



## **A Coordinated Strategy for Manufacturing High Power Lasers** Recommendations by the National Photonics Initiative

### **High power lasers are crucial for US national defense.**

Directed energy weapons using high power solid state lasers offer ultra-precise targeting, low cost per use, and a nearly unlimited magazine. In some situations, laser weapons are the only practical method of countering new threats.

Unlike previous laser applications that required significant advances in fundamental science and technology, high power laser technology required for many directed energy applications is now ready in large part because of Department of Defense (DoD) funding for research and development (R&D) and commercial advances. Commercial applications of high power lasers (including cutting, welding and additive manufacturing) are rapidly expanding and will play an increasingly important role in US manufacturing. Furthermore, as these markets drive volume this manufacturing base will also be critical for directed energy applications.

### **However, Foreign competition is increasing – US manufacturing is at a critical juncture.**

The United States is a global leader in manufacturing high power lasers, but the US industrial base is losing its competitive advantage to both developed and emerging countries. US funding for high power laser programs has declined over the last decade, just as technology is on the cusp of practical implementation to the warfighter. At the same time, foreign competition has expanded rapidly – particularly in China and Russia. High volume manufacturing of high-power lasers is key to drive both technology improvements and further reduce costs for industrial applications. This volume then provides a sustainable base for DOD applications. Currently, volume is moving offshore, where technology transfer enables foreign defense threats and erodes the US industrial base.

### **Recommendation: Deploy a coordinated strategy that ensures a strong industrial base in high power lasers.**

Unlike other countries, the US does not have a coordinated strategy to ensure a strong manufacturing base in high power lasers. The National Photonics Initiative (NPI) High Power Lasers (HPL) Task Force, in partnership with the Directed Energy Professional Society (DEPS), convened leading defense contractors, commercial laser companies and academia to determine recommendations to improve US defense operations and regain our nation's manufacturing stronghold. The members of the HPL Task Force recommend the establishment of a directed energy program office to develop and implement a national strategy with at least two essential elements:

- Increased and focused funding for technology and manufacturing to ensure cost effective domestic supply of critical components required for high power lasers.
- Enhanced policies that intelligently protect critical technologies while not inhibiting the success of US exporting companies.

### **About the National Photonics Initiative (NPI)**

The NPI is a collaborative alliance among industry, academia and government seeking to raise awareness of photonics and drive US funding in areas critical to maintaining US economic competitiveness and national security. The initiative is led by a coalition of scientific societies, including the American Physical Society (APS), the IEEE Photonics Society (IPS), the Laser Institute of America (LIA), the Optical Society (OSA) and SPIE, the International Society for Optics and Photonics (SPIE).

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