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Eclipse Submission in Response to Request for Information on Development of an Artificial Intelligence (AI) Action Plan

Since the launch of ChatGPT, the demand for AI applications has surged, generating unprecedented increased demand for robust computational infrastructure. Existing facilities, technologies, and capabilities to manufacture and assemble the necessary technologies are insufficient to handle the processing requirements of training and interference workloads.

As a true general-purpose technology (GPT), AI is pervasive across key sectors of the economy, improving rapidly, and spawning complementary innovations. Arguably, more than any previous technology paradigm shift, AI is quickly transforming industries, economies, and societies worldwide. Winners in the race to develop and deploy leading AI technologies will safeguard their own national interests, while also cementing their leadership in the global AI competition. AI is

rapidly reshaping industries and global power structures. Countries that control AI production and deployment will dictate economic and military advancements in the coming decades.

As AI becomes a critical driver of economic and military power, it is imperative for the United States to lead, including by ensuring that our allies develop secure, high-performance AI infrastructure consistent with U.S. AI technology standards and architecture. Given the increasing influence of Chinese AI technology, and the attendant risks of widespread international deployment of China based AI infrastructure built on key advances such as DeepSeek, U.S. companies—backed by the U.S. government—must establish a robust, repeatable framework for deploying AI infrastructure both domestically and internationally. This submission outlines a strategic approach to drive U.S. AI leadership through three key initiatives:

1. Domestic Production of Key Data Center Components
2. Adoption of U.S.-led AI capabilities by Key Allies
3. Strategic Energy Deployment for American AI Infrastructure

1. Domestic Production of Key Data Center Components

Building a Comprehensive Data Center Manufacturing Supply Chain in the United States

Strategic Objectives

As artificial intelligence (AI) becomes increasingly vital for economic growth, national security, and technological leadership, it is imperative that the United States develop a comprehensive, domestically based manufacturing supply chain for key data center components. This strategic initiative focuses on ensuring that critical hardware—ranging from servers, graphics processing units (GPUs), and storage systems to networking and power infrastructure—is produced within the country to support the ever-growing demand for AI-driven computing. Additional policy actions may be required to ensure that manufacturing of key components

occurs domestically. This could include actions under the authority of President Trump's "Securing the Information and Communications Technology and Services Supply Chain" Executive Order[1], new Executive Orders, or related legislation.

Servers

Domestic production of AI-optimized servers requires a robust supply chain for critical components such as motherboards, central processing units (CPUs), and high-bandwidth memory. The government should focus on fostering partnerships between hardware manufacturers, research institutions, and government agencies to support local fabrication plants and ensure a stable supply of raw materials like rare earth elements.

GPUs and AI Accelerators

GPUs and AI accelerators are among the most critical components for AI-driven data centers, yet much of the manufacturing is still outsourced to foreign foundries. To enhance domestic capabilities, the U.S. must expand its investment in advanced semiconductor fabrication facilities capable of producing cutting-edge AI chips at scale. This requires state-level incentives for companies to establish new fabs, workforce development programs to train engineers and technicians, and strengthened research and development (R&D) efforts to push the boundaries of chip design and manufacturing processes, as well as trade measures to protect against non-competitive and non-market practices by foreign nation competitors. For advanced AI chips, the U.S. must streamline the process of export control review and ensure that appropriate export control provisions do not limit the ability of American companies to compete in international markets and risk losing key customers to Chinese or other foreign competitors.

Storage Systems

[1] Executive Order 13873 (May 15, 2019), https://www.federalregister.gov/documents/2019/05/17/2019-10538/securing-the-information-and-communications-technology-and-services-supply-chain

High-performance storage solutions, such as solid-state drives (SSDs) and high-capacity storage arrays, are essential for managing the vast amounts of data processed by AI applications. While the U.S. has strong storage technology companies, much of the component manufacturing occurs overseas. Increasing domestic production would require investment in advanced fabrication facilities for NAND flash memory and storage controllers, as well as partnerships with major storage solution providers to onshore final assembly and testing.

Networking and Power Infrastructure

Beyond computational components, networking hardware—such as high-speed switches, routers, and fiber-optic connectivity solutions—must be produced domestically to support AI workloads securely and efficiently. Additionally, power and cooling infrastructure for AI data centers require specialized hardware, including power distribution units (PDUs) and liquid cooling systems. Government policies such as streamlined permitting processes can encourage domestic production of these critical infrastructure elements.

Policy and Investment Strategies

To achieve full domestic production of AI data center components, a combination of government policy support, private sector investment, and workforce training initiatives is necessary. Potential strategies include:

- Tax incentives for companies investing in U.S.-based semiconductor and hardware manufacturing facilities.
- Stream-lined regulatory approvals, especially for environmental permitting, for domestic investment in these areas.
- Public-private partnerships to support AI infrastructure and supply chain resilience.
- Education and workforce development programs to build a skilled labor force for semiconductor and high-performance computing industries.

- Trade policies that reduce dependency on foreign supply chains while ensuring access to essential raw materials.

By addressing these requirements, the United States can enhance its competitiveness in AI-driven computing while ensuring long-term security and technological independence in production of critical infrastructure components.

2. Adoption of U.S.-led AI capabilities by Key Allies

Establishing a Repeatable Deployment Model for Scalable and Adaptable AI Infrastructure across Allied Nations

Strategic Objectives

By ensuring that allied nations have access to secure AI infrastructure, the U.S. can both safeguard its own interests and promote a future where AI development aligns with democratic values and fair competition.

The primary objective of this initiative is to enhance AI sovereignty for U.S. allies by providing secure, high-quality AI infrastructure that aligns with U.S. technological and security standards. By expanding economic and technological influence, the U.S. will enable allied nations to develop competitive AI ecosystems without reliance on technology from adversary nations. Establishing a repeatable deployment model will create a scalable and adaptable AI infrastructure framework that can be replicated across multiple allied nations. Additionally, this strategy will strengthen U.S. industry leadership, positioning American technology firms as the preferred providers of AI solutions in global markets. A well-structured AI infrastructure strategy not only benefits U.S. allies but also solidifies America's role as a leader in technological advancement. By expanding economic impact and securing partnerships in AI development, the U.S. can prevent strategic vulnerabilities in global AI supply chains. The goal is to create an ecosystem where allied nations utilize reliable, secure, and cutting-edge AI technologies. It is essential that leading American companies—in alignment with U.S. government

policy—seize the initiative and offer allied countries a viable solution for AI infrastructure. Unlike the 5G competition, in which the U.S. struggled to offer allied countries a cost-effective alternative to Huawei products, U.S. companies are world leaders in AI infrastructure and can deliver a repeatable, scalable capability suite to allied countries to build a global network of U.S.-developed AI infrastructure. And unlike the 5G competition, in which the U.S. was forced to fight an uphill battle to convince allies to rip out Huawei equipment, the U.S. currently has the opportunity to take the lead in providing allies with a viable AI solution. Furthermore, the stakes are higher—unlike 5G telecom equipment, or reliance on a natural resource like oil—once a country has adopted AI infrastructure that is built on adversary architecture, it will be almost impossible to liberate the minds and social systems that have become reliant on these systems.

Key Components of AI Infrastructure Development

Data centers form the backbone of AI infrastructure, offering computational power for training and deploying AI models. These facilities must be designed to meet high security and operational efficiency standards, ensuring protection against cyber threats. By building partnerships with allied governments and private entities, the U.S. can create an ecosystem where AI computing power remains within friendly nations rather than being outsourced to adversary-nation entities.

AI development and deployment are incredibly energy-intensive, making a resilient energy grid crucial for AI infrastructure. Baseload energy sources such as natural gas and nuclear power generation will be essential to meeting the growing demand for reliable, uninterrupted energy. Partnering with U.S. energy firms will provide the necessary technical expertise to develop robust energy systems capable of supporting AI infrastructure at scale.

Semiconductors are a cornerstone of AI technology, and control over the supply chain ensures both economic stability and security. By developing advanced manufacturing hubs within allied nations, the U.S. can mitigate risks associated with vulnerable supply chains. Investments in fabrication plants and advanced

semiconductor research will also boost technological innovation within allied territories.

Building full-stack, advanced manufacturing capabilities in-country, including autonomous solutions that integrate software and robotics, will lead to increased self-sufficiency in manufacturing, reducing the need for allied countries to rely indefinitely on products manufactured across a broad range of external partners. By leveraging AI-driven automation, additive manufacturing, and intelligent supply chain solutions, the U.S. and its allies can create a resilient and efficient industrial base. Furthermore, digital manufacturing environments provide robust traceability that helps to improve quality and efficiency by giving manufacturers real-time visibility into their operations and facilitating root-cause analysis. This is of particular importance for AI infrastructure as semiconductor delays stemming from a flawed production process can lead to critical project delays, slower AI development, and the potential for competitive disadvantage.

Robotics and automation will significantly affect a variety of industries ranging from manufacturing to healthcare. Deploying AI-powered robotics can increase efficiency and make allied economies more competitive. Developing AI-driven robotics solutions for industries such as logistics, healthcare, and defense will promote U.S. robotics firms as preferred partners in industrial automation.

The UAE as a Pilot Nation

The UAE is an ideal starting point for this initiative due to its strategic geopolitical status, strong existing ties with the U.S. in defense, technology, and energy, significant investment in AI and digital transformation initiatives, and commitment to economic diversification and advanced technology adoption. As a nation committed to innovation, the UAE presents an excellent opportunity to establish a model for AI infrastructure development. With a government that actively promotes technological progress, including through the UAE National Strategy for Artificial Intelligence 2031, there is great opportunity for collaboration with U.S. companies.

A successful implementation in the UAE can serve as a blueprint for future expansions in other allied nations.

Implementation Strategy

Private-sector companies can build on President Trump's recent Executive Order, "Removing Barriers to American Leadership in Artificial Intelligence", to create a structured playbook for implementing AI infrastructure in allied countries.[2] This Executive Order provides a foundation for reducing regulatory burdens, streamlining AI development, and fostering private investment in AI technologies. U.S. technology firms can leverage this framework to deploy AI infrastructure efficiently while maintaining high security and ethical standards.

A comprehensive framework should outline best practices for designing, constructing, and maintaining AI infrastructure, ensuring consistency and scalability across allied nations. This includes establishing guidelines for securing government approvals, developing partnerships with local stakeholders, and integrating AI solutions that align with U.S. technological and national security interests. By codifying these procedures, U.S. companies can replicate successful AI deployment models in multiple regions, reinforcing strategic alliances and expanding economic influence.

Investment in AI infrastructure requires substantial financial backing. In addition to funding from deep and liquid U.S. capital markets, government-supported financing options from participating countries, including grants and tax incentives, will ensure the long-term sustainability of AI infrastructure projects across allied nations. Utilizing U.S. government-backed financing options such as the U.S. International Development Finance Corporation (DFC) and the Export-Import Bank of the United States for U.S. firms investing in allied AI infrastructure will help support these efforts.

[2] Executive Order 14179 (January 23, 2025), https://www.federalregister.gov/documents/2025/01/31/2025-02172/removing-barriers-to-american-leadership-in-artificial-intelligence

A skilled workforce is vital to sustaining AI innovation. Training local talent ensures that allied nations can maintain and expand AI infrastructure. Academic partnerships, internships, and startup incubators can help create a thriving AI ecosystem. Establishing AI research partnerships with local universities and institutions, launching training programs to develop local AI talent, and fostering an innovation ecosystem that supports startups and technology incubators will be key components welcomed by allied nations to support domestic AI industry growth.

3. Strategic Energy Deployment for American AI Infrastructure

Fast-Tracked Energy Transportation and Power Generation Supporting American Technology and Manufacturing Sectors

Strategic Objectives

This initiative focuses on establishing a robust, efficient, and resilient energy infrastructure to underpin the expansive build-out of AI systems across the United States. By streamlining federal–state regulatory coordination and standardizing permitting processes, the approach aims to facilitate rapid deployment of power generation and energy transportation projects. These measures not only provide the reliable, high-capacity energy required by data centers and AI applications but also promote domestic semiconductor production, regional revitalization, and the integration of advanced nuclear and energy storage solutions. Ultimately, this integrated approach drives innovation, enhances grid stability, and fortifies the nation's competitive position in the global technology landscape, ensuring that critical AI infrastructure is supported by a resilient and reliable energy system.

Federal-State Regulatory Coordination

Coordinating energy infrastructure across multiple states is a complex challenge that often shifts costs and impacts retail customers nationwide. To address these issues, it is essential to enhance federal–state regulatory coordination by establishing a single point of contact for all parties involved in generation permits

and interconnection requests. A dedicated coordinating body should be formed with oversight authority to engage with both federal and state agencies, ensuring that priority projects can progress more efficiently. In this system, projects that meet rigorous criteria—such as demonstrating 80 percent deliverability during peak net load hours while proving commercial viability—could be prioritized for expedited review.

Standardized Load Interconnection Processes

Developing a standardized load interconnection process is a pivotal step in improving the pace of new generation additions. This process would rely on a simplified evaluation of the existing grid conditions, allowing for provisional interconnection approvals for fast-track projects until all other permits are finalized. To further ensure efficiency and fairness, utilities should adhere to a strict timeline—such as a 30-day deadline for finalizing interconnection timing and cost—thereby prioritizing projects that are both viable and ready for integration.

Long-Term Contractual Financial Support for U.S. Industrial Capacity

Public and private financial support for industrial capacity is a key requirement for developing modern energy infrastructure. Core infrastructure assets such as pipelines and transmission networks face deployment constraints that must be addressed by securing anchor tenants for large interregional projects and modernizing existing infrastructure. This modernization is particularly important currently for accommodating rapid deployment of natural gas-fired power plants and renewable energy sources. Public sector financial support as a driver of development of AI infrastructure also leads to local economic growth and job creation—especially in rural areas—by establishing technology and infrastructure hubs that require a mix of skilled and unskilled labor.

Texas as a Case Study

Texas provides a unique case study for energy infrastructure development. The ERCOT system does not participate in interstate commerce, allowing it to bypass

federal approval processes and streamline project execution. The state also benefits from abundant natural gas supplies and innovative demand response programs that enable large consumers to adjust power usage during peak periods. Despite these advantages, challenges in resource adequacy—as exemplified by events like Winter Storm Uri—have prompted some companies to explore off-grid solutions, highlighting the need to balance regional autonomy with broader grid reliability.

Regional Focus: Rustbelt Revitalization

The Rustbelt region, which includes parts of the PJM regional transmission organization (RTO) in Ohio, Pennsylvania, and West Virginia, represents a significant opportunity for regional revitalization. Existing infrastructure, such as high-voltage transmission lines and industrial sites, can be leveraged alongside abundant water supplies and favorable cooling conditions. Furthermore, regional natural gas abundance provides a strong foundation for new power generation assets, provided that federal permitting measures are streamlined. The reintegration of mothballed baseload power generation could serve as a temporary measure to ensure affordability and reliability until new firm generation capacity, including nuclear energy, is licensed and deployed. Developing AI infrastructure could spur significant job creation and contribute to local economic growth for the region.

Addressing Permitting Barriers

Federal permitting remains one of the principal barriers, with approvals often taking five to seven years due to overlapping requirements for air quality permits, water quality permits, environmental impact assessments, and other regulatory requirements. Streamlining these processes through clear timeframes for filing challenges, and expediting environmental reviews could significantly reduce delays and enhance project execution.

Fast Track Permitting for Behind-the-Meter / Islanding Solutions

One alternative to circumvent permitting challenges and generation queue delays is adoption of an insular, or "behind-the-meter," approach for new power generation. This strategy involves generating and consuming power on-site without relying on the broader power market. Such an approach enhances energy reliability, reduces grid dependency, and lowers electricity costs through self-generation and peak shaving, particularly for data centers.

Water and Cooling Solutions

Water management is a critical factor for AI infrastructure and power resources. Advanced cooling technologies—such as free-air cooling, liquid or immersion cooling, or direct-to-chip liquid cooling—can offer cost and efficiency advantages. By modifying policies like Section 179D to reward facilities that minimize water consumption per megawatt and integrate heat recovery with oil and gas operations, further efficiency gains can be achieved. Additionally, a DOE-administered grant program could spur research and development in liquid cooling systems.

Combined Heat and Power (CHP)

Combined heat and power systems provide an efficient solution by generating on-site power while repurposing waste heat. With the expiration of key tax incentives for CHP systems, such as the IRC Section 48 ITC in 2025, restoring these incentives could enhance grid reliability, reduce dependence on centralized systems, and offer a viable dispatchable energy solution for the oil and gas sector.

Nuclear Energy in AI Infrastructure

Nuclear energy plays a strategic role in supporting American AI infrastructure by providing a powerful, efficient, and reliable source of baseload power. Nuclear fission generates electricity without greenhouse gas emissions, complementing renewable energy sources in efforts to reduce the overall carbon footprint. Nuclear power is particularly well-suited to the demanding energy needs of large-scale data centers and AI applications, offering a stable and scalable power source that enhances overall energy security.

Energy Storage Solutions

Reliable energy storage is vital for balancing supply and demand, especially in grids increasingly reliant on intermittent renewable energy resources. Advances in battery technologies, including lithium-ion and sodium-ion batteries, are enhancing storage capacity and efficiency, thereby bolstering grid stability and reliability.

Federal Land Utilization

Utilizing federal lands for data and AI infrastructure deployment offers significant strategic advantages. Recent Executive Orders have highlighted the potential of federal lands to support frontier industries, and effective allocation can reduce market uncertainties while minimizing the need for expansive federal intervention. This approach can further secure investments in the domestic technology sector.

Defense Production Act (DPA)

The Defense Production Act provides broad authorities that could be leveraged to establish public–private partnerships aimed at enhancing domestic production capacity. Such partnerships could secure investments in critical components and resources—such as transformers, steel, copper, and nuclear fuel supplies—supporting robust supply chains and mitigating rising costs.

Closing Loopholes to Reduce Frivolous Legal Delays

To prevent project delays caused by frivolous legal challenges, it is necessary to streamline the legal process for energy projects. By defining clear criteria for standing, limiting the time allowed for filing lawsuits and appeals, and expediting environmental reviews, project timelines can be significantly shortened. This approach ensures that vital energy infrastructure advances without undue hindrance from meritless legal challenges.

Legislative Considerations

Modernizing the Federal Power Act is essential to meet today's energy demands. Originally enacted in 1920, the Act should be updated to incorporate provisions for

real-time data, cybersecurity measures, and streamlined permitting processes that reflect emerging technologies such as AI-driven predictive maintenance and digital twin modeling. Such legislative reforms would support rapid evolution in energy infrastructure while maintaining high standards for environmental and safety protections.

Government Definitions

Uniform definitions across government agencies are critical for effectively regulating emerging technologies like AI and data centers. Establishing consistent standards will prevent ambiguity, foster transparency, and create a level playing field that supports innovation while addressing challenges related to privacy, security, and ethical considerations.

Conclusion

The surge in demand for AI applications, exemplified by breakthroughs like ChatGPT, has underscored the urgent need for a robust, scalable, and secure energy and manufacturing infrastructure to support AI-driven computing. The rapid evolution of AI as a transformative general-purpose technology is reshaping industries, economies, and global power structures. To maintain technological leadership and national security, the United States must not only secure its own AI infrastructure but also extend its influence to key allies, ensuring they have access to high-performance, secure, and reliable AI capabilities.

A comprehensive strategy to achieve these goals involves three interdependent initiatives: the domestic production of key data center components, the adoption of U.S.-led AI infrastructure by strategic allies, and the strategic deployment of advanced energy solutions. By developing a full-spectrum, domestically based manufacturing supply chain, the U.S. can ensure that critical components—ranging from AI-optimized servers and GPUs to storage systems and networking hardware—are produced locally, reducing dependency on foreign supply chains and

reinforcing technological independence. This effort is complemented by initiatives to bolster domestic semiconductor production and the establishment of resilient, high-capacity energy systems, including advanced nuclear and energy storage solutions, which are essential to meeting the enormous power demands of modern AI applications.