

**ARIZONA ARMY NATIONAL GUARD
ENVIRONMENTAL SECURITY AWARDS FY 12
SUSTAINABILITY (P2) AWARD—INDIVIDUAL**

ABSTRACT

As the Sustainability Manager of the Arizona Army National Guard (AZARNG), **Dorenda Coleman** is at the core of all sustainability undertakings across all of the AZARNG's training sites, mission facilities, and readiness centers. Sustainability is deeply integrated into operations at every level. Sustainability in the AZARNG is not simply an environmental function; it is a foundation for keeping the AZARNG mission-ready—now and into the future. Dorenda's leadership and management of the many facets of sustainability, from encroachment protection, recycling, energy conservation, green construction, and resource conservation has been key to integrating sustainable practices and awareness into the AZARNG culture. Her efforts to increase and expand these force multipliers throughout all stakeholder environments have not only brought together AZARNG elements, but other joint agencies such as the Arizona Air National Guard and Emergency Management Departments, all while leveraging sustainability initiatives in order to meet and exceed the guiding principles of the AZARNG sustainability policy: (1) to assess impacts of military operations on local resources and communities; (2) meet or exceed environmental, health, and safety requirements; (3) foster sustainability partnerships within local communities; (4) enact changes today in support of the AZARNG's long-term future; (5) empower employees to act sustainably on a daily basis through cultural support, education, and training; and (6) generate continual improvement in all aspects of sustainability.

SUMMARY OF ACCOMPLISHMENTS



Dorenda has developed an exceptionally robust sustainability program for the AZARNG. Over the past two years, she has achieved several important milestones to include the establishment of four interdepartmental sustainability teams. Dorenda is the overall subject matter expert for all sustainability activities and has established a diverse cross-functional network of support. Under her leadership, AZARNG initiated four sustainability teams dedicated to Infrastructure and Utilities, Community Involvement, Logistics and Procurement, and Readiness. The teams include representation from the Environmental division as well as the USPFO, Engineering, Information Technology, Human Resources, G Staff, State Procurement, and Custodial departments. Her teams comprehensively manage sustainability initiatives throughout the AZARNG by implementing the Department of Defense (DOD) Strategic Sustainability Performance Plan, and goals that are specific to the Guard in Arizona. Each team is chaired by two Lieutenant Colonels (LTCs) who report their quarterly progress to the Command Staff. In order to guide them, Dorenda meets with the teams and team leaders monthly. The four teams not only contribute to the DOD Strategic Sustainability Performance Plan and work to achieve the goals laid out therein, they also work on issues and goals specific to the AZARNG. They undertake important strategic AZARNG goals including the protection of training lands, community

partnerships and outreach, and environmental education. One major outcome of these efforts has been an agreement with officials of the Tonto National Forrest in making over 3 million acres of land available for training as well as protecting Camp Navajo from encroachment. Because sustainability has been integrated into the AZARNG on a much larger scale, the inter-departmental teams foster cultural commitment to sustainability as an overarching management principle and they play a key role in the program's continued success.

- Dorenda has initiated a pilot program to hire two Arizona State University sustainability interns each year to plant the seeds of sustainability into the next generation of young adults.
- Dorenda advises on the National Guard Bureau (NGB) Joint Army Guard and Air Guard Energy/Sustainability working Strategy, setting a national standard for conservation, fossil fuel use reduction, pollution prevention, and alternative energy use while realizing Net Zero resource program benefits, expanding sustainability education and training, and safeguarding viable energy and water resources.
- Dorenda was the subject matter, expert consultant for the ARNG during the development of a Military Leadership Sustainability Certificate Program at Arizona State University. After 3 years of development the program launched in FY 12.
- Dorenda created a robust sustainability website to educate AZARNG personnel, help the sustainability teams share information, and streamline their work effort.
- Dorenda is also a member of the Arizona Department of Environmental Quality Sustainability/Environmental Stewardship Program.
- Dorenda chairs the ARNG EMS/Sustainability Committee and coordinates directly with the Special Assistant to the ARNG G4 on Sustainability and Energy to convene meetings and solicit feedback and new ideas from committee members.
- Dorenda's sustainability management has resulted in significant cost and resource savings. Under her leadership, the AZARNG emphasizes modernization and renovation over demolition and new construction. For instance, at Camp Navajo the Headquarters building was restored and modernized at a price of approximately \$2.8 million, *at least \$10 million less* than the estimated cost for new construction.
- Dorenda leverages partnerships to minimize cost and resource outlays on the AZARNG's behalf. This year the AZARNG hosted a sustainability partnership workshop to bring together 30 potential university and governmental partners. The Arizona Air and Water Trust is one such valuable partner. Dorenda collaborates with this organization for the AZARNG Army Compatible Use Buffer (ACUB) program. The Trust is assisting with easement and purchasing paperwork, saving the AZARNG approximately \$50,000 every year on administrative costs. The Trust also manages the resulting easements, saving tens of thousands of dollars each year in staff and resource management costs to the AZARNG, which nonetheless receives the additional benefit of encroachment protection.



Overall, Dorenda's sustainability program emphasizes core goals of improved processes and material management, substitution of green materials, waste reduction, recycling, green construction, and green procurement.

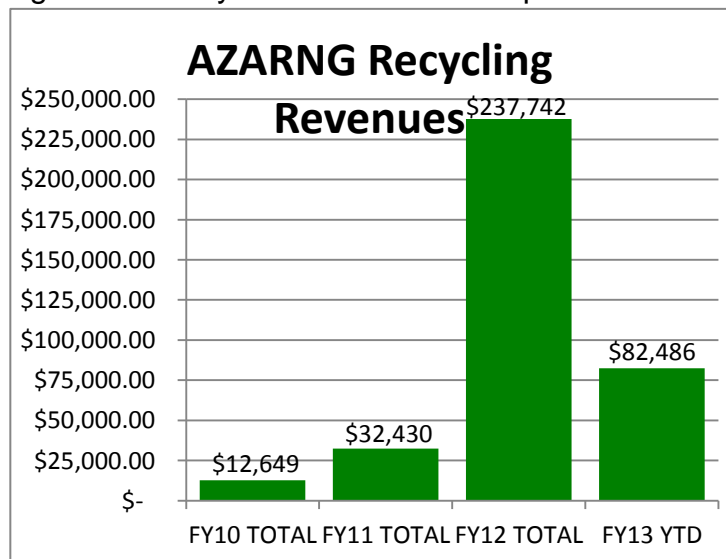
Material Management and Material Substitution:

- As a result of her sustainability partnership workshop, the AZARNG has begun a new pilot project with Northern Arizona University to produce liquid methanol as an alternative fuel for military vehicles. This project supports the program's long-term net zero goals, as well as Federal Executive Order 13423 (conserving energy). Dorenda's Logistics and Procurement Sustainability Team continued to maximize its efforts by downsizing after meeting three of its four goals in 2012, three years ahead of schedule, continuing to thrive in the current austere and pecuniary environment. The team has already achieved 100% certification for pesticide application, with 25% of all pest management plans remaining to be reviewed and updated. (see below)

FY 15 Logistics and Procurement Goals	Target	Current	Met
Hazardous and non-hazardous waste to landfill	50% Diversion	75%	<input checked="" type="checkbox"/>
Demolition debris	60% Diversion	90%	<input checked="" type="checkbox"/>
Certified personnel for pesticide application	100% individuals	100%	<input checked="" type="checkbox"/>
Annual reviews and updates for IPM plans	100%	75%	

Process Modification or Improvement: Dorenda worked with the AZARNG command initiating a unique sustainability initiative this year that saves resources, decreases costs, and enhances safety. The AZARNG is transitioning to a 10-hour day, four-day workweek throughout the installation. The new schedule will decrease commuting required of Soldiers and staff, and thereby increase safety and decrease emissions. Temporarily closing hundreds of buildings for one day a week results in impressive cost reductions and an estimated *greenhouse gas avoidance of 414 tonnes per year*, which is equivalent to taking 78 passenger cars off the road each of those years.

Recycling Program: Dorenda has worked with the AZARNG Qualified Recycling Program (QRP) since its FY 02 inception. The QRP recycles cardboard, aluminum, plastic, paper, and scrap metal. The Material Management team's efforts to increase awareness of recycling have resulted in a dramatic increase in recycling over the past two years (see table).



Reductions Achieved: A major goal of the sustainability program is to accomplish Net Zero status for energy, water, and other resource use. This year the AZARNG opened a pilot solar parking lot project.

The 20-car site provides covered parking for vehicles and the solar-generated electricity offsets the cost to safely light the lot.

Implementing installation energy security measures and pursuing Net Zero are primary targets for Dorenda's Infrastructure and

Utilities team, which institutes use-reduction initiatives and technological upgrades.



Over the past two years, the AZARNG has expanded the use of the state's most abundant natural energy source: sunlight. The AZARNG's solar projects create over 1million kW of energy each year, contributing to its progress toward Net Zero goals and Federal Executive Order compliance.

FY 20 Infrastructure and Utilities Team Goals	Target
Facility energy intensity	37.5% reduction
On-site releases and off-site transfers of toxic chemicals	15.0% reduction
Water consumption intensity	26.0% reduction
Industrial/irrigation water use	20.0% reduction
Petroleum product consumption for vehicle fleets	30.0% reduction
Greenhouse gas emissions caused by employee air travel	7.0% reduction
Excess/surplus electronic products	100.0% recycled
Reduced printer paper use, DOD Policies	100.0% adherence
Energy production or renewable source procurement	18.3% increase
Tele-working prevalence	30.0% eligible employees

Green Procurement: Dorenda's Logistics and Procurement team is in the process of implementing a green procurement page on the sustainability website to not only educate employees of the AZARNG, but to create a one-stop shop for all. A green procurement video was created to add to this site for further educational opportunities.

Green Buildings: Over the past two years, Dorenda has been instrumental in the certification of the AZARNG's first two LEED Gold and LEED Silver buildings:

- Building #1 at Camp Navajo originally served as a WWII storage and distribution point for military equipment and supplies. An inventory of the structure in the 1990s resulted in determining its eligibility for National Register listing. The building, now the installation's headquarters, needed significant renovation to meet current mission needs. Leveraging the sustainability principle, the AZARNG chose to green and modernize the building rather than demolish and rebuild it, thus enhancing and maintaining the structure's historic character. Modern energy-efficient windows were installed, chosen for their similarity to the building's original windows. An energy-efficient HVAC system was also added, with the existing boiler relocated to another

facility. By project completion, the building accumulated 56 points toward LEED Silver certification. This was achieved, in part, by meeting the goals in this table, thus achieving Exemplary Performance and Maximized Region Priority Credits.

LEED Credits Achieved	
Landscaping water usage	50.0% reduction
Overall water usage	30.0% reduction
Existing building materials	75.0% reuse
of construction waste	90.0% diversion

- Dorenda also worked with the engineering department to complete the AZARNG’s new 47,000 square-foot readiness center on the Florence Military Reservation. The readiness center complements an LEED Gold Field Maintenance Shop, completed in 2009, on the same installation. This “Grow-the-Army” readiness center is also being reviewed for LEED Gold certification. Because of the coordinated commitment to sustainability, all the AZARNG LEED Gold projects achieved their status without additional construction funding.



The AZARNG has embraced sustainability as an encompassing guiding ethic with the help of Ms. Coleman. Without sustainable access to water and energy resources, for example, the entire AZARNG mission could become threatened or irreparable damage may result. Dorenda increased education on environmental impacts and reduced resource use among Soldiers, leading to a cost savings and positive community attitude toward the AZARNG. Because partners recognize the AZARNG’s leadership in sustainability, environmental agencies within the state often share their program resources with the AZARNG at no charge, and Soldiers have been offered employment opportunities in Arizona’s growing solar PV installation industry. Dorenda’s sustainability program protects AZARNG’s training sites, facilities, and readiness centers from encroachment, and educates Soldiers and staff about their responsibility for sustainable operations, ensuring Soldiers have as many training facilities as possible.

- Dorenda is a key player in the AZARNG’s ACUB program. She developed a mutually beneficial partnership with the Arizona Air and Water Trust to establish encroachment buffers around the Florence and Silverbell training sites. In recent years, private companies have sought to purchase state lands surrounding the Florence military site. Developers planned to construct housing developments that would immediately abut against shooting range fence lines, which would have forced the AZARNG to curtail or eliminate those training capabilities because of the residential proximity. The Trust has handled the administrative duties necessary to purchase or establish conservation easements on these tracts, serving both its mission, and that of the AZARNG. At the Silverbell site, which serves a 12-county area for Blackhawk and Apache helicopter training, the Trust and the AZARNG again shared interest in protecting a piece of undeveloped land adjacent to the site.



Above is Roger’s Lake, adjacent to Camp Navajo. A 20-agency ACUB partnership is protecting the 2250 acres from being developed. Preventing encroachment is crucial to the AZARNG’s military mission.

- Dorenda creative ability resulted in educational opportunities for our next generation of sustainability professionals in the Army and ARNG by working closely with the Arizona State University (ASU) to develop and launch its Sustainability Leadership Graduate Certificate program. Initial enrollment began in spring 2012 and the program features contemporary examples of sustainability relevant to missions and operations of the Army, Army National Guard and Army Reserve. Working in collaboration with the National Guard Bureau and ASU, Dorenda carefully designed the curriculum to help current Soldiers and DOD civilians contribute to the Army, Army National Guard and Army Reserve's goals amidst a changing military landscape characterized by increasingly limited resources. The certificate program is online, making it accessible to Soldiers and staff deployed or stationed anywhere in the world, without using travel dollars. It includes five courses that draw upon the expertise of the Guard's trainers, environmental specialists, energy managers, and logisticians, as well as ASU's School of Sustainability faculty.



Dorenda is deeply committed to expanding the successes and lessons learned in AZARNG's sustainability program to other Guard and military units and installations. The graduate certificate program is a prime example of this sort of information and expertise transfer, but Dorenda also serves as the chair of the NGB Sustainability Committee, participates as an advisor in development of the NGB Energy Strategy, and contributes to ARNG's wider sustainability awareness education and training. Through these activities, she has personally contributed to implementation of sustainability best practices throughout all of the Army National Guard. Internally, Dorenda's program is assured continuity and consistency through its integral nature in all other AZARNG operations, its empowered sustainability teams, and its inclusion of sustainability in planning and policy documents that standardize practices, delineate goals, and chart easily identifiable progress.



In contrast to many sustainability programs, which are often limited to installation's boundaries, Dorenda has long emphasized the importance of community outreach, access, and education to foster a broader culture of environmental stewardship and dedication.

Education: Certainly, the most visible example of education over the past two years is the new graduate certificate program created at ASU. This recently launched program is a milestone achievement for the Army National Guard. Each of the five courses counting toward the certificate can be completed online and lasts 7.5 weeks, offering students the opportunity for a comprehensive learning experience. The coursework can also be applied toward an ongoing Master's degree at the university. There were 15 students enrolled in the first class offered this spring, Foundations in Sustainability. Though the courses are tailored to the National Guard and its operations, the class is open to civilian students as well, demonstrating the interoperability of the military's practices, techniques, and approaches to complex sustainability issues. This cooperative outreach ability exemplifies both the AZARNG's and Dorenda's commitment to foster an ethic of sustainability at the local, state, national, and global levels.

Partnerships and Workshops: The ASU partnership isn't the only facet of outreach and education Dorenda has set in motion. She also has established strong collaborative relationships with Northern Arizona University, the Arizona Air and Water Trust, the Western Regional Partnership (a coalition of federal, state, and defense agencies involved in sustainability issues), the Arizona Water Association, and the Pinal County Partnership. Dorenda's work and partnership with the Arizona Water Association in 2012 is paving the way for a training workshop on water conservation for governmental agencies and departments scheduled for 2013.



AZARNG Soldiers take part in a community garden project as part of Dorenda's Earth Day events. This annual event has grown to include over 50 partners. Events like these improve fruitful partnership prospects, foster community education, and garner local support for the AZARNG.

Public Outreach and Access: One of Dorenda's largest public outreach efforts is the annual Earth Day celebration at Papago Park Military Reservation. Under her leadership, this successful event has skyrocketed in popularity and attendance over the past several years. This year and last, around 1000 members of the community took part in the days' festivities, to include approximately 500 schoolchildren. Annual activities include arts and crafts with recycled materials, puzzles and games, a rock-climbing wall, a Blackhawk helicopter display, an electric car display, natural and cultural resources presentations, and even a pony rescue. Under Dorenda's leadership, the annual event has grown to include over 50 community and corporate partners. Those participating

included the Phoenix Herpetological Society, Liberty Wildlife Rescue, Home Depot, the cities of Phoenix, Scottsdale and Tempe, Arizona Electric Car Association, American Airlines, and the Sierra Club. These organizations and others attend, provide volunteer staffing, and donate materials to minimize the costs of the event for the AZARNG. These events are a wonderful opportunity to welcome the public onto military posts and familiarize them with the many faces of the AZARNG, inducing a positive public perception. At the same time, the AZARNG has the opportunity to connect with community groups and potential environmental partners, from animal rescues to electric vehicle dealerships. The event continues to grow each year through Dorenda's cultivation of new friendships, which has led many local groups and businesses to seek out the AZARNG's expertise and organizing skills. Based on the Earth Day events of FY 11 and FY 12, local communities invited the AZARNG to take part in three additional environmental and Earth Day events, garnering even more outreach relationship with the public.

Dorenda has served the AZARNG and our nation by integrating the sustainability principle at the state and national levels in an influential way. Under her leadership, the AZARNG's Sustainability Program has contributed to the overall success of the state's and nation's military missions through advancements in resource use and waste reduction, diverse community partnerships, and sustainable land-use.