### 1NC -- DA

#### PC gets BBB across the finish line, but negotiations are key---interruption must be avoided.

Greve 1/8 [Joan; 1/8/22; politics breaking news reporter for Guardian US, based in Washington; “Democrats could still salvage Build Back Better – and perhaps their midterm prospects,” <https://www.theguardian.com/us-news/2022/jan/08/build-back-better-democrats-midterms>] brett

Manchin’s opposition to the bill has intensified concerns among Democratic leaders that many vulnerable members may lose re-election this year, as voters blame the party for failing to follow through on their campaign promises despite having full control of the White House and Congress.

“Voters have shown time and again that they want a robust economic environment creating good opportunities to build a better life for themselves and their family,” said Congressman Brad Schneider, chair of the political arm of the centrist New Democrat Coalition, the NewDem Action Fund. “At the end of the day, we have to show working families we’re responsive to their kitchen table concerns.”

Some Democratic strategists have argued the party’s best option now is to work with Manchin to craft a version of the Build Back Better Act that he can support and then move forward with that proposal.

“Mr Manchin said at various points that he could support a scaled-back bill that made long-term commitments to fewer priorities,” David Axelrod, a former adviser to Barack Obama, said in a recent New York Times column. “If, through a retooled Build Back Better Act, Mr Biden can achieve significant and durable progress on some major priorities that will benefit children and families for generations, Democrats would be wise to celebrate and tout those gains instead of complaining about what wasn’t possible.”

Schneider echoed that argument, telling the Guardian, “Since the start of negotiations, New Dems have been advocating to do a select number of things better for longer, and we still believe that approach is the best path forward.”

But a Manchin-approved version of the Build Back Better Act does not come without potential pitfalls. Manchin has raised concerns about the cost of the legislation and the impact on the national debt if all of its programs are made permanent. (Under the current version of the bill, many of its programs expire after a year or a few years.)

The child tax credit, which was expanded under the coronavirus relief package signed by Biden last year, is particularly worrisome for deficit hawks. The current version of the Build Back Better bill calls for the expanded program to continue through 2022, at a cost of $185bn. However, if the expanded program is made permanent, as many Democrats would prefer, the 10-year cost of that policy would be $1.6tn, according to the Congressional Budget Office.

Despite the cost of the policy, many Americans have come to rely on the monthly checks from the expanded child tax credit, and failing to extend the program could be disastrous for families’ budgets and Democrats’ electoral prospects.

“If [Manchin] brings down the price tag below $1.75tn, if he cuts really popular things like the child tax credit especially or any of the pharma provisions, then that could be disastrous for Democrats,” said Adam Green, the co-founder of the Progressive Change Campaign Committee.

But Green argued there may be an upside to Manchin’s deficit concerns. If Manchin is determined to lower the national debt, it could provide an opening for progressives to advocate for revenue-raising proposals that they support, such as a tax on billionaires.

“There’s actually a scenario where we raise $1.75tn and invest that money, and then on top of that implement a very popular billionaires tax, the majority of which goes toward debt reduction,” Green said. “What that would do is give Democrats this extremely popular talking point that we’re the ones who finally taxed billionaires.”

Of course, that scenario will only be possible if Democrats are successful at bringing Manchin back to the negotiating table and actually getting a bill across the finish line. “Depending on how the negotiations go, Manchin’s current involvement could make things disastrous or very good for Democrats,” Green said. “It really depends on where things land.”

#### Manchin supports climate provisions, but continued negotiations and PC is key.

Collins 1/6 [Lois; 1/6/22; covers policy and research that impact families for the Deseret News National team. A University of Utah graduate, she has won numerous national, local and regional journalism awards; “Is the ‘Build Back Better’ Act dead or just drifting?” <https://www.deseret.com/2022/1/6/22868795/is-bidens-build-back-better-bill-dead-or-just-drifing-social-policy-climate-change-joe-manchin>] brett

Per Politico, “Manchin called some of the bill ‘well-intended’ but argued other parts are a ‘far reach.’ In the past, he has raised questions about the price of the expanded child tax credit as well as the legislation’s paid leave provisions. On Tuesday, Manchin suggested that focusing the bill on climate might be easier than lumping in a hodgepodge of provisions that amount to much of his party’s domestic wish list from the past few years.”

“The climate thing is one that we probably could come to an agreement much easier than anything else,” Manchin said.

Senate Majority Leader Chuck Schumer has predicted Manchin will return to the negotiating table and talks will resume.

So what’s next?

According to Vox, Democrats must win over Manchin, but “thus far, they’ve had a hard time proposing a version of the bill that he’s willing to accept.”

In December, Manchin’s office released a statement on the bill and why he doesn’t support it in its existing form.

“I have always said, ‘If I can’t go back home and explain it, I can’t vote for it,’” he said in the news release. “Despite my best efforts, I cannot explain the sweeping Build Back Better Act in West Virginia and I cannot vote to move forward on this mammoth piece of legislation.”

He promised, however, to “continue working with my colleagues on both sides of the aisle to address the needs of all Americans and do so in a way that does not risk our nation’s independence, security and way of life.”

#### The plan trades off -- ratification requires PC and floor time.

---even if popular, even some opposition ensures immense floor time due to Senate procedures.

Kelley & Pevehouse 15 [Judith G.\*, Duke Sanford School of Public Policy; AND Jon C.W.\*\*, University of Wisconsin-Madison; International Studies Quarterly (2015); “An Opportunity Cost Theory of US Treaty Behavior,” <https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/12521/isqu12185.pdf?sequence=1>] brett

An Opportunity Costs Theory

Although existing theories about veto players and political ideology explain the fate of some treaties, they leave some questions open. To complement these theories, we draw on economic theory to offer an opportunity cost theory of treaty ratification. In economics, the opportunity cost of a resource refers to the value of the nexthighest-valued alternative use of that resource. Scholars of domestic legislation have applied this concept to the time and resources of individual policymakers (Schiller 1995) but also to the fixed chamber time. For example, Koger refers to “[T]he foregone uses of the same [chamber] time for legislators as individuals as well as for the chamber collectively” (Koger 2010:22). Indeed, the Senate’s chamber time is not only fixed, but also scarce. A vast portion of its time goes to required routine business. This leaves little opportunity for discretionary activities (Walker 1977). Given that international policy matters have to draw on exactly the same remaining discretionary floor time as domestic policy, we argue that the United States sometimes delays or derails treaty ratification simply because political capital and Senate floor time are fixed and entail opportunity costs (Heitshusen 2013:4). As Koger (2010:33) argues more generally for legislation, “The expected gains from making a proposal must exceed the time and effort legislators invest in preparing it, organizing and coalition to support it, and taking the time of the chamber to debate and pass it.”

For a treaty to progress, the opportunity cost logic thus would mean that the net gains of the treaty must outweigh the opportunity costs of the advice and consent process. Thus, if the President or some Senators assign only low political value to a particular treaty or if they believe that passage of the treaty will take a lot of Senate floor time, they may decide that they would rather spend their political capital on other matters. If they think they have to fight a war of attrition to overcome opposition, this cost in terms of time and resources may tip the scales against moving the treaty forward. Under these conditions, the opportunity cost of processing the treaty may be too high for the treaty to gain attention, even if the President or more than the required two-thirds of the Senators think the treaty yields some benefits. As a result, whether or how fast a treaty makes it through the process depends on whether it has sufficient support to pass the constitutional process and on whether its value to politicians outweighs the opportunity cost of their political resources: legislative floor time and political capital.

The Fixed Political Agenda Space and Policy Priorities

Why do treaties incur these opportunity costs? Opportunity costs arise when resources are fixed and fully employed. Political agenda space is such a resource; there are only so many policy priorities a President can promote, and only so much Senate floor time to consider them. The media will pay attention to only so many issues on the Washington agenda. Both the President and the Senate must protect their legislative opportunities. They each face opportunity costs.

For the President, the transmittal process is not simple. If the United States signs an international agreement that falls under Article II of the Constitution, the President must transmit it to the Senate for advice and consent before the United States can ratify it. This process entails an analysis of the implications of the treaty including possible implementation legislation required, and the writing of a transmittal letter that serves as a report to the Senate Foreign Relations Committee (SFRC). Because of these requirements, usually there has to be some push from the White House (Halloran 2011), and this can take precious time away from domestic legislative priorities. Thus, transmittals can be costly, especially in the face of expected opposition. Indeed, in 1995 when President Clinton wanted to transmit the UN Convention on the Rights of the Child to the Senate, Jessie Helms, who chaired the SFRC, and 26 cosponsors introduced a resolution urging him to not transmit the Convention. Such opposition can be distracting or politically harmful for the President. Furthermore, because the President usually endorses the treaty in the transmittal letter, he may incur a reputational cost by transmitting treaties that stall (Krutz and Peake 2009:140). Dealing with treaties thus involves political costs, and withholding transmittal can conserve political capital.

For the Senate, floor time is of the essence. After transmittal, the SFRC must hold a meeting on the treaty, and eventually issue its own analysis and recommendation, and (if it has enough support) pass it out of committee. The treaty then has to be scheduled for debate, possible amendments, and a vote. To gain Senate advice and consent, the treaty must pass with at least a two-thirds majority. Crucial to differentiating the opportunity cost argument from a straight veto player model, the Senate rules for debate and passage enable opponents to increase the time expended on a treaty, even if they do not have the ability to vote it down on the floor. Dealing with a treaty thus ties up the SFRC time, but even more importantly, it could potentially take up scarce discretionary time on the Senate floor. Senators seek to maximize their reputational returns from the issues they spend time on, favoring issues that have broad appeal (Walker 1977:430). Before scheduling a treaty for debate and a vote, the relevant actors therefore have to consider the opportunity cost of dealing with the treaty: What else could the Senate accomplish with that time? Even if the Senate is not being productive in terms of passing legislation, what else does the Senate want to be seen focusing on at that moment? Even if there is strong support for a treaty, Senators may hold back if they anticipate serious and potentially time consuming opposition—opposition that can result in any number of procedural maneuvers that could take up costly time in the Senate. This explains why so few treaties ever take up much floor time for debate. If senators expect them to take time, they do not schedule them.

Thus, both the President and the Senate face opportunity costs of fixed resources: Presidents are concerned with “misusing” political capital and opportunities. The Senators are protective of floor time, or how they are seen to be using their time by a public foremost focused on domestic matters. At the same time, the political benefits of treaty ratification are uncertain. Treaty ratification is often invisible, because the media rarely covers such events and whatever benefits treaties may bring may never be attributed to the treaty advocates directly.

The implication of these political calculations is central to our argument: Contrary to standard assumptions of international relations, the decision to push a treaty through the advice and consent process may be less about an isolated examination of costs and benefits of the treaty itself than about the political benefit of spending time on the treaty relative to the benefit of other possible agenda activity that may produce important domestic legislation such as health-care reform, for example. In other words: Senate advice and consent and, by association, transmittal decisions depends on the associated legislative opportunity cost.

The opportunity cost can manifest itself for many types of treaties. Even nondivisive treaties require some Presidential attention and Senate floor time to move through the process (Johnson 2010), and therefore even these may fall by the wayside, which is of course even more likely to occur if they are not considered particularly vital. More important treaties might also be affected by the opportunity cost, however. Even if opponents might not command the requisite 1/3 of Senators to block the treaty, their willingness to obstruct it (even the threat to do so) may impose such high costs in terms of time that supporters are reluctant to spend time on it when they have many competing priorities. In a time-constrained Senate, minimal winning coalitions that reach supermajority status have become less important. Each piece of legislation must compete with all other legislation and having only a minimum backing can deprioritize legislation on the agenda, slowing it down (Oppenheimer 1985:410). And although the Senate can use a cloture vote to end filibustering and technically should be able to do so easily if the treaty commands two-thirds support, Senators may be reluctant to push for treaties that push these boundaries (for example, by objecting to a unanimous consent request (Heitshusen 2013:4)).

#### Opposition is guaranteed. NewSpace companies will lobby for their survival against the plan.

GC 17 [GC Magazine; Autumn 2017; Business thinking, In-house management, Published by legal500; “The new space race,” <https://www.legal500.com/gc-magazine/feature/the-new-space-race/>] brett

The upshot is that the ability to engage with legislators and policymakers will be essential for the long-term viability of companies like Planetary Resources.

‘We’re seeing already that with a regulatory framework laid out for a very quickly growing and expanding sector, there’s a lot of opportunity for policy engagement. That’s equally true in other countries too, which are either enacting their first national space laws or overhauling them,’ says Israel.

Before Israel joined the company, Planetary Resources was heavily involved in lobbying the US Congress to support the Spurring Private Aerospace Competitiveness and Entrepreneurship Act – better known as the SPACE Act.

That piece of legislation explicitly granted permission to US entities to ‘engage in the commercial exploration and exploitation of “space resources”.’ But the international community remains divided over whether the SPACE Act runs contrary to the obligations imposed on the US under the Outer Space Treaty.

‘The Americans are a sovereign state and according to their international treaty commitments, it’s hard to say that their domestic law is compatible with international law,’ says Smith.

Lobbying, both at a domestic and international level, stands to become increasingly critical, particularly as the US is in the process of crafting a framework for supervising non-governmental space activities, while ensure conformity with the Outer Space Treaty.

image of cartoon Mars Rover

‘It is incumbent on Congress to use the 50-year anniversary of the Outer Space Treaty to properly determine our actual international obligations, decide if specific articles in the Treaty are self-executing or not, and ensure that our domestic policy moving forward creates an environment that provides certainty for industry while protecting our national security,’ said Senator Ted Cruz, earlier this year.

‘The design and objectives in doing this must not only be to implement the government’s obligations, but to do so in a way that is not unduly burdensome on emerging space activities,’ adds Israel.

‘This is particularly relevant when the exact contours of how the activity will be carried out are not known, which makes it imperative that the regulators do not get too far ahead of the technology and make guesses about how it will be done, what is feasible, then lock in standards that are ultimately irrelevant and unworkable.’

#### Prevents existential climate disaster.

Moncrief ’11-11 [Aliki; 2021; executive director of Florida Conservation Voters; Orlando Sentinel, “Build Back Better Act would help in climate crisis,” https://www.orlandosentinel.com/opinion/guest-commentary/os-op-climate-change-congress-act-now-20211111-44u6bgyn5fdvnp3eqievkebqpe-story.html]

Last week, Congress passed the Infrastructure Investment and Jobs Act. This bipartisan bill will address upgrades to things like our transportation system, rural broadband, public transit, and clean-water infrastructure. These are badly needed, overdue investments that will make our communities more resilient to the climate impacts we are already seeing. But we know much more is needed.

It’s not enough to just respond to extreme weather — we need to cut the pollution driving it in the first place. That’s why Congress must also pass the Build Back Better Act, the most transformational climate and jobs legislation in our nation’s history. By investing in clean energy and things like electric vehicles and more energy-efficient homes and businesses, we can stop making the problem worse and avoid a growing disaster. We don’t have time for half measures, and Floridians know it — more than 75% of registered voters in the state support bold congressional action on climate change.

The Build Back Better Act takes bold steps to dramatically reduce climate pollution for everyone. But it also centers those who have been disproportionately impacted by this crisis by taking steps to address the decades of unchecked environmental injustice, ensuring at least 40% of the benefits of this bill go to those communities hardest hit by pollution and climate change.

Building a clean energy economy is an investment that will pay dividends for families today and for generations to come. Preventing the most catastrophic hurricanes, floods and heat waves will help ensure that we still bring people from all over the world to our beaches, the Everglades, and every amazing destination across our state that supports our multi-billion dollar tourism industry.

And the robust clean-energy investments in the Build Back Better Act will create millions of good-paying jobs for Floridians in every corner of our state. Florida already ranks fourth in the nation for clean-energy employment, and this legislation would help this industry grow exponentially by tapping into the Sunshine State’s solar power potential.

Orlando has some great members of Congress who understand that climate change is an existential threat to our state and they ran on being a part of the solution to this crisis. Now, we are counting on them to take bold action and pass the Build Back Better Act. This is a win-win-win that creates jobs, lowers energy bills for Floridians, and begins to address the climate crisis at the same time.

#### Warming is a threat multiplier that encompasses all impacts.

Dr. Michael T. Klare 20, Five Colleges Professor of Peace and World Security Studies at Hampshire College, Ph.D. from the Graduate School of the Union Institute, BA and MA from Columbia University, Member of the Board of Director at the Arms Control Association, Defense Correspondent for The Nation, “How Rising Temperatures Increase the Likelihood of Nuclear War”, The Nation, 1/13/2020, https://www.thenation.com/article/archive/nuclear-defense-climate-change/

Climbing world temperatures and rising sea levels will diminish the supply of food and water in many resource-deprived areas, increasing the risk of widespread starvation, social unrest, and human flight. Global corn production, for example, is projected to fall by as much as 14 percent in a 2°C warmer world, according to research cited in a 2018 special report by the UN’s Intergovernmental Panel on Climate Change (IPCC). Food scarcity and crop failures risk pushing hundreds of millions of people into overcrowded cities, where the likelihood of pandemics, ethnic strife, and severe storm damage is bound to increase. All of this will impose an immense burden on human institutions. Some states may collapse or break up into a collection of warring chiefdoms—all fighting over sources of water and other vital resources.

A similar momentum is now evident in the emerging nuclear arms race, with all three major powers—China, Russia, and the United States—rushing to deploy a host of new munitions. This dangerous process commenced a decade ago, when Russian and Chinese leaders sought improvements to their nuclear arsenals and President Barack Obama, in order to secure Senate approval of the New Strategic Arms Reduction Treaty of 2010, agreed to initial funding for the modernization of all three legs of America’s strategic triad, which encompasses submarines, intercontinental ballistic missiles, and bombers. (New START, which mandated significant reductions in US and Russian arsenals, will expire in February 2021 unless renewed by the two countries.) Although Obama initiated the modernization of the nuclear triad, the Trump administration has sought funds to proceed with their full-scale production, at an estimated initial installment of $500 billion over 10 years.

Even during the initial modernization program of the Obama era, Russian and Chinese leaders were sufficiently alarmed to hasten their own nuclear acquisitions. Both countries were already in the process of modernizing their stockpiles—Russia to replace Cold War–era systems that had become unreliable, China to provide its relatively small arsenal with enhanced capabilities. Trump’s decision to acquire a whole new suite of ICBMs, nuclear-armed submarines, and bombers has added momentum to these efforts. And with all three major powers upgrading their arsenals, the other nuclear-weapon states—led by India, Pakistan, and North Korea—have been expanding their stockpiles as well. Moreover, with Trump’s recent decision to abandon the Intermediate-Range Nuclear Forces (INF) Treaty, all major powers are developing missile delivery systems for a regional nuclear war such as might erupt in Europe, South Asia, or the western Pacific.

### 1NC -- DA

#### **The private sector is leading to a boom in space economic innovation – the plan decimates the predicted growth. Specifically, hindering SpaceX launches undermines other plans and funds.**

Weinzierl and Sarang 21 [Matt Weinzierl and Mehak Sarang; Matt Weinzierl is the Joseph and Jacqueline Elbling Professor of Business Administration in the Business, Government, and the International Economy Unit at Harvard Business School and a Research Associate at the National Bureau of Economic Research. Mehak Sarang works with the Space Exploration Initiative and a Research Associate at the National Bureau of Economic Research, 2-12-21, “The Commercial Space Age Is Here”, Harvard Business Review, <https://hbr.org/2021/02/the-commercial-space-age-is-here>] kelvin

Today, however, there is reason to think that we may finally be reaching the first stages of a true space-for-space economy. SpaceX’s recent achievements (in cooperation with NASA), as well as upcoming efforts by Boeing, Blue Origin, and Virgin Galactic to put people in space sustainably and at scale, mark the opening of a new chapter of spaceflight led by private firms. These firms have both the intention and capability to bring private citizens to space as passengers, tourists, and — eventually — settlers, opening the door for businesses to start meeting the demand those people create over the next several decades with an array of space-for-space goods and services.

Welcome to the (Commercial) Space Age

In our recent research, we examined how the model of centralized, government-directed human space activity born in the 1960s has, over the last two decades, made way for a new model, in which public initiatives in space increasingly share the stage with private priorities. Centralized, government-led space programs will inevitably focus on space-for-earth activities that are in the public interest, such as national security, basic science, and national pride. This is only natural, as expenditures for these programs must be justified by demonstrating benefits for citizens — and the citizens these governments represent are (nearly) all on earth.

In contrast to governments, the private sector is eager to put people in space to pursue their own personal interests, not the state’s — and then supply the demand they create. This is the vision driving SpaceX, which in its first twenty years has entirely upended the rocket launch industry, securing 60% of the global commercial launch market and building ever-larger spacecraft designed to ferry passengers not just to the International Space Station (ISS), but also to its own promised settlement on Mars.

Today, the space-for-space market is limited to supplying the people who are already in space: that is, the handful of astronauts employed by NASA and other government programs. While SpaceX has grand visions of supporting large numbers of private space travelers, their current space-for-space activities have all been in response to demand from government customers (i.e., NASA). But as decreasing launch costs enable companies like SpaceX to leverage economies of scale and put more people into space, growing private sector demand (that is, tourists and settlers, rather than government employees) could turn these proof-of-concept initiatives into a sustainable, large-scale industry.

This model — of selling to NASA with the hopes of eventually creating and expanding into a larger private market — is exemplified by SpaceX, but the company is by no means the only player taking this approach. For instance, while SpaceX is focused on space-for-space transportation, another key component of this burgeoning industry will be manufacturing.

Made In Space, Inc. has been at the forefront of manufacturing “in space, for space” since 2014, when it 3D-printed a wrench onboard the ISS. Today, the company is exploring other products, such as high-quality fiber-optic cable, that terrestrial customers may be willing to pay to have manufactured in zero-gravity. But the company also recently received a $74 million contract to 3D-print large metal beams in space for use on NASA spacecraft, and future private sector spacecraft will certainly have similar manufacturing needs which Made In Space hopes to be well-positioned to fulfill. Just as SpaceX has begun by supplying NASA but hopes to eventually serve a much larger, private-sector market, Made In Space’s current work with NASA could be the first step along a path towards supporting a variety of private-sector manufacturing applications for which the costs of manufacturing on earth and transporting into space would be prohibitive.

Another major area of space-for-space investment is in building and operating space infrastructure such as habitats, laboratories, and factories. Axiom Space, a current leader in this field, recently announced that it would be flying the “first fully private commercial mission to space” in 2022 onboard SpaceX’s Crew Dragon Capsule. Axiom was also awarded a contract for exclusive access to a module of the ISS, facilitating its plans to develop modules for commercial activity on the station (and eventually, beyond it).

This infrastructure is likely to spur investment in a wide array of complementary services to supply the demand of the people living and working within it. For example, in February 2020, Maxar Technologies was awarded a $142 million contract from NASA to develop a robotic construction tool that would be assembled in space for use on low-Earth orbit spacecraft. Private sector spacecraft or settlements will no doubt have need for a variety of similar construction and repair tools.

#### The plan upends a foundation for US economic competitiveness---the space-value chain touches all sectors of the economy.

---includes satellites.

George 19 [Kelly, Professor, Embry-Riddle Aeronautical University. “The Economic Impacts of the Commercial Space Industry.” Space Policy 47: 181-186.] brett

As the 1960s was known as the height of the space race propelled by government funding, the 21st century may be known as the commercial space race propelled by private investors that will lend to stimulus to the U.S. and Florida's economy's future structure. Continued domination by government investment in the space industry is a topic of debate as new commercial companies began working in and acting as disruptors to the commercial space sector [3], [21], [24]. Those that may have thought there would not be a stand-alone commercial space industry were surely dealt a blow with the visual of Elon Musk's red sports car driven by Spaceman past the earth that had been launched into orbit by SpaceX on February 6, 2018 [23]. However, in recent years, more evidence of advancements in the commercial space industry have been fulfilled by other private commercial space companies, most notably Blue Origin, Virgin Galactic, Moon Express, and Orbital ATK [8]. The U.S. government policy intentionally embarked on a direction intended to speed innovation and drive costs down by expanding the role of commercial space companies in manufacturing and launch activities [2]; hence, the orbiting sports car. Yet more importantly, reusable rockets, satellites, and associated services have developed as a result of the deliberate shift in federal policy initiated by the Commercial Space Launch Act of 1984 and follow-on public private partnerships that supported launch efforts and satellites [4], [24]. This analysis chose the United States and then more narrowly, the state of Florida as the region to study because of the importance of the industry to the U.S. and the state's specific geographical characteristics and its economy: specifically, the launch/landing facilities and support resources. Also, Florida's governor appointed a commission on space and aeronautics whose goals include advancing the state's economic development across the global aerospace enterprise further emphasizing the role of commercial space in the economy.

Various bodies forecast significant future growth in commercialization of the space industry and its importance for the U.S. economic competitiveness within the global market. The space sector is not solely comprised of launches and satellites but now includes direct consumer applications and personal entertainment. As the commercial space industry has some history of growth and its growth is expected to accelerate, input-output (IO) analysis is useful to help predict what industries will benefit from its growth and inform the government that may want to use this information in their policy or public investment decisions [27], [28], [29]. Discussions regarding expansion of industries often led to polarizing aspects of the debate. This analysis can be useful for researchers, practitioners, and policy-makers in mitigating debate or enhancing discussions by contributing unbiased, accurate quantitative data about the economic impacts of the expansion of an industry.

The Space Project Team of the Organization for Economic Cooperation and Development International Futures Program (IFP) determined that the future demand for commercial space applications is likely to be substantial. They presented 3 likely scenarios that have different geopolitical, socio-economic, and energy and environment characteristics. Using the 3 IFP scenarios for Space 2030 and the presented cost of access to space, this research determines a potential impact from the change in final demand of the space value chain to the U.S. economy. The IFP's estimates spanned a range of 18–40% growth in the industry from 2004 to 2030 [17]. These projections appear to be on track with a $339 billion in economic activity according to a June 2017 Satellite Industry Association report showing growth of 7% from 2013 to 2016. This estimate is a conservative one as Morgan Stanley estimates the industry to be over $1 trillion by 2040 [24]. Because of the interrelations of applications, the space-value chain is made up of 4 broad categories: ground equipment, launch industry and satellite manufacturing which make up the core of the space industrial base, and satellite services [22].

#### US competitiveness underwrites global stability and non-prolif---great power war.

Daniel Bessner 17 [\*\*Assistant Professor in American Foreign Policy, University of Washington. \*\*Jim McDermott, Representative for Washington’s 7th District. \*\*Francis Wilson, BA, International Studies, University of Washington. “Redefining American Leadership for an Internationalized Era.” The Henry M. Jackson School of International Studies, University of Washington. Task Force Report. <https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/38693/TaskForceC-Bessner.pdf?sequence=1&isAllowed=y>] brett

America’s status as the world’s most vital nation is as dependent on its prosperity as it is on its military might and ability to project power worldwide. The federal government’s capacity to allocate resources to our armed forces, the private sector’s ability to develop beneficial products and technologies, and the satisfaction of the domestic public are all closely tied to the continued growth of American wealth at home and abroad. This has been proven repeatedly during periods where the United States has faced its greatest existential threats: Nazi Germany and Imperial Japan were unable to keep up with the sheer industrial output of the American heartland, while the Soviet Empire lost control of its satellites in great part due to their desire to benefit from the Western free market system.

Therefore, the formulation of a long-term strategy that anticipates the potential disruptions and opportunities of the new global economy is as important as questions of diplomacy and military strategy. As the United States evaluates how it will face the rapidly changing and increasingly interconnected world of the 21st century, it must take into account its economic interests as well as the potential economic costs associated with achieving its political objectives.

Since the beginning of the Cold War, America’s unparalleled ability to influence countries through nonviolent means has been critical to the preservation of global stability. The most relevant example of this in our history is the Marshall Plan, which leveraged American capital to provide a devastated post-War Europe with almost 120 billion dollars (adjusted for inflation) in aid. This aid was critical to preventing the spread of Soviet influence into Western Europe, and laid the foundation for an economically strong region stretching from Portugal to Austria that has been free from inter-state conflict since 1945. Because of the pragmatic exercise of economic influence, the European Union is now our strongest ally as well as our largest trading partner.

Worldwide, the liberal economic system that the United States has promoted through international trade organizations like the WTO has contributed to unprecedented economic cohesion between states. When countries are tied together in the mutually beneficial exchange of goods, the opportunity cost of war goes up significantly, making political leaders much more likely to de-escalate and rely on nonviolent means to resolve conflicts.

Our economy also plays a key role in helping the United States deal with states that threaten stability. The American ability to impose sanctions has been a formidable tool for discouraging nuclear proliferation and punishing violators of international norms. When more direct means of coercion are required, a powerful industrial and technological base enables the maintenance of a well-funded and technologically advanced military.

America’s advanced 17 trillion-dollar economy has allowed it to exert the influence that it does in the world today. However, our economic strength and the skill of our workforce, which have always underwritten our international influence, should not be taken for granted. Rapid growth in the developing world means that American companies and workers must now contend in an increasingly crowded global marketplace. In the new “knowledge economy,” educating America’s workers and ensuring that the United States retains its role as an innovation capital must take the highest priority. On the business side, reforming America’s institutions and removing barriers to expansion and innovation will encourage the companies of the future to make their start here.

# Case

### AT: Kessler---1NC

#### No Kessler syndrome.

**Mosher** **’19** [Dave; September 3rd; Journalist with more than a decade of experience reporting and writing stories about space, science, and technology; Business Insider, “Satellite collisions may trigger a space-junk disaster that could end human access to orbit. Here’s How,” <https://www.usafa.edu/app/uploads/Space_and_Defense_2_3.pdf>; GR]

The Kessler syndrome plays center-stage in the movie "Gravity," in which an accidental space collision endangers a crew aboard a large space station. But Gossner said that type of a runaway space-junk catastrophe is unlikely. "Right now I don't think we're close to that," he said. "I'm not saying we couldn't get there, and I'm not saying we don't need to be smart and manage the problem. But I don't see it ever becoming, anytime soon, an unmanageable problem." There is no current system to remove old satellites or sweep up bits of debris in order to prevent a Kessler event. Instead, space debris is monitored from Earth, and new rules require satellites in low-Earth orbit be deorbited after 25 years so they don't wind up adding more space junk. "Our current plan is to manage the problem and not let it get that far," Gossner said. "I don't think that we're even close to needing to actively remove stuff. There's lots of research being done on that, and maybe some day that will happen, but I think that — at this point, and in my humble opinion — an unnecessary expense." A major part of the effort to prevent a Kessler event is the Space Surveillance Network (SSN). The project, led by the US military, uses 30 different systems around the world to identify, track, and share information about objects in space. Many objects are tracked day and night via a networkof radar observatories around the globe. Optical telescopes on the ground also keep an eye out, but they aren't always run by the government. "The commercial sector is actually putting up lots and lots of telescopes," Gossner said. The government pays for their debris-tracking services. Gossner said one major debris-tracking company is called Exoanalytic. It uses about 150 small telescopes set up around the globe to detect, track, and report space debris to the SSN. Telescopes in space track debris, too. Far less is known about them because they're likely top-secret military satellites. Objects detected by the government and companies get added to a catalog of space debris and checked against the orbits of other known bits of space junk. New orbits are calculated with supercomputers to see if there's a chance of any collisions. Diana McKissock, a flight lead with the US Air Force's 18th Space Control Squadron, helps track space debris for the SSN. She said the surveillance network issues warnings to NASA, satellite companies, and other groups with spacecraft, based on two levels of emergency: basic and advanced. The SSN issues a basic emergency report to the public three days ahead of a 1-in-10,000 chance of a collision. It then provides multiple updates per day until the risk of a collision passes. To qualify for such reporting, a rogue object must come within a certain distance of another object. In low-Earth orbit, that distance must be less than 1 kilometer (0.62 mile); farther out in deep space, where the precision of orbits is less reliable, the distance is less than 5 kilometers (3.1 miles). Advanced emergency reports help satellite providers see possible collisions much more than three days ahead. "In 2017, we provided data for 308,984 events, of which only 655 were emergency-reportable," McKissock told Business Insider in an email. Of those, 579 events were in low-Earth orbit (where it's relatively crowded with satellites).

#### Long time frame. This is an interview of their author.

Burns Interviewing Kessler **’**13 Corrinne Burns, interviewing Donald Kessler, who made up the concept. [Space junk apocalypse: just like Gravity? 11-15-2013, https://www.theguardian.com/science/blog/2013/nov/15/space-junk-apocalypse-gravity]//BPS

Now? Are we in trouble? Not yet. Kessler syndrome isn't an acute phenomenon, as depicted in the movie – it's a slow, decades-long process. "It'll happen throughout the next 100 years – we have time to deal with it," Kessler says. "The time between collisions will become shorter – it's around 10 years at the moment. In 20 years' time, the time between collisions could be reduced to five years." Fortunately, communications satellites are, in the main, situated high up in geosynchronous orbit (GEO), whereas the risk of collisions lies mainly in the much lower, and more crowded, low Earth orbit (LEO). But that doesn't mean we can relax. "We've got to get a handle on it – we need to prevent the cascade process from speeding up." And the only way to do that is, he says, to begin actively removing junk from space. Charlotte Bewick agrees. She's a mission concepts engineer with the German space technology company OHB System, with special expertise in space junk – specifically, how we can capture it and bring it back to Earth. While agreeing with Kessler that the movie scenario is exaggerated, she remains concerned. "Fragments of junk can naturally re-enter the atmosphere [and so be removed from orbit]. But we're at the stage where the rate of creation of new debris fragments is higher than the rate of natural removal. The orbits most at risk harbour important space assets – satellites for weather forecasting, oil spill and bush fire detection, and polar ice monitoring." Bewick highlights the case of Envisat, a defunct 8,000kg spacecraft circling Earth in an orbit that is very popular with space agencies and, hence, pretty crowded. "If Envisat collides with a piece of debris or a micrometeorite, the fragments could render the whole orbital region unusable." So can we get the junk down, I asked Massimiliano Vasile, part of the Mechanical & Aerospace Department at the University of Strathclyde and co-ordinator of the Stardust network. He told me defunct satellites in the high GEO region have, for some time, been shifted to higher "graveyard orbits" to keep them out of the way. But that's not an option for items in low Earth orbit. For this, he tells me, researchers are looking seriously into active debris removal – in-orbit capture techniques like harpooning, netting and tethering, the use of contactless systems like ion-beams or lasers, and even onboard robotics to position the junk away from high-risk orbital regions. As for middle Earth orbit – well, ideas are welcome, he says. We're in no immediate danger from Kessler syndrome – but it's not a problem that's going away. Despite Gravity's artistic license, Donald Kessler is pleased to see the phenomenon represented on the big screen. "It is very improbable that events would play out as they did in the film," he says. "But if it raises awareness, then that's great."

#### Private companies are filling in to solve space debris now and the risk of collision is low---built in safeguards

Winter ‘19 (Lara, Special Correspondent @ Aljazeera, “Taking out the trash - in space”, 7-17-19, https://www.aljazeera.com/ajimpact/trash-space-190716213037055.html ) NJR

Houston, we have a trash problem! And it is not just nasty. It can be fatal. In Low Earth Orbit (LEO), debris ranging from tiny crystals of human urine to small school bus-sized satellites are whizzing anywhere up to 2,000km above the Earth's surface at roughly 8km a second. That is 25 times faster than a bullet shot from a Beretta pistol. And that is a problem for humans who fancy going boldly into space. That debris can blow a hole right through a spacecraft, endangering crews and payloads, and creating more fragments of stuff - for which those who follow must watch out. There is no debate that space junk is a growing threat to the commercial space industry. And it got riskier this year after India blew up a satellite into some 4,000 fragments this past March. But some people are hoping to turn the problem of cleaning up the space junk we humans leave behind into a profitable enterprise. How much trash is floating above our heads? Exactly how much debris is floating in LEO is difficult to estimate. But there is undoubtedly a lot of it. NASA's Orbital Debris Program Office has confirmed there are at least 23,000 fragments larger than 10cm. That is roughly the size of a tennis ball. Meanwhile, the European Space Agency reckons the number of tennis-ball-sized junk objects is actually 34,000. That is in addition to an estimated 900,000 objects ranging in size between 1cm and 10cm, as well as 128 million pieces of debris measuring less than 1cm. To give an idea of the kind of damage those tinier objects could cause, consider that a bullet for a Beretta pistol is 9mm. Those millions of projectiles pose a problem to the global space industry that Morgan Stanley estimates will generate $1 trillion in annual revenues by 2040 - roughly triple what it is worth today. Anywhere from a half to two-thirds of that projected growth hinges on satellite broadband projects. One such project, Elon Musk's SpaceX Starlink, recently launched 60 satellites into LEO - the first of potentially thousands of broadband satellites forming a mega-constellation around the Earth. And SpaceX is not the only company trying to do this. OneWeb Satellites, Telesat and Amazon's Project Kuiper are all vying to create mega-constellations to provide broadband service pole to pole. All of this is expensive to develop. Amazon's Project Kuiper, for example, could cost roughly $10bn. That's why firms like Airbus - as well as investment banks and bootstrapping engineers and scientists - are betting that the business of tracking, netting and even harpooning rubbish in LEO could become as profitable as waste management here on Earth - a business estimated to be worth some $52.9bn annually, according to IBISWorld. Airbus is developing a space debris removal product line not only to address the risk to the coming mega-constellations, but a predicted increase in traffic congestion in LEO. "I know it is a truism, but space is a big place," Matthew Stuttard, head of Advanced Systems - Space Systems Engineering at Airbus UK, told Al Jazeera. "In fact, though there is a lot of debris in terms of numbers, the debris risk is really quite low. The last really big collision was 2009." The collision Stuttard to which is referring was between a derelict Russian state-owned Cosmos 2251 satellite that had been left in orbit for a decade, and a commercial Iridium 33 satellite, which was a member of a highly profitable constellation of 66 satellites providing mobile phone services. On February 11, 2009, they smashed into each other at 10km a second or 22,300 miles per hour, according to the Secure World Foundation. According to international law, if damage has been suffered and fault established, the launching state is liable. Although the parties involved tried to assess this, the fault for the Cosmos-Iridium smash-up was not determined. Stuttard pointed out that because of international guidelines, newer satellites are designed to de-orbit to avoid collisions, but there will always be a failure rate. "Objects at that altitude will stay there if they are not de-orbited successfully for many hundreds of years, eternity really if they are at that altitude," Stuttard said. "There is interest in disposing of commercial satellites from Low Earth Orbit and this is the first time that that has been potentially a commercial activity. So we are responding to the market." With the uptick in satellite launches, and the mega-constellations in the pipeline, the United States Federal Communications Commission (FCC) is currently seeking comment on how to best indemnify the US against the risk posed by any space junk that US commercial operators may leave in orbit. The risk is small, but the crash is catastrophic. So when it does happen it is too late to fix. Europe is on the case, too "In every business, there may be a polluter, so clearly there will always be people who will take advantage of the situation," Guglielmo Aglietti, director of the Surrey Space Centre, told Al Jazeera. "[But] the European Union is taking this problem seriously". The European Commission is approaching it so seriously that it underwrote roughly half of the $17m it cost to launch the proof-of-technology mission RemoveDEBRIS. Deployed from the International Space Station last year, this near-complete mission, led by the Surrey Space Centre, is the product of a seven-member academic-commercial consortium that includes Airbus. The RemoveDEBRIS concept is to net or harpoon dead satellites and large debris, and then tow them either out of orbit or into a graveyard orbit. The spacecraft successfully netted and harpooned test debris in October and February, respectively, and is now in the process of de-orbiting itself. The RemoveDEBRIS consortium is not alone in its quest to get the junk out of the way. Tokyo-based Astroscale has to date raised $132m from Sumitomo Mitsui Trust Investment Co, Ltd, the Innovation Network Corporation of Japan and JAFCO Co, Ltd, a private venture capital firm. "What's their motivation? It's financial. But investors in space do invest for a broader vision: to invest in something that has a higher long-lasting impact. It will not have an immediate one- or two-year ROI [return on investment]," Astroscale's Chief Operating Officer, Chris Blackerby, told Al Jazeera. "We see it as a market that's going to develop." Astroscale plans to launch its two-spacecraft proof-of-technology mission, ELSA-d, next year. Consisting of a "servicer" craft and a "client" craft, the mission will test proximity rendezvous technologies and a magnetic docking mechanism to demonstrate the capability to find and magnetically capture debris.

### 1NC---Alt Causes

#### Alt causes:

#### 1] China.

**Jones**, Andrew. **2021** https://spacenews.com/china-is-developing-plans-for-a-13000-satellite-communications-megaconstellation/

China is to oversee the construction and operation of a national satellite internet megaconstellation through coordinating the country’s major space actors.

Recent comments by senior officials indicate that plans are moving ahead to alter earlier constellation plans by space sector state-owned enterprises and possibly make these part of a larger “Guowang” or “national network” satellite internet project.

Spectrum allocation filings submitted to the International Telecommunication Union (ITU) by China in September last year revealed plans to construct two similarly named “GW” low Earth orbit constellations totaling 12,992 satellites.

#### 2] Russia.

---Roscosmos is stated owned.

**Forrester**, Chris **2018** https://advanced-television.com/2018/05/25/russia-wants-288-satellite-mega-constellation/

Russia has plans to join the club of major players with massive satellite constellations.

Russian news agency TASS says that Russian Space Systems Company (Roscosmos) wants to create a global constellation of 288 satellites, operating from 870 kms above the ground.The constellation, called Efir, would start operating in 2025, says the report quoting project chief Yuri Mishin.

#### 3] Solar storms.

**Wild 15** (Jim Wild, Professor of Space Physics at Lancaster University, “With So Much Vested In Satellites, Solar Storms Could Bring Life To A Standstill,” July 30, 2015, https://theconversation.com/with-so-much-vested-in-satellites-solar-storms-could-bring-life-to-a-standstill-45204)

These can disrupt satellite operations by depositing electrical charge within the on-board electronics, triggering phantom commands or overloading and damaging sensitive components. The effects of space weather on the Earth’s upper atmosphere disrupts radio signals transmitted by navigation satellites, potentially introducing positioning errors or, in more severe cases, rendering them unusable.

These are not theoretical hazards: in recent decades, solar storms have caused outages for a number of satellites services – and a handful of satellites have been lost altogether. These were costly events – satellite operator losses have run into hundreds of millions of dollars. The wider social and economic impact was relatively limited, but even so it’s unclear how our growing amount of space infrastructure would fare against the more extreme space weather that we might face.

When Space Weather Becomes A Hurricane

The largest solar storm on record was the Carrington event in September 1859, named after the British astronomer who observed it. Of course there were no Victorian satellites to suffer the consequences, but the telegraph systems of the time were crippled as electrical currents induced in the copper wires interfered with signals, electrocuted operators and set telegraph paper alight. The geomagnetic storm it triggered was so intense that the northern lights, usually a polar phenomenon, were observed as far south as the Bahamas.

Statistical analysis of this and other severe solar storms suggests that we can expect an event of this magnitude once every few hundred years – it’s a question of “when” rather than “if”. A 2007 study estimated a Carrington event today would cause US$30 billion in losses for satellite operators and threaten vital infrastructure in space and here on the ground. It’s a risk taken sufficiently seriously that it appears on the UK National Risk Register and has led the government to draw up its preparedness programme.

#### 4] EMP attacks are coming and wreck satellites

Graham 19 (William Graham, Chairman of the Congressional EMP Commission, White House Science Advisor to President Reagan, Ambassador R. James Woolsey, CIA Director and Senior Advisor to the Congressional EMP Commission, and Peter Vincent Pry, Chief of Staff of the Congressional EMP Commission, Served on the Staffs of the House Armed Services Committee and the CIA, “The EMP Executive Order — Where Were Bush and Obama?” The National Review. May 3, 2019. <https://www.nationalreview.com/2019/05/emp-executive-order-trump-administration-takes-threat-seriously/>) [language modified]

A threat that could literally mean the end of civilization is finally getting the attention it needs under Trump.

Washington and the press call almost everything an “existential threat” these days. But the threat from a natural or man-made electromagnetic pulse (EMP) really is one, as our congressional commission reported in 2017:

The critical national infrastructure in the United States faces a present and continuing existential threat from combined-arms warfare, including cyber and manmade electromagnetic pulse (EMP) attack, as well as EMP from a solar superstorm. During the Cold War, the U.S. was primarily concerned about an EMP attack generated by a high-altitude nuclear weapon as a tactic by which the Soviet Union could suppress the U.S. national command authority and the ability to respond to a nuclear attack — and thus negate the deterrence value of assured nuclear retaliation. Within the last decade, newly-armed adversaries, including North Korea, have been developing the ability and threatening to carry out an EMP attack against the United States.

The bottom line:

Such an attack would give countries that have only a small number of nuclear weapons the ability to cause widespread, long-lasting damage to critical national infrastructures, to the United States itself as a viable country, and to the survival of a majority of its population.

The EMP Commission warns that potential adversaries are developing a revolutionary new way of warfare combining cyber-attacks, sabotage, and nuclear EMP attack against national electric grids and other critical infrastructures to achieve quick and decisive victory:

Combined-Arms Cyber Warfare, as planned by Russia, China, North Korea, and Iran, may use combinations of cyber-, sabotage-, and ultimately nuclear EMP-attack to impair the United States quickly and decisively by blacking-out large portions of its electric grid and other critical infrastructures. Foreign adversaries may also consider nuclear EMP attack as the ultimate cyber “denial of service” weapon, one which can gravely damage the U.S. by striking at its technological Achilles’ heel, without having to engage the U.S. military. . . .

The synergism of such combined-arms is described in the military doctrines of all these potential adversaries as the greatest Revolution in Military Affairs (RMA) in history — one which anticipates rendering obsolete many, if not all, traditional instruments of military power.

Alarmingly, in the military doctrines of potential adversaries, nuclear EMP attack is considered a dimension of cyber warfare, because EMP is not directly injurious to people, only to electronics. High-altitude EMP attack entails exo-atmospheric detonation (30 to 500 kilometers high), so none of the blast, fire, radiation, radioactive fallout, or other effects associated with a nuclear attack on a city would occur — only the EMP.

Yet EMP, like a super-energetic radio wave that can destroy all kinds of electronics across a region as vast as North America with a single weapon, could in the long run kill far more Americans through its indirect effects than nuclear bombing of a city. Fatalities estimated from a protracted nationwide blackout lasting one year range from 67 to 90 percent of the U.S. population, due to starvation, disease, and societal collapse.

The EMP Commission tried, but could not figure out a way to keep 328 million Americans alive for a year without food and water. In 1880, just before the invention of the first electric grid in 1882, and long before the advent of our high-tech electronic civilization, the U.S. population was about 50 million, sustained by horse-drawn, coal-fired, and mechanical critical infrastructures that no longer exist.

Nuclear deterrence may not prevent an EMP attack, which can be executed anonymously using a balloon or a private jet or by doing a zoom-climb, with a short-range missile launched off a freighter (as practiced by Iran), or by satellite (as practiced by North Korea). Retaliatory threats are credible only if you know who attacked.

EMP also [destroys] ~~blinds~~, at the speed of light, satellites, radars, and other National Technical Means used for threat assessment and identifying attackers. Super-EMP weapons now possessed by Russia, China, and probably North Korea could generate 100,000 volts/meter or more, greatly exceeding the U.S. military hardening standard (50,000 volts/meter) and potentially [undermining] ~~paralyzing~~ U.S. nuclear and conventional retaliatory capabilities.

### AT: Space War

#### Squo debris and near misses thumps -- tensions should’ve already escalated.

#### No miscalc from satellite disruptions, but terrestrial conflict turns it

Mazur 12 (Jonathan Mazur, Manager Engineering at Northrop Grumman, writing in Space & Defense, from the Eisenhower Center for Space and Defense Studies. Past U.S. Actions: Redlines in Space. Space & Defense, Volume 6, Number 1, Fall 2012. https://inss.ndu.edu/Portals/97/Space\_and\_Defense\_6\_1.pdf?ver=2018-09-06-135424-147)

U.S. Reactions To Foreign Disruption Of U.S. Capabilities

In the 1970s, it was suspected that a U.S. maritime communications satellite was turned off by the Soviets when it was outside of the range of U.S. tracking stations.25 There does not appear to be any documented U.S. reaction, and I suspect there was none. In the mid-1990s, satellite hackers in Brazil began hijacking U.S. military communication satellite signals to broadcast their own information, though it took until 2009 for Brazil to crack down on the illegal activity with the support of the DoD.26 In 1998, a U.S.-German satellite known as ROSAT was rendered useless after it turned suddenly toward the sun. NASA investigators later determined the accident was possibly linked to a cyber-intrusion by Russia.

The fallout? Though there was an ongoing criminal investigation as of 2008; NASA security officials have seemed determined to publicly minimize the seriousness of the threat.27 In 2003, a signal originating from Cuba—later determined to be coming from Iranian embassy property— was jamming a U.S. communications satellite that was transmitting Voice of America programming over Iran, which was publicly referred to as an “act of war” by a U.S. official. 28 Press reporting indicates the U.S. administration was [frozen]“paralyzed” about how to cope with the jamming that continued for at least a month, even after U.S. diplomatic protests to Cuba.29 In 2005, U.S. diplomats protested to the Libyan government after two international satellites were illegally jammed disrupting American diplomatic, military, and FBI communications.30 In 2006, press reporting indicates that China hit a U.S. spy satellite with a ground-based laser. This action was acknowledged by the then director of the NRO, though the DoD remained tight lipped about the incident.31

“We’re at a point where the technology’s out there, and the capability for people to do things to our satellites is there. I’m focused on it beyond any single event.” – Air Force Space Command Commander, General Chilton, 2006 32

In 2009, a U.S. commercial Iridium communications satellite—extensively used by the DoD—was accidently destroyed by a collision with a dead Russian satellite.33 The U.S. company, Iridium, was able to minimize any loss of service by implementing a network solution within a few days.34 As of early 2011, no legal action had been taken by the company either because it is not clear who was at fault or because it might be politically problematic for the United States, which is trying to enter into bi-lateral transparency and confidence-building measures (TCBM) with Russia regarding space activities.35 Since August of 2010, North Korea has been intermittently using GPS jamming equipment, which reportedly has been interfering with U.S. and South Korean military operations and civilian use south of the North Korean border.36 Reportedly, only South Korea and the United Nations International Telecommunications Union—at the request of South Korea—have issued letters to Pyongyang demanding the cessation of disruptive communications signals in South Korea.37

It appears that the only time the U.S. military has responded with force to a disruption in U.S. space capabilities was in 2003, a few days after the start of the Iraq war.38 According to U.S. officials, Iraq was using multiple GPS jammers—which supposedly did not affect military GPS functionality. However, the U.S. military bombed the jammers anyway after a diplomatic complaint to Russia.39 The use of military force against the GPS jamming threat was possibly because the United States was already intervening in Iraq, and the bombing probably would not have occurred if the United States was not at war.

#### Official statements prove

Colby 16 (Elbridge, Senior Fellow at the Center for a New American Security, “From Sanctuary to Battlefield: A Framework for a U.S. Defense and Deterrence Strategy for Space”)SLAIR

But such a threat is of substantially decreasing credibility. In today’s much different context, no one really believes that a limited space attack would necessarily or even plausibly be a prelude to total nuclear war. Would the United States respond with a major strategic strike if China or Russia, in the context of a regional conflict with the United States, struck discriminately at implicated U.S. space assets in the attempt to defang U.S. power projection, all while leaving the broader U.S. space architecture alone? Not only does such a massive response seem unlikely – it would be positively foolish and irresponsible. Furthermore, would other nations regard attacks on assets the United States was actively employing for a local war as off limits to attack? Indeed, any reasonable observer would have to judge that such discriminate attacks on U.S. space assets would not necessarily be illegitimate, as, by the United States’ own admission, it relies greatly on its space architecture for conventional power projection. Moreover, official U.S. statements on how the United States would respond to attacks on its space assets – to the limited extent such statements exist and the degree to which those given are clear – offer no indication it would respond massively to such strikes.53 Perhaps more to the point, senior responsible U.S. officials have telegraphed that the United States would indeed not necessarily respond massively to attacks against its space assets.54 In light of these factors, any U.S. space deterrence strategy that is predicated on an all-or-nothing retaliation to space attacks will become increasingly incredible and thus decreasingly effective – and indeed might even invite an adversary’s challenge in order to puncture or degrade U.S. credibility. In other words, since space assets can increasingly be attacked segmentally and discriminately rather than totally, this means that credibly and effectively deterring such attacks requires a less than total response. Since the threat is more like a rapier than a broadsword, the United States needs rapier-like ripostes of its own. Accordingly, the United States Any U.S. space deterrence strategy that is predicated on an all-or-nothing retaliation to space attacks will become increasingly incredible and thus decreasingly effective. needs a more discriminate deterrent for space. In particular, it needs a flexible deterrent capable of meeting the intensifying challenge of deterring an adversary – and particularly a highly capable potential opponent like China or Russia – from attacking (or attacking to a sufficient degree) those U.S. space assets needed for the United States to effectively and decisively project power and ultimately prevail in a conflict in a distant theater. At the same time, this flexible deterrent must contribute to dissuading such an enemy from striking at the nation’s broader military and civilian space architecture, and in particular those core strategic space assets needed for central deterrence.

#### Congestion induces restraint, not aggression.

Bowen 18 [Bleddyn, Lecturer in International Relations at the University of Leicester; ELN; 20 Februrary 2018; “The Art of Space Deterrence,” <https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/>] brett

Fourth, the ubiquity of space infrastructure and the fragility of the space environment may create a degree of existential deterrence. As space is so useful to modern economies and military forces, a large-scale disruption of space infrastructure may be so intuitively escalatory to decision-makers that there may be a natural caution against a wholesale assault on a state’s entire space capabilities because the consequences of doing so approach the mentalities of total war, or nuclear responses if a society begins tearing itself apart because of the collapse of optimised energy grids and just-in-time supply chains. In addition, the problem of space debris and the political-legal hurdles to conducting debris clean-up operations mean that even a handful of explosive events in space can render a region of Earth orbit unusable for everyone. This could caution a country like China from excessive kinetic intercept missions because its own military and economy is increasingly reliant on outer space, but perhaps not a country like North Korea which does not rely on space. The usefulness, sensitivity, and fragility of space may have some existential deterrent effect. China’s catastrophic anti-satellite weapons test in 2007 is a valuable lesson for all on the potentially devastating effect of kinetic warfare in orbit.

### AT: Food

#### No food wars.

Vestby ’18 [Vestby, Ida Rudolfsen, and Halvard Buhaug; 5-18-18; Doctoral Researcher at the Peace Research Institute Oslo; doctoral researcher at the Department of Peace and Conflict Research at Uppsala University and PRIO; Research Professor at the Peace Research Institute Oslo (PRIO); Professor of Political Science at the Norwegian University of Science and Technology (NTNU); and Associate Editor of the Journal of Peace Research and Political Geography; “Does hunger cause conflict?” Prio, https://blogs.prio.org/ClimateAndConflict/2018/05/does-hunger-cause-conflict/]

It is perhaps surprising, then, that there is little scholarly merit in the notion that a short-term reduction in access to food increases the probability that conflict will break out. This is because to start or participate in violent conflict requires people to have both the means and the will. Most people on the brink of starvation are not in the position to resort to violence, whether against the government or other social groups. In fact, the urban middle classes tend to be the most likely to protest against rises in food prices, since they often have the best opportunities, the most energy, and the best skills to coordinate and participate in protests. Accordingly, there is a widespread misapprehension that social unrest in periods of high food prices relates primarily to food shortages. In reality, the sources of discontent are considerably more complex – linked to political structures, land ownership, corruption, the desire for democratic reforms and general economic problems – where the price of food is seen in the context of general increases in the cost of living. Research has shown that while the international media have a tendency to seek simple resource-related explanations – such as drought or famine – for conflicts in the Global South, debates in the local media are permeated by more complex political relationships.

#### Megaconstellations are key to rural broadband.

Weinschenk ‘21 [Carl; February 21; Freelance Editor, Freelance. Contributor, Telecompetitor, Technology, U.S. “Report: Starlink Looks Very Promising for Rural Broadband,” <https://www.telecompetitor.com/report-starlink-looks-very-promising-for-rural-broadband/>] brett

SpaceX’s Starlink satellite broadband service has the potential to be a game changer for rural broadband, according to an analysis by PCMag of Starlink speeds. The analysis is based on beta tester data exclusively provided to it by Ookla Speedtest.

The site looked at data from rural, suburban and urban areas. Among its more than 10,000 users in its semi-public beta were “a perplexing” number in urban and suburban areas where a variety of high-speed options already are available. The story cites Chicago, Seattle and Minneapolis as places where there were testers, despite readily available alternatives.

The site compared download speeds against other fixed service providers in 30 counties with at least 30 samples in any month from December 30 to February 24. The counties in which the fixed providers had the biggest speed advantage over Spacelink were urban or suburban: Los Angeles and Santa Clara counties, CA; Cook County, IL; King County, WA and Washington County, MN.

It is in rural areas that Starlink shines, according to the research. The five counties in which Starlink had the biggest download speed advantage over the fixed group were rural: Vilas County, WI; Ravali County, MT; Waldo County, ME; Okanogan County, WA and Lamoile County, VT.

Source: PCMag

The number of counties in which Starlink beat the fixed providers and those in which the fixed providers beat Starlink appeared to be about equal, as was the speed differential.

“Our own analysis shows that Starlink will make the biggest difference in rural, low-density, low-population counties with few options other than lower-quality satellite services,” wrote Sascha Segan, author of the PCMag article about Startlink rural speeds.

There is some skepticism about Starlink and its ability to serve rural broadband at scale, especially considering it has committed to serve 642K locations through the FCC RDOF program. Detractors have argued the service will struggle to provide adequate broadband speeds to that many rural customers.

At this point, Starlink is geographically constrained. The story says that reports put its current constellation most effectively covering areas ” between either 44 degrees or 45 degrees north, and either 52 degrees or 53 degrees north.” This region is in the northern third of the country and extends into Canada. A distribution map shows most beta testers in the northwest, with some in the upper Midwest and a smattering in the northeast and central and southern California.

Beta users report download speeds of as much as 170 Mbps with no data caps.

Starlink may be getting a speed boost. Last week, Space X CEO Elon Musk tweeted that he expects download speeds to hit 300 Mbps later this year. He added that latency will be 20 milliseconds.

#### Rural broadband is key to food output---absent megaconstellations, supply shortages are inevitable.

USDA ‘19 [US department of agriculture, April 2019, A Case For Rural Broadband, accessed 8/12/21, <https://mobroadband.org/wp-content/uploads/sites/44/2020/07/case-for-rural-broadband.pdf>] brett

Across the agricultural production cycle, farmers and ranchers can implement digital technologies as other modern businesses are doing, enhancing agriculture by driving decision-making based on integrated data, automating processes to increase operational efficiency, improving productivity with tasks driven by real-time insights, augmenting the role of management in the business of farming, and creating new markets with extended geographic reach. These patterns of digital transformation create fundamental shifts in agricultural production, developing new ways of working that make the industry more productive, attractive, and financially sustainable for farmers and ranchers. Tech companies which stand to benefit from industry transformation continue to capitalize on these shifts by developing new technologies, which according to one recent study, may help position themselves to capture a portion of an estimated $254 billion to $340 billion in global addressable digital agriculture market.13 Business Management shifts decision making from instinct to integrated data Precision Agriculture is transforming the way producers collect, organize, and rely on information to make key decisions. Traditionally, producers’ long-term experiences have created a competitive advantage: years of experiments have produced insights and instincts about the land they have farmed and the animals they have raised. But the volume of data that is possible to collect today can accelerate that learning curve, helping producers learn faster and more rapidly adapt to market shifts—particularly on new fields and with new animals—and creating more nuanced insights, enabling them to act on leading indicators. This creates a disparity between producers who can utilize high-speed Internet service and those who cannot. Examples include the ability to do the following: • create decision tools to help farmers and ranchers estimate the potential profit and economic risks associated with growing one particular crop over another • decide which fertilizer is best for current soil conditions • apply pesticides in targeted areas of the field, to control pests rather than applying pesticides over the entire field • use limited water resources more effectively • respond to findings of sensors that monitor animal health and nutrition Better choices about what, where, and when to plant, fertilize, and harvest—or breed, feed, and slaughter—can drive above-average returns by removing unrecognized inefficiencies and scaling insights. Digitization shifts supply chain management and resource allocation from generic to precise. Precision Agriculture helps make the business of farming more efficient by minimizing inputs— such as raw materials and labor—and maximizing outputs. For example, previous research has found that 40 percent of fields are over-fertilized, which not only inflates the cost of inputs but also results in 15 percent–20 percent yield loss suffered from improper fertilizer application.14 Precise application of inputs, such as fertilizer, herbicides, and pesticides, allows farmers to adjust inputs to location-based characteristics and use exact amounts needed, which saves money and increases sustainability due to more efficient resource stewardship. Improved fertilizer, soil, and water use can significantly improve water quality with less runoff and reduce climate gas emissions, which is important since agriculture accounts for 10-15 percent of worldwide emissions.15 Despite reductions in necessary inputs, Next Generation Precision Agriculture helps maintain or increase yields, leading to significant gains in efficiency14. Real-time insights also improve logistics. When growing melons, for instance, real-time data can help farmers overcome challenges in storing and shipping their products. Melons should be stored in an optimal refrigeration environment to minimize spoilage, and real-time precision sensors can reduce spoilage by alerting staff to suboptimal variations in temperature and humidity, allowing the execution of remedies before major losses occur. When refrigerated storage is full or the market price is at a peak, the “Internet of Things” can provide real-time information about where trucks are located and locating customers to market products to help make the sale. LABOR EFFICIENCY boosts productivity by automating routine processes and enabling real-time response Connected devices equip farmers with a clear picture of their operations at any moment, making it possible to prioritize tasks more effectively and triage the most pressing issues. While routine inspection and scouting has typically been a regular part of farm management and has increased farm profitability14, connected technologies can track, sense, and flag where a producer should focus their time and attention that day. Similarly, e-connectivity has allowed rural farms to access new training resources and high-skilled labor that has not been previously available. Real-time data and automation can radically improve a producer’s peace of mind and performance under time constraints, especially because of reduced physical and mental stress (no longer struggling to keep the machine on a row line between 6 and 10 hours in the field during harvest or planting). On dairy farms, for example, automated devices that milk and feed animals can also track each cow’s activity and alert producers to potential problems. Because these tasks are traditionally done by the producer and farm personnel, e-connectivity can substantially reduce the amount of time and effort necessary to run farms. This leads to dramatic increases in flexibility, enabling time and talent to be directed to more advanced tasks. Farmers can use newly found time to re-invest in more high-value tasks like long-term planning and management of the operation. This shift towards farm management opens new possibilities for the way that farms conduct business. GEOGRAPHIC ACCESS extends the reach of the supply chain and shifts marketing from standard to differentiated As explained in the previous section, as Precision Agriculture unlocks additional time and resources to explore new ways of doing business farmers are re-investing their time into identifying options to improve inputs, including better-trained labor and more effective types of inputs. New customers and markets can also be explored to increase sales volume and revenues.

### AT: Climate

#### All the stuff they use satellite data for regarding climate change is for adapting to the impacts of climate change and mitigating the damage, not reducing it at its source. This means they don’t solve because adaptation is impossible -- 1AC Kareiva ev says:

Kareiva 18, Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al. (Peter, “Existential risk due to ecosystem collapse: Nature strikes back,” Futures, 102)

Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks

#### **Adaptation alone is not sufficient, because climate change is nonlinear, has delayed consequences, and has positive feedback loops that lock it in after it’s too late -- we can only push back rising oceans for so long.**

#### ONLY Build Back Better solves climate change, because it reduces emissions at their source.

### 1NC---Debris Good: Fracking

#### Satellite loss shuts down global fracking

Les Johnson 13, Deputy Manager for NASA's Advanced Concepts Office at the Marshall Space Flight Center, Co-Investigator for the JAXA T-Rex Space Tether Experiment and PI of NASA's ProSEDS Experiment, Master's Degree in Physics from Vanderbilt University, Popular Science Writer, and NASA Technologist, Frequent Contributor to the Journal of the British Interplanetary Sodety and Member of the American Institute of Aeronautics and Astronautics, National Space Society, the World Future Society, and MENSA, Sky Alert!: When Satellites Fail, p. 99-105

Energy, environment, farming, mining, land use. All of these areas and more are now inextricably linked to satellite data and would be devastated should that flow of data stop.

Environmental Monitoring

Oh how complacent we've become. We take for granted that we will have instant images from space showing a volcanic eruption somewhere in the South Pacific within hours of learning that it happened. When the BP oll spill happened in the Gulf of Mexico in 2010, satellite images were used in conjunction with aircraft and ships to monitor the extent and evolving nature of the spill (Figures 10.1 and 10.2).

The data were also used to direct the ships that were attempting to clean up the spill, to warn fishermen of areas in which it would be dangerous to fish, and to generally monitor the extent of the disaster. This is the type of data we get from space in a field known as remote sensing.

Remote sensing is, well, exactly what its name implies. With it, you gather data, or sense, usually in the form of electromagnetic radiation (light), remotely - that is, you are not physically touching what you are looking at. Satellite remote sensing began shortly after we began launching satellites and many industries are now totally dependent upon having the capability.

We use satellites, like the venerable Landsat series, to study the Earth m unprecedented detail. Since 1972, Landsat satellites have taken millions of high resolution images of the Earth's surface, allowing comprehensive studies of how the land has changed due to human intervention (deforestation, agriculture, settlement, etc.) and natural processes (desertification, floods, etc.).

The best way to understand how useful Landsat and similar data can be to governments at all levels is best illustrated by looking at 14then and now" photographs. For example, Africa's Lake Chad has been shrinking for 40 years, as the desert has encroached on this once plentiful inland freshwater lake. Forty years ago, there were about 15,000 square miles of water within the lake. Now, it is less than 500 square miles (Figure 10.3) [1].

And what is the practical side of this particular bit of information?

Governments use this type of satellite imagery to avoid human tragedy. Hundreds of thousands of people, if not millions, depend upon the waters of Lake Chad for agriculture, industry, and personal hygiene. With the lake going dry, how has this impacted on their livelihoods, their families, and their very lives?

The European Space Agency (ESA) is freely providing satellite data to developing countries as they search for new sources of drinking water. For example, ESA assessed data obtained from space over Nigeria to find over 90 new freshwater sources within that country. After ground teams visited the new sites, all were confirmed to contain fresh water. This was no accident. These were satellites with sensors developed for just such purposes in mind [2].

Desertification is but one example of changing climates affecting people's everyday lives. What about more direct observations of our impact on the planet? Figures 10.4 and 10.5 show the scarring of the Earth's surface as a result of surface mining in West Virginia. This is not a polemic against mining; rather, it is an observation that we can use satellite imagery to monitor such mining and be mindful of its impact on the environment.

Other than taking pictures of surface features, like lakes and open pit mines, how are satellites monitoring the Earth's changing climate? In just about every way, by: monitoring global land, sea, and atmospheric temperatures; measuring yearly average rainfall amounts just about everywhere on the globe; measuring glaciation rates; measuring sea surface heights; and more. Remote sensing is more than taking pictures of the Earth in the visible part of the spectrum. We can learn a great deal from looking at part of the spectrum that our eyes cannot see - but our instruments can.

Shown in Figure 10.6 is a composite image of the Earth's surface showing the average land-surface temperature at night. The data came from two NASA satellites, Terra and Aqua, as they orbit the Earth in a polar orbit. (This means that they circle the Earth from top to bottom, passing over both the North and South Poles with each complete orbit.) Terra's orbit is such that it passes from the north to the south across the equator in the morning; Aqua passes south to north over the equator in the afternoon. Taken together, they observe the Earth's surface in its entirety every two days. Data sets such as this exist for just about any day of the year and can show either night-time lows or daytime highs.

By looking in different parts of the spectrum, like the infrared light discussed above, we can make observations as described in Table 10.1.

Pollution Monitoring

As emerging countries industrialize, they also become polluters. Many of these countries are not exactly forthright about releasing air-pollution details to the media, so much of our awareness of the rising pollution there is anecdotal - typically m the form of stories told by people who have visited these countries and seen the extreme pollution at first hand. This, by the way, is not exactly scientific.

Using satellites, and not relying on either the governments in question or second-hand stories, we can accurately assess the pollution levels there and elsewhere. Using satellite images to measure the amount of light absorbed or blocked by fine particulates in the atmosphere, otherwise known as air pollution, you can determine not only what the airborne pollutant might be, but also its size. And, by looking at the overall light blockage, an accurate estimate of the amount of pollution in the air can also be made. Recent studies show that many of these countries are covered in a pollution cloud that countries in the developed world would deem extremely harmful. And how do we know this with scientific certainty? From satellite measurements.

Energy Production

The recent boom in the production of shale oil in the United States and elsewhere is due in large part to the identification and geolocation of promising geologic formations for test drilling and fracking. "Fracking" is a somewhat new term that comes from the phrase "hydraulic fracturing". In fracking, massive amounts of previously unusable reservoirs of oil and natural gas are released for capture, sale, and transport from deposits deep within the Earth - many located at least a mile below the surface. In the United States alone, there may be as much as 750 trillion cubic feet of natural gas within shale deposits releasable by fracking [3]. How do energy companies know where to look for these deposits? In large part, by analyzing satellite imagery.

According to Science Daily (26 February 2009), a new map of the Earth's gravitational field based on satellite measurements makes it much less resource intensive to find new oil deposits. The map will be particularly useful as the ice melts in the oil-rich Arctic regions. The easy-to-find oilfields have already been found. To fuel the growing world economy, those harder-to-find deposits must be located and tapped - which is why satellite imagery is so important. Take away this and other satellite-dependent techniques of oil and gas exploration and the world economy will feel the impact through higher oil and natural gas prices.

#### Fracking makes extinction inevitable---try-or die to shut it off

Rev. Mac Legerton 18, Co-Founder and Executive Director of the Center for Community Action, Member of the Board of Directors of the NC Climate Solutions Coalition, Member of the Board of Directors of the Windcall Institute, “Will The U.S. Blaze A Trail To Mass Extinction?”, APPPL News, 1/15/2018, https://www.apppl.org/news/will-the-u-s-blaze-a-trail-to-mass-extinction/

As an elder, I now realize that there is even a greater threat to humanity and life on Earth than nuclear war—though, unlike a nuclear exchange, this threat is a slow-motion catastrophe. Can you guess what it is? Here’s a clue: it is something with which most people don’t have a personal relationship. Tragically, some persons remain in total denial of its validity, much less its present danger. And that’s the problem – that’s why this threat needs to be more seriously addressed on the local, state, national, and international level.

What is it? It’s the slow-motion but rapidly growing catastrophe of climate change. There’s now good news amidst this seemingly overwhelming challenge. But the answer may surprise you. Today we know what is the #1 preventable cause of climate change. It’s not coal, it’s not nuclear, and it’s not oil and gasoline. It’s actually the use of the very fuel that is touted as being cleaner, greener, and cheaper than all the rest. This fuel is called “Natural Gas”.

Let’s start with its name – “Natural Gas”. What is “natural gas”? There’s actually nothing “natural” about it when it is forcibly extracted from the ground through hydraulic fracturing, commonly known as “fracking”. When something is forcibly ruptured from deep within the earth with the use of toxic chemicals, the last name you would use for it is “natural”.

Fracking disrupts the geologic fault lines causing earthquakes, uses millions of gallons of fresh water that becomes permanently poisoned by unknown, cancer-producing chemicals added to it, creates air pollution during the drilling process, increases the risk of injury and explosions, raises major health risks to both people and place in close proximity to it, and changes the nature of both neighborhoods and landscapes. Fracking also leaves a massive carbon footprint of drilling wells as deep as 8,000 feet and then drilling horizontally over 10,000 feet; On top of all this, it leaks major amounts of gas into the environment.

So, what is this gas? It is 90-95% methane gas which is a hydrocarbon compound made up of one carbon atom and four hydrogen atoms (CH4). It releases carbon into the atmosphere and produces carbon dioxide (C02) just like coal does when it is burned. Methane is not its trace element–it is its undisputed compound of this fossil fuel product. If a compound is 90-95% of a product, it makes sense to call it by that name. Doesn’t it? Well, actually not if you want people to believe and think that it is something that it is not. It is un-natural methane gas produced under massive and highly toxic pressure and hazardous conditions.

Now that we know what this gas is, what does it do to the atmosphere and climate that is so dangerous? This hydrocarbon has properties that block the radiation of heat from Earth’s surface 100 times more effectively than CO2 (released from burning coal) during its first 10 years of release and 86 times more effectively in its first 20 years. Because of the climate emergency underway, the first 10 or 20 years matter most.

When utility companies and the larger fossil fuel companies state that they are committed to lowering carbon emissions, this just isn’t true. They are radically escalating the most dangerous and worst of all fossil fuels in relation to its impact on the climate. Now the industry wants to expand production of methane gas all over the world by calling it “the most environmentally friendly fossil fuel”and a “bridge fuel” that we can safely use until we transition to 100% renewable energy sources.

Why would a major business industry want to call its product by another name? Perhaps for the same reason that the tobacco industry did not like the term “coffin nails” or “cancer sticks” for cigarettes. Honestly, there’s a striking similarity between what are called cigarettes and natural gas. When both were produced and named, their harm was not fully known. Once the industries promoting them learned of their significant harm, they did everything they could to hide this knowledge from the public. They even hired scientists to deny their dangers. The tobacco industry was eventually sued, the truth was acknowledged, and billions of dollars were paid out in the tobacco settlement.

This same scenario that occurred with the tobacco industry needs to occur with methane gas and the fossil fuel industry. The major difference in these two scenarios is that that this fossil fuel product doesn’t just threaten the lives of individuals who voluntarily breathe it in – it threatens the lives of not only every human being, but also all life on the planet. The outcome of this scenario needs to be a moratorium and eventual end to all use of methane gas as an energy source. For the sake of all of us, our communities, and world, the sooner the better. This abomination is different. There is no time to waste.