



DoD Non-Lethal Weapons Program Directed Energy Initiatives



High power microwave systems, “active denial” millimeter wave (mmW) systems, dazzling lasers, and other directed energy (DE) capabilities developed through the DoD Non-Lethal Weapons Program provide **Intermediate Force Capabilities (IFCs)** to support Warfighters in bridging the gap between presence and lethal intent across the competition continuum.

Taking the Fight to the Gray Zone: Multidomain Irregular Warfare Applications. Strategic competitors engage in irregular warfare through coercion/subversion, propaganda, and other campaigns. They do so, at-will, to asymmetrically achieve their national objectives without triggering high-intensity conflict with the most lethal force in the world-the U.S. military.

IFCs support multidomain mission objectives without initiating, escalating, or prolonging unintended extensive (and expensive) hostilities to bridge the gap between presence and lethal effects/intent. Strategic risk mitigation investments provide warfighters with the IFC tools needed to seize the initiative while competing below the level of armed conflict.

Complementing Lethality. Lethality is absolutely necessary, but not sufficient to effectively engage across the competition continuum. Precise, reversible, and effective DE IFCs enhance lethality by boosting warfighters’ versatility and adaptability across many phases of warfare without causing unnecessary destruction of critical infrastructure (ex: civilian power station/place of worship) or loss of life. These force multipliers facilitate the discriminate use of limited lethal resources, completing the deterrence equation across the entire competition continuum and yielding enduring strategic victories for our warfighters and the Nation.



What Would You Do? Shaping the information domain through DE IFCs denies our adversaries the propaganda victories they enjoy today when we appear to retreat from the "Gray Zone" to avoid unintended lethal hostilities.

“Gray Zone” competition dominates any conceptual Spectrum of Warfare and is ideally suited for Intermediate Force Capabilities



Phases of Warfare



Competition Continuum

Visit: <http://jnlwp.defense.gov> for more information on these and other DoD NLW Program efforts

Directed Energy IFC Portfolio:



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 printer paper - compelling them to instinctively move.



High-Power Microwave IFCs: Emit directed wide- and narrow-band high-power radio frequency energy to stop advancing vehicles and vessels to temporarily disrupt control electronics without damaging the engine or harming persons on/near advancing 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. Laser Induced Plasma Effects can be used to push these effects to even greater ranges.

DE IFC Size, Weight, Power, and Cost/Cooling Reduction: DE IFC system, subsystem, and component size, weight, and power consumption with thermal cooling and cost reduction efforts.

DE IFC Human Effects Program: The DoD NLW Program supports a robust and active human effects program in collaboration with DoD laboratories, industry, and academia. The program's goals include advancing the science and knowledge of DE human effects and building predictive modeling and simulation capabilities to support system design and development. The end state 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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