

115TH CONGRESS
1ST SESSION

S. _____

To establish a cost of greenhouse gases for carbon dioxide, methane, and nitrous oxide to be used by Federal agencies, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. BENNET (for himself, Mrs. FEINSTEIN, Ms. HARRIS, Mr. WYDEN, Mr. WHITEHOUSE, Ms. HASSAN, and Mr. MERKLEY) introduced the following bill; which was read twice and referred to the Committee on

A BILL

To establish a cost of greenhouse gases for carbon dioxide, methane, and nitrous oxide to be used by Federal agencies, 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 “Transparent Pollution
5 Accounting Act”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that—

8 (1) sound economic and policy analyses require
9 that the economic benefits of reducing climate

1 change be considered together with the costs of poli-
2 cies and measures to reduce greenhouse gas emis-
3 sions;

4 (2) climate change, if not addressed, is pro-
5 jected to inflict substantial damage on the economy
6 and people of the United States;

7 (3) according to the Congressional Budget Of-
8 fice, the Government Accountability Office, and the
9 Office of Management and Budget, the impacts of
10 climate change are—

11 (A) costing United States taxpayers bil-
12 lions of dollars annually; and

13 (B) putting pressure on the Federal budg-
14 et;

15 (4) the expenditures by the Federal Govern-
16 ment resulting from the effects of climate change
17 are projected to increase, and reducing greenhouse
18 gas emissions presents an opportunity to minimize
19 those expenditures;

20 (5) between calendar years 2008 and 2015, the
21 United States reduced carbon pollution from the en-
22 ergy sector by nearly 10 percent, while the economy
23 grew more than 10 percent;

1 (6) more than 1,200 companies are taking the
2 cost of climate change into consideration in business
3 decisions;

4 (7) estimates of the costs of greenhouse gases
5 provide a method and measure, grounded in sci-
6 entific and economic research, for monetizing—

7 (A) the costs of greenhouse gas emissions;
8 and

9 (B) the benefits of reducing greenhouse
10 gas emissions;

11 (8) the National Academies of Sciences, Engi-
12 neering, and Medicine has provided detailed rec-
13 ommendations for improving the estimate of the
14 costs of greenhouse gases for the purpose of regu-
15 latory analysis;

16 (9) the reduction of greenhouse gas emissions
17 by other countries benefits the United States by re-
18 ducing climate risks to the United States, and the
19 reduction of greenhouse gas emissions by the United
20 States benefits other countries;

21 (10) in light of the global nature of the problem
22 of greenhouse gas emissions, the interests of the
23 United States would be maximized if the United
24 States were to use a calculation method of the cost
25 of climate pollution that reflects global damages;

1 (11) due to the nature of climate change risks,
2 the returns on mitigation may pay off in periods
3 that would otherwise involve substantial losses;

4 (12) economic theory and evidence suggests
5 that, for actions with intergenerational consequences
6 such as the consequences of climate change, a dis-
7 count rate approximately equal to or less than the
8 long-term yield on the debt of the Treasury of the
9 United States may be appropriate; and

10 (13) it is imperative that the academic commu-
11 nity continue research on the cost of greenhouse
12 gases.

13 **SEC. 3. DEFINITIONS.**

14 In this Act:

15 (1) **CALCULATION METHOD.**—The term “cal-
16 culation method” means the method by which the
17 costs of greenhouse gases are calculated in accord-
18 ance with subsections (a), (b), and (c) of section 4,
19 respectively.

20 (2) **COMMITTEE.**—The term “Committee”
21 means the Costs of Greenhouse Gases Scientific Re-
22 view Committee established under section 7(a).

23 (3) **COSTS OF GREENHOUSE GASES.**—

24 (A) **IN GENERAL.**—The term “costs of
25 greenhouse gases” means the monetized present

1 discounted values, in dollars, of the current and
2 future net costs to society that result from—

3 (i) 1 ton of emissions of a specific
4 greenhouse gas in a specific year, including
5 damage relating to—

6 (I) a change in net agricultural
7 productivity;

8 (II) energy use;

9 (III) human health;

10 (IV) property damage from in-
11 creased flood risk and sea level rise;
12 and

13 (V) to the maximum extent prac-
14 ticable, the value of the effect on eco-
15 system services due to climate change;
16 and

17 (ii) the monetized present discounted
18 values of the current and future net bene-
19 fits to society from a 1-ton reduction of
20 emissions of a specific greenhouse gas in a
21 specific year, including a reduction in any
22 damage described in clause (i).

23 (B) INCLUSIONS.—The term “costs of
24 greenhouse gases” includes—

25 (i) the cost of carbon dioxide;

- 1 (ii) the cost of methane;
 2 (iii) the cost of nitrous oxide; and
 3 (iv) the cost of any other greenhouse
 4 gas estimated by the Working Group.

5 (4) WORKING GROUP.—The term “Working
 6 Group” means the Interagency Working Group on
 7 the Costs of Greenhouse Gases established under
 8 section 5(a).

9 **SEC. 4. COST OF CARBON DIOXIDE, COST OF METHANE,**
 10 **AND COST OF NITROUS OXIDE.**

11 (a) COST OF CARBON DIOXIDE.—In developing any
 12 rulemaking that requires a regulatory impact analysis,
 13 making any substantial procurement decision for which
 14 the cost of carbon dioxide is not applied before the date
 15 on which a revised version of the costs of greenhouse gases
 16 is finalized, the head of any Federal agency shall consider
 17 and document the cost of carbon dioxide in accordance
 18 with the amounts specified in the following table:

**Cost of Carbon Dioxide, 2010 Through 2050 (in 2007
 Dollars per Metric Ton of Carbon Dioxide), Dis-
 count Rate and Statistic**

Year	5 Percent Average	3 Percent Average	2.5 Per- cent Av- erage	High Im- pact (95th Percentile at 3 Per- cent Dis- count Rate)
2010	\$10	\$31	\$50	\$86
2011	\$11	\$32	\$51	\$90

Cost of Carbon Dioxide, 2010 Through 2050 (in 2007 Dollars per Metric Ton of Carbon Dioxide), Discount Rate and Statistic—Continued

Year	5 Percent Average	3 Percent Average	2.5 Percent Average	High Impact (95th Percentile at 3 Percent Discount Rate)
2012	\$11	\$33	\$53	\$93
2013	\$11	\$34	\$54	\$97
2014	\$11	\$35	\$55	\$101
2015	\$11	\$36	\$56	\$105
2016	\$11	\$38	\$57	\$108
2017	\$11	\$39	\$59	\$112
2018	\$12	\$40	\$60	\$116
2019	\$12	\$41	\$61	\$120
2020	\$12	\$42	\$62	\$123
2021	\$12	\$42	\$63	\$126
2022	\$13	\$43	\$64	\$129
2023	\$13	\$44	\$65	\$132
2024	\$13	\$45	\$66	\$135
2025	\$14	\$46	\$68	\$138
2026	\$14	\$47	\$69	\$141
2027	\$15	\$48	\$70	\$143
2028	\$15	\$49	\$71	\$146
2029	\$15	\$49	\$72	\$149
2030	\$16	\$50	\$73	\$152
2031	\$16	\$51	\$74	\$155
2032	\$17	\$52	\$75	\$158
2033	\$17	\$53	\$76	\$161
2034	\$18	\$54	\$77	\$164

Cost of Carbon Dioxide, 2010 Through 2050 (in 2007 Dollars per Metric Ton of Carbon Dioxide), Discount Rate and Statistic—Continued

Year	5 Percent Average	3 Percent Average	2.5 Percent Average	High Impact (95th Percentile at 3 Percent Discount Rate)
2035	\$18	\$55	\$78	\$168
2036	\$19	\$56	\$79	\$171
2037	\$19	\$57	\$81	\$174
2038	\$20	\$58	\$82	\$177
2039	\$20	\$59	\$83	\$180
2040	\$21	\$60	\$84	\$183
2041	\$21	\$61	\$85	\$186
2042	\$22	\$61	\$86	\$189
2043	\$22	\$62	\$87	\$192
2044	\$23	\$63	\$88	\$194
2045	\$23	\$64	\$89	\$197
2046	\$24	\$65	\$90	\$200
2047	\$24	\$66	\$92	\$203
2048	\$25	\$67	\$93	\$206
2049	\$25	\$68	\$94	\$209
2050	\$26	\$69	\$95	\$212

1 (b) COST OF METHANE.—In developing any rule-
2 making that requires a regulatory impact analysis, making
3 any substantial procurement decision for which the cost
4 of methane is not applied before the date on which a re-
5 vised version of the costs of greenhouse gases is finalized,
6 the head of any Federal agency shall consider and docu-

- 1 ment the cost of methane in accordance with the amounts
- 2 specified in the following table:

**Cost of Methane, 2010 Through 2050 (in 2007 Dollars
per Metric Ton of Methane), Discount Rate and
Statistic**

Year	5 Percent Average	3 Percent Average	2.5 Per- cent Av- erage	High Im- pact (95th Percentile at 3 Per- cent Dis- count Rate)
2010	\$370	\$870	\$1,200	\$2,400
2011	\$380	\$910	\$1,200	\$2,500
2012	\$400	\$940	\$1,300	\$2,600
2013	\$420	\$970	\$1,300	\$2,700
2014	\$440	\$1,000	\$1,300	\$2,700
2015	\$450	\$1,000	\$1,400	\$2,800
2016	\$470	\$1,100	\$1,400	\$2,900
2017	\$490	\$1,100	\$1,500	\$3,000
2018	\$510	\$1,100	\$1,500	\$3,000
2019	\$520	\$1,200	\$1,500	\$3,100
2020	\$540	\$1,200	\$1,600	\$3,200
2021	\$560	\$1,200	\$1,600	\$3,300
2022	\$590	\$1,300	\$1,700	\$3,400
2023	\$610	\$1,300	\$1,700	\$3,500
2024	\$630	\$1,400	\$1,800	\$3,600
2025	\$650	\$1,400	\$1,800	\$3,700
2026	\$670	\$1,400	\$1,900	\$3,800
2027	\$700	\$1,500	\$1,900	\$3,900
2028	\$720	\$1,500	\$2,000	\$4,000
2029	\$740	\$1,600	\$2,000	\$4,100

**Cost of Methane, 2010 Through 2050 (in 2007 Dollars
per Metric Ton of Methane), Discount Rate and
Statistic—Continued**

Year	5 Percent Average	3 Percent Average	2.5 Per- cent Av- erage	High Im- pact (95th Percentile at 3 Per- cent Dis- count Rate)
2030	\$760	\$1,600	\$2,000	\$4,200
2031	\$790	\$1,600	\$2,100	\$4,300
2032	\$820	\$1,700	\$2,100	\$4,500
2033	\$850	\$1,700	\$2,200	\$4,600
2034	\$880	\$1,800	\$2,200	\$4,700
2035	\$900	\$1,800	\$2,300	\$4,900
2036	\$930	\$1,900	\$2,400	\$5,000
2037	\$960	\$1,900	\$2,400	\$5,100
2038	\$990	\$2,000	\$2,500	\$5,200
2039	\$1,000	\$2,000	\$2,500	\$5,400
2040	\$1,000	\$2,000	\$2,600	\$5,500
2041	\$1,100	\$2,100	\$2,600	\$5,600
2042	\$1,100	\$2,100	\$2,700	\$5,700
2043	\$1,100	\$2,200	\$2,700	\$5,800
2044	\$1,200	\$2,200	\$2,800	\$5,900
2045	\$1,200	\$2,300	\$2,800	\$6,100
2046	\$1,200	\$2,300	\$2,900	\$6,200
2047	\$1,300	\$2,400	\$2,900	\$6,300
2048	\$1,300	\$2,400	\$3,000	\$6,400
2049	\$1,300	\$2,500	\$3,000	\$6,500
2050	\$1,300	\$2,500	\$3,100	\$6,700

(c) COST OF NITROUS OXIDE.—In developing any rulemaking that requires a regulatory impact analysis, making any substantial procurement decision for which the cost of nitrous oxide is not applied before the date on which a revised version of the costs of greenhouse gases is finalized, the head of any Federal agency shall consider and document the cost of nitrous oxide in accordance with the amounts specified in the following table:

Cost of Nitrous Oxide, 2010 Through 2050 (in 2007 Dollars per Metric Ton of Nitrous Oxide), Discount Rate and Statistic

Year	5 Percent Average	3 Percent Average	2.5 Percent Average	High Impact (95th Percentile at 3 Percent Discount Rate)
2010	\$3,400	\$12,000	\$18,000	\$31,000
2011	\$3,500	\$12,000	\$18,000	\$32,000
2012	\$3,700	\$12,000	\$19,000	\$33,000
2013	\$3,800	\$13,000	\$19,000	\$34,000
2014	\$3,900	\$13,000	\$20,000	\$34,000
2015	\$4,000	\$13,000	\$20,000	\$35,000
2016	\$4,200	\$14,000	\$20,000	\$36,000
2017	\$4,300	\$14,000	\$21,000	\$37,000
2018	\$4,400	\$14,000	\$21,000	\$38,000
2019	\$4,600	\$15,000	\$22,000	\$38,000
2020	\$4,700	\$15,000	\$22,000	\$39,000
2021	\$4,900	\$15,000	\$23,000	\$40,000
2022	\$5,000	\$16,000	\$23,000	\$41,000
2023	\$5,200	\$16,000	\$23,000	\$42,000

**Cost of Nitrous Oxide, 2010 Through 2050 (in 2007
Dollars per Metric Ton of Nitrous Oxide), Discount
Rate and Statistic—Continued**

Year	5 Percent Average	3 Percent Average	2.5 Per- cent Av- erage	High Im- pact (95th Percentile at 3 Per- cent Dis- count Rate)
2024	\$5,400	\$16,000	\$24,000	\$43,000
2025	\$5,500	\$17,000	\$24,000	\$44,000
2026	\$5,700	\$17,000	\$25,000	\$45,000
2027	\$5,900	\$17,000	\$25,000	\$46,000
2028	\$6,000	\$18,000	\$26,000	\$47,000
2029	\$6,200	\$18,000	\$26,000	\$48,000
2030	\$6,300	\$19,000	\$27,000	\$49,000
2031	\$6,500	\$19,000	\$27,000	\$50,000
2032	\$6,800	\$19,000	\$28,000	\$51,000
2033	\$7,000	\$20,000	\$28,000	\$52,000
2034	\$7,200	\$20,000	\$29,000	\$54,000
2035	\$7,400	\$21,000	\$29,000	\$55,000
2036	\$7,600	\$21,000	\$30,000	\$56,000
2037	\$7,800	\$21,000	\$30,000	\$57,000
2038	\$8,000	\$22,000	\$31,000	\$58,000
2039	\$8,200	\$22,000	\$31,000	\$59,000
2040	\$8,400	\$23,000	\$32,000	\$60,000
2041	\$8,600	\$23,000	\$32,000	\$61,000
2042	\$8,800	\$23,000	\$33,000	\$62,000
2043	\$9,100	\$24,000	\$33,000	\$64,000
2044	\$9,300	\$24,000	\$34,000	\$65,000
2045	\$9,500	\$25,000	\$34,000	\$66,000
2046	\$9,800	\$25,000	\$35,000	\$67,000

**Cost of Nitrous Oxide, 2010 Through 2050 (in 2007
Dollars per Metric Ton of Nitrous Oxide), Discount
Rate and Statistic—Continued**

Year	5 Percent Average	3 Percent Average	2.5 Per- cent Av- erage	High Im- pact (95th Percentile at 3 Per- cent Dis- count Rate)
2047	\$10,000	\$26,000	\$35,000	\$68,000
2048	\$10,000	\$26,000	\$36,000	\$69,000
2049	\$10,000	\$26,000	\$36,000	\$71,000
2050	\$11,000	\$27,000	\$37,000	\$72,000

1 SEC. 5. INTERAGENCY WORKING GROUP ON THE COSTS OF
2 GREENHOUSE GASES.

3 (a) ESTABLISHMENT.—The Director of the Office of
4 Management and Budget, the Director of the Office of
5 Science and Technology Policy, and the Chair of the Coun-
6 cil of Economic Advisers shall establish an interagency
7 working group, to be known as the “Interagency Working
8 Group on the Costs of Greenhouse Gases” to carry out
9 the calculation method revision evaluation described in
10 section 6.

11 (b) MEMBERSHIP.—The Working Group shall consist
12 of members from—

- 13** (1) the Council of Economic Advisers;
14 (2) the Office of Science and Technology Policy;
15 (3) the National Security Council;
16 (4) the National Economic Council;

- 1 (5) the Council on Environmental Quality;
- 2 (6) the Department of Agriculture;
- 3 (7) the Department of Commerce;
- 4 (8) the Department of Energy;
- 5 (9) the Department of the Interior;
- 6 (10) the Department of Transportation;
- 7 (11) the Department of the Treasury;
- 8 (12) the Department of Health and Human
- 9 Services; and
- 10 (13) the Environmental Protection Agency.

11 **SEC. 6. CALCULATION METHOD REVISION.**

12 (a) REVISION EVALUATION.—

13 (1) IN GENERAL.—Not later than 5 years after
14 the date of enactment of this Act, and not less fre-
15 quently than once every 5 years thereafter, the
16 Working Group shall carry out a revision evaluation
17 for the cost of carbon dioxide, cost of methane, and
18 cost of nitrous oxide to determine whether a revision
19 of the calculation method of the cost of carbon diox-
20 ide, cost of methane, or cost of nitrous oxide is nec-
21 essary.

22 (2) CONSIDERATIONS.—In carrying out a revi-
23 sion evaluation under paragraph (1) or a revision
24 under subsection (b), the Working Group shall—

25 (A) consider—

1 (i) the findings of the National Acad-
2 emies of Sciences, Engineering, and Medi-
3 cine relating to approaches to estimating
4 the costs of greenhouse gases;

5 (ii) the findings of the Committee
6 under section 7(a)(3);

7 (iii) advancements in scientific and
8 economic research relating to the impacts
9 of climate change and the estimation of the
10 costs of greenhouse gases;

11 (iv) new domestic and international
12 findings; and

13 (v) all harm caused by greenhouse gas
14 emissions;

15 (B) assess any proposed revision of the cal-
16 culation method with respect to—

17 (i) consistency with the state of sci-
18 entific knowledge, as reflected by current,
19 peer-reviewed literature; and

20 (ii) the adequacy with which the pro-
21 posed calculation method identifies and
22 represents key uncertainties and sensitivi-
23 ties;

24 (C) evaluate the harm caused by green-
25 house gas emissions for the period beginning on

1 the date on which the applicable revision eval-
2 uation commences and ending on a date in the
3 future that would allow estimation of the vast
4 majority of discounted climate damages;

5 (D) apply 1 or more discount rates, which
6 shall—

7 (i) account for the intergenerational
8 nature of the harm caused by climate
9 change; and

10 (ii) be consistent with the interest
11 rate of consumption used by Federal agen-
12 cies to reflect climate risk;

13 (E) include values that account for global
14 damages from greenhouse gas emissions;

15 (F) document the calculation method and
16 present results in a manner adequate for the
17 scientific community to understand and assess
18 the calculation method; and

19 (G) make available to researchers the
20 model code for review, use, and modification.

21 (b) REVISION.—

22 (1) CALCULATION METHOD.—If the Working
23 Group makes a determination under subsection
24 (a)(1) that revision of the calculation method is nec-

1 necessary, the Working Group shall draft a proposed re-
2 vision of the calculation method.

3 (2) PUBLIC NOTIFICATION AND COMMENT PE-
4 RIOD.—Any proposed revision of the calculation
5 method shall be published in the Federal Register
6 for a period of public comment of not fewer than 90
7 days and include consultation with industry groups.

8 (3) EFFECT OF REVISIONS BY WORKING
9 GROUP.—Any revised calculation method of the cost
10 of carbon dioxide, the cost of methane, or the cost
11 of nitrous oxide developed by the Working Group
12 under paragraph (1) and published under paragraph
13 (2) shall supersede the applicable discount rate value
14 of the cost of carbon dioxide, the cost of methane,
15 or the cost of nitrous oxide under section 4.

16 **SEC. 7. COSTS OF GREENHOUSE GASES SCIENTIFIC RE-**
17 **VIEW COMMITTEE.**

18 (a) ESTABLISHMENT.—

19 (1) IN GENERAL.—Not later than January 1,
20 2019, and not less frequently than once every 5
21 years thereafter, the Director of the Office of Man-
22 agement and Budget, in consultation with the Direc-
23 tor of the Office of Science and Technology Policy
24 and the Chair of the Council of Economic Advisers,
25 shall establish a committee, to be known as the

1 “Costs of Greenhouse Gases Scientific Review Com-
2 mittee”.

3 (2) MEMBERSHIP.—The membership of the
4 Committee shall consist of not fewer than 10 mem-
5 bers, selected by the presidents of the National
6 Academies of Sciences, Engineering, and Medicine,
7 who shall represent scientific fields relevant to the
8 estimation of the costs of greenhouse gases, includ-
9 ing—

10 (A) climate science;

11 (B) climate economics; and

12 (C) decision analysis.

13 (3) DUTIES.—The Committee shall publish a
14 report in which the Committee shall—

15 (A) make a recommendation to the Work-
16 ing Group regarding whether a revision of the
17 calculation method is necessary;

18 (B) if the Committee determines that a re-
19 vision is necessary, recommend scientific data
20 and models to be used by the Working Group
21 in the revision of the calculation method;

22 (C) provide scientific advice to the Work-
23 ing Group on the revision; and

24 (D) provide guidance to the U.S. Global
25 Change Research Program with respect to the

1 research necessary to advance the estimation of
2 the costs of greenhouse gases.

3 (b) TERMINATION.—On the completion of the revi-
4 sion evaluation for which the Committee is established, the
5 Committee shall terminate.

6 (c) AUTHORIZATION OF APPROPRIATIONS.—There
7 are authorized to be appropriated to the Secretary of Com-
8 merce such sums as are necessary to administer the Com-
9 mittee.