

111TH CONGRESS
1ST SESSION

S. 1035

To enhance the ability of drinking water utilities in the United States to develop and implement climate change adaptation programs and policies, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MAY 13, 2009

Mr. REID (for himself, Mrs. FEINSTEIN, and Mrs. BOXER) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

A BILL

To enhance the ability of drinking water utilities in the United States to develop and implement climate change adaptation programs and policies, and for other purposes.

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. SHORT TITLE.**

4 This Act may be cited as the “Drinking Water Adap-
5 tation, Technology, Education, and Research (WATER)
6 Act”.

7 **SEC. 2. FINDINGS.**

8 Congress finds that—

1 (1) the consensus among climate scientists is
2 overwhelming that climate change is occurring more
3 rapidly than can be attributed to natural causes, and
4 that significant impacts to the water supply are al-
5 ready occurring;

6 (2) among the first and most critical of those
7 impacts will be change to patterns of precipitation
8 around the world, which will affect water availability
9 for the most basic drinking water and domestic
10 water needs of populations in many areas of the
11 United States;

12 (3) drinking water utilities throughout the
13 United States, as well as those in Europe, Australia,
14 and Asia, are concerned that extended changes in
15 precipitation will lead to extended droughts;

16 (4) supplying water is highly energy-intensive
17 and will become more so as climate change forces
18 more utilities to turn to alternative supplies;

19 (5) energy production consumes a significant
20 percentage of the fresh water resources of the
21 United States;

22 (6) since 2003, the drinking water industry of
23 the United States has sponsored, through a non-
24 profit water research foundation, various studies to

1 assess the impacts of climate change on drinking
2 water supplies;

3 (7) those studies demonstrate the need for a
4 comprehensive program of research into the full
5 range of impacts on drinking water utilities, includ-
6 ing impacts on water supplies, facilities, and cus-
7 tomers;

8 (8) that nonprofit water research foundation is
9 also coordinating internationally with other drinking
10 water utilities on shared research projects and has
11 hosted international workshops with counterpart Eu-
12 ropean and Asian water research organizations to
13 develop a unified research agenda for applied re-
14 search on adaptive strategies to address climate
15 change impacts;

16 (9) research data in existence as of the date of
17 enactment of this Act—

18 (A) summarize the best available scientific
19 evidence on climate change;

20 (B) identify the implications of climate
21 change for the water cycle and the availability
22 and quality of water resources; and

23 (C) provide general guidance on planning
24 and adaptation strategies for water utilities;
25 and

1 (10) given uncertainties about specific climate
 2 changes in particular areas, drinking water utilities
 3 need to prepare for a wider range of likely possibili-
 4 ties in managing and delivery of water.

5 **SEC. 3. RESEARCH ON THE EFFECTS OF CLIMATE CHANGE**
 6 **ON DRINKING WATER UTILITIES.**

7 (a) IN GENERAL.—The Administrator of the Envi-
 8 ronmental Protection Agency, in cooperation with the Sec-
 9 retary of Commerce, the Secretary of Energy, and the Sec-
 10 retary of the Interior, shall establish and provide funding
 11 for a program of directed and applied research, to be con-
 12 ducted through a nonprofit drinking water research foun-
 13 dation and sponsored by water utilities, to assist the utili-
 14 ties in adapting to the effects of climate change.

15 (b) RESEARCH AREAS.—The research conducted in
 16 accordance with subsection (a) shall include research
 17 into—

18 (1) water quality impacts and solutions, includ-
 19 ing research—

20 (A) to address probable impacts on raw
 21 water quality resulting from—

22 (i) erosion and turbidity from extreme
 23 precipitation events;

24 (ii) watershed vegetation changes; and

1 (iii) increasing ranges of pathogens,
2 algae, and nuisance organisms resulting
3 from warmer temperatures; and

4 (B) on mitigating increasing damage to
5 watersheds and water quality by evaluating ex-
6 treme events, such as wildfires and hurricanes,
7 to learn and develop management approaches to
8 mitigate—

9 (i) permanent watershed damage;

10 (ii) quality and yield impacts on
11 source waters; and

12 (iii) increased costs of water treat-
13 ment;

14 (2) impacts on groundwater supplies from car-
15 bon sequestration, including research to evaluate po-
16 tential water quality consequences of carbon seques-
17 tration in various regional aquifers, soil conditions,
18 and mineral deposits;

19 (3) water quantity impacts and solutions, in-
20 cluding research—

21 (A) to evaluate climate change impacts on
22 water resources throughout hydrological basins
23 of the United States;

24 (B) to improve the accuracy and resolution
25 of climate change models at a regional level;

1 (C) to identify and explore options for in-
2 creasing conjunctive use of aboveground and
3 underground storage of water; and

4 (D) to optimize operation of existing and
5 new reservoirs in diminished and erratic periods
6 of precipitation and runoff;

7 (4) infrastructure impacts and solutions for
8 water treatment and wastewater treatment facilities
9 and underground pipelines, including research—

10 (A) to evaluate and mitigate the impacts of
11 sea level rise on—

12 (i) near-shore facilities;

13 (ii) soil drying and subsidence;

14 (iii) reduced flows in water and waste-
15 water pipelines; and

16 (iv) extreme flows in wastewater sys-
17 tems; and

18 (B) on ways of increasing the resilience of
19 existing infrastructure, planning cost-effective
20 responses to adapt to climate change, and de-
21 veloping new design standards for future infra-
22 structure that include the use of energy con-
23 servation measures and renewable energy in
24 new construction to the maximum extent prac-
25 ticable;

1 (5) desalination, water reuse, and alternative
2 supply technologies, including research—

3 (A) to improve and optimize existing mem-
4 brane technologies, and to identify and develop
5 breakthrough technologies, to enable the use of
6 seawater, brackish groundwater, treated waste-
7 water, and other impaired sources;

8 (B) into new sources of water through
9 more cost-effective water treatment practices in
10 recycling and desalination; and

11 (C) to improve technologies for use in—

12 (i) managing and minimizing the vol-
13 ume of desalination and reuse concentrate
14 streams; and

15 (ii) minimizing the environmental im-
16 pacts of seawater intake at desalination fa-
17 cilities;

18 (6) energy efficiency and greenhouse gas mini-
19 mization, including research—

20 (A) on optimizing the energy efficiency of
21 water supply and wastewater operations and
22 improving water efficiency in energy production
23 and management; and

1 (B) to identify and develop renewable, car-
2 bon-neutral energy options for the water supply
3 and wastewater industry;

4 (7) regional and hydrological basin cooperative
5 water management solutions, including research
6 into—

7 (A) institutional mechanisms for greater
8 regional cooperation and use of water ex-
9 changes, banking, and transfers; and

10 (B) the economic benefits of sharing risks
11 of shortage across wider areas;

12 (8) utility management, decision support sys-
13 tems, and water management models, including re-
14 search—

15 (A) into improved decision support systems
16 and modeling tools for use by water utility
17 managers to assist with increased water supply
18 uncertainty and adaptation strategies posed by
19 climate change;

20 (B) to provide financial tools, including
21 new rate structures, to manage financial re-
22 sources and investments, because increased con-
23 servation practices may diminish revenue and
24 increase investments in infrastructure; and

1 (C) to develop improved systems and mod-
2 els for use in evaluating—

3 (i) successful alternative methods for
4 conservation and demand management;
5 and

6 (ii) climate change impacts on
7 groundwater resources;

8 (9) reducing greenhouse gas emissions and im-
9 proving energy demand management, including re-
10 search to improve energy efficiency in water collec-
11 tion, production, transmission, treatment, distribu-
12 tion, and disposal to provide more sustainability and
13 means to assist drinking water utilities in reducing
14 the production of greenhouse gas emissions in the
15 collection, production, transmission, treatment, dis-
16 tribution, and disposal of drinking water;

17 (10) water conservation and demand manage-
18 ment, including research—

19 (A) to develop strategic approaches to
20 water demand management that offer the low-
21 est-cost, noninfrastructural options to serve
22 growing populations or manage declining sup-
23 plies, primarily through—

24 (i) efficiencies in water use and re-
25 allocation of the saved water;

1 (ii) demand management tools;

2 (iii) economic incentives; and

3 (iv) water-saving technologies; and

4 (B) into efficiencies in water management
5 through integrated water resource management
6 that incorporates—

7 (i) supply-side and demand-side proc-
8 esses;

9 (ii) continuous adaptive management;
10 and

11 (iii) the inclusion of stakeholders in
12 decisionmaking processes; and

13 (11) communications, education, and public ac-
14 ceptance, including research—

15 (A) into improved strategies and ap-
16 proaches for communicating with customers, de-
17 cisionmakers, and other stakeholders about the
18 implications of climate change on water supply
19 and water management;

20 (B) to develop effective communication ap-
21 proaches—

22 (i) to gain public acceptance of alter-
23 native water supplies and new policies and
24 practices, including conservation and de-
25 mand management; and

1 (ii) to gain public recognition and ac-
2 ceptance of increased costs; and

3 (C) to create and maintain a clearinghouse
4 of climate change information for water utili-
5 ties, academic researchers, stakeholders, gov-
6 ernment agencies, and research organizations.

7 (c) AUTHORIZATION OF APPROPRIATIONS.—There is
8 authorized to be appropriated to carry out this section
9 \$25,000,000 for each of fiscal years 2010 through 2020.

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