

ISSUE BRIEF

The Downsides of Downsizing: Why the United States Needs Four Hundred ICBMs

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Executive Summary

Does the United States need four hundred nuclear-armed intercontinental ballistic missiles? Bipartisan US nuclear policy has long rested on a commitment to a nuclear triad of intercontinental ballistic missiles (ICBMs), ballistic-missile submarines (SSBNs), and strategic bombers.¹ In addition, the past three administrations have called for modernizing the US nuclear triad. Plans for the Ground-Based Strategic Deterrent (GBSD) include four hundred new ICBMs to be distributed among 450 existing ICBM silos.

This modernization of the US ICBM force is taking place despite persistent criticism of the ground leg, including by a former secretary of defense.² One recent criticism alleges that the United States is correct to keep the ICBM leg, but at a reduced number. Critics argue that a smaller number of ICBMs is sufficient for deterrence and that, by cutting their number, the United States can save money and strengthen strategic stability. As a result, critics conclude, the United States need not build more than three hundred new ICBMs.

What are the merits of this argument? Do the benefits of reducing to three hundred missiles outweigh the costs?

This report analyzes the costs and benefits of ICBM reductions and concludes that it would be a mistake to reduce the size of the US ICBM force. Contrary to the critics' argument that deterrence can be sustained with a smaller force,

1 2018 Nuclear Posture Review, Office of the Secretary of Defense, February 2018, <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

2 William J. Perry, "Why It's Safe to Scrap America's ICBMs," *New York Times*, September 30, 2016, <https://www.nytimes.com/2016/09/30/opinion/why-its-safe-to-scrap-americas-icbms.html>.



An unarmed Minuteman III intercontinental ballistic missile launches during an operational test at Vandenberg Air Force Base, Calif. The Intercontinental Ballistic Missile (ICBM) Combined Test Force (CTF), operated by AEDC, was activated to support modernization and life extension for the LGM-30 Minuteman III (MMIII) and development of the next generation Ground Based Strategic Deterrent (GBSD) ICBM. (U.S. Air Force photo/Senior Airman Ian Dudley), <https://www.hill.af.mil/News/Photos/igphoto/2001868506/mediaid/2469600/>.

reducing the number of ICBMs would have deleterious effects on all of the major roles of US nuclear policy.³ A smaller ICBM force would reduce the US ability to achieve its goals if deterrence fails. A smaller ICBM force would also weaken deterrence, increasing the risk that adversaries initiate and escalate military challenges against the United States and its allies.⁴ Cutting back the GBSD program might weaken assurance by causing allies to doubt the US commitment to extended nuclear deterrence.⁵ Finally, a smaller ICBM force also hinders the US ability to hedge against an uncertain future.

Moreover, the supposed benefits of reducing the size of the ICBM force are exaggerated by ICBM critics. The cost savings from building a smaller force are insignificant compared to the overall cost of nuclear modernization. The argument that a smaller ICBM force would increase strategic stability is unclear at best.

Given the benefits of an ICBM force of four hundred, instead of three hundred, missiles, this paper also considers the possibility that increasing the size of the land leg of the US nuclear triad would enhance the United States' nuclear

3 2018 Nuclear Posture Review; 2010 Nuclear Posture Review, Department of Defense, April 2010, https://dod.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf.

4 Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (Oxford: Oxford University Press, 2018).

5 Matthew Kroenig, "The Case for the US ICBM Force," *Strategic Studies Quarterly* 12, No. 3, Fall 2018, <https://www.jstor.org/stable/26481909>.

posture. While there may be strategic benefits to fielding a larger arsenal, an expansion that required building more missile silos would be impractical. The Department of Defense should, however, consider adding missiles to fill existing, unused silos, which would be a treaty-compliant and cost-effective way to strengthen US nuclear posture.

This report will continue in four parts. First, it will present the central argument that cutting the ICBM force to three hundred missiles would undermine the major goals of US nuclear strategy. Second, it will scrutinize the arguments advanced by GBSB critics that a three-hundred-missile ICBM force suffices for the nuclear mission, significantly reduces costs, and enhances strategic stability. Third, it will consider the possible strategic benefits of a larger ICBM force and recommend the consideration of a modest increase. Finally, the report will offer a brief conclusion.

The Case for Four Hundred ICBMs

The currently planned land leg of four hundred ICBMs better advances US national interests than a force of three hundred ICBMs. This section will explain how the land leg supports the major goals of US nuclear strategy and why decreasing its size would undermine these objectives.

The 2018 Nuclear Posture Review (NPR) calls on the US nuclear arsenal to serve four critical roles: deterrence of nuclear and non-nuclear attack; assurance of allies and partners; achievement of US objectives if deterrence fails; and capacity to hedge against an uncertain future.⁶ These are long-standing goals of US nuclear strategy. The 2010 NPR also emphasized strategic deterrence, reassuring allies and partners, and fielding an effective arsenal.⁷ Further, the 2010 NPR stated that “[r]etaining all three Triad legs will best maintain strategic stability at reasonable cost, while hedging against potential technical problems or vulnerabilities,” a clear indication that hedging is also a long-standing bipartisan element of US nuclear strategy.⁸ Moreover, the 2013 Nuclear Employment Strategy required US nuclear

forces to “achieve U.S. and Allied objectives if deterrence fails” and to maintain “significant counterforce capabilities.”⁹ The US ICBM force contributes to each of these roles, and reducing the size of the land leg would jeopardize each of them.

Deterrence of nuclear and non-nuclear attack

Nuclear deterrence is most reliable when an adversary has no doubt that a nuclear attack on the United States would fail to destroy the US nuclear arsenal and would result in an unacceptably costly counterattack. To eliminate the ICBM leg in a first strike, an enemy would need to destroy 450 ICBM silos. Because scholars estimate that two offensive warheads are necessary to destroy an intended target, defeating the ground leg would require the use of approximately nine hundred offensive warheads.¹⁰ This is equivalent to 60 percent of Russia’s strategic nuclear arsenal, making such an attack unattractive to Moscow. Moreover, the large number of nuclear weapons required renders such an attack impossible for adversaries with smaller arsenals, such as China or North Korea.

Cutting the land leg by one hundred missiles would undermine ICBMs’ contribution to nuclear deterrence. A smaller ICBM force would make a nuclear counterforce attack on the United States more thinkable. Employing standard assumptions, a Russian offensive against a diminished ICBM force would require two hundred fewer Russian warheads. This makes such an attack easier to contemplate. Moreover, Russia could retarget these unused warheads to destroy additional US cities or hold back for a threatened “third strike” in an attempt to deter US retaliation. In addition, US officials estimate that China will double the size of its nuclear arsenal in the coming decade.¹¹ ICBM reductions could soon, therefore, place a disarming first strike within reach of Beijing.

Moreover, if the United States had fewer nuclear weapons due to a smaller land leg, nuclear deterrence might also be

6 2018 Nuclear Posture Review, 20.

7 2010 Nuclear Posture Review.

8 Ibid., 21.

9 “Report on Nuclear Employment Strategy of the United States,” Department of Defense, June 12, 2013, https://fas.org/wp-content/uploads/2013/06/NukeEmploymentGuidance_DODbrief061213.pdf.

10 Keir A. Lieber and Daryl G. Press, “The End of MAD? The Nuclear Dimension of U.S. Primacy,” *International Security* 30, 4, Spring 2006, 7–44, https://www.belfercenter.org/sites/default/files/legacy/files/is3004_advanceproof_lieberandpress.pdf.

11 Joe Gould, “China Plans to Double Nuclear Arsenal, Pentagon Says,” *Defense News*, September 1, 2020, <https://www.defensenews.com/congress/2020/09/01/china-planning-to-double-nuclear-arsenal-pentagon-says/>.

threatened because US adversaries might be more willing to initiate and escalate militarized challenges against the United States and its allies. Nuclear deterrence has long been conceptualized as a game of nuclear brinkmanship. Although nuclear states cannot credibly threaten to launch a suicidal nuclear war, they can credibly threaten to risk one by initiating and escalating crises.¹² A state's willingness to stand firm in these crises depends, in part, on its vulnerability to nuclear war. Recent social-science research shows that states that are more vulnerable to a nuclear exchange are more likely to be targeted with military threats from nuclear-armed states and less likely to achieve their basic goals in a nuclear crisis.¹³ Accordingly, reducing the size of the US ICBM force would simultaneously increase US vulnerability and decrease adversary vulnerability to nuclear coercion, thereby shifting the balance of resolve toward US adversaries. Adversaries might be more willing to challenge, and stand firm in crises against, the United States, and Washington might be more eager to seek off-ramps in a crisis.

This resulting shift in the balance of resolve could also increase the risk of nuclear war. The most plausible pathway to nuclear war in the contemporary international security environment stems not from a bolt-from-the-blue strike but from escalation of a conventional conflict. US adversaries might employ nuclear weapons in the event of a conventional conflict in Eastern Europe, in the Indo-Pacific, or on the Korean Peninsula.¹⁴ If adversaries are more likely to initiate and escalate crises against a United States with a smaller ICBM force, as argued above, then there is also a greater risk that Washington will find itself in dangerous crises that could spiral out of control and result in a catastrophic nuclear exchange.

Assurance of allies and partners

The US nuclear arsenal has a special role in extending nuclear deterrence to more than thirty formal treaty allies. This US nuclear umbrella advances US national interests by ensuring stability in important geographic regions, preventing the spread of nuclear weapons, and strengthening alliance relationships. When the United States promises to use its nuclear weapons to defend the sovereignty of its allies, it eliminates these nations' perceived need for nuclear weapons.¹⁵ Indeed, according to political scientists, "states receiving security guarantees from nuclear-armed superpower allies are only 22 percent as likely to explore nuclear weapons as those who do not, 13 percent as likely to pursue them, and 15 percent as likely to acquire them in a given year."¹⁶ Absent the US nuclear umbrella over the past several decades, it is likely that several countries—such as Germany, South Korea, Taiwan, and possibly others—would possess nuclear weapons today. A robust nuclear arsenal, including ICBMs, reinforces the credibility of the US extended nuclear deterrent and dissuades nuclear proliferation.

Cutting the size of the ICBM force would exacerbate existing concerns among US allies that they cannot trust Washington's commitments to extended deterrence. Recent years have been a trying time for US allies and partners, which are concerned that the United States is pulling back from its international commitments.¹⁷ It is no surprise, then, that security analysts in Germany, South Korea, Japan, and other states are openly contemplating the pursuit of nuclear weapons.¹⁸ Past cuts to US nuclear capabilities have stoked allied fears about the credibility of US extended deterrence, such as when Washington retired the nuclear-armed submarine-launched Tomahawk cruise missile (TLAM-N), to the consternation of US allies in the

12 Thomas A. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1981).

13 Kroenig, *The Logic of American Nuclear Strategy* 3-5.

14 Matthew Kroenig, *A Strategy for Deterring Russian De-Escalation Strikes*, Atlantic Council, April 24, 2018, <https://www.atlanticcouncil.org/in-depth-research-reports/report/a-strategy-for-deterring-russian-de-escalation-strikes/>; Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 41, 4, Spring 2017, 50–92; Keir A. Lieber and Daryl G. Press, "The Next Korean War," *Foreign Affairs*, April 1, 2013, <https://www.foreignaffairs.com/articles/north-korea/2013-04-01/next-korean-war>.

15 Matthew Kroenig and Christian Trotti, "Modernization as a Promoter of International Security" in Aiden Warren and Philip M. Baxter, eds., *Nuclear Modernization in the 21st Century* (New York: Routledge, 2020), 176-178.

16 Philipp C. Bleek and Eric B. Lorber, "Security Guarantees and Allied Nuclear Proliferation," *Journal of Conflict Resolution* 58, 3, 2014, 438.

17 Michael Crowley, "Allies and Former U.S. Officials Fear Trump Could Seek NATO Exit in a Second Term," *New York Times*, September 3, 2020, <https://www.nytimes.com/2020/09/03/us/politics/trump-nato-withdraw.html>.

18 Matthew Karnitschnig, "German Bomb Debate Goes Nuclear," *Politico*, August 3, 2018, <https://www.politico.eu/article/german-bomb-debate-goes-nuclear-nato-donald-trump-defense-spending/>; Byong-Chul Lee, "Don't Be Surprised When South Korea Wants Nuclear Weapons," *Bulletin of the Atomic Scientists*, October 23, 2019; <https://thebulletin.org/2019/10/dont-be-surprised-when-south-korea-wants-nuclear-weapons/>; Clark Murdock and Thomas Karako, *Thinking about the Unthinkable in a Highly Proliferated World*, Center for Strategic & International Studies, July 2016, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/160725_Murdock_ThinkingAboutUnthinkable_Web.pdf.

Indo-Pacific.¹⁹ Decreasing the land leg from four hundred to three hundred ICBMs could signal to friend and foe alike that the United States may not intend to live up to its security commitments, thereby weakening extended deterrence and assurance. Indeed, experts in allied countries have already expressed concern about possible cuts to the US ICBM force.²⁰

Achievement of US objectives if deterrence fails

ICBMs are essential to the third goal of US nuclear strategy: achieving objectives if deterrence fails. A longstanding, bipartisan, objective of US nuclear policy is to limit damage to the United States and its allies if nuclear war was to break out.²¹ The primary purpose of US nuclear weapons is to deter nuclear attack, but, if deterrence fails, the United States will not simply await its mutually assured destruction. The US military exists to protect US and allied citizens, not to punish adversaries. By destroying enemy nuclear forces before they can be used, the United States can limit the damage of a nuclear attack on itself and its allies. Harold Brown, President Jimmy Carter's secretary of defense, perhaps put it best when he testified to Congress in 1980 that "we have always considered it important, in the event of war, to be able to attack the forces that could do damage to the United States and its allies."²²

The ICBM force is an indispensable element of damage limitation, and reducing the force to three hundred ICBMs would decrease its potency in this role for two reasons. First, the ICBM force presents a "warhead sink" to adversaries. Russia, the only US adversary capable of a large-scale, counterforce attack on the United States, is understood to practice a hybrid counterforce and countervalue targeting doctrine.²³ That is to say, in the event of all-out nuclear war, Russia would prioritize the destruction of US nuclear sites and then employ any remaining warheads on US cities.²⁴ Therefore, Russia would expend many of its nuclear weapons on US ICBM silos in sparsely populated areas of the

country. Without this US nuclear "sponge" to absorb attacks, adversaries would be able to reallocate more of their nuclear weapons to target US cities directly.²⁵ Cutting the size of the US ICBM force by one hundred missiles would liberate roughly two hundred Russian offensive warheads to be retargeted against US population centers, enabling Moscow to kill tens of millions of additional Americans in the event of nuclear war.

Second, in rare circumstances, the United States might decide to use nuclear weapons first. With a robust ICBM force, the United States has a greater number of warheads to use in a counterforce strike to blunt an enemy's nuclear forces. With four hundred ICBMs (and the aforementioned ratio of two offensive weapons for every target), the United States could destroy roughly two hundred Russian nuclear sites. If the US ICBM force is cut by one hundred warheads, however, Washington would be able to destroy fewer enemy nuclear weapons; it would be able to target fifty fewer Russian nuclear targets. A larger number of enemy nuclear weapons would survive to be employed in reprisals against US and allied population centers. This means that, in the event of a nuclear war that Washington felt compelled to initiate with a damage-limiting strike, tens of millions of additional US or allied citizens would perish. These lives could be saved if Washington simply maintained a larger ICBM force.

The primary purpose of US nuclear weapons is to deter nuclear war. But, if a nuclear war occurred, the United States would have no choice but to reduce the ability of adversaries to harm its citizens. In this way, the United States benefits from its robust ICBM force, which can both absorb and preempt adversary nuclear weapons, thereby limiting damage.

Capacity to hedge against an uncertain future

The 2018 NPR made explicit what had long been an implicit goal of US nuclear strategy: to hedge against an uncertain future. The international security environment is ev-

19 "Congressional Commission on the Strategic Posture of the United States," United States Institute of Peace, April 27, 2009, <https://www.usip.org/publications/2009/04/congressional-commission-strategic-posture-united-states>.

20 Kroenig, "The Case for the US ICBM Force, 59-60"

21 *2018 Nuclear Posture Review; Report on Nuclear Employment Strategy of the United States*.

22 Harold Brown, "Report by Secretary of Defense Brown to the Congress: Negotiations With the Soviet Union, Countervailing Strategy, and the Adequacy of Strategic Capabilities [Extracts]," January 29, 1980, in *Documents on Disarmament*, United States Arms Control and Disarmament Agency, 1980, <https://bit.ly/38GrKV4>.

23 Kroenig, *The Logic of American Nuclear Strategy*, 45.

24 *Ibid.*

25 Kroenig, "The Case for the US ICBM Force," 56.

er-changing, and the US nuclear arsenal must be capable of adapting to a variety of future scenarios. After the Cold War, the United States drastically cut its nuclear arsenal due to a reduced threat.²⁶ As recently as a decade ago, the 2010 NPR described a benign security environment, in which the “threat of global nuclear war has become remote.”²⁷ Unfortunately, that assessment does not describe the current security environment. Most analysts failed to anticipate the subsequent return of great-power competition and nuclear rivalry.²⁸ The threat of nuclear war today may be as great as during the most dangerous periods of the Cold War.²⁹ The United States is now resurrecting once-retired nuclear systems, such as a nuclear-armed, sea-launched cruise missile (SLCM).

The 2018 NPR discusses two kinds of uncertainty: geopolitical and technological.³⁰ Regarding geopolitical uncertainty, great-power competition may require an increased reliance on US nuclear weapons. For example, if the New Strategic Arms Reduction Treaty (New START) limits were to be contravened for any reason, Russia would have the ability to quickly upload its deployed strategic nuclear forces beyond current levels.³¹ Furthermore, China has already begun a rapid and significant buildup of its nuclear forces.³² Beyond the great powers, further nuclear proliferation to additional states, such as to North Korea and Iran, remains a challenge. Over the next decade and beyond, a more dangerous nuclear security environment may confront the United States, and Washington may decide to increase the size of its strategic deterrent accordingly.

The ICBM force can help to hedge against an uncertain geopolitical future. Currently, the four hundred ICBMs carry one warhead each, but they can be upgraded to carry up to three independently targetable warheads each, for a total of eight hundred additional warheads available for the ICBM force.³³ Therefore, if Russia or China expand their nuclear forces and Washington decides that its nuclear force requirements have also increased, then the United States could upload an additional eight hundred warheads on ICBMs. If, however, the United States cut to three hundred ICBMs, then its upload capacity would also be diminished. It would only be able to add an additional six hundred warheads, limiting its ability to hedge against an uncertain geopolitical future.

The prospect of rapid technological change further clouds the future, and ICBMs can also help to hedge against technological risk. The main criticism of ICBMs—that they are sitting ducks compared to invulnerable SLBMs—assumes that SSBNs will always be undetectable. But, recent research reveals that the United States successfully stalked Soviet SSBNs for extended periods of time during the Cold War.³⁴ In light of evidence that the seekers can gain advantage over the hiders in submarine warfare, it would be unwise to assume that the present US ability to hide SSBNs will persist forever. Indeed, advances in new technology, such as high-throughput data analytics and unmanned underwater vehicles, may render the submarine leg more detectable, and more vulnerable, in the foreseeable future.³⁵ Moreover, the submarine leg is also vulnerable to attacks on nuclear command, control, and communications (NC3). Communicating with submarines underneath hundreds of

26 I.C. Oelrich, “Sizing Post-Cold War Nuclear Forces,” Institute for Defense Analyses, October 2001, https://fas.org/programs/ssp/nukes/nuclear_doctrine_strategy_policy/szngnuclearforces.pdf.

27 2010 Nuclear Posture Review.

28 Matthew Kroenig, *The Return of Great Power Rivalry: Democracy versus Autocracy from the Ancient World to the US and China* (New York: Oxford University Press, 2020); Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Vintage Books, 1987).

29 Kroenig, *A Strategy for Deterring Russian De-Escalation Strikes*, 5; John Mecklin, “2020 Doomsday Clock Statement,” *Bulletin of the Atomic Scientists*, accessed September 1, 2020, <https://thebulletin.org/doomsday-clock/current-time/>.

30 Ibid.

31 Hans M. Kristensen and Matt Korda, “Russian Nuclear Forces, 2019,” *Bulletin of the Atomic Scientists* 75, 2, 2019; Hans Kristensen, “The New START Treaty Keeps Nuclear Arsenals in Check and President Trump Must Act to Preserve It,” *Forbes*, December 10, 2019, <https://www.forbes.com/sites/hanskristensen/2019/12/10/the-new-start-treaty-keeps-nuclear-arsenals-in-check-and-president-trump-must-act-to-preserve-it/#4801c2ef6e74>.

32 David E. Sanger and William J. Broad, “A New Superpower Competition Between Beijing and Washington: China’s Nuclear Buildup,” *New York Times*, updated July 14, 2020, <https://www.nytimes.com/2020/06/30/us/politics/trump-russia-china-nuclear.html>; Eric Heginbotham, et al., “China’s Evolving Nuclear Deterrent: Major Drivers and Issues for the United States,” RAND, 2017, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1600/RR1628/RAND_RR1628.pdf.

33 Hans M. Kristensen and Matt Korda, “United States Nuclear Forces, 2019,” *Bulletin of the Atomic Scientists* 75, 3, 2019, 127.

34 Austin Long and Brendan Rittenhouse Green, “Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy,” *Journal of Strategic Studies* 38, 1–2, 2015, 38–73; Owen R. Coté Jr., *The Third Battle: Innovation in the U.S. Navy’s Silent Cold War Struggle with Soviet Submarines* (Newport, RI: Naval War College, 2003); and Peter Sasgen, *Stalking the Red Bear: The True Story of a U.S. Cold War Submarine’s Covert Operations against the Soviet Union* (New York: St. Martin’s, 2009), cited in Keir A. Lieber and Daryl G. Press, “The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence,” *International Security* 41, 4, Spring 2017.

35 Sylvia Mishra, “Could Unmanned Underwater Vehicles Undermine Nuclear Deterrence?” *Strategist*, Australian Strategic Policy Institute, May 8, 2019, <https://www.aspi.org.au/could-unmanned-underwater-vehicles-undermine-nuclear-deterrence/>.



Missile maintenance Airmen prepare to unload a LGM-30G Minuteman III ICBM from a transport vehicle Aug. 26, 2014, at Vandenberg Air Force Base, Calif. A joint team from the 576th Test Squadron at Vandenberg AFB and the 91st Missile Squadron at Minot AFB, N.D., launched the missile Sept. 23, 2014, showcasing the capabilities of the Air Force's ground-based leg of the nation's nuclear triad. (U.S. Air Force courtesy photo). <https://tinyurl.com/yepkdsz5>.

meters of seawater is challenging. With the proliferation of precision conventional strike and electronic warfare, NC3 for the sea leg could become more vulnerable. NC3 for ICBMs—with communication channels hardwired deep underground—is better protected.

Further, US adversaries are maturing and expanding their missile defenses. These defenses are not currently capable of significantly blunting a US nuclear attack, but the possibility cannot be ruled out over the half-century lifespan of the GBSD program. Enemy missile-defense developments

could be countered by saturating those defenses with larger numbers of missiles. An extra one hundred missiles—particularly the GBSD, which adds additional avoidance capability—would help overwhelm enemy missile defenses.

The above scenarios reflect some “known unknowns” against which US nuclear posture must hedge.³⁶ But, the GBSD is expected to be in service until the 2070s. As a result, the nuclear force must be robust enough to hedge against “unknown unknowns,” the geopolitical and technological threats to nuclear stability decades from now that analysts cannot anticipate in 2021.

Scrutinizing Proposed Cuts to the ICBM Force

Since the United States first deployed ICBMs in 1957, every subsequent US presidential administration has decided that ICBMs are necessary for US nuclear deterrence. The Minuteman III ICBM is currently nearing the end of its service life, meaning that the land leg of the nuclear triad must be modernized. ICBM critics took this opportunity to press for the elimination of the land leg altogether, claiming that a nuclear dyad (submarines and bombers) was sufficient for nuclear deterrence with less cost and risk.³⁷ Still, the Barack Obama administration put in place a nuclear-modernization program to maintain the ground leg and replace the Minuteman III with the GBSD. The Donald Trump administration continued this modernization program.

Having lost the debate about whether to eliminate ICBMs altogether, some of those same critics have now turned their focus to the number of ICBMs to be deployed. These critics contend that deploying only three hundred missiles—as opposed to the four hundred currently planned—would better serve US nuclear strategy, save a significant amount of money, and improve stability with other states. This section will review each of these arguments.

Rebutting strategic arguments for three hundred ICBMs

Critics of the ICBM force believe that a smaller force would allow an increase in allegedly more useful SLBMs and re-

36 Donald Rumsfeld, “Known and Unknown: Author’s Note,” Rumsfeld Papers, 2014, <https://papers.rumsfeld.com/about/page/authors-note>.

37 Perry, “Why It’s Safe to Scrap America’s ICBMs.”

duce the dilemma of attacking enemy nuclear silos that had already fired.

The United States does not need to cut ICBMs to increase SLBMs.

The first strategic argument for ICBM reductions is that the United States could reallocate the liberated warheads from ICBM cuts to the submarine leg, which is less vulnerable to enemy attack.³⁸ But, this argument is technically flawed. It ignores the reality of warhead design and treaty limits. The current ICBM, the Minuteman III, carries the W78 or W87 warhead, while the current SLBM, the Trident II D-5, carries the W76 or W88 warhead.³⁹ The two are not currently interchangeable, although the 2018 NPR called for the exploration of possible SLBM-ICBM warhead interoperability in the future.⁴⁰ Moreover, the United States already has the ability to increase the number of warheads on the SLBM force; ICBM reductions are not necessary to achieve that goal. According to the most recent released data exchange under the New START treaty, which occurred in September of 2020, the United States is allowed ninety-three additional nuclear warheads and twenty-five additional strategic missiles before it hits New START limits.⁴¹ According to Hans Kristensen and Matt Korda, the United States fields approximately 890 warheads across its 240 deployed SLBMs.⁴² That is an average load of 3.7 warheads per missile. The current US SLBM, the Trident II D-5, is capable of carrying up to eight warheads.⁴³ Adding ninety-three warheads across the existing SLBM pool would raise the average warhead load 4.1, well within the capacity of existing missiles and submarines. Thus, if the United States wanted to add approximately one hundred more warheads to its submarine leg, it could do so without any modification to the land leg.⁴⁴

In the event of nuclear attack, ICBMs can be reprogrammed to alternate targets.

Those in favor of ICBM cuts further argue that the land leg should be reduced because US ICBMs would be useless in an actual nuclear war. They claim that Russian nuclear forces would already be on their way to the United States by the time a US president orders a nuclear strike and that, therefore, US ICBMs would be wasted on targeting empty Russian nuclear silos.⁴⁵ But, this argument is both incoherent and technically flawed. It is incoherent because it is not clear why a smaller ICBM force would solve the problem raised by the authors. If they are correct, would a smaller ICBM force not also be wasted in a nuclear exchange? Why have three hundred ICBMs (or any at all) if they are so useless? The critics do not clearly articulate this argument.

This argument is also flawed on technical grounds because US ICBMs are not necessarily targeted against their Russian counterparts. They might be targeted against other important enemy sites. Moreover, US ICBMs can be pre-programmed with several targets and can be retargeted by their crews to attack new sites.⁴⁶ An ICBM originally targeted at a Russian silo that has become emptied could be retargeted to other relevant military sites, such as radars, heavy-bomber airfields, submarine bases, command-and-control facilities, missile defenses, mobile missile garrisons, or conventional military formations. The ability to destroy these types of targets contributes to the broad range of US nuclear strategy goals articulated above.

Rebutting budgetary arguments for three hundred ICBMs

Those in favor of reductions in the ICBM force believe that the nuclear triad, and the ground leg specifically, are unaffordable and ripe for cuts. Yet a further examination reveals that proponents of cutting ICBMs have neither their strategic priorities nor their budgetary facts straight.

38 Steve Fetter and Kingston Reif, "A Cheaper Nuclear Sponge," *War on the Rocks*, October 18, 2019, <https://warontherocks.com/2019/10/a-cheaper-nuclear-sponge/>.

39 "Minuteman III," Missile Defense Project, Center for Strategic and International Studies, last modified June 15, 2018, <https://missilethreat.csis.org/missile/minuteman-iii/>; "Trident D-5," Missile Defense Project, Center for Strategic and International Studies, last modified June 15, 2018, <https://missilethreat.csis.org/missile/trident/>.

40 *2018 Nuclear Posture Review*.

41 "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Bureau of Arms Control, Verification, and Compliance, United States Department of State, September 1, 2020, <https://www.state.gov/new-start-treaty-aggregate-numbers-of-strategic-offensive-arms-12/>.

42 Hans M. Kristensen and Matt Korda, "United States Nuclear Forces, 2020," *Bulletin of the Atomic Scientists* 76, 1, 2020, 46–60.

43 Ibid.

44 Assuming that no major upload has taken place in the last three months of 2020.

45 Fetter and Reif, "A Cheaper Nuclear Sponge."

46 "Rapid Execution and Combat Targeting (REACT)," Federation of American Scientists, June 2, 1997, <https://fas.org/nuke/guide/usa/c3i/react.htm>; Bernard C. Nalty, "USAF Ballistic Missile Programs 1967–1968," Office of Air Force History, September 1969, <https://nsarchive2.gwu.edu/nukevault/ebb249/doc05.pdf>.

Nuclear weapons are the Defense Department's top priority and merit the modest fraction of the defense budget allocated to them.

Critics argue that the United States can save money by cutting the size of the ICBM force, but nuclear weapons are relatively inexpensive and nuclear deterrence remains the highest priority of the Department of Defense (DoD).⁴⁷ The United States plans to spend roughly 6 percent of the US defense budget on nuclear modernization, and several recent secretaries of defense have called nuclear deterrence the department's top priority.⁴⁸ When asked to comment on the cost of nuclear modernization, former Defense Secretary James Mattis explained that "America can afford survival."⁴⁹

Appeals for cost saving in the nuclear arsenal have been considered before but were rejected as a "hunt for small potatoes."⁵⁰ Indeed, since the 1950s, successive US administrations of both parties have recognized that nuclear weapons provide "more bang for the buck," allowing the United States to pursue its grand strategy with modest expenditures.

While reasonable people can disagree, it seems appropriate that the Department of Defense spends the planned 6 percent of the defense budget on strategic deterrence.

Cutting the GBSD program will result in insignificant long-term savings but would increase short-term costs.

The land leg is the wrong place to look for cost savings in the defense budget. It is the cheapest leg of the nuclear triad. According to the most recent Congressional Budget

Office (CBO) estimate, in the thirty years between 2017 and 2047, the United States is slated to expend \$313 billion on the sea leg, \$266 billion on the air leg, and \$149 billion on the land leg. These sums cover the development, fielding, operations, and sustainment of the current and planned next generation of nuclear capabilities.⁵¹ Thus, as one of us has argued elsewhere, "[i]f cost savings are a top priority, then the ICBM force should not be the first leg on the chopping block."⁵²

A second problem with the critics' budgetary argument is that cutting the size of the ICBM force by a quarter would not result in a 25 percent discount on the price tag. Much of the cost of the program is in designing and testing of the new missile, not the materials and labor required to produce each subsequent missile. The first missile in the GBSD program, therefore, will be significantly more expensive than the four hundredth. Reducing the missile order by 25 percent would result in less-than-linear cost savings.

Indeed, a closer budgetary analysis reveals that cutting the size of the ICBM force would not save much money. The CBO has reported on the potential cost savings from cutting one hundred planned ICBMs and two planned SSBNs. CBO estimates that this posture would save ten billion dollars over ten years and thirty billion dollars over thirty years.⁵³ It is not clear what share of this billion dollars per year in savings is due to ICBM cuts. Assuming the savings are proportional to the costs of the two legs, then annual savings from ICBM cuts would come to roughly \$300 million, or less than one percent of planned nuclear modernization costs.⁵⁴ To put this number in perspective, consider that Americans

47 Bernie Sanders, "Defund the Pentagon: The Liberal Case," *Politico*, July 16, 2020, <https://www.politico.com/news/magazine/2020/07/16/defund-the-pentagon-the-liberal-case-364648>; Fetter and Reif, "A Cheaper Nuclear Sponge"; Matthew Kroenig and Mark J. Massa, "Lloyd Austin has to back nuclear modernization for the free world," *The Hill*, January 28, 2021, <https://thehill.com/opinion/national-security/536327-lloyd-austin-has-to-back-nuclear-modernization-for-the-free-world>.

48 "Department of the Air Force Awards Contract for New ICBM System that Enhances, Strengthens US Triad," Secretary of the Air Force Public Affairs, September 8, 2020, <https://www.afnwc.af.mil/News/Article/2340186/department-of-the-air-force-awards-contract-for-new-icbm-system-that-enhances-s/>; Apryl Hall, "Carter Visits Minot, Emphasizes Nuclear Mission," Minot Air Force Base Public Affairs, September 27, 2016, <https://www.af.mil/News/Article-Display/Article/956911/carter-visits-minot-emphasizes-nuclear-mission/>.

49 Dan Lamothe, "Mattis Unveils New Strategy Focused on Russia and China, Takes Congress to Task for Budget Impasse," *Washington Post*, January 19, 2018, <https://www.washingtonpost.com/news/checkpoint/wp/2018/01/19/mattis-calls-for-urgent-change-to-counter-russia-and-china-in-new-pentagon-strategy/>.

50 David Mosher "The Hunt for Small Potatoes: Savings in Nuclear Deterrence Forces" in Cindy Williams, ed., *Holding the Line: U.S. Defense Alternatives for the 21st Century* (Cambridge, MA: MIT Press, 2001).

51 These cost estimates in 2017 dollars. "Approaches for Managing the Costs of U.S. Nuclear Forces, 2017 to 2046," CBO.

52 Kroenig, "The Case for the US ICBM Force," 64.

53 "Options for Reducing the Deficit: 2021 to 2030," Congressional Budget Office, December 2020, <https://www.cbo.gov/system/files/2020-12/56783-budget-options.pdf>; "Approaches for Managing the Costs of U.S. Nuclear Forces, 2017 to 2046," Congressional Budget Office, October 2017, <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53211-nuclearforces.pdf>.

54 CBO does not break out the savings in this scenario between the submarine and ICBM forces. Because the submarine force is estimated to be roughly twice as expensive to modernize (see footnote 51), this paper assumes that the two thirds of CBO's estimated cost savings come from cutting two SSBNs and the remaining third from cutting one hundred ICBMs.



First Lt. Allia Martinez, 320th Missile Squadron missile combat crew commander and 2nd Lt. Benjamin Lenos, 320th MS deputy combat crew commander perform checks on the strategic automated command and control system in a launch control center at F.E. Warren Air Force Base, Wyo., Nov. 6, 2016. The 90th Missile Wing sustains 150 Minuteman III ICBMs and the associated launch facilities that cover 9,600 square miles across three states. (U.S. Air Force photo by Staff Sgt. Christopher Ruano). <https://tinyurl.com/uzjheawb>.

spend \$5.4 billion annually on legal marijuana and \$4.9 billion annually on Doritos, Cheetos, and Funyuns.⁵⁵

Moreover, any cost savings would depend on how US military planners decide to allocate the ICBM reductions across the force. Would they shut down an entire missile wing? Or would they maintain all of the current missile wings with more empty missile silos? The latter option would make more strategic sense but would not reduce costs by much. There are currently fifty empty silos spread out among three US ICBM fields.⁵⁶ Because adversaries presumably

do not know which silos are empty, an enemy counterforce strike would still need to expend two nuclear warheads per silo on the fifty empty silos. Thus, the most strategically advantageous way to cut to three hundred ICBMs would be to leave an additional one hundred silos empty. Missile silos cannot be left empty and un-crewed for long, and, even if doing so was possible, the lack of deception may enable adversaries to determine which silos were empty. With missiles pulled at random from the three wings and rotated, the wing crews would still need to staff the same number of launch-control centers, maintain the same number of silos,

⁵⁵ Christopher Ingraham, "Americans spent more on legal weed than on Cheetos and Funyuns combined last year," *Washington Post*, February 2, 2016, <https://www.washingtonpost.com/news/wonk/wp/2016/02/02/americans-spent-more-on-legal-weed-than-on-cheetos-and-funyuns-combined-last-year/>.

⁵⁶ Conversation with current US missileer, Chatham House Rule.

pay for the same amount of perimeter security, and fund the same command structure for the wing. In sum, operating costs would not be noticeably reduced.

Shutting down an entire missile wing, on the other hand, could result in greater cost savings over time, but it would also increase short-term costs just as the bow wave of nuclear modernization costs approaches. These costs include removing the missiles, transporting and storing the warheads, demolishing structures, and filling the silos with gravel. An additional cost is the potential for environmental cleanup. Like many military or industrial sites in use for decades, the missile wings have accumulated environmental damage as the result of diesel-fuel spills, noxious fire retardants, toxic missile fuels, and the usage of other chemicals. These environmental issues would need to be resolved before the land of a former missile wing could be returned to the surrounding municipality. Environmental remediation would increase costs in the short term. Nuclear-modernization costs are expected to come to a bow wave—that is, a peak—in fiscal year 2022.⁵⁷ Accordingly, it would be inconsistent both to criticize ICBM modernization for exacerbating the bow wave of nuclear modernization cost and to call for the deactivation of an ICBM wing, which also increases short-term costs.

Rebutting strategic stability arguments for three hundred ICBMs

The use 'em or lose 'em dilemma is a logical fallacy unsupported by the evidence.

Proponents of ICBM cuts argue that ICBMs increase instability between nuclear powers by incentivizing a nuclear first strike. Critics of the GBSB program contend that ICBMs' vulnerability to an enemy first strike presents a "use 'em or lose 'em" (UELE) dilemma for a US president. They posit that, in crisis, the United States might decide to launch a nuclear attack with its full nuclear arsenal, rather than wait for an enemy to destroy vulnerable US ICBMs. This incentive could give US presidents an itchy trigger finger and even cause them to launch an accidental nuclear war based on false warning of an impending attack.

Critics contend that the ICBM arsenal should be reduced to three hundred missiles, but their argument is again incoherent.⁵⁸ They do not clearly explain why a ground leg of three hundred ICBMs would not also create UELE problems. Indeed, at first blush, reductions would seem to exacerbate the problem. After all, it would be easier for an enemy to destroy one hundred fewer missiles in a first strike.

More fundamentally, this argument is unpersuasive because the UELE dilemma does not make logical sense and lacks support in the historical record. UELE is a false dilemma. Never in the real world is there the choice between having one's nuclear weapons destroyed in a nuclear strike or launching a suicidal nuclear attack. In the real world, leaders would have many other options, including negotiating, backing down from the crisis, or using conventional military force. To believe UELE, one would have to believe that leaders would intentionally choose the worst possible option: to start a suicidal nuclear war on uncertain warning. It is illogical that a country, fearing a devastating nuclear exchange, would consciously decide to initiate such an exchange, especially if faced by an opponent with a secure second strike.⁵⁹

Moreover, there is no evidence for this theoretical concept in the empirical record. Nuclear states have fielded potentially vulnerable nuclear weapons for decades. And, although dozens of nuclear crises have occurred in the interim, the historical record bears no evidence of leaders starting a nuclear war out of fear of losing their arsenals.

Should the United States Increase the Size of the ICBM Force?

To this point, this report has considered and refuted the arguments for reducing the ICBM force from four hundred to three hundred missiles. But, this analysis raises a new question: if four hundred missiles are preferable to three hundred missiles, then does it follow that the United States should deploy more than four hundred missiles? Perhaps five hundred or six hundred missiles would better advance US national security interests.

On balance, there are potential strategic benefits to pursuing a larger force, but these are outweighed by practical

57 Todd Harrison, *Defense Modernization Plans through the 2020s: Addressing the Bow Wave*, Center for Strategic and International Studies, January 2016, https://csis-website-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/160126_Harrison_DefenseModernization_Web.pdf.

58 Fetter and Reif, "A Cheaper Nuclear Sponge."

59 Kroenig, *The Logic of American Nuclear Strategy*, chapter 6.



Airmen from the 90th Missile Maintenance Squadron prepare a reentry system for removal from a launch facility, Feb. 2, 2018, in the F. E. Warren Air Force Base missile complex. The 90th MMXS is the only squadron on F. E. Warren allowed to transport warheads from the missile complex back to base. Missile maintenance teams perform periodic maintenance to maintain the on-alert status for launch facilities, ensuring the success of the nuclear deterrence mission. (U.S. Air Force photo by Airman 1st Class Braydon Williams), <https://www.20af.af.mil/News/Article-Display/Article/1445835/missile-maintainers-tear-down-an-icbm-for-maintenance/>.

obstacles. There is a case for a modest expansion of the ICBM force, but any such expansion would be limited by arms-control agreements and existing infrastructure.

An expanded ICBM arsenal could benefit US national security. Consistent with the arguments above, more ICBMs could make it more difficult for an adversary to contemplate a disarming first strike on the United States. They could enhance US resolve in nuclear crises and dissuade adversaries from pursuing escalation. Increasing the US nuclear arsenal would be a clear signal that the United States was committed to providing extended deterrence and assuring allies. A larger ICBM arsenal could enhance damage

limitation by enabling the United States to destroy a larger portion of an adversary's nuclear arsenal with higher confidence and also by creating a larger nuclear sponge to absorb an enemy nuclear attack that might otherwise be directed at US cities. Finally, more missiles would mean a greater upload capacity, providing a better hedge against an uncertain future.

There are, however, practical obstacles to increasing the size of the US ICBM force. The New START arms-control agreement provides a hard cap on the number of missiles and warheads the United States can deploy. Moreover, a significant expansion of the ICBM force would require ac-

quiring large tracts of land and building new missile wings. During the Cold War the land for missile silos was appropriated by the US government through eminent domain. This was politically difficult even during the Cold War and would be more difficult today. Moreover, contemporary regulations make it more difficult to acquire permits to dig additional silos. Perhaps a future existential national security crisis could ease such restrictions, but (fortunately) such conditions do not exist today.

Still, there is room for a modest increase in the size of the US ICBM force. Under New START limits, the United States could still deploy an additional twenty-five ICBMs among its existing fifty empty silos. The United States currently reports fielding 675 of the seven hundred deployed delivery vehicles permitted by New START.⁶⁰ US defense officials should consider such an increase, given the possible strategic benefits articulated above.

Conclusion

Some national security analysts have recently called for reducing the size of the US ICBM force. This report considered how the size of the US ICBM force affects the central goals of US nuclear-weapons policy: deterring nuclear and nonnuclear attacks, assuring allies, achieving objectives if deterrence fails, and hedging against an uncertain future. It showed that a larger ICBM force better advances each of these objectives.

The issue brief also considered, and rebutted, the arguments made by critics of the GBSD program. Reducing the size of the US ICBM force will not save significant amounts of money or strengthen strategic stability. Indeed, if any adjustments to the size of the arsenal are needed, the report showed that a modest increase might better advance US national security goals.

Nuclear-armed ICBMs have been a mainstay of US strategic deterrence for decades, and they have enjoyed widespread bipartisan support. The Joseph R. Biden administration and Congress should continue to support a minimum ICBM strength of four hundred, as mandated by the National Defense Authorization Act for fiscal year 2021.⁶¹ The US policy of extended deterrence in Europe and Asia has undergirded the US-led, rules-based international system and has facilitated decades of sustained peace, prosperity, and democracy in the free world. This rules-based system is increasingly being challenged by revisionist autocratic states, including China, Russia, and North Korea, all of which are modernizing and expanding their nuclear capabilities. Now is the time to revitalize, adapt, and defend a US-led rules-based system for a new era of great-power competition.⁶² A strong US nuclear deterrent, including a robust ICBM force, will remain an important element of the defense of the free world for decades to come.

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