

110<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# S. 2970

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.

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## IN THE SENATE OF THE UNITED STATES

MAY 2, 2008

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

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## 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 “Climate Change Drink-  
5       ing Water Adaptation Research Act.”.

6       **SEC. 2. FINDINGS.**

7       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 water research foundation and  
13          sponsored by drinking water utilities, to assist suppliers  
14          of drinking water in adapting to the effects of climate  
15          change.

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

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

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

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

25                                   (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 facilities and underground pipelines,  
9 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; and

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

16 (B) on ways of increasing the resilience of  
17 existing infrastructure and development of new  
18 design standards for future infrastructure;

19 (5) desalination, water reuse, and alternative  
20 supply technologies, including research—

21 (A) to improve and optimize existing mem-  
22 brane technologies, and to identify and develop  
23 breakthrough technologies, to enable the use of  
24 seawater, brackish groundwater, treated waste-  
25 water, and other impaired sources;

1 (B) into new sources of water through  
2 more cost-effective water treatment practices in  
3 recycling and desalination; and

4 (C) to improve technologies for use in—

5 (i) managing and minimizing the vol-  
6 ume of desalination and reuse concentrate  
7 streams; and

8 (ii) minimizing the environmental im-  
9 pacts of seawater intake at desalination fa-  
10 cilities;

11 (6) energy efficiency and greenhouse gas mini-  
12 mization, including research—

13 (A) on optimizing the energy efficiency of  
14 water supply and improving water efficiency in  
15 energy production; and

16 (B) to identify and develop renewable, car-  
17 bon-neutral energy options for the water supply  
18 industry;

19 (7) regional and hydrological basin cooperative  
20 water management solutions, including research  
21 into—

22 (A) institutional mechanisms for greater  
23 regional cooperation and use of water ex-  
24 changes, banking, and transfers; and

1 (B) the economic benefits of sharing risks  
2 of shortage across wider areas;

3 (8) utility management, decision support sys-  
4 tems, and water management models, including re-  
5 search—

6 (A) into improved decision support systems  
7 and modeling tools for use by water utility  
8 managers to assist with increased water supply  
9 uncertainty and adaptation strategies posed by  
10 climate change;

11 (B) to provide financial tools, including  
12 new rate structures, to manage financial re-  
13 sources and investments, because increased con-  
14 servation practices may diminish revenue and  
15 increase investments in infrastructure; and

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

18 (i) successful alternative methods for  
19 conservation and demand management;  
20 and

21 (ii) climate change impacts on  
22 groundwater resources;

23 (9) reducing greenhouse gas emissions and en-  
24 ergy demand management, including research to im-  
25 prove energy efficiency in water collection, produc-

1       tion, transmission, treatment, distribution, and dis-  
2       posal to provide more sustainability and means to  
3       assist drinking water utilities in reducing the pro-  
4       duction of greenhouse gas emissions in the collec-  
5       tion, production, transmission, treatment, distribu-  
6       tion, and disposal of drinking water;

7           (10) water conservation and demand manage-  
8       ment, including research—

9           (A) to develop strategic approaches to  
10       water demand management that offer the low-  
11       est-cost, noninfrastructural options to serve  
12       growing populations or manage declining sup-  
13       plies, primarily through—

14           (i) efficiencies in water use and re-  
15       allocation of the saved water;

16           (ii) demand management tools;

17           (iii) economic incentives; and

18           (iv) water-saving technologies; and

19       (B) into efficiencies in water management  
20       through integrated water resource management  
21       that incorporates—

22           (i) supply-side and demand-side proc-  
23       esses;

24           (ii) continuous adaptive management;

25       and

1 (iii) the inclusion of stakeholders in  
2 decisionmaking processes; and

3 (11) communications, education, and public ac-  
4 ceptance, including research—

5 (A) into improved strategies and ap-  
6 proaches for communicating with customers, de-  
7 cisionmakers, and other stakeholders about the  
8 implications of climate change on water supply;  
9 and

10 (B) to develop effective communication ap-  
11 proaches to gain—

12 (i) public acceptance of alternative  
13 water supplies and new policies and prac-  
14 tices, including conservation and demand  
15 management; and

16 (ii) public recognition and acceptance  
17 of increased costs.

18 (c) AUTHORIZATION OF APPROPRIATIONS.—There is  
19 authorized to be appropriated to carry out this section  
20 \$25,000,000 for each of fiscal years 2009 through 2019.

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