AMENDMENT TO RULES COMMITTEE PRINT

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Page 223, strike line 7 and all that follows through page 241, line 25, and insert the following:

SECTION 2501. DEFINITIONS.

In this part:

(1) ECONOMICALLY DISTRESSED AREA.—The term “economically distressed area” means an area described in section 301(a) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161(a)).

(2) ELIGIBLE ENTITY.—The term “eligible entity” means—

(A) an institution of higher education;

(B) a National Laboratory;

(C) a Federal research agency;

(D) a State research agency;

(E) a research agency associated with a territory or freely associated state;

(F) a tribal energy development organization;

(G) an Indian tribe;
(H) a tribal organization;
(I) a Native Hawaiian community-based organization;
(J) a nonprofit research organization;
(K) an industrial entity;
(L) any other entity, as determined by the Secretary; and
(M) a consortium of 2 or more entities described in subparagraphs (A) through (L).

(3) INDIAN TRIBE.—The term “Indian tribe” has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

(4) INSTITUTION OF HIGHER EDUCATION.—The term “institution of higher education” has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(5) NATIONAL LABORATORY.—The term “National Laboratory” has the meaning given the term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

(6) NATIVE HAWAIIAN COMMUNITY-BASED ORGANIZATION.—The term “Native Hawaiian community-based organization” has the meaning given the

(7) PHOTOVOLTAIC DEVICE.—The term “photovoltaic device” means—

(A) a device that converts light directly into electricity through a solid-state, semiconductor process;

(B) the photovoltaic cells of a device described in subparagraph (A); and

(C) the electronic and electrical components of a device described in subparagraph (A).

(8) PROGRAM.—The term “program” means the program established under section 2502(a)(1).

(9) SECRETARY.—The term “Secretary” means the Secretary of Energy.

(10) SOLAR ENERGY.—The term “solar energy” means—

(A) thermal or electric energy derived from radiation from the Sun; or

(B) energy resulting from a chemical reaction caused by radiation recently originated in the Sun.

(11) TERRITORY OR FREELY ASSOCIATED STATE.—The term “territory or freely associated
state” has the meaning given the term “insular area” in section 1404 of the Food and Agriculture Act of 1977 (7 U.S.C. 3103).


(13) **Tribal organization.**—The term “tribal organization” has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

**SEC. 2502. SOLAR ENERGY TECHNOLOGY PROGRAM.**

(a) **Establishment.**—

(1) **In general.**—The Secretary shall establish a program to conduct research, development, testing, evaluation, demonstration, and commercialization of solar energy technologies in accordance with this section.

(2) **Purposes.**—The purposes of the program are the following:

(A) To improve the energy efficiency, cost effectiveness, reliability, resilience, security, integration, manufacturability, and recyclability of solar energy technologies.
(B) To optimize the performance and operation of solar energy components, cells, and systems, and enabling technologies, including through the development of new materials, hardware, and software.

(C) To optimize the design and adaptability of solar energy systems to the broadest practical range of geographic and atmospheric conditions.

(D) To support the integration of solar energy technologies with the electric grid and complementary energy technologies.

(E) To create and improve the conversion of solar energy to other useful forms of energy or other products.

(F) To reduce and mitigate any potential negative impacts of solar energy technologies on humans, wildlife, and wildlife habitats.

(G) To address barriers to the commercialization and export of solar energy technologies.

(H) To support the domestic solar industry, workforce, and supply chain.

(3) TARGETS.—Not later than 180 days after the date of enactment of this Act, the Secretary
shall establish targets for the program to address near-term (up to 2 years), mid-term (up to 7 years), and long-term (up to 15 years) challenges to the advancement of solar energy systems.

(b) Activities.—

(1) Types of activities.—In carrying out the program, the Secretary shall carry out research, development, demonstration, and commercialization activities, including—

(A) awarding grants and awards, on a competitive, merit-reviewed basis;

(B) performing precompetitive research and development;

(C) establishing or maintaining demonstration facilities and projects, including through stewardship of existing facilities;

(D) providing technical assistance;

(E) entering into contracts and cooperative agreements;

(F) providing small business vouchers;

(G) establishing prize competitions;

(H) conducting education and outreach activities; and

(I) conducting analyses, studies, and reports.
(2) SUBJECT AREAS.—The Secretary shall carry out research, development, testing, evaluation, demonstration, and commercialization activities in the following subject areas:

(A) Advanced solar energy technologies, including—

(i) new materials, components, designs, and systems, including perovskites;

(ii) advanced photovoltaic and thin-film devices;

(iii) concentrated solar power;

(iv) solar heating and cooling; and

(v) enabling technologies for solar energy systems, including hardware and software.

(B) Solar energy technology performance, operations, and security.

(C) Integration of solar energy technologies with—

(i) the electric grid, including transmission, distribution, microgrids, and distributed energy systems;

(ii) other energy technologies, including—

(I) other generation sources;
(II) demand response technologies; and

(III) energy storage technologies; and

(iii) other nonelectric applications, such as in the agriculture, transportation, industrial, and fuels sectors.

(D) Advanced solar energy manufacturing technologies and practices, including materials, processes, and design.

(E) Methods to improve the lifetime, maintenance, recycling, and reuse of solar energy components and systems.

(F) Solar energy forecasting, modeling, and atmospheric measurement systems, including for small-scale, large-scale, and aggregated systems.

(G) Hybrid solar energy systems that incorporate diverse—

(i) generation sources;

(ii) loads; and

(iii) storage technologies.

(H) Reducing market barriers to the adoption of solar energy technologies, including impacts on, or challenges relating to—
(i) distributed solar technologies, including the development of best practices, models, and voluntary streamlined processes for local permitting of distributed solar energy systems to reduce costs;

(ii) local communities;

(iii) wildlife and wildlife habitats; and

(iv) any other appropriate matter, as determined by the Secretary.

(I) Transformational technologies for harnessing solar energy.

(J) Other research areas that advance the purposes of the program, as determined by the Secretary.

(3) PRIORITIZATION.—In carrying out activities under the program, the Secretary shall give priority to projects that—

(A) are located in a geographically diverse range of eligible entities;

(B) support the development or demonstration of projects—

(i) in collaboration with tribal energy development organizations, Indian tribes, tribal organizations, Native Hawaiian com-
munity-based organizations, or territories
or freely associated states; or
(ii) in economically distressed areas;
(C) can be replicated in a variety of re-
regions and climates;
(D) include business commercialization
plans that have the potential for—
(i) domestic manufacturing and pro-
duction of solar energy technologies; or
(ii) exports of solar energy tech-
nologies; and
(E) satisfy any other priority that the Sec-
retary determines to be appropriate.

(4) COORDINATION.—To the maximum extent
practicable, the Secretary shall coordinate activities
under the program with other relevant programs and
capabilities of the Department of Energy and other
Federal research programs.

(5) USE OF FUNDS.—To the extent that fund-
ing is not otherwise available through other Federal
programs or power purchase agreements, funding
awarded under this subsection may be used for addi-
tional nontechnology costs, as determined to be ap-
propriate by the Secretary, such as engineering or
feasibility studies.
(c) Advanced Solar Energy Manufacturing Initiative.—

(1) Grants.—In addition to the program activities described in subsection (b), in carrying out the program, the Secretary shall award multiyear grants to eligible entities for research, development, and demonstration projects to advance new solar energy manufacturing technologies and techniques.

(2) Priority.—In awarding grants under paragraph (1), to the extent practicable, the Secretary shall give priority to solar energy manufacturing projects that—

(A) increase efficiency and cost effectiveness in—

(i) the manufacturing process; and

(ii) the use of resources.

(B) support domestic supply chains for materials and components;

(C) identify and incorporate nonhazardous alternative materials for components and devices;

(D) operate in partnership with tribal energy development organizations, Indian tribes, tribal organizations, Native Hawaiian commu-
nity-based organizations, or territories or freely associated states; or

(E) are located in economically distressed areas.

(3) EVALUATION.—Not later than 3 years after the date of enactment of this Act, and every 4 years thereafter, the Secretary shall conduct, and make available to the public and the relevant committees of Congress, an independent review of the progress of the grants awarded under paragraph (1).

(d) SOLAR ENERGY TECHNOLOGY RECYCLING RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROGRAM.—

(1) IN GENERAL.—In addition to the program activities described in subsection (b), in carrying out the program, the Secretary shall award multiyear grants to eligible entities for research, development, and demonstration projects to create innovative and practical approaches to increase the reuse and recycling of solar energy technologies, including—

(A) by increasing the efficiency and cost effectiveness of the recovery of raw materials from solar energy technology components and systems, including enabling technologies such as inverters;
(B) by minimizing environmental impacts from the recovery and disposal processes;

(C) by addressing any barriers to the research, development, demonstration, and commercialization of technologies and processes for the disassembly and recycling of solar energy devices;

(D) by developing alternative materials, designs, manufacturing processes, and other aspects of solar energy technologies and the disassembly and resource recovery process that enable efficient, cost effective, and environmentally responsible disassembly of, and resource recovery from, solar energy technologies; and

(E) strategies to increase consumer acceptance of, and participation in, the recycling of photovoltaic devices.

(2) DISSEMINATION OF RESULTS.—The Secretary shall make available to the public and the relevant committees of Congress the results of the projects carried out through grants awarded under paragraph (1), including any educational and outreach materials.
(c) **Solar Energy Technology Materials Physical Property Database.**—

(1) **In General.**—Not later than September 1, 2021, the Secretary shall establish a comprehensive physical property database of materials for use in solar energy technologies, which shall identify the type, quantity, country of origin, source, significant uses, and physical properties of materials used in solar energy technologies.

(2) **Coordination.**—In establishing the database described in paragraph (1), the Secretary shall coordinate with—

(A) the Director of the National Institute of Standards and Technology;

(B) the Administrator of the Environmental Protection Agency;

(C) the Secretary of the Interior; and

(D) relevant industry stakeholders, as determined by the Secretary.

(f) **Solar Energy Technology Program Strategic Vision.**—

(1) **In General.**—Not later than September 1, 2021, and every 6 years thereafter, the Secretary shall submit to Congress a report on the strategic vision, progress, goals, and targets of the program, in-
including assessments of solar energy markets and manufacturing.

(2) PREPARATION.—The Secretary shall coordinate the preparation of the report under paragraph (1) with—

(A) existing peer review processes;

(B) studies conducted by the National Laboratories; and

(C) the multiyear program planning required under section 994 of the Energy Policy Act of 2005 (42 U.S.C. 16358).

(g) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary to carry out the program $270,000,000 for each of fiscal years 2020 through 2024.

SEC. 2503. CONFORMING AMENDMENTS.


(b) Section 6(b)(3) of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5905(b)(3)) is amended—

(1) by striking subparagraph (L); and
(2) by redesignating subparagraphs (M) through (S) as subparagraphs (L) through (R), respectively.


(d) Section 4 of the Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989 (42 U.S.C. 12003) is amended—

(1) in the section heading, by striking “PHOTOVOLTAICS, AND SOLAR THERMAL” and inserting “ALCOHOL FROM BIOMASS, AND OTHER TECHNOLOGY”;

(2) in subsection (a)—

(A) in the matter preceding paragraph (1), by striking “photovoltaics, and solar thermal energy” and inserting “alcohol from biomass, and other energy technology”;

(B) by striking paragraphs (2) and (3);

and

(C) by redesignating paragraphs (4) and (5) as paragraphs (2) and (3), respectively; and

(3) in subsection (c)—

(A) in the matter preceding paragraph (1), by striking “the Photovoltaic Energy Systems
Program, the Solar Thermal Energy Systems Program,”;

(B) in paragraph (1)—

(i) by striking subparagraph (A); and

(ii) by redesignating subparagraphs (B) and (C) as subparagraphs (A) and (B), respectively; and

(C) in paragraph (2)—

(i) by striking subparagraph (A); and

(ii) by redesignating subparagraphs (B) and (C) as subparagraphs (A) and (B), respectively.

(e) Section 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231) is amended—

(1) in subsection (a)(2)—

(A) by striking subparagraph (A); and

(B) by redesignating subparagraphs (B) through (E) as subparagraphs (A) through (D), respectively;

(2) by striking subsection (d); and

(3) by redesignating subsections (e) through (g) as subsections (d) through (f), respectively.

(f) Sections 606 and 607 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17174, 17175) are repealed.
SEC. 2504. SAVINGS PROVISION.

The repeal of the Solar Energy Research, Development, and Demonstration Act of 1974 (42 U.S.C. 5551 et seq.) under section 2503(a) shall not affect the authority of the Secretary to conduct research and development on solar energy.

Page 3, in the table of contents strike the matter related to section 2501 and all that follows through the matter related to section 2506 and insert the following:

Sec. 2501. Definitions
Sec. 2502. Solar energy technology program
Sec. 2503. Conforming amendments
Sec. 2504. Savings provision