

# QUICK IMPACT



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## The “Iron Dome” and Implications for the North

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On 27 January 2025, President Donald Trump signed an [Executive Order](#) (EO) directing the US Department of Defense to build an “Iron Dome for America” which is shorthand for a next-generation missile defence shield for the United States (and since rebranded as the “[Golden Dome](#)”). “Over the past 40 years, rather than lessening, the threat from next-generation strategic weapons has become more intense and complex with the development by peer and near-peer adversaries of next-generation delivery systems and their own homeland integrated air and missile defence capabilities,” the EO noted. Although skeptics have questioned the cost and technological feasibility of an Iron Dome, the need to defend North America against ballistic, hypersonic, advanced cruise missiles, and other next-generation aerial attacks from peer, near-peer, and rogue adversaries [is now a US priority](#). Time is ticking. The deadline for the Secretary of Defense to submit to the President a reference architecture, capabilities-based requirements, and an implementation plan for this next-generation missile defence shield is 60 days which means three scalable options must be proposed by [28 February 2025](#) for review and decisions with RFIs ambitiously [anticipated for 2026 and beyond](#).

Many will think of Israel’s 10 Iron Dome batteries which can cover approximately 150 km (60 miles) to guard against missiles launched from relatively short ranges. Israel also has other systems ([David’s Sling, Arrow System and THAAD](#)) which together form a system of systems to protect [9,402,617 people and 21,937 sq km of land](#). To deal with the myriad different missile threats and their trajectories, flight paths and delivery systems, an Iron Dome for the United States will be on a scale, size and level of complexity that will stretch the capabilities of engineers, scientists and the military. In a potential distant future, the system could cover all of North America including the North American Arctic which would mean protecting over 380 million people and more than 19 million sq kilometers. However, for this current iteration of the EO, the Iron Dome will likely concentrate on the United States; the EO is clear that it is the Iron Dome for America. The technical necessity for comprehensive

space-based architecture and additional costs for systems to cover the entire continent of North America is beyond the current defence directive. The EO hints, however, at a role for allies and partners noting “Increase[d] bilateral and multilateral cooperation on missile defence technology development, capabilities, and operations” (Section 4a) is required. Canada (and other allies) will have important parts to play.

US Admiral (ret.) James Stavridis, the former Supreme Allied Commander of NATO, [recently outlined](#) the three elements of a successful “Iron Dome”: space-based sensors and interceptors; artificial intelligence to fuse and analyze information; and the ability to design, build, and implement a new method of destroying incoming missiles including with lasers.

The clarion call to protect North America has been made by successive Commanders of the North American Aerospace Defense Command (NORAD) and US Northern Command (USNORTHCOM). The goal is to have all-domain awareness, informed by sensors from seabed to outer space, that support deterrence by denial. [Deterrence by denial](#) aims to change the calculus of adversaries by permitting North America to see as far away in time and space to give the Commander information dominance and decision superiority. In other words, if North America can detect potential threats earlier, governments have more options to respond, especially options that do not involve force. Iron Dome could fundamentally [reshape how the United States thinks](#) about defence and re-define current integrated air and missile defence systems but answers about what to defend and from what need to come first.

There are eye watering costs, not to mention logistical and engineering issues that will need to be tackled. Rather than one system to cover all of North America, it is more likely to be many systems in many domains to deal with different missile threats that protect critical sites in the continental United States at the early stages and expand from there with theatre-style, likely ground-based and aerial systems, for Canada and Alaska.

Missile defence and modernizing early warning systems in the North American Arctic are complicated by the lack of persistent satellite communications capabilities above 60 degrees latitude. Today’s effective missile defence systems are extremely information intense, and future versions will only be more so. One of the reasons the F35 is so hotly anticipated in Canada is because it is a data and information vacuum, but managing such information flows requires new communications’ capabilities and AI to assist with the analysis. Particular Arctic challenges include frequent low cloud cover, aurora effects, maintaining a stable power supply, thermal management for optics, ice formation, protecting sensitive optical components, and complex atmospheric turbulence. Adequate supply chains and [industry capacity](#) are also concerns.

Strategically, the Arctic is a future, critical portion of the Iron Dome especially for cruise missiles given the shortest avenue of approach for many adversaries’ delivery systems is over the Arctic. Analysts have wrestled with missile defence for decades, including the U.S. Missile Defense Agency, U.S. Strategic Command, NORAD and U.S. Northern Command, U.S. Space Force (and component commands), and Defence Research Development Canada’s missile defence research programs.

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Canada, which contributes to and benefits from its longstanding bi-national North American Aerospace Defense Command (NORAD) with the United States, has committed to NORAD modernization programs, including promises to enhance its military footprint in the northern approaches to North America. NORAD warns of incoming missiles, but USNORTHCOM makes decisions with respect to which if any to defeat using its Ground Based Midcourse Defense (GMD) System optimally oriented to defeat [intercontinental ballistic missiles from North Korea or Iran but cannot manage the large and more sophisticated Russian and Chinese missiles](#). NORAD's North Warning System (a series of short- and long-range radars) and future Arctic and Polar Over the Horizon Radar systems will be essential sources of information; the latter two will be able to see far beyond North America and into the Arctic and the Greenland-Iceland-UK gap. A firm commitment to contribute to Iron Dome is an important shift in policy for Canada to make given its ["no" to participation in GMD in 2005](#).

The deadlines set by the EO for initial concepts are very tight and "off the shelf" options are likely to be preferred. NORAD will continue to defend all of North America with its three missions: aerospace warning and control and maritime warning.

There is great opportunity for Canada to rethink its defence posture and the sensors hosted by it and its space-based assets (such as [Sapphire](#)) could serve as a catalyst for deeper bilateral cooperation in continental defence, pushing both countries to develop new capabilities specifically tailored to high-latitude operations. Despite rhetoric to the contrary, the United States is defended with the help of allies and is the basis of F.D. Roosevelt's famous pledge in 1938 delivered in Kingston, Ontario that the American people will ["not stand idly by"](#). Canada must be ready to do its part.