March 14, 2018

The Honorable Mike Simpson  
Subcommittee on Energy and Water  
Development  
Committee on Appropriations  
2362-B Rayburn House Office Building  
Washington, D.C. 20515

The Honorable Marcy Kaptur  
Subcommittee on Energy and Water  
Development  
Committee on Appropriations  
1016 Longworth House Office Building  
Washington, D.C. 20515

Dear Chairman Simpson and Ranking Member Kaptur;

As you develop the fiscal year (FY) 2019 Energy and Water Development, and Related Agencies Appropriations bill, we write in support of the OMEGA Laser Facility at the University of Rochester’s Laboratory for Laser Energetics (LLE) and the National Nuclear Security Administration’s (NNSA) Inertial Confinement Fusion (ICF) program. Specifically, we request $555 million for the ICF program, including $80 million for the OMEGA Laser Facility.

The ICF program maintains three major, world-leading facilities: the National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory (LLNL), the Z Facility at the Sandia National Laboratories (SNL), and the OMEGA Laser Facility. The ICF program is essential because it supports the only leading-edge experimental facilities that can achieve the high-pressure and high-energy-density regimes, which account for ninety-nine percent of the country’s nuclear weapons yield, without underground nuclear testing.

Cutting-edge research at ICF facilities support critical decisions related to the maintenance and modernization of weapons systems and achieving scientific milestones set in NNSA’s ten-year strategic plan. ICF maintains U.S. leadership at a time when Russia and China are making significant investments in research capabilities and nuclear forces modernization programs which could lead to a “Sputnik moment” casting doubt on U.S. scientific and technological superiority.

In addition to maintaining U.S. leadership, the ICF program is key to avoiding technological surprise by other nuclear weapons states. ICF experiments are an important vehicle for training and testing the experts whose judgment we rely on to ensure the safety and reliability of the country’s nuclear stockpile, as well as to evaluate the capabilities of U.S. adversaries. The ICF program attracts scientific and engineering talent to the nuclear weapons program through the focus on achieving controlled fusion in the laboratory – one of our greatest technical challenges.

NNSA is currently pursuing three credible research approaches to demonstrating ignition – Direct Drive, Indirect Drive and Pulsed Power. The LLE is the lead laboratory for the Direct Drive approach to ignition, but is also the staging and support facility for experiments at the
national laboratories. Progress is being made in all three approaches thanks, in part, to LLE’s contributions.

Although, the Department of Energy FY 2019 Budget in Brief specifies a “three-year ramp-down,” we believe OMEGA deserves continued support and that eliminating the facility would be detrimental to national security and the continuity of our nuclear program. The LLE’s OMEGA laser facility is a vital contributor to national security and an invaluable source of scientific education and leadership that provides enormous value. The OMEGA lasers are the largest and most capable found at any academic institution. LLE is internationally recognized for its groundbreaking research in high energy density physics and high power lasers.

Further, the LLE is the most cost-effective facility in the science-based stockpile stewardship program – performing 80 percent of all the target shots used in the national inertial confinement fusion and high energy density physics programs with only 13 percent of the NNSA-ICF budget. Currently, demand for the OMEGA facility lasers exceeds available time by a factor of two.

The OMEGA Laser Facility is also the NNSA’s, and Department of Energy’s, largest university-based program and only major facility that trains graduate students, thereby serving as a critical pipeline to educate and train future talent that is critically important to our national and economic security. In addition, the ICF program also supports users from 55 U.S. universities and over 35 centers and national laboratories. Funding for LLE is an investment in the technical capacity of our nation’s nuclear and optical scientists, a crucial component of our national security.

LLE’s benefits go well beyond the more than 2,100 experiments OMEGA conducts annually in support of the ICF program. More than 360 scientists, engineers, technicians, and support staff work at the lab. LLE draws 400 scientists from around the world to Western New York every year to carry out fundamental research, training, and education. LLE provides a strong stimulus to New York’s economy as a source of new start-up companies and a driver of the region’s optics, imaging and photonics sector.

The $80 million the OMEGA Laser Facility we are urging the Subcommittee to support is consistent with the negotiated five-year Cooperative Agreement between the NNSA and the LLE and allows the lab to meet scientific milestones in NNSA’s ten-year strategic plan for ICF in support of stockpile stewardship. In particular, this level of support allows the LLE to support growing facility operations and experiments on OMEGA to make progress on all three of the most viable approaches to fusion and support the research programs of the three NNSA labs.

Funding at this level will provide the necessary resources to support the LLE’s research and academic programs to help maintain the nation’s stockpile and continue to train the future workforce. This level of funding will also accelerate development and deployment of state-of-the-art diagnostics to improve measurements and collect better data on the behavior of matter
under extreme conditions. Better diagnostics will fully leverage the capabilities of existing facilities.

For these reasons, we thank you for your past support and respectfully request $555 million for the ICF program, including $80 million for the OMEGA Laser Facility.

Sincerely,

Louise M. Slaughter  
Member of Congress

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Member of Congress

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