An American Iron Dome: Big, Beautiful Blueprint or Bloated Boondoggle?

[00:00:00] Speaker 1: Ladies and gentlemen, please welcome to the stage Leonie Allard, Lukasz Kulesa, Ankit Panda, and Heloise Fayette. All right, I'm going to go ahead and welcome everybody to the room. This is fantastic to see so many people interested in a topic that certainly doesn't inspire passions or promote passionate debates, which is missile defense. The announcement had one of the four names correct, and I'm going to introduce my co-panelists in just a minute, but let me welcome you all to this room. I'm Ankit Panda. I'm the Stanton Senior Fellow in the Nuclear Policy Program at the Carnegie Endowment for International Peace, and I'm very happy to be joined by a fantastic panel to talk about an issue that has certainly, I think, seized attention here in Washington and around the world, which is the shifting American approach to homeland missile defense. To quote the great American philosopher Homer Simpson, to paraphrase Homer Simpson, depending on your perspective, missile defense is either the cause of all of life's problems in the nuclear world or the solution to all of life's problems. We will talk about this and a lot more, particularly in the context of the Trump administration's plans to establish what was first called an Iron Dome for America, but is now the Golden Dome for America, a broad-based approach to homeland missile defense, ambitious in a way that no previous American approach on missile defense really has been. Before we jump into all of this, I do want to introduce the three fantastic panelists we have here today to go over these issues with us. Furthest over from me is Mr. Jacek Dukalic, who is a staff officer at NATO headquarters in Brussels, Belgium. To his right is Robert Sufer, who is Senior Fellow in the Forward Defense Practice at the Atlantic Council Scowcroft Center, and a former official in the first Trump administration where he worked on the 2019 Missile Defense Review, among other things. And immediately to my left is Dr. Sana Verschuren, who's an Assistant Professor of International Security at the Pardee School of Global Studies at Boston University. Thank you all for joining me. And before we get into the discussion, I do want to remind everybody, if you have questions for this panel, as I'm sure you will, please just put those into your app and those will be beamed into this iPad in front of me, and I'll be able to ask that to the panel in the second half of this conversation. So, Rob, I'm going to open with you. Let's just take this right on. Let's talk about the Golden Dome. How do you see the administration's ambitions for homeland missile defense? Do you see them as prudent in terms of cost and feasibility? Are there certain elements of the Golden Dome you'd prioritize over others?

[00:02:50] Speaker 2: Thanks, Ankit. Okay. Sorry about that. Oh, no worries. So, Ankit, I guess when I was thinking about this question, it really depends on what your objectives are, right? Because your objectives will inform feasibility and cost, right? So, if you're after an impenetrable astrodome defense that protects the entire United States, that's obviously going to cost more money, if it's feasible, any time soon, but it's going to cost more than if you have more modest objectives, which might be, for instance, trying to enhance deterrence, and specifically, you might want to deny the adversary the ability to use ballistic missiles, either conventional or nuclear, against the United States. The intent of their doing so would be to coerce us, to break our will, to keep us from responding to threats and legions, to come into the aid of the allies. But again, if you're trying to just provide greater attack uncertainty, you don't need a truly comprehensive defense system, and the feasibility, the requirements for that defense are less stringent, and so it becomes more possible to do, and therefore, more affordable. So, in terms of priorities, you mentioned, I think, again,

for me, there are three objectives for this system. We need to solve the problem of North Korea's expanding ICBM threat. We need to deal with potential Russian and Chinese limited strikes against the homeland, and we can get into this. And the third is, in the context of having to deter two major nuclear powers, are we now worried about the survivability of U.S. second strike capabilities, which is the sine qua non of deterrence, right? But in terms of going forward, there's a number of ways you can approach this. I tend to take a more evolutionary approach. So the only thing I think that the administration can do in the next, say, two to three years, is add an underlayer to the current missile defense system. For those of you not familiar, we deploy 44 ground-based interceptors, but we can supplement that with a sea-based system, as well as some ground-based systems. So we can do that fairly quickly by just buying more and integrating it into the system, right? The next step would be to accelerate space-based sensors. So we can track the threat, and we can discriminate between false objects and real objects, right? And then in the longer term, maybe three to five years out, you can start to demonstrate space-based interceptors or boost phase intercept concepts using directed energy or kinetic energy kills. So again, for me, it's an evolutionary approach meant to enhance deterrence. The idea is to make it clear to adversaries that their use of missile strikes against the homeland would be not only fatal, because we probably would respond, but also make sure that it's futile and that they won't be able to achieve their initial objectives.

[00:05:50] Speaker 1: So if I'm hearing you correctly, Rob, I think what you just outlined strikes me in a way as less ambitious than what the Golden Dome executive order at least sets out as the ambition for the United States, which is defending against ballistic cruise, hypersonic glide vehicle threats to the homeland from any source. You're still drawing a distinction between North Korea, Russia, and China, if I hear you correctly.

[00:06:11] Speaker 2: Well, no. I think we need to do all three. And we do have to defend against all those capabilities, but I think in a limited way, right?

[00:06:18] Speaker 1: But would you favor the end of the practice that the United States has been in since the late 1990s, where the aspiration has been to treat North Korea and potentially Iran one day as a distinct class of threats to the homeland that require missile defense, vis-a-vis Russia and China, which, you know, the 2019 Missile Defense Review, for instance, said the United States could rely on nuclear deterrence primarily to deal with that challenge?

[00:06:40] Speaker 2: No. We definitely have to change that policy to allow for building defenses, albeit limited, against Russian and Chinese limited coercive threats.

[00:06:51] Speaker 1: Okay. Thank you. Jacek, I want to come to you to get an allied perspective on these questions. So allies have long taken an interest in U.S. missile defense programs for a variety of reasons. Everything from perceived extended deterrence credibility, an America that's better able to protect its homeland will be more inclined to take risks on behalf of our allies, but also looking to co-development opportunities as well. From the perspective of how allies, particularly in Europe, are viewing the Golden Dome, what are the opportunities in this regard? Are there reasons for allies to be concerned from where you're sitting?

[00:07:23] Speaker 3: Thanks. Thanks, Ankit. First of all, thank you very much for having me here. It's really a great pleasure. So I remember when I was studying, like a great treat that I got from my supervisor was a CD-ROM from the Carnegie Conference. It was 20 years ago or so. So great pleasure to speak here. And just a disclaimer that I am representing my own views, not necessarily the views of NATO. Let me begin by saying that I think there is a similarity on both sides of the Atlantic when it comes to missile defense. There has been huge effort of an interest of NATO allies to strengthen integrated air and missile defense against a wide ranging of missile threats, be it cruise, ballistic, hypersonics, and coming from all directions. So truly a 360-degree approach to integrated air and missile defense. And the reasons for this are obvious. So Russia's breach of the INF Treaty since February 2022, we regularly see news about horrific Russian missile barrages against the Ukrainian population and critical infrastructure. We closely observed missile attacks against Israeli last year, and missile threats to Europe are becoming worse. So the situation is not likely to improve, and we have to acknowledge that. And saying that and going to Golden Dome. So Golden Dome is not only about, as I understand, shiny space interceptors, but it's also about, let's say, comprehensive defense of the U.S. homeland with this underlayer capabilities that Rob mentioned. But it's also about allies. So I found it quite assuring that the executive order speaks about the review of allied and theater missile defense. And of course, this creates hopefully some opportunities for collaboration, for acquisition. And missile defense in Europe really requires a boost. So it's clear that we need much more missile defense that we have, and we actually need those capabilities faster. And this brings me to another portion of your question, which was about the impact of U.S. missile defense on the U.S. credibility. So historically, there are two ways that allies have been looking at it. And one way of thinking is that the more protected the United States is, the more decoupled from the allied security the U.S. would become, so retrenchment of the United States into fortress America. The second way of thinking about it is quite opposite, that more missile defense, more protection actually recouples the United States with security of the allies. It allows the U.S. to take more risks on behalf of allies. And my personal view is that actually more homeland missile defense is good for assurance. It's also good for deterrence. I think that the problem would start when the U.S. would somehow make security guarantees to allies dependent on, let's say, full and impregnable missile shield. But I'm not sure, I don't think that we are there and that we are going in that direction.

[00:11:34] Speaker 1: So the Department of Defense is carrying out a feasibility assessment right now of the Golden Dome. We don't know exactly what the Golden Dome will look like, which programs will be procured first. From an allied perspective, I mean, speaking in your personal capacity, what are some of the things when this feasibility assessment is completed that you might look to to say, okay, this is actually really good news for Europe, for NATO?

[00:11:55] Speaker 3: Of course, from, let's say, purely regional perspective. So the continuation of efforts to strengthen regional defenses would be good. And this is actually something that would also could, as I understand, benefit U.S. homeland defense, but providing this underlayer against different missile threats. And we have to think about missile threats to the U.S. homeland in a, let's say, very holistic way. So we have to think also about the cruise missiles, something that was, I think, underappreciated in the United States for a very long time. And from perspective of, let's say, allied plans and so on, it's good that the, let's say, U.S. critical

infrastructure, ports, airports, and so on, is protected against this kind of missile threat. So I would say that this holistic approach to this is good.

[00:12:59] Speaker 1: Great. Sal, I want to come to you now. The administration's executive order nods at strategic stability, which is, of course, a concept that's been deeply tied up in debates going back decades in the United States about missile defense. We were actually talking right before this panel about how important it is to define what strategic stability is, which the executive order does not do. But I wanted to ask you, what do you anticipate the strategic stability consequences, however you'd like to define that concept, would be of the United States seeking to actually invest in what the Golden Dome aspires to do? How might American adversaries, in particular, counterreact? Yeah.

[00:13:34] Speaker 4: Okay. So let me start by saying a big thank you. Thank you for organizing this panel. Thank you for inviting me and to contribute to this panel. So when we think about strategic stability, and specifically the relations between our nuclear powers in this space, I'm going to be talking about missile defense specifically for strategic purposes, right? Like we've also got these theater missile defense systems. I think in general, and we can talk about it a little bit more, what we've seen is a lot of mission creep. So we see these theater systems being used at a strategic level. So for example, the SM-3 Block II A-test against an ICBM-type target is an example of theater being repurposed for strategic. But moving on from the definitional issues, I want to highlight three main issues. The changing rules of the game, the defensive-offensive challenge, and the potential for shifting crisis behavior. So let me get into the first one, the rules of the game. So throughout the Cold War, we've kind of established a set of rules informally that we're abiding by in our strategic interactions, right? Like we're living in a mad world. We cannot attack each other because either side would be destroyed in such a case. And so this shared understanding of the purpose of nuclear weapons, what they mean, how they're supposed to be employed, and the red lines in any conflict behavior, like what we just this morning heard about from Colin Kahn, about how that played out in the conflict in Ukraine, I think is incredibly important. And this was crafted through treaties. Think about the dual treaty of the 1972 ABM Treaty and the SALT I. True communications, the red phones, the Track II, Track I debates, true shared know-how and practices such as PLs, permissive action links, some coercion on the scene. We've established these rules that we're abiding by. And this really matters because it gives adversaries some sense of how to interpret each other's behavior. It gives blueprints for what best practices are when tensions get higher. And it outlines a set of accepted behaviors, I think. And the problem with missile defense is that missile defense is not part of the mad world. Missile defense is part of a different world. It is part of the world of denial, whereby we're trying to get our adversary not to execute their attack by rendering them unable to do so. And this is a different world with different sets of rules. And I think that shifting between these two worlds, something that's been happening for a while actually, something that's been happening for about the past 20 years, I think creates a lot of confusion and a potential for misperception, ultimately miscalculation. So I think it's really, that's the first danger that I really want to highlight is this shifting between what the rules of the game are. The second is the offense-defense challenge, which I'm sure everyone in the audience is already familiar with. But the offense fundamentally has the upper hand in these strategic interactions, right? And we can think about that in multiple different ways. So for example, the numbers of interceptors you would need to take

down incoming missiles is quite high. You need to fire more interceptors than what's coming at you. And so for example, for the Golden Dome, I mean, the estimates you read online is that it's more than 1,000, maybe 2,000 satellites need to be up in space in order to intercept even a limited attack. And then the second is that there's an enormous cost, the cost balance is really off, right? The enormous cost that comes with this. Just to give you a sense, the Next Generation Interceptor, and these are data I pulled from the Missile Defense Advocacy Alliance, but the Next Generation Interceptor, which is the interceptor for the ground-based midcourse defense system, is estimated to cost 111 million a pop. The SM-3 Block II-8, 27.9 million, right? That's a lot of money. And if we think about the thwarting of the Iranian attack, that was incoming missiles and drones and cruise missiles estimated somewhere between $80 and $100 million, and interception that was needed to take down these air threats was estimated to be a billion dollars. You can see how the cost calculation, the cost balance is really off. And then we're talking about a moving target, right? Like adversaries are not just going to sit by and take whatever the United States is building. Adversaries are going to develop, and we've seen this happen, technology to attack or evade missile defenses. Russia and China have done so in various ways. I mean, in turn, the United States will have to respond. For example, they'll have to harden those satellites. They'll have to increase the endurance of the satellites. So this is ultimately how we get into an arms race, right? This is ultimately adversaries trying to tackle each other's. And in this case, it's an armed arms race with very little guardrails. We've seen the dissipation of arms controls treaties, because in the end of the day, limits on missile defense, I think, are very much linked to strategic offensive forces reductions. And so the reluctance of the United States to accept limits on missile defense we know has been an impediment to keep the arms control conversations going. And then I want to turn to my third point, which is about shifting crisis behavior. And I want to kind of think about one aspect, right? It's often said that missile defense emboldens both sides of the equation. It emboldens both the side that's under the shield. It also emboldens the potential adversary. And I think—and here I want to be a little careful about what I say, because I can't look in the heads of policymakers. But my interpretation of the Iranian attack or the two Iranian attacks on Israel is very much an example of this. And while we also have to be careful to take or to draw parallels between what is a more theater-oriented discussion with slower and less sophisticated missiles, I think that we can learn something from that situation. I think the Iranians have felt invulnerable due to Iron Dome, Arrow, and their other technologies, and that has emboldened them to take more aggressive foreign policy actions. And likewise, in my reading of it, the Iranians were trying to send a very costly signal through that attack. They were trying to say they were meaning business, but they were also, I think, calculating that their attack would be intercepted. And so if that wouldn't have been the case, if that wouldn't have worked out, the consequences would have been disastrous. So in general, the third point is that I think we're in a world where there's just a really high chance for escalation. And so, yeah, I guess call me the pessimist on the panel.

[00:20:06] Speaker 1: Well, sounds good. We'll come back to Rob, because I know he has a slightly different perspective on some of these questions. I just want to pull on one thread you raised, which is about arms racing stability in particular. We're obviously in this moment now where New START is due to expire, but we have a president who is simultaneously pursuing an ambitious Golden Dome at the same time that he has talked about the expenditure of sustaining nuclear forces,

aspirations to work towards denuclearization, disarmament of some kind with Russia and China. Is there a tension here that you see?

[00:20:37] Speaker 4: So to me—and this comes to my—I think a little bit from the historical work I've been doing, thinking about the Strategic Defense Initiative and Ronald Reagan. To me, those things didn't come from a world that was geared towards disarmament. These things came from the denial world, in which you want a lot of offensive forces. You want a lot of—you want missile defenses. You want counterforce capabilities. You kind of want—I call this the plus-plus-plus approach. You kind of want a little bit of everything. And so to me, I think that there's a really big tension between stated ideas around moving towards a world in which nuclear weapons are less important and the missile defense, which are so symbolic of this denial world, of this plus-plus-plus world, if that makes sense.

[00:21:20] Speaker 1: Rob, coming back to you, views on strategic stability. I mean, let's say if you're back at DOD and tasked with implementing this Golden Dome executive order, which tasks the department to think about strategic stability, how do you square that circle with this ambitious missile defense effort that seeks to escape the condition of vulnerability?

[00:21:38] Speaker 2: Right. But let's address first the arms race aspect of strategic stability. So I know it sounds pretty logical that if one side builds defenses, the other side will want to build more offenses to overcome it, and you go back and forth. But in fact, if you look at the history of this, when we signed the ABM Treaty in 1972, the assumption was that because we maintained mutual vulnerability, there would be no need for either side to build up their nuclear arsenals. But in fact, in the 10 years between 1970 and 1980, the Russians, the Soviets, went from about 2,000 warheads to about 7,000 warheads. The U.S. went from about 3,000 warheads to almost 10,000 warheads. The point here is that there's something else going on besides this simple action-reaction phenomenon. Now, let's fast forward to when we pulled out of the ABM Treaty in 2002. A lot of people said that, my God, this is going to be the end of arms control. This is going to cause an arms race. But the very same month that we pulled out of the ABM Treaty, Russia and the United States agreed on the so-called Moscow Treaty that actually reduced the size of nuclear arsenals by two-thirds. We pulled out of the ABM Treaty, and yet we had nuclear reductions. So I suggest that this is a much more complicated issue. And I think in the Pentagon and in the administration, they will have to think about this. And I'm not saying that Putin is not going to say that this will be destabilizing, but we know what Putin's been saying about Ukraine. If you don't believe him there, why would you believe him in this aspect? So we're going to have to manage that problem, but I think that there may be a way of doing that. And if there isn't, then I come back to this answer, and that is we have to balance two different risks. One risk is the potential arms-racing risk, but the other risk is that by remaining vulnerable to Russian and Chinese coercive threats, we create more instability for regional conflicts, because now Russia and China have become perhaps more emboldened, because they think that if they strike the United States during a conflict, they will weaken our resolve, they will get us to back down. By having some missile defense, albeit limited defense, you have complicated that calculation, and I think you've reinforced the terms. And the last thing about crisis, what was it, crisis behavior, you know, the one thing I took away from the Iran-Israel situation was Israel built a homeland missile defense system. It wasn't perfect by any means, but it allowed the Israeli government the luxury of not having to retaliate against Iran during that attack,

and in that sense, it kept the crisis from escalating to perhaps another Middle Eastern war. So I would suggest that there was some strategic value to even imperfect homeland defenses.

[00:24:45] Speaker 1: So, Jacek, I want to come to you, because something that's really interesting in this conversation compared to the conversations and debates in the missile defense world just a few years ago is obviously that we live in a world now where missile-centric warfare has become somewhat normalized, regrettably, and this is the shoe that many of us feared would drop, and it now has dropped in Ukraine, in the Middle East, even 2022 with Chinese missiles flying over Taiwan and the Indo-Pacific where missiles are proliferating very quickly. You know, Rob and Sana have both shared some impressions about the lessons that they've taken from observing missile-centric warfare and the role that missile defense plays. I'd be curious if you could share something from the European and NATO perspective in particular about what allies are learning from the intensification of missile-centric warfare and the role that missile defense is playing in creating space for decision makers, lowering or increasing escalation incentives and risk-taking behavior. What's your impression?

[00:25:39] Speaker 3: Yeah, sure, sure. So I think one of the basic lessons that we learned from Russia's war of aggression against Ukraine is that missiles are an integral part of Russia's strategy, and if in the future the deterrence would fail and there would be a NATO-Russia conflict, this is something that Russia would do from the beginning of the war and for war-fighting purposes, not only escalation management purposes. Also other lesson is that actually we see that Russia is learning, that let's say over time Russia learned how to do the multi-axis attacks using different types of missiles with the use of cheap UAVs just to saturate missile defense systems. So let's say even we have seen that actually some of the Western missile defense systems have been quite effective against Russian missiles. We see that there is a need for quantity. We need more missile defense systems, but even so, even if we had more, there's actually, like the systems could be relatively easily overwhelmed. So we need to think about, let's say, missile defense in a more holistic way, and offense also plays a role. So if you look at the NATO IMD policy that was published, you can see that there is also an emphasis on the role of offensive systems in defending ourselves, defending alliance, so be it the precision strike or other, let's say, left of launch capabilities. So we have to think about defense in this more holistic way, not only thinking about defensive systems, also offensive. And what Sanne said before, that actually in terms of cost curve, the missile defense are not where they should be, so there is a need of making sure that the costs of different types of systems is going down as well, and hopefully this is something that over time will happen.

[00:28:26] Speaker 1: Rob, I want to come to you to ask you a bit more about North Korea. You emphasized the need to keep up with North Korea's capabilities, and there's actually a question here from Lauren Cho who asks that, despite decades of focus, U.S. intelligence has struggled to accurately assess North Korea's capabilities and deter its advancements. So how would you see the intelligence, what have been the key intelligence or policy failures that have prevented effective outcomes vis-a-vis North Korea, particularly the scaling up of its ICBM capabilities, and how should these inform future missile defense or deterrence strategies?

[00:28:57] Speaker 2: Well, Anne Keith, that's a question for you. I mean, you're one of the most foremost experts on what's going on in North Korea. But let me answer it this way. When we're trying to figure out how much missile defense, homeland missile defense is enough against North Korea, we face at least three dimensions of uncertainty. The first is we don't know the North Korean threat. I defy anybody in this room to find an official U.S. government estimate for how many North Korean ICBMs exist. It's not there. You know that China has 500 nuclear warheads, they're moving to 1,000 in 2030. There's no data like that for North Korea. Why? Because it's a complicated problem. So we don't know really what the threat is, and even within the government, most of those estimates are what we call low-confidence estimates, and we don't know how quickly it's going to advance. The second dimension of uncertainty is we don't know how well our missile defense systems will work. And so is the firing doctrine two-on-one? Is it three-on-one? Is it four-on-one? You have to make some assumptions about that, right? And the third dimension of uncertainty is we don't just rely on active defense. We don't rely on shooting down North Korean missiles once they're launched. We will try to eliminate them on the ground, right? We call that left of launch or sometimes missile defeat. But again, we don't know in a real-time scenario how many of those mobile launchers we're actually going to find. So you add up those three levels of uncertainty, and it's really difficult for the government to figure out how much is enough and how quickly we need to advance. All I can say is that today, the military commanders who are in charge of defending the homeland and northern commanders believe that we have enough today, but they are worried that we will not in the future. Why? Because North Korea is developing multiple warheads, right, as well as countermeasures for their ICBMs.

[00:30:50] Speaker 1: Thanks, Rob. Son, I want to come to you with actually a pair of questions that go very well together from first Matt Bunn and Sam Wilson. So Matt Bunn asks, how would space-based interceptors in particular affect China and Russia's decisions about expanding their nuclear forces and accepting restraints and prospects for future risk reduction? And Sam asks, how much do you think fears about space-based intercepts have animated Soviet and later Russian and Chinese proposals for space arms control, such as the prohibition of the placement of weapons in space?

[00:31:22] Speaker 4: Mm-hmm. Mm-hmm. Okay. So these are great questions. Very big questions, actually. So on the Chinese, I mean, I think the Chinese concern in particular has had to do historically with their second-strike capability. Having relatively limited numbers of nuclear weapons, they've been worried that U.S. missile defense capabilities would be able to take out their second-strike capabilities during a conflict or during a crisis. And I think I imagine that moving these capabilities into space will in no way lesser their fears and they will use the moves that the United States is making as a, whether they genuinely believe it or not, but as a way to legitimize their own increases in offensive missiles. On the space-based arms control, I think in some ways it's really interesting. I mean, I've been really deep lately in the Reagan archives and in the European counterparts of the time, and like the French, for example, were very interested in putting forward proposals to limit the militarization of space. So it's always been these issues are incredibly linked, right? Like the militarization of space, ASAT capabilities, missile defense capabilities, all technically and strategically they're very linked issues. But I'd say that we're well past a situation where we can talk about militarization of space. We're already there. And

so I think that really complicates this discussion that powers should be having, which is by no means evident in contemporary challenges. I hope that addresses it a little bit.

[00:33:00] Speaker 1: Absolutely. I mean, it is a really big question, but I think it's very important because the space-based component of the Golden Dome aspiration is certainly there. There's a lot of enthusiasm about lower launch costs, for instance, that factors in the cost debate today as well. But I think that's very well said. Jacek, I want to come to you with a question about ambiguity and the utility of ambiguity in augmenting a missile defense posture. So Jackson DuPont asks, there seems to be a great deal of ambiguity specifically in what the American homeland missile defense architecture would defend against specifically. In what ways do you think strategic ambiguity is actually useful when it comes to a missile defense system capability declaratory policy? And can ambiguity actually be destabilizing vis-a-vis American adversaries in your perspective?

[00:33:45] Speaker 3: That's a very good question. Of course, even in, let's say, at NATO or with regards to, let's say, NATO policy, there's always a discussion to what extent ambiguity is good. When it comes to nuclear, let's say, God response was always ambiguity. We should retain the ambiguity in terms of how we would respond. In terms of missile defense, I'm not so sure. I think that we probably have to be very clear about the goals that we have and, let's say, what strategic purpose our missile defense systems should serve, especially vis-a-vis Russia and China. And I would say that I agree with Rob on this, that I think what's concerning, for example, with regards to Russia is its, let's say, strategy of escalation management that is based on this dosing the damage in the way of, let's say, sobering, let's say, Russia's adversaries, but not enraging them in terms of response. So I would say the missile defense declaratory policy that's intended to shake this confidence in the escalation management strategy that would shake confidence of Russia that it can, let's say, tailor limited attacks to achieving its goals. I think this is something that would serve U.S. and allied strategic interests.

[00:35:45] Speaker 1: Thanks. So, Rob, we have a couple questions that I think get back to something you said earlier about defending the homeland against limited attacks. So both Cameron Tracy and John Wolfstahl essentially ask a version of the same question. I'll read Cameron's, which is that, what is the limited capability to defend the homeland against a Russian strike achieve? If the U.S. could confidently intercept, say, 20 Russian ICBMs, wouldn't that simply incentivize Russia to instead launch 30, 40, and so on? So say a little bit more about that particular point you made earlier.

[00:36:16] Speaker 2: Right. So you have to first ask, why would Russia or China launch these small attacks, right? And again, I think the idea would be that they want to create enough damage to break our will to prevent us from responding or assisting our allies, but not so much that it will elicit a massive U.S., say, nuclear response. And trying to find that space is going to be very difficult. But for instance, if they don't, they don't exactly know how well our defenses will work. And so they have to figure out a small enough number of strikes that will both overcome those defenses, but not be so much that would, again, elicit that big response. That is hard to do. What we are doing is we're creating uncertainty in the mind of the Russian or Chinese attack planner to make this so difficult that they don't even contemplate this at all. Now, if you believe that Russia and China would never contemplate attacking the United

States, even with limited, say, conventional attacks, then this is not for you. We know that China is building a conventionally armed ICBM. If not for the U.S., then for whom? So they're thinking about this, and what we're trying to do is take away this means of coercion. I'll never forget this. Christine Wormuth, who was Biden's Secretary of the Army, she said, yeah, China is developing these capabilities to strike the United States. Why? Because they want to break our will. They want to keep us from, you know, coming to the aid of our allies. And we simply want to try to obviate that.

[00:37:53] Speaker 1: Sam, do you want to add something on this?

[00:37:56] Speaker 4: Maybe this is just an odd thought, but I'm really puzzled. Why would an adversary be more determined to launch an attack when they're not certain that their attack will land versus situations in which they know there will be massive consequences? I'm not quite sure why an uncertainty of not being able to complete an attack actually works in a deterring manner.

[00:38:20] Speaker 1: Rob, do you want to respond to that real quick, and then we'll keep the conversation moving?

[00:38:26] Speaker 2: My sense is, again, if they launch a large-scale attack against the United States, which they can, right, they can probably expect a response. But they think that if they launch a small-scale attack, there will not be at least a nuclear response. Right? Now, you don't believe that they would do that. But again, there's enough evidence. We see that Russia has been making these threats against European countries, right? Limited strikes, limited course of strikes. Why not against the United States? I mean, Russia and China, actually, they have comprehensive homeland missile defenses of their own, because they're concerned that the United States will actually strike their countries during this scenario.

[00:39:11] Speaker 1: I'm starting to fear that this panel might not finally resolve these decades-long debates in the missile defense field, unfortunately. But, Sona, I want to go back to your point earlier in your opening remarks about crisis behavior, because Andrei Baklitsky reminds us that in 2017, President Trump claimed that the U.S. had a capability to, quote, knock out a missile in the air 97 percent of the time. What do you think his expectations for Golden Dome would be in terms of efficiency, and what would this mean for U.S. decision-making in a conflict, in your view?

[00:39:39] Speaker 4: Yeah. So, I think this is one of the big underlying problems of the missile defense debate, which is that the technical capabilities aren't quite there yet, and they aren't quite there in many different ways, right? Like, Golden Dome, essentially, apart from investing in—I mean, it seems—it's a little unclear what it's going to be, but it seems like it's both an investment in the capabilities that are already here, so the GMD, the TAT system, the Aegis system, and then, like, this next generation, the next generation lasers, erected energy for boost-phase interception, for example. And so, I think that some of those technologies, like erected energy, really aren't quite here yet. I think the common saying is they've been 10 years away for the last 40 years, so I think that probably remains somewhat true, so I think that's one bit where the technical systems are actually at. But I would also point to something different, which is that the way that these—that missile defense is increasingly conceptualized requires an enormous amount of coordination between military services, between the military services of different countries, in the

case of the NATO IAMD mission, and doing that is really, really tricky. Getting systems to talk to each other, getting different organizations to talk to each other, those are really, really tricky things to pull off in ways that I think we haven't quite figured out, even at a lower end. And so, when you're moving into the conversation around Golden Dome, you're kind of exacerbating these coordination issues around having different technical systems, different services, different countries talk to each other, exchange data, prioritize in data. I think this is really quite difficult to do. Just thinking, like, having sensors and interceptors talk to each other is not—across different systems really isn't that straightforward.

[00:41:23] Speaker 1: Jacek, I want to come back to you. So Chiara Farnioli asks a question that I think gets at the relationship between missile defense and nuclear deterrence and the potential for conventional capabilities to actually potentially be a lot more credible. So she asks, both the U.S. and Europe are developing their own shields to defend themselves and boost their deterrence, Europe with the European Sky Shield Initiative, the United States with Golden Dome. Could these systems in the long run replace or potentially substitute for the needs of nuclear deterrence and potentially contribute to limiting nuclear proliferation and potentially enabling greater confidence in conventional deterrence capabilities, in your opinion?

[00:42:02] Speaker 3: So a short response would be no, in the sense that I think it's—NATO, at least, has been quite clear that we have had this debate back in 2010 or so about relationship between missile defense, nuclear deterrence, and so on, and the view is that missile defense cannot replace nuclear deterrence. And this is like for many different reasons, and some of them I mentioned before that you—it's really hard to have this 100-proof, leak-proof missile defense system that nuclear deterrence is a, let's say, backbone of the entire deterrence and defense posture. So I don't see in the foreseeable future a scenario in which missile defense can entirely replace nuclear deterrence. And with conventional capabilities, this is also a part of, let's say, overall NATO deterrence mix, and over the last years there's really a clear recognition within the Alliance that we need more deep precision strike capabilities. So we are also investing in these capabilities, not as a way of replacing nuclear deterrence, but for creating options in a conflict. So I would say that the role of nuclear weapons in the overall mix would remain.

[00:43:59] Speaker 1: Thank you. Rob, I want to come back to you. So we have a couple questions on technology, which I think is certainly worth talking about given the Golden Dome Executive Order's emphasis on an array of new capabilities. So Frank Kuhn points out that Golden Dome has two dimensions. One is the rhetorical dimension, the policy dimension, which we've largely been talking about. The second is the technological dimension. And he asks, are the technological capabilities that are being sought in this executive order really new, or are these some things that were already being worked on in the United States?

[00:44:30] Speaker 2: Well, I guess the answer is both, really. So as you pointed out, the near-term options, if they want to do something, will be the SM-3, the sea-based missile. Now you have to integrate it into the homeland missile defense architecture, so that's going to require some integration. So all that stuff, and maybe industry can figure out a way to make it less expensive. For instance, right now they buy 12 SM-3 2A missiles a year, and that's why it costs $27 million. If you were to triple that and you could do that, you'd bring down the cost. So a lot of near-term stuff, but the long-term stuff really is the space-based stuff, space-based interceptors

and the like. Interestingly enough, we did a study at the Atlantic Council, which is actually available on our website. We spoke to the usual suspects, the industry out there. What are your concepts? And there really were no new concepts. Why? Because it wasn't our policy to build space-based interceptors, and so they weren't investing any money in that. So now with the executive order, companies are falling all over themselves, presenting new ideas, and these are not just the traditional big defense contractors, but the software companies and SpaceXs and the like. There's a whole set of new ideas that are being germinated by this executive order. Whether they will come to fruition, I don't know. Look, I'm an international relations major, I cannot speak to the viability of technology, but I can only assume that the administration, when they make a decision to move forward, it'll be based on some level of confidence. And again, we can go quickly with the proven stuff, more SM32As, more next-generation interceptors, and be a little bit more deliberate about the space-based stuff, and you begin with research and development, you put a test into space, and if it works, then you make a decision to deploy.

[00:46:20] Speaker 1: So we're actually going to get a little bit deeper into the technological trenches here. This is a question for anybody on the panel that would like to take it on. Matt Gensel asks, are there any changes in technology that any of you see today? He proposes low-cost, reusable space lift capacity, lasers, or cheaper interceptors that plausibly might flip the offensive cost advantage against missile defenses for attackers. It's a tough one, but if anybody has any thoughts.

[00:46:51] Speaker 2: We've been working on directed energy and lasers for a long time. We've moved away from the old chemical lasers. We had this big airborne laser, 747 Jumbo Jet, which actually lased a target and shot it down, but it was very expensive. We're moving to solid-state lasers, and in fact, during the Obama administration, there was a concept to put a solid-state laser on a high-altitude UAV and have it hover off of the North Korean peninsula and be able to shoot down weapons in the boost space. So there are things that we can move forward on. There's high-powered microwave. There are things that are in the classified realm that you do not hear about. But again, the thing that gets the most focus seems to be this space-based interceptor concept. And on the one hand, you hear views that this can never possibly work unless you have 10,000 interceptors in space, and you have others who say that no viable concept could be available with 2,000 or 3,000 interceptors. And again, the idea here is not to be able to shoot down every missile that's being launched from North Korea, Russia, or China, but it's part of a comprehensive, layered missile defense system. So you've got the boost phase with the space. You've got the midcourse phase with the ground-based interceptor. You've got the sea-based system that intercepts it later in the outer atmosphere. And then you have THAAD that could intercept some threats in the terminal phase when there are no interceptors. And so when you think about cost effectiveness and technology and all that, you've got to look at it from the adversary's perspective. Right now, if they want to launch a strike against U.S. nuclear forces for whatever reason, they can figure out what it would take. They know where ICBM silos are. They know where bomber bases or submarine pens are. There are going to be a certain number of submarines out at sea, granted. But they can maybe think about putting together a surprise rehearsal attack. If you have these multiple layers of defense, you have so complicated their attack, they have no idea. And that's the whole purpose. It's to enhance deterrence by complicating. There's no way they could. Maybe they could penetrate the space-based layer. But can they penetrate,

then, the midcourse layer? Can they penetrate the terminal layer? It's all about creating uncertainty.

[00:49:12] Speaker 1: So Sana, I want to come back to you. Do you have something to add to that?

[00:49:15] Speaker 4: Yeah, maybe just a little bit. The last time we tried space during the Reagan administration, the role was a whole lot different. It was technologically different, too. The cost, for example, of moving things up in space has really significantly come down. But I think what we see today, just a bit I want to add, is that it's really no surprise. I think some of this stuff was already present during the first Trump administration. Together with Space Force, some reorganization in the primes in the industry, I think we were really gearing up towards a lot more of emphasis on space. And I think we get to see that in this broader context, but that's just a small part.

[00:49:53] Speaker 1: So staying with you for a moment, Sana, I want to ask you a question posed by Anya Fink, which actually gets at something that I found probably the most surprising part. Maybe not the most surprising, but one of the surprising parts about the executive order, which is that it calls for preferential counter value defense. So Anya asks, how do you understand the executive order's discussion of choosing counter value targets for defense? Any thoughts? Yeah.

[00:50:15] Speaker 4: I saw that language, too. And I am not entirely sure how to interpret that. Maybe just thinking about, I mean, I think more broadly, and this is maybe sidestepping the question a little bit, but I think more broadly bringing all these missions together, cruise missile defense, hypersonic defense, ballistic missile defense, short range defense, bringing this all together into one giant system really isn't a great idea. Because these are all things that have different purposes, that are playing in different realms. And so bringing that from a strategic perspective together, I think, creates a little bit of confusion on the part of the strategic relationship. But that's completely sidestepping the point. But maybe Robert knows.

[00:50:58] Speaker 2: Yeah. Well, I was taken aback by that phrase as well. Because for those of you who don't know, a counter value attack usually means an attack against the U.S. cities, as opposed to counter force, which attacks our forces. And so the language is that the administration must come back with a prioritized set of locations to progressively defend against a counter value attack. Well, against North Korea, our policy is to protect the entire United States to the best extent possible. So we don't need progressive locations. The idea is to protect against all of it. And we can do that because, again, it's a small number of threats, less sophisticated. With respect to Russia and China, as I understand it, the strategy is really more to counter, again, the Russia limited coercive attack. They're not going to attack our cities. Because if they attack our cities, then we would counter against theirs. So they are going to go after our critical infrastructure, which is the seaports, the air bases, the trans-shipment points. It's those military quasi-critical infrastructure targets that they're going to go after. And that's where you need to prioritize the list. And obviously, you cannot protect all the areas. But there are some key nodes, say, San Diego, Pearl Harbor, some ports in the Gulf, some very important trans-shipment points, railroad lines. There are things that you can prioritize. But in terms of prioritizing counter value, that makes less sense.

[00:52:31] Speaker 1: Got it. So I actually want to take the prerogative to ask all of you a question. This gets at the point that Sana just made. The world has changed. It's not the 1980s anymore. But I would actually make the point that it's not even the 2010s or the 2000s anymore, in the sense that, Rob, you brought up your concerns about Russian and Chinese homeland missile defense capabilities, mid-course capabilities in particular. These are now parts of conversations about the future of the American ICBM force, for instance. So the question I have, and this is really an open question to all of you, is are we back in something of a pre-ABM world in a weak way, where the hallmark of the pre-ABM era was that mutual concerns about missile defenses manifested on both sides, leading to ultimately that realization that limiting defenses would provide some solve to the arms race. Golden Dome obviously does not articulate this vision, but it articulates an expansive American vision at a time when more Americans are concerned about Russian and Chinese long-term investments in missile defenses. So any thoughts on this particular point? And obviously feel free to disagree with the premise that we are in that kind of pre-ABM context. Sana, maybe you want to kick off, since you've been deep in the archives.

[00:53:42] Speaker 4: Yeah, so I'm actually—I think part of why we got to the ABM system is I think in part also because we got to define the system. Like we agreed upon what missile defenses was at the time. There was less shifting, and I feel like now we're talking about missile defenses—we're talking about so many different systems that you've outlined really well. You're supposed to do everything from deterrence to assurance to preventing proliferation, counterproliferation. So I think we're in a very dangerous world right now, and I think getting towards a safer world with treaties is also going to be inhibited by the fact that we don't really—that these are very murky technologies, shifting definitions, shifting priorities, that make them moving targets and that does make it hard to agree upon what we're talking about in the first place, right? Like every time we do arms control, a big chunk of arms control conversations are about actually defining what we're talking about, and I think in missile defenses it's particularly difficult, and it's not just in the Golden Dome stuff. Even if we think about integrated air and missile defense, I was part of a conversation that the French were organizing about missile defense in the Bourget, and it was really interesting because it was like all these phenomenal panelists that were talking about their national policies for integrated air and missile defense, and everyone defined the whole thing different, right? Like military officers were thinking more about air defense, civilian officers were thinking about missile defense. I think this is part of what makes our world so difficult right now.

[00:55:14] Speaker 1: Rob, Jacek, any thoughts?

[00:55:16] Speaker 2: Ankit, let's maybe wait and see what the administration has in mind, and then we can talk about the implications for arms racing and the like. It's not inconceivable to me, given the president's interest in both missile defense and arms control, that we might see potentially an agreement with Russia to increase the size of our deployed strategic forces to address the China problem. So go from 1550, today's New START Treaty, to maybe 2200, back to the Moscow Treaty, and we layer that with a layered missile defense system, and we talked to Putin about that, and he already has his own beginnings of a homeland missile defense system, and if he thinks that he can limit our offensive capabilities through this agreement, albeit with some missile defense, and again, remember, this is not a leak-proof, impenetrable defense. If Putin wants to get a nuclear missile on the United States

homeland, he will, using an underwater torpedo or the nuclear cruise missile, he can do that. I think he may be more interested in limiting U.S. offensive forces, and so if he does that, he'd be willing to accept some growth in U.S. homeland missile defenses.

[00:56:32] Speaker 1: Yeah, it's like, any thoughts on the implications for European security of all of this?

[00:56:37] Speaker 3: Yeah, I agree that, I don't know if we are going into pre-ABM world, so what I now see is that the competition is, let's say, intensifying on many different levels, actually in all domains, the situation is in flux. We don't know where we are going, where it is heading, let's say everyone tries to find an area of comparative advantage and think that it provides some sort of security for a longer time, so my perception of this is that actually, that probably things get worse before they will get better, that we'll see this intensifying competition from, let's say, offense, defense, cyberspace, like outer space, et cetera, and let's say trying to provide the more positive spin into this, hopefully at some point we will find some guardrails, areas to agree, maybe it will be sooner rather than later, but I'm not very optimistic about it.

[00:58:15] Speaker 1: All right, so we just have a couple minutes left on this panel, and unfortunately I do think my fears were correct, we did not once and for all resolve these longstanding debates about missile defense, but I wanted to come to each of you to close us out with just a closing thought. Imagine that you have the opportunity to brief the Secretary of Defense in the United States about what should be the biggest consideration that the United States should undertake as it seeks to move ahead with this Golden Dome idea, what would your advice be? Let's start with you, Rob, because I think you've been in that position probably more recently than perhaps anybody else on the stage.

[00:58:51] Speaker 2: So I guess I would say, Mr. Secretary, missile defense, homeland missile defense is foundational to U.S. national security policy and certainly defense policy. If we are unwilling to provide protection for ourselves, how can we convince our adversaries and our allies that we're willing to protect them, that we're willing to run risks to protect them? We need, in fact, if you look at the first page of the Biden National Defense Strategy, it talks about the priorities, and you can't get past the second paragraph before it says, first we will defend the homeland, first we will defend the homeland. If you don't protect the homeland, it's difficult for the Secretary of Defense to, again, put troops in harm's way when he's not sure whether strikes against the homeland could potentially break our will and, again, prevent us from defeating our adversaries abroad.

[00:59:57] Speaker 3: Jacek? I would say don't forget about allies. Allies are willing to engage, willing to invest more. So take advantage of it and translate it into opportunity for all of them. Great.

[01:00:17] Speaker 4: And Sana? I think along the lines of everything I've said, proceed with caution. Certain technological pursuits might not be worth the financial, technical, or strategic costs that they come with.

[01:00:28] Speaker 1: These remind me of fortune cookies. They're actually shot missile defense fortune cookies, right? But anyways, please thank the panelists. This has been a terrific discussion. Thank you.