University of Colorado Boulder

DECLARATION OF THE UNIVERSITY OF COLORADO BOULDER

I, Justin Schwartz, declare as follows:

1. I am the Chancellor at the University of Colorado Boulder (CU Boulder) in Boulder, Colorado. I have held that position since July 1, 2024. Prior to that I served as the Executive Vice President and Provost at The Pennsylvania State University (interim then permanent) from 2022-2024, after serving as the Harold and Inge Marcus Dean of Penn State's College of Engineering from 2017 to 2022. I have spent my career as a researcher, educator, entrepreneur and academic leader in large state universities. I hold a bachelor's degree in nuclear engineering from the University of Illinois Urbana-Champaign and a doctorate in nuclear engineering from the Massachusetts Institute of Technology. I am a fellow of the National Academy of Inventors, the American Association for the Advancement of Science, the Institute of Electrical and Electronics Engineers, and ASM International.

2. As Chancellor, I have personal knowledge of the contents of this declaration, or have knowledge of the matters based on my review of information and records gathered by the University of Colorado Boulder personnel, and could testify thereto.

3. The University of Colorado Boulder receives substantial annual funding from the Department of Energy ("DOE") and Department of Energy Labs (Including the National Renewable Energy Laboratory (NREL)). In Fiscal Year 2024 the university received 147 awards from the DOE totaling $29,816,115 with $10,377,944 in indirect expenses.

4. The funding the University of Colorado Boulder receives from DOE supports critical and cutting-edge energy related research, which millions of Americans benefit from and depend on. The U.S. Department of Energy (DOE) funds a wide array of research initiatives at the University of Colorado Boulder (CU Boulder), spanning renewable energy, materials science, atmospheric studies, and advanced energy systems. These efforts are often conducted in collaboration with national laboratories and interdisciplinary research centers. CU Boulder researchers collaborate with DOE's Office of Science on various projects, including materials science for solar and energy efficient computing and energy resilience systems. These collaborations often involve partnerships with national laboratories and contribute to advancing basic and applied energy research. CU Boulder's fundamental research is enabled by its participation in 6 Energy Frontier Research Centers focusing on fundamental scientific understanding that form the underpinning of next generation technologies and the critical workforce needed to develop these technologies. In this manner, the work supported by CU Boulder, and DOE-sponsored initiatives, directly impacts our nation's economic and national security by reducing our current and future reliance on technologies that are actively being developed outside the United States. It is noteworthy that a significant portion of CU Boulder's research aligns well with the U.S. Secretary of Energy's strategic direction for the Department of Energy, which emphasizes energy affordability, reliability, and national security, as well as a shift from demonstration projects to fundamental research.

CU Boulder plays a crucial role in supporting the DOE National Laboratories. For instance, CU Boulder maintains formal agreements with several DOE national laboratories, including NREL, Los Alamos National Laboratory, and Sandia National

Laboratories. These partnerships facilitate collaborative research projects, provide access to specialized facilities, and offer opportunities for faculty and student engagement

5. For example:

a. The Department of Energy-funded research led by the University of Colorado Boulder's Renewable and Sustainable Energy Institute (RASEI) encompasses a wide range of projects focused on the development and deployment of technologies critical to the United States' energy security. This research includes foundational work on fusion energy, control systems for wind and marine turbines, and advanced energy storage and grid reliability.

b. At CU Boulder's JILA institute and within the Department of Physics, Department of Energy-funded research spans a frontier portfolio in quantum science, condensed matter physics, and nuclear and particle theory. Projects include nano-optical imaging and ultrafast spectroscopy of quantum materials, exploration of disordered quantum states and fractons, and development of advanced quantum sensors capable of detecting radiation-induced effects in quantum circuits. Additional initiatives investigate superconductivity, strongly coupled plasmon polaritons for energy applications, and cryogenic spin probe technologies for rapid characterization of quantum defects. Work in experimental heavy ion physics and nuclear theory also contributes to fundamental understanding of matter under extreme conditions. These programs not only drive breakthroughs in quantum computing and next-generation materials, but also support applications in energy conversion, space science, and national security, reinforcing U.S. leadership in fundamental and applied physical sciences.

c. The Department of Energy also funds an expansive portfolio of research across CU Boulder's College of Engineering and Applied Science, which includes the departments of Mechanical, Aerospace, Civil, Chemical and Biological, and Materials Engineering, as well as Computer Science. This research includes innovations in water purification, low-carbon cement manufacturing, battery technology, and next-generation photovoltaic and fuel cell materials. Projects also include the application of artificial intelligence to wind energy forecasting, robotic systems for battery recycling, and advanced simulations for grid optimization. By addressing critical challenges in sustainability, infrastructure resilience, and clean energy systems, this work supports public health, national competitiveness, and a sustainable economic future.

d. Critical work at CU Boulder focusses on next generation solar technologies, which are aggressively being pursued in countries such as China. It is critical for the United States not to be reliant on foreign entities for development of technologies such this, rather it is in our national interest to develop these technologies domestically, so industry can further develop them and manufacture U.S.-made products.

e. Another critical area of excellence at CU Boulder pertains to energy storage applications, most notably in the area of next generation batteries. For example, a significant milestone in CU Boulder's battery research is the development of solid-state lithium batteries by CU Boulder professors leading to the creation of Solid Power, a CU Boulder spin-off company. Solid Power has advanced the commercialization of solid-state batteries, which offer enhanced energy density and safety compared to traditional lithium-ion batteries. The company has attracted substantial investment and established manufacturing facilities in Colorado.

f. CU Boulder has forefront research in securing the national electrical grid to address current challenges and increasing demands associated with both Artificial Intelligence and the proliferation of data centers. In particular activities that pertain to building-to-grid optimization, including i) the development of strategies for buildings to interact dynamically with the power grid, enhancing demand response and energy efficiency ii) applications of machine learning techniques to improve power system operations and control; iii) enhancing the resilience and reliability of smart grids through advanced control methods; iv) Designing microgrids that can operate independently or in conjunction with the main grid, improving energy security; iv) implementing advanced control strategies for building energy systems to optimize performance and efficiency

6. Indirect costs are essential for supporting this research. The DOE's proposal to cut indirect cost rates to 15% would end or seriously jeopardize all of the research projects described in paragraph 4. Indirect costs include personnel in support of sponsored projects (security, financial, administrative, technical, maintenance, and janitorial staff), secure data storage, telecommunication, high-speed data processing, utilities (ventilation, heat, air conditioning, water and lighting), library and research facilities, radiation and chemical safety, advanced research lab equipment, costs of federal regulatory compliance, including human and animal safety review boards. For example, with respect to the areas of research described in Paragraph 4:

a. Research relies on state-of-the-art instrumentation facilities that include characterization tools such as transmission electron microscopy, X-ray diffractometers, and laser spectroscopy tools. In many cases, these tools are purchased with

instrumentation grants that require significant cost-sharing elements, which are facilitated by reinvestment from indirect cost recovery.

b. Materials development also requires specialized synthesis spaces that include advanced HVAC systems, which are both expensive to install and maintain.

7. Physical space costs are one of the largest components of indirect costs, and the amount of space available to researchers has a direct and obvious impact on the amount of research that can be done at the University of Colorado Boulder. The University of Colorado Boulder is planning to construct a new research facility that will accommodate several faculty members engaged in the fields of materials synthesis and characterization for energy applications and quantum applications. However, substantial reductions in indirect costs have prompted the university to consider delaying or even canceling the construction of these facilities, which are crucial to CU Boulder's ability to conduct research that is vital to the development of our next generation workforce. This research is essential for maintaining the United States' technological and scientific leadership in these areas.

8. In addition, indirect costs fund the administration of awards, including staff who ensure compliance with a vast number of regulatory mandates from agencies such as DOE.[1] These mandates serve many important functions, including ensuring research integrity; properly managing and disposing of chemical and biological agents used in research; preventing financial conflicts of interest; managing funds; preventing intellectual property, technologies, or national security expertise from being inappropriately accessed by foreign adversaries; and providing the high level of cybersecurity, data storage, and computing

environments mandated for regulated data. Other costs include utilities (electricity, water, heating/cooling), building maintenance, depreciation of facilities and equipment, the support of shared research infrastructure like core facilities, and training programs for lab safety and research ethics. These costs are critical for maintaining the environment that makes research possible.

9. Recovery of the University of Colorado Boulder's indirect costs is based on predetermined rates that have been contractually negotiated with the federal government. Through fiscal year 2024, the predetermined indirect cost rates at 56.5%.

10. The impact of a reduction in the indirect cost rate would be devastating. In Fiscal Year 2024 CU Boulder received approximately $29,479,000 in direct costs on DOE awards and recovered $10,377,944 in indirect costs. In fiscal year 2025, the University of Colorado Boulder expects to receive approximately $34,490,000 in DOE funding for direct costs, while $12,141,000 is allocated for indirect costs. And over the next five years, the University of Colorado Boulder anticipates receiving an average of $40,714,000 from the DOE for annual direct costs. Based on the predetermined indirect cost rate of 56.5%, which was agreed upon by the federal government as of 2022 thus CU Boulder estimates to receive approximately $14,331,000 in indirect cost recovery on an annual basis.

11. This reduction will have deeply damaging effects on the University of Colorado Boulder's ability to conduct research from day one. Most critically, it will necessarily and immediately result in staffing reductions across the board. For example, the University is responsible for ensuring compliance with numerous regulatory requirements from federal sponsors, including DOE. Without adequate funding for indirect costs, the University would need to reduce staff in the Office of Research Integrity and research compliance,

which would limit its ability to prevent financial conflicts of interest, manage intellectual property, and protect technologies and national security expertise from inappropriate access by foreign adversaries. Reductions in staffing within the Office of Information Technologies will hinder the University's capacity to provide the high level of cybersecurity, data storage, and computing environments necessary for regulated data. Furthermore, staffing cuts will adversely affect the support of shared research infrastructure, including unique core facilities that may become unusable and obsolete. This situation could result in significant losses related to investments made to acquire instrumentation and the potential to offer these resources to the broader community for essential testing and characterization. Critical instrumentation includes for example, the transmission electron microscopy facility, quantum measurement devices, spectrometers, and laser systems, among others.

12. It is estimated that cutting overhead rate to 15% will cause a reduction of $8,224,000. Based on current allocation of indirect costs to support administrative units, this will correspond to a loss of approximately 25 positions in units including the Office of Contracts and Grants, Campus Controller Office, Research Compliance and Export Controls as well as unit-level administrative positions within RASEI, JILA, the Institute for Artic and Alpine Research (INSTAAR), the College of Arts and Sciences and the College of Engineering and Applied Science.

13. The University of Colorado Boulder has for decades relied on the payment of indirect costs. And until now, we have been able to rely on the well-established process for negotiating indirect cost rates with the government to inform our budgeting and planning. Operating budgets rely on an estimate of both direct and indirect sponsored funding to plan for annual

staffing needs (*e.g.*, post-docs, PhD students, and other research staff), infrastructure support (*e.g.*, IT networks, regulatory compliance, environmental health and safety staff and facilities, and grant management support), and facility and equipment purchases. And in some cases, the University of Colorado Boulder has long-term obligations—for example, indirect costs fund the establishment of laboratories for newly appointed faculty members, and the support of graduate student fellowships. These start-up funds are committed over periods that vary between 3 and 5 years. Thus, reductions in indirect costs will prevent the university to meet such commitments, reducing the success rate for new faculty and students—and it relies on budgeted grant funding, including associated indirect cost recovery, to fulfill these commitments.

14. In addition to the immediate impacts and reliance interests described above, there are longer-term impacts that are both cumulative and cascading. The areas of research where the Department of Energy has invested include those where i) there is extensive foreign competition, ii) the work impacts the safety and reliability of critical energy infrastructure, iii) the work helps develop various capabilities required to meet the increasing demand for artificial intelligence and data centers, each of which has been identified as a critical infrastructure to our national security and economic security.

15. Disruptions to the University of Colorado Boulder's research will also have negative effects in the Boulder and Denver area, the state of Colorado and the broader region. More than 13,500 Colorado residents were directly employed by the University of Colorado Boulder—and it collaborates with state and local partners to help solve regional challenges through joint research and innovation. The University of Colorado Boulder's research also fuels spending in the regional economy, including by driving discoveries that launch new

ventures, attract private investment, and make a positive social impact. A massive reduction in the University of Colorado Boulder's research budget would immediately and seriously jeopardize these contributions to the local region.

16. Finally, slowdowns or halts in research by the University of Colorado Boulder and other American universities will allow competitor nations that are maintaining their investments in research to surpass the United States on this front, threatening both our Nation's national security and its economic dominance.

17. Nor can the University of Colorado Boulder cover the funding gap itself. The University of Colorado Foundation maintains an endowment for the entire system, and not the individual campuses. Additionally, endowment funds are restricted based on the individual donor the donor agreement, meaning it is neither feasible nor allowable for the University of Colorado Boulder to use endowment funds to cover funding gaps created by a reduction to indirect cost rates.

    a. As a non-profit institution, the University of Colorado Boulder reinvests nearly all of its revenue (primarily student tuition revenue) into mission-critical activities, leaving little margin to absorb unexpected funding gaps. In other words, unlike for-profit organizations, the University of Colorado Boulder does not generate significant surpluses that could be redirected without impacting core academic priorities such as educational programs and financial aid support for students.

18. Moreover, absorbing the cost of a lower indirect cost rate, even if it were possible, would create long-term budget pressures on the University of Colorado Boulder—which would in turn force reductions in key investments supporting the University of Colorado Boulder's faculty, students, staff, research, and teaching infrastructure, as well as other

critical activities needed to maintain the University of Colorado Boulder's academic excellence.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 13, 2025, at Boulder Colorado.

Signed by:
Justin Schwartz
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Justin Schwartz