

# National Photonics Initiative Priorities for NQI Reauthorization 2023



**NATIONAL  
PHOTONICS  
INITIATIVE**

**As policymakers consider the second authorization phase of the National Quantum Initiative, the National Photonics Initiative has gathered policy recommendations from key quantum stakeholders about how to expand and improve the NQI and maximize its impact. These recommendations are below.**

## **EDUCATION AND WORKFORCE CENTERS**

- Establish one DOE and one NSF Center dedicated to the education and workforce aspects of the NQI that is funded at least at the level of the existing centers to ensure they can satisfy their mission.
  - Advisory Committee that includes leadership from current centers.
  - DOE and NSF liaison to coordinate between these two centers.
  - Have new centers coordinate with existing centers to share existing resources and coordinate activities.
  - Task the education Centers with developing quantum education curriculum across K-12, community college, and non-R1 institutions in coordination with industry and academia and state governments.
  - Center grant programs:
    - Establish and manage grant programs for small teams to work on education and workforce issues specific to QISE
    - Establish and manage a pilot program to fund localized teacher development programs to scale.
    - Establish and manage a program for allocating equipment funds and faculty support to non-R1 institutions to implement new courses.
    - Establish an internship program to work collaboratively with the Centers for workforce development.
  - For existing centers and new centers, specify K-12 and community college as a critical area of infrastructure development.
  - Mandate that existing centers must coordinate with new education and workforce centers.



## **NQI IMPACT STUDY**

- Commission a National Academies study to assess progress on the goals of the National Quantum Initiative, to include sensing, communications, computing, networking, and workforce development.
- Study to include assessment of joint institutes and potential for establishing additional joint institutes similar to JILA and JQI.

## **QUANTUM SENSING**

- Add language to create enhanced NQI activities in the area of quantum sensing.
- Task NIST with carrying out these quantum sensing research and development directives.

## **DOE CENTERS**

- Engage with stakeholder community broadly to assess the progress of the DOE Centers. Make structural changes if needed based on this feedback.

## **DOE AND NSF CENTERS**

- Task QED-C with studying the barriers to collaboration between the Centers and industry and academia, and make recommendations to alleviate these issues.
- Incentivize industry and government labs to build partnerships via modest financial set aside for these activities, up to \$5 million.



## QUANTUM MANUFACTURING INSTITUTE

- Establish a Quantum Manufacturing USA Institute which works collaboratively with other Manufacturing USA Institutes and other existing facilities to:
  - Provide an end-to-end manufacturing eco system addressing Quantum Computing, Quantum Sensing and Quantum Communication.
  - Include within the end-to-end eco system the capability to design, fabricate and test Quantum devices and manufacturing processes.
  - Provide access to prototyping for researchers and developers working on device and manufacturing process innovation.
- Provide grants to Quantum researchers and developers to enable prototyping devices and manufacturing processes.
- Establish funding mechanisms to support the advancement of Manufacturing Readiness (MRL) for selected technologies.
- Support the development of a Quantum supply chain with emphasis on key components and supply from Allies and a substantial increase Domestic supply.
- Incentivize small, medium and diverse companies to participate in the quantum supply chain.

## INCLUSION OF ADDITIONAL AGENCIES

- Add NASA as one of the agencies covered under the NQI.
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## FUNDING INCREASES FOR DOE, NSF, AND NIST

- Increase authorization levels at all three agencies consistent with percentage increases for the agencies included in the CHIPS and Science Act.
- Add additional funding authorizations for new activities not listed in the original bill.

### About the National Photonics Initiative