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Hearing on the Use of Energy as a Tool and a Weapon

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Chairman Manchin, Ranking Member Barrasso, members of the Committee,

Over the past two weeks, the world has watched tragic events unfolding in Ukraine. We see a brutal attack on a sovereign neighbor, a *war of choice* that the Russian president, in Orwellian fashion, will not even acknowledge for what it is. Many factors underlie the violence that is being perpetrated on Ukraine. And many aspects of everyday life around the globe will feel reverberations from that violence. Energy implications are certainly an important element of this picture.

This hearing therefore provides an important opportunity to reflect on conditions and trends in energy security. In my testimony, I will summarize the energy security position of the United States and its friends and allies in Europe, and I will emphasize the importance of delivering both near-term energy security and on-time climate solutions.

Russia – a Raw Material Economy

Today's Russian economy runs on energy, and especially on oil and gas. The country extracts more than one-tenth of total global oil production and more than one-sixth of natural gas production. The oil and gas industries represent roughly half of the country's export earnings, depending on global market conditions (54% in 2019, as cited in Thane Gustafson, **Klimat**, p. 15). Russia also plays a major role in coal and nuclear technology and fuel markets, representing one-sixth of coal exports and claiming a nuclear order book valued at $133 billion.

Not only are Russian oil and gas supplies significant on the world market, and significant to Russia's overall economy, they also are a tool that has been used on several occasions to place political pressure on Russia's neighbors. In 2006 and 2009, after years of murky gas dealings between Russia and Ukraine, tensions boiled over. In an attempt to undercut Ukraine's role as transit country, on both occasions Russia partially cut natural gas supply to Europe at the peak of the winter heating season. In 2014, after Russia's first invasion of Crimea and other parts of eastern Ukraine, President Putin again tried to use gas transit to place pressure on Ukraine. He sent a letter to European heads of state and government in which he threatened renewed disruption to natural gas flows. Putin claimed that Ukraine had failed to abide by contractual terms, an assertion rejected by an arbitration tribunal.

Ukraine was not the only country that had to manage Russia's efforts to use gas trade for political leverage. Gazprom stubbornly refused requests from independence-minded Lithuania, long an exclusive Gazprom consumer, to adjust prices to more fully reflect market realities. Only when Lithuania began liquefied natural gas (LNG) imports at Klaipeda did Gazprom abruptly find itself able to offer a 20% reduction in price. Gazprom had lost its leverage. Likewise, Poland has experienced protracted disputes with Gazprom over pricing and terms. Poland ultimately opted to diversify away from Russian supplies and is instead focusing on LNG imports and new pipeline infrastructure. Such moves do not come cheap, but Polish officials have stressed that they are ready to invest to protect their independence.

Russian officials and some non-Russian commentators often claim that Russia is and has been a reliable energy supplier, even during the peak of the Cold War. The reality as we have seen is more complicated — a mix of commercial-economic and political motivations. Soviet, and later Russian, gas trade with customers in northwest Europe operated without major hiccups for years. But Russian treatment of less powerful European customers in central and eastern Europe betrayed Moscow's willingness to exploit its market power to exert political pressure.

Today, with Russian forces attacking Ukraine and Russia looking for ways to reply to pressure from Europe and the United States, we should look hard at our country's own energy security and that of our European allies and friends.

US Energy Security – Certain Strengths, More Needed

The energy security position of the United States is far from perfect, but it has a number of positive aspects. The first is the strength of US energy companies and the diversification of the US energy resource mix. Our oil and gas industry is strong, with a number of companies employing industry-leading techniques to extract needed resources while limiting the local and global environmental impacts of their operations. Domestic oil and gas production has a central role to play in our energy security today, especially given the risk that Russian oil deliveries may drop for any one of a variety of reasons. Outlooks for US oil production in 2022 foresee growth from three-quarters of a million barrels per day to perhaps as much as a million and a quarter barrels per day.

Despite this good news, it would be a mistake to view oil and gas production alone as a silver bullet for energy security. Consider the uncertainty that gasoline consumers faced last May when one of our major refined-product supply arteries, the Colonial Pipeline System, was taken off-line after a cyberattack. Consider this week's unsettling news of a mid-February attack on nearly two dozen natural gas producers and exporters. Consider also the increasing physical vulnerability of large portions of the oil and gas industry that will need to invest significantly to adapt its own infrastructure to avoid catastrophic impacts from sea level rise, droughts, wildfires and other climate-driven events.

Some environmental advocates, when talking about the use of any fossil fuel, would prefer to see the United States "leave it in the ground." Such an approach would create significant

negative impacts on American households, companies, and workers. We clearly need to change our oil and gas usage patterns dramatically to avoid the worst outcomes of climate change. But to do this, we need to employ a combination of *policies* that reflect the true damage from greenhouse gas emissions and *technologies* that enable our economy to keep thriving and growing. We cannot deny the role of oil and gas in our energy economy today, and in fact doing so would only increase the challenge of accelerating real climate progress, as we absolutely must do.

Another positive aspect of our current energy security position is the fact that we have diversified energy systems. In this context, I want to focus on two particular trend lines. One is the dramatic growth of wind and solar power in countless locations across our country. From the West Texas hills to the New York Bight, from the plains of Iowa to mountaintops in Appalachia, wind and solar power capacity has lately dominated new generation investments. These projects offer opportunities for regional economic growth: creation of local supply chains, new job creation, and fiscal revenues. We should not miss the point, however, that the rapid growth of new renewable energy capacity increases significantly the importance of modernizing our electrical transmission and distribution grids. We have to find effective ways to speed up interconnections with regional transmission organizations as well as procedures for siting and permitting.

Nuclear power also plays an important role in a diversified American energy economy. Unfortunately, this reality is under threat. Nuclear power provides roughly one-fifth of our electricity nationwide, and roughly half of our zero-carbon electricity. Many US reactors are reaching the end of their operating licenses and some will go off-line unless we put in place policies that reflect the value of their carbon-free electrons. There is also the question of where the nuclear power industry is going. Exciting steps are occurring in the development of new, advanced reactors: small modular fission technologies, new fuels, new approaches to fusion, and more. In this context, we need to focus on our ability to produce the nuclear fuels required for both the current reactor fleet and the new technologies that will be entering commercial operation in a few years.

Let me offer one last comment on the significance of innovation and commercialization of new technologies for US energy security. The Biden administration, and particularly the Department of Energy, are focusing hard on how to support innovation, commercialization and deployment of a wide range of new energy technologies that can emerge into the marketplace and deliver both secure, American-made energy systems and the decarbonization we need. The range of technologies is wide — in fact as wide as the provisions of the Energy Act of 2020 that this Committee developed, moved through the Congress, and delivered to the president's desk for signature: It is backbone pipelines to move carbon dioxide to sequestration sites, zero-emissions hydrogen, long-duration energy storage, vehicle electrification, energy efficiency for buildings, critical materials for the clean energy transition and much more. We need a comprehensive approach to innovation and commercialization to enhance our energy security, sustain the diversification of our energy economy, and create new industries for American competitiveness.

European Energy Security – Current Vulnerability Despite Progress

Having surveyed the US energy security landscape, I now turn to Europe. Here too, one can see certain areas of strength and many areas of improvement in the past decade, but also some important areas of vulnerability, especially in view of tensions arising from the war in Ukraine.

In the past two decades, Europe has grown steadily more reliant on Russian natural gas supplies as Europe's own production has waned in the Netherlands, the North Sea offshore, and Norway. Today, 40% of Europe's natural gas supply comes from Russia, as well as 35% of Europe's oil and 40% of its coal supplies. It is obvious that Europe's natural gas reliance today creates real challenges. Less well-recognized but important to acknowledge is the fact that the European Union has taken significant steps in the past decade to improve its natural gas security. In the wake of Russia's invasion of Ukraine in 2014, the EU evaluated its vulnerabilities to supply shutoffs through a series of stress tests, updated its security of supply directive, and created mandatory new obligations to have alternative supply lines. The EU brought an antitrust case against Gazprom for engaging in price manipulation and other anticompetitive practices. Brussels forced an end to so-called destination clauses (which limit a buyer's ability to trade gas to other parties), added new LNG receiving terminals, and enhanced interconnections between EU member states in electricity and natural gas transmission.

But as recent days have made only too plain, more improvements are needed to protect Europe's energy security. Across the continent, decision makers are looking at options that they resolutely rejected in the past. France is hosting on March 10 and 11 an informal EU summit to debate a new EU energy strategy. In Brussels and in a number of other EU capitals, possible structures are being debated to ensure that natural gas storages are at least 80% full by October – far exceeding recent years. The EU is also looking at a variety of approaches to reduce natural gas demand by accelerating renewable energy development, substituting in biogas from agricultural waste and/or zero-carbon hydrogen, and increasing the efficiency of the building stock. (It is hard to see how these options will yield appreciable impact in the near term, but directionally they may be positive.) Germany, with its new coalition government, is reviewing ideas that would have seemed unimaginable only two weeks ago: a coal reserve and perhaps even a delay in the decommissioning of Germany's final three nuclear power plants (now due to be retired at year's end under a decision that the Merkel government set in motion after the Fukushima nuclear accident in 2011). That said, Berlin indicated on March 7 that it does not support a voluntary cessation of energy purchases from Russia.

Europe surely will hope to procure additional supplies of LNG from the United States, Qatar and elsewhere if supplies from Russia are disrupted or appear that they could be. But these new purchases will only happen if European gas buyers outbid other off-takers, including those in East Asia. Historically, European LNG prices have not been sufficiently attractive to draw significant flows to European terminals, although this old truism changed dramatically at the end of last year, and up to three-quarters of US LNG cargoes flowed to Europe in January and February. Moreover, current European LNG facilities do not have sufficient capacity to meet all

of Europe's needs if pipeline connections were severed. And certain parts of the EU — such as the Iberian Peninsula — are essentially natural gas islands with minimal connection to the rest of Europe's gas grids.

US-European Collaborations

Europe and the United States face a number of common energy security threats, and closer collaboration in these areas is a natural priority that has already been recognized by EU officials and the Biden administration. For example, cyberthreats pose significant risks for American energy systems and are an important challenge for Europe as well. Cyberthreats become steadily more concerning as American and European power systems and natural gas systems each become more integrated. This development creates interdependencies between neighboring EU member states and between the power and gas systems. To highlight one specific European case of cross-border dependencies, Germany has struggled to build sufficient high-voltage transmission capacity to move electrons from its offshore wind installations in the north of the country to demand centers in the south (an echo of our own challenges with permitting and siting). As a result, Germany relies significantly on so-called loop flows, which involve wheeling power onto the grids of Poland, Czech Republic and other neighbors and then wheeling the power back into Germany farther south. Germany, therefore, also relies on its neighbors' ability to defend their grids against cyberattacks. This is an area of high sensitivity, but close security collaboration among treaty allies may help facilitate productive engagement in the right channels.

Another important area for enhanced US-EU collaboration is integrated European-American supply chains for the energy sector. China's dominance of critical mineral resources and of supply chains for critical energy equipment creates a vulnerability that China has already demonstrated a willingness to exploit. Partner countries around the globe are now recognizing this situation as a problem that requires mitigation, so combining US and European efforts with partners such as Australia, Canada, Japan and Korea may be expedient, and institutions like the International Energy Agency can build on existing work to help to foster deeper analysis, policy options and possible collaborations.

Delivering Both Energy Security and Climate Security

The United States and our European allies thus face the imperative of strengthening our energy security. Russia's attack on Ukraine has dramatized the fact that unthinkable events — low-probability, high-impact events — do at times come to pass.

The full energy impacts of Russia's war in Ukraine are not yet clear. Do natural gas pipelines continue to operate in the middle of increasingly devastating attacks on civilian populations and infrastructure? Or do either malevolent or accidental acts knock them out of operation, thus cutting what is for many European countries a vital energy supply line? Do American and European partners allow continued (as of this writing) energy trade despite Russia's actions and

the responding sanctions? Or will sanctions expand to bring an end to oil and gas trade? Time will tell.

In the face of this uncertainty, some commentators argue that the United States and Europe must de-emphasize attention to climate protection and instead focus exclusively on security of energy supplies. Such an impulse is understandable but short sighted. Decision makers in Washington and European capitals will and should focus heavily on ameliorating the short-term risks arising from the current confrontation with Russia. Moscow's long-established willingness to employ energy as a weapon creates vulnerabilities for us, and decision makers will naturally wish to deprive Moscow of the ability to manipulate members of the Euro-Atlantic community.

But climate change is another long-established threat, and it too requires our attention. At the start of last week, the UN Intergovernmental Panel on Climate Change issued the second installment of its sixth assessment report. This new document focuses on the impacts of, adaptation to, and vulnerability to a changing climate. It underscores that climate change is not a faraway risk. Indeed, it finds that between 3.3 and 3.6 billion people around the globe are living in settings that are highly vulnerable to climate change. In recent months and years, all across the United States we have witnessed devastating scenes: loss of life, destruction of property as a result of floods along inland waterways, storm surges that deluged major metropolitan areas with unprecedented rainfall, out-of-season tornadoes in Kentucky and wildfires in the middle of the Colorado suburbs.

This bitter reality underscores the need to see and respond to two kinds of risks simultaneously: the very immediate challenges surrounding our energy security and also the already evident impacts of human-caused climate change. We do not have the luxury of worrying first about one and then later about the other. We need to improve our energy security as a priority matter; we also need to accelerate our efforts to find and implement effective, widespread climate solutions across our energy economy.