CINTAC Civil Nuclear Trade Advisory Committee

September 30, 2021

The Honorable Gina M. Raimondo Secretary U.S. Department of Commerce 1401 Constitution Ave., NW Washington, DC 20230

Dear Secretary Raimondo:

As an advisor on promoting nuclear energy exports, the Civil Nuclear Trade Advisory Committee (CINTAC) appreciates your support for America's nuclear energy sector to bolster U.S. competitiveness, jobs, and our economy. America's leadership in nuclear energy does more than support our economy, create high technology jobs, and buttress our national security. Our nuclear industry produces reliable, clean energy technologies that can play a decisive factor in addressing global climate change.

Given its critical importance to America's economic competitiveness, national security, and clean energy future – we ask that you encourage senior leaders across the U.S. Government to highlight the important role of nuclear energy in meeting global climate goals and advocate for nuclear energy's inclusion in mechanisms to mobilize capital and investment to decarbonize economies this November at the upcoming U.N. Climate Change Conference, known as COP26. Shining a spotlight on nuclear energy at COP26 in Glasgow will yield significant benefits for the U.S. industry and advance our netzero emission goals with real benefits for our planet.

We recognize that when President Biden on <u>Earth Day 2021</u> established a 2030 greenhouse gas reduction target "aimed at creating good-paying union jobs and securing U.S. leadership on clean energy technologies," it included nuclear energy. We urge the Administration to demonstrate this same leadership internationally by ensuring nuclear energy is central to any global greenhouse gas reduction regime.

Nuclear energy is the largest source of carbon-free energy in the United States and the European Union, and a major source in other advanced economies. It is considered by leading climate experts as an irreplaceable tool in the fight against climate change. Building more carbon-free nuclear energy facilities, along with other non-emitting sources such as solar and wind, will enable our planet to produce the energy it needs without producing climate-changing emissions.

The United States has played a leading role in nuclear energy since its founding decades ago – most of the world's nuclear facilities today are based on American technology. Exporting nuclear technology creates long-term strategic and economic ties that benefit American interests.

As nuclear energy's growth has slowed in the West, America's competitors such as China and Russia are gaining ground as they export their own nuclear technology to countries around the world. Until recently, American leadership in nuclear energy enabled us to set the standards concerning safety,

safeguards, security, development, transportation, and use of nuclear materials. America's competitors in the East are quickly seizing the leadership role and are controlling the narrative on safety, safeguards, and security. Simply put, if the United States is not at the table, we cannot maintain the standards.

Building on a long and exemplary track record, today dozens of U.S. nuclear energy companies are developing cutting-edge emissions-free technology that is more reliable, more efficient, and even safer. Exporting American technology will enable U.S. companies to make our products and services even better and more competitive. These exports result in long-term jobs and economic benefits in the communities these companies call home.

As many COP meetings have come and gone with little progress on climate, renewed American leadership on this key clean energy could change that. Highlighting nuclear energy at COP26 could do more than anything else at that event to position the United States as a bold leader on climate change. At the same time, promoting U.S. nuclear energy exports offers significant and pragmatic economic, competitiveness, and national security benefits.

Sincerely and on behalf of the members of the CINTAC,

Jeff Harper, Chair

Callenter Vice Chair

CC: U.S. Secretary of State U.S. Secretary of Energy U.S. Secretary of Treasury U.S. Secretary of Defense Special Presidential Envoy for Climate National Security Advisor Director, National Economic Council Chairman, U.S. Nuclear Regulatory Commission

Jeff Harper, CINTAC Chair and Vice President, Strategy and Business Development, X Energy, LLC Ralph Hunter, CINTAC Vice-Chair and Vice President, Exelon Generation Company, LLC, and Chief Operating Officer, Exelon Nuclear Partners, LLC Mimi Limbach, Nuclear Energy Communications Affiliate, 4 Factor Consulting, LLC Jeffery Kerridge, Senior Vice President for Global Business Development, Amentum Margaret Harding, Member of the Board, American Nuclear Society (ANS) Hash Hashemian, President, Analysis and Measurement Services Corporation (AMS) Paul Fakes, Senior Manager, Government Relations, ASME Ahmet Tokpinar, Vice President, Business Development and Operations, Bechtel Power Corporation Daniel Lipman, President, Beginning Energies International Glenn Neises, Nuclear Director, Burns & McDonnell Joseph Miller, General Manager for Advanced Technologies, BWXT Advanced Technologies, LLC John Valentino, Director, International Clients, Centrus Energy Corp. Nicholas McMurray, Senior Program Director, Nuclear Energy, ClearPath Malcolm Critchley, President and CEO, ConverDyn Gary Wolski, Vice President, Market Development, Curtiss-Wright Russell Neely, Chief Operating Officer, Edlow International Company Vice Admiral (Retired, U.S. Navy) William Hilarides, Advisory Board Member, Elysium Industries, USA Colin Austin, Senior Vice President of International Business, EnergySolutions Donald Hoffman, President and CEO, Excel Services Corporation Dayton Lawman, Director of Sales, Navy and Nuclear Products, Flowserve Limitorque Jarret Adams, Founder and CEO, Full On Communications Brandon Brooks, Strategic Business Development Manager, General Atomics Rob Sweeney, President and CEO, ibeX Energy Solutions Seth Grae, President and CEO, Lightbridge Corporation Alex Polonsky, Partner, Morgan, Lewis, & Bockius LLP Myron Kaczmarsky, Managing Director, Government Services, Holtec International Paul Murphy, Founder and Managing Director, Murphy Energy & Infrastructure Consulting Michael McMahon, Vice President, Consulting and Strategic Projects, NAC International Carol Berrigan, Executive Director, Federal Programs & Supplier Relationships, Nuclear Energy Institute Chris Colbert, Chief Strategy Officer and Chief Financial Officer, NuScale Power, LLC Eric Rasmussen, Director of Engineering and Sales, RSCC Wire and Cable, LLC Michael Edwards, Chief Operating Officer, RIZZO International, Inc. Nathan Schukei, Sales and Business Development Manager, Rosemount Nuclear Instruments, Inc. Gard Clark, Senior Vice President, Energy and Environment, Teledyne Brown Engineering, Inc. Marcia Burkey, Senior Vice President and Chief Financial Officer, TerraPower, LLC Yassin Hassan, Professor, Texas A&M University

Bud Albright, President and CEO, U.S. Nuclear Industry Council

Mike Shaqqo, Senior Vice President, Advanced Reactor Programs, Westinghouse Electric Company

CINTAC Civil Nuclear Trade Advisory Committee

April 21, 2022

The Honorable Gina M. Raimondo Secretary U.S. Department of Commerce 1401 Constitution Ave., NW Washington, DC 20230

Dear Secretary Raimondo:

As members of the Civil Nuclear Trade Advisory Committee (CINTAC), an advisory group on the promotion of U.S. nuclear technology exports, we appreciate your support for America's nuclear energy sector. Nuclear energy today plays an important role in supporting America's competitiveness, economy, and national security.

Nuclear energy has an indispensable role in achieving our climate and clean energy goals. Many experts, including the UN Intergovernmental Panel on Climate Change (IPCC), have concluded that we must expand the use of nuclear energy globally if we are to avert the catastrophic effects of climate change. While much of the media coverage of the <u>latest IPCC report</u> focused on renewables, carbon capture and sequestration, or mitigation, the IPCC also calls for a 90 percent expansion of nuclear energy capacity worldwide to meet our climate targets.

Hence, we ask that you highlight at upcoming media engagements and international gatherings U.S. successes and nuclear energy's role in meeting our climate objectives in accordance with the IPCC report conclusions. In addition, we encourage you to highlight nuclear energy's importance to energy security, as well as the America's opportunity to lead on the export of domestic nuclear energy technologies. The inclusion of nuclear energy will help the U.S. achieve our climate goals and could yield tremendous dividends for America's competitiveness, national security, and environmental well being.

Nuclear energy is vital to achieving climate goals, yet it unfortunately receives nearly an inaudible voice in the climate discussion while being recognized by experts as being a large piece of the solution. CINTAC believes that the successes of the Biden Administration in supporting the role that nuclear power has in meeting climate change reduction goals should be advocated more fully to further support U.S. and global objectives.

The Biden Administration has led the world in taking action to combat climate change with the Infrastructure Investment and Jobs Act, which demonstrates a significant investment in decarbonization. The \$6 billion Civil Nuclear Credit program will help preserve the largest single carbon-free source of electricity in the United States. The Advanced Reactor Demonstration Program (ARDP) support, which included authorizations and appropriations in the Infrastructure Bill, similarly demonstrates to the international community U.S. willingness to achieve climate change goals.

To improve international commerce, reduce the impact of climate change and provide leadership to the rest of the world, we need to amplify these U.S. accomplishments at the upcoming Clean Energy Ministerial (CEM) and the UN Climate Change Conference (COP 27) and encourage other nations to do the same, by enacting similar programs in their countries. In doing this, we will have demonstrated a plan that positions the United States to lead the clean energy transition, which includes supplying civilian nuclear technology to other countries. This will further enable us to keep existing plants operating, build new plants domestically, fill the gaps in our supply chain including regarding fuel, and improve the competitiveness of the U.S. nuclear technology offerings for international customers.

In addition to producing clean, reliable power, nuclear energy also promotes energy security because nuclear energy facilities use a small amount of fuel that is easily stored on site. As European allies work to break their dependence on Russian fossil fuels and nuclear technologies, the U.S nuclear energy industry stands ready to assist them with supply options to support ongoing operations and new technologies that will accelerate decarbonization of industrial sectors including the transition to hydrogen.

The development, construction, and operation of nuclear energy facilities domestically and internationally, creates long-term, high-technology jobs in the United States, contributes to regional economies, and make U.S. industry more competitive in a strategic clean energy sector. In addition to these attributes, nuclear energy is essential to meeting our net-zero emissions goals to ensure the future of our planet.

Sincerely and on behalf of the members of the CINTAC,

Jeff Harper, Chairman

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Ralph Hunter, Vice Chairman

Cc: U.S. Secretary of State U.S. Secretary of Energy U.S. Secretary of Treasury U.S. Secretary of Defense Special Presidential Envoy for Climate National Security Advisor Director, National Economic Council Chairman, Nuclear Regulatory Commission

Jeff Harper, CINTAC Chair and Vice President, Strategy and Business Development, X Energy Ralph Hunter, CINTAC Vice-Chair and President, Constellation Generation Development, VP Constellation Jarret Adams, Founder and CEO, Full On Communications Bud Albright, President and CEO, U.S. Nuclear Industry Council Colin Austin, Senior Vice President of International Business, EnergySolutions Carol Berrigan, Executive Director, Federal Programs & Supplier Relationships, Nuclear Energy Institute Brandon Brooks, Strategic Business Development Manager, General Atomics Marcia Burkey, Senior Vice President and Chief Financial Officer, TerraPower, LLC Gard Clark, Senior Vice President, Energy and Environment, Teledyne Brown Engineering, Inc. Chris Colbert, Chief Strategy Officer and Chief Financial Officer, NuScale Power, LLC Malcolm Critchley, President and CEO, ConverDyn Michael Edwards, Chief Operating Officer, RIZZO International, Inc. Paul Fakes, Senior Manager, Government Relations, ASME Seth Grae, President and CEO, Lightbridge Corporation Margaret Harding, Member of the Board, American Nuclear Society (ANS) Hash Hashemian, President, Analysis and Measurement Services Corporation (AMS) Yassin Hassan, Professor, Texas A&M University Vice Admiral (Retired, U.S. Navy) William Hilarides, Advisory Board Member, Elysium Industries, USA Donald Hoffman, President and CEO, Excel Services Corporation Myron Kaczmarsky, Vice President, Holtec Government Services Jeffery Kerridge, Senior Vice President for Global Business Development, Amentum Dayton Lawman, Director of Sales, Navy and Nuclear Products, Flowserve Limitorque Mimi Limbach, Nuclear Energy Communications Affiliate, 4 Factor Consulting, LLC Daniel Lipman, President, Beginning Energies International Michael McMahon, Vice President, Consulting and Strategic Projects, NAC International Nicholas McMurray, Senior Program Director, Nuclear Energy, ClearPath Joseph Miller, General Manager for Advanced Technologies, BWXT Advanced Technologies Paul Murphy, Founder and Managing Director, Murphy Energy & Infrastructure Consulting Russell Neely, Chief Operating Officer, Edlow International Company Glenn Neises, Nuclear Director, Burns & McDonnell Alex Polonsky, Partner, Morgan, Lewis, & Bockius LLP Eric Rasmussen, Director of Engineering and Sales, RSCC Wire and Cable, LLC Nathan Schukei, Sales and Business Development Manager, Rosemount Nuclear Instruments Mike Shaqqo, Senior Vice President, Advanced Reactor Programs, Westinghouse Electric Company Rob Sweeney, President and CEO, ibeX Energy Solutions Ahmet Tokpinar, Vice President, Business Development and Operations, Bechtel Power Corporation John Valentino, Director, International Clients, Centrus Energy Corp.

CINTAC

Civil Nuclear Trade Advisory Committee

4 August 2022

The Honorable Gina Raimondo Secretary U.S. Department of Commerce 1401 Constitution Avenue, NW Washington, DC 20230

Subject: Nuclear Energy is a Secure and Sustainable Investment

Dear Madame Secretary:

The Civil Nuclear Trade Advisory Committee (CINTAC) serves as an advisor to you on the promotion of nuclear energy exports, and we recommend that the U.S. Government (USG) immediately take decisive actions to ensure that nuclear energy is recognized for its contributions to meeting both climate and energy security goals through its inclusion in clean, green, and sustainable financing mechanisms and taxonomies. This will require engagement with both government and private sector stakeholders.

As nations around the world face the twin imperatives of meeting climate goals while ensuring their energy security, it is critical to unlock both private and public financing sources to provide the needed capital to meet these challenges. We note that the recent European Union decision to include nuclear within its taxonomy for sustainable activities is an important step forward and we commend the USG for its support of this notable outcome. However, we continue to see reluctance within the financial community to include nuclear energy in sustainable and/or green products.

Engaging organizations like the Institutional Investors Group on Climate Change (IIGCC), the Glasgow Financial Alliance for Net Zero (GFANZ) and others will help emphasize the role that nuclear energy can play alongside other clean energy resources to meet climate and sustainability goals, and energy security objectives. Positive engagement with such groups can help unlock much needed investment capital to advance nuclear energy development. As background, the IIGCC has over 370 members, across 22 countries, with their members controlling assets in excess of \notin 50 trillion. Further, the Glasgow Financial Alliance for Net Zero includes over 450 financial firms across 45 countries responsible for assets exceeding \$130 trillion.

CINTAC believes that the USG should take a "whole-of-government" approach to:

1. Engage the financial community and apprise organizations like IIGCC and GFANZ regarding the USG position supporting the inclusion of nuclear energy as a sustainable, clean investment that can make significant contributions to meeting energy security objectives on a technology neutral footing.

- 2. Engage, both bilaterally and multilaterally, with other countries and regional and multilateral organizations where USG has a governance or consultative role, and where able, vote in favor of technology neutral green/clean mechanisms or taxonomies. This would include The World Bank, International Finance Corporation, European Bank for Reconstruction and Development, the International Monetary Fund, and the Global Environment Facility.
- 3. Work jointly with the U.S. Department of the Treasury in this effort by supporting clean nuclear energy within its Climate Action Plan and consistent with its preamble by *"Creating and promoting incentives and policies for the private sector to invest in climate-friendly and resilient projects and activities to spur innovation, commercialization, and deployment of clean energy technologies and infrastructure."*
- 4. Use its stature to raise awareness within the financial community of the important role that nuclear energy can play in facilitating a clean and secure energy transition and the significant progress the industry is making in developing and deploying zero-emission nuclear technologies.
- 5. Support a side event, as part of the IAEA Ministerial meetings in Washington, DC in October 2022, specifically promoting nuclear energy in clean/green taxonomies and under ESG principles, as well as engage in clean energy agendas at the Annual Meetings of the International Monetary Fund and the World Bank Group, also to be held in Washington, DC in October.

The Biden Administration has very clearly demonstrated its commitment to environmental sustainability, a clean energy transition and supporting the energy security of the United States' partners and allies. The furtherance of nuclear energy remains aligned with the Administration's stated goals, while supporting American business international expansion.

U.S. companies are actively pursuing the export of small and advanced reactors domestically and internationally. As noted in previous letters to you, financing remains a major concern for potential buyers – a recurring theme heard by numerous U.S. companies (including those on CINTAC) that are pursuing international markets. The specific inclusion of nuclear as a sustainable investment would facilitate access to materially impactful amounts of capital controlled by investor and multilateral financial institutions.

Thank you for your support of CINTAC. We look forward to working with you and supporting your team on this subject and other issues of mutual concern.

Sincerely and on behalf of the members of CINTAC,

Jeff Harper, Chairman

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Ralph Hunter, Vice Chairman

cc: U.S. Secretary of State
U.S. Secretary of Energy
U.S. Secretary of Treasury
National Security Advisor
Chairman, U.S. Nuclear Regulatory Commission
Director, National Economic Council
Director, National Security Council
Chairman, Senate Energy and Natural Resources Committee
Chief Executive Officer, U.S. International Development Finance Corporation
Chairman, Export-Import Bank of the United States
Director, U.S. Trade and Development Agency

CINTAC

Civil Nuclear Trade Advisory Committee

November 4, 2021

The Honorable Gina Raimondo Secretary U.S. Department of Commerce 1401 Constitution Avenue, NW Washington, DC 20230

Subject: Essential Support Needed for U.S.-Canada Nuclear Commerce

Dear Secretary Raimondo:

The Civil Nuclear Trade Advisory Committee (CINTAC) serves as an advisor to you on the promotion of nuclear energy exports, and we are writing regarding the need to reinforce the longstanding mutual collaboration on commercial nuclear matters between the United States and Canada.

With the recent re-election of Prime Minister Justin Trudeau, we believe this is an appropriate time for the Biden Administration to seek closer collaboration between the U.S. and Canadian Governments on advanced commercial nuclear technologies and the resulting new business opportunities. These opportunities are also consistent with the Roadmap for a Renewed U.S.-Canada Partnership that President Biden and Prime Minister Trudeau committed to in February 2021 to strengthen implementation of the Paris Agreement to increase the pace and scale of climate action.

The U.S. and Canada have a highly integrated electricity network with some \$2.3 billion (USD) in bilateral trade carried annually over 30 major cross-border transmission lines, according to the U.S. Department of State. In fact, Canada is a net exporter of approximately \$1.4 billion each year in electricity.

Today, nuclear power provides over 60 percent of Ontario's electricity, and the Province will spend over \$25 billion to extend the life of 10 reactors at the Darlington and Bruce Stations. U.S. companies are involved in these efforts, supplying both personnel and equipment and this program has the potential to provide billions of dollars of revenue for U.S.-based nuclear suppliers. But more importantly, both the U.S. and Canada are embarking on the deployment of the next generation of advanced commercial nuclear reactors.

For example, two U.S.-based companies and a third with U.S. operations (General Electric, X-energy, and Terrestrial Energy respectively) have been down-selected by Ontario Power Generation to deploy one of their small modular reactors at the Darlington site by the end of the 2020s, with vendor selection expected by the end of 2021. Several Canadian utilities, including Bruce Power, SaskPower, and Alberta Power, may also consider these designs or other SMRs technology designs while pursuing operating licenses from the CNSC for future project deployments. Another example is Seattle-based Ultra Safe Nuclear Corporation, whose micro-modular reactor is scheduled for deployment at Canada's Chalk River Laboratories. Several U.S. utilities are closely collaborating on these efforts, and the

selection could have significant consequences for cross-border trade and the beneficial impact of providing carbon free nuclear generation. Furthermore, there are private and public entities in Europe closely watching these developments for possible deployment to reduce dependence on fossil fueled industrial and electric generating facilities. At the same time, financial markets are closely evaluating market signals for potential future vendor and/or project investment.

Importantly as well, most of these reactors will use High-Assay Low Enriched Uranium (HALEU) fuel with enrichments of up to 19.5%. Although the U.S. Department of Energy entered into a three-year project with Centrus Energy Corp. – a U.S. publicly traded corporation – to demonstrate the capability to produce HALEU material, it is for a limited duration and will not come anywhere near meeting the demand required for the advanced reactors planned and underway. Further, unlike the U.S., Canada has no enrichment capability whatsoever, so the need for the U.S. to meet the HALEU demand is vital to U.S. companies seeking to deploy advanced reactors domestically and internationally. The Government of Canada has expressed its strong support for a North American solution to meeting the demand for enriched uranium fuel needed to power advanced commercial reactors. In the absence of increasing domestic HALEU production, Russia will be the only viable source for large amounts of HALEU necessary to support new reactor development. Placing greater reliance on such foreign supply from a geostrategic rival to meet U.S. and Canadian energy needs is not a viable long-term choice, and in our view, the U.S. needs to deploy a whole-of-government approach to this issue as a matter of economic and national security. Making HALEU production a priority will also provide important signals to the stakeholder and financial communities that there will be no limitations or risks associated with fuel supply.

Along with its financial support to assist U.S. advanced reactor companies in developing their reactor technologies, the U.S. should provide robust investment in enrichment capacity needed to meet the emerging HALEU demand from these U.S. advanced reactors. Companies also could sign offtake agreements with U.S. HALEU providers that could provide a sound financial basis to finance further expansion of HALEU production.

Given the potential impact on near- and long-term exports, we request communicating this imperative to support U.S. HALEU development to counterparts specifically at: 1) Department of Energy (to include NNSA and NA-1), 2) Senate Energy and Natural Resources Committee, 3) National Security Council, and 4) National Economic Council, 5) NRCan, and 6) the Canadian Provinces of Ontario, New Brunswick, Saskatchewan, and Alberta.

Thirty years ago, the United States was the unparalleled and dominant supplier of international nuclear trade. Unfortunately, this is no longer the case, as non-U.S., state-owned entities have become significant competitive threats. Therefore, our companies are disadvantaged and must work ever harder to maintain our competitive edge. While we are unwavering in the need to enhance U.S. nuclear technology exports, we believe Canada can be a strong ally in what could be a tremendous economic opportunity for both countries, and we urge a significantly closer level of cooperation between the Biden and Trudeau Administrations to achieve this vital goal.

To this end, we request contacting the Canadian Minister of Small Business, Export Promotion and International Trade regarding a focused discussion on civil nuclear energy cooperation between our countries. The discussion may include the following:

• Encourage both countries to agree to keep the Canada-U.S. border open in the civil nuclear sector, especially as many of our respective nuclear technology and materials companies

operate cross-border; in particular, insulate civil nuclear cooperation from other bilateral energy issues in which there may be dispute.

- Encourage continued cooperation between our nuclear regulators, Canadian Nuclear Safety Commission (CNSC) and U.S. Nuclear Regulatory Commission (NRC), to harmonize regulations with respect to licensing and movement of technologies, materials, and people between our two countries. By closely collaborating on efforts to greater align regulatory reviews, with a goal of reducing regulatory overlap and expediting the deployment of these game-changing technologies, the harmonization has the potential to result in efficiencies in both countries. It would then provide an export platform of a new generation of nuclear reactors from both countries to Asia, Europe, Latin America, and Africa, while acting as a model for other nations with limited or less established regulatory frameworks to shape and develop their own nuclear safety programs going forward.
- Emphasize one of the key areas of U.S.-Canada bilateral cooperation is in nuclear materials and fuels. With many U.S. and Canadian advanced reactor technologies and SMR designs relying on enriched uranium fuel and High-Assay Low Enriched Uranium (HALEU) fuel, the countries will need to work closely together on fuel cooperation not only between/among our companies but also national nuclear laboratories.

Thank you for your support of CINTAC. We look forward to working with you and your team on this subject and other issues of mutual concern.

Sincerely and on behalf of the members of CINTAC,

Jeff Harper, Chair

Ralph Henry

Ralph Hunter, Vice Chair

cc: U.S. Secretary of State
U.S. Secretary of Energy
U.S. Secretary of Treasury
U.S. Secretary of Defense
National Security Advisor
Chairman, U.S. Nuclear Regulatory Commission
Director, National Economic Council
Director, National Security Council
Chief Executive Officer, Development Finance Corporation
Chairman, Export-Import Bank of the United States
Chairman, U.S. Nuclear Regulatory Commission

Jeff Harper, CINTAC Chair and Vice President, Strategy and Business Development, X Energy, LLC Ralph Hunter, CINTAC Vice-Chair and Vice President, Exelon Generation Company, LLC, and Chief Operating Officer, Exelon Nuclear Partners, LLC Jarret Adams, Founder and CEO, Full On Communications Bud Albright, President and CEO, U.S. Nuclear Industry Council Colin Austin, Senior Vice President of International Business, EnergySolutions Carol Berrigan, Executive Director, Federal Programs & Supplier Relationships, Nuclear Energy Institute Chrissy Borskey, Senior Vice President for Government Affairs, GE Hitachi Nuclear Energy Brandon Brooks, Strategic Business Development Manager, General Atomics Marcia Burkey, Senior Vice President and Chief Financial Officer, TerraPower, LLC Gard Clark, Senior Vice President, Energy and Environment, Teledyne Brown Engineering, Inc. Chris Colbert, Chief Strategy Officer and Chief Financial Officer, NuScale Power, LLC Malcolm Critchley, President and CEO, ConverDyn Michael Edwards, Chief Operating Officer, RIZZO International, Inc. Paul Fakes, Senior Manager, Government Relations, ASME Seth Grae, President and CEO, Lightbridge Corporation Margaret Harding, Member of the Board, American Nuclear Society (ANS) Hash Hashemian, President, Analysis and Measurement Services Corporation (AMS) Yassin Hassan, Professor, Texas A&M University Vice Admiral (Retired, U.S. Navy) William Hilarides, Advisory Board Member, Elysium Industries, USA Donald Hoffman, President and CEO, Excel Services Corporation Myron Kaczmarsky, Vice President, Holtec Government Services Jeffery Kerridge, Senior Vice President for Global Business Development, Amentum Dayton Lawman, Director of Sales, Navy and Nuclear Products, Flowserve Limitorque Mimi Limbach, Nuclear Energy Communications Affiliate, 4 Factor Consulting, LLC Daniel Lipman, President, Beginning Energies International Michael McMahon, Vice President, Consulting and Strategic Projects, NAC International Nicholas McMurray, Senior Program Director, Nuclear Energy, ClearPath Joseph Miller, General Manager for Advanced Technologies, BWXT Advanced Technologies, LLC Paul Murphy, Founder and Managing Director, Murphy Energy & Infrastructure Consulting, LLC Russell Neely, Chief Operating Officer, Edlow International Company Glenn Neises, Nuclear Director, Burns & McDonnell Alex Polonsky, Partner, Morgan, Lewis, & Bockius LLP Eric Rasmussen, Director of Engineering and Sales, RSCC Wire and Cable, LLC Nathan Schukei, Sales and Business Development Manager, Rosemount Nuclear Instruments, Inc. Mike Shaqqo, Senior Vice President, Advanced Reactor Programs, Westinghouse Electric Company Rob Sweeney, President and CEO, ibeX Energy Solutions Ahmet Tokpinar, Vice President, Business Development and Operations, Bechtel Power Corporation John Valentino, Director, International Clients, Centrus Energy Corp.

CINTAC Civil Nuclear Trade Advisory Committee

February 7, 2022

The Honorable Gina M. Raimondo Secretary U.S. Department of Commerce 1401 Constitution Ave., NW Washington, DC 20230

Subject: 24/7 Carbon-Pollution Free Electricity

Dear Secretary Raimondo:

As an advisor on promoting nuclear energy exports, the Civil Nuclear Trade Advisory Committee (CINTAC) appreciates your support for the United States' nuclear energy sector to bolster U.S. competitiveness, jobs, and our economy. The U.S.'s leadership in nuclear energy does more than support our economy, create high technology jobs, and buttress our national security. Our nuclear industry also produces reliable, carbon-free electricity that can play a decisive role in addressing global climate change by supporting the supply of 24/7 carbon-pollution free electricityⁱ in combination with renewables and storage.

President Biden's recent <u>Executive Order</u> set a goal for the U.S. Government to source one-half of its electricity from 24/7 carbon-pollution free electricity sources by 2030. We believe that the Department of Commerce should double down on the Executive Order's goal and seek to source **ALL** of its electricity from 24/7 carbon-pollution free sources by the end of 2022 for its operations in Washington, DC. This is **POSSIBLE TODAY** because Washington, DC has access to a large number of 24/7, carbon-pollution free nuclear plants in both Virginia and Maryland. In fact, for the first half of 2021, Washington, DC received 33% of its electricity from nuclear and 7% from renewables.ⁱⁱ

By beginning now, the Department of Commerce can lead all U.S. Government offices within Washington, DC and highlight a 24/7 carbon-pollution free "City of the Future" by the time the International Atomic Energy Agency (IAEA) International Ministerial Conference on Nuclear Power in the 21st Century takes place in Washington, DC from October 26-28, 2022. With COP27 then scheduled a few weeks later in Egypt, the U.S. can build upon this achievement amongst its peers.

We therefore strongly encourage you to implement a 24/7 carbon-pollution free electricity environment at the Department of Commerce by October, and challenge every U.S. agency, business, resident, and the District itself to join in. By leading the way, the Department of Commerce will harness the positive competitive nature of all who live and work within Washington, DC.

Sincerely and on behalf of the members of CINTAC,

Jeff Harper, Chair

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Ralph Hunter, Vice Chair

Cc: U.S. Secretary of State U.S. Secretary of Energy Special Presidential Envoy for Climate National Security Advisor Director, National Economic Council Chair, Nuclear Regulatory Commission

ⁱ The concept behind 24/7 Carbon-Free Electricity was first made popular by <u>Google</u> in 2018, endorsed by the UN on September 24, 2021 in its <u>24/7 Carbon</u> <u>Free Energy Compact</u>, and now embraced by the U.S. Government in the December 8, 2021 <u>Executive Order on Catalyzing Clean Energy and Industries</u> <u>through Federal Sustainability</u>. As defined in the EO "24/7 carbon pollution-free electricity" means carbon pollution-free electricity procured to match actual electricity consumption on an hourly basis and produced within the same regional grid where the energy is consumed.

ⁱⁱ Based on standardized environmental data filed by PEPCO with the District of Columbia Public Service Commission for the period January 1, 2021 – June 30, 2021. Here is a <u>LINK</u> to that report.

Jeff Harper, CINTAC Chair and Vice President, Strategy and Business Development, X Energy Ralph Hunter, CINTAC Vice-Chair and Vice President, Exelon Generation Company, LLC, and Chief Operating Officer, Exelon Nuclear Partners, LLC Jarret Adams, Founder and CEO, Full On Communications Bud Albright, President and CEO, U.S. Nuclear Industry Council Colin Austin, Senior Vice President of International Business, EnergySolutions Carol Berrigan, Executive Director, Federal Programs & Supplier Relationships, Nuclear Energy Institute Brandon Brooks, Strategic Business Development Manager, General Atomics Marcia Burkey, Senior Vice President and Chief Financial Officer, TerraPower, LLC Gard Clark, Senior Vice President, Energy and Environment, Teledyne Brown Engineering, Inc. Chris Colbert, Chief Strategy Officer and Chief Financial Officer, NuScale Power, LLC Malcolm Critchley, President and CEO, ConverDyn Michael Edwards, Chief Operating Officer, RIZZO International, Inc. Paul Fakes, Senior Manager, Government Relations, ASME Seth Grae, President and CEO, Lightbridge Corporation Margaret Harding, Member of the Board, American Nuclear Society (ANS) Hash Hashemian, President, Analysis and Measurement Services Corporation (AMS) Yassin Hassan, Professor, Texas A&M University Vice Admiral (Retired, U.S. Navy) William Hilarides, Advisory Board Member, Elysium Industries, USA Donald Hoffman, President and CEO, Excel Services Corporation Myron Kaczmarsky, Vice President, Holtec Government Services Jeffery Kerridge, Senior Vice President for Global Business Development, Amentum Dayton Lawman, Director of Sales, Navy and Nuclear Products, Flowserve Limitorque Mimi Limbach, Nuclear Energy Communications Affiliate, 4 Factor Consulting, LLC Daniel Lipman, President, Beginning Energies International Michael McMahon, Vice President, Consulting and Strategic Projects, NAC International Nicholas McMurray, Senior Program Director, Nuclear Energy, ClearPath Joseph Miller, General Manager for Advanced Technologies, BWXT Advanced Technologies Paul Murphy, Founder and Managing Director, Murphy Energy & Infrastructure Consulting Russell Neely, Chief Operating Officer, Edlow International Company Glenn Neises, Nuclear Director, Burns & McDonnell Alex Polonsky, Partner, Morgan, Lewis, & Bockius LLP Eric Rasmussen, Director of Engineering and Sales, RSCC Wire and Cable, LLC Nathan Schukei, Sales and Business Development Manager, Rosemount Nuclear Instruments Mike Shaqqo, Senior Vice President, Advanced Reactor Programs, Westinghouse Electric Company Rob Sweeney, President and CEO, ibeX Energy Solutions Ahmet Tokpinar, Vice President, Business Development and Operations, Bechtel Power Corporation John Valentino, Director, International Clients, Centrus Energy Corp.

CINTAC

Civil Nuclear Trade Advisory Committee

February 7, 2022

The Honorable Gina Raimondo Secretary U.S. Department of Commerce 1401 Constitution Avenue, NW Washington, DC 20230

Subject: Creation of Task Force to Address Developer and Equity Investment Issues

Dear Secretary Raimondo:

The Civil Nuclear Trade Advisory Committee (CINTAC) serves as an advisor to you on the promotion of nuclear energy exports, and we are writing regarding the need to address: (1) the absence of a "Developer"¹ role in foreign nuclear projects; and (2) the absence of U.S. "Equity Investment" as a component of foreign nuclear power projects.

The Developer Role

Currently, U.S. nuclear reactor technology developers and industry partners do not offer a project development function or full-service role to meet bid/offering requirements to succeed effectively in current international nuclear markets. This situation leads to an absence of an overarching counterparty for nuclear power plant (NPP) deployment and results in an incomplete offering. This situation puts U.S. firms at a disadvantage when compared to State Owned Enterprises (SOEs) and the leadership role taken by their governments in deal promotion and formation. Current and projected market conditions require a move away from the historical bid/response process towards more innovative approaches to develop U.S. led NPP projects and increase exports.

The Equity Investment Issue

Foreign customers wish to have U.S. equity investments in their NPP projects (noting that competitor nations include equity in their offerings); however, there does not seem to be a willingness or ability from the U.S. private sector (whether vendors, other nuclear exporters, or third-party investors) to provide meaningful equity investment, nor does the U.S. Government (USG) currently have the means to provide the requisite equity investment into these projects. Foreign customers tend to place a premium on the foreign project delivery team's ability to provide much of the financing, while assuming as much of the project risk as possible. Unfortunately, the U.S. has limitations with its ability to provide equity funding and assume risks (like some SOEs

¹ A "Developer" here means the leading party or entity that is involved with the development and oversight of an NPP project's planning, financing, execution, and commercial delivery.

have represented). Given the relative strengths and weaknesses involved, this area is ripe for a public/private approach leveraging the capabilities of both sectors to manage project risk more effectively.

Recommendation

CINTAC recommends that a "Task Force" (TF) under the authority of the Secretary of Commerce (preferably in coordination with the National Security Council) be convened to examine these two issues and related matters. Specifically, CINTAC recommends that the Secretary and the TF focus its efforts towards:

- 1. The need and options (both private and public) for a project "Developer" model to support U.S.-led international nuclear reactor projects and other nuclear export opportunities, including ways in which the USG can take both leadership and supporting roles. The TF would also (i) identify and consider lessons learned and/or factors that led to complications or challenges resulting in conditions and outcomes where U.S.-led efforts failed to win or even secure an opportunity to bid; and (ii) provide recommendations to enhance a delivery-developer model for future industry use and USG support, while taking into account current market trends and customers' expressed needs; and
- 2. The potential methods and sources available (both private and public), market conditions, public policy considerations, and regulatory issues, to be considered in the promotion of U.S. equity investment in new NPP projects involving U.S. exports. The TF would also consider lessons learned from prior financing efforts of overseas projects, as well as equity financing success models from other applicable industries to support new equity strategies for these NPPs.

An expected set of outcomes from the TF would also include: (i) suggested new resources for USG institutions, to include support mechanisms for "Developer" functions; and (ii) financing incentives, structures, and products to encourage greater equity participation from private sources in foreign NPPs, including considerations on carbon reduction goals and environmental, social and governance (ESG) investment objectives.

Should the Secretary authorize the creation of a TF, CINTAC proposes that it convene for a 9month period and be comprised of external advisors and contributors, all with specific experience on the topics involved (<u>i.e.</u>, history of developing and/or financing international nuclear power projects, large scale multi-billion dollar energy and industrial infrastructure projects, and major technology export sales). We further recommend a manageable number of participants (not more than 10 external advisors; not more than 10 from U.S. Government) and that external advisors be compensated at market rates that reflect the experience and seniority of the external advisors, as well as be reimbursed for any necessary travel. CINTAC proposes a draft final report with preliminary findings and recommendations from the TF to the Secretary within 6 months, with a final TF report to the Secretary no later than the completion of the 9-month term.

Lastly, if it may be accommodated, CINTAC suggests that any corresponding announcement of the TF by the Secretary be made in advance of the IAEA Ministerial that will be hosted by the U.S. in Washington, DC in late 2022.

Thank you for your support of CINTAC. We look forward to working with you and your team on this subject and other issues of mutual concern.

Sincerely and on behalf of the members of CINTAC,

Jeff Harper, Chair

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Ralph Hunter, Vice Chair

cc: U.S. Secretary of State
U.S. Secretary of Energy
U.S. Secretary of Treasury
National Security Advisor
Chairman, U.S. Nuclear Regulatory Commission
Director, National Economic Council
Director, National Security Council
Chairman, Senate Energy and Natural Resources Committee
Chief Executive Officer, U.S. International Development Finance Corporation
Chairman, Export-Import Bank of the United States
Director, U.S. Trade and Development Agency

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CINTAC

Civil Nuclear Trade Advisory Committee

April 21, 2022

The Honorable Gina Raimondo Secretary U.S. Department of Commerce 1401 Constitution Avenue, NW Washington, DC 20230

Subject:Imperative Support Needed for Domestic Production of High-Assay Low Enriched
Uranium (HALEU) While Expanding Low Enriched Uranium (LEU) Capacity for
Domestic and Foreign Nuclear Power Programs

Dear Madame Secretary:

The Civil Nuclear Trade Advisory Committee (CINTAC) serves as an advisor to you on the promotion of nuclear energy exports, and we recommend that the U.S. Government (USG) commence an aggressive program to substantially increase domestic uranium enrichment and conversion capabilities needed to support: 1) the operation and expansion of the U.S. nuclear power program and 2) deployment of advanced nuclear reactors using HALEU in the U.S. and abroad. The only existing commercial supplier is Russia, and while there is currently no legal ban on importing HALEU from Russia, purchasing HALEU from Russia is unacceptable for national security reasons and no longer a viable commercial option.

Specifically, we kindly request:

- your vocal and aggressive support on Capitol Hill to help appropriators understand the imperative to fully fund – at least \$300 million annually through 2028 – the HALEU development programs through DOE initiatives already authorized through the Energy Act of 2020. The investment in HALEU is an investment in U.S. energy security.
- 2) The Department of Commerce work directly with DOE and the Department of State to create a HALEU "fuel bank" or similar idea by December 31, 2022, that can act as a reliable demand signal to the market. This concept, using funds from \$3.5 billion proposed from FY2023-2031 in the International Nuclear Energy Act of 2022¹, could guarantee a certain minimum HALEU level to support advanced reactor deployments and domestic and international HALEU demand while enabling potential HALEU suppliers secure favorable financing terms.

Efforts to establish domestic HALEU production with Uranium-235 enrichment levels up to 19.75% are essential to our energy, climate, nonproliferation, and national security objectives while also creating thousands of American jobs.

¹ https://www.energy.senate.gov/services/files/35C3C5BF-0D81-4D23-B661-38C03218C402

The lack of sufficient quantities of HALEU to support commercial operations is a crucial concern constraining American companies' ability to develop and deploy advanced reactors both domestically and internationally, especially when competing against large state-owned enterprises that offer advanced designs that also include fuel. Current estimates of the advanced reactor market conservatively suggest annual global sales exceeding \$10B by 2030 with over 50% of the expected designs to use HALEU fuel. U.S. vendors will aggressively compete for those sales and must have the supporting infrastructure which will lead to thousands of American jobs and long-term relationships extending into the 2100's.

The Department of Energy's (DOE) Advanced Reactor Demonstration Program (ARDP) continues to stimulate demand for advanced reactors, but availability of commercial quantities of HALEU, which is a requirement for the viability of many advanced reactor designs is uncertain today. DOE solicited public input in December 2021 with a request for information regarding its plans to create a new program in the U.S. to ensure the availability of HALEU. We firmly believe that the USG must invest significant resources towards domestic HALEU production guided by the following three principles:

- 1) **Timely**: DOE moved with remarkable speed to establish the ARDP with the first awards announced within ten months of the program's creation. We must have a similar sense of urgency from all relevant elements of the USG. Without certainty of a U.S. HALEU supply, both near-term and longer-term advanced reactor deployments could be delayed or abandoned and U.S. leadership in this evolving sector ceded to foreign competitors. Given that it could take up to four years to establish new enrichment capacity and there is a 2026 statutory deadline for HALEU availability set by the Energy Act of 2020, the USG and industry must begin commercial HALEU deployment immediately.
- 2) Robust: USG's investment must match the difficulty and importance of the challenge. A single HALEU production facility with deconversion capacity could cost \$500 million to \$1 billion, depending on the scale of production and other factors. And given the potential market size both domestically and internationally, sufficient capacity to meet burgeoning demand will provide the certainty of fuel availability that reactor owners need to invest in a HALEU-fueled design. DOE's commitment to the ARDP will be seriously undermined if there is not a similarly robust commercial effort to establish the domestic fuel supply chain these reactors require.
- 3) **Strategic**: A domestic supply of HALEU is important to a broad range of U.S. strategic interests, from ARDP demonstration awardees to other commercial reactor developers, to use in research reactors and space propulsion and extra-terrestrial power applications. By domesticating the HALEU supply chain, including the production of unobligated uranium, the USG and the U.S. nuclear industry simultaneously provide options for possible microreactor deployments by entities such as the Department of Defense and the National Aeronautics and Space Administration (NASA).

Over the last 30 years, the U.S. has ceded their historical enrichment leadership to others. Currently, domestic nuclear plants import 99% of natural uranium and roughly two-thirds of the LEU used in current nuclear plants is from outside the U.S. . The immediate development of a domestic HALEU supply chain will address needs for both HALEU and LEU.

Russia now plays the dominant role in two key steps in nuclear fuel supply, with over 20% of the world's uranium conversion capacity and 45% of global uranium enrichment capacity. We must

restore America's domestic nuclear fuel supply chain so that we can once again meet our own needs and contribute to the energy security of our allies, with no reliance on Russia. This initiative includes establishing a domestic capability to produce HALEU for advanced reactors while also providing LEU supply to the existing fleet of reactors. Achieving this goal requires large-scale public and private investment.

Trade restrictions can supplement this effort, but not substitute for it. The Russian Suspension Agreement provides a mechanism for the Department of Commerce to gradually reduce our reliance on imports of Russian uranium, conversion, and enrichment services but this can only be successful if done in concert with a robust and urgent investment in domestic capacity to produce HALEU and LEU.

Commercial attachés in U.S. embassies are already seeing expanded and vibrant interests in U.S. nuclear fuel supply and new reactor deployments from countries reacting to Russia's invasion of Ukraine. However, in order to compete in the international market, the U.S. must be able to offer a complete package including the HALEU fuel for the U.S. advanced reactors under development.

Thank you for your support of CINTAC. We look forward to working with you and supporting your team on the challenges associated with HALEU development and other issues of mutual concern.

Sincerely and on behalf of the members of CINTAC,

Jeff Harper, Chairman

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U.S. Secretary of State cc: U.S. Secretary of Energy U.S. Secretary of Treasury U.S. Secretary of Defense National Security Advisor Chairman, U.S. Nuclear Regulatory Commission Director, Office of Management and Budget Director, National Economic Council Director, National Security Council Chairman, Senate Energy and Natural Resources Committee Chief Executive Officer, U.S. International Development Finance Corporation Chairman, Export-Import Bank of the United States Director, U.S. Trade and Development Agency Administrator, National Aeronautics and Space Administration

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