

AMENDMENT NO. _____ Calendar No. _____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—119th Cong., 2d Sess.

S. 4610

To promote the development and use of geothermal resources
in the Pacific, and for other purposes.

Referred to the Committee on _____ and
ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended
to be proposed by Mr. SCHATZ

Viz:

1 Strike all after the enacting clause and insert the fol-
2 lowing:

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Pacific Promotion of
5 Workable Energy Resources Act” or the “Pacific POWER
6 Act”.

7 **SEC. 2. DEFINITIONS.**

8 In this Act:

9 (1) APPROPRIATE COMMITTEES OF CON-
10 GRESS.—The term “appropriate committees of Con-
11 gress” means—

1 (A) the Committee on Foreign Relations,
2 the Committee on Energy and Natural Re-
3 sources, and the Committee on Appropriations
4 of the Senate; and

5 (B) the Committee on Foreign Affairs, the
6 Committee on Energy and Commerce, and the
7 Committee on Appropriations of the House of
8 Representatives.

9 (2) DIRECT USE.—The term “direct use” has
10 the meaning given the term in section 616A of the
11 Energy Independence and Security Act of 2007 (42
12 U.S.C. 17195a(b)).

13 (3) GEOTHERMAL PARTNERS.—The term “geo-
14 thermal partners” means the United States allies
15 and partners selected pursuant to section 5.

16 (4) NEXT-GENERATION GEOTHERMAL.—The
17 term “next-generation geothermal” means a geo-
18 thermal power production technology that has the
19 potential to greatly expand the scale and geo-
20 graphical range of geothermal power production, in-
21 cluding—

22 (A) enhanced geothermal systems, as de-
23 fined in section 612 of the Energy Independ-
24 ence and Security Act of 2007 (42 U.S.C.
25 17191);

1 (B) closed-loop geothermal systems, mean-
2 ing systems that use one or more wells drilled
3 into hot rock with fluid circulating through a
4 closed-loop system to bring heat to the surface;

5 (C) geothermal systems which harness heat
6 from supercritical temperatures, meaning at or
7 above 375 degrees; and

8 (D) other innovative geothermal power
9 technologies.

10 (5) SECRETARY.—The term “Secretary” means
11 the Secretary of State.

12 **SEC. 3. SENSE OF CONGRESS.**

13 It is the sense of Congress that—

14 (1) the Indo-Pacific is critical to United States
15 national security and economic interests, particularly
16 given the rise of the People’s Republic of China as
17 a competitor, and has some of the world’s highest
18 geothermal potential;

19 (2) achieving United States foreign and na-
20 tional security policy objectives, including deterring
21 conflict and reducing vulnerability to coercion, re-
22 quires further strengthening relationships with key
23 regional allies and partners;

24 (3) the United States should expand its engage-
25 ment with key allies and partners on geothermal, in-

1 including through commercial partnerships and tech-
2 nical assistance to support the development of their
3 geothermal capabilities to reduce reliance on the en-
4 ergy exports of adversaries and to develop markets
5 for United States companies; and

6 (4) the United States should promote the pur-
7 suit of bilateral memoranda of understanding or
8 other appropriate agreements on geothermal energy
9 with key allies and partners, where doing so furthers
10 United States foreign policy and national security
11 interests.

12 **SEC. 4. GEOTHERMAL DIPLOMACY.**

13 (a) IN GENERAL.—The Secretary, in consultation
14 with the Secretary of Energy, shall work both bilaterally
15 and multilaterally to advance geothermal energy in sup-
16 port of United States interests, including to develop—

17 (1) goals to increase geothermal deployment, in-
18 cluding for electricity and direct use applications;

19 (2) forums for collective learning and research;

20 (3) risk-sharing and financial tools for geo-
21 thermal exploration and development;

22 (4) potential regulatory and power market re-
23 forms that support geothermal power production, di-
24 rect use applications, and grid interconnection;

1 (5) technical, environmental, safety, and com-
2 munity engagement standards and best practices, in-
3 cluding—

4 (A) early and consistent community en-
5 gagement, including the free, prior, and in-
6 formed consent of Indigenous Peoples and other
7 communities;

8 (B) revenue sharing to create local eco-
9 nomic benefits;

10 (C) reservoir management;

11 (D) mitigation of seismic risk through real-
12 time monitoring, operational guardrails, and en-
13 gagement with impacted communities;

14 (E) mitigation of impacts to water re-
15 sources; and

16 (F) standardized, transparent, and secure
17 mechanisms for sharing geological and project-
18 related data.

19 (b) INDO-PACIFIC ENGAGEMENT.—The Secretary
20 shall prioritize engaging with allies and partners in the
21 Indo-Pacific on opportunities to collaborate on geothermal
22 energy and as potential geothermal partners to be selected
23 pursuant to section 5, including—

24 (1) Taiwan;

25 (2) the Philippines;

- 1 (3) Japan;
- 2 (4) Australia;
- 3 (5) Indonesia;
- 4 (6) India;
- 5 (7) New Zealand;
- 6 (8) Papua New Guinea; and
- 7 (9) Thailand.

8 (c) MULTILATERAL MECHANISMS.—The Secretary,
9 in consultation with the Secretary of Energy, shall use ex-
10 isting multilateral mechanisms to advance cooperation on
11 geothermal energy, including—

- 12 (1) the Quadrilateral Dialogue, or “Quad,”
13 comprising the United States, Australia, India, and
14 Japan;
- 15 (2) the United States-Japan-Philippines tri-
16 lateral dialogue;
- 17 (3) the United States-Japan-Republic of Korea
18 trilateral dialogue;
- 19 (4) United States-Association of Southeast
20 Asian Nations dialogues and energy engagements;
- 21 (5) the Pacific Community, the principal sci-
22 entific and technical organization in the Pacific re-
23 gion;
- 24 (6) the International Energy Agency; and

1 (7) the Group of Seven, comprising the United
2 States, France, the United Kingdom, Germany,
3 Japan, Italy, and Canada.

4 **SEC. 5. ESTABLISHMENT OF INTERNATIONAL GEO-**
5 **THERMAL PROGRAM AND COUNTRY SELEC-**
6 **TION.**

7 (a) ASSESSMENT.—Not later than 180 days after the
8 date of the enactment of this Act, the Secretary, in coordi-
9 nation with the Secretary of Energy, shall develop and
10 submit to the appropriate congressional committees a re-
11 port that—

12 (1) assesses global geothermal resources, in-
13 cluding mapping the areas of highest potential for
14 geothermal development based on factors, such as—

- 15 (A) existing geothermal generation;
- 16 (B) subsurface data;
- 17 (C) proximity of geothermal resources to
18 existing or potential energy infrastructure;
- 19 (D) regulatory and economic conditions,
20 including financial incentives for geothermal;
- 21 (E) current and projected energy mix and
22 demand;
- 23 (F) workforce;
- 24 (G) supply chains, including the distribu-
25 tion of assets relative to projected demand; and

1 (H) energy reliability conditions;

2 (2) assesses countries, regions, and other loca-
3 tions in which geothermal development or expansion
4 is most beneficial to United States national security
5 and economic interests, including in support of
6 United States Indo-Pacific strategy;

7 (3) explains the strategy for addressing the
8 challenges to geothermal energy development or ex-
9 pansion in the countries, regions, and other locations
10 most beneficial to United States national security
11 and economic interests; and

12 (4) assesses the extent to which foreign coun-
13 tries of concern, as defined in section 4872(d) of
14 title 10, United States Code, are involved in, or may
15 seek to influence or control, the geothermal energy
16 sectors, supply chains, infrastructure, financing, or
17 related critical minerals of countries, regions, and
18 other locations identified under paragraphs (1)
19 through (3).

20 (b) CONSULTATION.—In preparing the report re-
21 quired in subsection (a), the Secretary shall consult
22 with—

23 (1) agencies with relevant expertise;

1 (2) Department of Energy National Labora-
2 tories (as defined in section 2 of the Energy Policy
3 Act of 2005 (42 U.S.C. 15801));

4 (3) institutions of higher education (as defined
5 in section 101(a) of the Higher Education Act of
6 1965 (2 U.S.C. 1001(a));

7 (4) nonpartisan and nonprofit organizations;

8 (5) the International Energy Agency;

9 (6) the advisory group established pursuant to
10 subsection (g); and

11 (7) the appropriate committees of Congress.

12 (c) ESTABLISHMENT.—Not later than one year after
13 the date of the enactment of this Act, the Secretary, in
14 coordination with the Secretary of Energy, shall establish
15 the International Geothermal Program (the “Program”)
16 for international collaboration on geothermal exploration
17 and development to carry out section 4 and to pursue bi-
18 lateral and multilateral partnerships as described in sub-
19 section (d) to further United States foreign policy and na-
20 tional security interests.

21 (d) PROGRAM.—The Program established pursuant
22 to subsection (c) shall include public-private partnerships
23 for the exploration and development of geothermal re-
24 sources and next-generation geothermal systems, includ-
25 ing—

1 (1) to support large-scale geothermal deploy-
2 ment, including for next-generation geothermal tech-
3 nologies and direct use applications;

4 (2) to conduct research of next-generation geo-
5 thermal technologies, including through coordination
6 with existing international research initiatives;

7 (3) to conduct geothermal resource exploration
8 and characterization;

9 (4) to support the integration of geothermal en-
10 ergy into energy system planning and regulations;

11 (5) to identify opportunity zones where geo-
12 thermal could meet industrial, heating and cooling,
13 agricultural, and electricity needs;

14 (6) to support the workforce and supply chains
15 necessary for geothermal deployment;

16 (7) to support community engagement and edu-
17 cation;

18 (8) to assist in the development and implemen-
19 tation of risk-sharing mechanisms and other finan-
20 cial tools for the cost of geothermal exploration and
21 development;

22 (9) to assist in the development of predictable
23 siting and permitting processes for partners selected
24 pursuant to subsection (e);

1 (10) to create financial incentives for invest-
2 ment in geothermal energy; and

3 (11) to identify investment and export opportu-
4 nities for United States companies

5 (e) SELECTION OF GEOTHERMAL PARTNERS.—Con-
6 current with the establishment of the Program pursuant
7 to subsection (c), the Secretary, in consultation with the
8 appropriate congressional committees, shall select at least
9 five geothermal partners that—

10 (1) include—

11 (A) not fewer than three countries in the
12 Indo-Pacific;

13 (B) not fewer than one country that cur-
14 rently does not produce or consume geothermal
15 energy at commercial scale; and

16 (C) not fewer than one country that dem-
17 onstrates significant potential to expand exist-
18 ing capacity for geothermal energy generation,
19 such as through recent success in adding more
20 geothermal energy to its grid and through the
21 inclusion of geothermal in utility resource plans;
22 and

23 (2) are informed by the report required under
24 subsection (a).

1 (f) AGREEMENTS.—The Secretary shall pursue
2 memoranda of understanding or other appropriate agree-
3 ments with countries selected pursuant to subsection (e)
4 and that are willing to work with the United States to
5 implement the Program.

6 (g) ENGAGEMENT WITH THE PRIVATE SECTOR AND
7 NONPROFITS.—The Secretary shall establish an advisory
8 mechanism to engage United States geothermal devel-
9 opers, equipment manufacturers, financial institutions, in-
10 dustry associations, and nonprofit organizations with geo-
11 thermal expertise in the implementation of the Program,
12 including to—

13 (1) identify export opportunities for United
14 States geothermal technology and services in geo-
15 thermal partner countries;

16 (2) advise on technical standards, data use and
17 protections, policy, supply chain development, and
18 workforce needs; and

19 (3) facilitate connections between United States
20 companies and organizations and geothermal invest-
21 ment opportunities.

22 **SEC. 6. IMPLEMENTATION OF THE INTERNATIONAL GEO-**
23 **THERMAL PROGRAM.**

24 (a) STRATEGY.—Not later than 180 days after the
25 establishment of the Program and selection of geothermal

1 partners pursuant to section 5, the Secretary shall submit
2 to the appropriate congressional committees a report that
3 describes the United States strategy for advancing geo-
4 thermal energy with each of the geothermal partners.

5 (b) ELEMENTS.—The strategy submitted pursuant to
6 subsection (a) shall include the estimated personnel and
7 assistance resources required on an annual basis for suc-
8 cessful implementation of such strategy, and the identi-
9 fication of opportunities for—

10 (1) supporting regional partnerships on geo-
11 thermal energy;

12 (2) strengthening the resilience of geothermal
13 supply chains, including—

14 (A) equipment and services related to geo-
15 thermal resource exploration, characterization,
16 and production; and

17 (B) through partnerships with domestic
18 and allied manufacturers;

19 (3) leveraging existing and developing new mul-
20 tilateral financing tools to support geothermal en-
21 ergy;

22 (4) conducting geothermal-specific feasibility
23 studies and other support by the United States
24 Trade and Development Agency; and

1 (5) the United States Export-Import Bank, the
2 Millennium Challenge Corporation, and the United
3 States International Development Finance Corpora-
4 tion to provide financial support to geothermal part-
5 ners that meet the eligibility requirements of the
6 agencies.

7 (c) IMPLEMENTATION.—The implementation of the
8 Program established in section 5 shall be led by the Under
9 Secretary of State for Economic Growth, Energy, and the
10 Environment and coordinated with the leadership of the
11 Office of International Affairs and the Geothermal Tech-
12 nologies Office.

13 (d) ANNUAL REPORT.—The Secretary shall submit
14 a report to the appropriate congressional committees that
15 includes—

16 (1) a summary of United States activities and
17 engagement with each geothermal partner, including
18 the status of negotiations to establish memoranda of
19 understanding or other agreements pursuant to sec-
20 tion 5(f);

21 (2) any changes to the strategy required by
22 subsection (a) for each geothermal partner;

23 (3) the number of personnel assigned to imple-
24 mentation of the Program, by operating unit; and

1 (4) assistance provided to implement the Pro-
2 gram to date by operating unit, amount, account,
3 and purpose.

4 (e) TECHNICAL AND FINANCIAL ASSISTANCE.—The
5 Secretary is authorized to work with relevant United
6 States agencies to promote and coordinate the develop-
7 ment and underwriting of grants, loans, loan guarantees,
8 and other technical and financial assistance to geothermal
9 partners and United States companies that work with geo-
10 thermal partners through the Program established in sec-
11 tion 5.

12 (f) COORDINATION.—In preparing the strategy re-
13 quired under subsection (a) and the annual report re-
14 quired under subsection (d), and implementing the Pro-
15 gram established in section 5, the Under Secretary of
16 State for Economic Growth, Energy, and the Environment
17 shall convene agencies with relevant expertise and the ad-
18 visory group established in section 5(g) and brief the ap-
19 propriate committees of Congress not less than twice per
20 year.