

MAY 2026

Golden Dome or Golden Scam?



The false promise of strategic missile defense

A report by the International Physicians for the Prevention of Nuclear War,
Back from the Brink, and Physicians for Social Responsibility

INTRODUCTION

In 1983 Ronald Reagan proposed that the US build a ballistic missile defense system, quickly nicknamed “Star Wars”, to shield the US from possible attack. The appeal of this proposed system was obvious: the promise to end the threat posed by nuclear weapons. But the promise has not been met. After 43 years and hundreds of billions of dollars no such shield has been built. The US has deployed a mere 44 interceptors in its Ground-Based Midcourse Defense (GMD) system, and these have had a success rate of only 55% in highly scripted tests which do not begin to create the conditions that would exist during an actual nuclear war. [1]



Despite these decades of failure, President Trump announced on May 20, 2025 that the US would build a missile defense system in three years that would be “very close to 100%” effective and cost a total of \$175 billion.

But a report by the American Enterprise Institute concluded that, “A system that protects against the full range of aerial threats posed by peer and near-peer adversaries could cost \$3.6 trillion, and even then, it would fall short of the “100 percent” effectiveness claimed.” [2]

[1] <https://armscontrolcenter.org/issues/missile-defense/gmd-frequently-asked-questions/>

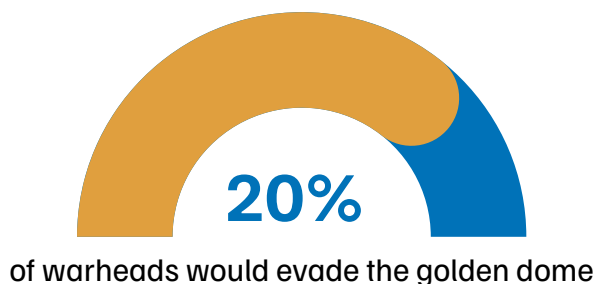
[2] <https://www.aei.org/wp-content/uploads/2025/09/WP-Estimating-the-Cost-of-Golden-Dome.pdf?x29144>

SCENARIO

Will the Golden Dome Protect us?

This brief report looks at what the United States would get from a \$3.6 trillion system that falls short of 100 percent effectiveness. Specifically, it considers what would happen in a war with Russia if the U.S. had an 80% effective missile defense system in place. The technology required to shoot down an intercontinental ballistic missile is much more complex than that used to take out the relatively primitive short-range rockets used in the current wars in the Middle East. [3] Given the track record of the last 40 years, an 80% success rate is almost certainly an unrealistically optimistic goal. But examining this “best case scenario” sheds important light on the real value, or lack of value, of the Golden Dome.

An optimistically 80% effective golden dome would still leave the United States massively vulnerable.



If the U.S. were to build a missile defense system that could shoot down 80% of the current Russian nuclear arsenal, Russia could simply build many more warheads and decoys to overwhelm this system, or redeploy some of the nearly three thousand warheads it has put into storage. But for the purposes of this scenario, we use the more conservative assumption that Russia is financially unable to do so and simply retargets all its currently deployed warheads at U.S. cities to exact an unacceptable price in any war with the U.S.

[3] <https://armscontrolcenter.org/issues/missile-defense/>

The current Russian nuclear arsenal contains an estimated 1718 deployed warheads: 430 warheads with the destructive power of 800 kilotons (Kt)—50 times the explosive yield of the Hiroshima bomb, 200 warheads with the power of 250 kilotons (Kt) , and 1088 100 kiloton (Kt) warheads. [4] There are many different targeting scenarios Russia could choose to maximize damage with this arsenal despite the existence of the Golden Dome.

Let's consider one of them.

If the US had the ability to shoot down 80% of all incoming Russian warheads, then, in order to achieve a 95% probability of hitting a given population center, Russia would have to target that city with 13 warheads. [5]

Table 1 number of cities that can be attacked with a 95% probability of hitting each one.

Weapon Size	Total # of warheads	# warheads needed for each target	# cities that could be targeted
800 Kilotons	430	13	33
250 Kilotons	200	13	15
100 Kilotons	1088	13	84

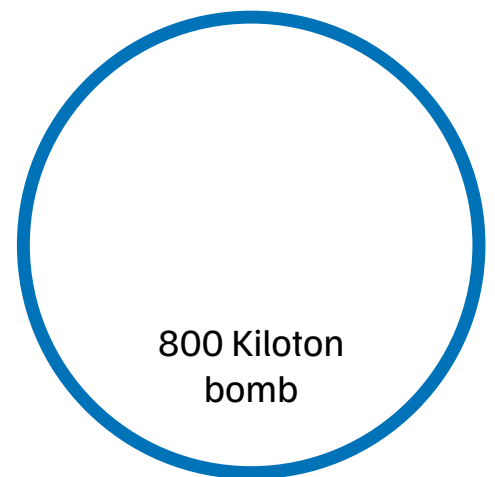
To maximize the damage, in this scenario the Russians could aim their 800 Kt warheads at the largest population centers, their 250 Kt warheads at the next largest and their 100 Kt warheads at the next largest group.

To estimate the damage that such an attack would cause we consider only the zone around each explosion where the heat from the explosion will cause

Hiroshima bomb



800 Kiloton bomb



[4] <https://fas.org/initiative/status-world-nuclear-forces/>

[5] Failure rate for 1 weapon is 80% so $0.8^n = .05$ to calculate a 5% failure rate or a 95% success rate; solving this equation, $n=13$

everything flammable to burn and calculate the total population living in that area. There would be many more people killed and wounded beyond this area of total destruction, therefore this is a conservative estimate of the human toll.

With 80% effectiveness the Golden Dome would still leave the 132 largest U.S. population centers and the lives of at least 75 million Americans exposed to Russian attack—assuming the Russians did not add a single additional warhead to their current arsenal.

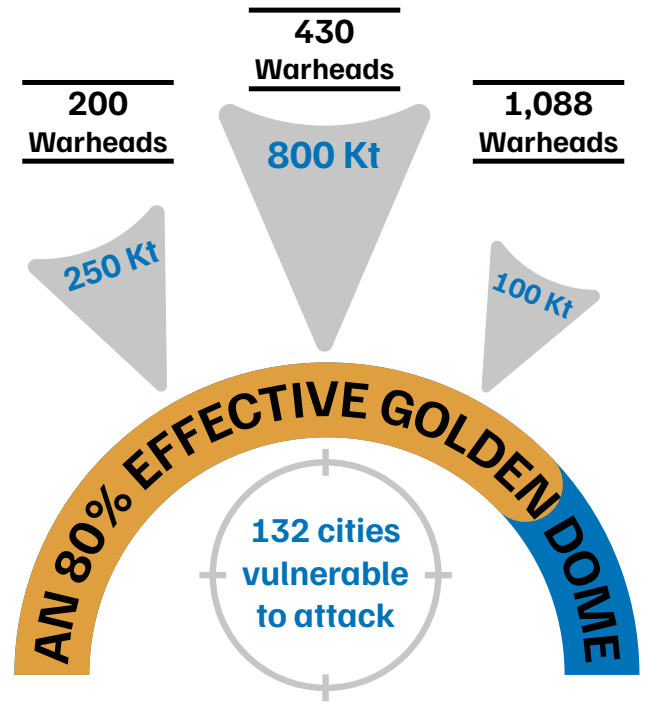


Table 2 number of people in zones of total destruction

Weapon Size	# Cities attacked	Populations in zone that burns [6]
800 Kilotons	33	46.275 million
250 Kilotons	15	6.218 million
100 Kilotons	84	22.507 million
Total	132	75 million

This hypothetical attack would also have enormous impact beyond the cities attacked. All of the support systems that U.S. residents rely on to keep themselves alive would be massively disrupted or destroyed. There would be no electric grid, no internet, no cell phones, no food distribution system, no public health system, no system for distributing gasoline or heating oil, or natural gas, no system of law and order. In the months following this attack huge numbers of people would die from radiation poisoning, from starvation, from epidemic disease, and from exposure to the elements.

[6] Data derived from : Environmental consequences of nuclear war Owen B. Toon, Alan Robock, and Richard P. Turco <http://scitation.aip.org/content/aip/magazine/physicstoday?ver=pdfcov>

Impact on the rest of the world

In addition, the attack would have profound consequences far beyond the borders of the United States, because of the enormous amounts of black carbon that would be lofted into the upper atmosphere by the fires. This soot would block out sunlight dropping temperatures across the globe with profound effects on food production worldwide.

Table 3 soot load that would be generated in teragrams (Tg-millions of tons)

Weapon Size	Number of cities burned	Black carbon lofted to stratosphere [7]
800 Kilotons	33	15.4 Tg
250 Kilotons	15	2.1 Tg
100 Kilotons	84	7.5 Tg
Total	132	25 Tg

A landmark study published in 2022 examined a scenario involving a comparable amount of black carbon, 27 Tg. The study found that temperatures across the planet would drop an average of 8°F. producing a famine which would kill 1.4 billion people in the first two years. The study only examined the death toll in the first two years after the war; the famine would continue beyond that. [8][9]

[7]Data derived from COMBUST: Gridded combustible mass estimates of the built environment in the conterminous United States (1975-2020); Johannes Uhl, et al <https://doi.org/10.5281/zenodo.15611964>

[8]<https://www.nature.com/articles/s43016-022-00573-0>

[9]<https://www.ipnww.org/wp-content/uploads/2022/09/ENGLISH-Nuclear-Famine-Report-Final-bleed-marks.pdf>

CONCLUSION

The Golden Dome will not protect the American people. Even if the system achieved an extremely optimistic 80% success rate, it would leave the 132 largest population centers open to attack with 75 million Americans in the zones of total destruction. Such an attack would also cause global climate disruption and lead to famine that would kill 1.4 billion people worldwide.

What the Golden Dome will do is to squander \$3.6 trillion creating a dangerous, false sense of security. This is money that could be spent on education, housing, health care, and food security-- social services that are currently being cut because we are told we can't afford them.

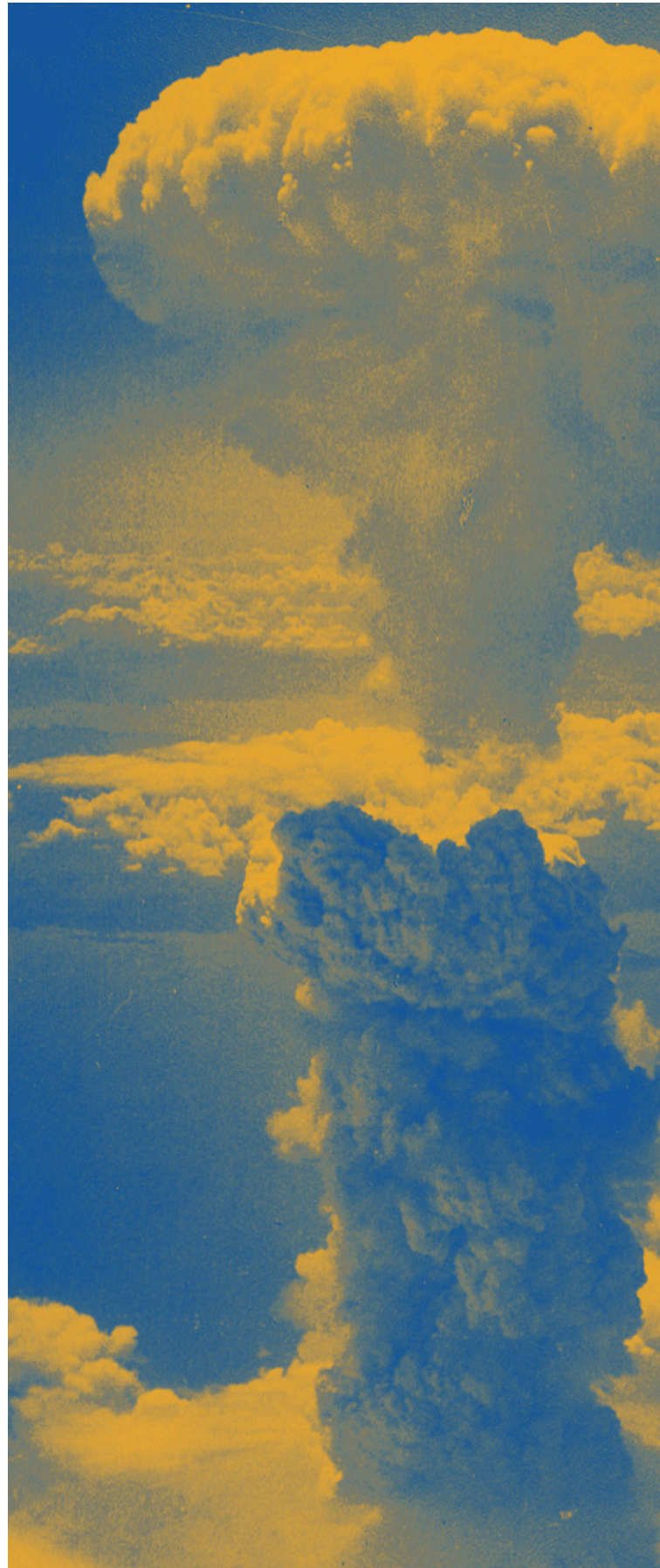
Developing and deploying the Golden Dome will also exacerbate the danger of nuclear war by blocking progress towards nuclear disarmament and further fueling the new and destabilizing arms race as Russia and China build more weapons to overcome any ability the Golden Dome has to intercept some of their current warheads. This is not a hypothetical concern. U.S. determination to pursue Star Wars during the 1980's derailed the attempt by Presidents Reagan and Gorbachev to reach an agreement to eliminate all nuclear weapons at the Reykjavik Summit in 1986. [9]

There is no technical fix to the threat posed by nuclear weapons. We have survived this far into the nuclear era

[9] <https://www.latimes.com/archives/la-xpm-1986-10-13-mn-3014-story.html>

because, according to former Defense Secretary Robert McNamara, “We lucked out....It was luck that prevented nuclear war.” The United States cannot rely on our luck lasting forever, and it cannot rely on a mythical Golden Dome to protect us. The only way to confront the growing danger of nuclear war and to guarantee that our world is not destroyed by these weapons is to eliminate them.

The United States should enter negotiations now with the other 8 nuclear armed states for a verifiable, enforceable agreement to eliminate all of their nuclear arsenals according to an agreed upon timetable. We cannot know in advance if this effort will succeed, but we do know what will happen if we don't eliminate these weapons. So there is every reason to try.



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PSR mobilizes physicians and health professionals to advocate for climate solutions and a nuclear-weapons-free world. PSR's health advocates contribute a health voice to energy, environmental health, and nuclear weapons policy at the local, federal and international levels.

About International Physicians for the Prevention of Nuclear War (IPPNW):

IPPNW is a non-partisan federation of national medical groups in 56 countries, representing tens of thousands of doctors, medical students, other health workers, and concerned citizens who share the common goal of creating a more peaceful and secure world freed from the threat of nuclear annihilation and armed violence.

About Back from the Brink (BftB):

BftB is a U.S.-based grassroots coalition of individuals, organizations and elected officials working together on a multi-year campaign to rid the world of nuclear weapons and secure a set of common sense U.S. nuclear weapons policies that will make the world safer, healthier, and more just.



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