Testimony of Ariel Cohen, Ph.D., Managing Director of the Energy, Growth, and Security Program at the International Tax and Investment Center, and non-resident Senior Fellow at the Atlantic Council

Senate Budget Committee Hearing ***Denial, Disinformation, and Doublespeak: Big Oil's Evolving Efforts to Avoid Accountability for Climate Change***, May 1, 2024.

Mr. Chairman, Members of the Committee, thank you for allowing me to testify. My name is Ariel Cohen. I am the Managing Director of the Energy, Growth, and Security Program at the International Tax and Investment Center, a non-profit organization in Washington, D.C. I am also a non-resident Senior Fellow at the Atlantic Council and an international energy columnist for Forbes. My opinions are mine only and do not represent any organization.

Undoubtedly, our great nation today faces grave technological and policy challenges when it comes to energy. The transition to renewable energy is a multi-decade, massive industrial, economic, and societal transformation. Among other things, it decentralizes energy production, and is shifting the global balance of power to those who master renewables technologies, products, and raw materials.

Moreover, as was the case with railroads, cars, telephone cables, contraceptives, and later, space travel and genetic engineering, we do not fully grasp all the far-reaching consequences of this phenomenon, as Alexander V. Mirtchev, distinguished visiting professor at George Mason University, posited in his definitive The Prologue: The Alternative Energy Megatrend volume. However, the U.S. has come a long way from 2005, when our energy imports peaked. We became a net energy exporter in 2019. Our national and continental energy security has improved due to shale oil and gas production, growing exports of liquified natural gas, and increased electricity generation from renewables.

We need to appreciate and enhance these strengths while addressing the challenges to domestic prosperity and American strength abroad. This includes providing for the energy security needs of our allies in crisis, who otherwise may fall prey to authoritarian foes of the West and of the United States.

When it comes to the impact of economic and technological progress on the environment, there is no doubt that this is a global, not a national, issue. We must find our way toward a zero-emission world where everybody can progress and prosper. The prosperity of the United States and of the West collectively has been built on ever cheaper and abundant energy. This has been the gist of economic progress since the beginning of the industrial revolution: from wood to coal, to oil, to gas, to nuclear, and now to renewable energy.

The energy transition and climate change cannot be solved by us alone. In many cases, renewables cost more than fossil fuels, especially if energy storage costs are considered, and denying these fuels to the developing world condemns its people to slower development and lower living standards. Such restrictions could stall and potentially reverse the progress made in

combating energy poverty, which has seen a worldwide reduction of 10% in the last two decades. This would create a considerable moral hazard.

Moreover, it is crucial that the United States provide the kind of leadership and dedication that these vital tasks demand. This can be only done with science, technology, and well-calibrated economic policy, making renewable energy profitable in the national economy at large, not picking winners and losers or imposing centrally planned goals, which slow growth, make the economy non-competitive, and lead to political backlash and extremism, as we now see in Europe.

Yet, unfortunately, at this juncture, the energy field is rife with politicization. There is tremendous pressure to find quick fixes. There are international security dimensions and domestic policy and political aspects that all need to be considered. The truth is that the United States is locked in a ferocious competition with China over global leadership, including over the world's energy future. China is near-monopolizing photovoltaic technology for solar panels, mining and refining more rare earth minerals, and producing more electric cars than the U.S.

American industrial competitiveness depends on domestic energy production, which provides cheap and abundant energy for our national economy and households. American electricity is two to almost three times cheaper than it is in Northern Europe but more expensive than in China and Russia. Where America goes with energy supply matters not just here in the U.S.A. but also for our allies in Europe, Asia, and the Middle East.

With this burden on our national shoulders, heavy as it is in a time of war in Europe and the Middle East, we must also tread the proper path between the U.S. and Western national security and economic interests and the aspirations and needs of our democratic allies, and of the developing world, whose people need abundant electricity, clean air, and water just as much as we do.

I support energy transition just as much as the next policy analyst, politician, or environmental advocate. But I am a foreign policy, national security, and energy expert and a realist, not a demagogue. We need to consider and integrate a plethora of factors when we craft our energy policy.

The struggle between the desire to go green today and the necessity of having heat in winter and energy to fuel factories and businesses has been playing out in sharp relief in Western Europe since the February 2022 Russian re-invasion of Ukraine. Take Germany as an example. Persuaded by an almost-religious faith, especially on the left, in Energiewende, the rapid transition to renewables while shutting down nuclear reactors, Germany is projected to have poured 600 billion Euro into wind and solar development and subsidies. The costs may reach a trillion Euros by 2030, causing high energy prices, high taxes, low industrial competitiveness, and slow economic growth.

Moreover, the 23 percent of energy generated from renewable sources in the EU in 2022 was no substitute for the oil and gas that Berlin was still buying from Moscow due to the misguided policies of Chancellor Angela Merkel. The only other alternative that might have

provided stable energy supply – nuclear – had already been vilified by the Greens and Social Democrats and condemned as environmentally evil. So, Germany had proceeded to shut down the three functioning nuclear power plants it had when Russia reinvaded Ukraine in 2022, in a bid to crush Ukrainian independence, threaten European security, push the U.S. out of Europe and fundamentally change the balance of power in the Eastern hemisphere and the world.

At that point, continuing to buy gas and oil from Russia as though everything was business as usual could not work. Moreover, gas, heating oil, and diesel fuel prices skyrocketed as the sudden Russian onslaught caused panic and fear of embargoes. That winter saw Germany forced to forsake some of its lofty ideas about going green– the green energy just was not ready, not in quantity, not at an affordable cost, and not as a steady source. Instead, Berlin found itself forced to take a giant step backward -- firing up coal power plants to keep its citizens from freezing and planning to subsidize fuel prices for the German population.

In September 2023, the cost of a kilowatt hour of energy in Germany was about $0.40. The cost in the U.S. was about $0.17. The insistence on attempting to force the green future into being wound up resulting in high energy costs that are an important factor in dragging the German economy down. The German GDP shrank in 2023 by 0.3%.

Achieving a green future is a worthwhile and needed aspirational goal – however, the realization of aspirations requires sound bipartisan strategy, not extremism and vilification, and a willingness to learn and reformulate policies and plans moving forward.

For example, currently, the EU is operating under the notion that all gasoline-fueled Internal Combustion Engine cars can be replaced by 2035. I am a big proponent of EVs and drive the most popular U.S.-made electric car brand. However, the cost of EVs, the speed of infrastructure deployment, the needed growth of electricity volume, and the necessary grid expansion mean this may take a few more years to transition. The market, instead of government fiat, should dictate the pace of the transition. Cars replaced horses not because of an executive order from the White House. EVs are cleaner and cheaper to operate than ICE cars. They are the future, possibly together with hydrogen-powered cars. But force-marching the future will not make it closer or happier.

Nor will force-marching the source of our baseload electrical production to solar work. There are two reasons for this: one is intermittency, the other is storage. Baseload is the minimum amount of electric power delivered or required over a given period at a steady rate. Intermittency is caused by drops in the production of power when the sun isn't shining, and the wind isn't blowing. Storage, of course, is the ability to store energy such that it can be used to mitigate against any drop in production and keep the flow of available power steady.

Our national grid was primarily designed and deployed 100 years ago for a steady baseload and is not smart enough to handle intermittency. More importantly, we do not have enough storage capacity to store electricity in large quantities, in industrial-size batteries, or in pumped hydro storage, like we do with our 90-day Strategic Petroleum Reserve.

Lithium-ion batteries are not an answer for storage. They have an energy density of 750 Wh/L (Watt hours per Liter), compared to the energy density of Liquified Natural Gas, 7,216 Wh/L. Grid-scale energy storage using lithium-ion batteries cannot replace current electricity generation technology, and it is also incredibly costly.

The United States consumed over 4 trillion kilowatt hours of electricity in 2022, which averages to almost 11 billion kilowatt hours per day. The storage costs of lithium-ion batteries amount to $338 per kwh for a battery with a 10-hour storage duration (most conservative estimate). This means powering America for a single day using Lithium-ion batteries would cost us roughly $3.7 trillion per day. If America were to keep a store of energy in these batteries to hedge against disruptions as we do with the Strategic Petroleum Reserve, the cost of operation for a standard 90-day buffer would be $333 trillion. This is not the cost of installation or production, which will be astronomical. These costs highlight the infeasibility of a rush to shift from natural gas and nuclear, as suggested in the Inflation Reduction Act (IRA) and the Build Back Better plan.

We need baseload power sources to meet our ever-increasing energy demands. If U.S. transitions to EVs as the EU and California are planning, our power production needs to increase by 50 percent, and the grid to be massively upgraded.

Coal was historically used as a source of baseload energy, but we thankfully moved away from it because it pollutes with CO2, SOxes, and NOxes. LNG is far less damaging to the environment in the areas lacking piped gas than coal, generating only half as many CO2 emissions per unit of power. It is a bridge fuel needed to get us to a renewable future. It's worth noting that the EU recognizes LNG and nuclear as green-compatible transition fuels.

This is why the pause on approving future LNG infrastructure projects placed by the Biden administration, disrupting the use of this transition fuel in Europe and Asia in favor of older fuels, like coal, actually works against the goal of furthering a green energy future. Again, let's recall that renewables cannot yet meet our energy demand with current generation and storage technologies. However, there are better options.

Nuclear energy is an excellent option for renewable energy to meet baseload demand, but it has been significantly overregulated. Bias against this technology and fear of the risks of nuclear energy has prompted the United States to regulate itself into a corner, with the Nuclear Regulatory Commission's approval process alone taking up to five years for a new reactor. In 2022, nuclear energy only accounted for 18.2% of electricity generation in the U.S. despite producing no CO2 emissions. We should invest in it far more. The IRA allocates $40 billion toward nuclear energy while funding for batteries and renewables exceeds $80 billion. Downplaying this alternative baseload power source and instead focusing on wind and solar will only cause avoidable difficulties in meeting the country's energy needs.

The IRA seems more focused on the aesthetic of renewables as opposed to their reality. This is evidenced by the inflationary subsidies provided to stereotypically "renewable" energy sources. The IRA targets specific demographics for the location of renewable energy projects

while ignoring our best practical hopes, like nuclear energy, including Small Modular Reactors. These can be made in the USA, generating jobs and emission-free electrons.

Despite the decreasing costs for renewable sources like wind and solar (tidal, geothermal, and biodiesel generation require a separate discussion), we cannot yet rely on them alone. The Biden administration admitted, and most pro-environment studies indicate, that without technological breakthroughs, the ambitious grid decarbonization targets are impossible.

Renewables have made incredible progress in recent years, but they need more time, possibly decades, to develop into a proper replacement for more reliable energy sources for baseload power generation, like natural gas, including LNG for exports. Renewables have their place, and we need to commit to them as part of a holistic energy strategy, but not to the exclusion of nuclear and natural gas – not at least for the next three decades.

For our allies, LNG is vital to their economy and their freedom. Even if we could magically fix every technological problem I briefly covered, America's LNG exports are not just a domestic economic issue – but also of immense geopolitical importance.

Without American LNG exports, Europe would not have been able to wean itself off Russian gas when Russia re-invaded Ukraine. Support for Ukraine would have been much lower, since high energy prices would have persisted for much longer, further curtailing European aid to Ukraine. In other words, American LNG was a lifeline for Europe and Ukraine. It was a lifeline requested by the Europeans, and it was a lifeline the United States extended. We did it in World War II, and we are doing it now. However, the Biden Administration's recent decision to pause approvals on LNG infrastructure projects threatens this lifeline and, by extension, benefits those who wish to see Europe and Ukraine weakened and, in doing so, erode the credibility of American deterrence and our global stature.

In the meantime, the situation in Ukraine is increasingly grave. Recent reports indicate that Russia is outfiring the Ukrainians by a ratio of 5:1 as noted by Gen. Chris Cavoli, the Commander of U.S. European Command and SACEUR, on April 10th to the House Armed Services Committee. Countries in Europe are in the process of ramping up their arms production. European allies must be safe in the knowledge that US LNG is and will be available to fuel their efforts. If this pause becomes a freeze, it will deliver another energy shock – a blow that would be felt not only by our allies in Europe but also in Asia, and one that would further reinforce what many in the world increasingly believe: America is unreliable and lacks strategic vision.

Russia is fighting a war against the West, counting precisely on our lack of strategic vision. LNG exports pauses and freezes, if they continue, will only support Russia's war. Russia aims to drive LNG prices up, increase their gas sales to European markets (where the Russian LNG is not sanctioned), and increase its own revenue to fund the war in Ukraine. Russian LNG is still openly sold within Europe – so far, in 2024, Russia supplied 4.89 million mt of LNG to Europe (16% of the total supply). Of that figure, Spain accounts for 32% (1.56 mt), Belgium 49%, and France 27% of total imports.

Despite sanctions, Russian oil and diesel continue to enter Europe through re-exports.

Russia doesn't see this changing soon, as it is expanding its LNG export capacity with the Novatek project in Murmansk, aiming to eventually produce 20.4 million tons annually. This is part of Russia's ambition to capture 20% of the global LNG market by 2030-2035.

Russia is doing all it can to ensure that the U.S. shies away from its role as an energy security guarantor to its allies. Through trolls and proxies, it is actively spreading claims that have no basis in scientific fact to discourage further U.S. energy production and exports. Favorite Kremlin narratives include overstating shale's negative impact on the environment, fearmongering about nuclear energy, and deliberately mischaracterizing the risks nuclear energy poses.

President Biden's decision has impacts that extend far beyond Europe, affecting US allies in the Asia Pacific theatre —Taiwan, Japan, and South Korea—whose energy needs are heavily dependent on LNG imports, accounting for 35% (double-checked by Aaron), 29.9%, and 22.9% of their respective energy mixes.

And it is not just Russian LNG exports the Senate needs to worry about. Qatar has announced an 80 percent expansion of its LNG exporting capacity. If American gas molecules won't be available, Qatar's will be. But Qatari profits will go towards supporting groups like Hamas, which has received approximately $1.8 billion from Qatar since 2007. Qatar's involvement with Hamas leadership is concerning, with reports of three high-ranking Hamas officials residing in its luxury hotels while Doha hosts the jihadist organization's political office.

A policy of LNG pauses and freezes will not replace American LNG with green energy. It will replace American LNG with Qatari LNG, Russian LNG, Algerian LNG, etc. Ukraine is fighting for its life, while our European allies cannot do without the LNG, we promised them. South Korea and Japan need American LNG to stand up against China and be capable allies. If we don't or won't deliver, they will be forced to turn elsewhere. It would be one thing if this policy were just too expensive, but it's not. It is an idealistic policy that aims for the stars but ignores the present. In doing so, it inadvertently sacrifices the future.

To conclude, we are facing a global, systemic challenge, which the U.S. will not be able to solve alone just by banning fossil fuel production at home. We and our allies are facing geo-strategic challenging in Europe, Asia, and the Middle East. Our economy and military need reliable and ample supplies of energy, and so are those of our allies.

We need to manage the energy transition in gradual, consumer-friendly, and business-friendly ways. We will need to expand electricity generation to meet the growing demand from the transportation sector. We will require a nuclear renaissance and a new generation of U.S.-built SMRs. We will need technological breakthroughs for affordable storage and will need to upgrade the grid to make it smart and capable of handling renewables.

America's LNG exports are vital to deter authoritarian adversaries and support our democratic partners. Our policymakers should take a strategic and pragmatic view of this.

Undermining America's standing not just as the arsenal of democracy but as a strategic energy reserve of democracy would undermine the U.S.-centric international system.

Thank you for your time and attention.