

112TH CONGRESS
1ST SESSION

H. R. 2781

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.

IN THE HOUSE OF REPRESENTATIVES

AUGUST 1, 2011

Mr. TONKO introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

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,*

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

4 (a) IN GENERAL.—The Secretary of Energy, through
5 the Office of Fossil Energy, shall carry out a multiyear,
6 multiphase program of research, development, and tech-
7 nology demonstration to improve the efficiency of gas tur-
8 bines used in power generation systems and to identify

1 the technologies that ultimately will lead to gas turbine
2 combined cycle efficiency of 65 percent or simple cycle effi-
3 ciency of 50 percent.

4 (b) PROGRAM ELEMENTS.—The program under this
5 section shall—

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

9 (A) high temperature materials, including
10 superalloys, coatings, and ceramics;

11 (B) improved heat transfer capability;

12 (C) manufacturing technology required to
13 construct complex three-dimensional geometry
14 parts with improved aerodynamic capability;

15 (D) combustion technology to produce
16 higher firing temperature while lowering nitro-
17 gen oxide and carbon monoxide emissions per
18 unit of output;

19 (E) advanced controls and systems integra-
20 tion;

21 (F) advanced high performance compressor
22 technology; and

23 (G) validation facilities for the testing of
24 components and subsystems;

1 (2) include technology demonstration through
2 component testing, subscale testing, and full scale
3 testing in existing fleets;

4 (3) include field demonstrations of the devel-
5 oped technology elements so as to demonstrate tech-
6 nical and economic feasibility; and

7 (4) assess overall combined cycle and simple
8 cycle system performance.

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

11 (1) in phase I—

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

17 (B) to develop and demonstrate the tech-
18 nology required for advanced high efficiency gas
19 turbines that can achieve at least 62 percent
20 combined cycle efficiency or 47 percent simple
21 cycle efficiency on a lower heating value basis;
22 and

23 (2) in phase II, to develop the conceptual de-
24 sign for advanced high efficiency gas turbines that
25 can achieve at least 65 percent combined cycle effi-

1 ciency or 50 percent simple cycle efficiency on a
2 lower heating value basis.

3 (d) PROPOSALS.—Within 180 days after the date of
4 enactment of this Act, the Secretary shall solicit grant and
5 contract proposals from industry, small businesses, univer-
6 sities, and other appropriate parties for conducting activi-
7 ties under this Act. In selecting proposals, the Secretary
8 shall emphasize—

9 (1) the extent to which the proposal will stimu-
10 late the creation or increased retention of jobs in the
11 United States; and

12 (2) the extent to which the proposal will pro-
13 mote and enhance United States technology leader-
14 ship.

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

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

21 (g) LIMITS ON PARTICIPATION.—The limits on par-
22 ticipation applicable under section 999E of the Energy
23 Policy Act of 2005 (42 U.S.C. 16375) shall apply to finan-
24 cial assistance awarded under this section.

1 (h) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary for car-
3 rying out this section \$50,000,000 for each of fiscal years
4 2013 through 2019.

○