

Prepared Testimony of Robert McNally, President, Rapidan Energy Group

Bottlenecks and Backlogs: How Climate Change Threatens Supply Chains

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Chair Whitehouse, Ranking Member Grassley, distinguished Members of the Senate Budget Committee, my name is Robert (Bob) McNally. I am the founder and president of Rapidan Energy Group, an independent Washington, DC-based energy advisory firm. I am honored that you have invited me to contribute to your important hearing today. This testimony reflects my views and not those of Rapidan Energy Group.

I have worked for 32 years at the intersection of energy markets, policy, and international politics. Except for service in the Peace Corps and as President George W. Bush's energy advisor from 2001–2003, I have spent my career providing clients with analysis and forecasts of market, policy, and geopolitical trends and events in the energy sector, specializing in the global oil market. Neither Rapidan nor I represent or lobby for any person, group, or company.

I am delighted the Senate is turning its attention to supply chain and bottleneck challenges and honored to contribute to your deliberations by suggesting some cautionary notes and lessons from recent oil and gas market supply disruptions and risks.

Oil is the lifeblood of modern civilization. Its widespread commercial use starting after 1859 lifted humanity from millennia of squalor, darkness, and immobility. Over the past four years, critical oil and gas supply chains have endured major, if fortunately short-lived, geopolitical disruptions. They are:

2019 Iranian attack on the world's most critical oil facility. On September 14, 2019, Iranian drones and missiles struck two Saudi Arabian oil facilities. One, the Abqaiq crude processing plant, is the world's most vital energy facility, accounting for about 6% of global oil supply. Unlike a port or pipeline, Abqaiq cannot be easily replaced or circumvented. The Iranian attack was the most extensive *volume* disruption from a single historical event. When oil markets opened in Asia on the Sunday evening following the attack, oil prices jumped by 15% in one day, the biggest percentage since oil futures began trading in 1988.

Nearly all Saudi crude must be processed at Abqaiq to prepare for export and refining into petroleum products. Since oil demand is highly insensitive or inelastic to price changes, the sudden and prolonged loss of nearly 6% of supply would have caused a massive oil price spike (I would estimate by around 33%) to reduce consumption by a similar percentage, likely inducing a recession.

Had Iran destroyed those facilities, it would have caused a severe and lasting oil price spike, likely throwing the US and world economies into a tailspin and triggering a wider regional war. Since oil is fungible, widely traded, and globally priced – a supply chain disruption anywhere causes a price spike everywhere, including right here at home. Being a net energy exporter provides some macroeconomic and national security resilience to international supply disruptions but not to price spikes, which act like a sudden tax on consumers and businesses, driving up the cost of personal transportation and goods and services.

Fortunately, Iran chose to inflict light and reversible damage, and Saudi Aramco was able to restore production quickly. The world dodged a bullet.

The 2021 Colonial Pipeline cyber attack was the most significant energy attack on the homeland in history. On May 7, 2021, Russian-based ransomware hackers forced a shutdown of the Colonial Pipeline. This major artery transports gasoline, diesel, and jet fuel from refineries in Texas to the East Coast, as far north as New York. This attack differed critically from the thousands of prior cyberattacks on US persons, businesses, and government agencies in that, for the first time, foreign attackers directly disrupted physical energy flows vital for the social order and national security of the United States. The pipeline supplies 45-50% of East Coast liquid fuel supplies, 90 military bases and installations, and seven major airports. Fortunately, Colonial restarted the pipeline after six days, albeit after paying the attackers a ransom.

The 2022 Russian invasion of Ukraine caused gasoline prices to spike to record levels. Russia's invasion of Ukraine on February 24, 2022, triggered sanctions that the International Energy Agency (IEA) advised could disrupt three mb/d of Russian oil exports through the rest of that year – some 810 mb in total. In response, oil prices spiked by 32% in 13 days, from \$97 to \$128 per barrel. On March 1, 2022, the IEA announced a 60 million barrel (mb) collective stock release, and on April 7, it increased the release by 120 mb. Combined with earlier United States Strategic Petroleum Reserve drawdowns unrelated to the Ukraine emergency, the IEA estimated some 240 mb would be released over six months.

But these strategic stock releases only offset about 30% of the feared loss of Russian supply. So, oil prices soon spiked again, reaching \$121 per barrel in early June. Since global crude oil prices are the most important determinant of domestic US gasoline prices, consumers saw retail pump prices soar to a record \$5 per gallon last summer. Tight post-pandemic refining capacity also contributed to this gasoline price spike. Oil prices retreated only after the feared Russian supply loss failed to materialize, partly due to G7 Price Cap mechanics intended to enable Russian oil exports to continue while crimping Russia's revenues.

Despite no material loss in Russian crude exports as initially feared, the US continued drawing down the SPR by the total 120 mb originally announced as part of its response to Russia's invasion of Ukraine. Considering also the non-emergency SPR release in November 2021 and congressionally mandated sales, the volume of crude in the SPR has fallen by nearly half, or 287 mb, since President Biden took office. The SPR now holds 351 mb – its lowest level in 40 years.

Fortunately, there is a bipartisan sense that the SPR releases have gone too far, and we should restore our protection against severe supply interruptions. The Biden administration worked with Congress to cancel prospective, congressionally-mandated SPR sales and has sought to begin refilling the SPR should crude oil prices fall below \$80 per barrel. As noted below, Congress should bolster these small steps by appropriating funds to replenish the SPR.

2023 Hamas attack on Israel and the associated risk of expanded regional conflict and energy disruption. Hamas's war against Israel raises the risk of a regional conflict that could disrupt large amounts of oil and LNG exports. The Biden administration has said Tehran is complicit in the savage attacks on October 7, 2023, and believes Iran-backed proxies intend to escalate attacks against US personnel and vessels if the conflict continues. While the conflict in Gaza does not threaten oil supply, there is a substantial risk that fighting will spread to include Iran's proxy, Lebanese Hezbollah, and other regional actors, including Yemen-based Houthi fighters, if not Iran

itself. A Middle East regional conflict would put at risk 40 percent of global crude exports and 18 percent of refined product exports passing through the Strait of Hormuz to world markets.

Even the *perceived* risk of losing Gulf energy exports would cause oil prices to rise sharply, reflecting a risk premium. Soaring crude oil prices are always unwelcome for consumers and many businesses. Moreover, with the Federal Reserve attempting to engineer a soft economic landing amid the highest inflation rates in 40 years, our present circumstances make high energy prices even more problematic.

Turning to gas market impacts, with the temporary shutdown at Israel's Tamar gas field and the East Mediterranean Gas (EMG) Pipeline, the Israel-Hamas conflict is already affecting Israel's domestic gas market and exports to Egypt. A multi-month shutdown of these facilities would delay the restart of Egypt's LNG exports (offline since June), marginally tighten global LNG balances this winter, and put some upward pressure on global natural gas prices.

The risk of further supply disruptions would increase if the conflict expanded in the region. Lebanese Hezbollah, unlike Hamas, can target offshore infrastructure and has done so in the past. If the war spreads to the Gulf, it could restrict shipping through the Strait of Hormuz—a choke point for more than 20% of global LNG supply. Ras Laffan, the world's largest LNG liquefaction facility, is located in the Arabian Gulf, and its exports to Asia and Europe must transit the Strait of Hormuz.

Policy considerations

Luckily, the massively disruptive Abqaiq and Colonial Pipeline attacks ended quickly. And so far, neither Russia's invasion of Ukraine nor Hamas's attack on Israel has caused an energy supply interruption for the United States. But we should not bank on such luck in the future. These supply disruptions underscore the ongoing vulnerability of energy production and distribution systems essential for our security and living standards. They suggest the following policy considerations regarding both hydrocarbon and decarbonized energy supply chains and bottlenecks:

First, attend carefully to cyber threats to critical energy infrastructure, including petroleum production, transportation systems, and electric grids. Congress must ensure the US has appropriate laws and procedures to effectively deter adversaries from attacking our critical infrastructure and responding to such attacks.

Industry and government's responses to the Colonial pipeline attack fell far short. For example, the federal government was neither informed nor consulted about Colonial Pipeline's decision to pay the ransom, despite FBI recommendations, nor was it consulted beforehand about Colonial Pipeline's decision to protect the pipeline systems by shutting it down temporarily. For further detail on this topic, including specific recommendations, please see this working paper by the Forum for American Leadership, a non-profit foreign policy and national security advisory group whose Energy Security working group I chair, entitled [*Eight Necessary Steps to Defend US Critical Energy Infrastructure from Cyber Attacks*](#).

Second, consider the current and new geographic concentrations of energy supplies, production, and trade. The geographic concentration of oil and gas production in the Middle East and major transit choke points from that region to global markets (the Strait of Hormuz, Bab-el-Mandeb, and the Suez Canal) have challenged US foreign policy since the Arab Oil Embargo fifty years ago this month. The sabotage of the North Stream natural gas pipelines last September and the potential

act of sabotage this month on a 95-mile-long natural gas pipeline connecting Finland and Estonia show that the Baltic has recently become another supply chain risk for our European allies.

As we seek to develop and scale up new energy sources, consider potential vulnerabilities arising from geographic concentration and dominance by hostile nations. China's dominance of renewable power and electric vehicle supply lines is a familiar challenge. On this topic, I recommend the FAL working paper, *[Arsenal of Energy: How to Bolster U.S. Energy Security and Aid our Allies Confronting Authoritarian Aggression](#)*, which includes specific suggestions to address supply chain risks arising from decarbonization.

Third, build and bolster defenses against severe energy supply interruptions and resist frittering them away. Recent energy supply chain crises underscore the folly of draining our SPR to pay for non-energy expenses or in a vain attempt to control gasoline prices. Draining the SPR for non-emergency purposes is a dangerous policy error. I recommend that Congress rectify it soon by appropriating funds to replenish it.

Regarding rare earth elements, Congress should consider establishing a strategic rare earths reserve and restricting the use of rare earth elements from China in advanced defense technology in the United States.

Finally, the US should avoid policies that would exacerbate an already tight and volatile energy market. Policies that cause abrupt increases in energy costs or loss of supply will harm consumers, the economy, and social peace.

My firm, Rapidan Energy Group, carefully monitors global energy and climate policies. We find that policies that increase energy costs often spark unrest. Most often, governments respond to this unrest by reversing the policy. Examples include France's brief attempt to impose a carbon tax on diesel fuel that triggered the "Yellow Vest" social protest and, more recently, Germany's dilution and delay to a planned ban on natural gas-fired home heaters.

Moreover, last year's energy price spikes due to Russia's invasion of Ukraine were a stress test for many governments' willingness to impose or maintain energy taxes and supply restrictions. We found most governments, including in Europe and the US, responded to this stress test by increasing fuel subsidies, lowering fuel taxes, or attempting price controls to insulate consumers from these energy costs. The Biden administration, which took office determined to implement sweeping restrictions on domestic oil and gas production, temporarily responded to last year's oil price spikes by asking shale companies and OPEC+ producers to increase output while greenlighting a new Willow upstream oil project in Alaska. But with the crisis having passed, the administration has unfortunately reverted to sweeping anti-oil and gas supply policies, such as removing nearly all the National Petroleum Reserve in Alaska from leasing.¹

I recommend avoiding policies that impose burdensome costs without clear and publicly acceptable benefits. In addition to the Biden administration's hostility toward new oil and gas investments, I can think of no more dangerous development for US global and energy security than the International Energy Agency's advice since 2020 to ban new investment in greenfield oil

¹ Friedman, Lisa. (2023, September 7). Biden Approved a Big Oil Project. Now, He's Cracking Down on Drilling. *New York Times*. <https://www.nytimes.com/2023/09/07/climate/biden-drilling-climate-oil.html>

and gas projects. These policies will exacerbate supply chain bottlenecks arising from tightening supply and demand fundamentals in the coming years, resulting in more extensive and economically painful oil and gas price spikes. Ideally, Congress, the Biden administration, and the IEA will support domestic energy production and minimize supply change risks while developing sound, cost-benefit-based strategies and policies to address climate change.

In closing, I recommend two other relevant FAL working papers that bear on today's hearing: [Congress is Key to Restoring Realism in US Energy Policy](#) and [Blueprint for a Serious and Sound Climate Policy](#).