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Pushing a Non-Nuclear Button Against China's Nuclear Buildup

Vincent Ferrara

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INTRODUCTION

It is January 2018 the beautiful islands of Hawaii are seeing a usual influx in vacationers looking to enjoy the desirable climate and favorable activities. Early one Saturday morning as most residents and visitors were waking up to go on a tour or planning their day, an emergency alert blasted on everyone's phones, "BALLISTIC MISSILE THREAT INBOUND TO HAWAII. SEEK IMMEDIATE SHELTER. THIS IS NOT A DRILL."[1] People panicked, reading in disbelief, calling loved ones, having a full twelve minutes to seek shelter once the alert was sent. A nuclear missile was evidently minutes away launched from a small authoritarian state who had attained nuclear weapons.

This was not the synopsis of a sci-fi movie or some fictious novel seeking to craft a clever new story on what a nuclear attack might look like. This was a real event, a false alarm thankfully, but it caused fear of a nuclear attack unlike anything since the Cold War. Such an event underscores an unnerving reality, despite previously unthinkable advances in technology, our world remains in the antiquated state of being vulnerable to large scale nuclear destruction.

As the Cold War faded from many Americans recent memory, so too in our collective consciousness has the threat of nuclear war. Bomb shelters and air raid drills once commonplace have been relegated to updated history books. Events such as the Cuban Missile Crisis or the threatening rhetoric of the early 1980s seem distant, as relevant today as the U.S.S.R. However, recent events like the false alarm in Hawaii provide an unwelcomed reminder that nuclear threats

[1] Johanna Barr, Adam Nagourney, and David Sanger, *Hawaii Panics After Alert About Incoming Missile Is Sent in Error*, N. Y. TIMES, (January 13, 2018), https://www.nytimes.com/2018/01/13/us/hawaii-missile.html.

remain a part of everyday life no less, if not more likely, than it is portrayed in those new edition history books.[2]

President Biden campaigned on and often asserts that "America is back."[3] This phrase signaled a return to experienced, level-headed, responsible foreign policy. The administration has sought re-engagement with our allies on issues such as climate change, refugees, and international institutions such as the W.H.O., N.A.T.O., and the U.N., but there remains one area in which this cooperation is sorely needed in: arms control dialogue and nuclear proliferation.

This paper aims to reinvigorate discussion on the most consequential foreign policy issue every American President has faced since 1945, how to navigate the raised stakes of nuclear international relations. The Biden administration, like several previous administrations in the past two decades, faces the serious nuclear threat posed by Russia, a rogue North Korea, an uncertain nuclear future in Iran, and the potential for increased nuclear proliferation. Besides the daunting challenges mentioned, this administration must confront a new challenge, a rapid nuclear buildup from China.

The Biden Administration has signaled a myriad of changes to American foreign policy, but one thing that has not changed despite the White House's new resident: bi-partisan consensus that China presents the greatest existential threat to the United States.[4] While rhetoric alleging a

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[2] Ben Forsgren, *Death Star Drones: How Missile Defense Drone Technology Marks the Advent of Contingent Sovereignty*, 46 BRIGHAM YOUNG UNIVERSITY L. Rev. 847 (2021). (Noting "The impact of the first atomic weapons was devastating, leveling two cities in Japan and causing generational suffering from the effects of radiation. The first bomb dropped on August 6, 1945, over the city of Hiroshima, killed between 90,000-146,000 people. The other, dropped three days later on Nagasaki killed between 39,000-80,000 people. As awful as these statistics are, demonstrating a tremendous human cost, nuclear weapons today are 3,000 times more powerful than the bombs dropped in 1945").

[3] *Remarks by President Biden on America's Place in the World*, THE WHITE HOUSE, (February 4, 2021), https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/02/04/remarks-by-president-biden-on-americas-place-in-the-world/.

[4] *Annual Threat Assessment of the U.S. Intelligence Community*, OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE, (April 9, 2021), 6-8, https://www.dni.gov/files/ODNI/documents/assessments/ATA-2021-Unclassified-Report.pdf; Yasmeen Serhan, *Consensus Isn't Always a Good Thing*, THE ATLANTIC, (October 5, 2021), https://www.theatlantic.com/international/archive/2021/10/perils-washingtons-china-consensus/620294/.

new "Cold War" between Beijing and Washington is misguided[5], it is undisputed that China's multifaceted strategic competition in economic, military, and global influence has as its goal to become a preeminent world leader. Recent developments showing China's massive buildup of nuclear silos, shifting its six-decade old policy of minimum deterrence to potentially developing a first strike capability, and conducting a hypersonic missile test in July, leading the Chairman of the Joint Chiefs of Staff to declare a near "Sputnik moment," all should reaffirm that consensus.[6]

Reliance on the failed theory that by asking nations nicely to reverse course in amassing immense arsenals, hoping countries will finally realize their error is wishful thinking; it also ignores the realpolitik mindset embedded in authoritarian regimes like Russia and China, the tremendous cost incurred, not to mention the dangerous potential of a major nuclear war. This approach has failed to achieve reductions or limit proliferation and should be relegated to a footnote in those history books mentioned earlier.

The administration needs a bargaining chip, some tangible incentive to precipitate meaningful nuclear arms control with China, as well as curbing proliferation. Where can such a powerful negotiating tool be found? The President and his advisers need not look far to find it, the answer originated in 1983, SDI. Now with technological advances, viable space-based missile defense, once derided as "star wars" is more attainable than ever, adapting a 1980s idea into a 21st century reality.

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[5] Thomas Christensen, *There Will Not Be a New Cold War: The Limits of U.S.-Chinese Competition*, FOREIGN AFFAIRS, (March 24, 2021), https://www.foreignaffairs.com/articles/united-states/2021-03-24/there-will-not-be-new-cold-war. (Noting three "essential and interrelated elements of the Cold War with Russia are lacking: (1) The U.S. and China are not involved in a global ideological struggle for third party nations; (2) the globalization of the world precludes dividing the world into economic blocs; and (3) the U.S. and China are not leading or supporting alliances or proxy wars as was the case in Korea, Vietnam).

[6] William Broad and David Sanger, *As China Speeds Up Nuclear Arms Race, the U.S. Wants to Talk*, N. Y. TIMES, (November 28, 2021), https://www.nytimes.com/2021/11/28/us/politics/china-nuclear-arms-race.html.

This paper argues that the Biden administration should pursue a more rigorous missile defense system in its endeavor to engage in strategic competition with China and regain America's leadership role in curbing nuclear proliferation. While the principal concern is China's nuclear buildup, this paper acknowledges an obvious fact, pursuing an enhanced space-based missile defense also has collateral benefits to countering threats from North Korea and Iran, but does not address this subtopic in detail.

In order to achieve a highly effective missile defense system and be in a position to negotiate from a position of strength, the Biden administration needs to convince Congress to increase and expand funding for the Missile Defense Agency (MDA). This, like any congressional persuasion, will not be easy, however, there is a significant possibility for bipartisan success.

While this paper proposes increased funding for space-based missile defense technology, it does not proffer an immediate short-term solution to a problem with such inherit complexity or declare an end to nuclear weapons. Rather the issue of lowering the number of nuclear weapons through difficult diplomacy and the proposed solution of viable space-based missile defense will be long term investments. Achieving an effective missile defense system is a necessary rather than a sufficient condition to altering the nuclear status quo. It has the potential to shift current unwillingness to engage in arms control due to the false security of offensive arsenals, to a serious dialogue incentivizing negotiation rather than nuclearization.

For all the complexities that accompanied arms control during the Cold War between the former U.S.S.R. and the U.S., it seems minimal when compared to the multipolar reality of the nuclear world today. The stakes are high, inaction not feasible, failure not an option.

Part I assesses the current nuclear proliferation situation, the new administration's statements and actions on nuclear proliferation, China's nuclear buildup, as well as comprehensive analysis on the cost effectiveness of missile defense. Part II provides a historic overview of the U.S.'s efforts at developing missile defense, and the origins of SDI. Part III examines the U.S.'s current missile defense capabilities, the increased feasibility of space-based missile defense, provides two historic examples to show why space defenses should not be traded away and rejects common missile defense myths. Part IV discusses how the administration can persuade Congress to fund space-based defense and outlines negotiations with Beijing, using missile defense as leverage to incentivize agreement. It concludes by suggesting some additional concrete steps to further increase our missile defense capabilities.

Part I: An administration and a New Nuclear Challenge

A. Current State of nuclear weapons and Proliferation

Nine states possess a staggering 13,080 nuclear weapons, 3,825 are deployed with operational forces, and approximately 2,000 are kept in a state of high alert.[7] Adding to the sense of urgency, global reductions of operational warheads have stalled and may even be on the rise.[8] The United States and Russia, undoubtedly the two nations with the largest nuclear arsenals are both engaged in extensive, expensive modernization programs.[9] Additionally, a dangerous trend of consequential Cold War era nuclear reduction treaties such as the Intermediate Nuclear Forces Treaty (INF) Treaty and the Open Skies Treaty have recently been discarded.[10]

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[7] *SIPRI Yearbook 2021 Chapter 10 World Nuclear Forces: Armaments, Disarmament and International Security*, STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE, (June 2021), 16-17. https://sipri.org/sites/default/files/2021-06/sipri_yb21_summary_en_v2_0.pdf.

[8] *Id.* While the total number of nuclear warheads is declining, it can be attributed to the U.S. and Russia dismantling retired warheads.

[9] The President's Inbox, *Why It Matters Nuclear Security*, COUNCIL ON FOREIGN RELATIONS, (September 16, 2021), https://www.cfr.org/podcasts/podcast-takeover-nuclear-security-presidents-inbox.

[10] Lori Esposito-Murray, *What the INF Treaty's Collapse Means for Nuclear Proliferation*, COUNCIL ON FOREIGN RELATIONS, (August 1, 2019), https://www.cfr.org/in-brief/what-inf-treatys-collapse-means-nuclear-proliferation.

Besides the two major nuclear powers, other nuclear nations are seeking to expand, and non-nuclear nations are pursuing nuclear capability, threatening further proliferation. Countries such as India and Pakistan are also increasing their arsenals at a time when heated rhetoric and the potential for conflict between the two remains high.[11] Additionally, Iran has again moved closer to developing nuclear capabilities as the JCPOA (Iran Nuclear Deal) was withdrawn from by the U.S. and North Korea's nuclear arsenal remains central to their strategy of legitimacy.[12] Meanwhile Saudi Arabia seeks nuclear weapons[13], and the potential for terrorists to attain nuclear weapons remains a legitimate concern, with the instability of the Middle East.[14]

As if this nuclear possession picture of the world is not enough, China is significantly enlarging its nuclear arsenal, with recent reporting disclosing the building of at least 250 new long range missile silos in three isolated locations, more than ten times the number of ICBM

[11] Joshua T. White, *The Other Nuclear Threat: America Can't Escape Its Role in the Conflict Between India and Pakistan*, THE ATLANTIC, (Mar. 5, 2019), https://www.theatlantic.com/ideas/archive/2019/03/americas-role-indiapakistan-nuclear-flashpoint/584113/.

[12] *See generally*, Eric Brewer, *Iran's Evolving Nuclear Program and Implications for U.S. Policy*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (October 2021), 1-10, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/211015_Brewer_IranNuclear_USPolicy.pdf?x71oEFdt_zke9xyP7qN5Nc31Rw50FVCd. *See also* W.J. Hennigan, *'They're Very Close' U.S. General Says Iran Is Nearly Able to Build a Nuclear Weapon*, TIME, (November 24, 2021), https://time.com/6123380/iran-near-nuclear-weapon-capability/; Ken Dilanian, Carol Lee, Dan De Luce, North Korea has more nuclear weapons than ever. What should Biden do?, NBC News, (April 17, 2021), https://www.nbcnews.com/politics/national-security/north-korea-has-more-nuclear-weapons-ever-what-should-biden-n1263983; *See also,* Lukasz Kulesa*, Reinventing Nuclear Disarmament and Nonproliferation as Cooperative Efforts*, COUNCIL ON FOREIGN RELATIONS, (April 21, 2021), https://www.cfr.org/report/reinventing-nuclear-disarmament-and-nonproliferation-cooperative-endeavors.

[13] Kingston Reif, *Saudi Arabia Threatens to Seek Nuclear Weapons*, ARMS CONTROL ASSOCIATION, (June 2018), https://www.armscontrol.org/act/2018-06/news/saudi-arabia-threatens-seek-nuclear-weapons. *See also* Michael Gordon, Felicia Schwartz, and Warren Strobel, *Saudi Arabia, With China's Help, Expands Its Nuclear Program*, WALL STREET JOURNAL, (August 4, 2020), https://www.wsj.com/articles/saudi-arabia-with-chinas-help-expands-its-nuclear-program-11596575671.

[14] *See generally*, Bruce Riedel and Gary Samore, Managing Nuclear Proliferation in the Middle East, The Brookings Institute, (June 12, 2016), https://www.brookings.edu/wp-content/uploads/2016/06/12_nuclear_proliferation_riedel.pdf.

silos it currently operates.[15] The Chinese also lack transparency in reporting the number and capabilities of their arsenal.[16]

The Biden administration in creating its approach to foreign policy, has through messaging and action addressed the increasing nuclear threat posed by the PRC.

B. A New Administration with an Opportunity to Rethink U.S. Nuclear Policy

Despite China's continued nuclear buildup, the administration has been consistent in its message of endeavoring to work diplomatically with Beijing.[17] Various officials from the State Department to the President, in his first U.N. General Assembly speech, articulated a vision for American leadership regarding nuclear disarmament, one which comports with pursuing missile defense.[18] This foundation is critical as policymakers are well underway in reviewing American

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[15] Matt Korda and Hans Kristenen, *China is Building A Second Nuclear Missile Silo Field*, FEDERATION OF AMERICAN SCIENTISTS, (July 26, 2021), https://fas.org/blogs/security/2021/07/china-is-building-a-second-nuclear-missile-silo-field/.

[16] *SIRPI Yearbook*, *supra* note 7.

[17] *See* Denise Jenkins, *Remarks to the 17th Annual NATO Conference on WMD Arms Control, Disarmament, and Nonproliferation*, U.S. DEPARTMENT OF STATE, (September 6, 2021), https://www.state.gov/under-secretary-bonnie-jenkins-remarks-nuclear-arms-control-a-new-era/. (The Under Secretary of State stated, "[B]oth Russia and China are engaged in extensive, destabilizing nuclear buildup that poses new threats to collective security and endangers the international rules-based order." She then asked the central question, "how can we reduce nuclear tensions and diminish the danger of a nuclear miscalculation or conflict?")

[18] *See Remarks by President Biden Before the 76th Session of the United Nations General Assembly*, THE WHITE HOUSE, (September 21, 2021), https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/09/21/remarks-by-president-biden-before-the-76th-session-of-the-united-nations-general-assembly/. (After noting the focus of the administration on the Indo-Pacific region, the President stated, "U.S. military power must be our tool of last resort" later discussing "an era of new technologies. . .that have the potential to. . .reshape every aspect of the human existence." He cautioned that the "major powers have a duty to carefully manage their relationships, so they do not tip from responsible competition to conflict." He also declared the U.S. seeks no new Cold War and expressed a willingness to engage with nations even if intense disagreement in other areas is present, using softer rhetoric towards China. A central tenet of the Biden presidency, that democracies can meet the challenges of today effectively, if not better than authoritarian regimes, was reiterated by stating, "democracy remains the best tool we have to unleash our full human potential." He left no doubt that we'll all suffer the consequences of our failure if we do not come together to address. . .enduring threats like nuclear proliferation." (The speech underscored several principles for pursuing missile defense, reaffirming reluctant to use offensive military strength and utilizing new technologies to reshape nuclear norms).

nuclear strategy through the Nuclear Posture Review (NPR)[19] and a Missile Defense Review (MDR), both set to be completed by early 2022.[20]

The Biden administration issued its "Interim National Security Strategic Guidance" in March 2021, stating, "As we re-engage the international system, we will address the existential threat posed by nuclear weapons."[21] The guidance further added, "We will head off costly arms races and re-establish our credibility as a leader in arms control…where possible, we will also pursue new arms control arrangements…and we will engage in meaningful dialogue with Russia and China on a range of emerging military technological developments that implicate strategic stability."[22] The administration acknowledged that, "renewed American nonproliferation leadership will also be essential to reducing the dangers posed by nuclear weapons" promising to address the nuclear threats posed by Iran and North Korea.[23]

The administration also took a crucial step in furthering the dialogue on arms control and reinstating America's leadership role through concrete action, disclosing our nuclear arsenal which stands at 3,750 warheads.[24] The October 5, 2021, announcement provided much needed transparency to the rest of the world and strengthens our position in pressuring other nations,

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[19] Kingston Reif, *Biden Administration Begins Nuclear Posture Review*, ARMS CONTROL ASSOCIATION, (September 2021), https://www.armscontrol.org/act/2021-09/news/biden-administration-begins-nuclear-posture-review.
[20] *Missile Defense Review Will Address Growing Threats From Iran, North Korea, and Others*, DOD NEWS, U.S. DEPARTMENT OF DEFENSE, (June 11, 2021), https://www.defense.gov/News/News-Stories/Article/Article/2654964/missile-defense-review-will-address-growing-threats-from-iran-north-korea-others/. *See also* Kingston Reif, *Missile Defense Review Begins*, ARMS CONTROL ASSOCIATION, (October 2021), https://www.armscontrol.org/act/2021-10/news/missile-defense-review-begins.
[21] Joseph R. Biden, Jr., *Interim National Security Strategic Guidance*, THE WHITE HOUSE, (March 2021), https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf.
[22] *Id.*
[23] *Id.*
[24] *Transparency in the U.S. Nuclear Weapons Stockpile Fact Sheet*, U.S. DEPARTMENT OF STATE, (October 5, 2021), https://www.state.gov/transparency-in-the-u-s-nuclear-weapons-stockpile/.

particularly China to be transparent in disclosing their arsenal.[25] The declassified information revealed that the U.S. has only 72 less weapons in its nuclear stockpile than reported in 2017.[26]

The NPR comes at a pivotal moment when the U.S. is considering costly modernization investments in its offensive nuclear arsenal.[27] The last NPR conducted under the Trump administration in 2017-2018 sought to expand the capability of our nuclear arsenal.[28] The NPR will determine whether President Biden will transfer his rhetoric as a candidate, stating in 2019 the U.S. "does not need new nuclear weapons" and that he would work to reduce reliance and excessive expenditures on nuclear weapons, into U.S. policy.[29] His first budget request indicated otherwise, continuing the modernization effort from the Trump administration.[30] Notwithstanding the continuation, the NPR will give guidance on whether the administration will seek to limit modernization efforts.[31] Some actions the NPR could implement that there is consensus on, would align with the administration's position, shift towards an increased missile defense and signal a non-aggressive position to Beijing would be: (1) declaring a sole purpose policy that prohibits use of nuclear weapons in a preemptive or nonnuclear attack; (2) reducing costly new modernization efforts to the extent possible, including lowering the number of deployed ICBMs below the current number of 400, as well as extend current nuclear capabilities

[25] *See* Bonnie Jenkins, *Remarks to the 2021 NATO Nuclear Policy Symposium*, U.S. DEPARTMENT OF STATE, (November 3, 2021), https://www.state.gov/remarks-to-the-2021-nato-nuclear-policy-symposium/. (Undersecretary of State Bonnie Jenkins did exactly that. After referencing the release of U.S. weapons data, she stated, "In contrast, Beijing is substantially expanding its nuclear arsenal, keeps its programs shrouded in secrecy, and is unwilling to provide details on its plans to the international community. . .we call on Russia and the PRC to also commit to transparency and provide the same data on their stockpiles as we have released").
[26] *Id.*
[27] See *infra* p. 16.
[28] *See* Reif, *supra* note 19.
[29] *Id.*
[30] *Id. See also* Daryl Kimball, *Biden's NPR Must Reduce the Role of Nuclear Weapons*, ARMS CONTROL ASSOCIATION. (October 2021), https://www.armscontrol.org/act/2021-10/focus/bidens-npr-must-reduce-role-nuclear-weapons.
[31] Rebecca Hersman and Joseph Rodgers, *Nuclear Modernization under Competing Pressures*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (February 12, 2021), https://www.csis.org/analysis/nuclear-modernization-under-competing-pressures.

rather than fund a costly new ICBM; and (3) Revise the number of nuclear weapons deemed sufficient to deter a nuclear attack to 1,000, one third lower than the New Start Treaty, which importantly in the realm of diplomacy, will provide a basis for reductions negotiations with Russia and put the U.S. in a position to press Beijing on its arsenal.[32] The NPR must coordinate with the MDR, another review that will decide the trajectory of missile defense goals for the next decade.

The Missile Defense Review will also clarify where the President and his new administration stand on missile defense. As with the NPR, Biden continued with plans from the previous administration to build the new Next Generation interceptor (NGI) to counter long range ballistic missile attacks.[33] The central question of the anticipated MDR is whether the administration will endorse modifying existing systems which are designed to counter limited strikes from North Korea and Iran, or to expand against longer range threats from more numerous and sophisticated Russian and Chinese arsenals.[34] While this paper advocates for expanding research to counter larger threats due to advances in technology, at a minimum the administration should continue the modernization of missile defense approved under President Obama and marginally adjusted under President Trump and supported by a large bipartisan margin in Congress.[35] Remaining questions such as the future efforts to counter hypersonic threats will provide further insight into missile defense for the next decade.[36] Both reviews give the Biden administration a chance to redefine nuclear weapons and missile defense, hopefully a

[32] Steven Pifer, *Go bold or go home: The Nuclear Posture review must give Biden real options*, THE BROOKINGS INSTITUTE, (October 7, 2021) https://www.brookings.edu/opinions/go-bold-or-go-home-the-nuclear-posture-review-must-give-biden-real-options/ *See also* Kimball, *supra* note 30.
[33] Reif. *supra* note 19.
[34] *Id.*
[35] *See* Walter Slocombe and Robert Soofer, *A Bipartisan Call To Stay The Course On US Homeland Missile Defense*, BREAKINGDEFENSE, (September 10, 2021), https://breakingdefense.com/2021/09/staying-the-course-on-us-homeland-missile-defense/.
[36] *Id.*

chance that will prioritize advances in attaining space-based sensors and defending against hypersonic threats.

Congressional input relating to the trajectory American nuclear policy should take is an important guidepost for any effort the administration might make in asking for increased funding of missile defense. Democrats in Congress have lobbied the administration to discontinue modernization efforts, exemplified in a letter twenty two lawmakers, including the co-chairs of the bicameral Nuclear Weapons and Arms Control Working Group, which urged President Biden to "reject a 21st Century arms race" and to "make bold decisions to lead us towards a future where nuclear weapons no longer threaten all humanity."[37] The Chairman of the House Armed Services Committee Adam Smith (D-W.A.) also called on Biden "to take a hard look at whether every ongoing and planned [modernization] effort is necessary."[38] Republicans have asked the administration to continue the current trajectory of modernization, citing Russia and China's nuclear developments.[39] However, missile defense is supported by Republicans, with its inception being the articulated by President Reagan.[40] Additionally, President Trump's MDR in 2019 advocated a significant expansion of the role and scope of U.S. missile defenses, stating the goal is to, "ensure we can detect and destroy any missile launched against the United States—anywhere, anytime, anyplace."[41] The new administration should continue this expanded view missile defense, focusing the MDR on such advanced space capabilities as the Hypersonic and

[37] *Id. See also* Reif, *supra* note 19.
[38] *Id.*
[39] *Id.*
[40] Kingston Reif, *Congress Rewrites Missile Defense Policy*, ARMSCONTROLASSOCIATION, (January/February 2017), https://www.armscontrol.org/act/2017-01/news/congress-rewrites-missile-defense-policy (noting the 2017 NDAA broading missile defense was sponsored in the House of Representatives and the Senate by Republicans).
[41] *Id.*

Ballistic Tracking Space Sensor, accelerating the Glide phase interceptor, and the more affordable directed energy technology to clearly prioritize its funding goals to Congress.[42]

The MDR will be completed at a time when China is only beginning a substantial nuclear buildup, warranting a detailed examination.

C. Preempting the PRC's Nuclear Buildup

While the Biden administration has made some nuclear arms progress with Russia, immediately extending the New START treaty[43] until 2026 and reiterating along with President Putin, the Reagan-Gorbachev principle that "a nuclear war can never be won and must never be fought" at the Geneva summit in June[44], China remains unmoored by any nuclear arms control agreements limiting arsenal size.[45] As the administration hopefully seeks to move away from the dangerous trend of letting crucial nuclear control treaties such as the Intermediate Nuclear Forces Treaty (INF) to be discarded[46], missile defense remains the best facilitator of restoring responsibility among sovereign nations to eventually reduce nuclear weapons. In the alternative, if China continues to refuse cooperating in arms control talks, which Biden's own top

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[42] *See* Patty-Jane Geller, *How the Upcoming Missile Defense Review Can Make America Safer*, THE HERITAGE FOUNDATION, (October 4, 2021), https://www.heritage.org/defense/report/how-the-upcoming-missile-defense-review-can-make-america-safer. (Noting the FY 2022 budget includes $256 million for the HBTSS sensor). *See also MDA and the 2022 Budget*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (June 22, 2021), https://www.csis.org/analysis/mda-and-2022-budget, (Noting the Director of MDA stated, "we need space capability" and referenced the proposals above prioritized in the 2022 budget to counter the threat of hypersonic weapons).

[43] *See Why It Matters: Nuclear Security*, *supra* note 9. Even a positive development in nuclear reductions, such as the renewal of the New Start agreement with Russia until 2026, merely continues a dangerous stability in the status quo, limiting both countries to a staggering 1,550 deployed operational warheads.

[44] *Nuclear Arms Control After the Biden-Putin Summit*, CONGRESSIONAL RESEARCH SERVICE, (last updated September 30, 2021), https://crsreports.congress.gov/product/pdf/IN/IN11694.

[45] Rose Gottemoeller, *Lessons from the Cold War on Preventing a U.S.-China Arms Race*, POLITICO MAGAZINE. (November 23, 2021), https://www.politico.com/news/magazine/2021/11/23/biden-xi-cold-war-nuclear-arms-race-523248. *See also* 2021 Report on China's Military Developments, i*nfra*, note 48 at 93 (Raising concern China might not be adhering to the "zero yield" standard under the Comprehensive Nuclear Test Ban Treaty).

[46] *See* Murray, *supra* note 10.

intelligence officials, in its annual threat assessment, specifically cited as Beijing's position[47], missile defense sends a clear signal of our resolve.

China's buildup is deeply concerning. A new annual report from the Department of Defense (DOD) assessing Chinese military developments described the accelerating pace of the PRC's nuclear program as a "major expansion," estimating they may have up to 700 warheads by 2027, and at least 1,000 by 2030.[48] These revised estimates exceeded even the U.S.'s projections from just one year ago.[49] The PRC also likely now has a full nuclear triad, gaining air-launched missile capability while improving its ground and sea based nuclear weapons.[50] This revised analysis, along with the 250 nuclear silo expansions, precipitated the report to predict China to increase peacetime readiness of its nuclear forces, moving to a launch-on-warning posture.[51] The buildup is being supplemented with large increases in plutonium reactors and increased activity at its largest nuclear site.[52] Accompanying this unnerving increase is a troubling assessment anticipating future outpacing of any adversary's nuclear capability that could threaten Beijing's ability to retaliate against a first strike.[53]

[47] *Annual Threat Assessment of the U.S. Intelligence Community*, *supra* note 4. (The report stated that, "Beijing is not interested in arms-control agreements that restrict its modernization plans and will not agree to substantive negotiations that lock in U.S. or Russian nuclear advantage").
[48] *See*, *Military and Security Developments Involving The People's Republic of China 2021*, U.S. DEPARTMENT OF DEFENSE, (November 3, 2021), 90, https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF.
[49] *Id.*
[50] *Id.*
[51] *Id.* at 93, 94. (Where warning of a missile strike leads to a counterstrike before an enemy first strike can detonate).
[52] *Id.*
[53] *Id.* at 92.

As this paper is written, reports of China constructing 250 new ICBM silos[54], testing a hypersonic missile in August[55], and a definitive increased belligerence towards Taiwan[56] all bolster the need to staunch Chinese nuclear advancements with defensive technology. These recent events were described by Admiral Charles Richard, the head of Strategic Command, as "a strategic breakout by China" adding, "the explosive growth and modernization of its nuclear and conventional forces can only be described as breathtaking."[57]

Military spending further supports its buildup. China's defense budget for 2021 was a 6.8 percent increase from the previous year[58], totaling $209 billion, making the PRC the second largest military budget in the world and reflecting its nuclear advances.[59] Spending on the Chinese military as a total of government spending rose to 5.4 percent, and "for the past decade, the annual increase in China's official military spending has outpaced its annual GDP growth, reflecting the priority that Beijing attaches to bolstering its armed forces."[60]

The Biden administration's focus on China's nuclear capabilities must be paramount in its overall strategy in countering Beijing. There can be no doubt of China's mission to principally

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[54] Matt Korda and Hans Kristenen, *China is Building A Second Nuclear Missile Silo Field*, FEDERATION OF AMERICAN SCIENTISTS, (July 26, 2021), https://fas.org/blogs/security/2021/07/china-is-building-a-second-nuclear-missile-silo-field/. *See also* Shannon Bugos, and Julia Masterson, *New Chinese Missile Silo Fields Discovered*, ARMS CONTROL ASSOCIATION, (September 2021), https://armscontrol.org/act/2021-09/news/new-chinese-missile-silo-fields-discovered. (Noting Secretary of State Blinken at the ASEAN Regional Forum was concerned with China's nuclear arsenal's rapid growth and that such an expansion "indicates a sharp deviation from Beijing's "decades-old nuclear strategy based on minimum deterrence).

[55] Natasha Bertrand, *China's latest missile test raises the stakes for Biden's nuclear weapons review*, CNN, (October 22, 2021), https://www.cnn.com/2021/10/22/politics/china-hypersonic-missile-joe-biden-nuclear-policy/index.html

[56] https://www.nytimes.com/2021/10/09/world/asia/united-states-china-taiwan.html.

[57] *Id. See also* Reif, *supra* note 19.

[58] Matthew Funaiole and Brian Hart, *Understanding China's 2021 Defense Budget*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (March 5, 2021), https://www.csis.org/analysis/understanding-chinas-2021-defense-budget.

[59] *Id.* "The Stockholm International Peace Research Institute (SIPRI) estimated that Chinese defense-related expenditure actually reached, based on current exchange rates, $240 billion in 2019—nearly 40 percent higher than the official budget ($183.5 billion)."

[60] *Id.* See also *China's Defense Budget Climbs 6.8% as Economy Recovers*, BLOOMBERGNEWS. (March 5, 2021), https://www.bloomberg.com/news/articles/2021-03-05/china-s-defense-budget-climbs-6-8-as-economy-recovers. (Noting China spends about 1.7 percent of its GDP on its military budget).

threaten the U.S.[61] The annual threat assessment, published in April 2021 and supplemented by top intelligence officials testifying before Congress, leaves no doubt of China's alarming nuclear actions, stating that China's ballistic missile arsenal is "more survivable, more diverse, and on higher alert than in the past, including nuclear missile systems designed to manage regional escalation and ensure an intercontinental second-strike capability."[62]

While the administration stated after China's reported hypersonic missile test it "welcomes stiff competition,"[63] it must not forget the strategic aspect to the competition, and there is no beneficial strategy in failing to confront Beijing on these aggressive actions. China's increasing nuclear capabilities, along with the destabilizing nuclear threat posed by DPRK, only further complicates the already complex foreign policy of the Asia-Pacific region.

China's nuclear arsenal is currently estimated at 290-350 weapons.[64] Those, including Beijing, who repeatedly point out China's arsenal is only one-tenth the size of the U.S.'s, therefore, concern is unwarranted, leads to a false sense of security. China's arsenal disparity to the U.S.'s is not a reason for complacency. History has not looked favorably on previous examples of complacency in the face of military build-ups, epitomized by John F. Kennedy's thesis, "Why England Slept."[65] Let there be no illusions, the Chinese arsenal will not remain

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[61] *Id.* ("The report stated Beijing viewed competition with the U.S. 'as part of an epochal geopolitical shift'" The report added, "Beijing is increasingly combining its growing military power with its economic, technological, and diplomatic clout to preserve the CCP, secure what it views as its territory and regional preeminence, and pursue international cooperation at Washington's expense").

[62] *Id.* Scott Neuman, *Intelligence Chiefs Say China, Russia are Biggest Threats to U.S.*, NATIONAL PUBLIC RADIO, (April 14, 2021), https://www.npr.org/2021/04/14/987132385/intelligence-chiefs-say-china-russia-are-biggest-threats-to-u-s (Noting Director of National Intelligence (DNI) Haines stated in her testimony that "China is focused on achieving leadership in space, detailing Beijing's plan for a space station in low Earth orbit, a moon base, and deployment of space based anti-satellite weapons).

[63] *Press Briefing by Press Secretary*, THE WHITE HOUSE, (October 18, 2021), https://www.whitehouse.gov/briefing-room/press-briefings/2021/10/18/press-briefing-by-press-secretary-jen-psaki-october-18-2021/

[64] https://chinapower.csis.org/china-nuclear-weapons/. *See also* Matt Korda and Hans Kristenen, *The Pentagon's 2020 China Report*, FEDERATION OF AMERICAN SCIENTISTS, (September 1, 2020), https://fas.org/blogs/security/2020/09/the-pentagons-2020-china-report/.

[65] *See* John F. Kennedy, *Books: Why England Slept, Correspondence and Reviews*, JOHN F. KENNEDY PRESIDENTIAL LIBRARY AND MUSEUM, https://www.jfklibrary.org/asset-viewer/archives/JFKPOF/129/JFKPOF-129-018.

there for long, as consensus among military officials at the Pentagon and independent policy analysts have concluded the PRC's ambitions are expanding as detailed above. The Biden administration and policymakers need only take note of a lesson from the Cold War and the first arms race, when the U.S. built over 32,000 warheads and the U.S.S.R. over 40,000, to avoid a second arms race. Parity is not the answer to peace.

Any delay in a robust development of space-based interceptors and an increase in the U.S. land, air, and sea-based defense systems only invites further development of offensive capabilities. Against this daunting backdrop, preliminary plans for the U.S. to modernize its nuclear arsenal and missile defense funding projections for the next decade render a clear outcome, missile defense has been underfunded.

D. Cost of Nuclear Arsenal Modernization and Missile Defenses for the Next Decade

The United States is planning to upgrade and modernize its nuclear arsenal over the next decade. The Congressional Budget Office (CBO) projects spending until fiscal year 2030 at an estimated $634 billion.[66] The new nuclear spending assessment is 28 percent higher than the CBO's previous estimates from just two years ago, which totaled $494 billion over the 2019-2028 period.[67] This budget allocation would average just over $60 billion per year, with two-thirds of the costs incurred by the DOD for ballistic missile submarines and intercontinental

[66] *Projected Cost of U.S. Nuclear Forces 2021-2030*, CONGRESSIONAL BUDGET OFFICE, (May 2021), https://www.cbo.gov/system/files/2021-05/57130-Nuclear-Forces.pdf The Congressional Budget Office (CBO), which conducts nonpartisan analysis for Congress, is required by law to project the ten-year costs of nuclear forces every two years under the National Defense Authorization Act for Fiscal Years 2013 and 2015.

[67] *Id.* Half of the $140 billion increase is attributed to the two additional years of the newly assessed period (fiscal years 2029 and 2030) which the CBO states are more expensive years of development. About 36 percent of the increase is projected from 2021 to 2028, years included in the previous 2019 estimate because of DOD's modernization plans moving into the production phase.

ballistic missiles.[68] Importantly, these estimates do not account for any change in plans as submitted by DOD, additional cost growth or schedule delays.[69]

To put the current nuclear budget in perspective, the U.S. spent $714 billion on defense in 2020, is expected to spend $733 billion in 2021, and the administration is expected to ask for 753 billion for fiscal year 2022.[70]

Comparing what the U.S. spends on nuclear weapons ($634 billion) to what the U.S. currently spends on missile defense, the Biden administration's FY 2022 budget request asks for $20.4 billion.[71] The Missile Defense Agency (MDA)[72] highest ever budget allocation adjusted for inflation was $11.5 billion in fiscal year 2018.[73] The MDA's FY 2021 budget request was $9.13 billion.[74] The FY 2022 budget request is $8.917 billion, an eighteen percent decrease from FY 2021 and actually a net decrease in real dollars from FY 2008.[75]

To further demonstrate the more cost-effective pursuit of missile defense capabilities, the CBO projected U.S. spending on future missile defenses for fiscal years 2020-2029 based on the 2019 Missile Defense Review.[76] The estimate of the DOD's 10-year costs of missile defense as

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[68] *Id.*
[69] *Id.* The CBO did incorporate cost growth in its $634 billion estimate, totaling $83 billion, which is based on similar cost growth of projects in the past, however, additional cost growth may increase nuclear spending further.
[70] *New Defense Budget, Existing Opportunities to Improve DOD Business Operations*, THE GOVERNMENT ACCOUNTABILITY OFFICE, (May 19, 2021), https://www.gao.gov/blog/new-defense-budget-existing-opportunities-improve-dod-business-operations.
[71] Kingston Reif, *Trump Era Missile Defense Spending Continues*, ARMS CONTROL ASSOCIATION, (July 2021), https://www.armscontrol.org/act/2021-07/news/trump-era-missile-defense-spending-continues
[72] Matt Korda and Hans Kristensen, *U.S. Ballistic Missile Defenses, 2019*, 75 BULLETIN OF THE ATOMIC SCIENTISTS 6, 295-306, 297, (October 24, 2019), https://doi.org/10.1080/00963402.2019.1680055.
[73] Tom Karako and Wes Rumbaugh, *Inflection Point: Missile Defense and Defeat in the 2021 Budget*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (March 22, 2020), https://www.csis.org/analysis/inflection-point-missile-defense-and-defeat-2021-budget.
[74] *Id.*
[75] *Id. See also* Reif, *supra* note 20; Rebeccah Heinrichs, *To Make up for Years of Slow Policy Decisions, MDA Needs More Cash*, BREAKING DEFENSE, (August 12, 2021), https://breakingdefense.com/2021/08/to-make-up-for-years-of-slow-policy-decisions-mda-needs-more-cash/.
[76] *Costs of Implementing Recommendations of the 2019 Missile Defense Review*, CONGRESSIONAL BUDGET OFFICE, (January 2021), https://www.cbo.gov/publication/56960#_idTextAnchor038.

described in their 2020 budget request would be about $176 billion.[77] The estimated cost is about $50 billion higher than the CBO's last projection from 2017-2026.[78] The overall cost of the NGI system will be about $18 billion over ten years.[79] According to the FY 2021 budget request it will be one-quarter of one percent of DOD's budget through FY 2026.[80] If you combine NGI and GMD funding, it will account for one-half of one percent of the DOD budget within the same period.[81]

To further emphasize the lesser burden of funding missile defense, additional context is needed in answering critics who contend funding missile defense is wasteful. Opponents cite the MDA receiving $152 billion from its creation in 2002 to 2018, and an anticipated $47 billion from FY 2019 to 2023, totaling $199 billion.[82] This amount while not minimal, is only one third of the anticipated cost of nuclear modernization, reduced further when compared to domestic investments in the trillions. Central to any discussion of cost regarding missile defense is asking what is more important than investing in the defense of our nation? Investment in missile defense can and should be increased as technology develops and threats from adversaries dictate a need for adequate funding.

Part II: History and Principles of Missile Defense

[77] *Id.*
[78] *Id.* (The CBO points out that the Missile Defense Review described other recommendations that might be pursued, but not included in budget submissions, therefore, DOD would incur additional costs).
[79] *See* Slocombe and Soofer, *supra* note 35. *See also* Reif, Kingston, *Missile Defense Review Begins*, ARMS CONTROL ASSOCIATION., (October 2021) https://www.armscontrol.org/act/2021-10/news/missile-defense-review-begins.
The NGI costing $18 billion in total, most of which is spent on development at $13 billion, $2.3 billion to deploy, and only $2.2 billion to operate.
[80] *Id. see also* Slocombe and Soofer, *supra* note 35.
[81] *Id.*
[82] *Fact Sheet: U.S. Ballistic Missile Defense*, CENTER FOR ARMS CONTROL AND NON-PROLIFERATION, (April 2, 2021), https://armscontrolcenter.org/fact-sheet-u-s-ballistic-missile-defense/.

A brief history detailing the U.S. pursuit of missile defense before and after SDI is helpful, providing a relevant framework prior to a discussion of the SDI initiative and three principles that still inform missile defense today.

A. U.S. Pursuit of Missile Defense Before and After SDI

The United States has pursued a viable missile defense capability long before SDI, since the 1950's.[83] In March of 1969 President Nixon announced that at his direction, the Pentagon begin developing a system to protect land based retaliatory forces from Soviet attack, defend the American people from a nuclear attack from China, which he predicted would be attainable in a decade, and to protect against accidental launches.[84] DOD developed the "Safeguard" system at Grand Forks Air Force Base in North Dakota to protect the base's 150 nuclear missiles.[85] Advocates of the precursor missile defense system argued it would been improved over time, however, Congress stopped its funding by 1976.[86]

Moving forward past SDI[87], the idea of utilizing lasers in space to destroy nuclear missiles was renamed "Brilliant Pebbles" transitioning from land based missiles to space-based missiles.[88] However, this was unsuccessful and President Clinton deprioritized missile defense, even vetoing legislation that would have mandated deployment of a limited national missile

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[83] John Topping, *The Legality of President Reagan's Proposed Space-Based Ballistic Missile Defense System*, 14 GA. J. INT'L & Comp. L. 329, 330 (1984). https://digitalcommons.law.uga.edu/gjicl/vol14/iss2/4.
[84] *Id.* at 330 footnote 9. (Noting "The first two systems developed by the United States were the Nike-Zeus and the Nike-X. Both systems used missiles with nuclear warheads to intercept incoming ICBMs. Both these systems, designed to protect the entire country from nuclear attack, were considered marginally effective and prohibitively expensive. Cost estimates ranged as high as $50 billion. In 1967, President Johnson scaled down the Nike-X program and renamed it Sentinel. Its purpose was to protect the nation from a light attack, either a Chinese attack or an accidental Soviet launch of a few missiles").
[85] *Id.* "The total cost of the "Safeguard system was $25 billion. Despite the cost, the "Safeguard system like its Soviet counterpart became obsolete after the U.S. and U.S.S.R. further developed their nuclear arsenals after the SALT I Treaty, placing multiple warheads on top of the ICBM's."
[86] *Id.*
[87] See infra p. 20.
[88] *Id. See also* Lazzari, *infra* note 137 at 32.

defense (NMD) under the belief no threat justified deploying such a system.[89] The no threat assumption was quickly challenged when North Korea launched a missile over Japan, creating a new urgency in NMD and prompting President Clinton to ask for a substantial increase in funding.[90] A large bipartisan majority passed the NMD Act of 1999, Clinton had no choice but to sign or be overridden by veto.[91]

B. President Reagan Addresses the Nation

On March 23, 1983, President Reagan, in an Oval Office address to the nation, outlined a drastic shift in nuclear deterrence, upending the decades old mutually assured destruction (MAD) policy for an idea that gambled on the hope of attainable technologies at the start of the next century. As President Reagan unveiled the Strategic Defense Initiative, he laid out several important, then and now foundational principles, worth revisiting which still inform missile defense and provide a critical framework for supporting missile defense policies today.

a. Deterrence.

SDI and the missile defense capabilities existing today should be viewed in the context of deterrence, a theme the Biden administration should rely on in persuading Congress. President Reagan's ability to communicate succinctly and eloquently did just that, stating what deterrence is, "making sure any adversary who thinks about attacking the United States, or our allies, or our vital interests, concludes that the risks to him outweigh any potential gains."[92] The central premise of missile defense is about deterring our adversaries to attack us because they would be unsure of the result of an initial first strike. Our current capabilities leave no such doubt,

[89] *Id.*
[90] *Id.*
[91] *Id.*
[92] Ronald Reagan, *Address to the Nation on Defense and National Security*, Reagan Library, (March 23, 1983), https://www.reaganlibrary.gov/archives/speech/address-nation-defense-and-national-security.

rendering us reliant on what President Reagan called "deterrence of aggression through the promise of retaliation."[93]

President Reagan's speech affirmed a fundamental aspect of missile defense reiterated by President Biden in his U.N. speech, the U.S. "will never be an aggressor. We maintain our strength in order to deter and defend against aggression to preserve freedom and peace."[94] Missile defense is not a threat to other countries, rather the U.S.'s goal in advancing defensive mechanisms is to defend its people.

b. Preparedness.

The address accounted for an audience of citizens that had lived through, suffered, and served through two World Wars, and reminded them, as it should remind us, that "we didn't start them" and "did everything we could to avoid being drawn into them. But we were ill-prepared for both." We would serve our interests to remember the horrors of massive conflict as those world wars demonstrated, and always remember a chilling realization, that today such a comparable conflict would involve nuclear weapons. Reagan's words again remain prescient when he said, "Some people may still ask: Would the Soviets ever use their formidable military power?" answering with a question as true today if you replace the PRC for Soviets, "can we afford to believe they won't."[95] Every U.S. administration's primary obligation is to protect the American people by being prepared. Decades ago, SDI sought to prepare for and prevent Soviet nuclear aggression, today such preparedness demands the same attempt to attain space defense to counter Chinese aggression.

c. Challenging the Norm.

[93] *Id.*
[94] *Id. See supra*, note 18.
[95] *Id.*

Reagan's speech acknowledged the national security threats, particularly nuclear threats facing the U.S., as well as the unsatisfactory answer provided by predecessors of the presidency, offensive retaliation.[96] Reagan's discontentment with this strategy led him to find an alternative, resting on the conviction that, "the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence."[97] The President acknowledged another fundamental truth in arms control then and now, that even if adversaries agree to major arms reductions, we are tethered to retaliation and mutual threat.[98] After underscoring such a reality "a sad commentary on the human condition" the President of the United States dared to ask, "Wouldn't it be better to save lives than to avenge them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and our ingenuity to achieving a truly lasting stability?"[99] This question led to another, one that would fundamentally change the dynamics of nuclear power:

> *What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack, that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?*[100]

President Reagan's optimism offered a vision of hope for the future, utilizing the American "can do" spirit by "turn[ing] to the very strengths in technology that…ha[s] given us the quality of life we enjoy today," calling upon the scientific community who gave us nuclear weapons "to turn their great talents now to the cause of mankind and world peace, to give us the means of

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[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] *Id.*
[100] *Id.*

rendering these nuclear weapons impotent and obsolete."[101] (emphasis added). After daring the nation to such a task, implausible as it was, Reagan acknowledged that the task remained a formidable one, and advised it would be a decades long effort, riddled with risks, failures and setbacks, but he contextualized the seemingly insurmountable goal with another question, "Isn't it worth every investment necessary to free the world from the threat of nuclear war?"[102] As the address concluded, it stated the effort being launched "holds the promise of changing the course of human history" and expressed a firm belief that we as Americans can do it.[103]

Reviewing the speech is refreshing in a world that has receded from emphasis on defense and shifted back to offensive retaliation, spending billions on weapons rather than missile defense. President Biden has the opportunity to challenge the norm as President Reagan did, utilizing American spirit to mobilize and implement a fundamental change in the nuclear status quo. The administration should articulate these principles when declaring to our allies and adversaries alike, President Biden's core statement, "America is back" as the leader in restoring a nuclear world order.

Part III: A Relic of the Past Transferable to Today

An overview of our current missile defense systems is examined as a necessary predicate to provide context. This section will show continued improvement in current abilities, before demonstrating the now attainable pursuit of space-based missile defense. Next, two previous historical examples of U.S. Presidents refusing to trade away the future potential of achieving an SDI-type program for short term nuclear reductions, offers insight into why no such trade should be made today. Accompanying this subpart is an overview of common missile defense myths,

[101] *Id.*
[102] *Id.*
[103] *Id.*

followed by a discussion of how the administration, through persuading Congress for increased funding, can implement defenses in the realm of space. After domestic action is outlined, some lessons from the Cold War are offered to guide negotiations with Beijing. Lastly, additional policy recommendations supplementing missile defense are given.

A. Reviewing Our Current Missile Defense Capabilities

A brief overview of current U.S. missile defense capabilities is required to demonstrate the feasibility of improvement in existing technology as well as implementing space-based interceptors. At this moment U.S. missile defense cannot counter a large-scale nuclear attack, the original achievement sought by pursuing SDI.[104]

The U.S. homeland missile defense system, known as Ground-based Midcourse Defense (GMD) is designed to intercept ballistic missiles in the midcourse phase of flight.[105] The GMD relies on "hit-to-kill" technology; the kill vehicle seeks out the incoming missile in space and destroys it through collision.[106] There are currently forty-four GMD interceptors deployed; forty at Fort Greely in Alaska and four at Vandenberg Air Force Base in California.[107] The Pentagon is building a new missile field at Fort Greely, intending to add twenty interceptors by 2023.[108] The GMD relies on an extensive and complex network of ground and space based sensors and radars, but these are vulnerable to interception.[109] Enhancing the sensors and radar system to make it

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[104] Stephen McCall, *Defense Primer: Ballistic Missile Defense*, CONGRESSIONAL RESEARCH SERVICE, (December 29, 2020) https://heinonline-org.eu1.proxy.openathens.net/HOL/Page?handle=hein.crs/goveaqu0001&id=1&collection=milandgov&index=.
[105] *Id. See also* Forsgren *supra,* note 2 at 851-52. (Describing the three phases of a missile flight).
[106] *See* U.S. Missile Defenses 2019, *supra*, note 72 at 299.
[107] *Id.*
[108] *Id.* (Noting Some members of Congress have advocated for a third interceptor location to be added on the East Coast, but the DOD has no intent to build one since the 2019 MDR stated there was no operational requirement for one).
[109] *Id.* (Noting "these sensors and radar are comprised of launch detection satellites in space, the COBRA DANE radar system in Alaska, early warning radar in California, the United Kingdom, and Greenland, forward-based X-band radar in Japan, Aegis missile destroyers, and a sea-based X-band radar in the Pacific Ocean).

more impervious is a critical component in an increased reliance on missile defense, especially in protecting the U.S.[110]

Accompanying any discussion of missile defense is success rate. The GMD system's tests record is not without room for improvement. Half of the forty-four interceptors currently deployed are fitted with the (CE)-I kill vehicle which succeeded in two of four tests, while one third of the interceptors are fitted with the CE-II kill vehicle which has a fifty percent success rate.[111] More recent tests have substantially improved the GMD, with a successful test in September of 2021 of a new three stage booster designed to enhance the GMD interceptors, building on a successful 2019 test which fired two interceptors from Vandenberg Air Force Base in California at an ICBM launched 4,000 miles away.[112]

The Terminal High Altitude Area Defense (THAAD) system is a portable missile defense capability and the only U.S. missile defense system designed to intercept short, medium, and intermediate range targets during the terminal phase.[113] THAAD like GMD utilizes hit-to-kill technology, with each battery consisting forty eight interceptors.[114] THAAD's test rate was initially poor, only successfully performing in two out of eight tests, but THAAD now has a

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[110] *Id. See also*, Tom Karako and Wes Rumbaugh, *Inflection Point: Missile Defense and Defeat in the 2021 Budget,* CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, 4, (March 2020), https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/200320_karako_MissileDefense_WEB%20FINAL.pdf. (Additionally, as part of the Upgraded Early Warning Radar modernization program the radar systems at Clear Air Force Station in Alaska and Cape Cod in Massachusetts will be upgraded by 2023. According to the 2019 MDR two new missile defense radars were to be constructed in Hawaii and the Pacific region by 2023 and 2025, however, these were cancelled in the 2021 MDA budget.)

[111] *Id.* at 299. (Noting the (CE)-I was last tested in 2008).

[112] Jen Judson, *Homeland missile defense system takes out ICBM threat in historic salvo test*, DEFENSENEWS, (March 25, 2019), https://www.defensenews.com/land/2019/03/25/homeland-missile-defense-system-takes-out-icbm-threat-in-historic-salvo-test/; Jen Judson, *Missile Defense Agency Successfully Tests New Booster for Homeland Missile Defense System*, DEFENSENEWS, (September 12, 2021), https://www.defensenews.com/2021/09/12/missile-defense-agency-successfully-tests-new-booster-for-homeland-missile-defense-system/.

[113] *Id.* at 300. *See also* 302-03. (Noting The U.S. also has the Patriot system, which like the THAAD system, is designed to intercept short and medium range missiles during the terminal phase, but at lower altitudes. The U.S. owns sixty Patriot units and used the system in combat during the Gulf War in 1991 with estimates of a fifty percent success rate, its performance alleged to greatly improved during the Iraq War. Its success is disputed).

[114] *Id.*

perfect test record of sixteen consecutive intercepts, including an ICBM target as recent as 2019.[115] The U.S. owns seven of these flexible THAAD batteries, some are deployed long term in Guam and South Korea, while its suitability for rapid and temporary deployments was demonstrated by the U.S. European Central Command in sending a THAAD battery to Israel and another to Romania in 2019.[116] THAAD protects our allies and deters our adversaries near their own borders; in the case of South Korea, provoking a negative response from China which serves as an example of how effective missile defense hits a nerve.[117] The success of THAAD has also resulted in other countries seeking to purchase the system.[118]

The Aegis missile defense system, which is capable of being deployed both on land as an "Aegis Ashore" or at sea on certain cruisers and destroyers, intercepts short, medium, and intermediate range missiles during the midcourse and terminal phases of flight.[119] The navy currently has forty eight Aegis operational ships, with additional ships to be operational by 2023.[120] The Aegis system's primary interceptor, the SM-2 Block IV also has a perfect test record with the most recent test being conducted in 2015.[121] While the Aegis system overall has a record of thirty four successful tests out of forty three attempts, an effective test of the SM-3 Block IIA at the end of 2020 against an ICBM-representative target was successful.[122] After the successful MDA test, the Pentagon plans to procure fifty SM-3 Block IIA interceptors per year

[115] *Id.*
[116] *Id.*
[117] *Id.* at 302.
[118] *Id.*
[119] *Id.*
[120] *Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress*, CONGRESSIONAL RESEARCH SERVICE, (last updated October 20, 2021), https://sgp.fas.org/crs/weapons/RL33745.pdf.
[121] *Id.*
[122] *See e.g., Fact Sheet: U.S. Ballistic Missile Defense*, CENTER FOR ARMS CONTROL AND NON-PROLIFERATION, (April 2, 2021), https://armscontrolcenter.org/fact-sheet-u-s-ballistic-missile-defense/; Reif, *supra*, note 20.

beginning in 2024.[123] The CBO projects unit cost at $30 million, much more affordable than the NGI ground based interceptors.[124] The administration should continue such plans, providing a critical component to shifting missile defense towards larger threats and demonstrates the ever decreasing cost of missile defense.

Missile defense is no longer an unrealistic scheme of President Reagan. The U.S. is reliant on our current capabilities to defend against an attack from rogue states such as North Korea, evidenced by Defense Secretary Lloyd Austin's testimony before Congress characterizing missile defense as "a central component to keeping the homeland safe."[125] The increased success of GMD should encourage the new administration to examine the viability of developing space-based interceptors, drones, and other advances in missile defense to counter China.

B. SDI: A Relic of the Past Transferable to Today

In an era of sending ordinary Americans into space due to the hobbies of billionaires, among other previously unthinkable technological developments, implementing defensive mechanisms in space to intercept missiles is not nearly as incredulous today as it was decades ago.

Unlike past attempts at space-based laser interceptors, the technology, is now more than ever attainable using drones, potential development of an interceptor in space, and directed energy technology.[126] The U.S. Air Force successfully tested a laser system to shoot down

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[123] Daryl, Kimball, *Missile Defense and the Arms Race*, ARMS CONTROL ASSOCIATION, (December 2020), https://www.armscontrol.org/act/2020-12/focus/missile-defense-arms-race.
[124] *Implementing the Cost of the 2019 Missile Defense Review*, CONGRESSIONAL BUDGET OFFICE, (January 2021), https://www.cbo.gov/publication/56949.
[125] Slocombe and Soofer, *supra* note 35.
[126] *See* Kim R. Holmes, *THE IMPACT OF STRATEGIC DEFENSE ON THE U.S.-USSR-PRC STRATEGIC TRIANGLE: STRATEGIC AND MILITARY DIMENSIONS*, *ASIAN PERSPECTIVE* 10, No. 2 (1986): 223–43, 227-28, http://www.jstor.org/stable/24026038, (Stating the highest priority in missile defense research reflected by the 1987 budget, was to research "sensors to identify, track and target enemy missiles and warheads" as well as $1.6 billion on directed energy weapons, which underscores technology not attainable then is becoming more feasible).

missiles in 2019.[127] The U.S.'s unmanned aerial vehicle directed-energy missile defense program (UAV DMDP) presents the first opportunity to destroy nuclear missiles in the critical boost phase when the missile is compact, can be easily tracked, and neutralizes countermeasures as well as multiple warheads.[128] This program seeks to utilize the high-altitude, endurance, cost effective benefits of drones that would realize SDI's original goal. For this to be accomplished the drones must be able to fly 63,000 feet high, be in flight for more than thirty-six hours without refueling, have a cruising speed of 350mph and be able to support laser weaponry weighing up to 12,500 pounds.[129] Before skeptics give in to pessimism, these drones are set to be operational as early as 2023, prompting a senior fellow for laser and systems at Lockheed Martin to state, "[w]e're really at the dawn of an era of the utility of laser weapons."[130] Such a breakthrough led one scholar to assert this "would provide a sense of national security and peace of mind that the United States has not felt since before the Cold War."[131]

Additionally, the placement of critical sensors to track missiles and guide interception in space has "some of the greatest benefits of sensor elevation."[132] The creation of the Space Force and SDA gives the DOD more ability to deploy space-based sensors, with the (SBIRS) satellites and (OPIR) sensors for initial missile warnings passing a crucial design review in August 2021, prompting the Pentagon to begin an effort to launch 500 satellites that would provide improved

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[127] Andrew Liptak, *The U.S. Air Force successfully tested a laser system to shoot down missiles*, THE VERGE, (May 5, 2019), https://www.theverge.com/2019/5/5/18530089/us-air-force-research-laboratory-shield-laser-weapons-system-test. (The Self-Protect High Energy Laser system shot down multiple missiles and is expected to eventually be equipped on aircraft. The system is highly accurate, instantaneous, has no magazine limit, can re-aim to hit additional targets quickly and not susceptible to certain countermeasures).
[128] *See* Forsgren, *supra* note 105.
[129] *Id.* at 853.
[130] *Id.* at 854, footnote 36 (denying the potential for the drones being shot down).
[131] *Id.* at 854.
[132] Wes Rumbaugh and Tom Karako, *Extending the Horizon: Elevated Sensors for Targeting and Missile Defense*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (September 27, 2021), (last accessed October 4, 2021), https://missilethreat.csis.org/extending-the-horizon-elevated-sensors-for-targeting-and-missile-defense/.

means of tracking ballistic, cruise, and hypersonic missiles.[133] The MDA and SDA are also collaborating to deploy lower orbit tracking sensors for both hypersonic and ballistic missiles, allowing continuous tracking of missiles.[134]

Despite the feasibility of space-based missile defense, many have in the past and are at present urging trading away potential advancements in missile defense, but history reminds us of the near sightedness of such a bad bargain.

C. Revisiting Reykjavik: Lessons for Today

The administration in their well-intentioned goal of limiting proliferation and nuclear weapons, might be tempted, persuaded, or pressured by adversaries such as Russia and China or arms control advocates[135] to put missile defense "on the table," relinquishing or severely limiting missile defense research, development, and deployment, in exchange for substantial reductions or even eliminations in nuclear arsenals. The trade might seem enticing, but the President, the Secretary of State, and all within the administration must answer unequivocally, NO.

This would not be the first time a president confronted hostility in pursuing the uncertain long-term gamble of missile defense rather than a short-term opportunity to reduce nuclear stockpiles. In the fall of 1986 Reagan and Gorbachev met in Reykjavik, Iceland for a summit to

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[133] *Id.* See also Sanger and Broad, *supra* note 6.

[134] *Id.* (Cost remains a factor in implementing these particular systems). *See also Missile Defense: Assessment of Testing Approach Needed as Delays and Changes Persist*, GOVERNMENT ACCOUNTABILITY OFFICE, 1-111, 30, (July 2020), https://www.gao.gov/assets/710/708393.pdf.

[135] *See e,g.* Steven Pifer, *Go bold or go home: The Nuclear Posture review must give Biden real options*, THE BROOKINGS INSTITUTION (October 7, 2021), https://www.brookings.edu/opinions/go-bold-or-go-home-the-nuclear-posture-review-must-give-biden-real-options/; *Reviving Nuclear Arms Control under Biden*, THE BROOKINGS INSTITUTION (December 1, 2020), https://www.brookings.edu/blog/order-from-chaos/2020/12/01/reviving-nuclear-arms-control-under-biden/; *Should U.S. Missile Defenses Be A Part of Arms Control Negotiations with Russia?*, THE NATIONAL INTEREST (January 26, 2021), https://nationalinterest.org/feature/should-us-missile-defenses-be-part-arms-control-negotiations-russia-177092; Daryl Kimball, Missile Defense and the Arms Race, ARMS CONTROL ASSOCIATION, (December 2020), https://www.armscontrol.org/act/2020-12/focus/missile-defense-arms-race (alleging that Russia and China will not engage in any serious arms control discussions unless the Biden administration is willing to "move away from the notion that there should never be any limits on U.S. missile defenses).

negotiate reductions in nuclear weapons.[136] Gorbachev had one goal at Reykjavik, to talk his counterpart out of pursuing SDI.[137] The Soviet leader sought to achieve this by making an offer seemingly irrefusable, the U.S.S.R. would agree to massive cuts if not complete elimination of their nuclear weapons if the U.S. agreed in exchange to limit SDI to research only.[138] President Reagan refused to relinquish the potential of SDI.[139]

The summit and the decision by President Reagan were derided in the press, with the Washington Post headline, "Nonexistent Weapons Undid Summit."[140] With the President not folding, Gorbachev would have to compete with our abilities, forcing an already stretched Soviet economy to expand its huge military spending even further.[141] Despite facing severe criticism the decision, even from staunch allies such as Prime Minister Margaret Thatcher who throughout the Reagan administration, sided with critics of SDI, had a rare reversal of opinion, writing in her memoir that SDI "was to prove central to the West's victory in the Cold War."[142] The iconic prime minister concluded her assessment of pursuing SDI, stating, "Looking back, it is now clear

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[136] David Hoffman, *Mutually Assured Misperception on SDI*, ARMS CONTROL ASSOCIATION, (October 2010), https://www.armscontrol.org/act/2010_10/Hoffman. (This concern precipitated Moscow to task the KGB with gathering information on "targets, dates, and expected financial outlay" as well as technical results from conducted tests. Several projects for a Soviet version of SDI were developed with costs running in the billions).
[137] *Id.* See also Luigi Lazzari, The Strategic Defense Initiative and the end of the Cold War, Calhoun Naval Postgraduate School, 1-115, 41, 70 (March 2008), https://core.ac.uk/download/pdf/36697931.pdf.
[138] Ken, Adelman. *The Phantom Menace*, POLITICO MAGAZINE, (May 11, 2014), https://www.politico.com/magazine/story/2014/05/the-phantom-menace-106551/.
[139] *Id. See also*, *Address to the Nation on the Meetings With Soviet General Secretary Gorbachev in Iceland*, REAGAN LIBRARY, https://www.reaganlibrary.gov/archives/speech/address-nation-meetings-soviet-general-secretary-gorbachev-iceland ("I realize some Americans may be asking tonight: Why not accept Mr. Gorbachev's demand? Why not give up SDI for this agreement? Well, the answer my friends, is simple. SDI is Americas insurance policy that the Soviet Union would keep the commitments made at Reykjavik. SDI is American's security guarantee if the Soviets should – as they have done too often in the past – failed to comply with their solemn commitments. SDI is what brought the Soviets back to arms control talks at Geneva and Iceland. SDI is the key to a world without nuclear weapons").
[140] *Id.*
[141] *Id.* (Attributing SDI as a factor in accelerating the collapse of the Soviet Union, taxing the U.S.S.R.'s military spending of 30 to 40 percent even further). See also Lazzari, *supra* note 137 at 92-95.
[142] *Id.*

to me that Ronald Reagan's original decision on SDI was the single most important of his presidency."[143]

The second time an American President was faced with pressure to relinquish pursuit of missile defense was decades after the famous Iceland summit. The Soviets contended that the Anti-ballistic missile (ABM) treaty was in direct conflict, legally and logically with deploying missile defense systems.[144] Entire scholarly works were dedicated to the subject[145], but the vociferous debate ended when President George W. Bush withdrew the U.S. as a signatory in 2002.[146] Yet again an American President chose the potential of missile defense rather than adhering to a treaty predicated on the unavailability of technology from a moment in time thirty years ago.[147] Under President Bush the Missile Defense Agency was established and the GMD system deployed, laying the groundwork for much of the viable missile defense we rely on today.[148] This only further underscores why missile defense is so important, and should never be traded away.

Returning to Reykjavik, President Reagan, after denying Gorbachev's remarkable concessions, looking for reassurance, wrote on a note to Secretary of State George Schultz, "Am I wrong?" Schultz whispered back, "No. You are right."[149] President Biden should have the same

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[143] *Id.*
[144] *U.S. Ballistic Missile Defenses*, supra note 72 at 295.
[145] *See e.g.*, John Topping, *The Legality of President Reagan's Proposed Space-Based Ballistic Missile Defense System*, 14 GA. J. INT'L & COMP. L. 329 (1984); Pamela L. Meredith, *The Legality of a High-Technology Missile Defense System: The ABM Treaty and Outer Space Treaties*, 78 THE AMERICAN JOURNAL OF INT'L L. 2, 418-423, (April 1984).
[146] *ABM Treaty*, NUCLEAR THREAT INITIATIVE, (last updated October 26, 2011), https://www.nti.org/education-center/treaties-and-regimes/treaty-limitation-anti-ballistic-missile-systems-abm-treaty/.
[147] *See*, Topping, *supra* note 145 at 331 note 9. (Noting "one of the primary motivations for the ABM treaty was the ineffectiveness of both the Soviet and the United States systems. Had either side developed an effective ABM system at this early stage, it is likely that the Treaty would never have been signed").
[148] Robert Joseph, *Missile Defense Agency must be free to move quickly and with limited restrictions*, DEFENSENEWS (September 15, 2021), https://www.defensenews.com/opinion/commentary/2021/09/15/the-missile-defense-agency-must-be-free-to-move-quickly-and-with-limited-restrictions/.
[149] Adelman, *supra* note 138.

conviction if confronted with a third attempt by our adversaries or skeptics at home to stop additional advances because trading away missile defense relies on the failed policies of the past rather than the technological possibilities of the future.

Undoubtedly fueling calls to trade away missile defense are several misperceptions that the administration will be confronted with if an expansion of missile defense is pursued.

D. Missile Defense Myths

The President and his new administration in conducting the MDR to alter the status quo, formulating a modern space-based missile defense policy, and in lobbying Congress for adequate funding, should be mindful of and reject several myths surrounding missile defense.

a. Missile Defense Disrupts Strategic Stability

The argument that missile defense alters the strategic balance of the major nuclear powers given the current capabilities of the U.S., lacks merit. The forty-four interceptors within the U.S., even with the additional twenty planned to be deployed could not possibly threaten Russia's 1,550 warheads, nor China's increasing arsenal.[150] The GMD system was and still is predicated on countering a rogue regime such as the DPRK or thwarting an attack from Iran. Additionally, these same critics quickly discrediting our current capabilities with a 50 percent success rate, are left to answer how such an ineffective system alters strategic stability? A change in the strategic stability would require hundreds of ground-based interceptors which the U.S. at present and the foreseeable future is not acquiring.[151] The argument has some merit when considering the potential for space-based satellites and interceptors given the technological advances described above, however, even the Soviet Union when it sought to limit SDI in the 1980s, the proposal

[150] See U.S. Missile Defenses 2019, *supra*, note 107.
[151] See Geller, *supra* note 42.

still allowed for research, which this paper recommends. If the technology proves feasible in testing, then addressing the imbalance it might create will need to be addressed, not before.

Moreover, Russia and China have their own advanced missile defense systems despite ironically protesting the U.S. system.[152] Russia possess sixty-eight nuclear armed interceptors near Moscow, more than the U.S. possesses, not to mention both countries' advanced air defenses that can intercept our ballistic missiles.[153] The PRC is also working on land and sea mid-course missile defense capabilities and testing an interceptor that may be able to thwart ICBM's.[154] If we use the illogical reasoning of Moscow and Beijing, since U.S. missile defense disrupts their retaliatory capabilities, their own missile defense systems would be just as destabilizing, if not more.

b. Missile Defense Will Provoke Our Adversaries to Buildup Their Arsenals[155]

An examination of the past few decades shows no causal connection between increased missile defense capabilities and a clear buildup in response. In fact, Russia and China pursue offensive nuclear weapons regardless of U.S. missile defense efforts. After the U.S. agreed to the ABM Treaty in 1972, dismantling its Safeguard system (discussed above), and refraining from

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[152] *See e.g.*, *Fact Sheet: Chinese and Russian Missile Defense: Strategies and Capabilities,* U.S. DEPARTMENT OF DEFENSE, (July 28, 2020), https://media.defense.gov/2020/Jul/28/2002466237/-1/-1/1/CHINESE_RUSSIAN_MISSILE_DEFENSE_FACT_SHEET.PDF; Tom, O'Conner, *Russia Says U.S. Missile Defense Test Proves It Lied About Global Missile Shield*, NEWSWEEK., (November 19, 2020), https://www.newsweek.com/russia-us-missile-test-lied-global-shield-1548803.
See also, Holmes, *supra,* note 126, *229*, ("From the early 1950s up to the present time, the Soviet Union has spent much time, money, and effort to develop a strategic defense against ballistic missile attacks. Soviet military doctrine regards ballistic missile defense (BMD) to be an integral part of a nuclear strategy. In fact, over the past decade the Soviet Union has spent more on strategic defense than the U.S. has on its strategic offensive forces. Moreover, since 1975 it has spent sixty billion dollars more on strategic defense procurement than the U.S.") See also Michael McCann, *National Missile Defense: Legal & Policy Justifications for Expanding Deterrence & Preventing War in the 21st Century*, 3 SAN DIEGO INT'L L. J., 207, 248-51 (2000). (Noting that the Soviet Union was the first to utilize Article III of the ABM treaty to deploy two limited missile defense systems, constructing one outside Moscow by the late 1960's, containing 64 long range nuclear armed high-altitude interceptors with two surveillance radars and 24 scanning radars to guide the interceptors.
[153] *Id.*
[154] *See,* 2021 China Military Report, *supra* note 48 at 80.
[155] *See*, McCann, *supra* note 152 at 224.

building *any* missile defense systems, the Soviet Union proceeded to engage in one of the largest nuclear buildups in its history, tripling the number of deployed warheads over the next decade.[156]

Even the often cited hypersonic weapons Russia and China boast of, which on their face seem to respond directly to missile defense, due to their low flight altitude evading detection, but alternate theories, such as giving an adversary less warning with standard radar capabilities render it more desirable inapposite any missile defense.[157] Moreover, China gain little if any security advantage in developing such defense immune weapons because every Yuan spent on these "show-off value" systems is not invested in other military projects that could threaten other weaknesses of the U.S.[158] Such development of advanced weapons telegraphs a concern that the U.S. will develop a more robust missile defense capability, even before any serious efforts by the U.S. are underway, much less being implemented.

China's nuclear buildup cannot be said to be caused by U.S. missile defense enhancements either. A full two years before the U.S. withdrew from the ABM Treaty in 2002 and before implementing the limit GMD system in 2004, U.S. intelligence officials were predicting a significant expansion in Chinese intercontinental nuclear weapons.[159] The PRC's gradual nuclear buildup over the last two decades can instead be largely explained by Russian nuclear modernization on China's border, increased focus on its national strategic interests and regional ambitions, and perhaps most likely, wanting to demonstrate its great power status.[160] The analysis renders the conclusion that if the U.S. refrained and continues to refrain from

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[156] Matthew R. Costlow, *The Missile Defense 'Arms Race' Myth*, 15 STRATEGIC STUDIES QUARTERLY, 1 (Spring 2021), https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15_Issue-1/Costlow.pdf. (Noting Russia's nuclear arsenal growth is driven by projected increases in non-strategic (short range) weapons not long-range weapons expected if trying to counter the GMD system).
[157] *Id.* at 6.
[158] *Id.* at 7.
[159] *Id.* at 7-8.
[160] *Id.* at 7.

improvement of missile defense China would not have altered its strategy.[161] As a former defense secretary once said, "When we build, they build; when we cut, they build" the same remains true today, regardless of U.S. action, if an adversary is motivated to buildup a nuclear arsenal they will do so, without incentive otherwise.[162]

Additionally, fears of provoking a buildup are misplaced. The buildup is already occurring, and it can hardly be asserted that such a drastic action was the result of THAAD batteries on South Korea, the only missile defense action taken by the U.S. in recent years.[163] The impulse follow up argument, that further pursuing missile defense will only increase China's buildup also fails to persuade. With the prediction China will amass 1,000 warheads by 2030, any further increase becomes surplus. Moreover, would it not be better to mitigate a sizeable buildup with defense rather than remain defenseless against a smaller one which still would have devastating consequences. The U.S. would in fact, in pursuing space defenses, be catching up to a threat posed by our adversaries.[164]

In considering the alleged provocation missile defense causes, one should ask if the U.S. had remained a signatory to the ABM treaty (with Moscow's defense system in place) would Russia

[161] If the U.S. did implement space-based missile defense and hypothetically caused China to singularly build up an arsenal even further to challenge *defensive* technologies, the U.S. could rally international organizations and our partners in the region to denounce such a buildup, making the U.S. the non-aggressor provided the U.S. followed other consensus recommendations described above, committed to a sole use nuclear policy, minimally modernized its own nuclear arsenal, decreased the number of deployed nuclear weapons unilaterally, and has a long record of inviting China to engage in strategic stability. Additionally, this situation would put the emphasis on Beijing to justify amassing hundreds of warheads, meanwhile the U.S. might be capable of utilizing newly available space-based interceptors, rely on GMD and Aegis capabilities for any missiles that evade initial boost phase interception and still possess the ability to respond.
[162] *Id.* at 9.
[163] *See supra*, note 117.
[164] *See* Sanger and Broad, *supra* note 6. (Reporting Vice Chairman of the Joint Chiefs of Staff, John Hyten's comments that the Chinese have conducted "hundreds of hypersonic tests compared with nine by the United States"). *See also supra*, note 154.

have not built these weapons?[165] The same question to be asked regarding China, if the U.S. had no missile defenses would the PRC not be pursuing a buildup?

c. Missile Defense is Prohibitively Expensive and Provides Minimal Deterrence

Opponents of missile defense often assert that because missile defense fails to be one hundred percent effective, it therefore, cannot and should not be relied on.[166] Critics cite "scripted" tests, the no room for failure reality of the system during a conflict, and continually advancing countermeasures, all render it not feasible to implement.[167] Skeptics in shooting down missile defense, state that even a high success rate of ninety percent or higher would still kill thousands, depending on how many missiles get through.[168] However, critics omit the fact that this sets an unrealistic standard never intended by advocates of strategic defense, going back to when SDI was originally proposed and debated.[169] Since its inception during the Reagan administration, space-based missile defense aimed to create:

> A new defense dominant strategic environment in which offensive nuclear arms would gradually lose their primary military utility relative to defensive ones. Most strategic defense proponents neither expect nor even strive for a system that will provide perfect defenses. By making it difficult for a potential aggressor to predict his own vulnerability in the face of uncertainties about the success of his aggression, strategic defense can create an effective deterrent posture based not on the threat of offensive retaliation but rather on the defensive denial of military objectives.[170]

SDI and its modern counterpart was not meant to be, nor would it be today, exclusively defensive.[171] Moreover, an adversary's desire to overcome defensive measures, the hypersonic capabilities of today, were anticipated by the likelihood of "stealth" long range cruise missiles or

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[165] *Id.*
[166] *See* Forgson, *supra* note 2.
[167] *Id.*
[168] *Id.*
[169] Holmes, *supra,* note 126 at 226.
[170] *Id.*
[171] *Id.*

"advanced ICBMs equipped with strategic defense countermeasures."[172] Their ability to puncture "will not obviate the overall deterrent capability of a strategic defense system capable of keeping out most offensive weapons. Rather, it will complicate an enemy's plans for a first strike and caution him against aggression."[173] Reiterating the change missile defense would have in the nuclear status quo, "the hope is that a defense dominant system in conjunction with offensive arms reductions will gradually diminish the military utility of offensive nuclear weapons and thus shift investment of military resources from offensive to defensive forces."[174]

Besides the previous discussion, the minimal amount the U.S. spends on missile defense and that in fact the U.S. has not spent enough, two other points regarding cost need to be addressed. First, although critics consistently cite the amount the U.S. has previously spent on missile defense, it fails to acknowledge the majority of that money has been spent when technology prohibited development and came at a much higher cost.[175] Second, anti-missile defense voices must answer a question once aptly posed by a former Congressman who asked, "How much is Chicago worth? How much is Cincinnati worth? Is Philadelphia worth 100 million or 500 million?"[176]

With the primary myths of missile defense dispelled, the administration is now armed with sufficient information to make the argument to Congress. This action will require use of existing structures such as appropriations bills, and an executive order to enable Congressional buy in.

Part IV: Next Steps for the Administration: Implementing and Negotiating

A. Persuading Congress

[172] *Id.*
[173] *Id.*
[174] *Id.*
[175] McCann, *supra*, note 152, at 252.
[176] *Id.* at 253.

The Biden administration has a number of weapons in its arsenal when endeavoring to persuade Congress for an increase in funding missile defense. Moreover, the domestic legal mechanisms are already established in renewing commitment to missile defense.

The 2017 National Defense Authorization Act (NDAA) statutorily proscribed a "robust layered missile defense system capable of defending the territory of the [U.S.] and its allies against the developing and increasingly complex ballistic missile threat."[177] The 2017 NDAA broadened the Missile Defense Act of 1999, which stated the goal of the United States to "deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack."[178] With law endorsing missile defense already in place, the President should use future appropriations bills as the legal mechanism to implement space-based missile defense.

In order to facilitate Congressional support for greater emphasis on missile defense, the President should sign an executive order clearly delineating MDA's responsibilities to include missile defense research and development, given increased Congressional concern over the lack of experience in tasking the newly designated Space Development Agency (SDA) with such functions.[179] Resolving a bureaucratic budgetary battle over whether the SDA or MDA should develop space-based sensors would assuage Congress and assure confidence in future funding.

Additionally, unlike almost every other subject in Washington, missile defense has enjoyed broad support across the political spectrum and received support for funding regardless

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[177] *See,* Reif, *supra* note 40.
[178] 10 U.S.C. § 2431. *See also*, 51 U.S.C. § 20102. Space based missile defense also aligns with The National Aeronautics and Space Act originally adopted by Congress in 1958 states, "The Congress hereby declares that it is the policy of the United States that activities in space shall be for peaceful purposes for the benefit of all mankind," a goal furthered by missile defense.
[179] *See e.g.,* Joseph, *supra* note 148; GAO Report, *supra* note 134 (Noting close cooperation between the MDA and SDA is required in developing space capabilities).

of which party controls Congress.[180] The administration should, in garnering additional missile defense funding, craft a compromise, capitalizing on Democrats negative view of nuclear modernization and Republicans who advocate for an expansion of missile defense. Clear signals to Beijing that present and future administrations enjoy unwavering domestic support for missile defense, strengthens the U.S. position at the nuclear negotiating table.

B. Negotiating from A Position of Strength: How Cold War Arms Control Offers a Blueprint for Beijing

A helpful analogy can be drawn between the impact SDI had in spurring the Soviet Union to the negotiating table and the probability that a modern pursuit of space-based missile defense (SMD), due to the presence of similar factors, would also have the same effect with China. While claims that SDI singularly resulted in the collapse of the U.S.S.R. is not a valid conclusion, it was a crucial secondary factor prompting a resumption of negotiations.[181] Gorbachev was willing to negotiate in part because of a desire to focus on domestic concerns rather than further draining economic resources to compete with it.[182] President Xi is facing a similar preference to work on domestic and economic concerns.[183] SMD will additionally burden the Chinese economy, even if by prompting the PRC to invest in "show value weapons" as discussed previously or raise enough doubt about success of an attack. SMD like SDI should not

[180] *See* Congressional Research Service, *supra* note 104.
[181] *See*, Lazzari, *supra* note 137 at 12-13. *See also*, Peter Westwick, *"Space-Strike Weapons" and the Soviet Response to SDI*, 32 DIPL. HIST. 5, (2008).
[182] *Id.* at 66. (Noting the Soviet Union was worried about SDI, even though they thought it might not be plausible, believing it was at least ten to fifteen years away).
[183] *See*, Scott Kennedy and Daniel Rosen, *Market Metrics: A Fact Based Approach to the Chinese Economic Challenge*, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES, (October 10, 2019), https://www.csis.org/analysis/market-metrics-fact-based-approach-chinese-economic-challenge. (Noting that despite the talk of economic reform from the Chinese, "a dispassionate look" at the economic trajectory today reveals under a façade of minimal improvements, "reform" is "regressing" leading to declining productivity). *See also*, Steven Myers and Chris Buckley, *Xi Hasn't Left China in 21 Months. Covid May Be Only Part of the Reason*, N.Y. TIMES, (last updated November 15, 2021), https://www.nytimes.com/2021/10/30/world/asia/china-xi-jinping-g20.html.

be the sole factor, but rather one tool of many in dealing with Beijing.[184] Again, missile defense did not by itself bring the Soviets to the table, nor will it today, but it fits, as it did in the Reagan era, in the comprehensive approach the Biden administration has in engaging with Beijing. SDI was predicated on a long-term plan to pressure the Soviets to negotiate, using the leverage of U.S. advantages in technology, economic might, and morality.[185] These U.S. advantages remain at the disposal of President Biden today. This historical precedent importantly informs current negotiations.

Although U.S.-China tensions are high, with relations between the world's two largest economies strained[186], and the inception of a new arms race seemingly inevitable, facilitating talks between Washington and Beijing is nevertheless doable. While Chinese officials have consistently demurred on entering arms control talks[187], there is reason for optimism. The President and President Xi Jinping had a high stakes virtual summit lasting over three hours on November 15, 2021.[188] President Biden raised the possibility of "strategic stability talks," to which President Xi agreed according to administration officials, a precursor to substantive arms control talks, which the National Security Advisor (NSC) explicitly stated were not the focus.[189]

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[184] See *Biden and Xi Pledge More Cooperation, but Offer No Breakthroughs*, N.Y. TIMES, (last updated November 16, 2021), https://www.nytimes.com/live/2021/11/15/world/biden-xi-summit (Noting President Biden pressed China on human rights issues, climate change, trade and other issues). Unproductive policies countering China's influence such as the China Initiative should be ended. *See*, Margaret K. Lewis, *Criminalizing China*, 111 J. CRIM. L. & CRIMINOLOGY 145, (2020), https://scholarlycommons.law.northwestern.edu/jclc/vol111/iss1/3.

[185] Lazzari, *supra* note 137 at 15.

[186] Raymond Zhong, *Taiwan, Trade, Tech and More: A Tense Era in U.S.-China Ties*, N.Y. TIMES, (November 17, 2021), https://www.nytimes.com/article/us-china-tensions-explained.html.

[187] See *Remarks at the 2021 NATO Nuclear Symposium*, *supra* note 25. ("Previously, PRC officials have sidestepped a meaningful dialogue on nuclear weapons by pointing to a larger U.S. nuclear arsenal. In fact, the United States has steadily reduced the size of our arsenal over the past several decades and has shown clear, continued interest in pursuing nuclear arms control. In contrast, Beijing is planning to substantially expand its nuclear arsenal. The PRC's nuclear build-up, which has accelerated in the last year, now looks to include novel nuclear-powered capabilities and a massive increase of its silo-based ICBM forces. The destabilizing dynamic originating from the PRC's rapid and opaque nuclear build-up cannot be ignored").

[188] See, Sanger, *supra* note 6.

[189] *Id.* The NSC advisor set forth an initial goal to avoid miscommunication that could prompt conflict, with no shortage of potential flashpoints such as tensions over Taiwan, the South China Sea, and space collisions among top concerns. Such tentative talks would also deal with the urgent reality that no conversation has been had about

The situation is reminiscent of talks undertaken with Russia at the beginning of the last arms race, one difference being the benefit of lessons learned.[190]

An analogy to past nuclear negotiations with Russia is helpful here, giving current policymakers a framework from the first arms race to use in preventing a second one with China. Two major lessons from our experience with Russia should be adhered to with China. First, the U.S. and China should avoid trying to limit new technologies and focus on ensuring mutual nuclear predictability, knowing such efforts failed during the Cold War.[191] Second, be prepared for a long, complex process, since it took the U.S. and U.S.S.R. a decade to agree to control measures such as verification, and until 1986 to seriously consider reductions.[192]

These two lessons once again show the need for pursuing missile defense. With no limits on technology off the table, the U.S. could pursue space-based missile defense, so could the PRC if they perceive success. What the U.S. does not want repeated from its Cold War experience, is pursuing missile defense at the end of the decade or even later, when valuable time in research and development, as well as any potential to curb China's growing arsenal, is lost. Additionally, the reality of a long, tough road ahead signals a need to prepare for the possibility that talks with Beijing amount to just talking.[193] Missile defense provides insurance (just like SDI) in the event

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missile defenses in the Pacific, Chinese experiments on blinding U.S. satellites which would cripple early warning systems if conflict occurred, not to mention the alarming fact that no direct line of communication exists between the two militaries.

[190] *Id. See also Undersecretary Jenkins*, *supra*, note 25, who also referenced those lessons, stating, "Past experience has taught us why meaningful arms control and risk reduction is worthwhile and can avoid unpredictable crises that could escalate to nuclear use. The unfortunate reality is that the United States and the PRC do not have the benefit of the same mature arms control relationship that we have with Russia, which was forged through decades of Cold War nuclear competition and cooperation. However, we will apply and tailor the lessons we've learned in the U.S.-Russia arms control process when possible to U.S.-PRC discussions."

[191] Gottemoeller, *supra* note 42. (Noting the 1970's underscores the reality of this lesson when SALT I and SALT III froze the deployment of new strategic intercontinental missiles, only to be evaded by the Soviet Union).

[192] *Id.*

[193] *Id.*

China like the Soviet Union, continues to buildup. Even if the PRC shows a willingness to meaningful discussions, missile defense gives Washington increased leverage.

The Biden administration should also learn a more recent lesson and not push for a multilateral meeting of the new big three since our nuclear discussions with Russia are more advanced, they should be focused on a treaty to succeed New START, while nascent negotiations with Beijing should clarify the PRC's nuclear intentions, beginning with broad steps such as seeking Beijing to reaffirm the Reagan-Gorbachev principle and recommitting to Article VI of the Nuclear Proliferation Treaty.[194] Engaging in common interest areas where China possesses comparable capabilities, such as space and technology, would be more productive, allowing both countries to set protective measures on action in space without trying to limit technologies like missile defense or Chinese advances. A targeted approach such as this learns the first lesson recommended, while still endeavoring to find common ground and allows the U.S. to pursue missile defense.

C. Policy Recommendations

The Biden administration in addition to persuading Congress to support space-based missile defense over the next decade, several other recommendations should be considered and prioritized to maximize short term benefits of our current capabilities and further strengthen its position with Beijing. These are not extensively detailed and could be the subject of future work, including: (1) The administration should expand our GMD interceptors to 100 at a minimum; (2) Create an additional GMD site within the U.S.; (3) Prioritize implementation of the NGI

[194] *Id. See also, Reinventing Nuclear Disarmament and Nonproliferation as Cooperative Efforts*, *supra*, note 12; Daryl Kimball, *Biden Xi Virtual Summit Should Lead to Agreement on Nuclear Risk Reduction Talks*, ARMS CONTROL ASSOCIATION, (November 15, 2021), https://www.armscontrol.org/blog/2021-11-15/xi-biden.

interceptor; (4) Build an Aegis ashore system in Guam to increase security of the U.S. territory from North Korea and China.[195]

CONCLUSION

One of President Biden's most admired presidents is Franklin Delano Roosevelt, whom he honors with a large portrait in the Oval Office.[196] FDR's philosophy in confronting the Great Depression was, "to take a method and try it: if it fails, admit it frankly and try another. But above all, try something."[197] This approach shares commonality here, the United States has tried the mutually assured destruction (MAD) policy and it has failed, efforts at containing proliferation in the past few decades have failed, our policymakers should admit this and try another: missile defense, which has worked to a certain extent and is more possible today than ever given technological advances.

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[195] *See* Jen Judson, *Iron Dome heads to missile defense experiment in Guam*, DEFENSENEWS. (October 7, 2021), https://www.defensenews.com/land/2021/10/07/iron-dome-heads-to-missile-defense-experiment-in-guam/. Building Aegis Ashore would augment the U.S. Army's November 2021 temporary deployment of one of the two Iron Dome missile defense batteries it purchased from Israel as an interim cruise missile defense and to satisfy a Congressional mandate in the 2019 National Defense Authorization Act to deploy an Iron Dome battery by the end of 2021.

The Iron Dome system which has been largely funded and supported by the U.S. was tested more than any previous conflict between Israel and Palestine in May of 2021 and has a 90 percent success rate. *See* e.g., Anshel Pfeffer, *The Costly Success of Israel's Iron Dome*, THE ATLANTIC, (May 24, 2021), https://www.theatlantic.com/international/archive/2021/05/iron-dome-israel-netanyahu-hamas/618973/. (According to the Israeli military, 4,369 rockets varying in size and range were fired towards Israel, with about two-thirds missing their intended target, leaving around 1,500 rockets which targeted cities and more populous areas. This massive missile assault resulted in only 12 deaths despite the enormous number of rockets threatening such a small area, with a success rate worth reiterating, 90 percent).

One contention critics point out despite its success rate, is the relatively low technology of Hamas' rockets which have no guidance system against a sophisticated missile defense system. *See* David Hambling, *Under the Iron Dome: The Problem with Israel's Rocket Shield*, FORBES, (May 12, 2021), https://www.forbes.com/sites/davidhambling/2021/05/12/under-the-iron-dome-the-problem-with-israels-rocket-shield/?sh=5f01599659b8.

[196] Mark Katkow, *Photos: President Biden's Redecorated Oval Office*, NATIONAL PUBLIC RADIO, (January 21, 2021), https://www.npr.org/sections/president-biden-takes-office/2021/01/21/959223157/photos-president-bidens-redecorated-oval-office.

[197] Franklin Delano Roosevelt, Oglethorpe University Commencement Address, (May 22, 1936), Franklin D. Roosevelt Library, http://www.fdrlibrary.marist.edu/archives/collections/franklin/index.php?p=collections/findingaid&id=582.