

111TH CONGRESS
1ST SESSION

H. R. 3029

IN THE SENATE OF THE UNITED STATES

DECEMBER 2, 2009

Received; read twice and referred to the Committee on Energy and Natural
Resources

AN ACT

To establish a research, development, and technology demonstration program to improve the efficiency of gas turbines used in combined cycle and simple cycle power generation systems.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. HIGH EFFICIENCY GAS TURBINES.**

2 (a) IN GENERAL.—The Secretary of Energy shall
3 carry out a multiyear, multiphase program of research, de-
4 velopment, and technology demonstration to improve the
5 efficiency of gas turbines used in power generation sys-
6 tems and to identify the technologies that ultimately will
7 lead to gas turbine combined cycle efficiency of 65 percent
8 or simple cycle efficiency of 50 percent.

9 (b) PROGRAM ELEMENTS.—The program under this
10 section shall—

11 (1) support first-of-a-kind engineering and de-
12 tailed gas turbine design for megawatt-scale and
13 utility-scale electric power generation, including—

14 (A) high temperature materials, including
15 superalloys, coatings, and ceramics;

16 (B) improved heat transfer capability;

17 (C) manufacturing technology required to
18 construct complex three-dimensional geometry
19 parts with improved aerodynamic capability;

20 (D) combustion technology to produce
21 higher firing temperature while lowering nitro-
22 gen oxide and carbon monoxide emissions per
23 unit of output;

24 (E) advanced controls and systems integra-
25 tion;

1 (F) advanced high performance compressor
2 technology; and

3 (G) validation facilities for the testing of
4 components and subsystems;

5 (2) include technology demonstration through
6 component testing, subscale testing, and full scale
7 testing in existing fleets;

8 (3) include field demonstrations of the devel-
9 oped technology elements so as to demonstrate tech-
10 nical and economic feasibility; and

11 (4) assess overall combined cycle and simple
12 cycle system performance.

13 (c) PROGRAM GOALS.—The goals of the multiphase
14 program established under subsection (a) shall be—

15 (1) in phase I—

16 (A) to develop the conceptual design of ad-
17 vanced high efficiency gas turbines that can
18 achieve at least 62 percent combined cycle effi-
19 ciency or 47 percent simple cycle efficiency on
20 a lower heating value basis; and

21 (B) to develop and demonstrate the tech-
22 nology required for advanced high efficiency gas
23 turbines that can achieve at least 62 percent
24 combined cycle efficiency or 47 percent simple

1 cycle efficiency on a lower heating value basis;
2 and

3 (2) in phase II, to develop the conceptual de-
4 sign for advanced high efficiency gas turbines that
5 can achieve at least 65 percent combined cycle effi-
6 ciency or 50 percent simple cycle efficiency on a
7 lower heating value basis.

8 (d) PROPOSALS.—Within 180 days after the date of
9 enactment of this Act, the Secretary shall solicit grant and
10 contract proposals from industry, universities, and other
11 appropriate parties for conducting activities under this
12 Act. In selecting proposals, the Secretary shall empha-
13 size—

14 (1) the extent to which the proposal will stimu-
15 late the creation or increased retention of jobs in the
16 United States; and

17 (2) the extent to which the proposal will pro-
18 mote and enhance United States technology leader-
19 ship.

20 (e) COMPETITIVE AWARDS.—The provision of fund-
21 ing under this section shall be on a competitive basis with
22 an emphasis on technical merit.

23 (f) COST SHARING.—Section 988 of the Energy Pol-
24 icy Act of 2005 (42 U.S.C. 16352) shall apply to an award
25 of financial assistance made under this section.

Passed the House of Representatives December 1,
2009.

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