



Energy Advantage – the Cornerstone of 21st Century Security and Prosperity

Part of the Global Competition Project

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EVENT SUMMARY

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Dr. Tim Welter led a panel consisting of Mr. Frank Fannon (Former Assistant Secretary of State, Energy Resources, Managing Director at Fannon Global Advisors, Senior Advisor [Non-Resident] at CSIS, Senior Fellow [Non-Resident] at Atlantic Council), Mr. Ron Nussle Jr. (Former Senior Advisor to the Under Secretary of State, President/COO of New Hope Energy), and Ms. Gentry Lane (CEO and Founder of ANOVA Intelligence, Technical Team Member at the NATO S&T Organization, Senior Fellow [Non-Resident] at Potomac Institute). As part of its Global Competition Project, the Potomac Institute is commissioning a spectrum of experts to help address the most vexing challenges associated with near-peer competition; developing foundational references to help guide government and industry leaders, and DoD officials, to best serve the nation's future. This panel focused on the U.S. energy sector, related technologies, resources, infrastructure, and policy, as they pertain to America's competitive advantage on the world stage.

Opening Remarks

Dr. Tim Welter began by touching on the importance of energy assurance for American security and prosperity. The energy sector touches virtually every facet of our daily lives. A stable, affordable energy supply is in large part responsible for the economic prosperity and high standard of living across the U.S. and other western nations. With the energy markets' central nature in domestic prosperity comes a complex set of international relations issues. Welter remarked how the ongoing war in Ukraine demonstrated the importance of energy as a soft power tool, calling out the western powers' use of international embargos and sanctions as means of deterrence against Russian aggression. As the impacts of these well-intentioned economic actions against Russia has boomeranged around the globe the fallout has simultaneously caused those reliant on nefarious international actors, like Russia, for energy production to reexamine their energy portfolio and seek more balanced supply chains. Considering these rebalancing efforts by allies and partners, Welter asked what steps the U.S. needs to take to rebalance and secure its own energy portfolio? He noted that if the U.S. expects to sustain its competitive advantage in the energy sector, it will need to increase its pursuit and employment of state-of-the-art technologies that foster advanced energy capabilities. To initiate the conversation, Welter put forth four questions.

- 1) How can the U.S. leverage its strengths and resources across the energy sector to assure a prosperous and secure future without compromising its core values?

- 2) How should the U.S. balance the pursuit of sustainable/renewable energy technologies/practices with the need to assure both short- and long-term national security and prosperity?
- 3) What set of policies is required to achieve the right mix of public and private investment in the energy sector and ensure the U.S. remains globally competitive?
- 4) Should the U.S. seek energy independence? Is such a state even a realistic option?

Mr. Frank Fannon began his remarks by stating that energy is the cornerstone of national prosperity. Fannon recounted how, during his time in the State Department, the U.S. was able to leverage a whole of government approach to transform the country into the world's largest energy exporter – a feat few would have thought possible 10-15 years ago. He noted that this unprecedented surge of U.S. energy production was an example of what industry can achieve when they are given the freedom to innovate and pursue R&D initiatives that solve complex energy problems. The transformation of the U.S. from a net importer to exporter of energy gave the government increased freedom on the world stage and allowed the U.S. to better prosecute its foreign policy priorities with respect to major petroleum producing states such as Iran and Venezuela. Since the discovery of petroleum's utility, hydrocarbon-based energy has been a huge element of foreign policy. Fannon noted that in addition to freeing the U.S.'s hand, the careful integration of Israeli oil interests into the MENA (Middle East and North African) energy market helped improve regional stability and played a key role in finalizing the Abraham Accords between Israel and its Gulf neighbors.

Fannon rounded out his comments discussing the U.S. government's limitations in controlling the energy market. He noted that in a free-market economy the best the government can do is attempt to induce desired market conditions through policy making. However, in recent history more success has been realized when federal policy input was kept to a minimum and states were empowered to dictate energy policy. Fannon urged that those pursuing alternative energy sources need to acknowledge and address the current resource limitations (especially with respect to critical minerals) associated with those technologies. He warned that a blunt, policy-induced transition to renewables, absent required advancements in technologies and supply chains, will ultimately lead to failure. And such a failure could leave the nation short of energy and resources while simultaneously eroding our national security and leadership on the world stage.

Mr. Ron Nussle Jr. offered insights from his experience across the public and private sectors, notably on supply chain management, providing examples from his current role as President and COO of New Hope Energy. Nussle echoed Fannon's sentiments with respect to the mismatch of available technologies and global energy needs, in his case highlighting the inability to recycle plastics efficiently. The failure of policymakers to identify and incentivize the development of required technology has resulted in a global plastic recycling farse that fails to achieve any of its desired environmental goals while creating a false public belief that the plastics problem is being meaningfully addressed via existing programs. Nussle described the technology New Hope Energy developed to aid in plastics recycling. While innovative, New Hope is currently operating only at a small scale. Capital infrastructure represents a serious

hurdle to scale such solutions effectively enough to remedy plastic's linear economy. Nussle outlined several additional impediments challenging the necessary level of scaling. Those included Asian-based (Chinese) supply chains, hyper-inflation within the raw-materials, equipment, and construction markets, and the knock-on effects of all the above – resulting in increased lead-times that put industrial-scale timelines and emissions targets out of reach.

Ms. Gentry Lane reoriented the conversation from energy production to energy provision and the vulnerability of U.S. infrastructure to cyberaggression. Lane noted multiple misperceptions in our understanding of the nature of the threat to the U.S. energy sector. While it is true that geopolitical adversaries like China, Russia, Iran, and North Korea target and have likely penetrated our energy infrastructure, they are unlikely to launch a sudden, catastrophic attack that blacks out the U.S. Such an attack would certainly be considered an act of war and instigate a powerful response from the U.S. military. Instead, adversaries are pursuing what Lane referred to as “salami tactics” – a strategy of incremental disruption and degradation of critical industries and infrastructure over time. The end goal is a slowly weakened and constantly distracted energy sector¹ within the U.S., hindering the nation's ability to exert influence in the international community.

Cyber conflict remains a relatively new domain of warfare, where U.S. government policy prescriptions are still evolving. Lane argued that the current prescriptions to address the cyber threat are lacking and do not sufficiently incorporate the necessary elements of national power, especially military power. She emphasized that the U.S. needs to develop and implement a cognizant strategy that defines its current position and that of its adversaries, consolidates the priorities and concerns of both government and private sector actors, and provides the ability to appropriately scale responses to the threat posed by a given cyber-threat actor (state and/or non-state). The continued pursuit of piecemeal solutions will only benefit adversaries, who already enjoy an edge in the offense dominated cyber domain.

Q&A

What does the U.S. need to do to generate a whole of government approach to the energy issue?

Fannon first addressed the question by stating that the government needs to develop a single point of accountability that incorporates the interests of the public and private sectors into its decision making. Such a position can then establish realistic, achievable goals that provide mission clarity and delegate responsibilities to organizations and agencies that are best situated to accomplish a given task.

Nussle added that supply chain disruptions due to bad actors are increasing and adding to the burden of addressing energy security issues. Referencing current semiconductor supply chain problems as an example, Nussle pointed to how a whole of government effort was able to rapidly begin the process of re-shoring the semiconductor supply chain and help propel the

¹ The discussion here focuses on energy, but similar “salami tactics” can be observed across all critical industry sectors, including finance, medicine, defense production, and more.

passage of the CHIPS for America Act, incorporated as part of the FY2021 National Defense Authorization Act.

Lane rounded out the responses by emphasizing the need to prioritize solutions and efficacy over ego and individual priorities in the larger U.S. response to problems. The end goal for U.S. cyber elements should be a strategy and capability set that places the nation on an even playing field with adversaries.

Should the U.S. government pick winners and losers to improve our energy portfolio? How would we measure the success of such an endeavor?

Nussle addressed the question first, stating that foreign commercial competitors in key industries, like semiconductors, have government backing that puts U.S. firms at a disadvantage. Chinese state-owned enterprises (SOE) can take financial risks in terms of R&D and market capture because they have the government's backing, hedging their financial risks. While the U.S. cannot and should not adopt the Chinese economic approach, it can strategically stimulate key sectors of the U.S. economy with targeted subsidies.

Fannon added that U.S. policies should reflect national priorities rather than focus on picking winners and losers. He stressed the need to create conditions conducive to competition and innovation. As an example, the lack of EPA regulatory authority over hydraulic fracking played a key role in the success of the Shale Revolution and U.S. energy independence. The U.S. also needs to ensure its clean energy solutions reflect our country's values. For instance, the need for alternative forms of energy shouldn't lead the U.S. to purchase solar technologies and materials manufactured under inhumane conditions.

From a strategic standpoint, is renewable energy transition a practical goal?

Lane responded with reference to the nation's history of major technological advances which occurred during a wartime footing. She suggested that the energy crisis caused by the Russian invasion of Ukraine could act as an impetus to place the U.S. and other nations on a similarly aggressive footing, enough to pursue a Manhattan Project-style program focused on realizing the technological leap(s) required to scale renewable energy solutions.

What is the future of nuclear energy for the U.S. and our allies and partners?

Fannon underscored the importance of nuclear energy as it relates to U.S. energy security and stability. Currently, nuclear energy is the cleanest, most sustainable form of energy globally. It provides the most readily available option for a hydrocarbon-free energy source. Fannon noted the advancements in reactor technologies has led to safer, more affordable reactors. These are not the reactors of Chernobyl or Three Mile Island and they should not be painted with the same brush. Nuclear power needs to play a major role in the world's transition to renewable energy.

Lane added that France provides a workable model of how to transition a nation's energy grid to nuclear energy. The U.S. should consider replicating many of their approaches. The lack of a major western presence in the global nuclear energy market leaves a void for geopolitical adversaries, like China, to fill.

How can Congress improve unity on energy issues and related policy?

Lane and Fannon both observed that a major hurdle to congressional activity comes from the broad and often competing priorities of the various states. There needs to be an a more unifying narrative around the energy issue, and global competition issues writ large, to drive action. Policy suggestions that have broad appeal, such as increased funding for energy-related R&D, should be a high priority.

Is Europe's energy dependence on Russia a wake-up call for U.S. energy independence?

Fannon and Lane both agreed that climate policy and the transition to renewable energy sources need to include a security dimension in the final calculation. The U.S. cannot prioritize clean energy at the expense of our own national security or that of our allies. Energy production or infrastructure reliance on adversaries provides them with a means to stave off international sanctions or other levers of statecraft. The delay in leveraging full international sanctions against Russia's petroleum sector stands as a prime example of the consequence of lacking energy independence.

China is famously good at taking the long view yet does not seem overly concerned about global climate change. Why do they not share the West's concern about the effects of climate change?

Fannon noted that China's climate motivation is not based on reduced emission outcomes but rather on control. China's primary objective in all aspects of its domestic and foreign policy is to increase its sphere of influence and ensure the domination of its priorities on the world stage. China places more importance on the ability to control the resources that the west will need to transition to renewable energy (lithium, copper, cobalt) than on reducing its own carbon emissions. For example, China leveraged German policy incentives and consumer demand to help corner the solar panel technology and manufacturing market.

What should the U.S. do to secure its energy sector from a cyber standpoint?

Lane emphasized the need to approach the problem from a more strategic perspective rather than play policy whack-a-mole at the tactical level. To that end, the military needs to develop and incorporate a deterrence strategy that supports the cyber domain of warfare. Adversary strategies that seek a steady degradation of U.S. assets and infrastructure must be addressed through a defined response tree, one that provides avenues for defensive and offensive cyber responses. Until such a long-term strategy is adopted, the U.S. energy sector (and commercially maintained civil infrastructure, more broadly) will remain vulnerable to cyber aggression.

Takeaways & Key Themes

The transition to renewable energy must be led by advancements in technology rather than policy edicts.

Presently, the renewable energy infrastructure (raw materials, supply chain) is not sufficient to supplant the hydrocarbon infrastructure the U.S. relies on. Policy alone cannot bring transition goals to reality wherein underlying technologies are lacking. In developing renewable energy

policies, the U.S. must consider resource realities required to achieve desired outcomes. Factors like access to essential minerals (lithium, copper, cobalt) and supply chains that supply renewable energy technologies (solar panels, electric cars, batteries) must be considered when deriving timelines for clean energy goals.

For example, if the world is to meet the renewable technology goals of the Paris Climate Accords, we would need to mine 550,000,000 tons of copper over the next 25 years. That is the equivalent of all the copper mined over the last 5,000 years according to the World Bank, per Mr. Fannon's observation. Mines capable of producing that amount of copper have not yet even been discovered. Meanwhile, the lead-time for a mine to go from discovery to production is 17 years on average. This scenario exemplifies policy and political milestones superseding technology and resource reality. To develop a viable renewable energy transition strategy, appropriate balancing of technology capability, resource availability, manufacturing infrastructure, and policy prioritization must occur.

National security needs to be a priority when pursuing clean energy goals.

The current Russo-Ukrainian conflict makes clear the necessity of freeing the U.S. and its allies from reliance on adversaries for energy needs. Due to the reliance on Russian energy production, European countries (and to an extent, the U.S.) were limited in enacting, or credibly threatening, timely and practical sanctions on the Russian energy market. The West thus lost a potential means of deterrence. This has led to calls for moving up renewable energy transition timelines. While reducing European reliance on Russian oil is a positive step, the U.S. and its allies must be careful not to trade energy dependencies from one adversary to another in a transition to renewables.

In pursuing a renewable energy transition and energy independence, the government should create policies that incentivize industry innovation.

The shale oil boom is a prime example of the innovative solutions industry can produce when largely freed from government regulation. The U.S. transformed itself into the world's largest energy producer via shale energy production. Industry innovation coupled with proper financial incentives can generate a technology-driven (not a policy-driven) energy transition. Incentivizing R&D of renewable energy technologies is an ideal case for government stimulation, one that has broad public appeal and bipartisan support in Congress.

Economic stability will be crucial to future renewable energy transition success.

U.S. efforts to transition to a renewables-based energy system are already experiencing difficulties resulting from hyperinflation. Increased resource prices are limiting the ability of companies to procure components and resources that are essential to renewable energy technologies (electric cars, batteries, solar etc.). Attempting to simply regulate hydrocarbon energy, which powers the U.S. economic engine, out of existence risks increasing the price of goods so much that the knock-on economic contraction will put carbon-neutral timelines further out of reach.

Our adversaries are employing a cyber strategy of incremental degradation against our critical infrastructure.

Referred to as “Salami Tactics,” our geopolitical adversaries are leveraging a long-term strategy of repeated, low-level cyber harassment that weakens our industrial position and distracts U.S. security resources from efforts to counter their geopolitical maneuvers. The steady degradation of U.S. infrastructure and assets by our adversaries needs to be addressed with a long-term strategy that will enable U.S. civilian and military forces to both defend and go on the offensive in the cyber domain.