

117TH CONGRESS  
2D SESSION

**S.** \_\_\_\_\_

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

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IN THE SENATE OF THE UNITED STATES

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

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**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 2022”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that—

1           (1) the Environmental Protection Agency has  
2 not established a process to consistently gather in-  
3 formation on local air quality monitoring systems  
4 across the United States;

5           (2) it is not yet clear how newer air sensor  
6 technologies should be deployed to provide the most  
7 benefit, nor how the data should be interpreted;

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

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

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

17           (6) existing methods that are prescribed for  
18 basin-wide air quality monitoring—

19                 (A) are cost-prohibitive for monitoring  
20 community-scale air quality; and

21                 (B) do not, as of the date of enactment of  
22 this Act, measure the intrinsic variability of  
23 persistently poor air quality in environmental  
24 justice communities at the neighborhood block  
25 level.

1 **SEC. 3. DEFINITIONS.**

2 In this Act:

3 (1) ADMINISTRATOR.—The term “Adminis-  
4 trator” means the Administrator of the Environ-  
5 mental Protection Agency.

6 (2) AIR POLLUTANT.—The term “air pollutant”  
7 means—

8 (A) a criteria pollutant for which there are  
9 national ambient air quality standards under  
10 section 109 of the Clean Air Act (42 U.S.C.  
11 7409) and the precursors to such a pollutant,  
12 including ammonia and volatile organic com-  
13 pounds (as defined in section 51.100 of title 40,  
14 Code of Federal Regulations (or successor regu-  
15 lations));

16 (B) a hazardous air pollutant (as defined  
17 in section 112(a) of that Act (42 U.S.C.  
18 7412(a))); and

19 (C) a greenhouse gas.

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

23 (4) ENVIRONMENTAL JUSTICE.—The term “en-  
24 vironmental justice” means the fair treatment and  
25 meaningful involvement of all people, regardless of  
26 race, color, culture, natural origin, or income, in the

1 development, implementation, and enforcement of  
2 environmental laws (including regulations) and poli-  
3 cies to ensure that each person enjoys—

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

6 (B) equal access to any Federal agency ac-  
7 tion relating to the development, implementa-  
8 tion, and enforcement of environmental laws  
9 (including regulations) and policies for the pur-  
10 pose of having a healthy environment in which  
11 to live, learn, work, and recreate.

12 (5) ENVIRONMENTAL JUSTICE COMMUNITY.—

13 The term “environmental justice community” means  
14 a community with significant representation of com-  
15 munities of color, low-income communities, or Tribal  
16 and Indigenous communities that experiences, or is  
17 at risk of experiencing, higher or more adverse  
18 human health or environmental effects, as compared  
19 to other communities.

20 (6) GREENHOUSE GAS.—The term “greenhouse  
21 gas” means any of the following:

22 (A) Carbon dioxide.

23 (B) Methane.

24 (C) Nitrous oxide.

25 (D) Hydrofluorocarbons.

1 (E) Perfluorocarbons.

2 (F) Sulfur hexafluoride.

3 (7) HYPERLOCAL AIR QUALITY MONITORING  
4 SYSTEM.—The term “hyperlocal air quality moni-  
5 toring system” means a method of monitoring ambi-  
6 ent air quality, greenhouse gases, and co-pollutants  
7 and detecting the presence of other air pollutants  
8 that—

9 (A) yields frequently repeated, ongoing  
10 measurements of air pollutants at a geographic  
11 scale that is—

12 (i) as small as practicable to identify  
13 communities; and

14 (ii) not larger than that of a census  
15 tract; and

16 (B) identifies hotspots of persistent ele-  
17 vated levels of air pollutants localized to, and  
18 caused by the characteristics of, a specific geo-  
19 graphic location.

20 (8) HYPERLOCAL DATA.—

21 (A) IN GENERAL.—The term “hyperlocal  
22 data” means the results returned by a  
23 hyperlocal air quality monitoring system.

24 (B) INCLUSIONS.—The term “hyperlocal  
25 data” may include data on—

1 (i) the health impacts of air pollution;

2 and

3 (ii) sources of pollution.

4 (9) INDIRECT SOURCE.—The term “indirect  
5 source” has the meaning given the term in section  
6 110(a)(5)(C) of the Clean Air Act (42 U.S.C.  
7 7410(a)(5)(C)).

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

11 (11) RELEVANT COMMITTEES OF CONGRESS.—  
12 The term “relevant committees of Congress”  
13 means—

14 (A) the Committee on Environment and  
15 Public Works of the Senate; and

16 (B) the Committee on Energy and Com-  
17 merce of the House of Representatives.

18 **SEC. 4. COMPENDIUM OF AIR QUALITY MONITORING TECH-**  
19 **NOLOGIES AND USES OF AIR QUALITY IN-**  
20 **SIGHTS.**

21 Not later than 1 year after the date of enactment  
22 of this Act, and annually thereafter, the Administrator  
23 shall update the Air Sensor Toolbox of the Environmental  
24 Protection Agency or an equivalent online, publicly avail-  
25 able compendium—

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

3           (A) Federal Reference Method or Federal  
4 Equivalent Method monitors;

5           (B) mobile monitoring platforms;

6           (C) low-cost stationary monitors;

7           (D) satellite sensors and surface monitors;

8           (E) fenceline monitoring instruments;

9           (F) high-resolution cameras; and

10          (G) other technologies, as determined to be  
11 appropriate by the Administrator;

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

15          (3) to update and describe the advantages and  
16 limitations of monitoring technologies with respect to  
17 different air quality management applications, which  
18 may include—

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

21           (B) air pollutant or air pollutants mon-  
22 itored;

23           (C) spatial resolution;

24           (D) temporal resolution;

1 (E) frequency of data collection by mon-  
2 itors;

3 (F) data quality and data processing  
4 needs; and

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

7 (4) to describe—

8 (A) potential incongruities in air quality  
9 monitor measurements and reference methods;  
10 and

11 (B) relevant insights with respect to  
12 hyperlocal data, despite the potential incongru-  
13 ities described in subparagraph (A);

14 (5) to describe the availability of, and how to  
15 access, data on—

16 (A) the location and nature of likely  
17 sources of air pollution, including major  
18 sources, area sources, and indirect sources; and

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

21 (6) to connect and integrate the Air Sensor  
22 Toolbox or equivalent compendium with the  
23 EJSCREEN mapping tool of the Environmental  
24 Protection Agency, the Environmental Information  
25 Exchange Network, and other relevant Federal,

1 State, and local environmental justice mapping and  
2 screening tools—

3 (A) to inform communities and local air  
4 agencies of local air pollution concerns;

5 (B) to address—

6 (i) the multiple and cumulative expo-  
7 sures identified in environmental human  
8 health analyses under section 3–301(b) of  
9 Executive Order 12898 (42 U.S.C. 4321  
10 note; relating to Federal actions to address  
11 environmental justice in minority popu-  
12 lations and low-income populations); and

13 (ii) any exclusion from participation  
14 in, denial of and the benefits of, or dis-  
15 crimination under programs and activities  
16 receiving Federal financial assistance on  
17 the ground of race, color, or national ori-  
18 gin, as prohibited under section 601 of the  
19 Civil Rights Act of 1964 (42 U.S.C.  
20 2000d); and

21 (C) to strengthen hyperlocal air quality  
22 monitoring systems, air quality data visualiza-  
23 tion, and hyperlocal data integration into deci-  
24 sionmaking; and

1           (7) to describe how to integrate air quality  
2           monitoring technologies and data across spatial and  
3           temporal scales to improve quantitative use of low-  
4           cost sensors, satellite sensors, and other tech-  
5           nologies.

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

7           (a) ESTABLISHMENT.—

8           (1) IN GENERAL.—Not later than 180 days  
9           after the date of enactment of this Act, the Adminis-  
10          trator shall establish an Air Quality Technology  
11          Working Group (referred to in this section as the  
12          “Working Group”).

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

15                (A) 1 representative from each Regional  
16                Office of the Environmental Protection Agency;

17                (B) not less than 1 representative with a  
18                demonstrated record of experience with device  
19                installation, operation, maintenance, and cali-  
20                bration of different air quality monitoring ap-  
21                proaches;

22                (C) not less than 3 representatives with  
23                demonstrated records of experience in data  
24                science as it pertains to using measurements  
25                from monitoring technologies to develop air

1 quality insights for environmental justice and  
2 associated air quality monitoring applications;

3 (D) not less than 3 representatives of envi-  
4 ronmental justice community-based organiza-  
5 tions, coalitions, networks, or alliances with ex-  
6 perience in using new technologies to assess and  
7 address air pollution in the communities of  
8 those environmental justice community-based  
9 organizations, coalitions, networks, or alliances;

10 (E) not less than 1 representative with a  
11 demonstrated record of experience in outreach  
12 and engagement with environmental justice  
13 communities;

14 (F) not less than 1 representative from a  
15 Federal air agency;

16 (G) not less than 1 representative from a  
17 State air agency;

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

20 (I) not less than 1 representative from a  
21 Tribal air agency;

22 (J) not less than 2 representatives that—  
23 (i) are—

24 (I) from public health depart-  
25 ments; or

1 (II) public health scientists; and  
2 (ii) have a demonstrated record of ex-  
3 perience with translating information col-  
4 lected from monitoring technologies into  
5 health insights for environmental justice  
6 applications and air quality management;  
7 and  
8 (K) not less than 1 representative from the  
9 air quality technology industry.

10 (b) MONITORING SYSTEM TEMPLATE.—Not later  
11 than 1 year after the date on which the Working Group  
12 is established under subsection (a)(1), the Working Group  
13 shall develop and submit to the relevant committees of  
14 Congress a report that includes—

15 (1) templates for integrated air quality moni-  
16 toring systems ranging in cost estimates, population  
17 sizes of communities served, atmospheric dispersion  
18 dynamics of air pollutants, and other relevant pa-  
19 rameters, as determined to be appropriate by the  
20 Working Group, that provide a holistic under-  
21 standing of local air pollutant measurements across  
22 time, which may incorporate—

23 (A) 1 or more in-situ monitors;  
24 (B) 1 or more satellite sensors;  
25 (C) computer modeling;

- 1 (D) multipollutant monitoring options;
- 2 (E) single pollutant monitoring options;
- 3 and
- 4 (F) data collection, interpretation, and re-
- 5 porting to relevant Federal, State, local, and
- 6 Tribal air agencies;
- 7 (2) a description of the costs and capacity
- 8 needs associated with the integrated air quality mon-
- 9 itoring systems described under paragraph (1), in-
- 10 cluding—
- 11 (A) costs of purchase, operation, mainte-
- 12 nance, and calibration of monitor technologies;
- 13 (B) workforce needs;
- 14 (C) data infrastructure needs; and
- 15 (D) any other needs, as determined to be
- 16 appropriate by the Administrator; and
- 17 (3) technology modernization targets for up-
- 18 grades to integrated air quality monitoring stations.

19 **SEC. 6. NATIONAL INFRASTRUCTURE INVENTORY.**

20 (a) IN GENERAL.—Not later than 180 days after the

21 date of enactment of this Act, the Comptroller General

22 of the United States, in coordination with the Environ-

23 mental Protection Agency, shall carry out a study to in-

24 ventory national air quality monitoring infrastructure by

25 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  
19          across Federal, State, local, and Tribal levels.

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

24                 (1) a description of the study carried out under  
25                 subsection (a);

1           (2) a description of the results of that study;

2           (3) a map of high-priority areas for air quality  
3 monitor deployment, based on factors such as prox-  
4 imity to or effects on environmental justice commu-  
5 nities, discrepancies between monitor readings and  
6 satellite or low-cost sensor readings, proliferation of  
7 pollution sources, and the lack of existing Federal  
8 Reference Method or Federal Equivalent Method  
9 monitors; and

10          (4) recommendations for legislative and regu-  
11 latory action that would facilitate more effective and  
12 targeted air quality management across scales,  
13 which may include—

14               (A) monitor placement;

15               (B) monitor accuracy;

16               (C) integration of monitor, modeling, and  
17 satellite technologies;

18               (D) methods for hyperlocal monitoring;

19               (E) information gathering and sharing;

20           and

21               (F) maintenance and regular upgrades to  
22 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 2023 through  
4 2027 for the purposes of—

5           (1) carrying out this Act; and

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