



FROM THE DEPUTY ASSISTANT SECRETARY OF THE ARMY (ENERGY AND SUSTAINABILITY)

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Enhancing Readiness

By J. E. "Jack" Surash, P.E.

Acting Deputy Assistant Secretary
of the Army for Energy and
Sustainability

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prepared for the threats of
tomorrow, while caring for our
Soldiers, Family Members, and
Army Civilians.

The Army's top priorities are
Readiness, Modernization, and
Reform.

Energy and water resilience
enables Army readiness.

Installations are the backbone of
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They are also the Army's power
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In order for our installations to
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resilient.

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Enabling Soldiers

The Army recognizes that a
reliable supply of energy for
operational mission capabilities
will be challenged at every
opportunity, across multiple
domains.

Therefore, the Army is working to
use energy more effectively and to
increase the energy efficiency
across its platforms, devices, and
equipment required to train, move,
and sustain forces.

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comprise as much of 80 percent of
tonnage in logistics convoys. This
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deployed Soldiers.

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Congressional Engagements

The Army meets with congress
frequently to provide updates on
energy resilience initiatives. We
engage with Congressional
members, staffs, professional
staff members, military
legislative assistants, and energy
committee members to promote
for Army energy resilience
initiatives.

These engagements give the
Army the opportunity to garner
support for energy resilience
initiatives, as well as discuss the
importance of installation energy
and water resilience and its
impact on Army Readiness.

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- Maine National Guard CHP - Four Years Later
- New Technology at Fort Myer Highlights Army Resilience Opportunities
- Summer Months Offer Engagement Opportunities

Enhancing Readiness: Modernizing the Army's Energy Posture

The Army must be ready and be prepared for the threats of tomorrow, while caring for our Soldiers, Family Members, and Army Civilians.

The Army's top priorities are Readiness, Modernization, and Reform.

Energy and water resilience enables Army readiness.

Installations are the backbone of our Force, and are where our Soldiers, Civilians and contractors work. They are also the Army's power projection platforms where our Soldiers train and prepare for combat. In order for our installations to succeed, they must be energy resilient.

Energy and water resilience enables the Army to anticipate, prepare for, and adapt to changing conditions and to withstand, respond to, and recover rapidly from disruptions in the availability of energy, land, and water resources.

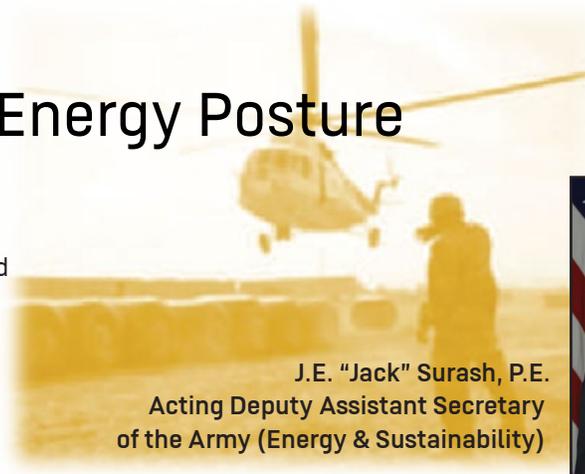
A key component of preparedness and energy and water resilience is maintaining and modernizing Army installations while safeguarding them from potential energy disruptions.

The Army's Energy and Sustainability program continues to help modernize the Army's energy posture by promoting the concept of "islandable" capabilities on our installations and working toward operating independent from the commercial electrical grid — this will help enhance the performance of combat equipment through improved operational energy.

By refocusing Army resources to increase installations' ability to withstand energy disruptions caused by natural, physical, and cyber attacks; our strategy is increasing Army readiness and modernizing critical infrastructure on installations through third-party financing and teaming with industry.

Recently, the Army assessed installation resilience in the event of an electrical failure by intentionally "unplugging" from the power grid in controlled Energy Resilience Readiness Exercises (EERs), held across four installations (Forts Stewart, Greely, Knox, and Bragg). We applaud these installations for their voluntary participation in these exercises.

In 2009, Fort Knox was without power for 10 days due to ice storms. Since then, the installation worked with their local utility provider to increase energy resilience. During their recent Energy Resilience Readiness Exercise, Fort Knox continued to operate when its microgrid started a series of diesel and natural gas-powered generators to power the installation. Fort Knox continues to work towards its goal of meeting 100 percent of the installation's energy needs with onsite natural gas.



J.E. "Jack" Surash, P.E.
Acting Deputy Assistant Secretary
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Other installations experienced challenges when critical systems either failed to start or failed within an hour of operations. Although these exercises left room for improvement, these exercises are instrumental for future energy resilience planning by providing scenario-based evidence to determine deficiencies.

Such exercises not only highlight gaps, but shape conversations between energy managers, garrison commanders, and Army leadership. While many installations perform tabletop exercises, until exercised, critical failures — or lack thereof — are only speculated.

On the Operational Energy side, our Soldiers and their related combat equipment are more energy resilient than ever before. This is essential to readiness. Soldiers and equipment that can travel further, on less fuel, and less battery life. This shortens logistical supply chains, decreases fuel consumption, and makes Soldiers and units more lethal with extended range and lift.

Secretary of the Army, Mark Esper said, "Ensuring installation energy and water resilience is a vital component to maintaining critical enablers."

The Secretary told the Senate Armed Services Committee that the Army will attain our Total Force Readiness recovery goals by 2022. The Army of 2022 will provide the best troops with the best training to ensure readiness. To do this, the Army must always be prepared for war by providing world-class training facilities, maintaining combat equipment, and ensuring the ability to command and control, through our network and systems backbone.

As we continue our pivot to resilience, help ensure Total Force Readiness, and become more energy and water resilient, we are excited to do so under the leadership of the new Assistant Secretary of the Army for Installations, Energy & Environment, Alex Beehler.

Assistant Secretary Beehler joins the Army after serving as Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health) from 2004 to 2009.

We look forward to engaging and sharing ideas with all of you at upcoming future events. For more information, please visit our website.

Army Strong!

J. E. "Jack" Surash, P.E.



Enabling Soldiers with Stronger Tools to Fight and Win

The Army recognizes that a reliable supply of energy for operational mission capabilities will be challenged at every opportunity, across multiple domains. Therefore, the Army is working to use energy more effectively and to increase the energy efficiency across its platforms, devices, and equipment required to train, move, and sustain forces. In fact, water and liquid fuel can comprise as much of 80 percent of tonnage in logistics convoys. This poses an operational risk to deployed Soldiers.

However, operational energy is not just about fuel saving initiatives.

Investments in operational energy technology must balance capability and consumption, ensuring equipment can meet the tactical demands of forward operating environments.

Combat vehicles must have the necessary horsepower for mobility, plus the electrical power needed for modern combat operations, mission command, and force protection systems.

The Army is working on a future environment where units can operate in a complex and lethal battlespace semi-independent of their sources of supply for extended periods.

Basic Research for Future Technologies

The Army is continuing to fund investments in basic research to provide new materials, techniques, and processes to modernize Army resources and equipment, enabling our Soldiers to win in ground combat against adversaries, defend the homeland, and sustain counter-terrorism operations.

You Have The Power

BE AWARE OF YOUR ENERGY USE

What was true 50 years ago is still true today. In Iraq and Afghanistan, fuel and water was 80 percent of the tonnage in an increasingly long and contested supply chain.

Reliance on frequent resupply means not just risking mission success, it also means putting personnel and equipment at risk. By increasing the efficiency of operational energy use, we can reduce the need to resupply. We can reduce risks to personnel and equipment, we can improve, and we can make sure our teams have what they need, where they need it, and when they need it to train and when necessary, to fight.

The Army has set an ambitious goal that a brigade combat team will need to sustain for seven days without resupply. Right now, resupply is required at five days.

New equipment and upgrades are going to dramatically improve fuel efficiency and lethality.

For example, the new engine in the M1 tank will be 30 percent more efficient and a new auxiliary generator will mean a 90 percent fuel savings when at idle.



View the U.S. Army's Energy video at: <https://www.youtube.com/watch?v=lpXH7bgz3NA>

A new turbine engine for the Black Hawk and Apache helicopters will enable the aircraft to fly higher, longer, and in hotter temperatures while reducing fuel consumption by up to 25 percent and maintenance costs by up to 35 percent.

The new Joint Light Tactical Vehicle (JLTV) will be another big increase in fuel efficiency, with up to a 35 percent increase in fuel economy at idle. Lighter, more powerful batteries will reduce the weight of batteries we carry into the field.

All these improvements will result in increased range and lift to ensure mission effectiveness. Other technologies like micro-grids and solar panels will help support troop energy needs more efficiently as well.



Congressional Engagements

The Army meets with congress frequently to provide update on energy initiatives. We engage with Congressional members, key staffs, professional staff members, military legislative assistants, and energy committees to advocate for Energy Resilience.

On Dec. 12, 2018, Acting Deputy Assistant Secretary of the Army (Energy & Sustainability), Mr. J. E. "Jack" Surash, P.E., testified before The House Committee on Energy and Commerce, subcommittee on Energy at the "Public Private Partnerships for Federal Energy Management" hearing. The hearing aimed to garner support for energy resilience initiatives, Energy Savings Performance Contracts, and Utility Energy Service Contracts. Additional witnesses

included representatives from the Department of Energy, the General Services Administration, and Department of Veteran Affairs. The full hearing may be viewed on the Congressional Website, [click here](#).

On March 26, 2019, the Assistant Secretary of the Army (Installations, Energy and Environment), Alex Beehler hosted a Professional Staff Member Day in the Pentagon. Attended by Professional Staff Members, the daylong event afforded ASA (IE&E), the opportunity to update Congressional guests on key drivers across the installation and operational energy portfolio, as well as discuss the importance of installation energy and water resilience and its impact on Army Readiness, a top priority.

Connect With Us

To strengthen energy stakeholder community of practice across the portfolio, the Army's Energy and Sustainability Office, in conjunction with the Assistant Chief of Staff for Installation Management and the Army's Office of Energy Initiatives is hosting scheduled webinars.

The webinars offer internal Army stakeholders an opportunity to hear about changing policies and discuss best practices.

The webinars also serve as an outreach to industry, enabling them to engage directly with Army leaders, receive updates on key initiatives and projects, and increase understanding on the Army's pivot to energy resilience.

Aberdeen Proving Ground, MD
Co-Generation Plant Ribbon Cutting
(Energy Savings Performance Contract)

Redstone Arsenal, AL
10 MW Solar Array & 2 MW-hour Battery System
(Power Purchase Agreement)

Rock Island Arsenal, IL
Modernization of Joint Manufacturing
and Technology Center
(Energy Savings Performance Contract)

Ft. Carson, CO
8.5 MW-hour Battery System
(Energy Savings Performance Contract)

Ft. Knox, KY
Energy Independence Test, Oct. 2018
(Installation Initiative)

Welcome to the Army Installation Energy Webinar

Registration details and additional information are provided in advance of specific webinars.



Maine National Guard Combined Heat and Power Four Years Later

The Maine National Guard project came online four years ago, and the Combined Heat and Power (CHP) system provides energy resilience and enhances Army readiness to directly support the warfighter

CHP, or cogeneration, is the use of an engine or power station to generate electricity and to use waste heat for heating or cooling purposes. This method is more efficient than conventional systems where the heat from generating electricity is wasted.

With the critical mission of providing medical evacuation rescue and support operations throughout Maine and New England, the Maine National Guard operates the Army Aviation Support Facility (AASF) in Bangor, Maine.

Inside the hangar, the team can recover heat and re-use it to produce hot water to heat the facility through a 75 kilowatt CHP system.

Maine National Guard CHP system demonstrates how CHP can save money, build energy resilience, and strengthen National Guard locations' infrastructure to support mission readiness.

The facility's CHP system requires approximately 32 percent less power than what conventional electricity and hot water production would use. A 40 kilowatt solar panel array further adds to energy source diversification. The combination of the systems has led to a 30 percent decrease in energy consumption and produced about 65 percent of the facility requirements.

The modern CHP has increased the AASF's energy resilience and security, as these systems can disconnect from the grid and operate independently.

According to the Maine National Guard energy manager and project manager, these systems are designed specially



The "Micro" Combined Heat and Power Project in operation at the Army Aviation Support Facility (AASF) in Bangor, Maine.

to operate without being hooked up to the commercial power lines. The system is already entirely self-sufficient during the weekends and during half of the remaining weekdays.

The Maine National Guard project aimed to determine if CHP is a viable option for any Army National Guard facilities above the 5,000 Heating Degree Day (HDD) line. This line is a reference bisecting the continental United States to quantify the average number of days buildings need heat. Just within the Army National Guard, there are 734 ground maintenance buildings and 293 aviation support facilities north of this line.

This system is well on its way to debuting in other National Guard facilities nationwide.

A job well done for Maine National Guard and a model for Army aviation and ground vehicle support facilities across the United States.

New Technology at Fort Myer Highlights Army Resilience Opportunities

Recently, installation energy managers and public works professionals tuned into the Strategic Environmental Research and Development Program and the Environmental Security Technology Certification Program webinar on Joint Base Myer – Henderson Hall's new technology to hear firsthand of its successes.

Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) recently held a webinar to educate and highlight Joint Base Myer – Henderson Hall's (JBM-HH) Conservation Voltage Reduction (CVR) and microCVR program. CVR and microCVR together is a new system to manage voltage and reduce peak loads. The two technologies had never before been tested together in the United States.

CVR is an automated system-level voltage reduction technology that optimizes voltage to continuously reduce energy consumption. MicroCVR builds off the same electrical principles and effectively performs this same function at the building-level but improving performance by using high-speed voltage regulation and appliance level monitoring.

Dr. Cyrus Jabbari, from the Directorate of Public Works at JBM-HH, explained, "This was a great success. There was a 3.7 percent energy savings overall with no effect on the mission..." The system took advantage of smart meters the U.S. Army Corps of Engineers had previously installed on the base. Customers also did not need to change any behavior, like unplugging outlets or switching to LED lightbulbs. CVR and microCVR is a different approach that aims to manage voltage and reduce peak loads at the JBM-HH substation.

To avoid cybersecurity issues, CVR and microCVR were independent of JBM-HH's network and information technology system. A real-time closed-circuit computer station onsite displayed voltage information to manage and oversee the CVR system.

Why would JBM-HH go to all that trouble? JBM-HH took on the innovative and high-profile project in line with the Army energy goals of resilience, modernization, and reform. The team at JBM-HH aimed to reduce energy usage and cost, increase energy efficiency, and get data for expanding the concept of CVR at other installations.

Strengthening the Army's mission readiness by modernizing energy systems assures the Army is postured to deploy, fight, and win in any situation.



The next step for JBM-HH is to privatize the system and transfer it to the local utility provider Dominion Energy, which will operate and maintain the arrangement.

The monthly operation and maintenance charges will be less than the amount of energy savings, resulting in net savings for JBM-HH.

Parallel to this CVR project, Dominion Energy also joined with the Department of Defense through SERDP and ESTCP for JBM-HH's Base of Tomorrow concept to achieve energy resilience.

The Base of Tomorrow aims to reduce vulnerabilities by integrating and optimizing the way energy is generated, delivered, and managed.

Looking forward, JBM-HH is keeping CVR, but not the more costly microCVR. MicroCVR maintenance is expensive, so keeping the microCVR would cannibalize CVR savings. Mr. Bruce Ensley of Dominion Energy explained, "If economics are right, microCVR and other equipment can scale up." Mr. Ensley alongside others is working to deliver this technology to other installations.

For those who are unfamiliar with the SERDP ESTCP website, I encourage you to register for webinars, listen and engage with the enormous resources the SERDP and ESTCP website has.

The SERDP and ESTCP website provides tools and training for installation energy and water, including cybersecurity, energy planning, and assessments. Future webinars are bi-weekly and highlight everything from installation energy and water systems (July 25th) to environmental restoration (September 5th).

CVR provided more savings than planned and exemplifies the Secretary of the Army Mark Esper's focus upon readiness, modernization, and reform.

Energy Action Month Planning is Here!

ENERGY RESILIENCE ENABLES ARMY READINESS



INSTALLATION ENERGY



OPERATIONAL ENERGY

Local Energy stakeholders are helping Army installations move toward energy resilience. We encourage Installations to team with their utilities and industry to conduct commemorative celebrations during October, not only highlight Army – Industry successes, but to educate Soldiers, Civilians and Families about what they can do to conserve our precious Energy resources.

We've already begun preparing for the Army to observe Energy Action Month.

Energy Action Month is an observance held each October to promote installation and operational energy resilience and security. This year the Army's theme Energy Resilience Enables Army Readiness reinforces the fact that secure and reliable access to energy, water, and land resources is vital for the Army to perform its mission and support global operations.

Currently the Army is improving energy resilience and security across its' 156 installations and more than 2,100 community-based National Guard and Reserve centers.

The Army's ability to prepare for and respond to energy disruptions enables mission readiness. Incorporating energy resilience, security, conservation, and awareness into everyday decision-making processes better positions the Army to successfully deploy and rapidly respond to the changing demands of national security.

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To contact us:

usarmy.pentagon.hqda-asa-iee.mbx.energy-initiatives@mail.mil

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