

118TH CONGRESS
1ST SESSION

S. 2045

To improve air quality management and the safety of communities using
the best available monitoring technology and data.

IN THE SENATE OF THE UNITED STATES

JUNE 20, 2023

Mr. MARKEY (for himself, Mr. BENNET, Mr. BLUMENTHAL, Mr. BOOKER, Ms. DUCKWORTH, Mr. DURBIN, Mr. SANDERS, Ms. SMITH, Mr. VAN HOLLEN, Ms. WARREN, and Mr. WHITEHOUSE) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

A BILL

To improve air quality management and the safety of communities using the best available monitoring technology and data.

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 “Technology Assess-
5 ment for Air Quality Management Act of 2023”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that—

1 (1) the Environmental Protection Agency can
2 further strengthen air quality planning and manage-
3 ment by consistently gathering information on local
4 air quality monitoring systems across the United
5 States;

6 (2) newer air sensor technologies create the
7 possibility for enhanced, community-scale air pollu-
8 tion data;

9 (3) despite national progress in reducing air
10 pollution, more than 40 percent of people in the
11 United States live in places with unhealthy levels of
12 ozone or particle pollution;

13 (4) people of color, Indigenous people, and low-
14 income communities bear disproportionately higher
15 exposures and health burdens due to air pollution;

16 (5) air quality can vary up to 800 percent from
17 block to block within a single neighborhood; and

18 (6) existing methods that are prescribed for
19 basin-wide air quality monitoring are cost-prohibitive
20 for monitoring community-scale air quality.

21 **SEC. 3. DEFINITIONS.**

22 In this Act:

23 (1) ADMINISTRATOR.—The term “Adminis-
24 trator” means the Administrator of the Environ-
25 mental Protection Agency.

1 (2) AIR POLLUTANT.—The term “air pollutant”
2 has the meaning given such term in section 302(g)
3 of the Clean Air Act (42 U.S.C. 7602(g)).

4 (3) AREA SOURCE.—The term “area source”
5 has the meaning given the term in section 112(a) of
6 the Clean Air Act (42 U.S.C. 7412(a)).

7 (4) ENVIRONMENTAL JUSTICE.—The term “en-
8 vironmental justice” means the fair treatment and
9 meaningful involvement of all people, regardless of
10 race, color, culture, national origin, or income, in the
11 development, implementation, and enforcement of
12 environmental laws (including regulations) and poli-
13 cies to ensure that each person enjoys—

14 (A) the same degree of protection from en-
15 vironmental and health hazards; and

16 (B) equal access to any Federal agency ac-
17 tion relating to the development, implementa-
18 tion, and enforcement of environmental laws
19 (including regulations) and policies for the pur-
20 pose of having a healthy environment in which
21 to live, learn, work, and recreate.

22 (5) ENVIRONMENTAL JUSTICE COMMUNITY.—
23 The term “environmental justice community” means
24 a community with significant representation of com-
25 munities of color, low-income communities, or Tribal

1 and Indigenous communities, that experiences, or is
2 at risk of experiencing, higher or more adverse
3 human health or environmental effects, as compared
4 to other communities.

5 (6) HYBRID METHOD.—The term “hybrid
6 method” means a method for monitoring air pollut-
7 ants that combines information from multiple
8 sources, including monitors at ground level, mod-
9 eling, and satellites.

10 (7) HYPERLOCAL AIR QUALITY MONITORING
11 SYSTEM.—The term “hyperlocal air quality moni-
12 toring system” means a system of monitoring air
13 pollutants that—

14 (A) yields frequently repeated, ongoing
15 measurements of air pollutants at a geographic
16 scale that is—

17 (i) as small as practicable to identify
18 communities; and

19 (ii) not larger than that of a census
20 tract; and

21 (B) identifies hotspots of persistent ele-
22 vated levels of air pollutants localized to, and
23 caused by the characteristics of, a specific geo-
24 graphic location.

25 (8) HYPERLOCAL DATA.—

1 (A) IN GENERAL.—The term “hyperlocal
2 data” means the data returned by a hyperlocal
3 air quality monitoring system.

4 (B) INCLUSIONS.—The term “hyperlocal
5 data” may include data on—

6 (i) the health impacts of air pollution;

7 and

8 (ii) sources of air pollutants.

9 (9) INDIRECT SOURCE.—The term “indirect
10 source” has the meaning given the term in section
11 110(a)(5)(C) of the Clean Air Act (42 U.S.C.
12 7410(a)(5)(C)).

13 (10) MAJOR SOURCE.—The term “major
14 source” has the meaning given the term in section
15 501 of the Clean Air Act (42 U.S.C. 7661).

16 (11) REFERENCE METHOD.—The term “ref-
17 erence method” has the meaning given such term in
18 section 50.1 of title 40, Code of Federal Regula-
19 tions, as in effect on the date of enactment of this
20 Act.

21 (12) RELEVANT COMMITTEES OF CONGRESS.—
22 The term “relevant committees of Congress”
23 means—

24 (A) the Committee on Environment and
25 Public Works of the Senate; and

1 (B) the Committee on Energy and Com-
2 merce of the House of Representatives.

3 **SEC. 4. COMPENDIUM OF AIR QUALITY MONITORING TECH-**
4 **NOLOGIES AND USES OF AIR QUALITY IN-**
5 **SIGHTS.**

6 Not later than 1 year after the date of enactment
7 of this Act, and annually thereafter, the Administrator
8 shall update the Air Sensor Toolbox of the Environmental
9 Protection Agency or an equivalent online, publicly avail-
10 able compendium—

11 (1) to describe all types of common air quality
12 monitor technologies, which may include—

13 (A) Federal Reference Method or Federal
14 Equivalent Method monitors;

15 (B) mobile monitoring platforms;

16 (C) low-cost stationary monitors;

17 (D) satellite sensors and surface monitors;

18 (E) fenceline monitoring instruments;

19 (F) high-resolution cameras; and

20 (G) other technologies, as determined to be
21 appropriate by the Administrator;

22 (2) to describe the uses of the data associated
23 with the types of common air quality monitor tech-
24 nologies described under paragraph (1);

1 (3) to update and describe the advantages of
2 monitoring technologies with respect to different air
3 quality management applications, which may in-
4 clude—

5 (A) the costs and ease of purchase, instal-
6 lation, operation, and maintenance of monitors;

7 (B) air pollutant or air pollutants mon-
8 itored;

9 (C) spatial resolution;

10 (D) temporal resolution;

11 (E) frequency of data collection by mon-
12 itors;

13 (F) data quality and data processing
14 needs; and

15 (G) compatibility, accessibility, and ease of
16 use of a type of monitor with online databases;

17 (4) to describe—

18 (A) potential incongruities between air
19 quality monitor measurements from reference
20 methods and hybrid methods; and

21 (B) relevant insights from data returned
22 from hybrid methods, despite the potential in-
23 congruities described in subparagraph (A);

24 (5) to describe the availability of, and how to
25 access, data on—

1 (A) the location and nature of likely
2 sources of air pollution, including major
3 sources, area sources, and indirect sources; and

4 (B) potential health impacts that may re-
5 sult from air pollution exposure;

6 (6) to connect and integrate the Air Sensor
7 Toolbox or equivalent compendium with the
8 EJSCREEN mapping tool of the Environmental
9 Protection Agency, the Environmental Information
10 Exchange Network, and other relevant Federal,
11 State, and local environmental justice mapping and
12 screening tools—

13 (A) to inform communities and local air
14 agencies of local air pollution concerns; and

15 (B) to help communities understand and
16 describe—

17 (i) the multiple and cumulative expo-
18 sures identified in environmental human
19 health analyses under section 3–301(b) of
20 Executive Order 12898 (42 U.S.C. 4321
21 note; relating to Federal actions to address
22 environmental justice in minority popu-
23 lations and low-income populations); and

24 (ii) any exclusion from participation
25 in, denial of and the benefits of, or dis-

1 crimination under programs and activities
2 receiving Federal financial assistance on
3 the ground of race, color, or national ori-
4 gin, as prohibited under section 601 of the
5 Civil Rights Act of 1964 (42 U.S.C.
6 2000d); and

7 (7) to describe how to integrate air quality
8 monitoring technologies and data across spatial and
9 temporal scales to improve quantitative use of low-
10 cost sensors, satellite sensors, and other tech-
11 nologies.

12 **SEC. 5. AIR QUALITY TECHNOLOGY WORKING GROUP.**

13 (a) ESTABLISHMENT.—

14 (1) IN GENERAL.—Not later than 180 days
15 after the date of enactment of this Act, the Adminis-
16 trator shall establish an Air Quality Technology
17 Working Group (referred to in this section as the
18 “Working Group”).

19 (2) MEMBERSHIP.—The Working Group shall
20 consist of 30 members, including—

21 (A) 1 representative from each Regional
22 Office of the Environmental Protection Agency;

23 (B) not less than 1 representative with a
24 demonstrated record of experience with device
25 installation, operation, maintenance, and cali-

1 bration of different air quality monitoring ap-
2 proaches;

3 (C) not less than 3 representatives with
4 demonstrated records of experience in data
5 science as it pertains to using measurements
6 from monitoring technologies to develop air
7 quality insights for environmental justice and
8 associated air quality monitoring applications;

9 (D) not less than 3 representatives of envi-
10 ronmental justice community-based organiza-
11 tions, coalitions, networks, or alliances with ex-
12 perience in using new technologies to assess and
13 address air pollution in the communities of
14 those environmental justice community-based
15 organizations, coalitions, networks, or alliances;

16 (E) not less than 1 representative with a
17 demonstrated record of experience in outreach
18 and engagement with environmental justice
19 communities;

20 (F) not less than 1 representative from the
21 national headquarters of the Environmental
22 Protection Agency;

23 (G) not less than 1 representative from a
24 State air agency;

1 (H) not less than 1 representative from a
2 local air agency;

3 (I) not less than 1 representative from a
4 Tribal air agency;

5 (J) not less than 2 representatives who—
6 (i) are—

7 (I) from public health depart-
8 ments; or

9 (II) public health scientists; and

10 (ii) have a demonstrated record of ex-
11 perience with translating information col-
12 lected from monitoring technologies into
13 health insights for environmental justice
14 applications and air quality management;
15 and

16 (K) not less than 1 representative from the
17 air quality technology industry.

18 (b) MONITORING SYSTEM TEMPLATE.—Not later
19 than 1 year after the date on which the Working Group
20 is established under subsection (a)(1), the Working Group
21 shall develop and submit to the relevant committees of
22 Congress a report that includes—

23 (1) templates for integrated air quality moni-
24 toring systems ranging in cost estimates, population
25 sizes of communities served, atmospheric dispersion

1 dynamics of air pollutants, and other relevant pa-
2 rameters, as determined to be appropriate by the
3 Working Group, that provide a holistic under-
4 standing of local air pollutant measurements across
5 time, which may incorporate—

6 (A) 1 or more in-situ monitors;

7 (B) 1 or more satellite sensors;

8 (C) computer modeling;

9 (D) multipollutant monitoring options;

10 (E) single pollutant monitoring options;

11 and

12 (F) data collection, interpretation, and re-
13 porting to relevant Federal, State, local, and
14 Tribal air agencies;

15 (2) a description of the costs and capacity
16 needs associated with the integrated air quality mon-
17 itoring systems described under paragraph (1), in-
18 cluding—

19 (A) costs of purchase, operation, mainte-
20 nance, and calibration of monitor technologies;

21 (B) workforce needs;

22 (C) data infrastructure needs; and

23 (D) any other needs, as determined to be
24 appropriate by the Administrator; and

1 (3) technology modernization targets for up-
2 grades to integrated air quality monitoring stations.

3 (c) HYPERLOCAL MONITORING SUPPORT.—Not later
4 than 360 days after the date on which the Working Group
5 is established under subsection (a)(1), the Working Group
6 shall develop and submit to Congress a report that in-
7 cludes—

8 (1) recommendations for how the Administrator
9 can consider data returned from hybrid methods to
10 improve air quality in communities; and

11 (2) recommendations for dedicated staffing at
12 the Environmental Protection Agency to robustly
13 support communities interested in hyperlocal data,
14 for example, assistance with grant applications, co-
15 location of low-cost monitors with Federal reference
16 monitors, and data analysis.

17 **SEC. 6. NATIONAL INFRASTRUCTURE INVENTORY.**

18 (a) IN GENERAL.—Not later than 180 days after the
19 date of enactment of this Act, the Comptroller General
20 of the United States, in coordination with the Environ-
21 mental Protection Agency, shall carry out a study to in-
22 ventory national air quality monitoring infrastructure by
23 documenting—

1 (1) locations, operation statuses, frequencies of
2 data return, and dates of installation of Federal air
3 quality monitors;

4 (2) the number of people living within $\frac{1}{2}$ mile
5 of Federal air quality monitors that continuously re-
6 turn data;

7 (3) in coordination with Regional Offices of the
8 Environmental Protection Agency, and State, local,
9 and Tribal air agencies, the locations, operation
10 statuses, and dates of installation of additional air
11 quality monitors that are managed by State, local,
12 and Tribal air agencies;

13 (4) data infrastructure and online platforms
14 that are associated with datasets collected by Fed-
15 eral, State, local, and Tribal air quality monitors
16 that are documented under paragraphs (1) and (3);
17 and

18 (5) existing workforce capacity and needs for
19 air quality monitoring, analysis and State and local
20 engagement across Federal, State, local, and Tribal
21 levels.

22 (b) REPORT.—Not later than 2 years after the date
23 of enactment of this Act, the Administrator shall submit
24 to the relevant committees of Congress a report that in-
25 cludes—

- 1 (1) a description of the study carried out under
2 subsection (a);
- 3 (2) a description of the results of that study;
- 4 (3) a map of high-priority areas for air quality
5 monitor deployment, based on factors such as prox-
6 imity to or effects on environmental justice commu-
7 nities, discrepancies between monitor readings and
8 satellite or low-cost sensor readings, proliferation of
9 air pollution sources, and the lack of existing Fed-
10 eral Reference Method or Federal Equivalent Meth-
11 od monitors; and
- 12 (4) recommendations for legislative and regu-
13 latory action that would facilitate more effective and
14 targeted air quality management across scales,
15 which may include—
 - 16 (A) monitor placement;
 - 17 (B) monitor accuracy;
 - 18 (C) integration of monitor, modeling, and
19 satellite technologies;
 - 20 (D) Federal Equivalent Methods for
21 hyperlocal monitoring;
 - 22 (E) information gathering and sharing;
 - 23 and
 - 24 (F) maintenance and regular upgrades to
25 monitors and data infrastructure.

1 **SEC. 7. AUTHORIZATION OF APPROPRIATIONS.**

2 There is authorized to be appropriated to the Admin-
3 istrator \$11,000,000 for each of fiscal years 2024 through
4 2028 for the purposes of—

5 (1) carrying out this Act; and

6 (2) funding 8 new full-time equivalent positions
7 to assist the Administrator in carrying out this Act.

8 **SEC. 8. SAVINGS CLAUSE.**

9 Nothing in this Act shall be construed as altering,
10 limiting, revising, or weakening existing Federal law to
11 protect public health or welfare from air pollution.

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