Net Zero Industrial Policy Lab

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Why Adding Australia to the Defense Production Act's Domestic Sources is a Powerful Tool

Both the Senate and House versions of the 2024 National Defense Authorization Act modify the Defense Production Act (DPA) to add Australia (and the UK) as a domestic source. What are the implications of this addition for friendshoring critical minerals? Adding Australia to the DPA's domestic sources, which already included Canada, allows the US to directly fund mining development in jurisdictions with reserves nearly sufficient to meet U.S. net-zero deployment targets. It creates a powerful tool for mining development that could significantly friendshore the metals needed for the energy transition.

Defense Production Act Overview

The Defense Production Act (DPA) grants the President the authority to ensure domestic production of the materials necessary for national defense, as well as civilian and homeland security.[1]

If the US is not at war, the DPA process has three steps:

1. Designation: The President can create a Presidential Determination that production of a certain commodity must be increased.
2. Funding Authorization: The authorization of funds greater than $50m requires congressional approval and notification. Projects less than $50m can be directly implemented.
3. Implementation: Implementation can proceed under Title I (prioritization & allocation), Title III (investments), or Title VII (general provisions).[2] Under Title III, the federal government can distribute approved funds in the form of loans, loan guarantees, purchases, purchase commitments, grants, and subsidies to spur production.[3]

If Australia is added as a domestic source, and greater funding approved by Congress, then near sufficient secure reserves could be paired with a flexible government mechanism to finance project development.

In 2022, the Biden Administration initiated this process by issuing a Presidential Determination for critical minerals used in large scale batteries that authorized DPA action in the relevant supply chains.[4] The determination directs the Department of Defense (DoD) to support:

- "domestic production capabilities of such strategic and critical materials by supporting feasibility studies for mature mining, beneficiation, and value-added processing projects;"
- "by-product and co-product production at existing mining, mine waste reclamation, and other industrial facilities;"
- "mining, beneficiation, and value-added processing modernization."[5]

In brief, the scope of the determination includes using DPA funds to advance mine development, ensure that existing mines can co-process key metals, and modernize existing processes to enhance productivity, sustainability and worker safety. It does not authorize spending on, say, the central capital expenditures associated with building a mine.

- For example, in July 2023, the DoD announced $37.5m through DPA Title III for Graphite One's feasibility study for a project in Alaska.

As such, the DPA will complement funds from the Loan Program Office, the Export-Import Bank (under the significantly expanded powers granted in the Make More in America initiative and the China and Transformational Exports Program), and the Development Finance Corporation which could finance the core capital expenditures associated with establishing a mine. Further, EXIM and DFC both have the ability to use funds on mines abroad (though DFC is currently limited to low- and middle-income countries).[6] This creates a powerful set of resources that could be used to friendshore critical minerals.

Including Australia as a "domestic source" would allow DPA funds for critical mineral development to be deployed in the country. DPA funds could "ready the ground" identifying bankable critical mineral projects in the U.S., Canada, and soon Australia. A secondary agency like EXIM could then provide the core capital funding for a now enlarged pipeline of critical mineral projects. This is critical, because the US, Canada, and Australia combined have sufficient mineral requirements necessary to meet much of the materials demand for North American clean energy production up to 2030.

What Including Australia in the DPA Could Accomplish

To estimate the potential impact of including Australia in the DPA, we conducted a study of the mineral reserves and production capacity in the US, Canada, and Australia. We then compared that to the critical minerals needed to meet North American demand for battery, solar panel, and wind turbine production.

To estimate demand, we conducted an analysis of potential North American battery, solar, and wind production. Our model calculates the critical minerals necessary to produce 1189 GWh of batteries, 54 GW of solar panels and 21 GW of wind turbines per year.

Annual totals of demand from U.S. and Canadian battery production are based an asset-level analysis of proposed projects.[7] Annual materials needs for US solar panels

are based on the Solar Energy Industry Association's forecast of domestic module production this decade.[8] Annual materials demand for domestic wind turbine production is based on the National Renewable Energy Laboratory's (NREL) High IRA-impact scenario for US offshore and onshore wind deployment.[9] The percentage of wind demand met with domestic production is assumed at 69% based on United States International Trade Commission data.[10] For the supply side, we used US Geological Survey data for reserves and production.[11]

Table 1. CAN-AUS-US Mineral Reserves and Clean Energy Demand

Mineral	**2023-2030 Cumulative North American Demand**	**US-CAN-AUS Reserves**	**Surplus or Deficit**
Aluminum	4,062,382	568,888,889	564,826,506
Boron	306	40,000,000	39,999,694
Chromium	80,886	620,000	539,114
Cobalt	441,903	1,620,000	1,178,097
Copper	3,733,651	150,800,000	147,066,349
Graphite	7,660,407	30,000,000	22,339,593
Lithium	832,869	5,700,000	4,867,131
Manganese	652,474	270000000	269,347,526
Nickel	4,472,525	23,340,000	18,867,475
Selenium	101	16,000	15,899
Silver	47, 135	116,000	68,865
Tellurium	6,384	0	**-6,384**
Tin	106,004	560,000	453,996
Zinc	880,110	83,400,000	82,519,890

Note: All figures are national reserves, barring graphite which includes Canadian resources as calculated by the Lab based on an asset-level analysis.

First, we looked at whether reserves are sufficient to cover cumulative demand to 2030. Table 1 presents the results: Australia, Canada and the United States have reserves sufficient to produce large quantities of all the major metals needed.

Second, the study analyses production numbers. This provides a more realistic assessment of whether mining development could provide all the minerals to meet annual demand from battery, solar panel, and wind turbine production. Table 2 is a test of whether annual flows of minerals could practically grow fast enough to meet rising annual production.

In order to estimate growth in the mining industry during the transition, we increased production by the same growth rates experienced during the height of the last commodity supercycle in the late 1990s and early 2000s.

The results of table 2 identify some important challenges. Even with increases in production on par with a commodity supercycle, demand for cobalt, graphite, lithium, silver, tellurium, and tin will outstrip production from domestic sources. This suggests it would take an unprecedented build-out of critical minerals supply chains to secure supply from just these sources.

Our study concludes that adding Australia to the DPA creates a pool of resources that is nearly sufficient to meet long-term demand in all major minerals.

Table 2. US-CAN-AUS Mineral Production and Clean Energy Demand

Mineral	**2021 US-CAN-AUS Production**	**2030 US-CAN-AUS Production**	**2030 North American Demand**	**2030 North American Demand as a % of 2021 Production**	**2030 North American Demand as a % of Additional Production**
Aluminum	5,580,000	7,342,105	664,056	12%	38%
Boron	1,000,000	1,316,000	40	.004%	.01%
Chromium	0	0	10,615	0%	0%
Cobalt	10,600	13,967	76,832	**725%**	**2282%**
Copper	2,690,000	3,544,539	622,788	23%	73%
Graphite	8,600	11,332	1,262,988	**14,686%**	**46,230%**

Lithium	55,000	72,472	137,301	**250%**	**786%**
Manganese	3,300,000	4,348,319	103,552	3%	10%
Nickel	308,000	405,843	735,144	**239%**	**751%**
Selenium	60	79	19	32%	100%
Silver	2,300	3,031	8,746	**380%**	**1197%**
Tellurium	45	59	1,197	**2660%**	**8550%**
Tin	8,300	10,937	19,878	**239%**	**754%**
Zinc	2,300,000	3,030,647	115,500	5%	16%

Note: Boron production is withheld from the USGS Data. US production numbers are based on US Borax's public disclosure: https://www.borax.com/about/borax-operations/boron-california

DPA financing of feasibility studies for critical minerals projects already sends market signals regarding government interest (and thus expected customer demand) for specific projects. However, greater funding for the DPA could be used to build out the mineral infrastructure at the speed required to meet growing demand from US-Canada battery production with reduced dependency on fragile states, or geopolitical competitors. Given the range of financing tools available under the DPA, the US would have significant flexibility in supporting critical minerals projects. Conditionality could also be attached to DPA-supported projects mandating preferential purchasing rights for output by the U.S. and allies.

If Australia is added as a domestic source, and greater funding approved by Congress, then near sufficient secure reserves could be paired with a flexible government mechanism to finance project development. The U.S. would have the opportunity to ramp-up the energy transition while mitigating the geopolitical risks that have plagued the fossil fuel economy.

[1] https://www.bis.doc.gov/index.php/documents/2022-update-conference/3064-dpat3-overview-mz/file
[2] https://sgp.fas.org/crs/natsec/R43767.pdf
[3] https://www.bis.doc.gov/index.php/documents/2022-update-conference/3064-dpat3-overview-mz/file
[4] https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/31/memorandum-on-presidential-determination-pursuant-to-section-303-of-the-defense-production-act-of-1950-as-amended/

[5] Ibid., Sec. 2b.
[6] EXIM's finance can be used to fund mines abroad, provided those mines feed into American processing and manufacturing that is intended for export.
[7] https://www.charged-the-book.com/na-ev-supply-chain-map
[8] https://www.seia.org/sites/default/files/2023-03/Manufacturing%20Reniassance%20Report%203-8-2023.pdf
[9] https://scenarioviewer.nrel.gov/?project=43691656-4010-4570-8ede-af98ace8ea58&mode=view&layout=Default
[10] https://www.usitc.gov/publications/332/working_papers/id-078_wind_turbine_production_and_trade_011422-compliant.pdf
[11] https://www.usgs.gov/publications/mineral-commodity-summaries-2022