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Energy Security/Grid Resilience: Diversifying and securing energy supplies nationally and locally

Clarice Charlie-Hubbard Receives Visionary Voice Award from AG Aaron Ford

Judge vows quick ruling on Nevada's motion to block plutonium shipments

Digital tech in rural businesses could grow Nevada's workforce

Ed Ely (no information available yet)

Dee Rose Crutcher



Signs throughout Albuquerque for the Gathering of Nations Miss Indian World events.

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[Indian citizenship.](#)

Office of Indian Affairs A bulletin that discusses laws that decide on a persons citizenship.

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College



[Indian Artifacts](#)

[Ralph S. Solecki](#) Indian artifacts from the collection of the Reverend Father John D. O'Halloran of the Protestant Episcopal Church of the Holy Cross in Brooklyn. Includes items from Sunken Meadows, Shinnecock, Lloyd's... [View Full Item](#) in [Queens Borough Public Library](#)



[King Wyandank Pharoah](#) Caption on back of photograph reads: "At the time of his

death on March 12, 1921, King Wyandank Pharoah was 57 years old and stood six feet four inches tall. The son of King David and Maria was born i...

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[Last will and testament of Sarah Jame Tall Chief, 1851 Jun. 15](#)

Tall Chief, Sarah Jane

Will of Sarah Jane Tall Chief, signed by Maris B. Pierce, Sally Jemison and Sarah Jane Tall Chief.

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[Onondaga Nation: Two men in Iroquois dress](#)

Wolcott, Fred Ryther, 1862-1946

Two men, dressed in special occasion Iroquois dress, stand in a rocky clearing. Both are wearing Western Indian feathered headdresses. Man on left has a large ax by his side. Man on right has his hand...

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[Princess Pocahontas Pharoah 1878-1963](#)

Caption on back of photograph reads: This is a very interesting photo of Pocahontas Pharoah who was a princess of the royal family of the Montauk tribe. Here she appears as a young lady dressed in the...

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[Doll, cloth: "Aunt Sarah: A Healing Woman"](#) Hooke, Caroline

This doll, "Aunt Sarah" is based on family stories of her Black Foot Indian relative who worked as a medical and teaching missionary out of a small cabin in the Ozark Mountains in the late 1800-early...

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Shinnecock and Montauk tribes at the 1944 Pow Wow

Caption on back of photograph written by Red Thunder Cloud reads: "Though living only fourteen miles apart, the Shinnecocks and the Montauks have rarely intermingled socially. The Shinnecocks accepted... [View Full Item](#) in East Hampton Library



Norris Herbert Fowler, 1910 Caption on back of photograph reads: The serious young Montauk sitting at the wheel of this car back in 1910, when he was 15 years old, is Norris Herbert Fowler, brother of George, William, John (Red...[View Full Item](#) in East Hampton Library



Peace Queen (Jigönsahse')

Smith, Ernest
Two tribes of Indians approach a pine tree beneath which stands an Indian woman pointing to a long house. In this painting, Jigönsahse' (The Peace Queen) stands beneath a tall pine tree, a Hodinöhsöni... [View Full Item](#) in Rochester Museum & Science Center

peacequarters.com|By [Peace Quarters](#)

[People Who Read A Lot of Books Are Way Nicer, Kinder and Empathetic](#)

HISTORY OF THE TOIYABE NATIONAL FOREST

A Compilation

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_042121.pdf

The Experiential Learning Leadership Institute

Annual Conference in the Parks of Southern Utah



Experiential Learning Leadership Institute

The ELLI conference is celebrating its 5th anniversary!

This year's theme is Mountains of Possibilities and proposals are being accepted now! Join us in beautiful Southern Utah for a fulfilling time for educators in experiential, engaged, and project-based learning (K-12, Higher Education, non-profit).

In addition to the intensive sessions and workshops, it will feature an excursion to Bryce Canyon National Park as well as opportunities for excursions to Zion National Park and other Southern Utah locations.

perspectivesonreading.com

Discover a New Perspective on Reading. Articles suggested and written by librarians, educators

Long but informative and focuses on the need for tribal leadership to ensure their constituencies' energy sustainability/independence:

Program Summary

Energy Security and Grid Resilience: Diversifying and securing energy supplies nationally and locally

**A Presentation and Discussion on 15 March 2019 with Vice Admiral Lee Gunn, USN (ret)
Vice Chair, CNA's Military Advisory Board**

“There are serious opportunities for those who lead and missed opportunities for those who do not lead the transition to advanced energy sources and grid diversification.”

The CNA Military Advisory Board (MAB) has been a leading voice on national security issues since 2007, producing seminal reports climate and energy security. Two of these explore U.S. military needs for advanced, transportable, safer, and secure sources of energy and electricity transmission systems for mission critical operations. Vice Adm Lee Gunn serves as Vice Chair for CNA-MAB and has been instrumental in leading the CNA MAB reports on advanced energy and electric grid modernization. In his NSF presentation, he highlighted many key findings from the CAN-MAB studies and challenged us a Nevadans to lead the way in transitioning to a more energy secure future.

With the U.S. military transitioning U.S. bases from solely supporting mission readiness to one that conducts military operations directly from the homeland, the demand for stable, uninterrupted electric power sources has increased. Base operations now require electricity that is not vulnerable to natural hazards and malicious attacks. One of our military's most critical operations is the drone missions conducted from Nellis AFB, outside Las Vegas. Drone operations demand energy supplies that are independent and not at risk from the aging infrastructure underpinning our national electric grid. Our military operators cannot afford to be subject to large scale power outages, as much of the northeast coast experienced in 2006 when a squirrel knocked a tree limb on a power line in Ohio causing lights to go out across the region for days.

“The national grid was not designed, so much as it just happened.”

Adm Gunn marveled at the ingenuity of early American engineers who built power lines to light up communities across the country over 100 years ago. He also cautioned us that much of that early infrastructure is still in place and the hodge-podge nature of its expansion leaves the United States with serious vulnerabilities to disruption and attack. The most poignant example of an electric grid infrastructure failure, especially for those of us living in or near the Sierra Nevada, was the collapse of the PG&E tower credited for sparking the Camp Fire in Paradise, California in 2018. That fire claimed 85 lives and reduced the entire town to ash and rubble. With 17 of the last 22 most destructive wildfires in the West caused by electrical grid failures, our aging grid infrastructure has become a major national security risk. The PG&E tower that failed was 99 years old with an original design life of 75 years and there are many more towers around the country that are still operating decades beyond their projected lifetimes.

Weather – fires, floods, wind, extreme storms - is the major disrupter of electric power in the United States, as witnessed by current flooding in the Central Plains, Bomb Cyclone storms in Midwest a few weeks ago, and Atmospheric River winter storms in California and Nevada this winter. Droughts are also a major contributor to electric power disruptions. A prime example of this being decreased water levels in Lake Powell available to feed hydroelectric generation at the Hoover Dam. Ample water supplies, from rivers and other sources, are also needed to cool coal and nuclear-powered electricity generating plants.

Renewable energy resources such as wind and solar that do not depend on water supplies are well-suited to augment power generation during times of drought. Texas is the state with largest investment in wind energy with massive wind farms in the Panhandle in the north and on the coast in the south. These two sources of wind energy balance electricity generation diurnally for the State's independent electrical grid. The scarcity of electricity from fossil fuel and nuclear power during the intense drought a few years ago, was compensated for entirely by wind generation, making Texas resilient to the electricity outages that plagued California and other western states.

Natural hazards are far from the only source of electric grid vulnerability. Malicious attacks, both physical and cyber, are increasing in number and sophistication. During the 3-year study period

of the 2015 CNA-MAB Report “*National Security and Assured U.S. Electrical Power*,” there were 357 physical attacks on the U.S. grid infrastructure. One of the highest profile cases was the attack on the Metcalf Power Station south of San Francisco in which 17 rifle shots were fired disabling several transformers and knocking power out to Silicon Valley for half a day. Due to a lack of U.S. suppliers for replacement transformers, which cost over \$1m each, the Metcalf power station remained off-line for nearly a year. Even today, transformers are not manufactured in the U.S. Almost all our transformers are produced in South Korea, where manufacturers are overloaded with orders from China and other countries.

During this same time period, there were 14 successful cyberattacks on our grid. These attacks resulted in hackers either denying service to customers or taking control of elements of the grid infrastructure. More worrisome were there were hundreds of thousands (perhaps millions) of cyberattack “probes” that also occurred during this time in which hackers tested for vulnerable access points or grid weaknesses. What can we do to protect against these attacks and build more resilience in electricity supplies across the country? CNA-MAB’s succinct answer,

“We need smart grids.”

The smart grid solution relies on distributing energy generation to areas closer to the consumer. Smaller generating stations that can take advantage of the advanced energy resources locally - solar arrays, wind farms, geothermal plants and even small modular nuclear reactors - can feed power to smart grid systems equipped with artificial intelligence algorithms to anticipate and respond to power demands and potential disruptions, in real-time. Innovative technologies such as nana-tubes, which allow electricity to be stored and released from directly from nano-fibers, have the potential to make smart grids more practical.

“It is not true that we are stuck with what we have or that we should leave it to others to lead us to a new energy future.”

Advanced energy innovations are no longer in the realm of science fiction. The Department of Defense (DoD) is leading the country, and the world, in moving these research concepts to field operations. The MAB has adopted and supports an “all of the above” approach – solar, wind, geothermal, hydroelectric, nuclear, biofuels, etc. - to reaching the goal of emission-free or reduced-emission power generation, as a national security imperative for the country. Adm Gunn explained among the options for achieving this goal, nuclear power has many advantages, especially small modular reactors. The U.S. Army is testing small modular reactors for use in supporting forward deployments in operating theaters. Generating power in place would alleviate the risks posed by logistics resupply convoys carrying diesel fuels. Illustrating this point, Adm Gunn reminded us that one in eight resupply convoys in Iraq and Afghanistan resulted in a soldier being killed or severely wounded.



The Marines also learned about the benefits of solar energy from Moms and Pops across America who sent roll-out solar panels to troops deployed in Afghanistan. The solar panels were used to

charge cell phones and batteries for other communication gear and equipment. Replacing heavy batteries loads with light-weight solar panels reduced the soldiers' packs (typically about 110lbs for a week's deployment) by 30lbs. Less weight made for more agile movement and fewer casualties.

Closer to home the military relies heavily on renewable energy resources to provide uninterrupted power for mission critical operations. One of the leading examples of this is the three large utility-scale solar arrays at Nellis AFB that power drone and operations conducted from Creech and Nellis. The Naval Air Weapons Station at China Lake, California also operates a 180-megawatt geothermal generating plant that provides power for most of the Navy's weapons and armaments research.

"Nevada is going to be on the front lines."

Adm Gunn emphasized that Nevada is uniquely positioned to lead the nation in transitioning to advanced energy resources and distributed electric grids due to our geography, long history of defense operations, commitment to national security, and strong culture of innovation. He admitted that the MAB members are not above, "state shaming" when they meet with state legislators around the country and he is especially fond of reminding our friends in other states (especially California) that Nevada is leading the way for many of DoD's advanced energy initiatives.

In closing, the Adm Gunn summarized the changing energy landscape that MAB has been reporting on for several years. Factors driving these changes include increases in global population and higher demands for energy by a growing middle class, increased electrification of transportation, new technologies for fracking and fossil fuel extraction, and the growing market for renewables. The world's population, now at 7.7 billion people, is expected to reach 9.4 billion by 2050 and nearly 11 billion by the end of the century. Most of the growth (around 1.5 billion) will be in India and Africa, driving a projected 40% increased demand for energy by 2050. Even if fossil fuels can meet this demand, the environmental and economic costs of extraction and burning fossil fuels may be prohibitive.

As developing countries leap-frog combustion engine technologies in favor of electric vehicles (EVs), the cost of EVs is projected to decrease significantly. This will push more EVs to market in all countries around the world, changing how energy resources are managed. Nevada is capitalizing on this growth with the electric highway plan to expand charging stations on most major roadways in the state and with initiatives to increase in the state's Renewable Portfolio Standard (RPS) to 50% by 2030.

Today, energy security in the U.S. depends on fossil fuels and much of our foreign policy is driven by our dependence on oil producing nations including Saudi Arabia and Venezuela. Despite the current political unrest in Venezuela the U.S. remains the largest buyer of Venezuelan oil. This is driven by geography and economics. Because of Venezuela's close proximity to oil refineries on the Gulf coast we can purchase crude oil from them and sell refined products to

others at a profit. Production of fossil fuels is driven by price, globally. And the U.S. does not (and will not) control that price.

Energy independence for the United States will only be realized when/if we control the price of our energy sources. Advanced energy development has the potential to move the U.S. from being energy self-sufficient (our current state) to being energy independent by allowing the U.S. to control energy generation costs at home. Although achievable, this goal will take time. Adm Gunn explained that given the small percentage of renewables in the global energy market, compared to fossil fuels, means the U.S. will need to accelerate advanced energy development if it wants to achieve energy independence.

“It would be far better for the United States economy and security if we led the charge for renewable energy research, manufacturing and deployment.”

Is leading renewable energy development really economically advantageous for the United States? The MAB pondered and explored this concept in their studies. Employing solar energy technologies originally pioneered in the U.S., China now sells solar panels to U.S. consumers at lower cost as similar systems produced in the U.S. MAB studies indicate that this short-term gain in cost savings comes at a longer-term to our national economy. Succinctly stated in the CNA-MAB 2017 Report, Advanced Energy and National Security,

“As new energy options emerge to meet global demand, nations that lead stand to gain; should the U.S. sit on the sidelines, it does so at considerable risk to our national security.”

That said, Adm Gunn explained how the U.S. can regain global leadership in advanced energy. Recognizing that hydroelectric and geothermal energy sources are limited in their development by the availability of natural resources and the cost of large-scale infrastructures. Nuclear power is also stalled in the United States, even as Russian and China are building and selling over 80 new nuclear reactors. The intermittency of solar and wind renewables continues to be a challenge – one the U.S. is well positioned to address. Nevada, in particular, is leading the development and production of efficient, affordable storage technologies, making renewable energy more reliable and scalable. Nevada is also benefiting from the renewable energy economy, which employs 25,400 Nevadans. In terms of energy production potential, the Silver State ranks 2nd in the nation for geothermal energy and 4th for utility-scale solar energy generation.

Reminding us that energy is security, Adm Gunn closed his presentation by noting that energy security choices that the country makes now can enhance our national security and benefit military operations.

Fielding questions on a range of topics, Adm Gunn started by addressing the issue of grid vulnerability from electromagnetic pulses (EMP) caused naturally by solar bursts or intentionally by nuclear weapons. First the bad news. None of the U.S. electric grid, except for very few isolated elements dedicated to military operations, are hardened against large-scale EMPs (solar or man-made). This became evident late in the 19th century when a large solar burst electrified

the telegraph lines killing several telegraph operators across the country. Potential high-altitude nuclear weapon detonations by adversarial nations, including Russia and North Korea, also pose a significant risk to the grid. If used, these weapons would also trigger severe retaliation from the U.S. providing a substantial deterrent. On a positive note, the MAB reported that deployment of more distributed energy grids provides resilience to some EMP events by allowing energy to be restored locally much faster than the national grid could be restored.

Adm Gunn addressed several questions related to the deployment of EVs at scale, including how states can compensate for losses in highway funds from lower fuel tax revenues. At present, EVs are only 1-1.5% of vehicle traffic on U.S. highways, therefore fuel tax losses are still small. As the number of EVs increases, states will need to find other ways to recoup expenses through other forms of “use-taxes.” In response to questions about EV recycling, Adm Gunn cited Germany as an example. A recent German law mandates 100% recycling of all automobile vehicles and parts. German car manufactures met the challenge and are now deploying advanced manufacturing technologies to reduce waste and increase component recycling.

The topic of lithium availability, especially from mines in Nevada, was also a popular topic. Adm Gunn acknowledged Nevada’s role as a major world supplier; however, he also explained that Bolivia and Argentina are expanding their lithium mining efforts. China is now forging new partnerships with these countries to obtain lithium from producers outside the United States, reducing the demand for lithium from Nevada. Expanding U.S. research on batteries that use alternatives to lithium, including more abundant rare earth elements, could help protect the U.S. against a possible lithium trade war in the future.

Adm Gunn closed his talk on a positive note for the future. Nevada, along with many other states, is leading the way for advanced energy development and distributed grid technologies despite a recent decline in federal leadership. Cities and states across the country are pursuing energy security initiatives that are strengthening our national security.

CNA-MAB Report “National Security and Assured U.S. Electrical Power,” (November 2015) is available for download at: https://www.cna.org/cna_files/pdf/national-security-assured-electrical-power.pdf

CNA-MAB Report “Advanced Energy and U.S. National Security,” (June 2017) is available for download at: https://www.cna.org/CNA_files/PDF/IRM-2017-U-015512.pdf

Vice Admiral Lee F. Gunn, USN (Ret.), Vice Chairman, CNA's Military Advisory Board, served for 35 years in the U.S. Navy. His last active duty assignment was Inspector General of the Department of the Navy where he was responsible for the Department’s overall inspection program and its assessments of readiness, training, and quality of service. Serving in the Surface Navy in a variety of theaters, Gunn rose through the cruiser/destroyer force to command the Frigate USS Barbey, then commanded the Navy’s anti-submarine warfare tactical and technical evaluation Destroyer squadron, DESRON 31. He later commanded Amphibious Group Three. As Commander of PHIBGRU THREE, he served as the Combined Naval Forces Commander and

Deputy Task Force Commander of Combined Task Force United Shield, which conducted the withdrawal of U.N. peacekeeping forces from Somalia. Adm Gunn holds a Bachelors degree in Experimental and Physiological Psychology from the University of California, Los Angeles and a Master of Science in Operations Research from the Naval Postgraduate School in Monterey, California.

[Link to Amb Gunn's PowerPoint Presentation](#)

[Link to Energy Security in Nevada Whitepaper](#)



[Rebecca Charlie](#)

My Daughter, [Clarice Charlie-Hubbard](#), made her family extremely proud to watch her receive the Visionary Voice Award. We're in the State's capitol today to have the State of Nevada Attorney General, Aaron Ford, present her with this outstanding award. This award recognizes the creativity and hard work of individuals around the country who have demonstrated outstanding work to end sexual violence in Indian County. Your hard work and sacrifice is not overlooked and we all love you and will continue to support all of your endeavors



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[Judge vows quick ruling on Nevada's motion to block plutonium shipments](#)

The Associated Press

[Digital tech in rural businesses could grow Nevada's workforce](#)

According to a recent report from the U.S. Chamber of Commerce and Amazon, technology is playing an increasing role in economic growth.

In Loving Memory Of
Dee Rose Crutcher



September 10, 1960-April 19, 2019

Funeral Services will be held
Thursday, April 25, 2019
11:00 a.m. (P.S.T.)

Ft. McDermitt Tribal Gym
111 North Road

Dinner following burial at
Tribal Youth Center
Interment Ft. McDermitt Cemetery