### NC – DA

#### The plan upends local control over ocean zoning—national interests expedite offshore renewables, local opposition prevents it

Ganong 11, (J.D. Candidate at William & Mary Law School, The Slippery Shelf: Ceding the Public Trust to Administrative Ambivalence in Offshore Development, scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1535&context=wmelpr)

Still, the Act garnered praise as a step in the right direction towards more cohesive management of the nation’s sea resources, as called for by a 2003 Pew Ocean Commission report,136 which provides part of a possible solution to allowing adjacent coastal states to command a response to negative impacts of projects in federal waters off their shores.137 The report calls for the federal government to revamp federal ocean laws to better protect ocean resources in the face of increasing ocean development.138 The report noted that “[t]he principal laws to protect our coastal zones, endangered marine mammals, ocean waters, and fisheries were enacted thirty years ago, on a crisis-by-crisis, sector-by-sector basis.”139 The result has rendered chaos for ocean management: “[p]lagued with systemic problems, U.S. ocean governance is in disarray.”140 The current state of affairs prompted the Commission to call for reformation of the federal government’s relationship to ocean resources, with the report noting, “[m]ost importantly, we must treat our oceans as a public trust.”141 The report advocates implementing ocean zoning guided by a National Ocean Policy Act and administered by regional authorities.142 Implementing the Pew Ocean Commission’s recommendations would aggrandize the Massachusetts Ocean Act of 2008 by installing a comprehensive ocean management policy and consequent zoning,143 administered through regional councils.144 While the plan calls for participation from various government officials and a broad range of stakeholders,145 it creates new governmental bodies146 at the expense of bypassing existing governmental zoning structures rooted in the American tradition of local land use governance.147 This is perhaps detrimental to states’ roles as public trust guardians when local governments, who traditionally hold such zoning authority,148 are situated nearest the project and, resultantly, may be best attuned to the negative externalities of offshore projects and most cognizant of the public’s interest in those resources affected by a particular offshore project.149 As discussed below, and as illustrated by the Cape Wind conflict, shifting ocean zoning authority to a new federal agency, even one peppered with local stakeholders, might aggravate existing tensions between offshore development, national policy considerations, and an American tradition of local control. IV. SITING THE POWER AS KEY TO SITING WIND FARMS AND OTHER OFFSHORE PROJECTS Perhaps contributing to the Cape Wind conflict is the dissonance between the presupposition of local land use controls and national policy advancement. The latent tension between local land use control and national policy objectives could be mitigated by a cohesive national oceanic policy and consequent zoning, as suggested by the Pew Commission report.150 A national ocean policy that heeds the traditional structure of American zoning governance may both chill paralyzing conflict and elevate discourse regarding appropriate offshore development.151 The concept of local control over what space is used for what purpose has deep-seated origins in local governance: as Rosenberg suggests, “[t]he practice of state and local government supremacy over direct land utilization has strong support in American concepts of federalism and enacting federal preemption would interfere with traditional land use control authority and would likely be very politically unpopular in many parts of the United States.”152 Clearly, the Cape Wind project has illustrated how unpopular removing local control from significant development can be.153 Perhaps the resistance to surrendering local control comes with good reason. Zoning powers were delegated to states, which in turn delegated such powers to municipalities and counties,154 due to federalism’s assumption that decision-making should occur at the most local level with capacity to solve the problem at issue.155 Whether local governments have the “capacity” to exhaustively analyze the impacts of an offshore wind farm might be arguable given that their perspective is often limited to localized concerns156 at the expense of broader concerns, like a national interest in encouraging renewable energy generation.157

#### Local PTD obstructs offshore wind now – increasing federal power over-rides this because of vast energy benefits – OSW undermines ocean biodiversity

Ganong 11, (J.D. Candidate at William & Mary Law School, The Slippery Shelf: Ceding the Public Trust to Administrative Ambivalence in Offshore Development, scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1535&context=wmelpr)

While these concerns are valid,161 the same rationale for seating decision-making power closest to those it affects would seem to suggest that communities can capably assess the particular project impacts affecting their shores, navigable waterways, and citizens, thereby supporting the assertion that local governments should have some command of how spaces surrounding them are used. For instance, local communities have staged complaints that radiation from wind turbines could pollute the water and that turbine supports could attract jellyfish populations that would cause a corresponding decrease in fish, thereby affecting local fishermen.162 Without local fishermen to raise these concerns impacting their livelihood, this negative impact, however small, to the biodiversity of the proposed project site might not be so zealously emphasized. Also, corollary to the proposition that community oversight of project impacts leads to parochial decision-making163 is that state and federal agencies may not make decisions in the best interests of individual communities in an effort to achieve broader policy goals. This is especially true when federal and state alternatives to local decision-making stand to receive significant revenues from the proposed projects. This is the case in the Cape Wind project, where a twenty-eight year lease for operating offshore wind turbines will generate $88,278 in annual federally assessed fees, more when the project becomes operational, twenty-seven percent of which will go to the Massachusetts commonwealth.164 In times of shrinking public budgets, such inducements might sway policy makers, even inadvertently, towards project approval while understating negative project impacts.165 Because those closest to the project may best be able to articulate negative policy impacts,166 local governments should play an active role in articulating negative externalities from offshore development projects as part of a state’s fulfillment of its role as guardian of the public trust. While local governments should play an active role by guiding development of projects in federal waters, national policy goals could be too easily thwarted if local communities, or even states, held veto power for offshore projects marginally impacting their shores, despite the fact that such projects promise renewable energy benefits to a much larger segment of the population than resides within their town lines.167 While understanding the Alliance dissent’s warning against polarizing the stewardship of ocean resources with furtherance of national energy policy goals,168 it is important to note that the public trust doctrine should not be commandeered in the name of many to serve the private desires of a few,169 a charge Cape Wind project opponents have encountered in their opposition to the project.170 Yet in cases where competing values stake a claim to public trust doctrine arguments, such policy tensions are perhaps best left to resolution by the people, to whom powers are reserved by the Constitution’s Ninth and Tenth Amendments.171 Resolving these overarching policy conflicts could well be done through a comprehensive revamping of ocean legislation as suggested by the Pew Commission172 and as recommended by the U.S. Commission on Ocean Policy.173 Given the need for federal policy to establish a comprehensive offshore wind power regulatory scheme,174 the siting of offshore projects located in federal territorial waters should well be the prerogative of federal administrative agencies.175 Yet, to best resolve the tension between the benefits and tradition of local oversight and the need for efficacy in implementing a comprehensive national policy,176 heed should be given to the state’s role in enforcing the public trust doctrine177 and, consequently, to negative externalities flagged by those trustees of the public trust as provided for by statutes like the Massachusetts Ocean Act of 2008.178 To achieve this framework of complete federal jurisdiction concordant with the state’s public trust role, Congress can act on the U.S. Commission on Ocean Policy’s recommendation to strengthen partnerships with nonfederal agencies, particularly states, to manage off shore development.179 How to do this raises another discussion.

#### Their solvency author explicitly flags oceans as an area where the doctrine would be applied

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The 1959 Antarctic Treaty343 established “the foundation for international space law.”344 Like outer space, Antarctica and the oceans “presented a dilemma regarding habitation and defense. No nation occupied these territories and no nation desired a ‘race to own’ without a guarantee of who would emerge victorious.”345 Both the Antarctic Treaty and the Deep Seabed Hard Mineral Resources Act (the “Deep Seabed Act”)346 eschewed the concept of private property as well as the rights of first possession, in part, because the riches of those areas might allow developing nations to share in those riches as opposed to remaining economically marginalized.347 The Deep Seabed Act provides a model for how to regulate activities in a commons, like outer space, which it manages to do without privatizing the marine resource.348 As a result, it is “customary and accepted legal reasoning” to analogize between private ownership rights outside of national sovereignty, like those the Deep Seabed Act granted, and a “land claims recognition law for celestial bodies.”349 “The oceans and Antarctica . . . have much in common with the moon. They can be harsh environments that are difficult to reach to extract minerals [and are resource rich]. They are also designated international areas in which no nation has a sovereign claim.”350 The history of the earth’s oceans is a progression from “the domain of conquering armadas and privateers, when good legal title required as little as arbitrary lines drawn on a map,” to the concept of a “free sea” open to all countries, where no single country could “obstruct the use of that privilege.”351 International space law built on that history of open passage and “free sea.”352 The roots of the idea of granting non-space faring nations right of access can also be found in the 1958 Geneva Convention on the High Seas, which granted “landlocked states the right to sail the oceans by requiring their coastal neighbors to grant free passage over land and through territorial waters.”353 The legal framework of UNCLOS united “a broad spectrum of national and private interests into a shared agreement on the possession and usage of a seemingly borderless area of the global commons,” setting another useful precedent for outer space.354 However, UNCLOS, as a model, is impractical in “the vast reaches of outer space”—space is simply too vast and unlimited.355

**New turbines lead to invasive species – collapse global biodiversity**

**Langhamer 12** – Research Professor @ Norwegian University of Science and Technology

(Olivia, “Artificial Reef Effect in relation to Offshore Renewable Energy Conversion: State of the Art,” The Scientific World Journal, doi: 10.1100/2012/386713)//BB

One mitigating effect of offshore renewable energy on the local biodiversity may occur due to colonization by invasive species. Ever since international shipping started, marine organisms have been distributed all over the world by ballast water or as fouling on boat hulls. This introduction of alien species has dramatic ecological effects, since **it can be a threat to global biodiversity** [52, 53] and lead to local extinctions and fishery collapses [53]. Artificial hard substrates offer habitats for a large number of invasive species normally attached to rocky reefs [54]. In general, artificial structures do not host exactly the same species as a natural hard substrate [55, 56]. The installation of offshore renewable energy parks may not only introduce hard substrata in otherwise sandy-dominated bottoms, but can also provide new habitats for invasive species. Different hydrodynamics, such as more shelter due to new structures may lead to colonization of organisms very different to those on nearby hard substrates and thereby establish and spread nonindigenous species [57]. On wind turbine constructions in the North Sea and in the Baltic Sea the presence of alien species has been recorded [58–60] and may provide stepping-stones for spread, which could facilitate the establishment of the new taxa in the recipient region.

#### BioD loss causes extinction and turns everything

Torres 16 (Phil, founder of the X-Risks Institute, an affiliate scholar at the Institute for Ethics and Emerging Technologies, and the author of The End: What Science and Religion Tell Us About the Apocalypse, "Biodiversity loss: An existential risk comparable to climate change," Bulletin of Atomic Scientists, 4/11, http://thebulletin.org/biodiversity-loss-existential-risk-comparable-climate-change9329)

But there is another existential threat that the Bulletin overlooked in its Doomsday Clock announcement: biodiversity loss. This phenomenon is often identified as one of the many consequences of climate change, and this is of course correct. But biodiversity loss is also a contributing factor behind climate change. For example, deforestation in the Amazon rainforest and elsewhere reduces the amount of carbon dioxide removed from the atmosphere by plants, a natural process that mitigates the effects of climate change. So the causal relation between climate change and biodiversity loss is bidirectional. Furthermore, there are myriad phenomena that are driving biodiversity loss in addition to climate change. Other causes include ecosystem fragmentation, invasive species, pollution, oxygen depletion caused by fertilizers running off into ponds and streams, overfishing, human overpopulation, and overconsumption. All of these phenomena have a direct impact on the health of the biosphere, and all would conceivably persist even if the problem of climate change were somehow immediately solved. Such considerations warrant decoupling biodiversity loss from climate change, because the former has been consistently subsumed by the latter as a mere effect. Biodiversity loss is a distinct environmental crisis with its own unique syndrome of causes, consequences, and solutions—such as restoring habitats, creating protected areas (“biodiversity parks”), and practicing sustainable agriculture. The sixth extinction. The repercussions of biodiversity loss are potentially as severe as those anticipated from climate change, or even a nuclear conflict. For example, according to a 2015 study published in Science Advances, the best available evidence reveals “an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way.” This conclusion holds, even on the most optimistic assumptions about the background rate of species losses and the current rate of vertebrate extinctions. The group classified as “vertebrates” includes mammals, birds, reptiles, fish, and all other creatures with a backbone. The article argues that, using its conservative figures, the average loss of vertebrate species was 100 times higher in the past century relative to the background rate of extinction. (Other scientists have suggested that the current extinction rate could be as much as 10,000 times higher than normal.) As the authors write, “The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth’s history.” Perhaps the term “Big Six” should enter the popular lexicon—to add the current extinction to the previous “Big Five,” the last of which wiped out the dinosaurs 66 million years ago. But the concept of biodiversity encompasses more than just the total number of species on the planet. It also refers to the size of different populations of species. With respect to this phenomenon, multiple studies have confirmed that wild populations around the world are dwindling and disappearing at an alarming rate. For example, the 2010 Global Biodiversity Outlook report found that the population of wild vertebrates living in the tropics dropped by 59 percent between 1970 and 2006. The report also found that the population of farmland birds in Europe has dropped by 50 percent since 1980; bird populations in the grasslands of North America declined by almost 40 percent between 1968 and 2003; and the population of birds in North American arid lands has fallen by almost 30 percent since the 1960s. Similarly, 42 percent of all amphibian species (a type of vertebrate that is sometimes called an “ecological indicator”) are undergoing population declines, and 23 percent of all plant species “are estimated to be threatened with extinction.” Other studies have found that some 20 percent of all reptile species, 48 percent of the world’s primates, and 50 percent of freshwater turtles are threatened. Underwater, about 10 percent of all coral reefs are now dead, and another 60 percent are in danger of dying. Consistent with these data, the 2014 Living Planet Report shows that the global population of wild vertebrates dropped by 52 percent in only four decades—from 1970 to 2010. While biologists often avoid projecting historical trends into the future because of the complexity of ecological systems, it’s tempting to extrapolate this figure to, say, the year 2050, which is four decades from 2010. As it happens, a 2006 study published in Science does precisely this: It projects past trends of marine biodiversity loss into the 21st century, concluding that, unless significant changes are made to patterns of human activity, there will be virtually no more wild-caught seafood by 2048. Catastrophic consequences for civilization. The consequences of this rapid pruning of the evolutionary tree of life extend beyond the obvious. There could be surprising effects of biodiversity loss that scientists are unable to fully anticipate in advance. For example, prior research has shown that localized ecosystems can undergo abrupt and irreversible shifts when they reach a tipping point. According to a 2012 paper published in Nature, there are reasons for thinking that we may be approaching a tipping point of this sort in the global ecosystem, beyond which the consequences could be catastrophic for civilization. As the authors write, a planetary-scale transition could precipitate “substantial losses of ecosystem services required to sustain the human population.” An ecosystem service is any ecological process that benefits humanity, such as food production and crop pollination. If the global ecosystem were to cross a tipping point and substantial ecosystem services were lost, the results could be “widespread social unrest, economic instability, and loss of human life.” According to Missouri Botanical Garden ecologist Adam Smith, one of the paper’s co-authors, this could occur in a matter of decades—far more quickly than most of the expected consequences of climate change, yet equally destructive. Biodiversity loss is a “threat multiplier” that, by pushing societies to the brink of collapse, will exacerbate existing conflicts and introduce entirely new struggles between state and non-state actors. Indeed, it could even fuel the rise of terrorism. (After all, climate change has been linked to the emergence of ISIS in Syria, and multiple high-ranking US officials, such as former US Defense Secretary Chuck Hagel and CIA director John Brennan, have affirmed that climate change and terrorism are connected.) The reality is that we are entering the sixth mass extinction in the 3.8-billion-year history of life on Earth, and the impact of this event could be felt by civilization “in as little as three human lifetimes,” as the aforementioned 2012 Nature paper notes. Furthermore, the widespread decline of biological populations could plausibly initiate a dramatic transformation of the global ecosystem on an even faster timescale: perhaps a single human lifetime. The unavoidable conclusion is that biodiversity loss constitutes an existential threat in its own right. As such, it ought to be considered alongside climate change and nuclear weapons as one of the most significant contemporary risks to human prosperity and survival.

### NC – DA

#### Appropriations pass now but floor time and bipartisanship are key

Bolton 1/13 [Alexander, staff reporter for The Hill, “Negotiators report progress toward 2022 spending deal” https://thehill.com/policy/finance/589599-negotiators-report-progress-on-reaching-2022-spending-deal]

Senate and House negotiators say they are getting closer to a deal on setting the top-line spending number for an appropriations package to fund government past Feb. 18 and avoid a shutdown.

The top Democrats and Republicans on the Senate and House Appropriations Committees met Thursday morning to chart a path for reaching agreement on a fiscal year 2022 omnibus government funding bill and said they would meet again soon.

Negotiators in the so-called “Four Corners” say they’re optimistic about reaching an agreement.

“I think of we have a good chance coming together on this,” Rep. Kay Granger (Texas), the top-ranking Republican on the House Appropriations Committee, told reporters as she headed into the meeting.

One Democratic senator said he had been told that Senate Appropriations Committee Chairman Pat Leahy (D-Vt.) and Sen. Richard Shelby (Ala.), the top-ranking Republican on the Senate panel, already have a tentative deal on the parameters of the legislation and now need to bring their House counterparts on board.

Leahy told The Hill before the meeting that “we’re trying to” get an agreement between Senate and House negotiators wrapped up soon.

“We realize time is running out,” he said.

Leahy, however, declined to comment on any understandings he has with Shelby or on the negotiating dynamics between the Senate and House.

Shelby told reporters after the meeting that Congress’s top-four appropriators had laid out the path for the talks, something they hadn’t done before.

“The four of us had constructive talks of where we go and how we get there and how we start,” he said. “We hadn’t worked that out yet.”

“We’ll continue to talk and meet,” he said, adding that Leahy and House Appropriations Committee Chairwoman Rosa DeLauro (D-Conn.) will reconvene the group soon to resume negotiations.

Shelby warned that another stopgap funding measures is “looming” if they fail to hammer out a deal by early next month.

Leahy described the meeting as a “worthwhile discussion” and said he hoped to get a deal done in the next few weeks.

Leahy and Shelby met with Senate Majority Leader Charles Schumer (D-N.Y.) and Minority Leader Mitch McConnell (R-Ky.) Wednesday to discuss the parameters of the spending package, which is weeks behind schedule.

The 2021 fiscal year ended at the end of September and lawmakers uncharacteristically left Washington for Christmas without passing the annual appropriations bills because Democrats were focused on finishing work on President Biden’s sweeping climate and social spending bill, Build Back Better, which remains stalled in the Senate.

The Senate is scheduled to be in recess next week in observance of Martin Luther King Jr. Day but DeLauro said the group would meet again soon in order to have a better chance of reaching a deal by Feb. 18.

“That’s my goal,” she said. “We’re going to continue speaking.”

Asked if she feels more hopeful after the meeting, she said “I’m hopeful always.”

#### Large President-led national space policies incite immense partisan backlash that spills over to kill the entire political agenda

Dreier 16 [Casey Dreier, Chief Advocate & Senior Space Policy Adviser for The Planetary Society, April 13, 2016. “Does Presidential Intervention Undermine Consensus for NASA?” https://www.planetary.org/blogs/casey-dreier/2016/0413-does-a-strong-president-help-or-hurt-consensus-on-NASA.html]

To see how this happens, I recommend reading the book “[Beyond Ideology](http://smile.amazon.com/Beyond-Ideology-Politics-Principles-Partisanship/dp/0226470768/ref=smi_www_rco2_go_smi_g2243582042?_encoding=UTF8&*Version*=1&*entries*=0&ie=UTF8)” by Frances Lee. The author’s larger premise is that issues having no intrinsic relation to stated party ideology have become increasingly polarized in recent years. This is a function of the two party nature of our political system. If your party coalition wins, the other one loses. It’s [It is] zero-sum. Your party can win in one of two ways: you can make a better pitch to voters by demonstrating the superiority of your agenda; or you can undermine and stymie the agenda of the opposition party, making them unpopular with voters, and pick up the seats that they lose. Since you’re the only other political party, you gain in either scenario. I’m not sure if you’ve noticed, but the “undermine and stymie” approach has been popular for quite some time now in the U.S. Congress. Given this situation, the President and their policies naturally become the symbolic target of the opposition party. Anything promoted by the President effectively induces opposition by association. Lee demonstrates the magnitude of this induced polarization on various types of issues. For highly polarized issues like the role of government in the economy, or social issues, the impact is minimal—the opposition has already been clearly defined and generally falls into clearly defined ideologies of the Republican and Democratic parties. But for issues that do not fit readily into a predefined political ideology—like space—the induced polarization by the President can be significant. In fact, Lee showed that space, science, and technology issues incur the greatest increase in partisanship based on their inclusion in the Presidential agenda. One need only look to at the responses by political operatives of the opposing party to the strong human spaceflight proposals by [Barack Obama in 2010](http://www.shelby.senate.gov/public/index.cfm/mobile/newsreleases?ID=25F3AD2E-802A-23AD-4960-F512B9E205D2), [George W. Bush in 2004](http://www.nbcnews.com/id/3950099/ns/technology_and_science-space/t/bush-sets-new-course-moon-beyond/#.Vw3UMRMrKHo), and [George H.W. Bush in 1989](http://www.nytimes.com/1989/07/21/us/president-calls-for-mars-mission-and-a-moon-base.html) to see this reflected in recent history. This isn’t to say that Presidents can’t have a significant impact on the space program. Clearly they can. But the broad consensus needed for stability after their departure from office may be undermined by the very priority they gave it during their tenure. It what amounts to a mixed blessing for NASA, the U.S. space program does have an unusually strong bipartisan group of politicians who support the program due to NASA centers in a variety of states throughout the union. Berger notes this throughout his article, and it does, in a way, act as force that is resistant to change for good and bad. This mitigates somewhat the pure polarization seen on other science and technology issues. But for a Journey to Mars—a major effort that would, at best, require stability and significant funding over many Presidential administrations—that may not be enough. Perhaps the solution is for the next President to maintain a light touch on space. Maybe they should speak softly through the budget process, and avoid the Kennedyesque speeches and declarations to Congress that induce the types of partisanship we so dearly need to avoid.

#### Yearlong CR ruins UAVs for decades—that undermines strategic competition

Wynne 1/14 [Brian Wynne, Federal Aviation Administration’s Drone Advisory Committee and Management Advisory Council, "A yearlong continuing resolution will hinder unmanned systems integration", 1/14/22, https://www.defensenews.com/opinion/commentary/2022/01/14/a-yearlong-continuing-resolution-will-hinder-unmanned-systems-integration/]

With fiscal 2022 well underway and the current continuing resolution set to expire without congressional consensus on a way forward on appropriations, the U.S. Department of Defense is preparing for the possibility of operations under a full-year CR stopgap measure. Let’s be clear: That will hinder the continued integration of unmanned systems into the U.S. military and ultimately harm our preparedness for strategic competition.

During a hearing this week of the House Appropriations Committee’s Defense Subcommittee, appropriators rightly acknowledged that a full-year CR would make our military less agile and curtail our ability to prepare for current security challenges. Members of Congress must also realize that failure to pass funding bills will create a domino effect that will harm U.S. national security for years to come by damaging the growing unmanned systems industry.

As the Pentagon moves resources and dollars to address this new era of strategic competition, unmanned systems — in the air, in space, in the sea and on land — will be the tip of the sword for our sailors, Marines, soldiers and airmen against rising geopolitical threats.

Launched last year, the Navy’s Unmanned Campaign Plan and related task force are two examples that demonstrate the extent to which DoD leaders understand the unparalleled value uncrewed systems will provide in achieving the vision presented in the National Defense Strategy.

However, the new normal of cycles of CRs results in real-dollar budget reductions and program delays that threaten the progress of this vision — and these losses harm both U.S. strategic competitiveness and the defense-industrial base. As Adm. Mike Gilday stated during the House Appropriations Committee hearing: “Every day matters in this critical decade.”

Appropriators must understand that the importance of full funding for the research, development, test and evaluation as well as the procurement of uncrewed systems at this moment cannot be overstated.

A full-year CR will prevent critical, new uncrewed systems programs from being initiated. This includes authorization of $57 million for the Marine Corps’ Group 5 UAS development project; projects totaling $52.5 million for the development of counter-small UAS capabilities; and $57.6 million dedicated to the maturation of technologies under the AFWERX prime project. By operating at FY21 funding levels, the program for small unmanned undersea vehicles will see only a third of its FY22 authorized budget.

These cuts represent significant losses of time and capital that the unmanned systems industry has spent in preparing systems for field action. The defense-industrial base has made investments in the technology, supply base, workforce, supply chain and infrastructure based on the DoD’s vision for the future.

Companies working to advance the front lines of innovation already face a “procurement trough” caused by delays and gaps in new programs. A full-year CR would set off an irreversible ripple effect that would deepen this trough for years to come.

Simply put, saddling companies nationwide with long-standing Capital Beltway problems prevents the development and adoption of critical tools. Smaller and midsized companies feel the impacts of these delays most, and continued delays will force them to move their investments away from unmanned systems to other, more predictable markets.

Until Congress puts American warfighters before political concerns, the U.S. will fall behind in the development, fielding and adoption of modern tools that support a full range of missions.

The time is now to make the DoD’s strategic visions reality by accelerating investments in air, surface and subsurface platforms. Congressional leaders must immediately work to build consensus in support of stable funding that enables the development and integration of uncrewed systems. The country is looking for assertive congressional leadership — now is the time to step up.

#### That causes nuclear war with Russia and china

Kroenig & Gopalaswamy 18, \*Associate Professor of Government and Foreign Service at Georgetown University and Deputy Director for Strategy in the Scowcroft Center for Strategy and Security at the Atlantic Council. \*\*Director of the South Asia Center at the Atlantic Council. He holds a PhD in mechanical engineering with a specialization in numerical acoustics from Trinity College, Dublin. (Matthew & Bharath, 11-12-2018, "Will disruptive technology cause nuclear war?", *Bulletin of the Atomic Scientists*, https://thebulletin.org/2018/11/will-disruptive-technology-cause-nuclear-war/)

Rather, we should think more broadly about how new technology might affect global politics, and, for this, it is helpful to turn to scholarly international relations theory. The dominant theory of the causes of war in the academy is the “bargaining model of war.” This theory identifies rapid shifts in the balance of power as a primary cause of conflict.

International politics often presents states with conflicts that they can settle through peaceful bargaining, but when bargaining breaks down, war results. Shifts in the balance of power are problematic because they undermine effective bargaining. After all, why agree to a deal today if your bargaining position will be stronger tomorrow? And, a clear understanding of the military balance of power can contribute to peace. (Why start a war you are likely to lose?) But shifts in the balance of power muddy understandings of which states have the advantage.

You may see where this is going. New technologies threaten to create potentially destabilizing shifts in the balance of power.

For decades, stability in Europe and Asia has been supported by US military power. In recent years, however, the balance of power in Asia has begun to shift, as China has increased its military capabilities. Already, Beijing has become more assertive in the region, claiming contested territory in the South China Sea. And the results of Russia’s military modernization have been on full display in its ongoing intervention in Ukraine.

Moreover, China may have the lead over the United States in emerging technologies that could be decisive for the future of military acquisitions and warfare, including 3D printing, hypersonic missiles, quantum computing, 5G wireless connectivity, and artificial intelligence (AI). And Russian President Vladimir Putin is building new unmanned vehicles while ominously declaring, “Whoever leads in AI will rule the world.”

If China or Russia are able to incorporate new technologies into their militaries before the United States, then this could lead to the kind of rapid shift in the balance of power that often causes war.

If Beijing believes emerging technologies provide it with a newfound, local military advantage over the United States, for example, it may be more willing than previously to initiate conflict over Taiwan. And if Putin thinks new tech has strengthened his hand, he may be more tempted to launch a Ukraine-style invasion of a NATO member.

Either scenario could bring these nuclear powers into direct conflict with the United States, and once nuclear armed states are at war, there is an inherent risk of nuclear conflict through limited nuclear war strategies, nuclear brinkmanship, or simple accident or inadvertent escalation.

This framing of the problem leads to a different set of policy implications. The concern is not simply technologies that threaten to undermine nuclear second-strike capabilities directly, but, rather, any technologies that can result in a meaningful shift in the broader balance of power. And the solution is not to preserve second-strike capabilities, but to preserve prevailing power balances more broadly.

### Case – adv2

#### Squo solves debris – private tracking, surveillance, in-orbit servicing and green satellite tech all happening now – private sector and P3s are key and outpacing government monitoring

CSTP 20 – OECD Committee, The strategic objectives of the Committee as defined in its Mandate and by the work priorities agreed by Member countries' Ministers responsible for science and technology provide the framework for the Secretariat's proposals for activities to be developed or initiated under the aegis of the Committee itself or its subsidiary bodies (NESTI, TIP, GSF, BNCT and IPSO) [This paper was approved and declassified by written procedure by the Committee for Scientific and Technological Policy (CSTP) on 11 March 2020 and prepared for publication by the OECD Secretariat, “SPACE SUSTAINABILITYTHE ECONOMICS OF SPACE DEBRIS IN PERSPECTIVE,” OECD Science, Technology and Industry Policy Papers, April 2020, No. 87, https://www.oecd-ilibrary.org/science-and-technology/space-sustainability\_a339de43-en]

An emerging “space debris economy”?

* Will we see a more intensive use of cubesats and miniaturised technologies in lower orbits? Cubesats have been the fastest-growing category of launched satellites in the last years and, when launched at lower altitudes, are naturally compliant with debris mitigation guidelines. They are also ever more performant and affordable, and dedicated launch opportunities become more widespread. Furthermore, they increasingly receive preferential treatment in risk-based national legislations (e.g. introduction of sliding scale in the UK Outer Space Act for insurance requirements).
* Space surveillance and tracking capabilities, in both GEO and LEO: New (private) sources of situational awareness data are becoming increasingly important, with data analytics and modelling fuelled by advances in digital technologies. Private sector debris catalogues and tracking capabilities for the geostationary orbit may now be almost as good as government capabilities (IDA, 2016[76]), while solutions for the low-earth orbit are emerging. Start-ups such as LeoLabs provide data and services based on low-cost ground equipment and sophisticated data analysis. The company, which in October 2019 had three radars in the United States and New Zealand, has developed a cloud-based “Space Regulatory and Sustainability Platform” for the New Zealand Space Agency, a first of its kind, destined to track objects launched from New Zealand to ensure compliance with permit conditions (MBIE, 2019[77]). A novel project called TruSat intends to use blockchain technology to crowdsource and validate satellite orbital positions worldwide via open source software (TruSat, 2019[78]). The US Air Force Research Laboratory has signed agreements with several commercial space situational awareness data providers (e.g. Numerica, LeoLabs, ExoAnalytics) to get access to sensor networks and algorithms (Numerica, 2019[79]). The Space Situational Awareness (SSA) open-architecture data-sharing platform under development by the US Department of Commerce, including data from different government agencies, is also expected to spur innovative value-added products and services.
* In-orbit servicing solutions: Several governmental agencies and commercial companies have developed, or are in the process of acquiring, some capabilities for in-orbit servicing (e.g. NASA, DARPA, ESA, JAXA). In-orbit servicing involves a number of complex operations in space: the servicing of space platforms (e.g. satellite, space station) to replenish consumables and degradables (e.g. propellants, batteries, solar array); replacing failed functionality; and/or enhancing the mission through software and hardware upgrades. This is a major challenge as, when on orbit, space platforms can move at speeds of several kilometres a minute. The first commercial in-orbit servicing mission was launched in 2019, by a MEV-1 spacecraft developed by Orbital ATK for an Intelsat geostationary satellite. The main short-term market is seen in the life extension of geostationary satellites, with some 300 potential candidates, at least in theory (Kennedy, 2018[80]). However, the key benefits of in-orbit servicing are expected in the future. Satellite design is currently heavily restricted by extreme launch conditions, but the possibility of servicing could enable a much more flexible and modular satellite design, able to take advantage of the latest advances in materials and electronics, beyond software upgrades (Jaffart, 2018[81]). Market forecasts estimate a USD 3 billion market for in-orbit servicing over the 2017-27 period, mainly driven by life extension services (Northern Sky Research, 2018[82]).
* Active debris removal solutions: Active debris removal is at a less mature technological level, but several firms are preparing demonstration missions (e.g. Astroscale in 2020). Potential candidates for removal include more than 200 critical debris objects (3-9 tonnes); mainly rocket bodies, but also the European Envisat satellite. JAXA, has formally launched a project to remove a large piece of debris by 2025 (a Japanese rocket body) in a public-private partnership (Japanese Delegation to UNCOPUOS, 2019[83]). Both Airbus and Thales Alenia Space are developing in-orbit servicing vehicles with debris removal functions, some of which have been tested on the RemoveDEBRIS mission (Surrey Space Centre, 2019[84]; OECD, 2019[11]).

• “Green” satellite design and technology: The demand for space-environment friendly satellite design is picking up. This includes features to reduce or avoid debris creation (explosion-safe batteries, deorbit technologies) and/or facilitating active removal (e.g. markers or grapple fixtures). One example is OneWeb, which is installing grapple fixtures on their satellites. In Europe, all future Sentinel satellites will be designed for demise. Affordable deorbit technologies are already being tested on orbit. Canada’s three-kilo CanX-7 satellite was launched in 2016 and is currently using its four 1 m2 drag sails to deorbit at a significantly faster rate than it would have without the sails. Amazon’s Kuiper constellation intends to use unpressurised and non-explosive propellant to mitigate accidental explosions, and satellites losing contact with ground control would automatically deactivate themselves, first by self-passivation and orbit-lowering, then depleting all energy reservoirs and switching off charging circuits (FCC, 2019[85]). SpaceX’ Starlink satellites are equipped with automated collision avoidance systems (although it is unclear which role the system played in the near-collision with the ESA Aeolus satellite).

A recent promising initiative is the “Space Sustainability Rating” scheme, originally conceived by teams from the MIT Media Lab, European Space Agency, and World Economic Forum. The initiative intends to be similar to the most widely used green building rating system in the construction industry, called the LEED certification for Leadership in Energy and Environmental Design. The objective is to promote mission designs and operational concepts that mitigate debris creation, and create a label that can encourage operators to behave more responsibly.

#### No debris cascades, but even a worst case is confined to low LEO with no impact

Daniel Von Fange 17, Web Application Engineer, Founder and Owner of LeanCoder, Full Stack, Polyglot Web Developer, “Kessler Syndrome is Over Hyped”, 5/21/2017, http://braino.org/essays/kessler\_syndrome\_is\_over\_hyped/

Kessler Syndrome is overhyped. A chorus of online commenters great any news of upcoming low earth orbit satellites with worry that humanity will to lose access to space. I now think they are wrong.

What is Kessler Syndrome?

Here’s the popular view on Kessler Syndrome. Every once in a while, a piece of junk in space hits a satellite. This single impact destroys the satellite, and breaks off several thousand additional pieces. These new pieces now fly around space looking for other satellites to hit, and so exponentially multiply themselves over time, like a nuclear reaction, until a sphere of man-made debris surrounds the earth, and humanity no longer has access to space nor the benefits of satellites.

It is a dark picture.

Is Kessler Syndrome likely to happen?

I had to stop everything and spend an afternoon doing back-of-the-napkin math to know how big the threat is. To estimate, we need to know where the stuff in space is, how much mass is there, and how long it would take to deorbit.

The orbital area around earth can be broken down into four regions.

Low LEO - Up to about 400km. Things that orbit here burn up in the earth’s atmosphere quickly - between a few months to two years. The space station operates at the high end of this range. It loses about a kilometer of altitude a month and if not pushed higher every few months, would soon burn up. For all practical purposes, Low LEO doesn’t matter for Kessler Syndrome. If Low LEO was ever full of space junk, we’d just wait a year and a half, and the problem would be over.

High LEO - 400km to 2000km. This where most heavy satellites and most space junk orbits. The air is thin enough here that satellites only go down slowly, and they have a much farther distance to fall. It can take 50 years for stuff here to get down. This is where Kessler Syndrome could be an issue.

Mid Orbit - GPS satellites and other navigation satellites travel here in lonely, long lives. The volume of space is so huge, and the number of satellites so few, that we don’t need to worry about Kessler here.

GEO - If you put a satellite far enough out from earth, the speed that the satellite travels around the earth will match the speed of the surface of the earth rotating under it. From the ground, the satellite will appear to hang motionless. Usually the geostationary orbit is used by big weather satellites and big TV broadcasting satellites. (This apparent motionlessness is why satellite TV dishes can be mounted pointing in a fixed direction. You can find approximate south just by looking around at the dishes in your northern hemisphere neighborhood.) For Kessler purposes, GEO orbit is roughly a ring 384,400 km around. However, all the satellites here are moving the same direction at the same speed - debris doesn’t get free velocity from the speed of the satellites. Also, it’s quite expensive to get a satellite here, and so there aren’t many, only about one satellite per 1000km of the ring. Kessler is not a problem here.

How bad could Kessler Syndrome in High LEO be?

Let’s imagine a worst case scenario.

An evil alien intelligence chops up everything in High LEO, turning it into 1cm cubes of death orbiting at 1000km, spread as evenly across the surface of this sphere as orbital mechanics would allow. Is humanity cut off from space?

I’m guessing the world has launched about 10,000 tons of satellites total. For guessing purposes, I’ll assume 2,500 tons of satellites and junk currently in High LEO. If satellites are made of aluminum, with a density of 2.70 g/cm3, then that’s 839,985,870 1cm cubes. A sphere for an orbit of 1,000km has a surface area of 682,752,000 square KM. So there would be one cube of junk per .81 square KM. If a rocket traveled through that, its odds of hitting that cube are tiny - less than 1 in 10,000.

So even in the worst case, we don’t lose access to space.

Now though you can travel through the debris, you couldn’t keep a satellite alive for long in this orbit of death. Kessler Syndrome at its worst just prevents us from putting satellites in certain orbits.

In real life, there’s a lot of factors that make Kessler syndrome even less of a problem than our worst case though experiment.

* Debris would be spread over a volume of space, not a single orbital surface, making collisions orders of magnitudes less likely.
* Most impact debris will have a slower orbital velocity than either of its original pieces - this makes it deorbit much sooner.
* Any collision will create large and small objects. Small objects are much more affected by atmospheric drag and deorbit faster, even in a few months from high LEO. Larger objects can be tracked by earth based radar and avoided.
* The planned big new constellations are not in High LEO, but in Low LEO for faster communications with the earth. They aren’t an issue for Kessler.
* Most importantly, all new satellite launches since the 1990’s are required to include a plan to get rid of the satellite at the end of its useful life (usually by deorbiting)

So the realistic worst case is that insurance premiums on satellites go up a bit. Given the current trend toward much smaller, cheaper micro satellites, this wouldn’t even have a huge effect.

I’m removing Kessler Syndrome from my list of things to worry about.

### Adv 1

#### Colonization is impossible – too many barriers

Coates 18, Andrew Coates, professor of physics, deputy director (Solar System) at the Mullard Space Science Laboratory, UCL. The views expressed in this article are the author's own. “Sorry Elon Musk, We'll Probably Never Colonize Mars”, Newsweek, 8/3/18, <https://www.newsweek.com/sorry-elon-musk-probably-never-colonize-mars-opinion-1055529> //JK

SpaceX and Tesla founder Elon Musk has a vision for colonizing Mars, based on a big rocket, nuclear explosions and an infrastructure to transport millions of people there. This was seen as highly ambitious but technically challenging in several ways. Planetary protection rules and the difficulties of terraforming (making the planet hospitable by, for example, warming it up) and dealing with the harsh radiation were quoted as severe obstacles. Undeterred, Musk took a first step towards his aim in February this year with the launch of a Tesla roadster car into an orbit travelling beyond Mars on the first Falcon Heavy rocket. This dramatically illustrated the increasing launch capability for future missions made available by partnerships between commercial and government agencies. But six months later, the plans have started to look more like fantasy. We have since learned that there could be life beneath Mars' surface and that it may be impossible to terraform its surface. The possibility that there currently could be life on the red planet was raised last week as scientists reported the discovery of a salt water lake beneath Mars' surface. The lake would be one mile below the south polar cap and at least 12 miles in diameter. This was found from analysis of subsurface radar data from the Mars Express spacecraft. The water is thought to be briny, with the likely magnesium, calcium, and sodium perchlorate salts acting as an antifreeze down to temperatures of perhaps 200K (-99.67°F). This is exciting as it is the first definitive detection of liquid water on Mars, and it is possible that there may be further deep lakes elsewhere on the planet. This means there is a real possibility of current life on Mars. We already knew life could have existed on Mars in the past. There are several pieces of evidence indicating that Mars was habitable 3.8-4 billion years ago. Data from recent missions—including Mars Global Surveyor, Odyssey, Opportunity, Curiosity and Mars Express—have provided mounting evidence that water was present on the surface in streams and lakes with reasonable acidity and that the right chemistry for life to evolve existed there around the time that life was evolving on Earth. But Mars lost its magnetic field, which would have protected life from harsh radiation from space, 3.8 billion years ago. This also meant its atmosphere started leaking into space, making it increasingly inhospitable. So living organisms may not have survived. But while the new discovery may fuel aspiring colonisers' dreams that the water in the subsurface lake might be usable to sustain a human presence, the reality is very different. The risk of contamination means we shouldn't send humans there until we know for sure whether there is naturally evolved life—something that could take years to decades. We will need to drill under the surface and to analyse samples, either in situ or from material returned to Earth, and find suitable biomarkers to be sure. Terraforming plans crushed? Perhaps even more damning, the long-suggested idea of terraforming Mars is now firmly locked in the realm of science fiction. Musk has previously indicated that he wants to terraform the planet to make it more Earth-like, so you can "eventually walk around outside without anything on." This would most easily be done by producing an atmosphere made of heat-trapping greenhouse gases locked in the planet's ice in order to raise its temperature and pressure. Musk has suggested that we could drop thermonuclear bombs on the ice at its poles in order to heat it up to release the carbon dioxide. But according to a new study, published in Nature Astronomy, Mars has lost so much of its potential greenhouse gases to space over billions of years that there is now no possibility of transforming the remaining atmosphere into a breathable one with available technology. The study is based on measurements of the recent escape rate of gases to space measured over the last 15 years by Mars Express and the last four years by MAVEN. This can tell us how much effective greenhouse gases, carbon dioxide and water are available at Mars. The measurements, combined with knowledge of the inventories of carbon dioxide and water on Mars from recent space missions, show that greenhouses gases locked in the ice caps are not enough to provide the necessary heating. More may be available deep within the planet but extracting that is well beyond today's technology. Also, the atmosphere is still being lost due to the lack of a magnetic field, so that would need to be somehow slowed to maintain any changes achieved by terraforming. This means that potential explorers would need to use heavy, airtight walls, roofs or buildings to provide the right atmosphere and the required screening from cosmic radiation.

#### Expert consensus is neg

Saplakoglu 19 (Yasemin Saplakoglu is a staff writer at Live Science, writing about biology and neuroscience, among other science topics. She cites two professors of astrophysics. “Humans Will Never Live on an Exoplanet, Nobel Laureate Says. Here's Why.” 10-14-19, Live Science, https://www.livescience.com/will-we-ever-live-exoplanet.html //KDCC)

Here's the reality: We're messing up the Earth and any far-out ideas of colonizing another orb when we're done with our own are wishful thinking. That's according to Michel Mayor, an astrophysicist who was a co-recipient of the Nobel Prize in physics this year for discovering the first planet orbiting a sun-like star outside of our solar system.

"If we are talking about exoplanets, things should be clear: We will not migrate there," he told Agence France-Presse (AFP). He said he felt the need to "kill all the statements that say, 'OK, we will go to a livable planet if one day life is not possible on Earth.'"