental and clean-up issues. This must be dealt with in accordance with the appropriate federal and State laws. Each State and local jurisdiction has its own processes to handle disposals. The disposed facilities may be repurposed and used as community centers for local services. Sometimes the real estate value is prime for redevelopment and it is more advantageous to demolish the building. I have also seen facilities sold to commercial and private interests. I once saw a television program about a private homeowner who had bought a local armory for $25,000 on Craigslist. The new owner poured thousands of dollars into it and adopted it as his residence." ●●●

TOP: As recommended by the RCTMP, this Florida ARNG facility in Miami is slated for divestiture. BOTTOM: Demolition in progress.

Armory Degradation **Modeling**

BY PREDICTING THE DEGRADATION RATE OF ITS FACILITIES, THE ARMY NATIONAL GUARD SEEKS TO **EXTEND THE FACILITIES' SERVICE LIFE BEYOND THE ORIGINAL DESIGN**

In life, all things eventually decay. Once imposing structures crumble at the wear of time. The Army National Guard's (ARNG) facilities are no exceptions. The ARNG designs its facilities to last approximately 55 years. That means that the quality of a facility degrades from excellent at the time of construction to unusable at the age of 55 years. Barring unusual events, such as hurricanes, tornados and other acts of nature, the facilities degrade at a relatively predictable rate as a result of usage and exposure to the elements.

Due to fiscal constraints, the ARNG has been allocated significantly less Military Construction (MILCON) and Sustainment, Restoration and Modernization (SRM) funds in recent years than the organization requires in order to meet its mission. With little funds available to construct new facilities, extending the service life of its current facilities has become imperative.

Under the lead of LTC D. Troy Fontenot, the ARNG has developed a model to predict the degradation of its facilities. The model, called Armory Degradation Modeling, seeks to change the performance curve of a degrading facility so that the facility's lifecycle can be sustained beyond the original service life. The ARNG has many Armories and Readiness Centers that are older than 55 years, and extending the service life beyond the original design is not unusual. What is different about the Armory Degradation Modeling is that instead of extending the service life of a single facility in an ad hoc manner, it looks at the organization's facilities at a macro level and seeks to extend the service life of the whole inventory in a planned manner.

"The concept of Armory Degradation Modeling first occurred to me in 2013, within a few weeks of me taking on the position of Facilities Branch Chief," LTC Fontenot said. "It came from the need to answer a very simple question: If the ARNG doesn't get 100 percent of its required SRM funding, what happens to its facilities? Without some sort of mathematical model that question is impossible to answer with any exactness."

"If you don't fund 100 percent of the critical requirements you're accepting a level of risk," LTC Fontenot continued. "The Armory Degradation Modeling calculates what those risks are. It answers the "So what?" of underfunding. For example, if the ARNG is allocated 50 percent of its SRM requirements, the Armory Degradation Modeling is able to predict the acceleration of the rate at which the ARNG's Readiness Centers will degrade. In short, it is a tool to make informed budgetary decisions."

To assess the condition of each facility the ARNG uses a reporting system called the Installation Status Report (ISR). ISR tracks each facility's condition in terms of infrastructure, services, and mission capacity. The quality of a facility is measured by the Q rating, which ranges from Q1 to Q4, with Q1 being the best and Q4 the worst. The functionality of a facility, meaning how well the facility meets the tenant's needs, is defined by the mission rating. The mission rating ranges from F1 to F5, with F1 being the best and F5 the worst.

AN EXTENDED LIFE

The ARNG's facilities, such as the 1959 Readiness Center in Durham, North Carolina pictured to the left, are built to last approximately 55 years. With little funds available to construct new facilities, extending the service life of the organization's current facilities has become imperative. Through the Armory Degradation Modeling the ARNG can predict the degradation rate of its facilities and extend the service life of the whole inventory in a planned manner.

Asked how the Armory Degradation Modeling differs from the ISR's quality and mission ratings LTC Fontenot said, "The two models serve as each other's checks and balances. The Armory Degradation Modeling tracks only the quality, and not the functionality, of facilities. The Armory Degradation Modeling has no bearing on the F rating, but the ISR's Q rating is the Armory Degradation Modeling's first step of input."

The ISR's quality rating is a percentage calculated by dividing the cost to improve a facility to a Q1—meaning excellent—level with the plant replacement value (PRV) of that same facility. That means that a facility that is 75 percent on the quality scale would require an investment of 25 percent of the facility's PRV in order to bring the facility to a 100 percent quality rating. "A 75 percent rating means that the facility is only 75 percent functional. By simply multiplying the quality percentage with the PRV you get a figure for how much it would cost to restore that facility to its original condition," LTC Fontenot said.

The Q rating is the model's first input, and it is followed by a standard degradation rate of 1.54 percent per year. The degradation rate is calculated by dividing the expected lifecycle of an ARNG Readiness Center, 55 years, by 100 percent, which is the quality starting point at construction.

The cost of bringing a facility to its original condition is of course dependent on factors such as location and inflation. The Armory Degradation Modeling uses the inflation rate of the Office of Management and Budget (OMB), which was 1.7 percent in 2015. It does not, however, take location and variations in construction costs into account. "The Armory Degradation Modeling was developed for a strategic, macro-level look. It was not developed for a State-level, or even regional, look. It is a predictive modeling of the whole ARNG inventory," LTC Fontenot said.

The name implies that it only forecasts the degradation of Armories, or Readiness Centers, but the model is actually used to track 55,000 real property assets in the ARNG inventory. A real property asset is anything that the ARNG has constructed, ranging from small assets such as flag poles, to larger assets such as roads, runways and utility lines. A Readiness Center is constructed to last 55 years, but other types of real property assets have different lifecycles, some which are much longer than 55 years. "There is an assumption that everything in the inventory is designed to last 55 years, which is not necessarily true, but by subtracting the required sustainment we can calculate the restoration and modernization costs for the various assets," LTC Fontenot explained.

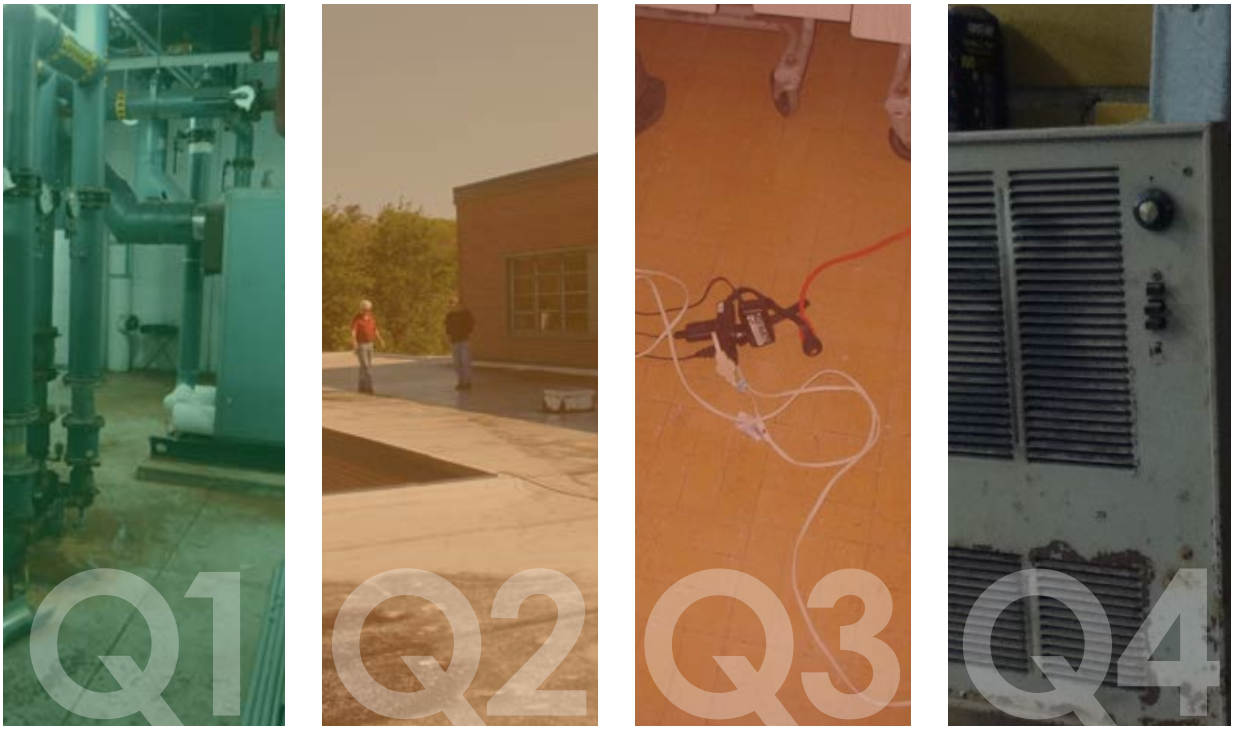
In line with the Command Plan Impact Staff Estimate (CPISE), the ARNG's force size will be downsized from 350,000 to 335,000 by 2018. A change in force size is always associated with a cost, no matter if the force is growing or declining. The question is, "How much?"

"Because we know what our existing inventory looks like in terms of quality and functionality, we can make some assumptions about what it is going to cost to change our inventory at the macro level to accommodate the changes in the force structure. We know approximately how many units were going to be affected by CPISE, and by affected we mean activated, converted or deactivated. Because we know how many facilities each of those units occupy we can make some assumptions about the restructuring of the force and come up with cost estimates for reconfiguring those facilities to accommodate a new or changed unit type," LTC Fontenot said.

CPISE divides facilities into four categories. The first category, with facilities rated Q1 or Q2 and F1 or F2, require no work under CPISE. The second category is made up of facilities of poor quality—Q3 and Q4—but with reasonable functionality. The third category consists of facilities of good quality, but with the wrong configuration, meaning a F3 or F4 rating. The fourth category consists of facilities of poor quality and with the wrong configuration, in other words Q3 or Q4 and F3 or F4. "We have facilities that are Q1 or Q2 and F1 or F2 that would not require any work at all under CPISE. We also have many facilities that are Q3 or Q4 and F3 and F4, and those facilities will require significant amounts of work. Since we know the approximate percentage of how many of the facilities in our inventory fall in each of those categories and we know how many units are going to be affected we have a fairly good understanding of how much it is going to cost," LTC Fontenot said.

It took LTC Fontenot a year to work out the formulas for the model and the Armory Degradation Modeling was fully formed in 2014. Two years in, LTC Fontenot has a good understanding of the model's accuracy. "After two years of using the Armory Degradation Modeling I went back and looked at the previous two years to see what the model predicted and what turned out to be true. The model was within two percentage points of being right. It is also self-correcting, because every year we get a new ISR data file. Each year starts with a completely new set of data," he said.

The Armory Degradation Modeling is unique to the ARNG. At the time that it was conceived the other Army components did not have models to track the degradation of their facilities. In July, 2015 LTC Fontenot was called over to the Pentagon to develop a similar model for the Active Army. The development of the Armory Degradation Modeling and the ARNG's prudence with tax dollars as it seeks to extend the lifecycle of its existing facilities will benefit the Army community as a whole, and ultimately the Nation. ●●●



Accuracy in **Reporting**

A REVAMPED TRAINING PROGRAM AND STREAMLINED PROCESSES GREATLY
IMPROVE THE ARMY NATIONAL GUARD'S ACCURACY IN FACILITY CONDITION REPORTING

The Army National Guard (ARNG) maintains thousands of facilities across the Nation. The organization is present in 2,579 communities in the 50 States, three Territories, and the District of Columbia. With a total plant replacement value of $46 billion, ARNG facilities total more than 170 million square feet.

To assess the condition of each facility the ARNG uses a reporting system called the Installation Status Report (ISR). ISR has three components: Infrastructure, Services, and Mission Capacity. The three components are measured based on Army-wide standards. Combined, that information turns ISR into a decision-making tool for Army leaders, providing them with the information they need to build requirements and develop facility investment strategies.

To facilitate the Army leaders' decision-making process 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/function rating, which assesses how well the facility meets the tenant's needs, ranges from F1 to F5, with F1 being the best and F5 the worst. However, the vast majority of facilities receive a rating from F1 to F4. The F5 rating is reserved for special cases, such as facilities left completely inoperable after a natural disaster.

Arun Pankaj is the ISR Program Manager for the ARNG at the national level. His team analyzes the data sent by ARNG staff in all States, Territories and the District of Columbia and looks at various trends to create a macro view of the condition of ARNG facilities. Their analysis of the ISR data helps inform the ARNG's facility investment strategy.

The quality rating for infrastructure measures the condition of a facility and the mission rating measures how well that facility meets the requirements of its tenants. "We're doing pretty well quality-wise," Mr. Pankaj said. "The majority of our facilities are in the top 50 percent for quality, Q1 or Q2, but the majority of our facilities are in the bottom 50 percent for mission, F3 or F4." Of the ARNG's roughly 2,300 Readiness Centers, 39 percent are Q3 or Q4, failing in quality. A full 68 percent are F3 or F4, failing in mission. Many of the facilities with a failing F rating are older facilities that are well-maintained, but inadequate for the current mission. "To give an example, an older maintenance facility that's well maintained could receive a Q1 rating for excellent quality, but if its maintenance bays are only eight feet wide and today's vehicles require a 10-foot opening, that facility is not going to meet the tenant's mission. From a quality perspective, those bays may be perfectly fine, but from a mission perspective they don't do what we need them to do. A lot of our facilities are inherited from the Active Army, and not built to meet our mission requirements. We have a lot of facilities that are older than 50 years old. With our Military Construction (MILCON) program so underfunded, there is not enough funding to build new facilities, so we maintain our current facilities as best as we can. Those facilities may not be meeting our mission, but there's really not much of an alternative," Mr. Pankaj said.

Virtual training improves accuracy in reporting

Collecting the facility condition data requires a systematic and regulated approach. The data must be collected at regular intervals and what garners a certain rating in one State must get the same rating in another State. Over time the ARNG has improved its processes, and, as a result, the accuracy of its data. "A couple of years ago we developed a virtual training course

COLLECTING THE DATA

OPPOSITE PAGE: To assess the condition of each facility in its inventory the ARNG uses a reporting system called the Installation Status Report. Through inspections conducted every year, every two years, or every three years, depending on the type and age of facility, the facilities are rated on how well they are meeting the requirements for Infrastructure, Services, and Mission Capacity. The photos (from left to right) represent the Q ratings associated with various facilities across the ARNG.

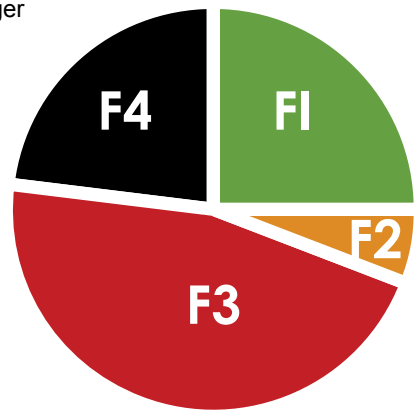
Of the ARNG's roughly 2,300 Readiness Centers, 39 percent are Q3 or Q4, failing in quality. A full 68 percent are F3 or F4, failing in mission.

for facility inspectors," Mr. Pankaj said. "What's interesting is that these inspections are done by laypersons. It doesn't necessarily have to be somebody with an engineering background; the idea is that no matter who the tenant is, a person from that organization should be able to do the inspection. In the past, the data we received varied based on who was performing the inspection. Our training at the time was probably eight to 10 years old, and it needed to be updated. We developed several virtual training courses, which are offered through Guard University, our online training mechanism. The course participants do virtual inspections by walking through a virtual facility and rating the windows, electrical outlets, lighting, and so on. I think that it has helped our reporting quite a bit."

Mr. Pankaj's team also continues to improve the infrastructure inspection workbooks, which provide the inspectors with standards for how to rate various components of a facility. For example, the workbook used to rate Readiness Centers contains about 200 elements requiring inspection, each with a Green, Amber, and Red standard. There is a workbook for every kind of facility, and each one is reviewed annually Army-wide to make any necessary revisions or improvements. "We completely overhauled the workbook that rates Readiness Centers about two years ago. The feedback has been very positive from the States," Mr. Pankaj said.

Funding for an ISR manager in every State

In the past, the ARNG did not have an ISR manager solely devoted to managing the ISR program in each State. Starting in fiscal year 2009 and for a total of three years, the National Guard Bureau (NGB) funded an ISR manager in each State. After the three years it was up to the States to continue to fund the position. Almost all of the States did continue to fund the position. Mr. Pankaj thinks having a person dedicated to the program in each State has greatly improved the accuracy of the data. "The State Chiefs-of-Staff are showing a commitment to ISR and there's renewed interest in reporting at the State level," he said.



F RATING

The mission/function rating, also known as the F rating, assesses how well a facility meets the tenant's needs. It ranges from F1 to F5, with F1 being the best and F5 the worst. The vast majority of facilities receive a rating from F1 to F4, and the F5 rating is reserved for special cases, such as facilities left completely inoperable after a natural disaster. As seen in the pie chart above, roughly 25 percent of ARNG facilities are rated F1; 6 percent are rated F2; 46 percent are rated F3; and 23 percent receive a F4 rating.

FI **Negligible or no impact** on the capability to support the tenant organizations' required missions.

F2 **Moderate deficiencies** that have limited impact on the capability to support the tenant organizations' required missions. All essential/critical functional elements exist.

F3 **Significant deficiencies** that impair the capability to support some of the tenant organizations' required missions. Some essential/critical functional elements may be missing.

F4 **Major facility deficiencies** that present considerable obstacles to the tenant organizations' required mission.

F5 **Asset is non-funtional** and cannot be occupied.

Q1 **The condition meets or exceeds** Army standards for most or all rated components. The cost to improve is no more than 10 percent of the replacement value.

Q2 **The condition meets the minimum level** of Army standards for most or all rated components. The cost to improve will be no more than 20 percent of the replacement value.

Q3 **The condition fails to meet the minimum level** of Army standards for at least one major rated component. The cost to improve is no more than 40 percent of the replacement value.

Q4 **The condition fails to meet the minimum level** of Army standards for multiple rated components. The cost to improve exceeds 40 percent of the replacement value.

Q RATING

The quality rating, also known as the Q rating, for infrastructure measures the condition of a facility. The quality rating ranges from Q1 to Q4, with Q1 being the best and Q4 the worst. The Q rating is calculated by dividing the cost to improve a facility to a Q1 level with the plant replacement value of that same facility.

The ISR program does not look the same in each State. It is up to the ISR manager to develop his or her own specific program, taking a centralized or a decentralized approach. A centralized approach means that the ISR manager is the focal point, and he or she does the majority of the inspections. A decentralized approach means parsing out the inspections to various individuals across the State, who then complete the inspections and send the data back to the ISR manager. Even in small States, there are hundreds of facilities that must be rated every year. In total, the ARNG has about 50,000 facilities in ISR that require a rating. "Rather than rating each facility every year, we've come up with several business rules that mean we now rate facilities every year, every two years, or every three years, depending on the type and age of facility. That has cut down on the annual ratings, and now only about 25,000 ratings occur every year," Mr. Pankaj said. For example, a facility with a F1/Q1 rating only has to be rated every three years. However, if that facility is a dining facility or living quarters, it has to be rated every year.

The ARNG recently completed an ambitious study of its Readiness Centers, titled the Readiness Center Transformation Master Plan (RCTMP). Over the course of three years, the ARNG 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 ARNG's overall mission. The RCTMP team conducted its own inspections, but for the areas where it could not do its own inspections the team relied on ISR data. Whereas RCTMP was a one-time study, ISR's data collection is an ongoing process.

The cost to improve all facilities

A major output from the ISR Infrastructure data is the "Cost-to-Improve-to-Q2" amount. The Army would like every facility to be at a Q2 standard. To calculate how much it would cost to bring a facility to a Q2 standard there are algorithms that take in to account the facility type, square footage, current rating, and market costs for construction materials and labor. As the ARNG's data accuracy has improved, so has the organization's ability to validate its requirements. "Our cost-to-improve all our Readiness Centers was $1.1 billion in fiscal year 2014. With our ISR data, we are able to tell the decision-makers at the Pentagon with great accuracy how much funding we would need to get our Readiness Centers to the Army-wide standard. I think our senior leaders have great confidence in our data now that we've instituted the reporting changes and we have historical trends that match the conclusions from the data. With our declining budget, we have fewer and fewer MILCON projects that we're able to fund, so the competition for States to receive a new project is quite tough. Typically, only facilities that are Q3 or Q4 are even considered for replacement. The ISR rating plays a critical role in helping to prioritize MILCON projects as well as Sustainment, Restoration, and Modernization (SRM) projects," Mr. Pankaj concluded. ●●●

A major output from the ISR Infrastructure data is the "Cost-to-Improve-to-Q2" amount, in which the cost for bringing a facility to a Q2 standard is calculated using a set of algorithms.

A Conduit for **Communication**

ADVISORY COUNCILS, SUCH AS THE FACILITIES ENGINEERING ADVISORY COUNCIL, FACILITATE THE COMMUNICATION **BETWEEN THE ARMY NATIONAL GUARD INSTALLATIONS DIVISION AND ITS MEMBER STATES**

THE FACILITY ENGINEERS ADVISORY COUNCIL
The attendees of FEAC's August 2015 meeting gather for a group photo. From left to right: Region VII representative LTC David Giesler; Region IV representative COL Steven Hines; Co-Chair and ARNG-ILI Division Chief LTC Erik Gordon; Region II representative LTC Fred Cost; Executive Assistant COL (R) Donovan Lajoie; Co-Chair COL Scott Ayers; LTC Daniel Shank; Region VI representative LTC Farin Schwartz; Region I representative COL David Mikolaities; and LTC Robert Utlaut.

Made 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 geographical location and climate, force size, and State finances. However, what unifies them is a common mission: to defend the Nation at home and abroad, serving both as a homeland defense force that provides support at the local and State level, and as an operational force that, when needed, rapidly and competently expands the operational capacity of the U.S. Army.

To communicate with its diverse group of members, the ARNG Installations Division (ARNG-ILI) relies on advisory councils such as the Facilities Engineering Advisory Council (FEAC) to get its message across. Conversely, the States and Territories also rely on the FEAC to be their unified voice in communicating their issues and concerns to the ARNG-ILI.

The FEAC's Chair, COL Scott Ayres, describes the FEAC is a conduit through which Construction Facilities Management Officers (CFMOs) and their staff can work on issues with the ARNG-ILI, as well as a conduit through which the ARNG-ILI Division Chief can communicate with the States and Territories. The communication is constant. "I don't think a week goes by without either me or one of our region representatives getting a call or an email about an issue from a CFMO. There's a great deal going on within each CFMO office and many of the questions concern specific positions and how they should be used to match and achieve Army requirements. Energy management is a current issue of concern. If a subject repeatedly raises questions, the FEAC will work with the appropriate ARNG-ILI branch to better address the issue," COL Ayres said.

There are four FEAC committees and four subcommittees, and each committee aligns with a branch within the ARNG-ILI. The Design, Project and Contract Management Committee works with the ARNG-ILI's Resource Management and Construction Branches on updating design criteria for authorizations and "right-sizing" facility requirements. The Resource Management, Planning and Programming Committee aligns with the ARNG-ILI's Resource Management and Facilities Management Branches and works on Base Operating Fund issues and the streamlining of various Unspecified Minor Military Construction

"Our near-term issues are the enduring lack of Base Operating Funds, our shrinking travel funds, and the impact the reduction of the ARNG's overall force strength will have on the CFMO offices as we balance our requirements against the funds available."

COL Scott Ayres, Chair of the FEAC

COL Scott Ayres

(UMMC) and Sustainment, Restoration and Modernization (SRM) requirements. The Education and Training Committee manages, supports, and produces a menu of CFMO education courses together with the ARNG-ILI's Strategic Plans and Education Branch. The Facilities Management Committee (which aligns with ARNG-ILI's Facilities Management Branch), the Information Technology and Systems Integration Committee (which aligns with the Real Estate and Resource Management Branches), the Strategy, Policy, Regulations and Program Initiatives Committee (which aligns with the Strategic Plans and Education Branch), and the Manpower Committee (which aligns with ARNG-ILI's Deputy Director) are still under development. FEAC also has several working groups and advisory councils on topics such as energy, real property master planning, PRIDE (which is the ARNG-ILI's real estate tracking and project management system), and the Installations Status Report (which is the reporting system the ARNG-ILI uses to assess the conditions of its facilities). Asked to describe some issues the FEAC has worked on COL Ayres said, "The FEAC spent a good deal of time this past year on the changes in Federal funding and its consequences. While our Military Construction (MILCON) funding continues on a downward trend, we continued to work."

The ARNG recently completed a study on the state of its Readiness Centers to assess each Readiness Center's adequacy in terms of location and size, role in training, and in ARNG's overall mission. The project, known as the Readiness Center Transformation Master Plan (RCTMP), took three years and engaged all CFMO offices around the country, as well as all active working committees, such as the FEAC. "Last year, 2014, was the year of the RCTMP for many CFMO offices. It was also the focus of a considerable FEAC effort. The FEAC conducted dozens of teleconferences and participated in several coordination meetings at the National Guard Bureau (NGB). The result was a better product for submittal to Congress and a viable plan for distribution of the additional MILCON and SRM funds that the plan recommends," COL Ayres said.

The education of CFMOs and their support staff is vital to the ARNG-ILI's success. In the past, the FEAC has worked closely with the ARNG-ILI to develop courses for ARNG-ILI's education program. That program is now going through a transformation in response to recent budget cuts. Asked what the education program will look like going forward COL Ayres responded, "The education program's distance-learning aspect will continue to grow as we adapt to the new normal. The program was forced to transform due to budget cuts, but there has also been a transformation in education techniques, with more distant learning possibilities now available. However, there's no substitute for the networking that a physical classroom environment creates. The CFMO program needs to continue its onsite training. Meeting, talking, and getting to know your peers are vital parts of helping each other avoid pitfalls and finding the best solutions to our unique CFMO issues. The 2015 Program Guidance Course was halved as the result of our reduced travel budget. Ideally, we'll hold all courses in 2016 and allow CFMO offices to send personnel as their funding allows. If funding continues to be problematic in 2016 and we need to cut it again to a single week we'll flip the course availability, holding the courses missed in 2016 and waiting until 2017 to hold the courses held in 2015."

Asked what he felt are the FEAC's—and the ARNG's—most important issues in the near-term COL Ayres answered, "Our near-term issues are the enduring lack of Base Operating Funds, our shrinking travel funds, and the impact the reduction of the ARNG's overall force strength will have on the CFMO offices as we balance our requirements against the funds available. The FEAC will continue to work on these important issues. In a longer-term perspective, we're all adjusting to the new normal of a smaller amount of MILCON for all. We've lost the ability for States to ask for MILCON projects via the Congressional Add program, but we are optimistic that the RCTMP report will result in future funding. Our inability to travel directly impacts the FEAC's committees' and subcommittees' abilities to meet and address issues. Despite that, the FEAC will continue to be the ready conduit for CFMOs, and our committees will continue to meet—telephonically if not in person—to discuss our various issues. We still have the same work to do; we just need to be able to do it differently." ●●●

Synergies in **Facilities Programs**

THROUGH THE RECENTLY-ESTABLISHED SENIOR ENGINEER STEERING GROUP THE SENIOR ENGINEERS OF THE FOUR SERVICES' RESERVE COMPONENTS **EXPLORE SYNERGIES BETWEEN THEIR FACILITIES PROGRAMS AND EXCHANGE IDEAS ON BEST PRACTICES AND LESSONS LEARNED**

The six Reserve Components of the three Services vary greatly in size. The Army National Guard (ARNG) and the Army Reserve are the largest with an end-strength of 350,200 and 205,000, respectively, and the Marine Corps Reserve the smallest with 40,000 Reserve Marines. The different Reserve Components' facilities programs are also vastly different in size. Whereas the ARNG has close to 2,400 Readiness Centers and Armed Forces Reserve Centers, the Marine Corps Reserve has 42 facilities and the Air Force Reserve has only around 20 facilities. Despite differences in size and in mission, there are many commonalities between the different Services' Reserve Component facilities programs. By exploring the synergies between the programs the Reserve Components might be able to avoid pitfalls and improve their business practices.

The idea occurred to COL Patrick Briley, who is the Director of the Army Reserve's Installation Management Directorate, to create a forum for senior representatives from the four Services' Reserve Components where these representatives could share information on installations issues. Together with COL (Ret.) Kimberly O'Keefe, who was the ARNG Installations Division Chief at the time, COL Briley took the initiative to start a working group, which in time would be named the Senior Engineer Steering Group (SESG). "Our goals were to meet our counterparts, gain an understanding of their programs, and establish not only a network for sharing information, but also a framework to coordinate initiatives. I believe it exceeded

our expectations as it grew into a recurring forum with traction between us and support from the Office of the Secretary of Defense, Reserve Affairs (OSD RA)," COL (Ret.) O'Keefe explained. The group is made up of the senior engineer from each of the four Services' Reserve Components, in other words the Army Reserve, the Army National Guard, the Air Force Reserve, the Air National Guard, the Navy Reserve and the Marine Corps Reserve. The group has invited the Coast Guard Reserve to participate as well. "Even though the Coast Guard Reserve is not technically part of the Department of Defense, it is part of the Department of Defense in times of war. We think it'd be appropriate if the Coast Guard Reserve participated," COL Briley said.

FORT BELVOIR, VIRGINIA

The Senior Engineer Steering Group was formally established in early 2014, and the Army Reserve hosted the group's first meeting at Fort Belvoir, Virginia in February 2014. The attendees were Col. Roy Augustin, Mr. Greg S. Wagner, Mr. William Albro, Mr. Stephen Jameson, COL Patrick Briley, Col. Bart Pester and COL Kimberly O'Keefe (from left to right).

The group was formally established in early 2014, and the Army Reserve hosted the group's first meeting at Fort Belvoir, Virginia in February 2014. The group met for the second time at the National Guard Bureau headquarters in Arlington, Virginia in August 2014. In February 2015 the group met again, this time at the United States Marine Corps Reserve's facility in New Orleans, Louisiana. The group's fourth meeting took place in September 2015 at Joint Base Andrews, Maryland. The day-long meetings usually start with an update from each of the regional engineers, and then move on to that meeting's theme. The theme at the most recent meeting was "Space Utilization," a topic that is at the top of each senior engineer's mind in times of drastically reduced Military Construction (MILCON) budgets. Col. Denise Boyer of the US Air Force attended her first meeting in August 2014, in her role as the Deputy Director, Construction in the Office of the Assistant Secretary of Defense, Reserve Affairs (OASD RA). "I would like to give credit to COL Briley and COL (Ret.) O'Keefe for recognizing the need to get all of the senior engineers or representatives responsible for the Reserve Component facilities programs together to discuss common problems. On the agenda for the first meeting I attended was an update on energy initiatives and efficiencies, a discussion of top MILCON projects that did not make the Future Years Defense Program (FYDP), maintenance issues, underutilized facilities, and the future of Base Realignment and Closure (BRAC). There was early recognition by members of this group that they had a lot in common, despite the fact that they wore different uniforms and reported to different Services," said Col. Boyer. When asked what her goals were for the cooperation when she agreed to participate in the SESG, Col. Boyer responded, "One of my early goals was to formalize this cooperation so that it could be maintained and strengthened even after the current members rotate out of their positions and are replaced by new members." At the August 2014 meeting, the group agreed to formalize the relationship by writing the group into policy.

ANDREWS AIR FORCE BASE, MARYLAND

The Senior Engineer Steering Group met for a fourth time at Joint Base Andrews, Maryland in September 2015 to continue and deepen the group members' cooperation. The attendees of the September meeting were Col. Michael McDonald, Col. Gary Schneider, COL Patrick Briley, LTC Erik Gordon, Lt. Col. Brandon Shearer, and CAPT Peter Lynch.

The different Services and Components cooperate on a range of projects and at different levels, but these regular, senior-level installations meetings are new. When asked what kind of cross-component cooperation existed before the establishment of the SESG, COL Briley answered, "This cooperation is completely new. The only forum that we had to discuss anything prior to this was at the Joint Service Reserve Component Facility Board meetings, which are held in each State. However, we never had all Services or Components present at one of those meetings. When we did have most of the Components gathered the attendees were mainly at captain level. The important difference of the SESG is that it brings together the senior representative or the senior engineer from each Service and Reserve Component." Asked to describe the peer mentoring environment in the group, COL (Ret.) O'Keefe said, "The Reserve Component Chief forum was made up of professional colleagues who I now also consider to be trusted friends. We rolled up our sleeves, worked together with transparency, and celebrated the progress as a team. I'd also like to give credit to the great support we received from the OSD RA office, from Mr. Steve Jameson, Col. Elizabeth Sydow and Col. Denise Boyer. They kept us updated on emerging policy issues and were part of our team."

The open line of communication that the SESG provides has helped the senior representatives in their daily work. "Open communication fosters teamwork and collaboration," COL (Ret.) O'Keefe said. "For us it also increased the awareness of which of the other Services' installations initiatives were successful. We are striving to meet aggressive, and in some cases challenging, Presidential energy goals. It was helpful to see how the other Services were doing on their "scorecards" and to see if we could emulate their breakthroughs. Having that

network was invaluable—being able to pick up the phone and call a counterpart if you needed assistance was a huge help. The SESG network saves time and time is money. The Reserve Components have proven to be an invaluable foundation of our country in terms of citizen support and protection. They work well with each other, with State and Federal entities, and with non-governmental organizations. Partnering is second nature to the Reserve Components and our country benefits from their ability to leverage their strengths," she said. COL Briley agreed with COL (Ret.) O'Keefe. "Because we know each other now and we have developed a relationship with each other we can lean on each other for ideas, such as innovations, best business practices, and lessons learned. Why should the ARNG make the same mistake that the Army Reserve did? If I share with them the problems that I've encountered they can avoid the same pitfalls. When one of us succeeds we all succeed," COL Briley said. Asked how similar the installation divisions of the different Services and Reserve Components are, and if what works for one Component is necessarily applicable to another, COL Briley responded, "I believe that they are all vastly different, but one focus of the SESG is to look at ways to become more like each other. By sharing our lessons learned and best business practices we can figure out the best ways to do things. We are learning from each other and at the end of the day the taxpayer is going to be the winner."

ARLINGTON, VIRGINIA
The attendees of the Senior Engineer Steering Group's second meeting gathered for a group photo at the National Guard Bureau headquarters in Arlington, Virginia in August 2014. From left to right: Col. Gary Schneider, COL Paul McDonald, COL Kimberly O'Keefe, LTC Dale Oldham, Col. Bart Pester, Col. Denise Boyer, COL Patrick Briley and Mr. William Albro.

As the group prepares for its fifth meeting it continues to improve the lines of communication. The theme from the third meeting, Space Utilization, was repeated at the fourth meeting, and expanded to include Joint Construction. "Joint construction is an area of focus. The reason for that is that we will probably have another BRAC in the next few years. The last BRAC, in 2005, was voluntary for the ARNG's member States and many States did not participate at all. This next BRAC will enable us to consolidate several of our facilities into large Reserve Component facilities and save a lot of money on sustainment costs alone," COL Briley said. At the February 2015 meeting each Service or Component made a presentation of facilities currently in their portfolio that are either vacant of has less than full occupancy. The presentations also indicated which facilities are anticipated to be vacant in the future. By co-locating their operations in an underused facility owned by another Service, a Service or Component can avoid costly new construction, while the facility owner receives a rental income for the unused space. "For example, at our February meeting I shared information on approximately 40 different facilities with room for another Component and/or Service. That's just the Army Reserve. The ARNG had space in some of its Readiness Centers or Armories. The Navy Reserve and the Marine Corp Reserve had a few spaces. If we can close one of our small facilities and move into an ARNG Readiness Center it will save taxpayers' dollars as we don't have to maintain a facility that is not needed. The

"We can all benefit from greater understanding and synchronization on issues."

COL (Ret.) Kimberly O'Keefe, former
Division Chief, ARNG Installations

winner here is the taxpayer, obviously," COL Briley said. When asked how the Service Components would advertise unused or underused space in the past, COL Briley said, "The Department of Defense has a disposal program. When a Service Component has a piece of property or a facility it no longer needs the facility goes through the disposal process. At that point the other Services and Components within the Department of Defense can claim that space. If nobody within the Department Of Defense needs it the property or facility goes back to the government. If no government office wants it the property or facility is passed to the State. If there is still no taker the property or facility is auctioned off. What is different about the SESG's exchange of unused or underused space is that we share this information before it comes up for disposal. I'm offering space to my colleagues in the other Services and Components. It's really a good thing we're doing." The facilities in the Department of Defense's disposal program are facilities the Service Components no longer needs. However, a scenario where a Service Component has space in a facility it is currently using

and can offer to a tenant is much more common. It is that space that the SESG wants to see utilized. “The biggest result of our cooperation is improving our facility utilization. The Department Of Defense recently came out with a directive called “Reduce the Footprint” which will force us to do what we’re already doing on a volunteer basis a little quicker,” COL Briley said.

As previously mentioned, the MILCON program is underfunded. With little funds for new construction, space utilization becomes even more important. “The Budget Control Act, also known as the sequestration cuts, means that the Department of Defense and all the Services face a difficult fiscal environment,” Col. Boyer said. “As a result, the Active Components are reducing end-strength manning. At the same time, they are transforming to new mission sets. Many of the Services are “taking risk in infrastructure,” which translates to smaller budgets for MILCON and facilities in general. The Reserve Components are dealing with similar challenges. They find themselves taking care of aging infrastructure with less money, and in many cases fewer people, with increased regulatory oversight, while missions are rapidly changing around them. Mr. William Albro, a SESG member and Associate Director of the NGB/A7, is fond of the Winston Churchill quote, “Gentlemen, we have run out of money; now we have to think.” That quote accurately describes where we are now. To deal with the many challenges at hand, the members of the SESG need the open lines of communication provided by their new group. They also need to compare notes, share bright ideas and best practices, and pool resources when possible. While Congress has long required the Reserve Components to examine their MILCON projects for the feasibility of joint construction, the SESG members recognize there are many other ways they can cooperate to share resources and reduce costs,” Col. Boyer continued.

> “I really feel as if we are just starting, and that this group has so much potential.”
>
> Col. Denise Boyer, Deputy Director, Construction, OASD RA

Now that the group has been formed, and formalized, COL Briley has three main goals for the SESG. “One is to get a mapping program established or approved. Right now, there’s one for the Army, one for the Marine Corps, one for the Navy, and one for the Air Force. There’s a lot of duplicity in geo-spectral management currently. I think a geo-spectral program that includes all the Services is in the works and the SESG supports that effort. The second goal is more joint construction. The third and final goal of the SESG is a BRAC collaboration. We’re really good at collaboration within our own Service. The ARNG and the Army Reserve collaborate regularly. We’d like to extend our collaboration to include the Marine Corps Reserve, the Navy Reserve and the Air National Guard,” COL Briley said. COL (Ret.) O’Keefe said she would like to see the cooperation expanded beyond the Reserve Components and into the Active Components’ Installations communities. “We can all benefit from greater understanding and synchronization on issues,” she said. “I also feel there is potential for the Active Components to increase their recognition of the unique aspects of the Reserve Components, and thus improve effectiveness of policies. Issues such as “Host-Tenant” and DoDI 4000.19, which encourages cross-Component and cross-Service cooperation, make communication even more key. BRAC is another example where the Services can maximize opportunities to more efficiently match footprint against mission requirements, using minimal investment. We are all facing the challenges created by reduced funding. Partnering wherever possible is a very real benefit,” COL (Ret.) O’Keefe said. About to attend her third meeting, Col. Boyer feels the group has the possibility to accomplish a lot together. “There are several things that were discussed at that first meeting that will take years to fully realize,” she said. “This SESG is made up of visionary leaders, but they are also very busy people with a lot of difficult challenges on their plate. I would like to see some working groups established at the next meeting, to continue the good work started by the SESG so that key issues make more progress between the group’s meetings. I really feel as if we are just starting, and that this group has so much potential.” ●●●

NEW ORLEANS, LOUISIANA

The Senior Engineer Steering Group met for a third time at the United States Marine Corps Reserve’s facility in New Orleans, Louisiana in February 2015. The attendees were Mr. Ed Maguire, Mr. William Albro, LTC Stan Wiechnik, LTC Troy Fontenot (top row), CAPT Peter Lynch, COL Patrick Briley, Col. Bart Pester, Col. Gary Schneider (bottom row).

Sustainability Expectations **and Field Contributions**

AN INNOVATIVE SPIRIT, LEADERSHIP SUPPORT, AND COLLABORATION BETWEEN STATES
HELP THE ARMY NATIONAL GUARD MEET ITS SUSTAINABILITY GOALS

Like many other organizations, the Army National Guard (ARNG) has had to reevaluate the way it consumes natural resources. Over the last decade, the organization has completed a range of projects to both reduce its consumption of resources, and to change what it consumes. By changing the culture of the organization and the habits of its personnel, the ARNG has managed to reduce its consumption of electricity and water, and by moving from fossil fuels to renewable energy sources the organization has managed to reduce its dependence on finite natural resources and increase its energy security.

Some of the changes has been voluntary, as part of a growing concern for the constraints of the world's resources and as a way to cut costs, and some have been mandated from above. The Policy on Sustainability and Energy, issued by the Assistant Secretary of the Army (Installations, Energy & Environment), places high expectations on the ARNG. To ensure the ARNG G4's adherence to the sustainability requirements, the Chief of the ARNG G4 at the time, BG Michael Bouchard, created a Sustainability Team (ARNG-ILG) in the spring of 2014. The Sustainability Team works closely with the ARNG's Installations Division (ARNG-ILI) and Environmental Division (ARNG-ILE). Whereas ARNG-ILE has more broad responsibilities, handling issues such as hazardous waste, water pollution, and air pollution, the Sustainability Team solely works on sustainability issues for facilities. BG Bouchard appointed LTC Anita Vinson-Britman as the Chief of the Sustainability Team. She moved to a new position in June 2015 and was succeeded by LTC Christopher Tatian.

LTC Vinson-Britman's first task as the ARNG-ILG Chief was to decipher the policies on Sustainability and Energy and create a system for tracking the ARNG's progress in meeting the goals stated in the policies. Her team created a scorecard, which is an adaptation of the Office of Management and Budget (OMB) Sustainability Scorecard used by the highest tier agencies to report their sustainability performance to the President. The policies that drive the metrics for the ARNG Sustainability Scorecard are EO 13423, EISA 2007, FY2014 DoD Strategic Sustainability Performance Plan, EPAct 2005; Presidential Memorandum (Dec 2013), NDAA 2010, EO 13514, AR-420-1, and Army Sustainable Design and Development Policy Update (Dec 2013). "The goals of these policies are to decrease future mission constraints, increase operational flexibility and resilience, safeguard human health and the environment, and improve the quality of life for our Soldiers and local communities," LTC Tatian explained.

Over time, LTC Vinson-Britman's team grew. "When I started, there were two people on the team. Now there are six people. Four contract team members support two military officers in relaying federal requirements and requests to the 54 ARNG organizations. Their roles include providing technical guidance on policy implementation, tracking and monitoring sustainability metrics and data quality, analyzing data and compiling reports for military and federal leadership, sharing ARNG sustainability best practices both inside and outside the organization, and improving overall awareness of ARNG sustainability issues. My team has divided up the Nation into four regions, so that our customers—the Construction Facilities Management Offices in each State—can have consistencies in communicating with the same contractor. Communication is very important, and so is collaboration. We hold monthly Net Zero collaboration calls as an opportunity for energy managers from different components to share their experiences and best practices. Typically at least 30 people participate in those calls," LTC Vinson-Britman said.

Another area where the Sustainability Team is helping the States is in locating grants and partnerships that may help the States realize their projects. "We have a list of partners that we're trying to develop partnerships with—most are through the Department of Energy, and some through the Office of the Assistant Secretary of the Army. We're also trying to expand our partnerships with the Corps of Engineers and other military components, such as the Army Reserves and the Air Guard," LTC Vinson-Britman said.

FIELD CONTRIBUTIONS

OPPOSITE PAGE: From the top: A 10kW wind turbine generates energy at one of the Arizona ARNG's installations; Solar panels help power the Texas ARNG's facilities at Fort Hood; In the summer of 2013 the Northwest National Marine Renewable Energy Center deployed a test buoy to measure wave energy in Oregon's coastal waters. The tests showed that Oregon is an optimal site for wave energy. The Oregon ARNG is now implementing a wave energy converter pilot project at Camp Rilea.

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 (ASA IE&E), 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 rate of zero consumption of resources in the areas of energy, water, and waste at all installations by the year 2020.

Since the initiative's announcement, the ARNG has actively pursued Net Zero projects. LTC Vinson-Britman said the areas where the ARNG are the closest to meeting its goals are water and waste. "We have greatly improved our waste diversion and water reduction. It's easier to invest in technologies to reduce energy usage, than it is to invest in technologies to reduce water usage. However, it is more difficult to get to Net Zero for energy," she said. "Renewable energy projects are the hardest to do, because they require a lot of space. Those projects are almost always limited to training installations. We are improving, but we have not achieved the goal for any of the energy areas—energy reduction or renewable energy. The installations that have come close to the Net Zero goal of producing as much energy as they consume are usually lucky enough to sit on a natural resource, such as a gas deposit. We do have some installations that are Net Zero for water. It seems that most of the facilities that are Net Zero for water have ground water wells that allow them to supply their own water. We still have a ways to go to achieve our goals."

Turning winds and waves into usable energy and air into potable water

The ARNG's goal of meeting and surpassing the Army's sustainability requirements would not be possible without the dedication and hard work of the ARNG personnel in the field. Across the country, ARNG offices are exploring new technologies to meet their requirements for reduction and reuse. A first in the ARNG, the Michigan ARNG (MIARNG) is developing three wind funnel systems at Camp Grayling and Fort Custer. Each wind funnel has three generators and each system has a production capacity of up to 250 kilowatt (kW). Traditional wind energy systems require strong winds, but the funnels can reach full capacity with wind speeds of only six meters per second.

Another area that contains tremendous energy potential is ocean waves. The surface motion of ocean waves and the pressure fluctuations below the surface both produce energy that can be converted into usable electricity. Whereas solar and wind systems are dependent upon the weather, ocean wave energy is continuous and predictable. In Oregon, the Oregon ARNG (ORARNG) is implementing a wave energy converter (WEC) pilot project at Camp Rilea. Oregon was chosen in 2003 as the most promising location in the Nation for wave energy because of a unique blend of abundant wave energy resource, coastal grid infrastructure, coastal population centers, and industry and academic expertise.

Between 2011 and 2012, an energy feasibility study funded by National Guard Bureau was conducted at Camp Rilea. The study concluded that wave energy made sense in Oregon, and that it should be implemented first at Camp Rilea, given the mission requirements of energy security, energy independence, disaster resilience, and Net Zero Energy goals. In September 2014, the first WEC was deployed off the coast of Camp Rilea. The successful launch and recovery of the small pilot device, known as APEX, was important in demonstrating the world's first open ocean test of a WEC of this type, and in validating that the technology can be used in full-scale versions. In 2015, the Oregon Military Department signed a Memorandum of Understanding to cooperate on wave energy development and test center procedures with the Oregon State University, the Department of Energy-funded Northwest National Marine Renewable Energy Center, and the Pacific Marine Energy Test Center (PMEC). Camp Rilea's shallow and mid-depth test sites will complement the PMEC's deep test site.

The ORARNG's Construction Facilities Management Officer (CFMO) LTC Kenneth Safe said the successful WEC project could be applied to Army and Navy coastal facilities around the world. In addition, WECs could help remote villages and islands around the world where high electricity costs inhibit community development. Rapidly deployable WECs could also be used for production of electrical power and desalinized water as part of humanitarian missions to provide disaster relief.

An abundance of water creates opportunities in one location, and a shortage of water spurs innovation in another location. In response to critical water shortages at Camp Swift, Texas the Texas Military Forces (TXMF) is exploring the possibility to develop Atmospheric Water Generation (AWG) technology projects on the site. Currently in use in Spain, Qatar, Panama, and other countries around the world, AWG technology is based on the principle of dehumidifying air to produce high quality water with low mineralization that meets hygienic conditions. The technology produces water in climates with temperatures ranging from 41 to 131 degrees Fahrenheit with relative humidity limits of 20 to 99 percent. A mobile AQUAIR (AQ) 5000 unit, which costs around $300,000 to purchase, produces up to 2,220 gallons a day. A stationary AQ 250 unit costs approximately $15,000 and produces up to 69 gallons a day.

Camp Swift's water shortage is a result of a current system that can't meet the installation's water usage and prohibitive costs to transport and store potable water onsite. After phase one of the AWG pilot project, which is led by Trinity University in San Antonio, has been completed, and one or more AQ 5000 units have gone through further testing, the first course of action will be to integrate the AWG technology into existing facilities at Camp Swift at a cost estimated between $280,000 and

$425,000. TXMF Grants Manager Joey Estrada, who heads the AWG technology and pilot project, said that if the implementation at Camp Swift is successful, the second course of action would be to incorporate the use of mobile AWG technology into TXMF's missions for homeland security and domestic response.

Creating autonomy through micro grids

Conserving precious resources is one part of the Army's sustainability policy. The other, equally important, part is to maximize energy security. Energy security comes from a dependable and uninterrupted supply of energy. Such a supply can be created through the development of renewable energy sources. Supply is one part of the equation; distribution is another. If an installation is dependent on the public grid to power its mission-critical facilities it is still not energy secure. Across the country, the ARNG is creating autonomy from the public grid through micro grids.

In October 2012, New Jersey, along with most of the Eastern seaboard, was hit by Super Storm Sandy. The New Jersey ARNG's (NJARNG) Sea Girt Training Center, which is crucial to several missions, suffered prolonged power outages, forcing the site to be out of service for over a week. In early 2015, a feasibility study was completed on the development of a micro grid at Sea Girt. Energy security has long been a top priority for ARNG, and a micro grid gives a site autonomy from the commercial grid and allows operations to continue in times of disaster.

The feasibility study stated three goals for the development of a micro grid at Sea Girt. First, to provide the NJARNG with improved resiliency and energy security to allow NJARNG to execute its mission under adverse conditions, such as a prolonged power outage. Second, to develop a template for micro grids at ARNG facilities across the country, and third, to move the NJARNG towards Net Zero energy consumption. The study concluded that the implementation of a micro grid at Sea Girt requires a series of related, but independently installed, projects. The NJARNG's energy team, led by Energy Manager Christopher Moore and Chief of Planning and Programming CW5 Thomas Comyack, is now pursuing funding partnerships to implement the six projects recommended by the study. The projects have a total estimated capital cost of $8.5 million and a total projected annual savings of $95,000. Once completed, the Sea Girt micro grid could serve as a resource and model for ARNG sites across the country to plan and deploy micro grid projects.

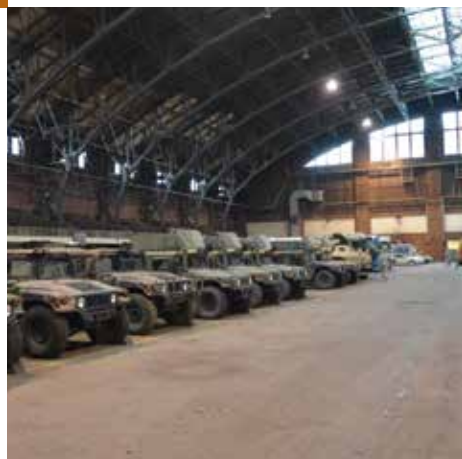
Similar to New Jersey, the Minnesota National Guard (MNNG) is planning to develop a micro grid on Camp Ripley Training Center (CRTC) in central Minnesota that would allow the installation to operate autonomously from the public grid. The CRTC is a 53,000-acre training site with over 400 active and transient buildings that can house up to 3,600 personnel in all seasons, and up to 8,200 personnel in the spring, summer and fall seasons. The CRTC is also home to the Minnesota Homeland Security and Emergency Management's Emergency Management Training Center building, and could be used as a continuity of government location away from the State capitol of Saint Paul.

The CRTC conducted a micro grid assessment in 2014. The study recommended that the 30-year old electrical infrastructure be repaired and replaced as a first step. That work is now underway as a sustainment project. The study also recommended that a 4 megawatt (MW) distributed generator (DG) be installed to cover the current peak demand of 3.4 MW. Finally, the study called for the installation of Supervisory Controls and Data Acquisition (SCADA) to allow islanding, the incorporation of solar photovoltaic panels, and the reduction of demand through load sequencing. Islanding refers to the condition in which a DG continues to power a location even though electrical grid power from the electric utility is no longer present. The MNNG, under the lead of the Minnesota ARNG's CFMO COL Larry Herke and Deputy CFMO LTC Sol Sukut, submitted an Energy Conservation Investment Program (ECIP) packet in 2015, which included a request for the funding of the 4 MW DG. The MNNG and the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory (ERDC-CERL) are partnering for a micro grid design and construction grant that would potentially fund the design and SCADA. The partnership would also serve as a test-bed for the creation of a Department of Defense standard operating procedure for micro grid development.

> Experience, collaboration, and partnerships will help the ARNG meet its sustainability goals.

In addition, the MNNG and the local utility company Minnesota Power (MNP) have signed a Memorandum of Understanding to build a 10 MW solar array on CRTC by the end of 2016. The array will feed MNP's grid, but be available for the MNNG to use in a grid outage. The MNNG will receive 1.5 gigawatt hours (GWh) per year of Renewable Energy Credits as part of the 35 year lease agreement, making CRTC nearly Net Zero for electricity. Together, the new infrastructure, SCADA, and the interruption rate option with onsite generation has the potential to reduce CRTC's monthly electric bill by almost 15 percent, or approximately $10,000 per month.

The bar is high, but meeting the goals of the Policy on Sustainability and Energy is not impossible. "The States are very innovative, especially if they have the leadership's support," LTC Vinson-Britman said. That innovative spirit, paired with the guidance of experts at Headquarters, the collaboration between the States, and partnerships with public and private entities, will inch the ARNG closer to its sustainability goals, one project at a time. ●●●



Guarding **the Legacy**

ACROSS THE COUNTRY, THE ARMY NATIONAL GUARD HAS MANY HISTORIC FACILITIES STILL IN OPERATION. IN NO STATE IS THE DENSITY OF HISTORIC STRUCTURES GREATER THAN IN NEW YORK STATE. **THERE, AS IN OTHER STATES, THE ARMY NATIONAL GUARD FACES THE CHALLENGE OF MODERNIZING AGING FACILITIES TO MEET THE NEEDS OF A MODERN FORCE**

Founded in 1636 as a citizen force organized to protect families and towns from hostile attacks, the National Guard is the oldest military component in the United States. The Army National Guard's (ARNG) facilities reflect that legacy. Across the country, the organization has many historic facilities still in operation, some over a hundred years old. In no State is the density of historic structures greater than in New York State. There, as in other States, the ARNG faces the challenge of modernizing these aging facilities to meet the needs of a modern force.

"Our historic armories are extremely valuable to us," said Mr. Frank Wicks, Director, Facilities Management & Engineering at the New York Army National Guard (NYARNG). The NYARNG has 18 historic facilities. Of those 18 facilities, 12 are listed in the National Registry of Historic Places and two are designated as National Landmarks. "We have a strong desire to keep the rich history of the National Guard alive. One of the ways to do this is to keep our historic facilities, while ensuring that they meet today's mission requirements. This comes at a cost," he said. The challenges are two-pronged. First and foremost, the facilities must be modernized to meet the ARNG's current mission, which is very different than it was when these facilities were built a century ago. Secondly, the modernized facilities must meet the strict sustainability guidelines set forth by Presidential executive orders and the Army's own sustainability policy.

Meeting sustainability requirements, historic preservation guidelines, and work safety concerns

Modernizing a historic facility is not easy. Oftentimes, the buildings have not been maintained, because funds were needed elsewhere. Often, there are environmental hazards, such as asbestos and lead. On top of that, there are guidelines for what can, and cannot, be done to a historic building. LTC Scott Cleaveland is the Construction and Facilities Management Officer (CFMO) for the NYARNG. Asked about the process for modernizing a historic Armory, LTC Cleaveland said, "First, we focus on envelope issues. By envelope I mean all the openings in a building, such as the roof and the windows. These historic buildings were built really, really well. The façade issues that we're facing now are largely the effect of environmental factors. As these buildings get older, we're seeing a lot of failing masonry, a lot of failing stone. The masonry restoration can become very expensive, because the facilities have been left for so long to the elements. Many of these older buildings were built with stone and brick. If mortar falls out of a brick building it introduces water into the building envelope. It's this perpetual problem when you don't care for these older buildings. They're very forgiving, but at some point, they're going to have problems that are going to be extremely expensive."

"With declining Sustainment, Restoration and Modernization (SRM) budgets, we're constantly caught in a life-cycle issue," LTC Cleaveland continued. "When I look at our capital investment strategy, I know that for the next couple of years we're going to be dealing with nothing but envelope issues. We have over 5 million square feet of real property in New York State. We finish one roof, and then we have the roofs of 44 other buildings. By the time we get to that last, we're coming around again. It seems like we never can come out of this life-cycle circle. After the roofs there are window issues. Windows are extremely expensive. To replace the

THE ECHOES OF TIME

OPPOSITE PAGE: Clockwise from top, left: Exterior view of the Connecticut Street Armory in Buffalo, New York, which was built in 1900. (Photo courtesy of David Schalliol); Soldiers of the 1st Battalion, 69th Infantry lead the St. Patrick's Day parade, which ends at New York City's Lexington Armory. (Photo by Pfc. J.P. Lawrence, U.S. Army); Vehicles line up at the Masten Avenue Armory in Buffalo, New York, built in 1933, following a snow storm. (Photo by Senior Master Sgt. Raymond Lloyd, 107th Airlift Wing); and exterior view of the Ogdensburg Armory in Ogdensburg, New York.

windows at the Lexington Avenue Armory in New York City was almost $5 million. There are over 300 windows in that building."

Once the envelope has been modernized, attention can be turned towards the inside of the facility. "Then comes removing the older heating systems and installing modern systems. We've done that in many of our facilities, and we've installed some very modern condensing boilers. However, the heating systems are not the only challenge. We still have a lot of work to do in regards to the infrastructure of the buildings. The piping for plumbing and heating has not been touched since the buildings were built. There comes our next challenge," LTC Cleaveland said. He said the one thing that it's cheaper to maintain in older buildings than in newer buildings is the cooling systems. Most of the older Armories are not air-conditioned. "If one of the window units breaks, you just repair or replace that one unit, and not the whole system," he said. The window units may be cheaper, but they also lead to poor air quality. "Indoor air quality is a concern," LTC Cleaveland acknowledged. "For most of our historic Armories we haven't been able to take that next step with modern cooling systems. Light safety systems and Americans with Disabilities Act (ADA) accessibility are two other challenges in our older buildings." Many of the historic facilities long lacked fire alarms, but now fire alarms—but not sprinkler systems—have been installed in all of the historic Armories.

There are strict limitations to what can be done to the façade of a historic building. Inside the building there is a little bit more leeway. The NYARNG works closely with New York's State Historic Preservation Office (SHPO) and The New York Landmarks Conservancy, which is a private New York City-based preservation organization to ensure compliance with preservation guidelines. "Our environmental section has a very good relationship with both SHPO and Landmarks. They're involved early in the planning and design process. The things that we can do to the outside of buildings are limited, but they're always reasonable. They want to preserve the historic appearances of those buildings. Inside, they often have more to say about one space than another. You think, 'Oh, they would really want to be involved with this classroom.' Instead, they want to be involved in the commander's office that has a fireplace in it. They're really interested in preserving spaces with a unique historical perspective," LTC Cleaveland said. Sometimes the cooperation goes beyond consulting throughout the modernization process. When the NYARNG could no longer afford to maintain its Armory on Park Avenue in New York City, the organization turned over a large portion of the Armory to the Landmarks Conservancy. The conservancy has been restoring the rooms, designed by Louis C. Tiffany and other notable designers and artists of the same time period, back to their original grandeur.

The ARNG is required by law to reduce its energy intensity. Executive Order 13423 requires all Federal agencies to reduce their energy intensity by three percent each year over a ten-year period—from 2005 to 2015—ending with a 30 percent decrease in intensity by the end of fiscal year 2015, compared to a fiscal year 2003 baseline. For historic structures with aging systems and envelope issues this is a challenge, but according to Mr. Wicks it's not impossible to meet these goals. "There are significant challenges when it comes to retrofitting a historic facility to meet current energy goals, but none are unsurmountable. We have found that we are able to meet the energy goals, but they do come at a cost. These buildings are built well and with a proper retrofit they can become 'modern'," Mr. Wicks said.

Meeting today's mission

From a mission-centric viewpoint, there are other concerns. "We face unique challenges in our historic facilities," Mr. Wicks said. "From a mission-centric viewpoint, the initial concern is location. Many of these facilities are located in metropolitan areas. In my opinion, this is the biggest challenge, as it usually means that the facilities don't have the land to support today's requirements. The lack of land makes it hard to park vehicles and store equipment onsite. We have to carefully evaluate the ability to provide a mission-capable facility with the constraints we have due to the location and costs." LTC Cleaveland agreed, "We're not the Active Army. We don't have thousands of acres available and can't just pick another site. We're located where our population centers are, where our recruiting base is. We are where we are."

NEW YORK CITY

The Seventh Regiment Armory, also known as Park Avenue Armory, fills an entire city block on New York's Upper East Side. The building was designed by Charles Clinton and dedicated in 1880. Louis Comfort Tiffany designed two rooms in the Armory—the library and the Veterans Room. The latter features hand-carved wood paneling and coffered ceiling and is considered the building's masterpiece. (Photos courtesy of Julia Rubinic)

When the now-historic Armories were built they were placed in the middle of the communities that they served, often functioning as community centers, hosting weddings and other community events. For years, these facilities have faced the issue of encroachment, and more recently, the concerns of terrorism. A few years ago, the Department of Defense tightened its Anti-Terrorism Force Protection (ATFP) standards, requiring all Components to create a buffer between military facilities and the public. "When the ATFP standard was developed, they did not have the ARNG and our older facilities in mind. We cannot meet the stand-off distance," LTC Cleaveland said. This concern is not unique to historic Armories—the majority of the ARNG's Readiness Centers do not meet the Department of Defense's ATFP requirements.

HORNELL

Hornell Armory in Hornell, New York was built in 1894. It was designed by Isaac G. Perry, who also designed the state capitol and 26 other Armories. The three-story main structure features a four-story round corner tower and two additional two-story corner towers. The Armory was listed on the National Register of Historic Places in 1980.

"Another big challenge is the way these historic Armories were built. For example, at our Armory in Peekskill we still have a stable area and a huge drill hall. That was great for horses, but our mission no longer calls for these spaces. Keeping the grandeur of our historic facilities intact, while meeting our current mission is a significant challenge," Mr. Wicks said. LTC Cleaveland elaborated, "I don't think people take into context what the ARNG was like in the 1800s. All of these buildings were basically cavalry buildings. Horses were actually housed at the Armory. These large assembly areas were the riding rinks. These facilities don't lend themselves to what our Soldiers do now." With limited funds for new construction and with a desire to preserve its legacy, the NYARNG has found ways to work with what it has. "In our Armory in Utica, which was built in 1930 for a cavalry unit, we put an addition inside the drill shed, which is the very large assembly space where the riding range was once located. Here we took a very modern approach to create a modern training space for our Soldiers in a 1930s building originally designed for horses," LTC Cleaveland said. "We'd like to continue to maintain the historical perspective, while providing modern training opportunities. Many of our Soldiers' families have lived in these areas for many, many years. There's a lot of pride in these facilities. Capturing that historical perspective, while meeting our training requirements, is good not just for the ARNG, but for the Army in general," he said.

Storage and locker rooms are two other areas where space generally is tight in the older facilities. The facilities were not built to accommodate both female and male Soldiers. "These buildings were built for all-male populations," LTC Cleaveland said. "We have had to make provisions for locker rooms and latrine spaces." In some instances, the NYARNG has solved the storage problems by using caging for supplies. "In some cases it's worked great. It's inexpensive and inspection is easy as you walk by," LTC Cleaveland said. Many of the historic Armories were built for one unit, and are now used by two or more units. That means the needs for arms vaults and supply rooms have doubled, and sometimes tripled, since each units must have its own vault and supply rooms. What makes it even more difficult is that the historic structures often can't support the sheer weight of modern equipment. "We can't put these supplies in the basement areas because of their weight. The vaults and supply rooms need to be new construction," LTC Cleaveland said.

LTC Cleaveland sees training as the biggest challenge for modernizing a historic building from a mission-centric perspective. Training, in turn, is essential to maintain readiness. Inadequate, dilapidated facilities can impair training. They can also impact retention. "Training is part and parcel to readiness. We don't have modern classrooms. We don't have modern dining facilities and kitchens. We don't have storage facilities and locker rooms. Those are some real challenges. Soldiers come out of basic training at modern facilities and are stationed at these aging facilities. They don't necessarily look at the heritage of the building. They see a dilapidated locker room. They see old, tired classrooms. Where we have modernized these historic facilities, it's amazing. Where we haven't had those dollars to support a modernization or restoration, the conditions can be a distractor. A Soldier may decide to go to another component with modern facilities," LTC Cleaveland said. The NYARNG's end-strength is about 10,000 Soldiers. So far, the organization has been able to keep up its recruitment numbers. "I would say overall we're very close to 100 percent of our recruiting goal," LTC Cleaveland said.

Despite the challenges posed by location, configuration, and facility conditions, the NYARNG is finding new ways to meet its requirements, while preserving a piece of the ARNG's legacy. ●●●

A Big State Makes a **Big Impact**

A DECADE OF SUCCESSFUL PROJECTS TO ACCOMMODATE THE ARMY NATIONAL GUARD'S ONLY STRYKER BRIGADE AND THE COMPLETION OF THE STATE'S LARGEST CONSTRUCTION PROJECT TO-DATE **WINS THE PENNSYLVANIA ARMY NATIONAL GUARD THE 2014 FRED ARON AWARD**

Taking the scores from nine different areas, such as Military Construction (MILCON) Program execution and financial management, into account the Army National Guard Installations Division (ARNG-ILI) presents the best-performing ARNG facilities program in the Nation with the Fred Aron Award for Excellence in Facilities Programs at an annual award ceremony. In 2014 that award went to Pennsylvania Army National Guard (PAARNG). *Foundations of Readiness* had a chance to speak with the PAARNG's Construction Facilities Management Officer (CFMO), LTC Christopher McDevitt, on one of his visits to the National Guard Bureau Headquarters in Virginia.

The Fred Aron Award for Excellence in Facilities Programs is presented to the best-performing facilities program in the Nation. In 2014, that recognition went to the PAARNG. However, Pennsylvania's scores have not always looked so good. How did you manage to improve your program from a functioning, but average, program, to a program that outperformed the competition in the other 49 States, three Territories, and the District of Columbia?

LTC McDevitt: The PAARNG's Facilities Program matured dramatically during the Stryker program; prior to that it would be fair to say that the program was average. Strykers are the most technically-advanced, armored combat vehicles on the planet and the PAARNG has the only Stryker brigade in the ARNG inventory—the 56th Stryker Brigade Combat Team. The PAARNG was selected for this program over a decade ago because of its personnel strength and the readiness of its units. With this program came funds to upgrade facilities to meet the specific requirements of the Stryker program. It ended up being the largest investment in the PAARNG's facilities since World War II. The CFMO at the time, COL John Buffington, did a tremendous job managing the program during this surge in construction. So the PAARNG already had a strong program when I was assigned as the CFMO. I would compare the facilities program to a typical NFL season; you have 54 programs full of the very best professionals the field has to offer, but it's the combination of a few exceptional performers and a few lucky bounces that propels one program above the others. I provided the vision—a clearly defined end-state—and then I empowered my folks to accomplish the mission. It's their initiatives and professionalism that won the day. I am very fortunate to be surrounded by a fantastic group of professionals, several of whom are superstars. Their efforts, and a few lucky bounces, made Pennsylvania number one in 2014.

Pennsylvania has the country's largest Army National Guard, in terms of members. Can you tell us about the challenges of running a facilities program for such a large force?

LTC McDevitt: Pennsylvania, along with California and Texas, is considered one of the "big three" in the ARNG in terms of number of Soldiers. I believe Pennsylvania's base operations budget is second only to California's. The State facilities programs are mainly funded in two ways: we get funds for construction and for base operations. The latter is the pot that pays salaries and utilities. Historically that account has been underfunded and we are constantly looking at ways to reduce our expenditures. In fiscal year 2014 we were able to reduce our operations expenditures by $2 million, down from $16 million the previous year to $14 million in 2014. The single biggest source of these savings was the conversion of Fort Indiantown Gap's heating systems from oil to natural gas. The conversion was a four-year effort that was largely complete just in time for the series of Polar Vortexes in the winter of 2013-2014.

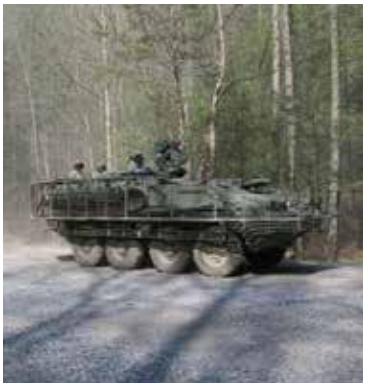
You recently completed a couple of large MILCON projects. Can you tell us about those projects?

LTC McDevitt: The Honesdale and Coatesville Readiness Centers were completed early in 2014, but more importantly we were able to award the Eastern Army Aviation Training Site's (EAATS) Aviation Maintenance & Training Facility in September 2014. Although programmed as a fiscal year 2015 project,

the project, which is the single largest MILCON project in the PAARNG's history, was pushed to fiscal year 2014 as we made the award with just days to spare in September 2014. If we hadn't awarded the project, we certainly would not have received the Fred Aron Award, and the MILCON program as a whole would have failed to meet the national goal of at least 90 percent execution in the first year of appropriation.

The ARNG recently completed the ambitious Readiness Center Transformation Master Plan (RCTMP), an assessment of each ARNG facility's adequacy in terms of location and size, role in training, and in ARNG's overall mission. What were the RCTMP's major findings and recommendations for Pennsylvania?

LTC McDevitt: The findings in Pennsylvania largely reflected the national trends. Perhaps what is somewhat unique to Pennsylvania is that we began the implementation of a number of plan's recommendations long before the RCTMP was formulated. Through the 2005 round of Base Realignment and Closure (BRAC) and through the Stryker program, Pennsylvania was



LEFT: LTC McDevitt (far right) is joined by representatives from other award-winning States at the Fred Aron Award Ceremony. RIGHT: The Stryker Program provided the largest investment in PAARNG facilities since World War II.

able to consolidate its Readiness Centers and bring the number of facilities down from 104 facilities in 1995 to 86 in 2013.

The completed RCTMP provided the ARNG with a 15-year build-out plan. Did the RCTMP recommend divesting any facilities in Pennsylvania?

LTC McDevitt: Jacobs, the international engineering firm, executed the RCTMP in Pennsylvania. The findings directed the divestiture of 11 sites. From a starting point of 86 Readiness Centers in 75 locations when the Pennsylvania study was completed in 2013, the study recommended that PAARNG reduce its facility-count to 74 Readiness Centers in 68 locations.

Did the plan include any MILCON projects for Pennsylvania?

LTC McDevitt: We are short a full third of our authorized space. The RCTMP directs 51 MILCON projects in Pennsylvania, as well as a $147 million investment in Sustainment, Restoration and Modernization (SRM) lifecycle upgrades to provide facilities that are capable of supporting our critical homeland response missions and training units for war.

How would you asses the current state of your facilities? Are there any major capability gaps or training distracters?

LTC McDevitt: As I mentioned, Pennsylvania has executed a great deal of consolidation over the past two decades. However, without BRAC and Stryker, Pennsylvania would not have added any new Readiness Centers in the past 15 years. This has created a situation of "haves" and "have-nots" in Pennsylvania. While the average age of Pennsylvania's Readiness Centers is slightly below the national average the numbers are a bit skewed. Fifty-one of our Readiness Centers are in need of renovations—some in more dire need than others—and while we have been very successful in capturing and executing federal funds, the Commonwealth of Pennsylvania has made a significant investment in our Readiness Centers. A number of recent renovation projects have been exclusively State-funded.

After the 2014 Fred Aron Award was announced, several States approached the ARNG-ILI to ask how they could improve their scores. What advice would you give your colleagues who are trying to improve their processes to create a successful—and award-winning—facilities program?

LTC McDevitt: Success is the result of finding and developing talented employees. Find yourself the best Resource Manager you can find in the ARNG—or the second-best, since we have the best one in Pennsylvania. The greatest investment you can make in your program is an investment in your people. ARNG-ILI does an outstanding job of providing training, and the exchange of information and ideas through the Facilities Engineering Advisory Council (FEAC) is phenomenal. My hat's off to my 53 counterparts across the Nation: you all do an outstanding job in a very difficult mission. Remember, if the facilities program was easy...they'd call it tactics. ●●●

PENNSYLVANIA

THE NEW WAYNESBURG READINESS CENTER REPLACES AN ARMORY BUILT IN 1914

Opened in August 2010, the 38,000-square foot Waynesburg Readiness Center replaced the 12,513-square foot Waynesburg Armory that was built in 1914. The new facility, located on 18 acres, houses 140 Soldiers from Company B of the 1-110th Infantry Battalion. This one-story masonry structure was designed to achieve Leadership in Energy and Environmental Design (LEED) Silver certification. Security components include anti-terrorist high face curbs, boulder walls, military spec fencing, and a K4 swing gate designed to stop vehicles. The interior layout includes administrative offices, an assembly hall, classrooms, a physical fitness room, locker rooms, and a full-service kitchen. A secure storage area includes a military class weapons vault. The assembly hall contains translucent panels to maximize natural lighting. Lastly, there are large maintenance bays for servicing all assigned military vehicles.

OLD AND NEW
TOP PHOTO: The new Waynesburg Readiness Center. BOTTOM PHOTO: The previous facility was built in 1914.

ILLINOIS

THE ILLINOIS ARMY NATIONAL GUARD LOCATES A NEW READINESS CENTER ON THE CAMPUS OF THE HEARTLAND COMMUNITY COLLEGE

The new home of the Illinois Army National Guard's 404th Maneuver Enhancement Brigade, numbering approximately 200 Soldiers, is a Readiness Center located at Heartland Community College in Normal, Illinois. Opened in December 2014, construction of the 59,000-square foot facility designed to Leadership in Energy and Environmental Design (LEED) standards was completed at the cost of $19.7 million. The Readiness Center project was managed by the Illinois Capital Development Board (CDB) using a single prime contract method of construction. Of the total cost, $11.4 million was funded by the U.S. Department of Defense and the rest was funded through the CDB. The main facility is a 57,000-square foot building containing administrative space, assembly areas, unit storage, a kitchen, and seven classrooms. A separate 2,000-square foot detached slab-on-grade building houses a maintenance work bay and storage space. Also included in the construction was military and privately-owned vehicle parking, fencing, sidewalks, outdoor lighting, utility extensions, access road, and landscaping.

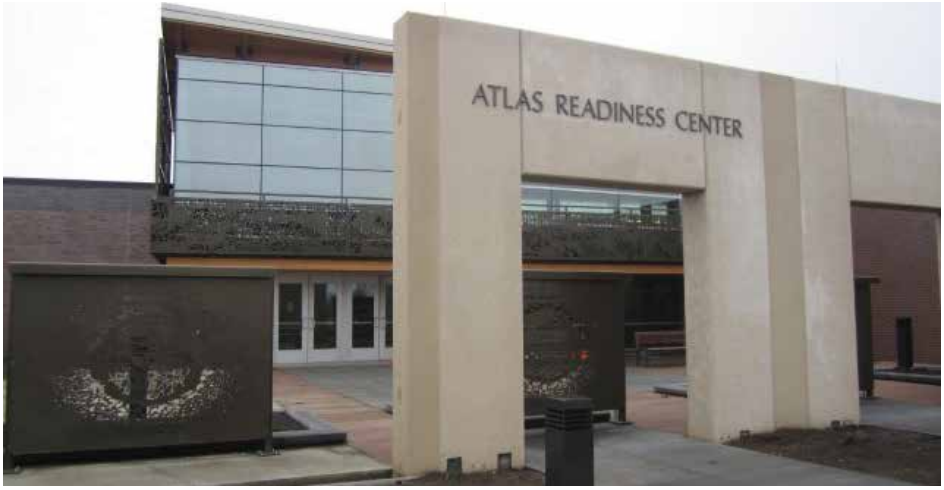
NEBRASKA

A NEW READINESS CENTER AT THE MEAD TRAINING SITE OFFERS STATE-OF-THE-ART TRAINING FOR NEBRASKA ARMY NATIONAL GUARD SOLDIERS AND VISITING GUARD UNITS

The Atlas Readiness Center, which opened with a dedication ceremony in July 2013, is located at the Mead Training Site and offers state-of-the-art training for members of the Nebraska Army National Guard. The $10.8 million, nearly 48,000-square foot facility will be home to 150 Soldiers from the 402nd Military Police Battalion, 40 Soldiers from Detachment 2, 165th Quartermaster, and a Detachment of the 189th Truck Company. In addition, it will be host to other Guard units that utilize the training site. Located on 1,194 acres, this facility provides training spaces that include classrooms, an assembly hall, combat simulator spaces, and unit equipment storage areas. Administrative offices, conference rooms, work areas, kitchen, dining room, fitness center, locker rooms, and general storage are also included. Designed to achieve Leadership in Energy and Environmental Design (LEED) Silver designation, the Atlas Readiness Center replaces the Seward Armory built in 1956. The old Armory will be renovated to become the new Nebraska National Guard State Museum.

STATE-OF-THE-ART TRAINING IN NEBRASKA

ABOVE: The Atlas Readiness Center in Mead, Nebraska, which opened in 2014, also serves visiting Guard units. INSET: The facility replaced the Seward Armory in Seward, Nebraska, which was built in 1956.



INTERIOR VIEWS

LEFT AND ABOVE: The Atlas Readiness Center provides training spaces, an assembly hall, combat simulator spaces, and unit equipment storage areas, as well as a fitness center and locker rooms.

CONNECTICUT

THE NEW READINESS CENTER AT WINDSOR LOCKS CONSOLIDATES THREE ARMY AVIATION UNITS

The Connecticut Army National Guard opened the new Readiness Center in Windsor Locks in November 2013. The Leadership in Energy and Environmental Design (LEED) Silver certificate facility is 120,000 square feet and cost $34 million to build. The building includes office and administrative space, conference and training space, an assembly hall, a medical clinic, a learning center, mobility and unit equipment storage, a full-service kitchen, a fitness center, a weapons training simulator, lockers, and shower facilities. It also includes a 9,345-square foot storage building and a 300-square foot entry control facility. Lighting in the center can be controlled based on the natural light from outside, allowing the center to use significantly less energy for lighting during daylight hours. The two-story center consolidates three Army aviation units previously dispersed throughout the State. All facilities are within the Connecticut Army National Guard cantonment area at Bradley International Airport and support over 350 Soldiers.

ENERGY SAVINGS THROUGH THE USE OF NATURAL LIGHT

The new Readiness Center at Windsor Locks features a lighting system that bases the inside light level on the natural light from the outside. This allows the facility to use significantly less energy for lighting during daylight hours. The lighting system is just one of many solutions that have earned the Windsor Locks facility a LEED Silver certificate.

KENTUCKY

THE KENTUCKY ARMY NATIONAL GUARD DEDICATES FLAGSHIP READINESS CENTER CLOSE TO THE OWENSBORO-DAVIESS COUNTY REGIONAL AIRPORT

On May 30, 2012, Governor Steve Beshear joined MG Edward W. Tonini, Kentucky's Adjutant General, along with State legislators and local officials in dedicating the new Kentucky Army National Guard Readiness Center in Owensboro, Kentucky. Built on 20 acres adjacent to the Owensboro-Daviess County Regional Airport, the $14 million facility is the Kentucky Guard's flagship Readiness Center in the region. It has more than 35,000 square feet of administrative offices, classrooms, drill halls, and storage and will function as the home for two Kentucky Army National Guard units—Headquarters Support Company and Forward Support Company, both of which are with the 206th Engineer Battalion. The Readiness Center is designed to train Soldiers of the missions of the Commonwealth and the Nation. The facility offers a staging area to receive and/or deploy Soldiers, and expands the maintenance capability and support of military equipment assigned to western Kentucky. The Readiness Center will also serve as the Regional Emergency Operations Center, and offer Homeland Security support in multiple arenas. The facility features an energy-efficient design with shaded windows and efficient heating/cooling systems. The Kentucky Army National Guard's future plans include installing solar panels on the facility to reduce energy costs.

OHIO

THE OHIO ARMY NATIONAL GUARD PARTNERS WITH STATE ORGANIZATIONS TO BUILD FACILITIES THAT BENEFIT THE ENTIRE COMMUNITY

The Ohio National Guard, in conjunction with the city of Delaware and the Delaware Community Center YMCA, conducted a ribbon-cutting ceremony of a Readiness Center on April 20, 2015. The Readiness Center, which is connected to the existing Delaware Community Center YMCA, replaced current facilities that are more than 50 years old. The facility will provide the necessary administrative, training, and storage areas that its new residents require in order to conduct operations and training. The facility includes a drill floor, gymnasium, locker rooms, library and learning center, kitchen, dining facilities, vehicle work bays, and a large outdoor secure motor-pool area that will accommodate approximately 250 Ohio Army National Guard personnel. The combined Training and Community Center (TACC) is part of an ongoing Ohio National Guard public-private partnership initiative that shares the costs of developing facilities that can benefit the entire community. The cost of the new facility was $11.4 million; the federal share was more than $8.5 million and the State of Ohio's share was nearly $2.9 million.

HAWAII

BY CENTERING ALL ADMINISTRATIVE AND LOGISTICAL SUPPORT AT ONE FACILITY READINESS IS ENHANCED

The Hawaii Army National Guard dedicated its new $31 million 29th Infantry Brigade Combat Team (IBCT) Readiness Center in Kalaeloa on August 2, 2014. The Brigade Readiness Center is a 55,000-square foot building that is comprised of an auditorium, assembly hall, kitchen, administrative spaces, storage vaults, locker rooms, IT room and classrooms. Co-locating all administrative and logistical support under one roof has tremendously enhanced the brigade's readiness to respond to future overseas or domestics operations. The Brigade Readiness Center was designed and built in accordance with Leadership in Energy and Environmental Design (LEED), a green building certification program which recognizes best-in-class building strategies and practices. LEED establishes uniform standards for new buildings that focus on environmentally-friendly design, construction, and operation. The Brigade Readiness Center has been designated as LEED Silver Certification.

WEST VIRGINIA

THE WEST VIRGINIA ARMY NATIONAL GUARD'S AND THE UNITED STATES ARMY RESERVE'S JOINT FACILITY IN JACKSON COUNTY ALSO SERVES THE PUBLIC

The Jackson County Armed Forces Reserve Center opened in late 2011, at the cost of $21 million. The facility houses both the West Virginia Army National Guard (WVARNG) and the United States Army Reserve (USAR). The primary user of the 75,000-square foot facility will be DET 1 821st Engineering Company, which will be supported by a FSC of the 1092nd. The facility has an expanded drill hall that can serve as a convention and meeting place. The area also includes 350 acres of undeveloped property where the Army Guard plans to hold training exercises. The layout of the facility includes a main entry with the WVARNG's and USAR's recruiting, family support, and administrative areas located on separate sides. A traverse wing houses all functions that have the potential for public use, such as the drill hall and the educational component. This allows for separate entries for public functions, while the remainder of the facility can be secure.

JOINING FORCES

The 75,000-square foot Jackson County Armed Forces Reserve Center (pictured above and below right) features an expanded drill hall (below left).

NEVADA

THE NEW NORTH LAS VEGAS READINESS CENTER SOLVE OVERCROWDING AT THE PREVIOUS FACILITY

Serving the Nevada Army National Guard, the North Las Vegas Readiness Center is a new 68,000-square foot training facility that is intended to solve overcrowding of the previous, neighboring Readiness Center. Opened in May 2013, the total cost of the Readiness Center was $25 million, which included $17 million from the federal Military Construction (MILCON) program and $8 million from a Nevada legislative appropriation. The North Las Vegas Readiness Center will be home to six units, including the 240th Engineer Company, the 100th Quartermaster Company, the 1864th Transportation Company, the 277th Engineer Haul Platoon, the 777th Engineer Concrete Team, and the 1-421st Regional Training Institute's southern detachment. The main Readiness Center building provides an auditorium, assembly hall, administrative, training, storage, classroom and support space, locker rooms and security vault, as well as sufficient military and civilian vehicle parking. Energy efficiency, force protection, shading and natural day-lighting were key aspects in the design of the facility. Over 300 traditional Guardsmen/women will call the new facility home on drill weekends.

GEORGIA

NEW EXTERIOR LED LIGHTING AT CLAY NATIONAL GUARD CENTER WILL REDUCE ENERGY CONSUMPTION BY 300,000 KILOWATT-HOURS PER YEAR

The Georgia Army National Guard (GAARNG) completed a major undertaking in March 2015 by replacing older-technology outdoor roadway, site, parking and security lighting at Clay National Guard Center (CNGC) with LED (light-emitting diode) lighting. The project represents an opportunity, through use of energy dollars, to upgrade the lighting levels for CNGC, and reduce energy consumption.

While outdoor lighting currently exists along roadways and at designated parking and building locations, additional lighting which meets Illuminating Engineering Society of North America (IESNA) outdoor lighting level standards was much needed at Clay.

Thirty-four new, approximately 30-foot long, aluminum light poles outfitted with the LED fixtures were installed as part of this project. The new poles were located at strategic points along Atlantic and Halsey Avenues, larger parking lots around Clay that are in need of higher light levels at night, and associated buildings. From a safety lighting standpoint, new site lighting, such as building wall packs and overhead security lighting, were also replaced with LEDs. Other LED fixtures were installed on existing utility poles around Clay in cooperation with the utility service provider.

It is anticipated that this project will reduce energy consumption at CNGC by approximately 300,000 kilowatt-hours (kWh) of electricity per year, representing a total energy savings of approximately $690,000 over the life of the project, and will pay for itself in 14.5 years. Modern-day LED lighting technologies are manufactured to last 20-30 years and beyond; therefore, once the project recoups expenditures, it could continue harnessing additional savings for the GAARNG well beyond the cost of construction.

LED technology allows for more watts per lumens than existing high intensity discharge (HID) types of lighting (high pressure sodium, metal halide, etc.), thereby providing more illumination while consuming much less electricity. LED lights also require much less maintenance due to the fact that lamps do not 'burn down' like HID lighting. Partnered with this avoidance of routine maintenance (both in labor costs and lamp/fixture replacement costs), the savings are twofold.

The lighting project at Clay National Guard Center will provide a safer, brighter, more contemporary complex for the GAARNG's Soldiers and visitors.

SAFETY, IN ADDITION TO SAVINGS

The new exterior LED lighting at Clay National Guard Center, pictured above, will not only reduce the GAARNG's energy consumption, but also provide a safer and brighter environment for the GAARNG's Soldiers and visitors.

ARMY NATIONAL GUARD INSTALLATIONS DIVISION

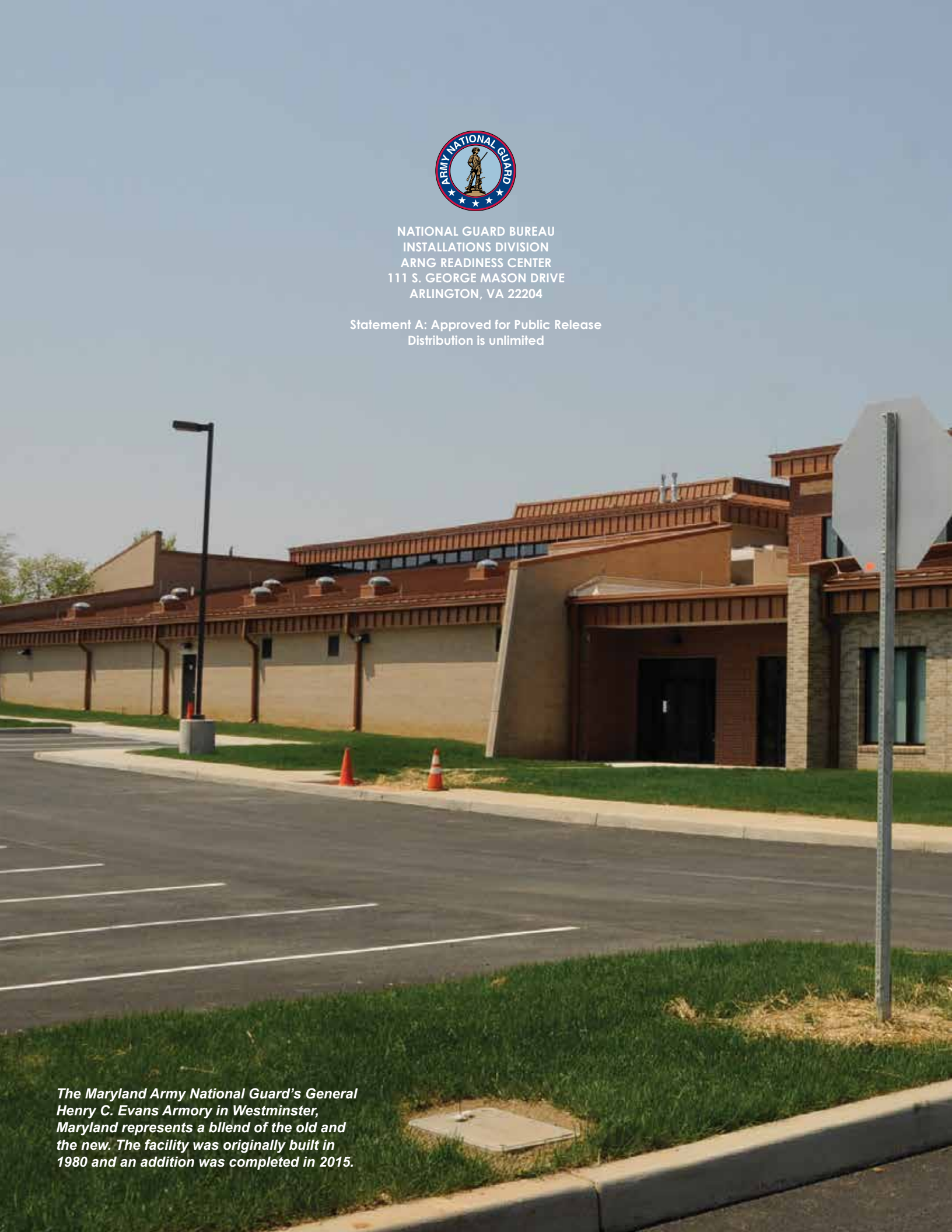
FROM LEFT: Branch Chief of Construction (ARNG-ILI-C) LTC Daymone Simmons; Branch Chief of Facility (ARNG-ILI-F) MAJ Selina Herndon; Deputy Chief (ARNG-ILI) Mr. Hallet Brazelton; Branch Chief of Real Estate (ARNG-ILI-E) Mr. Raymond Barnard; Chief (ARNG-ILI) LTC Erik Gordon; Branch Chief of Strategic Plans and Education (ARNG-ILI-S) LTC Douglas White; and Branch Chief of Resource Management (ARNG-ILI-R) LTC Thomas McQue.

ARNG INSTALLATIONS

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

The Army National Guard (ARNG) maintains facilities in 2,579 communities in 50 States, three Territories, and the District of Columbia. There are 3,047 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 2,386 Readiness Centers/Armed Forces Reserve Centers, 2,078 Training Buildings, 734 Ground Vehicle Maintenance Buildings, 293 Aviation Support Buildings, 4,462 Warehouse Storage Buildings, 2,803 Barracks, and 487 Dining Buildings. The ARNG buildings total more than 172 million square feet. The total plant replacement value of the ARNG facilities is $46.2 billion.

NATIONAL GUARD BUREAU
INSTALLATIONS DIVISION
ARNG READINESS CENTER
111 S. GEORGE MASON DRIVE
ARLINGTON, VA 22204



The Maryland Army National Guard's General Henry C. Evans Armory in Westminster, Maryland represents a blend of the old and the new. The facility was originally built in 1980 and an addition was completed in 2015.