“There is no military force in the world that has proven more sensitive to civilian casualties. We go out of our way to always do everything humanely possible to reduce the loss of life or injury among innocent people. The same cannot be said for our adversaries.”

– Secretary of Defense James Mattis, March 2017

The Nation’s Joint Forces’ missions span the full range of military operations across the globe, from peacekeeping, disaster response, and humanitarian assistance to major combat campaigns. The current toolkit of non-lethal weapons, supported by the Dept. of Defense Non-Lethal Weapons (DoD NLW) Program and Armed Services, provides commanders with additional decision time and space before resorting to lethal force, helping to mitigate the negative consequences of unintended injuries and fatalities.

**Non-Lethal Directed Energy Applications.** Non-lethal weapons, developed to have reversible effects on personnel and materiel, complement lethal force and maximize mission effectiveness while minimizing risk to U.S. forces, coalition partners, civilians, and critical infrastructure. Directed energy (DE) technology can deliver effective non-lethal effects over long distances almost instantaneously, addressing threats at safer standoff distances. The DoD NLW Program, a leader in DE technology development, increased its investment in DE enabling technology to target individuals, equipment, and facilities with safe, effective, and less expensive non-lethal capabilities.

**NLW DE Portfolio.** The DoD NLW Program’s DE portfolio showcased at DE2DC events prove that these capabilities exist today. As NLW DE systems undergo assessments in FY18/19, they demonstrate the ability to 1) stop vehicles, vessels, and other systems with Radio Frequency/High-Power Microwave (RF/HPM) energy, 2) deny/suppress/move individuals using millimeter wave (mmW) electro-magnetic energy commonly referred to as Active Denial Technology, and 3) hail and warn individuals at safer standoff ranges through low-power lasers and long-range audio devices.

Visit: [http://jnlwp.defense.gov](http://jnlwp.defense.gov) for more information on these and other DoD NLW Program efforts
Non-Lethal Directed Energy Weapon (NL DEW) Technology Thrust Areas:

**Active Denial Technology:** Non-lethal mmW energy creates an intolerable heating sensation by penetrating a targeted individual’s skin to a depth of only 1/64th of an inch - the equivalent of three sheets of paper - compelling them to instinctively move.

**RF/HPM NLWs:** Emit directed wide- and narrow-band high-power microwave energy to stop advancing vehicles and vessels by temporarily disrupting the platform’s control electronics without necessarily harming persons on or near materiel targets.

**Long-Range Sound and Light Technology:** Low-power lasers and long-range audio devices hail, warn, move, disrupt, and suppress individuals with very low risk of significant injury.

**NL DEW SWaP/C² Reduction:** NL DEW system, subsystem, & component size, weight, and power consumption with thermal cooling and cost reduction efforts (SWaP/C²)

**NLW DE Bioeffects Program:** The DoD NLW Program has a robust and active NLW DE Bioeffects program in collaboration and partnership with DoD laboratories, industry, and academia. The goals of the NLW DE bioeffects program include advancing the science and knowledge of DE bioeffects and building predictive Modeling and Simulation (M&S) capabilities to support system design and acquisition. The focus and end state of the M&S capability is to characterize the desired non-lethal effects and risk of injury of DE systems in line with policy outlined in DoD Instruction 3200.19.

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