A REPORT TO THE 2025–2026 CALIFORNIA LEGISLATURE

Analysis of California Assembly Bill 546: Portable HEPA Purifiers and Filters

APRIL 13, 2025

CHBRP

California Health Benefits Review Program (CHBRP)
University of California, Berkeley

chbrp.org

KEY FINDINGS

Analysis of California Assembly Bill 546: Portable HEPA Purifiers and Filters

Summary to the 2025–2026 California State Legislature, April 13, 2025

CHBRP

Summary

The version of California Assembly Bill (AB) 546 analyzed by California Health Benefits Review Program (CHBRP) would require coverage of air filtration equipment without cost sharing, for enrollees diagnosed with asthma or chronic obstructive pulmonary disease (COPD), and enrollees who are pregnant.

In 2026, of the 22.2 million Californians enrolled in state-regulated health insurance, 13.6 million of them would have insurance subject to AB 546.

Benefit Coverage

At baseline, there is no coverage for any enrollees in Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated policies for air filtration equipment. Postmandate, AB 546 would increase coverage for 100% of enrollees with asthma, COPD, or who are pregnant. AB 546 may exceed essential health benefits (EHBs).

Medical Effectiveness

CHBRP found *some evidence* that high-efficiency particulate air (HEPA) filtration is effective in the reduction of negative health outcomes in those with asthma who were exposed to cigarette smoke, but *conflicting evidence* for the general asthma population. CHBRP found *some evidence* for the effectiveness of HEPA filtration on health outcomes for people with COPD or who are pregnant. CHBRP found no studies on the effectiveness of household HVAC filters on health outcomes for the populations impacted by AB 546.

Cost and Health Impacts[1]

In 2026, AB 546 would result in 65,000 additional households using air filtration equipment, for an additional $13.6 million in annual expenditures (includes any likely cost offsets), resulting in improvements in health outcomes for enrollees with asthma, COPD, or who are pregnant.

Context

Air pollution refers to harmful gases, tiny particles, or biological substances in the air that can negatively impact human health.[2] Air pollution can come from outdoor sources, such as factories and wildfires, and indoor sources, such as cooking, smoking, and heating. Fine particulate matter, known as PM2.5, is a major type of air pollutant. PM2.5 includes any particles that measure 2.5 microns or smaller in diameter—about 30 times smaller than the width of a human hair. Because these particles are so small, they can penetrate deeply into the lungs, causing serious health problems.

Indoor air filtration equipment can be used to remove harmful particles from indoor air. AB 546 specifically addresses the following types of air filtration equipment:

1. **Portable air filtration devices and their associated HEPA filters.** High-efficiency particulate air (HEPA) filters capture at least 99.97% of particles 0.3 microns in diameter, including PM2.5. Portable devices typically clean the air in a single room and require regular filter replacements. Larger, more powerful devices can clean bigger spaces but tend to cost more.
2. **Household HVAC filters.** These filters are installed in heating, ventilation, and air conditioning (HVAC) systems. They use the Minimum Efficiency Reporting Value (MERV) rating to show their particle-capturing ability. AB 546 specifically covers HVAC filters rated MERV 13, which trap at least 85% of particles between 1 and 3 microns in size, roughly the size of PM2.5. MERV 13 filters do not capture very small particles as efficiently as true HEPA filters. True HEPA filters are rarely used in HVAC systems because they significantly restrict

[1] Similar cost and health impacts could be expected for the following year though possible changes in medical science and other aspects of health make stability of impacts less certain as time goes by.

[2] Refer to CHBRP's full report for full citations and references.

airflow, requiring special equipment. Like portable filters, HVAC system filters must also be replaced regularly.

Bill Summary

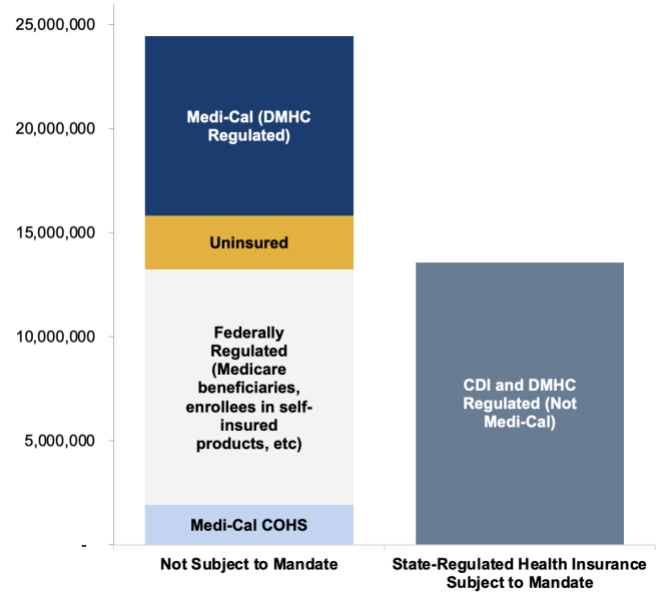
AB 546 would require coverage for air filtration equipment, without cost sharing, for enrollees diagnosed with asthma or COPD, and enrollees who are pregnant.

The term *air filtration equipment*, used by CHBRP, includes portable air filtration devices and their accompanying HEPA filters, and specialized air filters in home HVAC systems.

If enacted, AB 546 would apply to the health insurance of enrollees in commercial or California Public Employees' Retirement System (CalPERS) health insurance regulated by DMHC or CDI. All Medi-Cal Managed Care plans are exempt from the legislation.

Figure A notes how many Californians have health insurance that would be subject to AB 546.

Figure A. Health Insurance in CA and AB 546



Source: California Health Benefits Review Program, 2025.
Note: CHBRP generally assumes alignment of Medi-Cal Managed Care plan benefits, with limited exceptions.[3]
Key: CDI = California Department of Insurance; COHS = County Organized Health System; DHCS = Department of Health Care Services; DMHC = Department of Managed Health Care.

[3] Although COHS plans are not subject to the Knox-Keene Act, DHCS generally updates Medi-Cal Managed Care plan contracts, All Plan Letters, and other appropriate authorities for alignment of managed care plan benefits, except in cases when the benefit is carved out of the Medi-Cal Managed Care plan contract or the law exempts specified Medi-Cal contracted providers.

How does utilization impact premiums?

Health insurance, by design, distributes risk and expenditures across everyone enrolled in a plan or policy. It does so to help protect each enrollee from the full impact of health care costs that arise from that enrollee's use of prevention, diagnosis, and/or treatment of a covered medical condition, disease, or injury. Changes in utilization among any enrollees in a plan or policy can result in changes to premiums for all enrollees in that plan or policy.

Impacts

Benefit Coverage

At baseline, there was no coverage for any enrollees in DMHC-regulated plans and CDI-regulated policies for air filtration equipment. AB 546 would increase coverage for 100% of enrollees with asthma, COPD, or who are pregnant in DMHC-regulated plans and CDI-regulated policies, excluding Medi-Cal Managed Care plans.

Utilization and Unit Cost

CHBRP estimates there are 85,195 households containing enrollees with asthma or COPD, or who are pregnant that use air filtration equipment at baseline. CHBRP estimates the number would increase postmandate by 76.05%. More specifically, the number of households with pregnant enrollees that will obtain air filtration equipment will increase from 24,307 to 32,494, those with enrollees with asthma will increase from 57,476 to 111,480, and those with enrollees with COPD will increase from 3,412 to 6,015 households.

CHBRP estimates the additional benefit coverage for air filtration equipment will increase the average annual cost of air filtration equipment per year by 12.4% due to more frequent replacements of filters or devices.

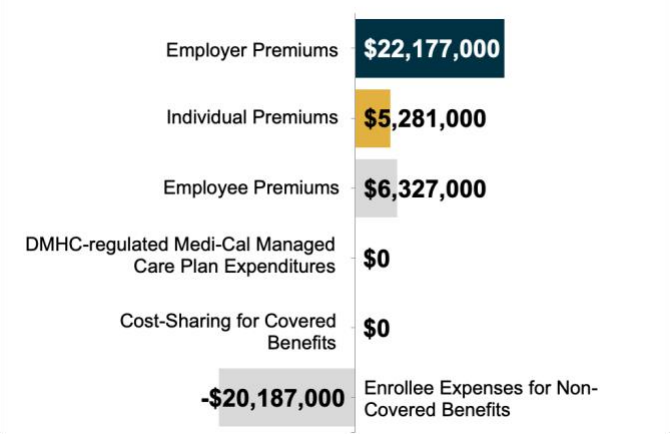
Expenditures

AB 546 would increase total net annual expenditures by approximately $13.6 million for enrollees with DMHC-regulated plans and CDI-regulated policies (Figure B). This is inclusive of an increase in premiums of $33,785,000; an approximate $20.2 million decrease in

enrollee expenses for noncovered benefits; and cost offsets due to a reduction in the number of medications used for enrollees with asthma, and a reduction in urgent care visits for enrollees with COPD.

Changes in premiums because of AB 546 would vary by market segment. The largest increases in premiums would occur in the DMHC-regulated large-group (0.0295%) and small-group market (0.0301%) and the CDI-regulated small-group (0.0309%) and individual market (0.0304%). The smallest change would be 0.0242% in the DMHC-regulated individual market. Because none of the insurance market segments had baseline coverage for air filtration equipment, the increases in premiums would be driven primarily by the underlying populations of asthma, COPD, and pregnant people in each market segment.

Figure B. Expenditure Impacts of AB 546



Source: California Health Benefits Review Program, 2025.
Key: DMHC = Department of Managed Health Care.

Medi-Cal

There would be no impact on Medi-Cal expenditures because the health insurance of all Medi-Cal beneficiaries is exempt from the bill.

CalPERS

For enrollees associated with CalPERS in DMHC-regulated plans, CHBRP estimates premiums would increase by 0.0241%.

Covered California – Individually Purchased

Enrollees in Covered California DMHC-regulated small-group products would experience a 0.0299% increase in premiums, whereas those Covered California DMHC-regulated individual market products would see a 0.0242% premium increase. There were not sufficient data to project an increase in the CDI-regulated Covered California small-group or individual market.

Number of Uninsured in California

Because the change in average premiums does not exceed 1% for any market segment, CHBRP would expect no measurable change in the number of uninsured persons due to the enactment of AB 546.

Medical Effectiveness

CHBRP did not find any studies related to the impacts of household HVAC filters on health outcomes for individuals with COPD, asthma, or who are pregnant. Therefore, the medical effectiveness review focused on only HEPA air filtration equipment.

CHBRP assumed that HEPA filtration devices are effective in removing particulate matter from the air, trapping at least 99.97% of particles 0.3 microns in size. The medical effectiveness analysis summarizes studies that examined the impact of HEPA filtration for individuals with the specified conditions regardless of the cause of air impurities, although separate findings for wildfire smoke and tobacco smoke are reported. Additionally, all studies summarized involve the utilization of portable devices on indoor particulate levels (versus whole-house systems).

CHBRP found:

- *Some evidence*[4] that HEPA filtration is effective in the reduction of negative health outcomes in those with asthma who were exposed to cigarette smoke, but *conflicting evidence*[5] regarding the impact on negative health outcomes for those with asthma who were not exposed to cigarette smoke.

[4] *Some evidence* indicates that a small number of studies have limited generalizability to the population of interest and/or the studies have a serious methodological concern in research design or implementation. Conclusions could be altered with additional evidence.

[5] Conflicting evidence indicates that a similar number of studies of equal quality suggest the treatment is effective as suggest the treatment is not effective.

- *Some evidence* for the effectiveness of HEPA filtration on health outcomes for those with COPD or who are pregnant.

With regard to the impact of HEPA filters on the reduction of negative health outcomes for those with asthma but who were not regular exposed to cigarette smoke, several studies reported significant for outcomes such as symptom control and medication utilization. However, other studies of similar size and quality reported non-significant findings for similar health outcomes leading CHBRP to conclude the evidence is *conflicting* for this population.

It is well established both that HEPA filtration is effective at cleaning indoor air, and that exposure to polluted air, especially that due to smoke, leads to adverse health outcomes. However, the current research is insufficient with regard to the direct impact of HEPA filtration on health outcomes for those exposed to polluted air.

Public Health

AB 546 is projected to lead to the following improvements in health outcomes:

- An improvement in respiratory health status for enrollees with asthma, especially the 3,800 living in homes where they are exposed to tobacco smoke, including a significant reduction in the use of steroids and inhalers.
- An improvement in respiratory health status and quality of life for 2,600 enrollees with COPD, including 484 fewer urgent care visits.
- An improvement in fetal growth and cognitive development for babies born in the 8,200 homes with pregnant enrollees.

In the first year postmandate, CHBRP estimates that people with asthma exposed to tobacco smoke in the home, enrollees with COPD, and pregnant enrollees would all have improvements in health outcomes related to health care use. This estimate is supported by some evidence that air filtration equipment is medically effective, would reduce some avoidable urgent care and prescription drug use for specific populations, and the estimated increase in nearly 65,000 homes that would use this equipment postmandate.

Long-Term Impacts

Future climate shifts are expected to increase the frequency and severity of wildfires in California. More frequent wildfires will result in increased air pollution and greater health risks. Given these projected increases in ambient air pollution, increased use of air filtration equipment could be more beneficial in the coming years.

Over time, provider and population awareness of the benefits of air filtration equipment is expected to improve and utilization of the equipment will increase. Due to likely increases in wildfire frequency and severity, more people may be likely to purchase air filtration equipment to address wildfire smoke concerns, especially for those with asthma and COPD. It is unclear how health plans and insurers would structure the benefit if AB 546 were enacted, which leads to some uncertainty about long-term use and costs.

Additional use and payment by health plans and insurers after Year 1 is highly likely, with premiums expected to increase concurrently with increased use of both purifiers and replacement filters. Though there are short-term cost offsets for specific subgroups of people with asthma and COPD, the reductions in medication use and urgent care visits do not fully offset the additional premium spending for the covered benefit.

It is possible that AB 546 could reduce premature death and reduce economic loss in California for specific populations, including children born to parents who use air filtration equipment, but the extent to which these could happen is unknown.

Essential Health Benefits and the Affordable Care Act

AB 546 would require coverage for a new state benefit mandate that may exceed the definition of EHBs in California by requiring benefit coverage beyond what is present in the California EHB benchmark plan or required as a basic health care service as defined under the Knox Keene Health Care Service Plan Act of 1975.

About CHBRP

The California Health Benefits Review Program (CHBRP) was established in 2002. As per its authorizing statute, CHBRP provides the California Legislature with independent analysis of the medical, financial, and public health impacts of proposed health insurance benefit-related legislation.

The state funds CHBRP through an annual assessment on health plans and insurers in California.

An analytic staff based at the University of California, Berkeley, supports a task force of faculty and research staff from multiple University of California campuses to complete each CHBRP analysis. A strict conflict-of-interest policy ensures that the analyses are undertaken without bias. A certified, independent actuary helps to estimate the financial impact. Content experts with comprehensive subject-matter expertise are consulted to provide essential background and input on the analytic approach for each report.

More detailed information on CHBRP's analysis methodology, authorizing statute, as well as all CHBRP reports and other publications, are available at chbrp.org.

Suggested citation

California Health Benefits Review Program (CHBRP). (2025). *Analysis of California Assembly Bill 546 HEPA Purifiers and Filters.* Berkeley, CA.

Table of Contents

Lists of Tables and Figures

Acronyms and Abbreviations

AB – Assembly Bill
ACA – Affordable Care Act
CA – California
CalPERS – California Public Employees' Retirement System
CARB – California Air Resources Board
CDC – Centers for Disease Control and Prevention
CDI – California Department of Insurance
CHBRP – California Health Benefits Review Program
CMS – Centers for Medicare & Medicaid Services
COHS – County Organized Health System
COPD – chronic obstructive pulmonary disease
DHCS – Department of Health Care Services
DMHC – Department of Managed Health Care
EHB – essential health benefits
HEPA – high-efficiency particulate air
HVAC – heating, ventilation, and air conditioning
MERV – minimum efficiency reporting value
OOP – out-of-pocket
PM2.5 – particulate matter with a diameter of 2.5 micrometers or less
PMPM – per member per month
YLL – years of life lost

Introduction

The California Assembly Committee on Health requested that the California Health Benefits Review Program (CHBRP)[6] conduct an evidence-based assessment of the medical, financial, and public health impacts of Assembly Bill (AB) 546 on portable high-efficiency particulate air (HEPA) purifiers and filters.

Bill Language of AB 546 Portable HEPA Purifiers and Filters

AB 546 would require coverage for air filtration equipment, without cost sharing, for enrollees diagnosed with asthma or chronic obstructive pulmonary disease (COPD), and enrollees who are pregnant.

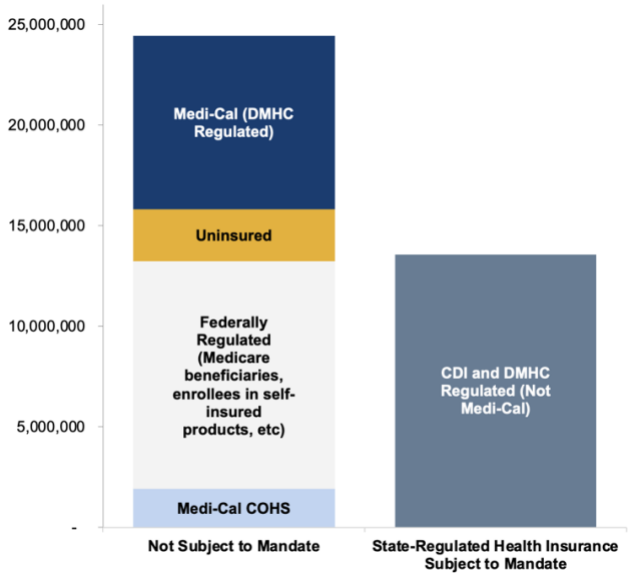
The term *air filtration equipment*, used by CHBRP, includes portable air filtration devices that use HEPA filters and installation of specialized air filters in home heating, ventilation, and air conditioning (HVAC) systems. See the *Analytic Approach and Assumptions* section for more details.

See the full text of AB 546 in Appendix A, and more information on asthma, COPD, and pregnancy in relation to air filtration in the *Background* section.

If enacted, AB 546 would apply to the health insurance of approximately 13.6 million enrollees (35.8% of all Californians) (Figure 1).

- **Includes**: enrollees in commercial or California Public Employees' Retirement System (CalPERS) health insurance regulated by the Department of Managed Health Care (DMHC) and the California Department of Insurance (CDI).
- **Excludes**: Medi-Cal beneficiaries enrolled in DMHC-regulated plans or County Organized Health System (COHS) plans.

Figure 1. Health Insurance in CA and AB 546



Source: California Health Benefits Review Program, 2025.
Note: CHBRP generally assumes alignment of Medi-Cal Managed Care plan benefits, with limited exceptions.[1]
Key: CDI = California Department of Insurance; COHS = County Organized Health System; DHCS = Department of Health Care Services; DMHC = Department of Managed Health Care.

Appendix B provides an overview of the cost-sharing practices addressed in AB 546.

Terminology

The following are terms used by CHBRP throughout this analysis of AB 546.

Air filtration equipment: includes portable air filtration devices, mechanical HEPA air filters for portable air filtration devices, and specialized air filters for household heating, ventilation, and air conditioning (HVAC) systems. The term does not include the household HVAC system.

[6] See CHBRP's authorizing statute.

HEPA air filtration equipment: air filtration equipment that includes only portable air filtration devices and their HEPA replacement air filter.

HEPA filtration: the act of filtering indoor air through a portable air filtration device that functions using a HEPA filter.

Household HVAC filter: air filter used in a household HVAC system. These systems utilize air filters with minimum efficiency reporting value (MERV) ratings that must be replaced on a regular basis to maximize their efficiency. HEPA filters are not compatible with household HVAC systems.

Portable air filtration devices: mobile units that use HEPA filters to filter particulate matter out of the air. Also referred to as air cleaners or portable air purifiers. These units require filters to be replaced on a regular basis to maximize their efficiency. They are not compatible with air filters with MERV ratings.

MERV: a measure of an air filter's ability to capture large particles between 0.3 and 10 microns.[7] MERV ratings range from 1 through 16; air filters with higher MERV ratings are better at trapping specific types of particles.

Replacement filter: the mechanical air filters that are used to replace either portable air filtration devices or household HVAC systems.

What Are Air Pollution and Air Filtration Equipment?

Air pollution refers to harmful gases, tiny particles, or biological substances in the air that can negatively impact human health (WHO, 2024). Air pollution can come from outdoor sources, such as factories and wildfires, and indoor sources, such as cooking, smoking, and heating (Huang et al., 2024). Fine particulate matter, known as PM2.5, is a major type of air pollutant (Huang et al., 2024). PM2.5 includes any particles that measure 2.5 microns or smaller in diameter—about 30 times smaller than the width of a human hair. Because these particles are so small, they can penetrate deeply into the lungs, causing serious health problems as described in more detail in the *Background* section.

Indoor air filtration equipment can be used to remove harmful particles from indoor air. AB 546 specifically addresses the following types of air filtration equipment:

1. Portable air filtration devices and their associated HEPA filters; and
2. Specialized air filters specific to household HVAC systems.

Back to Table of Contents

[7] The United States Environmental Protection Agency provides a list of MERV ratings and the average particle size efficiency for each rating.

Analytic Approach and Assumptions

The language of AB 546 specifically mandates coverage for "portable HEPA purifiers and filters" and defines them as one that "uses a mechanical air filter that can remove at least 99% of airborne particles that are 10 microns in size or have a MERV of 13 or higher." In addition, the bill states that "a HEPA filter includes a filter used for air purification systems for home use or portable use." CHBRP assumes that home use refers to a household HVAC system, and that portable use refers to a portable air filtration device. As discussed in the *Background* section, although HEPA filters are typically used in portable air filtration devices, they are rarely used in home HVAC systems because they significantly restrict airflow. Instead, home HVAC systems tend to use specialized air filters with a MERV rating.

For this analysis, CHBRP assumes that the benefit mandate would apply to the following:

1. Portable air filtration devices that use only physical filtration, also known as "mechanical" air filters, and do not generate ozone or ions (see the *Background* section for more information);

2. HEPA air filters used in portable air filtration devices; and

3. Household HVAC filters.

In addition, CHBRP assumes the benefit mandate would not include costs associated with the installation or maintenance of any of these items, and that portable HEPA air filtration devices would be used only inside the enrollee's home.

Back to Table of Contents

Policy Context

Health benefit mandates may interact and align with the following state and federal mandates, programs, and policies.

California Law and Regulations

Air Filtration Equipment

As a result of AB 2276 (2006), the California Air Resources Board (CARB) develop and adopted regulations limiting the amount of ozone that may be emitted by all air cleaners sold in, or shipped to, California.[8] The California Green Building Standards Code, the nation's first mandatory green building standards code, requires the installation of MERV 13 air filters in mechanically ventilated buildings prior to occupancy. In addition, the operation and maintenance manual must include recommendations for filter maintenance.[9]

Asthma-Related Mandates, Medi-Cal Benefits, and Community Supports

Existing law requires the Department of Health Care Services (DHCS), if appropriated funding under the annual state budget to do so, to regularly analyze asthma morbidity and mortality data and periodically assess the burden of asthma on the state's medical and economic resources.[10] In addition, DHCS must offer public and professional education on the most current information on asthma, and administer available funds to organizations working on innovative asthma interventions and health care services, improving patient education and self-management skills, and developing local policies that support asthma prevention and control.[11]

In 2022, California began implementation of the California Advancing and Innovating Medi-Cal (CalAIM) initiative as part of a larger effort to reform the state Medi-Cal program. One of the foundational supports of CalAIM is Community Supports, which are services provided by Medi-Cal Managed Care plans intended to address beneficiaries' health-related social needs and avoid higher, costlier levels of care. There are 14 Community Supports available that Medi-Cal Managed Care plans may opt in to; not all services are offered by all plans in the counties they serve. Asthma remediation is a Community Support that provides a lifetime maximum of $7,500 in reimbursements for certain physical modifications to a home to reduce environmental asthma triggers. Examples of modifications include HEPA-filtered vacuums, air filters, minor mold removal and remediation services, and integrated pest management services. Eligibility is limited to those Medi-Cal beneficiaries with "poorly controlled asthma,"[12] for whom a licensed health care provider has determined that the service will likely avoid asthma-related hospitalizations, emergency department visits, or other high-cost services (DHCS, 2023).[13]

Sixteen counties in California have no managed care plans that have chosen to implement the Asthma Remediation Community Support. Additionally, nine counties have at least one managed care plan that has not opted to implement the benefit. Nine counties plan to introduce the Community Support by July 1, 2025, or July 1, 2026 (Figure 2). See Appendix C for more details on county offerings related to asthma remediation.

[8] California Code of Regulations, Title 17, Sections 94800-94810.
[9] CALGreen Code Section 5.504.5.3: Filters.
[10] Health and Safety Code (HSC) Section 104316.
[11] HSC Section 104317.
[12] DHCS defines "poorly controlled asthma" by either: 1) as determined by an emergency department visit; 2) hospitalization or two sick or urgent care visits in the proceeding 12 months; or 3) a score of 19 or lower on the Asthma Control Test.
[13] Effective January 1, 2026, the assessments for removal of in-home environmental triggers and asthma self-management education will no longer be a part of the asthma remediation community support. As of the date of publication of this report, these two services are included as part of the asthma remediation community support.

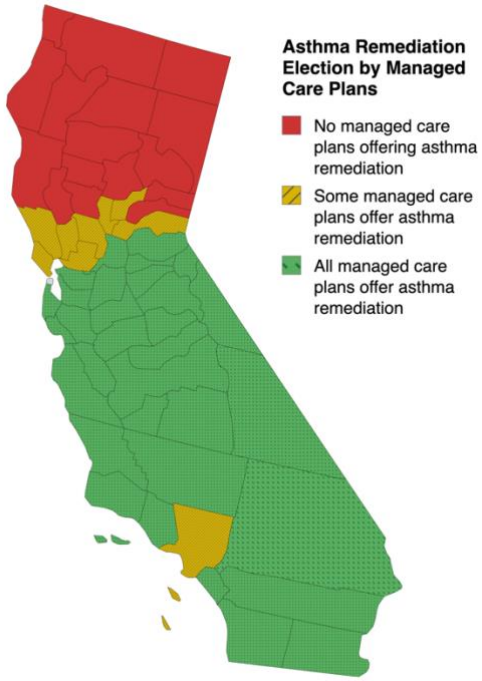
There are no Community Supports designed specifically for Medi-Cal Managed Care plan members diagnosed with COPD or those who are pregnant. However, patients that fall into either or both categories may be eligible for Community Supports.

Six months after the launch of the Asthma Remediation Community Support, the Centers for Medicare & Medicaid (CMS) approved a California state plan amendment allowing DHCS to launch the Asthma Preventive Services benefit under Medi-Cal. The benefit includes coverage for clinic- and home-based asthma self-management education, and in-home environment trigger assessments when medically necessary for eligible beneficiaries of any age.

Previous California Legislation

SB 1308 (2024) would have required CARB to adopt updated regulations to limit ozone emissions from indoor air cleaning devices, replacing the current limit of 50 parts per billion (ppb) with a limit of 5ppb. The bill would also have required regulations to include a ban on the sale of devices that exceed the emissions limit of 5ppb. The bill was held in the Assembly Natural Resources Committee without a hearing.

Figure 2. Availability of Asthma Remediation Community Support in California Counties



Source: California Health Benefits Review Program, 2025; created using mapchart.net.

Similar Legislation in Other States

Two states are currently considering legislation regarding air filtration equipment. Legislation was introduced in the Illinois Legislature that would require all school districts to supply each school with five additional portable air purifiers and five additional air quality monitors for use on school property.[14] New Jersey is deliberating on legislation that would mandate new and existing fire stations to install an HVAC system that contains a carbon air filter and HEPA purification system that satisfy certain criteria.[15]

Federal Policy Landscape

Affordable Care Act

A number of Affordable Care Act (ACA) provisions have the potential to or do interact with state benefit mandates. Below is an analysis of how AB 546 may interact with requirements of the ACA as presently exist in federal law, including the requirement for certain health insurance to cover essential health benefits (EHBs).[16,17]

[14] Illinois House Bill 1923 (2025).
[15] New jersey Senate Bill 3930 (2024).
[16] The ACA requires nongrandfathered small-group and individual market health insurance – including, but not limited to, qualified health plans sold in Covered California – to cover 10 specified categories of EHBs. Policy and issue briefs on EHBs and other ACA impacts are available on the CHBRP website.
[17] Although many provisions of the ACA have been codified in California law, the ACA was established by the federal government, and therefore, CHBRP generally discusses the ACA as a federal law.

Essential Health Benefits

In California, nongrandfathered[18] individual and small-group health insurance is generally required to cover essential health benefits (EHBs).[19] In 2026, approximately 11% of all Californians will be enrolled in a plan or policy that must cover EHBs.[20]

States may require state-regulated health insurance to offer benefits that exceed EHBs.[21,22,23] Should California do so, the state could be required to defray the cost of additionally mandated benefits for enrollees in health plans or policies purchased through Covered California, the state's health insurance marketplace. However, state benefit mandates specifying provider types, cost sharing, or other details of existing benefit coverage would not meet the definition of state benefit mandates that could exceed EHBs.[24,25]

Table 1, below, describes the conditions that may trigger the requirement for the state to defray costs, and AB 546's interaction with each condition. AB 546 would require coverage for a benefit that is not in the current California EHB benchmark plan (Kaiser Small Group HMO 30). In addition, air filtration equipment is not covered as a basic health care service under current law, therefore AB 546 would require new benefit coverage for many enrollees, As a result, AB 546 may exceed EHBs. See the *Benefit Coverage, Utilization, and Cost Impacts* section for estimates on the state costs for exceeding EHBs. It should be noted that federal guidance establishes the "State" as the entity that would identify when a state benefit mandate exceed EHBs[26]; thus DMHC and CDI would determine whether the benefit would require defrayal of costs.

Table 1. AB 546 and EHBs

Conditions That May Trigger State to Defray the Cost of a New Benefit Mandate	Services Mandated by AB 546
Bill would mandate benefit coverage not included in the Kaiser Small Group HMO 30 plan, which is part of the definition of the EHB benchmark package in California (a) or required by BHCS (b).	Would require benefit coverage (for air filtration equipment) beyond what is present in Kaiser Small Group HMO 30 plan or required by BHCS.
Bill would mandate new benefit coverage (not just alter the terms/conditions of existing benefit coverage). (c)	Would require new benefit coverage (air filtration equipment) for many enrollees.

Source: California Health Benefits Review Program, 2025.
Notes: (a) California selected Kaiser Small Group HMO 30 as its base EHB benchmark plan, and supplemented this plan with pediatric dental and vision benefits, and habilitative services to meet federal requirements.
(b) Basic health care services are defined by the Knox Keene Health Care Service Plan Act of 1975.
(c) Federal regulations define benefit mandates that could exceed EHBs as benefits that are specific to care, treatment, and/or services.[27]
Key: BHCS = basic health care services; EHB = essential health benefit; HMO = health maintenance organization; QHP = qualified health plan.

[18] A grandfathered health plan is "a group health plan that was created – or an individual health insurance policy that was purchased – on or before March 23, 2010. Plans or policies may lose their 'grandfathered' status if they make certain significant changes that reduce benefits or increase costs to consumers."
[19] For more detail, see CHBRP's issue brief, *Essential Health Benefits: An Overview of Benefits, Benchmark Plan Options, and EHBs in California*.
[20] See CHBRP's resource, *Sources of Health Insurance in California*.
[21] ACA Section 1311(d)(3).
[22] State benefit mandates enacted on or before December 31, 2011, may be included in a state's EHBs, according to the U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[23] However, as laid out in the Final Rule on EHBs U.S. Department of Health and Human Services (HHS) released in February 2013, state benefit mandates enacted on or before December 31, 2011, would be included in the state's EHBs, and there would be no requirement that the state defray the costs of those state-mandated benefits. For state benefit mandates enacted after December 31, 2011, that are identified as exceeding EHBs, the state would be required to defray the cost.
[24] Essential Health Benefits. Final Rule. A state's health insurance marketplace would be responsible for determining when a state benefit mandate exceeds EHBs, and qualified health plan issuers would be responsible for calculating the cost that must be defrayed. Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[25] Both Massachusetts and Utah currently pay defrayment costs for exceeding EHBs. For more information about defrayal, refer to CHBRP's issue brief *Essential Health Benefits: Exceeding EHBs and the Defrayal Requirement.*
[26] Essential Health Benefits Final Rule. Federal Register, Vol. 87, No. 27. February 25, 2013.
[27] Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.

Other Federal or State Programs

Asthma

The Centers for Disease Control and Prevention (CDC) runs different programs and public education campaigns aimed at improving the lives of individuals with asthma, focusing on public health. The National Asthma Control Program, established in 1999, provides funding and technical assistance to state and local health departments with the goal of reducing asthma-related hospitalizations, emergency visits, school days and workdays missed, and limitations on activity (CDC, 2024). The program developed EXHALE, a set of six strategies that each contribute to better asthma control. Air filtration equipment is not explicitly mentioned within the resource document for EXHALE; however, there is discussion of how ventilation could help control asthma triggers in home, school, and work environments (CDC, 2018). The program currently funds 29 partners, including the California Department of Public Health, through a 4-year agreement to improve asthma control services and reduce asthma morbidity, mortality, and disparities through evidence-based strategies. The funding has assisted support of California Breathing, the state asthma program, which conducts disease surveillance and established the Asthma Management Academy, a program to train community health workers and other health educators how to deliver evidence-based asthma education (CDPH, 2024).

COPD

At the request of Congress, the National Institutes of Health and CDC developed the COPD National Action Plan in 2018, which provides a comprehensive framework for action by those impacted by the disease (NIH, 2021). The plan notes that exposure to lung irritants, such as air pollutants, may contribute to COPD, and references programs and policies aimed at reducing exposure to indoor air pollutants. However, it does not directly include references to the air filtration technologies that are the subject of AB 546.

Back to Table of Contents

Background on Air Pollution and Air Filtration Equipment

AB 546 would mandate coverage for indoor air filtration equipment for enrollees who are pregnant or have been diagnosed with asthma or chronic obstructive pulmonary disorder (COPD). Here, the term *air filtration equipment* includes portable air filtration devices that use high-efficiency particulate air (HEPA) filters and installation of specialized air filters in home heating, ventilation, and air conditioning (HVAC) systems. These technologies remove harmful particles from the air by passing it through special filters that trap dust, pollen, and other pollutants. This section provides contextual information describing the problem of air pollution in California, air filtration equipment and their use, clinical practice guidelines for the use of air filtration equipment by high-risk populations, the disparities in the distribution of air pollution, barriers to accessing and using air filtration equipment, and the societal burden of air pollution.

Air Pollution

Air pollution refers to harmful gases, tiny particles, or biological substances in the air that can negatively impact human health (WHO, 2024). These pollutants come from many sources, such as factories, cars, trucks, and natural events such as wildfires (Huang et al., 2024). Air pollution can also come from indoor activities such as smoking, cooking, cleaning, or using certain household products (Huang et al., 2024). Modern homes that are well-insulated and have effective ventilation systems typically do a better job of reducing indoor exposure to outdoor pollutants compared to older or poorly maintained homes, which often allow more pollutants to enter (Morawska et al., 2024a).

Fine particulate matter, known as PM2.5, is a major type of air pollutant (Huang et al., 2024). PM2.5 includes any particles that measure 2.5 microns or smaller in diameter—about 30 times smaller than the width of a human hair. Because these particles are so small, they can penetrate deeply into the lungs, causing serious health problems. Other important pollutants include gases such as nitrogen dioxide, ozone, and volatile organic compounds, which can also harm human health (Huang et al., 2024). Indoor air can also harbor allergens such as dust mites, pet dander, mold spores, and pollen (Grant et al., 2019). In susceptible people, inhaling these allergens triggers an overactive immune response and can cause sneezing, congestion, and itchy or watery eyes (Murrison et al., 2019).

No level of air pollution is entirely safe; even low-level exposures can have adverse health effects (Huang et al., 2024). Both short-term spikes—such as those during wildfire events — and long-term, chronic exposures have been linked to increased risks of respiratory diseases (including asthma and COPD), adverse pregnancy outcomes, cardiovascular conditions, respiratory infections, diabetes, mental health disorders, and premature mortality (Huang et al., 2024; Thurston et al., 2017; WHO, 2024). In California, the Global Burden of Disease Study estimates that in 2021, air pollution contributed to between 5,200 and 11,800 premature deaths — roughly 1.6% to 3.5% of all state deaths — and accounted for the loss of between 90,000 and 206,000 years of life (1.3%–2.9% of total life years lost) (GBD 2021 Collaborators, 2024; IHME, 2021).

Air Filtration Equipment

People spend most of their time indoors, making indoor air quality very important for health (Morawska et al., 2024a, 2024b). Indoor air pollution comes from outdoor pollutants that enter buildings and from pollutants created indoors from activities such as cooking, burning candles, or smoking cigarettes. Since people have little control over outdoor air pollution, indoor air filtration equipment, such as portable air purifiers and the use of specialized filters in household HVAC systems, can be used to remove harmful particles and allergens from indoor air.

There are two main types of indoor air filtration technologies. The first is mechanical filtration, which physically captures particles as air passes through a filter. The second is electronic filtration, which uses electricity to remove particles.

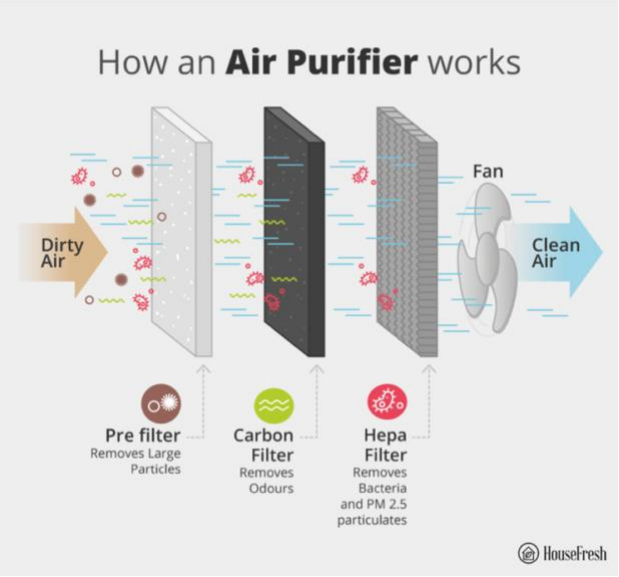
Mechanical filtration is the most common type. Portable air filtration devices typically use mechanical filtration, but some devices combine mechanical and electronic filtration. Mechanical filtration devices use fans to draw indoor air across filters, where harmful particles are trapped. Over time, these particles build up, clogging the filters and making regular replacements necessary.

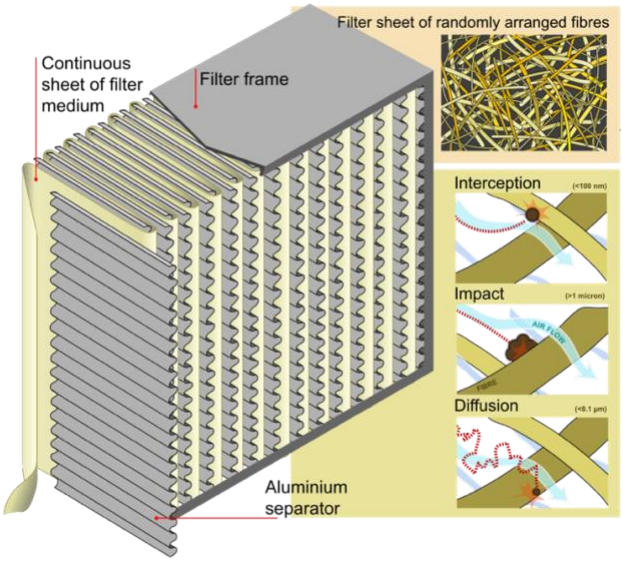
AB 546 specifically addresses the following air filtration equipment (Figure 1):

1. **Portable air filtration devices**: These devices typically use HEPA filters, which capture at least 99.97% of particles 0.3 microns in diameter, including PM2.5. Portable devices typically clean the air in a single room and require regular filter replacements. Larger, more powerful devices can clean bigger spaces but tend to cost more. Example devices and schematics of the structure and function of portable air purifiers are shown in Figure 3.
2. **Household HVAC filters:** These filters are installed in HVAC systems. They use the minimum efficiency reporting value (MERV) rating to show their particle-capturing ability. AB 546 specifically covers HVAC filters rated MERV 13, which trap at least 85% of particles between 1 and 3 microns in size, roughly the size of PM2.5. MERV 13 filters do not capture very small particles as efficiently as true HEPA filters. True HEPA filters are rarely used in HVAC systems because they significantly restrict airflow, requiring special equipment. Like portable filters, HVAC system filters must also be replaced regularly.

AB 546 covers both portable air filtration devices (and their replacement filters) and household HVAC filters.

Figure 3. Air Filtration Equipment





Sources: Breathe Naturally, **2024 (top left);** Philip Greenspun illustration project, **2025 (top right);** New York Times, **2025 (bottom)**

Use of Air Filtration to Improve Indoor Air Quality

Air filtration effectiveness depends on the filter type, room size, pollutant source, and adherence to recommended maintenance schedules. Most studies examining the effectiveness of air filtration equipment on reducing indoor air pollution concentrations have focused on HEPA air filtration equipment; fewer have studied the effectiveness of household HVAC filters. Properly maintained portable air filtration devices with HEPA filters can substantially reduce indoor particulate matter levels. A recent review of field studies found that portable air filtration devices reduced indoor PM2.5 concentrations by an average of 49% (Ebrahimifakhar et al., 2024), consistent with findings from similar studies (Faridi et al., 2023; Zhu et al., 2021). Household HVAC systems equipped with higher-efficiency (MERV 13 or greater) filters can reduce indoor PM2.5 by approximately 20% to 60% (Jones et al., 2021), depending on the system's airflow and operational efficiency. Reductions in indoor area concentrations are expected to also lower exposures experienced by individuals inhabiting these spaces. Indeed, evidence indicates that portable air filtration devices can effectively reduce personal PM2.5 exposures—measurements taken directly from monitors worn by an individual (Maestas et al., 2019). Studies have found that air filtration equipment can also reduce airborne allergen levels, with reported reductions of between 43% and 73% (Shih et al., 2024). A review of the evidence on the effectiveness of these devices on health outcomes for individuals who are pregnant, have asthma, or have COPD is presented in the *Medical Effectiveness* section.

Consistent use and timely filter replacements are crucial for improving indoor air quality. HEPA filters in portable air filtration devices are typically recommended to be replaced every 6 months. HVAC systems with MERV 13 or higher filters should have filters replaced every 4 months.

A recent nationwide survey from August 2023 found that about 18.6% of adults in the United States use portable air filtration devices (NCHS, 2023). Similar data on the prevalence of MERV 13 or greater filters in household HVAC systems are not available. Concerns about indoor air quality, driven by the COVID-19 pandemic and wildfire smoke events, have likely increased both the purchase and use of air filtration equipment recently (Han et al., 2024; Morawska et al., 2024b).

High-Risk Populations for Air Pollution

Certain groups are especially vulnerable to the harmful effects of air pollution, including older adults, children, pregnant individuals, and people with asthma, COPD, and other chronic respiratory conditions. In this analysis, CHBRP focuses on populations named in this bill: people with asthma, individuals with COPD, and pregnant persons. CHBRP highlights two additional high-risk populations: those that smoke or live in households with smokers and those with allergic disorders.

Asthma

Asthma is a chronic lung condition that causes inflammation and narrowing of the airways, leading to symptoms such as wheezing, shortness of breath, chest tightness, and coughing. Common triggers include PM2.5, indoor allergens such as dust mites, pet dander, and mold, and smoke from tobacco or wildfires. Long-term exposure to these air pollutants can increase the risk of developing asthma (Lee et al., 2024; Ni et al., 2024), whereas short-term exposure can trigger asthma attacks (Anenberg et al., 2018). One California study found that asthma-related emergency department visits rose by more than 50% within a week in impacted ZIP codes after just 1 day of wildfire smoke exposure (Heft-Neal et al., 2023). Additionally, reducing air pollution over the long term has been associated with fewer new asthma cases (Garcia et al., 2019).

Clinical guidelines suggest a comprehensive approach to managing asthma that includes medication and changes in lifestyle, behavior, and environment (GINA, 2024). The Global Initiative for Asthma (GINA) specifically recommends maintaining heart and lung health through balanced diets and regular physical activity. Patients are advised to avoid triggers such as smoking, vaping, secondhand smoke, allergens, and irritants such as mold, dust mites, pet dander, and air pollution. The GINA report also encourages using cleaner cooking and heating methods and venting pollutants outdoors whenever possible (GINA, 2024). However, the report does not explicitly mention indoor air filtration equipment.

Chronic Obstructive Pulmonary Disease

COPD is a progressive lung disease characterized by long-term narrowing and inflammation of the airways, typically caused by long-term exposure to harmful particles and gas. Common COPD symptoms include difficulty breathing, chronic cough, and mucus production. COPD is a progressive disease, meaning it worsens over time, and the damage is often irreversible. While tobacco smoking is the most common cause, exposure to outdoor and indoor air pollution also significantly contributes to COPD, especially among nonsmokers (Lu et al., 2022; Safiri et al., 2022). Air pollution exposure can worsen COPD symptoms, increase the frequency of flare-ups, and accelerate declines in lung function (Lu et al., 2022; Safiri et al., 2022).

According to guidelines from the Global Initiative for Chronic Obstructive Lung Disease (GOLD) report, COPD requires ongoing, coordinated medical care, which involves medication, lifestyle changes, and reducing exposure to pollutants (GOLD, 2024). The GOLD report suggests that physicians recommend using cleaner cooking and heating methods, regularly venting indoor pollutants to the outdoors, and maintaining general health through vaccines, healthy diet, and exercise. Additionally, a recent GOLD Scientific Committee report notes that air filtration equipment with HEPA filters “may also be effective in improving symptoms and reducing the risk of exacerbations in patients with COPD” (Sin et al., 2023). The committee specifically advises using air filtration equipment during periods of poor air quality, such as wildfire smoke events (Sin et al., 2023).

Pregnancy

Exposure to air pollution during pregnancy can affect the health of both the pregnant person and their baby. Pollutants such as PM2.5 have been linked to negative birth outcomes, including preterm birth, low birth weight, and slower fetal growth (Ghosh et al., 2021). These pollutants can reach the placenta, causing inflammation and disrupting its ability to deliver oxygen and nutrients to the developing baby. The American College of Obstetricians and Gynecologists (ACOG) recognizes the connection between air pollution and negative infant health outcomes. ACOG advises health care providers to screen patients for air pollution exposure as part of routine prenatal care (ACOG, 2021). However, ACOG makes no specific recommendations related to the use of indoor air filtration equipment.

Tobacco Smoke Exposure

Tobacco smoking can be a significant source of indoor air pollution, and especially harmful for individuals with asthma or COPD, and pregnant people. For people with asthma, tobacco smoke can worsen symptoms and trigger attacks. For individuals with COPD, tobacco smoke is the main cause and worsens the disease. Continued exposure leads to faster lung damage and more frequent flare-ups. During pregnancy, tobacco smoke can lead to preterm birth, low birth weight, and developmental issues, as harmful substances cross the placenta. Clinical guidelines emphasize avoiding tobacco smoke exposure; evidence suggests that the use of air filtration equipment can reduce indoor air pollution concentrations (Ratschen et al., 2016; Rosen et al., 2015).

Allergic Disorders

Allergic disorders include conditions in which the immune system overreacts to typically harmless substances. A common example is allergic rhinitis, or hay fever, which mainly affects the nasal passages and upper airways, causing sneezing, nasal congestion, runny nose, and itching. This differs from asthma, where inflammation occurs in the lower airways, leading to wheezing, shortness of breath, and chest tightness. Not only can allergic rhinitis be worsened by exposure to allergens, but exposure to air pollution more broadly can also heighten nasal inflammation and amplify responses to allergens. Managing allergic rhinitis generally involves avoiding triggers (such as dust mites, pet dander, and mold), using medications such as intranasal corticosteroids or antihistamines, and sometimes undergoing immunotherapy to reduce the immune system’s sensitivity to specific allergens. Clinical guidelines, such as those from the American Academy of Allergy, Asthma and Immunology, note the potential for air filtration equipment as a treatment for its potential to reduce indoor allergen exposures, especially when used in sleeping quarters and when used in combination with other treatment strategies (Leas et al., 2018; Le Cann et al, 2016; Sublett et al., 2010).

Table 2. Annual Rates of Asthma, COPD, and Pregnancy Among Adults in California, 2021

Health Condition	Rate (a)	Estimated Number Subject to AB 546*
Asthma Ever diagnosed Had an asthma attack in the past year	 15.9% 4.5%	386,000
COPD	4.6%	25,000
Pregnancy	2.3%	183,000

Sources: CHIS, 2024; CDC, CHBRP, 2025.
Note: The average age of diagnosis for COPD is 67 years, so a large proportion of individuals with COPD in California are not in the population impacted by AB 546. Data for pregnancy include only adults who are currently pregnant.
*see the *Benefit, Coverage, Utilization, and Cost Impacts* section.
Key: COPD = chronic obstructive pulmonary disease.

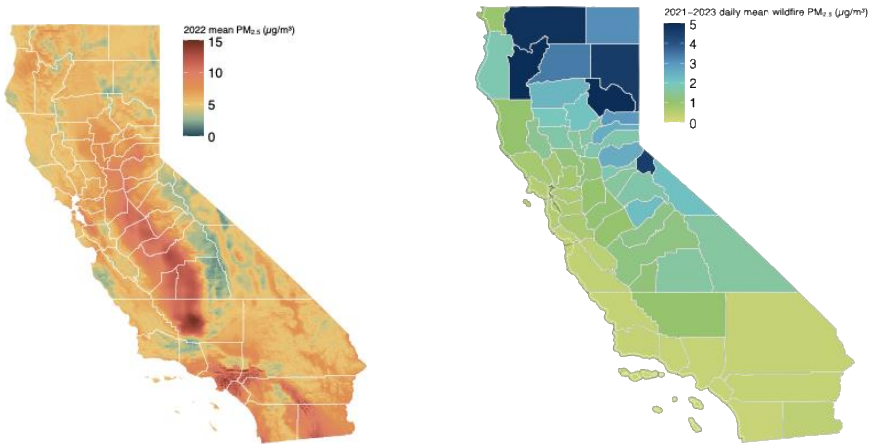
Prevalence of Exposure to Air Pollution in California

Air pollution levels vary significantly across California, influenced by factors such as population density, industrial activities, geography, and weather (Figure 4). The national standard for PM2.5 pollution is set at 9 µg/m³, but urban areas such as Los Angeles, San Francisco, San Jose, San Diego, and much of the San Joaquin Valley consistently exceed this level. Between 2021 and 2023, for example, the Los Angeles-South Coast Air Basin averaged 13.1 µg/m³, whereas the San Joaquin Valley recorded an even higher average of 16.2 µg/m³ (CARB, 2024; van Donkelaar et al., 2024). Los Angeles often struggles with high ozone levels due to heavy traffic and industrial emissions. Meanwhile, the Central Valley also experiences high PM2.5 concentrations, primarily due intensive agricultural practices and weather conditions that trap pollutants close to the ground (Ayres et al., 2022).

Smoking indoors significantly increases concentrations of indoor air pollutants, including PM2.5 and toxic chemicals such as nicotine and polycyclic aromatic hydrocarbons (Apelberg et al., 2013). It is estimated that 7.1% of children in California live in a household where someone uses cigarettes, cigars, or pipe tobacco in the home (America's Health Rankings, 2023). Indoor smoking has been associated with PM2.5 concentrations several times higher than those measured in smoke-free indoor environments (Apelberg et al., 2013).

Wildfire smoke has recently reversed some historical improvements in California's air quality, reducing the gains achieved through the Clean Air Act (Burke et al., 2023). Each year, wildfires add between 0.5 and 1 µg/m³ to the average Californian's annual PM2.5 levels. In some regions, wildfire smoke adds even more—upward of 5 µg/m³ (CHBRP 2025 analysis of Childs et al., 2022 and 2024). Between 2018 and 2023, every ZIP code in California experienced wildfire smoke at least once each year, with Californians averaging about 0.2 days per year of wildfire smoke exposure (CHBRP 2025 analysis of Childs et al., 2024). Wildfires do not just raise average pollution; they also cause sudden, extreme spikes, sometimes exceeding 100 µg/m³ (Childs et al., 2022). From 2018 to 2023, 16 million Californians experienced at least 1 day when wildfire-specific PM2.5 levels surpassed 100 µg/m³ in their ZIP code (CHBRP 2025 analysis of Childs et al., 2024).

Figure 4. Annual Average Total and Wildfire-Specific PM2.5 Concentrations in California



Source: CHBRP 2025 analysis of van Donkelaar, et al., 2024 (left); CHBRP 2025 analysis of Childs et al., 2024 (right).
Left: Annual average total PM2.5 concentrations in 2022. Right: County level average daily wildfire-specific PM2.5 concentrations from 2021-2023.

Disparities in Populations Impacted by Air Pollution[28]

Disparities are noticeable and preventable or modifiable differences between groups of people (Adler and Steward, 2010). Health insurance benefit mandates or related legislation may impact disparities. Where intersections between health insurance benefit mandates and social determinants or systemic factors exist, CHBRP describes relevant literature. CHBRP found evidence indicating that, in California, communities of color, communities with higher LGBTQ populations, and lower-income communities face much higher burdens of exposure to air pollution.

Race or Ethnicity

California's communities of color typically experience higher air pollution compared to mostly White communities. Neighborhoods with more Black and Latino residents tend to be closer to pollution sources such as highways or factories, exposing residents to more harmful pollutants. Statewide, the most polluted neighborhoods have around 91% residents of color, whereas the cleanest neighborhoods are about two-thirds White residents (OEHHA, 2021). These disparities are not fully explained by income differences, and can in part be traced back to redlining policies that impacted the geographical location of people of color (Estien et al., 2024).

Sex or Gender[29]

Research shows mixed results regarding air pollution differences by sex or gender. Some studies find women and girls experience more indoor pollution exposure, partly due to household roles (Clougherty, 2010). Biological factors such as lung size or hormones might also increase women's sensitivity to air pollution, causing more respiratory symptoms (Clougherty, 2010). However, these differences often reflect social or economic factors more than biology alone.

Age

Children and older adults (usually over 65 years) are especially sensitive to air pollution's impacts on health (Aithal et al., 2023; Garcia et al., 2021; Hooper and Kaufman, 2018; WHO, 2024). Children breathe faster, and their lungs are still

[28] Several competing definitions of "health disparities" exist. CHBRP relies on the following definition: Health disparity is defined as the differences, whether unjust or not, in health status or outcomes within a population (Wyatt et al., 2016).
[29] CHBRP uses the National Institutes of Health (NIH) distinction between "sex" and "gender": "'Sex' refers to biological differences between females and males, including chromosomes, sex organs, and endogenous hormonal profiles. 'Gender' refers to socially constructed and enacted roles and behaviors which occur in a historical and cultural context and vary across societies and over time." (NIH, 2019).

growing, making pollutants particularly harmful. Older adults frequently have existing health problems such as heart or lung disease, which can worsen from pollution. Both children and seniors have a higher risk of severe outcomes — such as emergency room visits or hospital stays — when exposed to polluted air.

Gender Identity or Sexual Orientation[30]

Currently, there is very limited research on air pollution exposure or health impacts specifically linked to gender identity or sexual orientation. Indirect evidence suggests LGBTQ+ communities might be more vulnerable due to broader social issues such as discrimination or economic disadvantages, which could influence exposure or susceptibility to air pollution (Collins et al., 2017). LGBTQ+ populations experience higher rates of chronic health conditions, including respiratory and cardiovascular diseases, potentially increasing vulnerability to air pollution (Ferriter et al., 2024; Nagata et al., 2022). However, research directly linking air pollution exposure and health outcomes in LGBTQ+ populations remains limited.

Income

Lower-income neighborhoods generally face higher pollution levels, often because they're located closer to major roads, factories, and other pollution sources. Nationwide, long-standing economic inequality means lower-income communities more frequently live in polluted areas. In California, neighborhoods with fewer resources often face higher pollution from traffic, industrial activity, and other sources (Su et al., 2024). Wildfire smoke is somewhat different from air pollution from other sources because it can spread across large areas and affect people of all income levels. However, people with lower incomes may face higher exposure because they often live in homes that let in more smoke and are more likely to work in outdoor jobs that expose them to polluted air.

Barriers to Accessing Insurance Coverage of Air Filtration Equipment

There are at least four major barriers to accessing insurance coverage of air filtration equipment:

- **Awareness and Knowledge:** Many people and health care providers lack familiarity with the potential health benefits of air filtration equipment.[31] Specialists such as allergists or lung doctors may recommend filtration devices more often than family doctors or obstetricians. Awareness often increases after major air quality events, such as wildfires. Non-English speakers might have even less access to information on filtration options.
- **Housing and Rental Restrictions:** Independent of financial ability, renters may not have permission to modify or upgrade their HVAC systems. Because HVAC improvements usually require permission from property owners, renters have limited options to improve indoor air quality through these technologies.
- **Affordability:** Air filtration equipment can be costly upfront. Even with insurance coverage, lower-income households might find initial costs or ongoing filter replacements too expensive. Regular use and consistent replacement of filters are required for optimal performance, which creates additional ongoing expenses that may be particularly challenging for lower-income households.
- **Screening and Risk Identification:** Despite evidence linking air pollution exposure during pregnancy to adverse birth outcomes, screening for environmental exposures is not a standard part of prenatal care. This lack of screening means many pregnant individuals are unaware of their pollution exposures and its potential risks.

Societal Impact of Air Pollution in California

The presence of air pollution in California has direct and indirect economic and societal costs. Please note, the societal impact discussed here is relevant to a broader population than AB 546 impacts, which would affect the health insurance of

[30] CHBRP defines gender identity as one's internal sense of one's own gender, or the gender in which a person identifies, whether it be male, female, or nonbinary. Gender identity and sexual orientation are different facets of one's identity; an individual's gender does not determine a person's sexual orientation (i.e., a person's emotional, romantic, or sexual attraction to other people) (ACOG, 2022; CDC, 2022).
[31] Personal communication with Dr. John Balmes and Dr. Syndey Leibel, March 2025.

a subset of Californians (see the *Policy Context* section). See the *Benefit Coverage, Utilization, and Cost Impacts* section for estimates of direct cost impacts for the specific population targeted by AB 546.

To understand the societal impacts of air pollution in California, CHBRP used data from the Global Burden of Disease (GBD) study. The GBD estimates that air pollution in California caused significant health impacts among people aged 70 years and younger, responsible for an estimated 2,016 deaths (1,285–2,969) and 63,443 years of life lost (YLL) (40,146–92,563) from all causes. Air pollution specifically causes 14,583 (6,648–23,529) YLL and 511 (233–826) deaths due to COPD among persons under 70 years of age in 2021. With respect to adverse birth outcomes due to air pollution, the GBD only quantifies impacts on neonatal preterm birth, estimating that 2,091 (48–5,274) YLL were lost and 23 (0.5–59) deaths in 2021. For asthma in particular, no direct estimate for air pollution is available; among those 70 years and younger, all environmental risk factors are responsible for 1,218 (1,032–1,433) YLL in 2021.

Back to Table of Contents

Medical Effectiveness

As discussed in the *Policy Context* section, AB 546 would mandate coverage for air filtration equipment for enrollees who have been diagnosed with asthma or chronic obstructive pulmonary disease (COPD), or who are pregnant. Additional information on air filtration equipment is included in the *Background* section. The medical effectiveness review summarizes findings from evidence[32] on the medical effectiveness of air filtration equipment for reducing negative health outcomes for those with asthma or COPD, or for those who are pregnant.

Research Approach and Methods

The search was limited to studies published from 2010 to present. A total of 11 studies were included in the medical effectiveness review for this report, all of which were randomized controlled trials. Other articles were eliminated because they did not focus on the specified populations or were of poor quality. A more thorough description of the methods used to conduct the medical effectiveness review and the process used to grade the evidence for each outcome measure is presented in CHBRP's Medical Effectiveness Analysis and Research Approach document.

The conclusions below are based on the best available evidence from peer-reviewed and grey literature.[33] Unpublished studies are not reviewed because the results of such studies, if they exist, cannot be obtained within the 60-day timeframe for CHBRP reports.

CHBRP did not find any studies related to the impacts of household HVAC filters on health outcomes for individuals with COPD, asthma, or who are pregnant. Therefore, the medical effectiveness review focused on only HEPA air filtration equipment.

Key Questions

1. Is HEPA filtration effective for reducing negative health outcomes for those with asthma?
   a. For those with asthma exposed to cigarette smoke?
   b. For those with asthma for general health outcomes not specific to cigarette smoke exposure?
2. Is HEPA filtration effective for reducing negative health outcomes for those with COPD?
3. Is HEPA filtration effective for reducing negative health outcomes for those who are pregnant?

Methodological Considerations

For the purposes of the analysis present below, there is an assumption that HEPA filtration devices are effective for removing particulate matter from the air, trapping at least 99.97% of particles 0.3 microns in size. Please see the *Background* section for further details regarding the effectiveness of HEPA filtration. The following analysis summarizes studies that examined the impact of HEPA filtration for individuals with the specified conditions regardless of the cause of air impurities, although separate findings for wildfire smoke and tobacco smoke are reported. Additionally, all studies summarized below involve the utilization of portable air filtration devices on indoor particulate levels (versus whole-house systems).

[32] Much of the discussion in this section is focused on reviews of available literature. However, as noted in the section on Implementing the Hierarchy of Evidence in the Medical Effectiveness Analysis and Research Approach document, in the absence of fully applicable to the analysis peer-reviewed literature on well-designed randomized controlled trials (RCTs), CHBRP's hierarchy of evidence allows for the inclusion of other evidence.
[33] Grey literature consists of material that is not published commercially or indexed systematically in bibliographic databases. See CHBRP's website for more information.

Study Findings

This following section summarizes CHBRP's findings regarding the strength of evidence for the medical effectiveness of HEPA filtration for reducing negative health outcomes for those with asthma, COPD, or for those who are pregnant, as specified in AB 546.

The following terms are used to characterize the body of evidence regarding an outcome:

Very strong evidence indicates that there are multiple studies of a treatment and the large majority of studies are of high quality and consistently find that the treatment is either effective or not effective. Conclusions are unlikely to be altered by additional evidence.

Strong evidence indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective. Conclusions could be altered with additional strong evidence.

Some evidence indicates that a small number of studies have limited generalizability to the population of interest and/or the studies have a serious methodological concern in research design or implementation. Conclusions could be altered with additional evidence.

Conflicting evidence indicates that a similar number of studies of equal quality suggest the treatment is effective as suggest the treatment is not effective.

Not enough research indicates that there are no studies of the treatment or the available studies are not of high quality, meaning there is not enough evidence available to know whether or not a treatment is effective. It does not indicate that a treatment is not effective.

Impact of HEPA Filtration on Those With Asthma, COPD, or Who Are Pregnant and Were Exposed to Smoke due to Wildfires

Smoke and polluted air caused by wildfires is mentioned in the AB 546 bill text (Sec. 4). CHBRP found no studies that specifically examined the impact of HEPA filtration of air pollution due to wildfires for those with the conditions specified above.

Summary of findings regarding the effectiveness of HEPA filtration on individuals with asthma, COPD, or who were pregnant who were exposed to smoke due to wildfires: There is *not enough research* regarding the effectiveness of HEPA filtration on those with asthma, COPD, or who are pregnant and were exposed to smoke due to wildfires

Figure 5. Impact of HEPA Filtration on the Reduction of Negative Health Outcomes for Those With Asthma, COPD, or Who Are Pregnant and Were Exposed to Smoke Due to Wildfires

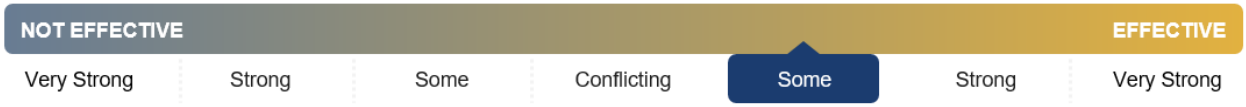
Impact of HEPA Filtration on those with Asthma

Exposed to Cigarette Smoke

HEPA air filtration may be particularly useful for those exposed to indoor air pollution, most often caused by cigarette smoke. CHBRP found one study that provided evidence that HEPA filtration can reduce acute asthma symptoms and associated complications. This study provides the most relevant information with regard to AB 546 as it examined the specific impact of HEPA filtration on children with asthma who were exposed to cigarette smoke in the home. A large randomized controlled trial (RCT) involving 225 children with asthma (Lanphear et al., 2011) who were regularly exposed to secondhand smoke in their homes found that usage of HEPA air filtration resulted in significantly fewer unscheduled asthma-related clinic or emergency room visits compared to the control group over 1 year ($p = 0.043$). However, they also reported no significant between-group differences in parent-reported asthma symptoms in the child, exhaled nitric oxide levels, or air nicotine levels.

Summary of findings regarding the effectiveness of HEPA filtration on individuals with asthma who were exposed to cigarette smoke: Based on evidence from 1 RCT, CHBRP concludes there is *some* evidence that HEPA filtration is effective in the reduction of negative health outcomes in those with asthma who were exposed to cigarette smoke.

Figure 6. Impact of HEPA Filtration on the Reduction of Negative Health Outcomes for Those With Asthma Who Were Exposed to Cigarette Smoke



Asthma Not Specific to Smoke Exposure

The evidence for the effectiveness of HEPA filtration for those with asthma (not specific to cigarette or other smoke exposure) is mixed. Although multiple RCTs have been conducted, they differ with regard to outcome measures as well as their findings regarding the effectiveness of HEPA filtration for this population.

In one RCT (James et al., 2020) researchers conducted a one double-blind crossover trial of 43 children aged 10 to 16 years with a physician diagnosis of asthma. They reported Asthma Control Questionnaire scores improved from 1.3 (poor control) to 0.9 (better control) after 4 weeks usage of a HEPA filtration device ($p = 0.003$), and quality-of-life (AQLQ) scores rose from 4.9 to 5.5 ($p = 0.02$). These results suggest cleaner air can translate to meaningful symptom relief and better daily control, particularly in children with uncontrolled asthma or high exposure to traffic pollutants.

In another small RCT (Lee et al., 2020), researchers compared a treatment group that involved daily use of a HEPA filtration device with a placebo group who had the filter turned off. The study included 30 elementary school students with diagnosed asthma who were randomly assigned to have either a HEPA air filtration device in the living room or an air filtration device with no filter (placebo group). After 6 weeks, subjects in the HEPA air filtration device group reported a significant decrease in medication utilization. However, they found no significant differences between groups for other measured outcomes such as symptoms, lung function, and airway inflammation.

The only RCT in this analysis that focused on adults versus children, researchers (Park et al., 2020) reported mixed findings. Researchers assigned 44 adult participants aged 18 to 65 years diagnosed with allergic rhinitis to either a HEPA filtration group (two portable devices placed in living room and bedroom) or a placebo group (mockup of a HEPA air filtration device). After 6 weeks of usage, the HEPA air filtration group reported a significant decrease in medication requirements as compared to the placebo group. However, there was no difference in reported symptoms between the groups.

While the results of the above studies are promising, there are a similar number of studies that found limited effectiveness of HEPA filtration for those with asthma. Another RCT (Phipatanakul et al., 2021) compared asthma symptoms for children with active asthma in classrooms assigned to have either active HEPA filtration devices in the classroom, or sham filters (N = 236). They reported that, although HEPA filtration successfully lowered indoor air contaminants, there were no differences with regard to reported symptoms over the 2-week study period.

In another RCT involving 75 children with active asthma (Drieling et al., 2022), children were randomly assigned either to have HEPA air filtration devices placed in their sleeping area and home living room or to have only education about asthma. Outcomes were assessed at baseline, and 6 and 12 months. Although they found a general improvement in the study outcomes (asthma control score, symptoms, and unplanned medical visits), none were statistically significant between groups over the study timepoints.

In an RCT conducted in 2023 (Gent et al., 2023), researchers studied the impact of HEPA filtration on children with active asthma who lived in small homes (fewer than seven rooms) that had gas stoves (gas appliances are associated with increased levels of nitrogen dioxide in the home). Special filters known as nitrogen dioxide "scrubbers" can be used to reduce levels in the home. They assigned 126 children to one of three groups: 1) HEPA filtration and active nitrogen dioxide scrubbing; (2) HEPA filtration and sham nitrogen dioxide scrubbing; or 3) sham filtering and scrubbing. After the 5-week treatment period, they reported that, although the treatment groups were effective in cleaning the air, they observed only modest, nonsignificant improvements in the number of symptom-free days.

Summary of findings regarding the effectiveness of HEPA filtration on individuals with asthma: Based on evidence from six RCTs, CHBRP concludes there is *conflicting* evidence that HEPA filtration is effective in the reduction of negative health outcomes in those with asthma (not specific to cigarette smoke exposure).

Figure 7. Impact of HEPA Filtration on the Reduction of Negative Health Outcomes for Those With Asthma

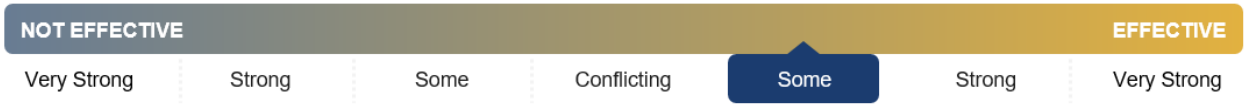
Impact of HEPA Filtration on Those With COPD

There has been one main RCT that focused on the effect of HEPA filtration for those with COPD. The "CLEAN AIR" study (Hansel et al., 2022), assigned 116 former smokers with moderate-to-severe COPD to either an active HEPA filtration device condition or a sham filter condition for 6 months. Though the primary outcome of health-related quality of life measured by the St. George's Respiratory Questionnaire (SGRQ) did not improve significantly for all subjects, those who actively used their HEPA filtration devices more than 80% of the time showed a significantly greater improvement than those in the sham group ($p < 0.05$). An improvement of 4 to 5 points in SGRQ is considered clinically meaningful, suggesting that adherent patients derived tangible benefit in daily life. Similarly, a daily respiratory symptom scale (combining breathlessness, cough, sputum) improved in the HEPA group, who experienced 68% fewer moderate exacerbations (flare-ups requiring steroids or urgent care visit) compared to the sham group and needed their rescue inhalers less often (approximately 46% reduction in rescue medication use). There were no significant differences between the groups with regard to severe exacerbations including events such as emergency department visits.

Overall, these findings suggest HEPA filtration devices can be a valuable adjunct therapy for COPD and can help reduce symptoms and exacerbations.

Summary of findings regarding the effectiveness of HEPA filtration on individuals with COPD: Based on evidence from one RCT, CHBRP concludes there is *some* evidence that HEPA filtration is effective in the reduction of negative health outcomes in those with COPD.

Figure 8. Impact of HEPA Filtration on the Reduction of Negative Health Outcomes for Those With COPD



Impact of HEPA Filtration on Those Who Are Pregnant

Similar to COPD, there is one main high-profile study that has been conducted examining the impact of HEPA filtration for those who are pregnant.

The Ulaanbaatar Gestation and Air Pollution Research (UGAAR) study is an RCT conducted in Ulaanbaatar, Mongolia, to assess the effects of reducing indoor air pollution during pregnancy on fetal and child development. Initiated in 2014, the study involved 540 nonsmoking pregnant women who were fewer than 18 weeks into their pregnancies and had not previously used air filtering devices. Participants were randomly assigned to either an intervention group, which received one or two portable HEPA filtration devices to use continuously throughout their pregnancies, or a control group, which received no air cleaners. The primary aim was to evaluate whether use of a HEPA filtration device during pregnancy could mitigate the adverse effects of prenatal exposure to fine particulate matter (PM2.5) on children's cognitive development. At 4 years of age, children whose mothers used HEPA filtration devices during pregnancy scored an average of 2.8 points higher on the full-scale intelligence quotient (FSIQ) compared to those whose mothers did not use the air cleaners (95% CI: −0.1, 5.7) (Ulziikhuu et al., 2022).

Additionally, the study examined the impact of HEPA filtration on fetal growth and early childhood development. Although the intervention did not show a significant increase in birth weight across all live births, women who used HEPA filtration devices during pregnancy and had full-term pregnancies gave birth to heavier babies, with infants weighing ~85 grams more at term on average than those in the control group. The increase in birth weight was noted as meaningful, as low birth weight is a risk factor for infant health problems (Barn et al., 2018).

Summary of findings regarding the effectiveness of HEPA filtration for pregnant women: Based on evidence from one RCT, CHBRP concludes there is *some* evidence that HEPA filtration is effective in the reduction of negative health outcomes for pregnant women.

Figure 9. Impact of HEPA Filtration on the Reduction of Negative Health Outcomes for Pregnant Women

Summary of Findings

The analysis presented above examined the impact of HEPA filtration on medical outcomes for those with asthma, COPD, or who were pregnant. CHBRP found there is some evidence that HEPA filtration is effective in the reduction of negative health outcomes in those with asthma who were exposed to cigarette smoke. CHBRP concluded that there were conflicting findings for asthma, and some evidence for the effectiveness of HEPA filtration on health outcomes for people with COPD or who are pregnant.

As detailed in the *Background* section, it is well established both that HEPA filtration is effective at cleaning indoor air, and that exposure to polluted air, especially that due to smoke, leads to adverse health outcomes. However, the current research is insufficient with regard to the direct impact of HEPA filtration on health outcomes for those exposed to polluted air.

With regard to the impact of HEPA filters on the reduction of negative health outcomes for those with asthma but who were not regular exposed to cigarette smoke, several studies reported significant for outcomes such as symptom control and medication utilization. However, other studies of similar size and quality reported non-significant findings for similar health outcomes leading CHBRP to conclude the evidence is *conflicting* for this population. Although there were multiple RCTs on the impact of HEPA filtration for those suffering from asthma, many suffered from limitations such as small sample sizes or limited measurement of outcomes. The studies included in this analysis reported mixed findings, with some studies reporting improvements in outcomes when compared to control or comparison groups, and others reporting nonsignificant findings for primary or secondary study outcomes. Additionally, the observation periods of the studies varied widely, with some as short as two weeks. However, it should be noted that many of the studies with nonsignificant results did report promising trends in the direction of significant effectiveness, with many lacking a sufficient sample size for the effects to achieve significance. Additionally, the one study included in this analysis examining the impact of HEPA filtration on children with asthma who were exposed to smoke in the home did provide some evidence of effectiveness.

The analysis of the effectiveness of HEPA filtration for those with COPD or pregnant suffer primarily from a lack of studies, with only one main study having been conducted in each area. Additional research involving each of these populations is required in order to reach definitive conclusions regarding the effectiveness of HEPA filtrations in reducing negative outcomes for these groups.

Back to Table of Contents

Benefit Coverage, Utilization, and Cost Impacts

As discussed in the *Policy Context* section, AB 546 would require DMHC-regulated health plans and CDI-regulated health policies to include coverage for air filtration equipment for enrollees who are diagnosed with asthma or COPD, or who are pregnant. AB 546 also prohibits air filtration equipment from being subject to cost sharing. There is existing coverage for air filtration equipment without cost sharing in Medi-Cal in selected counties, for patients without well-managed asthma who are at risk for emergency room visits.

This section reports the potential incremental impacts of AB 546 on estimated baseline benefit coverage, utilization, and overall cost.

How does utilization impact premiums?

Health insurance, by design, distributes risk and expenditures across everyone enrolled in a plan or policy. It does so to help protect each enrollee from the full impact of health care costs that arise from that enrollee's use of prevention, diagnosis, and/or treatment of a covered medical condition, disease, or injury. Changes in utilization among any enrollees in a plan or policy can result in changes to premiums for all enrollees in that plan or policy.

Analytic Approach and Key Assumptions

CHBRP used a survey of DMHC- and CDI-regulated health plans and insurers to estimate the baseline level of coverage for air filtration equipment. Responses to the survey represented 88% of commercial enrollees with health insurance that can be subject to state benefit mandates. The surveys indicated that no enrollees in regulated plans or insurance policies had existing coverage for air filtration equipment. Data from the 2023 Consolidated Health Cost Guidelines Sources Database (CHSD) also indicated no paid claims for air filtration equipment.

Due to the lack of current coverage and paid claims for air filtration equipment, CHBRP made several assumptions about baseline use based on guidance from content experts. For further details on the underlying data sources and methods used in this analysis, please see Appendix D.

The following assumptions were made to model baseline utilization and cost:

1. At baseline, 18.6% of enrollees used air filtration equipment regardless of health status or condition (NCHS, 2023). An additional 0.01% of enrollees with pregnancy, 3.75% of enrollees with asthma, and 2.25% of enrollees with COPD used portable air filtration devices based upon a doctor's recommendation.

2. The average baseline cost of using air filtration equipment is $236.95 per household per year to purchase one portable air filtration device in the first year, plus HEPA replacement filters, and a subset purchased household HVAC filters for their home. Due to lack of coverage, all costs were out-of-pocket (OOP).

The following assumptions were made to model postmandate utilization and cost:

1. CHBRP assumes coverage would be provided only to patients with a qualifying condition as assessed by a primary care provider or qualified specialist, consistent with the requirements of AB 546.

2. To comply with the proposed benefit mandate, CHBRP assumed enrollees that obtained air filtration equipment due to the mandate would be able to purchase one portable air filtration device per year, plus two HEPA replacement filters, and four sets of replacement MERV-13 filters for their household HVAC system.

3. Use of air filtration equipment would increase due to the mandate, so that 6.28% of enrollees who are pregnant, 37.5% of enrollees with asthma, and 27.5% of enrollees with COPD would obtain portable HEPA purifiers and filters postmandate. At baseline, no health plans or policies cover air filtration equipment, and these services are paid for out-of-pocket. Roughly 50% of the increase in utilization is attributable to coverage with no cost sharing, and the remainder of the increase is anticipated to be attributable to changes in provider practice patterns for patients with asthma and COPD. Given pregnancy can occur anytime throughout a year and people are not pregnant for the entire policy period, CHBRP assumed use by pregnant enrollees was lower due to partial year coverage. CHBRP also assumes that recommendations for air filtration will be lower among pregnant patients of primary care, obstetrics, and gynecology when compared to allergists and pulmonologists.

4. The average cost of the air filtration equipment purchased by enrollees would increase to $266.34 due to the new coverage without cost sharing required by AB 546. A typical household might spend between $84.75 (for a small HEPA purifier and the necessary replacement filters) to $445.94 (for a large purifier, replacement filters, and MERV-13 filters for their home HVAC system). The $30 (12.4%) increase in the annual cost of air filtration equipment represents enrollees more regularly utilizing replacement filters. It is not due to an increase in the price of devices, but an increase in the broader "basket" of goods an enrollee would be able to purchase in a given year due to AB 546.

5. CHBRP's estimates of postmandate utilization reflect the reality that obtaining coverage for air filtration equipment will require some administrative effort on behalf of the enrollee. CHBRP assumes that postmandate, the new benefit would be administered either through direct enrollee reimbursement or through contracting with a vendor who would procure the air filtration equipment directly to the enrollee. Due to the relatively small number of people who would become eligible for coverage (asthma, COPD, and enrollees who are pregnant), CHBRP does not assume that HVAC vendors will actively try to solicit clients and bill health insurers for the air filtration equipment sold. AB 546 would require reimbursement for the cost of the air filtration equipment themselves and does not include coverage for labor associated with installation.

The following offsets were applied to assess the potential cost savings due to AB 546. As described in the *Medical Effectiveness* section, there is conflicting evidence for enrollees with asthma (not specific to cigarette smoke exposure), and some evidence for COPD and those who are pregnant, suggesting potential health improvements due to use of HEPA purifiers and filters among enrollees with COPD or who are pregnant. It is possible that the use of clinical services attributed to pre-term birth and asthma and COPD exacerbations would decline postmandate despite the mixed evidence available. Note that the calculations present estimates for the "best case scenario" based on the studies cited.

1. Air filtration improvements would reduce urgent care visits for people with COPD by 68% (Hansel et al., 2022).

2. For enrollees with asthma (Lee et al., 2020), reductions in medication use with air filtration improvements would vary depending on whether smoking occurs in the home. All enrollees with asthma would see a reduction of 3% for steroid use to address flare ups. There would also be a decrease in inhaler use — a 48% reduction among people with asthma in a household with secondhand smoke and a 3% reduction for all other populations (Lee et al., 2020). As stated in the *Background* section, 7.1% of children in California live in a household where someone uses cigarettes, cigars, or pipe tobacco in the home (America's Health Rankings, 2023). In total, inhaler use would decrease by 3.4% for all enrollees with asthma.

With these figures, CHBRP estimated an annualized cost offset of $20.19 for patients with asthma and $42.43 for patients with COPD for households using air filtration equipment.

There would be no measurable cost offsets for pregnant enrollees because of AB 546. Although there is some evidence of reduction of negative health outcomes with the use of HEPA filtration, these outcomes are not likely to lead to measurable cost offsets in the first or second year postmandate.

Baseline and Postmandate Benefit Coverage

As discussed in the *Policy Context* section, AB 546 would apply to state-regulated health insurance, including commercial enrollees, and enrollees with insurance through the California Public Employees' Retirement System (CalPERS). Medi-Cal beneficiaries, including those enrolled in DMHC-regulated plans, are exempt from AB 546. It should be noted that DMHC regulates the plans and policies of approximately 74% of enrollees associated with CalPERS. [34]

CHBRP estimates that at baseline, 13,570,000 Californians (100%) with state-regulated insurance subject to the mandate are enrolled in plans or policies out of compliance with AB 546, and none (0%) are enrolled in plans or policies that are already compliant with AB 546 at baseline.

Benefit coverage would increase because of the mandate, resulting in new coverage for air filtration equipment for enrollees with asthma and COPD, and those who are pregnant. The new coverage would result in increased use of services by enrollees and increased spending by health plans and health insurers. Cost sharing is prohibited by AB 546.

Below, Table 3 provides estimates of how many Californians have health insurance that would have to comply with AB 546 in terms of benefit coverage.

Table 3. AB 546 Impacts on Benefit Coverage, 2026

	Baseline	Postmandate	Increase/Decrease	Percentage Change
Total enrollees with health insurance subject to state benefit mandates*	22,207,000	22,207,000	0	0.00%
Total enrollees with health insurance subject to AB 546	13,570,000	13,570,000	0	0.00%
Percentage of enrollees with coverage for mandated benefit	0%	100%	100%	—
Number of enrollees with fully compliant coverage for mandated benefit	0	13,570,000	13,570,000	—

Source: California Health Benefits Review Program, 2025.
Notes: * Enrollees in plans and policies regulated by DMHC or CDI. Includes those associated with Covered California, CalPERS, or Medi-Cal.[35]
Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; DMHC = Department of Managed Health Care.

Baseline and Postmandate Utilization and Household? Cost

There are 85,195 households containing enrollees with pregnancy, asthma or COPD that use air filtration equipment at baseline. The number will increase postmandate by 76.05%. CHBRP estimates that the number of households that will obtain air filtration equipment with pregnant enrollees will increase from 24,307 to 32,494, whereas the number of enrollees with asthma will increase from 57,476 to 111,480, and the number of enrollees with COPD obtaining air filtration equipment will increase from 3,412 to 6,015 enrollees. The additional benefit coverage for air filtration equipment will increase the average cost of air filtration equipment per year by 12.4%.

Below, Table 4 provides estimates of the impacts of AB 546 on utilization and household cost of air filtration equipment.

[34] For more detail, see CHBRP's resource, *Sources of Health Insurance in California*.
[35] For more detail, see CHBRP's resource, *Sources of Health Insurance in California*.

Table 4. AB 546 Impacts on Utilization and Unit Cost, 2026

	Baseline (2026)	Postmandate Year 1 (2026)	Increase/ Decrease	Percentage Change
Eligible populations				
Number of enrollees that are pregnant	183,000	183,000	0	0.00%
Number of enrollees with asthma	386,000	386,000	0	0.00%
Number of enrollees with COPD	25,000	25,000	0	0.00%
Utilization without coverage				
Number of households receiving air purification due to an enrollee with pregnancy	24,307	0	(24,307)	-100.00%
Number of households receiving air purification due to an enrollee with asthma	57,476	0	(57,476)	-100.00%
Number of households receiving air purification due to an enrollee with COPD	3,412	0	(3,412)	-100.00%
Utilization with coverage				
Number of households receiving air purification due to an enrollee with pregnancy	0	32,494	32,494	—
Number of households receiving air purification due to an enrollee with asthma	0	111,480	111,480	—
Number of households receiving air purification due to an enrollee with COPD	0	6,015	6,015	—
Total number of households receiving air purification	85,195	149,989	64,794	76.05%
Average annualized cost of air purification	$236.95	$266.34	$29.39	12.40%

Source: California Health Benefits Review Program, 2025.
Key: COPD = chronic obstructive pulmonary disease.

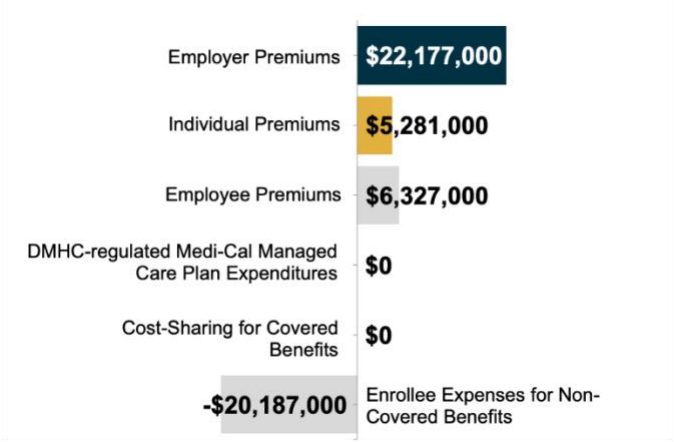
Baseline and Postmandate Expenditures

At baseline, there was no coverage for any enrollees in DMHC-regulated plans and CDI-regulated policies for air filtration equipment. AB 546 would increase coverage for 100% of enrollees with asthma, COPD, or who are pregnant in the DMHC-regulated plans and CDI-regulated policies.

For DMHC-regulated plans and CDI-regulated policies, AB 546 would increase total premiums paid by employers and enrollees for newly covered benefits. Enrollee expenses for covered and/or noncovered benefits would decrease. This would result in an increase of 0.01% total net annual expenditures for enrollees with DMHC-regulated plans and CDI-regulated policies (Figure 10).

Below, Table 5 provides estimates of the impacts of AB 546 on expenditures, which include premiums, enrollee cost sharing, and enrollee expenses for noncovered benefits.

Figure 10. Expenditure Impacts of AB 546



Source: California Health Benefits Review Program, 2025.
Key: DMHC = Department of Managed Health Care.

Table 5. AB 546 Impacts on Expenditures, 2026

	Baseline (2026)	Postmandate Year 1 (2026)	Increase/ Decrease	Percentage Change
Premiums				
Employer-sponsored (a)	$68,752,638,000	$68,772,919,000	$20,281,000	0.03%
CalPERS employer	$7,881,873,000	$7,883,769,000	$1,896,000	0.02%
Medi-Cal (excludes COHS) (b)	$31,818,731,000	$31,818,731,000	$0	0.00%
Enrollee premiums (expenditures)				
Enrollees, individually purchased insurance	$21,757,790,000	$21,763,071,000	$5,281,000	0.02%
Outside Covered California	$6,011,399,000	$6,012,876,000	$1,477,000	0.02%
Through Covered California	$15,746,391,000	$15,750,195,000	$3,804,000	0.02%
Enrollees, group insurance (c)	$21,712,866,000	$21,719,193,000	$6,327,000	0.03%
Enrollee out-of-pocket expenses				
Cost sharing for covered benefits (deductibles, copayments, etc.)	$18,992,422,000	$18,992,422,000	$0	0.00%
Expenses for noncovered benefits (d) (e)	$20,187,000	$0	-$20,187,000	-100.00%
Total Expenditures	$170,936,507,000	$170,950,105,000	$13,598,000	0.01%

Source: California Health Benefits Review Program, 2025.
Notes: (a) In some cases, a union or other organization. Excludes CalPERS.
(b) Includes only Medi-Cal beneficiaries enrolled in DMHC-regulated plans.
(c) Enrollee premium expenditures include contributions by enrollees to employer (or union or other organization)-sponsored health insurance, health insurance purchased through Covered California, and any contributions to enrollment through Medi-Cal to a DMHC-regulated plan.
(d) Includes only expenses paid directly by enrollees (or other sources) to providers for services related to the mandated benefit that are not covered by insurance at baseline. This only includes those expenses that will be newly covered postmandate. Other components of expenditures in this table include all health care services covered by insurance.
(e) For covered benefits, such expenses would be eliminated, although enrollees with newly compliant benefit coverage might pay some expenses if benefit coverage is denied (through utilization management review).
Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; COHS = County Organized Health Systems; DMHC = Department of Managed Health Care.

Premiums

At the end of this section, Table 7 and Table 8 present baseline and postmandate expenditures by market segment for DMHC-regulated plans and CDI-regulated policies. The tables present per member per month (PMPM) premiums, enrollee expenses for both covered and noncovered benefits, and total expenditures (premiums as well as enrollee expenses).

Changes in premiums due to AB 546 would vary by market segment. Note that such changes are related to the number of enrollees (see Table 3, Table 7, and Table 8), with health insurance that would be subject to AB 546.

Commercial

The largest increases in premiums will occur in the DMHC-regulated large-group (0.0295%) and small-group market (0.0301%) and the CDI-regulated small-group (0.0309%) and individual market (0.0304%). The smallest change was 0.0242% in the DMHC-regulated individual market. Because none of the insurance market segments had baseline coverage for air filtration equipment, the increases in premiums are driven primarily by the underlying populations of people with asthma and COPD, and the pregnant population in each market segment.

Enrollees in Covered California DMHC-regulated small-group products would experience a 0.0299% increase in premiums, whereas those Covered California DMHC-regulated individual market products would see a 0.0242% premium increase. There was not sufficient data to project an increase in the CDI-regulated Covered California small-group or individual market.

CalPERS

For enrollees associated with CalPERS in DMHC-regulated plans, premiums would increase by 0.0241%.

Enrollee Expenses

AB 546–related changes in out-of-pocket (OOP) expenses for noncovered benefits would vary by market segment. Note that such changes are related to the number of enrollees (see Table 3, Table 7, and Table 8) with health insurance that would be subject to AB 546 expected to use air filtration equipment during the year after enactment.

At baseline, no enrollees had coverage for air filtration equipment. In addition, AB 546 requires coverage without cost sharing, which would mean that even with the new enrollee coverage to purchase air filtration equipment there would be no increase in cost sharing or coinsurance despite the predicted increase in utilization. Therefore, OOP expenses would decrease due to the new coverage for air filtration equipment. Although premiums would increase by between 0.02% to 0.03% depending on the market segment, AB 546 would increase total net expenditures by only 0.01% due to the reduction in enrollee OOP expenses postmandate.

The reductions in enrollee OOP expenses vary by market segment, with the largest decreases in the DMHC-regulated individual market segment ($0.1260) and the smallest decrease in the CDI-regulated market segment ($0.1226). Overall, OOP expenses by enrollees will decline by $20,187,000.

Postmandate Administrative and Other Expenses

CHBRP estimates that the increase in administrative costs of DMHC-regulated plans and/or CDI-regulated policies will remain proportional to the increase in premiums. CHBRP assumes that if health care costs increase because of increased utilization or changes in unit costs, there is a corresponding proportional increase in administrative costs. In this case, additional administrative expenses would occur due to the processing of manual claims from enrollees seeking reimbursement for the device and filters they purchased. CHBRP assumes that the administrative cost portion of premiums is unchanged. All health plans and insurers include a component for administration and profit in their premiums.

Other Considerations for Policymakers

In addition to the impacts a bill may have on benefit coverage, utilization, and cost, related considerations for policymakers are discussed below.

Potential Cost of Exceeding Essential Health Benefits

As explained in the *Policy Context* section, the air filtration equipment required by AB 546 is not included in California's essential health benefits (EHBs) package. The state is required to defray the additional cost incurred by enrollees in qualified health plans (QHPs) for any state benefit mandate that exceeds the state's definition of EHBs. Coverage for air filtration equipment, as would be required if AB 546 were enacted, could trigger this requirement and so require the state to defray related costs.

CHBRP has considered means of projecting the potential cost to the state of enacting a benefit mandate that would exceed EHBs. CHBRP presents in Table 6 presents one scenario regarding the cost to the state, should AB 546 be judged to exceed EHBs. Premium impacts would vary by market segment (and by market segment enrollment), but would likely range between lowest impact $0.24 PMPM in the DMHC-regulated small-group market and $0.25 PMPM in the DMHC-regulated individual market (Table 6). While cost savings from the reduction in health care utilization as a result of AB 554 (cost offsets) are included in CHBRP's overall analysis, cost offsets are excluded in the estimated state responsibility.

Overall, CHBRP estimates that the state responsibility for the portion of the mandate that is in excess of EHB is $12,236,000.

Table 6. Estimated State-Responsibility for Portion of Mandate that is in Excess of EHB, California, 2026

	DMHC-Regulated		CDI-Regulated		
	Small Group	Individual	Small Group	Individual	Total
Enrollee counts					
Total enrollees in plans/policies subject to state mandates	2,076,000	2,181,000	65,000	36,000	4,358,000
Number of enrollees in QHPs (a)	1,943,000	2,133,000	65,000	0	4,141,000
Premium cost of mandated benefit					
Estimated premium cost of mandated benefit (b)	$0.24	$0.25	$0.24	$0.00	$0.25
Marginal premium impact with offsets (c)	$0.19	$0.19	$0.19	$0.00	$0.19
Marginal premium Impact considering baseline coverage (d)	$0.24	$0.25	$0.24	$0.00	$0.25

Estimated annual state-responsibility for portion of mandate that is in excess of EHB					
Full estimated cost (e) = (a) x (b) x 12	$5,711,000	$6,334,000	$191,000	$0	$12,236,000

Source: California Health Benefits Review Program, 2025.
Notes: (a) States are required to defray the costs of state-mandated benefits that are in excess of the EHB for QHPs. QHPs are a subset of the plans offered in the individual and small-group markets.
(b) Estimated full cost of the mandated benefit without offsets for reduction in costs for related benefits that are EHBs.
(c) Estimated marginal premium impact considering some of the increase in costs associated with a given benefit mandate may be offset by reduction costs for related benefits that are EHBs.
(d) Estimated marginal premium impact of the proposed mandated benefit considering some QHPs may already cover the mandated benefit.
Key: CDI = California Department of Insurance; DMHC = Department of Managed Health Care; EHB = essential health benefit; QHP = qualified health plan.

Postmandate Changes in the Number of Uninsured Persons

Because the change in average premiums does not exceed 1% for any market segment (see Table 5, Table 7, and Table 8), CHBRP would expect no measurable change in the number of uninsured persons due to the enactment of AB 546.

Changes in Public Program Enrollment

CHBRP estimates that the mandate would produce no measurable impact on enrollment in publicly funded insurance programs due to the enactment of AB 546.

How Lack of Benefit Coverage Results in Cost Shifts to Other Payers

At baseline, enrollees who obtain air filtration equipment are not reimbursed for them by their health plan or insurance policy because they are not a covered benefit. CHBRP estimates that 18.6% of all enrollees and a portion of people with asthma, COPD, and pregnancy have air filtration equipment in their home for a variety of reasons (e.g., wildfire smoke exposure, COVID-19 mitigation, or allergies). Although many purchased air filtration equipment on their own, a portion may have received them at no cost through their health care provider, a charity, or an event focused on addressing air pollution. For example, universities held events to build Corsi-Rosenthal boxes at the height of COVID-19 and continue to do so during wildfire recovery efforts (Hannah, 2022). While these types of charitable or donation-based sources of air filtration equipment may continue, CHBRP anticipates some of the need for air filtration equipment through these free sources will be addressed by the benefit mandate. However, AB 546 would not necessarily replace the need for free, donated devices in crisis situations due to convenience, shortages of supplies, and other factors that might result in people obtaining free, donated devices despite already owning or being eligible for reimbursement for air filtration equipment through their insurance coverage. For example, there were likely residents who were evacuated from their homes in the recent Southern California wildfires who received a donated portable HEPA air filtration device to use in their hotel room, despite owning a portable unit in their evacuated home.

Back to Table of Contents

Table 7. Baseline Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2026

	DMHC-Regulated						CDI-Regulated			Total
	Commercial Plans (by Market) (a)			Publicly Funded Plans			Commercial Policies (by Market) (a)			
	Large Group	*Small Group*	*Individual*	*CalPERS (b)*	*Medi-Cal (Excludes COHS) (c)*		*Large Group*	*Small Group*	*Individual*	
					Under 65	*65+*				
Enrollee counts										
Total enrollees in plans/policies subject to state mandates (d)	8,034,000	2,076,000	2,181,000	914,000	7,787,000	850,000	264,000	65,000	36,000	22,207,000
Total enrollees in plans/policies subject to AB 546	8,034,000	2,076,000	2,181,000	914,000	0	0	264,000	65,000	36,000	13,570,000
Premiums										
Average portion of premium paid by employer (e)	$557.33	$507.76	$0.00	$718.62	$276.79	$583.72	$609.11	$567.83	$0.00	$108,453,242,000
Average portion of premium paid by enrollee	$145.58	$212.63	$818.51	$139.09	$0.00	$0.00	$224.25	$185.49	$777.47	$43,470,656,000
Total premium	**$702.91**	**$720.39**	**$818.51**	**$857.71**	**$276.79**	**$583.72**	**$833.35**	**$753.32**	**$777.47**	**$151,923,898,000**
Enrollee expenses										
Cost sharing for covered benefits (deductibles, copays, etc.)	$64.42	$164.36	$272.54	$81.59	$0.00	$0.00	$122.99	$249.30	$173.93	$18,992,422,000
Expenses for noncovered benefits (f)	$0.12	$0.12	$0.13	$0.12	$0.00	$0.00	$0.12	$0.12	$0.12	$20,187,000
Total expenditures	**$767.46**	**$884.87**	**$1,091.17**	**$939.43**	**$276.79**	**$583.72**	**$956.46**	**$1,002.75**	**$951.52**	**$170,936,507,000**

Source: California Health Benefits Review Program, 2025.
Notes: (a) Includes enrollees with grandfathered and nongrandfathered health insurance acquired outside or through Covered California (the state's health insurance marketplace).
(b) Includes only CalPERS enrollees in DMHC-regulated plans. Approximately 51.6% are state retirees, state employees, or their dependents.
(c) Includes only Medi-Cal beneficiaries enrolled in DMHC-regulated plans. Includes those who are also Medicare beneficiaries.
(d) Enrollees in plans and policies regulated by DMHC or CDI. Includes those associated with Covered California, CalPERS, or Medi-Cal.[36]
(e) In some cases, a union or other organization – or Medi-Cal for its beneficiaries.
(f) Includes only those expenses that are paid directly by enrollees (or other sources) to providers for services related to the mandated benefit that are not covered by insurance at baseline. This only includes those expenses that will be newly covered, postmandate. Other components of expenditures in this table include all health care services covered by insurance.
Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; COHS = County Organized Health Systems; DMHC = Department of Managed Health Care.

[36] For more detail, see CHBRP's resource *Sources of Health Insurance in California*.

Table 8. Postmandate Change in Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2026

	DMHC-Regulated						CDI-Regulated			
	Commercial Plans (by Market) (a)			Publicly Funded Plans			Commercial Policies (by Market) (a)			
	Large Group	*Small Group*	*Individual*	*CalPERS (b)*	*Medi-Cal (Excludes COHS) (c)*		*Large Group*	*Small Group*	*Individual*	Total
					Under 65	*65+*				
Enrollee counts										
Total enrollees in plans/policies subject to state mandates (d)	8,034,000	2,076,000	2,181,000	914,000	7,787,000	850,000	264,000	65,000	36,000	22,207,000
Total enrollees in plans/policies subject to AB 546	8,034,000	2,076,000	2,181,000	914,000	0	0	264,000	65,000	36,000	13,570,000
Premiums										
Average portion of premium paid by employer (e)	$0.1643	$0.1527	$0.0000	$0.1729	$0.0000	$0.0000	$0.1583	$0.1753	$0.0000	$22,177,000
Average portion of premium paid by enrollee	$0.0429	$0.0639	$0.1979	$0.0335	$0.0000	$0.0000	$0.0583	$0.0573	$0.2363	$11,607,000
Total premium	$0.2072	$0.2166	$0.1979	$0.2063	$0.0000	$0.0000	$0.2166	$0.2326	$0.2363	**$33,785,000**
Enrollee expenses										
Cost sharing for covered benefits (deductibles, copays, etc.)	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0
Expenses for noncovered benefits (f)	-$0.1236	-$0.1236	-$0.1260	-$0.1233	$0.0000	$0.0000	-$0.1235	-$0.1237	-$0.1226	-$20,187,000
Total expenditures	$0.0836	$0.0930	$0.0719	$0.0830	$0.0000	$0.0000	$0.0930	$0.1089	$0.1137	**$13,597,000**
Postmandate percent change										
Percent change insured premiums	0.0295%	0.0301%	0.0242%	0.0241%	0.0000%	0.0000%	0.0260%	0.0309%	0.0304%	0.0222%
Percent change total expenditures	0.0109%	0.0105%	0.0066%	0.0088%	0.0000%	0.0000%	0.0097%	0.0109%	0.0119%	0.0080%

Source: California Health Benefits Review Program, 2025.
Notes: (a) Includes enrollees with grandfathered and nongrandfathered health insurance acquired outside or through Covered California (the state's health insurance marketplace).
(b) Includes only CalPERS enrollees in DMHC-regulated plans. Approximately 51.6% are state retirees, state employees, or their dependents.
(c) Includes only Medi-Cal beneficiaries enrolled in DMHC-regulated plans. Includes those who are also Medicare beneficiaries.
(d) Enrollees in plans and policies regulated by DMHC or CDI. Includes those associated with Covered California, CalPERS, or Medi-Cal.[37]
(e) In some cases, a union or other organization, or Medi-Cal for its beneficiaries.
(f) Includes only those expenses that are paid directly by enrollees (or other sources) to providers for services related to the mandated benefit that are not covered by insurance at baseline. This only includes those expenses that will be newly covered, postmandate. Other components of expenditures in this table include all health care services covered by insurance.
Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; COHS = County Organized Health Systems; DMHC = Department of Managed Health Care.

[37] For more detail, see CHBRP's resource *Sources of Health Insurance in California*.

Public Health Impacts

As discussed in the *Policy Context* section, AB 546 would mandate coverage of air filtration equipment. Although AB 546 could potentially cover a wide range of equipment, this report focused on portable air filtration devices and their HEPA replacement filters, and household HVAC filters (MERV 13). Additional information on the use of air filtration equipment, air pollution, and related populations and outcomes are included in the *Background* section.

The public health impact analysis includes estimated impacts in the short term (within 12 months of implementation) and in the long term (beyond the first 12 months postmandate). This section estimates the short-term impact[38] of AB 546 on healthcare utilization and outcomes related to asthma, COPD, and pregnancy, potential disparities, and financial burden. See the *Long-Term Impacts* section for discussion of premature death, economic loss, and social drivers of health.

Estimated Public Health Outcomes

Measurable health outcomes relevant to AB 546 include control of asthma symptoms, use of rescue medication, urgent care visits, emergency department visits, respiratory health status and quality of life related to COPD, and cognitive development and fetal growth related to exposure during pregnancy.

As presented in the *Medical Effectiveness* section, there is conflicting evidence as to the use of air filtration equipment to improve control of asthma symptoms. While it appears that this equipment is effective in homes with asthmatic children exposed to tobacco smoke, it is unclear the extent to which these findings would apply to a broader population of people with asthma. There is also some evidence that the use of air filtration equipment improves health outcomes for people who are pregnant or who have COPD.

As presented in the *Benefit Coverage, Utilization, and Cost Impacts* section, it is estimated that postmandate, there would be an increase in nearly 65,000 households using HEPA filters for household HVAC systems and portable air filtration devices. This breaks down into an increase of 8,200 homes with pregnant enrollees, 54,000 homes with enrollees with asthma, and 2,600 homes with enrollees with COPD. It is estimated that among the 54,000 homes with enrollees with asthma, 3,800 would be among homes with people exposed to tobacco smoke.

AB 546 is projected to lead to the following improvements in health outcomes:

- An improvement in fetal growth and cognitive development for babies born in the 8,200 homes with pregnant enrollees;
- An improvement in respiratory health status and quality of life for 2,600 enrollees with COPD, including a reduction in the number of urgent care visits by 484 visits; and
- An improvement in respiratory health status for enrollees with asthma especially the 3,800 living in homes where they are exposed to tobacco smoke, including a significant reduction in the use of steroids and inhalers.

In addition, it is estimated that AB 546 would lead to a reduction in financial burden of $20.2 million in out-of-pocket costs for enrollees.

In the first year postmandate, CHBRP estimates that people with asthma exposed to tobacco smoke in the home, enrollees with COPD, and pregnant enrollees would all have improvements in health outcomes. This estimate is supported by some evidence that air filtration equipment is medically effective and an estimated increase in nearly 65,000 homes that would use this equipment postmandate.

[38] CHBRP defines short-term impacts as changes occurring within 12 months of bill implementation.

Potential Harms From AB 546

When data are available, CHBRP estimates the marginal change in relevant harms associated with interventions affected by the proposed mandate. In the case of AB 546, there is no evidence to suggest that an increase in the use of air filtration equipment could result in harm.

Impact on Disparities[39]

As described in the *Background* section, disparities in exposure to air pollution exist by race/ethnicity, sex, age, and income. Within the first 12 months postmandate, CHBRP estimates that it is likely that AB 546 could reduce negative health outcomes related to increased exposure to air pollution by specific populations. Therefore, the disparities that exist in exposure to air pollution among people of color, females, children, and people with lower incomes may be reduced by AB 546. Because Medi-Cal is exempt from AB 546, the reduction of disparities could be concentrated in specific health plans and insurance policies that have a higher prevalence of low-income groups, like Covered California enrollees in enhanced silver tier products due to their income. For a discussion of potential impacts beyond the first 12 months of implementation (including social drivers of health), see the *Long-Term Impacts* section.

Back to Table of Contents

[39] For details about CHBRP's methodological approach to analyzing disparities, see the *Benefit Mandate Structure and Unequal Racial/Ethnic Health Impacts* document.

Long-Term Impacts

In this section, CHBRP estimates the long-term impact of AB 546, which CHBRP defines as impacts occurring beyond the first 12 months after implementation. These estimates are qualitative and based on the existing evidence available in the literature. CHBRP does not provide quantitative estimates of long-term impacts because of unknown improvements in clinical care, changes in prices, implementation of other complementary or conflicting policies, and other unexpected factors.

Long-Term Utilization and Cost Impacts

Utilization Impacts

Over time, provider and population awareness of the benefits of air filtration equipment is likely to improve and utilization of the equipment is expected to increase. Due to the likely increases in wildfire frequency and severity, more people may be prone to purchase air filtration equipment to address wildfire smoke concerns, especially those with asthma and COPD (Abatzoglou and Williams, 2016). Not only are more enrollees expected to obtain air filtration equipment in the future, but there could also be continued spending for those who had already obtained them due to filter replacements. Depending on how health plans and health insurance carriers structure the benefit, enrollees may be able to obtain new portable air filtration devices on a regular, but currently unknown, basis, leading to some uncertainty about long-term use and costs.

As stated in the *Medical Effectiveness* section, there are clear reductions in PM2.5 and improvements in home air quality due to obtaining and using air filtration equipment. However, few studies have shown broad cost savings outside of the reduction in urgent care visits for users with COPD, reductions in unscheduled visits for those with asthma, and a broad reduction in medication use. Although filtered air is relevant to child development, reduces the likelihood of contracting respiratory illnesses (including COVID-19), and has other benefits, reductions in utilization for related services may not occur for several years and are not only directly linked to home air filtration equipment use. For example, teachers that use portable air filtration devices in their classroom, which are not covered by the benefit mandate, might affect their pupils' learning progress and mitigate respiratory illnesses in their classrooms, even though their intervention is occurring outside of the home and not specifically with people with COPD, asthma, or who are pregnant.

Cost Impacts

Additional use and payment by health plans and insurers after Year 1 is highly likely, with premiums expected to increase concurrently with increased use of air filtration equipment. The cost of the equipment is approximately $266 per year, and the cost of replacement filters on a yearly basis is lower if the actual portable air filtration device is not being replaced. As mentioned above, though there are cost offsets for specific subgroups of people with asthma (e.g., children in a household with secondhand smoke exposure will experience greater benefits), the reductions in medication use and urgent care visits do not fully offset the additional premium spending for the covered benefit.

Long-Term Public Health Impacts

Some interventions in proposed mandates provide immediate measurable impacts (e.g., maternity service coverage or acute care treatments), whereas other interventions may take years to make a measurable impact (e.g., coverage for tobacco cessation or vaccinations). When possible, CHBRP estimates the long-term effects (beyond 12 months postmandate) to the public's health that would be attributable to the mandate, including impacts disparities, premature death, and economic loss.

Future climate shifts are expected to increase the frequency and severity of wildfires in California (Abatzoglou and Williams, 2016). Hotter and drier climate conditions create drier vegetation, which more easily fuel larger fires (Williams et al., 2019). More frequent wildfires will result in increased air pollution and greater health risks (Qiu et al., 2024). Given

these projected increased in ambient air pollution, increased air filtration equipment use could be more beneficial in the coming years.

Impacts on Disparities and the Social Drivers of Health[40]

Periodically, health insurance mandates can influence social drivers of health (SDOH[41]), which can mediate health inequities. Evidence presented in the *Background* section indicates that people with lower incomes are more likely to live in areas with higher levels of air pollution. The exposure to poor air quality leads to adverse health outcomes, especially for individuals with asthma, COPD, and for people who are pregnant. AB 546 could potentially create healthier environment for individuals who have higher levels of pollution in their home through the provision of air filtration equipment that has been proven to improve indoor air quality. This could specifically impact health outcomes for enrollees with lower incomes who live in environments with poorer air quality, are more likely to develop asthma, COPD, or have poor pregnancy outcomes, and are less likely to be able to afford effective air filtration equipment.

CHBRP estimates that AB 546 could modify the effects of poor air quality on health outcomes by providing a mechanism to reduce exposure to air pollutants in the home.

Impacts on Premature Death and Economic Loss

Premature death

Premature death, measured by years of potential life lost (YPLL), is often defined as death occurring before the age of 75 years (NCI, 2019).[42] As mentioned in the *Background Section*, it is estimated that air pollution in California is responsible for an estimated 2,016 premature deaths each year. There is no direct evidence evaluating the impact of air filtration equipment on premature death as an outcome, but there is evidence that air filtration equipment can improve the quality of the air and outcomes for individuals who are pregnant or who have asthma or COPD. Therefore, it is possible that AB 546 could reduce premature death in California, but the extent to which this could happen is unknown.

Economic loss

Economic loss associated with disease is generally presented in the literature as an estimation of the value of the YPLL in dollar amounts (i.e., valuation of a population's lost years of work over a lifetime). In addition, morbidity associated with the disease or condition of interest can also result in lost productivity by causing a worker to miss days of work due to illness or acting as a caregiver for someone else who is ill. As mentioned in the *Background* section, it is estimated that air pollution in California is responsible for an estimated 63,443 YPLL. There is no direct evidence evaluating the impact of air filtration equipment on lost productivity as an outcome, but there is evidence that air filtration equipment can improve the quality of the air and outcomes for individuals who are pregnant or who have asthma or COPD. Therefore, it is possible that AB 546 could reduce economic loss in California, but the extent to which this could happen is unknown.

Back to Table of Contents

[40] For more information about SDOH, see CHBRP's Public Health Impact Analysis and Research Approach.
[41] Also referred to as "social determinants of health."
[42] For more information about CHBRP's public health methodology, see CHBRP's Public Health Impact Analysis and Research Approach.

Appendix A. Text of Bill Analyzed

On February 12, 2025, the California Assembly Committee on Health requested that CHBRP analyze AB 546, as introduced on February 11, 2025.

CALIFORNIA LEGISLATURE— 2025–2026 REGULAR SESSION

ASSEMBLY BILL **NO. 546**

Introduced by Assembly Member Caloza
(Principal coauthor: Assembly Member Rivas)

February 11, 2025

An act to add Section 1367.56 to the Health and Safety Code, and to add Section 10123.63 to the Insurance Code, relating to health care coverage, and declaring the urgency thereof, to take effect immediately.

LEGISLATIVE COUNSEL'S DIGEST

AB 546, as introduced, Caloza. Health care coverage: portable HEPA purifiers and filters.

Existing law, the Knox-Keene Health Care Service Plan Act of 1975, provides for the licensure and regulation of health care service plans by the Department of Managed Health Care and makes a willful violation of the act's requirements a crime. Existing law provides for the regulation of health insurers by the Department of Insurance. Existing law sets forth specified coverage requirements for plan contracts and insurance policies, and limits the copayment, coinsurance, deductible, and other cost sharing that may be imposed for specified health care services.

This bill would require a health care service plan contract or health insurance policy issued, amended, or renewed on or after January 1, 2026, to include coverage for portable high-efficiency particulate air (HEPA) purifiers and filters for enrollees or insureds who are pregnant or diagnosed with asthma or chronic obstructive pulmonary disease. The bill would prohibit a portable HEPA purifier and filter covered pursuant to these provisions from being subject to a deductible, coinsurance, or copayment requirement.

Because a willful violation of these provisions by a health care service plan would be a crime, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

This bill would declare that it is to take effect immediately as an urgency statute.

DIGEST KEY

Vote: 2/3 Appropriation: NO Fiscal Committee: YES Local Program: YES

BILL TEXT

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 1367.56 is added to the Health and Safety Code, to read:
1367.56. (a) A health care service plan contract issued, amended, or renewed on or after January 1, 2026 , shall include coverage for portable high-efficiency particulate air (HEPA) purifiers and filters for enrollees who are pregnant and enrollees diagnosed with asthma or chronic obstructive pulmonary disease (COPD).

(1) A portable HEPA purifier and filter pursuant to this section shall not be subject to a deductible, coinsurance, or copayment requirement.
(2) If a health care service plan contract is a high deductible health plan, as defined in Section 223(c)(2) of Title 26 of the United States Code, the contract shall not impose cost sharing as specified in this section, unless not applying cost sharing would conflict with federal requirements for high deductible health plans.

(b) (1) For purposes of this section, a portable HEPA purifier and filter uses a mechanical air filter that can remove at least 99% of airborne particles that are 10 microns in size or have a minimum efficiency reporting value (MERV) of 13 or higher.

(3) A HEPA filter includes a filter used for air purification systems for home use or portable use.

(c) This section shall apply to enrollees of a Public Employees' Retirement System (CalPERS) sponsored health plan and members of the State Teachers' Retirement System (CalSTRS) who receive a health care benefit under CalSTRS.

(d) (1) This section shall not apply to a Medicare supplement policy or a specialized health care service plan contract that covers only dental or vision benefits.

(2) This section shall not apply to Medi-Cal managed care plans that contract with the State Department of Health Care Services pursuant to Chapter 7 (commencing with Section 14000) of, and Chapter 8 (commencing with Section 14200) of, Part 3 of Division 9 of the Welfare and Institutions Code.

(3) This section shall not apply with respect to self-insured employer plans governed by the Employee Retirement Income Security Act of 1974 (ERISA) (Public Law 93-406).

SEC. 2. Section 10123.63 is added to the Insurance Code, to read:

10123.63. (a) A health insurance policy issued, amended, or renewed on or after January 1, 2026 , shall include coverage for portable high-efficiency particulate air (HEPA) purifiers and filters for insureds who are pregnant and insureds diagnosed with asthma or chronic obstructive pulmonary disease (COPD).

(1) A portable HEPA purifier and filter pursuant to this section shall not be subject to a deductible, coinsurance, or copayment requirement.

(2) If a health insurance policy is a high deductible health plan, as defined in Section 223(c)(2) of Title 26 of the United States Code, the contract shall not impose cost sharing as specified in this section, unless not applying cost sharing would conflict with federal requirements for high deductible health plans.

(b) (1) For purposes of this section, a portable HEPA purifier and filter uses a mechanical air filter that can remove at least 99% of airborne particles that are 10 microns in size or have a minimum efficiency reporting value (MERV) of 13 or higher.

(2) A HEPA filter includes a filter used for air purification systems for home use or portable use.

(c) This section shall apply to insureds of a Public Employees' Retirement System (CalPERS) sponsored health plan and members of the State Teachers' Retirement System (CalSTRS) who receive a health care benefit under CalSTRS.

(d) (1) This section shall not apply to a Medicare supplement policy or a specialized health insurance policy that covers only dental or vision benefits.

(3) This section shall not apply with respect to self-insured employer plans governed by the Employee Retirement Income Security Act of 1974 (ERISA) (Public Law 93-406).

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

SEC. 4. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the California Constitution and shall go into immediate effect. The facts constituting the necessity are:

Pregnant women who are exposed to particulate matter from wildfire smoke face a higher risk of preterm birth than women who were not exposed. Wildfire smoke can additionally trigger asthma attacks or chronic obstructive pulmonary disease (COPD). To mitigate these outcomes, it is necessary that this act take effect immediately.

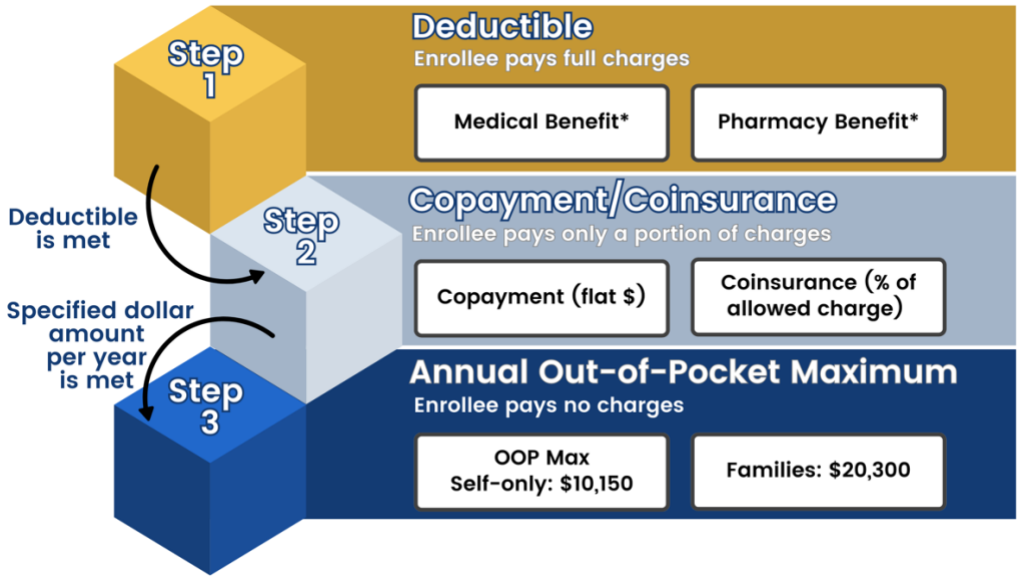
Back to Table of Contents

Appendix B. Cost Sharing

Payment for use of covered health insurance benefits is shared between the payer (e.g., health plan/insurer or employer) and the enrollee. Common cost-sharing mechanisms include copayments, coinsurance, and/or deductibles (but do not include premium expenses[43]). There are a variety of cost-sharing mechanisms that can be applicable to covered benefits (Figure 11). Some health insurance benefit designs incorporate higher enrollee cost sharing in order to lower premiums. Reductions in allowed copayments, coinsurance, and/or deductibles can shift the cost to premium expenses or to higher cost sharing for other covered benefits.[44] AB 546 would prohibit cost sharing for air filtration equipment.

Annual out-of-pocket maximums for covered benefits limit annual enrollee cost sharing (medical and pharmacy benefits). After an enrollee has reached this limit through payment of coinsurance, copayments, and/or deductibles, insurance pays 100% of the covered services. The enrollee remains responsible for the full cost of any tests, treatments, or services that are not covered benefits.

Figure 11. Overview of the Intersection of Cost-Sharing Methods Used in Health Insurance



Source: California Health Benefits Review Program, 2025; CMS, 2024.
Notes: 1) Steps 1 and 2 are not mutually exclusive. Under certain circumstances (i.e., preventive screenings or therapies), enrollees may pay coinsurance or copayments prior to their deductible being met; also copayments and coinsurance may be applied against the deductible in some circumstances. The figure assumes that the enrollee is in a plan with a deductible. If no deductible, then enrollee pays a coinsurance and/or a copayment beginning with the first dollar spent (Step 2). The annual out-of-pocket maximums listed in Step 3 increase each year according to methods detailed in CMS' Notice of Benefit and Payment Parameters (CMS, 2024).
2) There is variation in the type and source of the pharmacy benefit among commercial and CalPERS enrollees in DMHC-regulated plans and CDI-regulated policies. While most enrollees have a pharmacy benefit that is regulated by DMHC or CDI, a small share of enrollees in the individual market have a pharmacy benefit that covers only generic medications, do not have a pharmacy benefit at all, or have a pharmacy benefit not subject to DMHC or CDI regulation. Thus, the deductible paid by enrollees will vary depending on whether they have a medical and/or pharmacy benefit included in their plan or policy.
Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; DMHC = Department of Managed Health Care; OOP Max = annual out-of-pocket maximum.

[43] Premiums are paid by most enrollees, regardless of their use of any tests, treatments, or services. Some enrollees may not pay premiums because their employers cover the full premium, they receive premium subsidies through the Covered California, or they receive benefits through Medi-Cal.
[44] Plans and policies sold within Covered California are required by federal law to meet specified actuarial values. The actuarial value is required to fall within specified ranges and dictates the average percent of health care costs a plan or policy covers. If a required reduction in cost sharing impacts the actuarial value, some number of these plans or policies might have to alter other cost-sharing components of the plan and/or premiums in order to keep the overall benefit design within the required actuarial value limits.

High deductible health plans

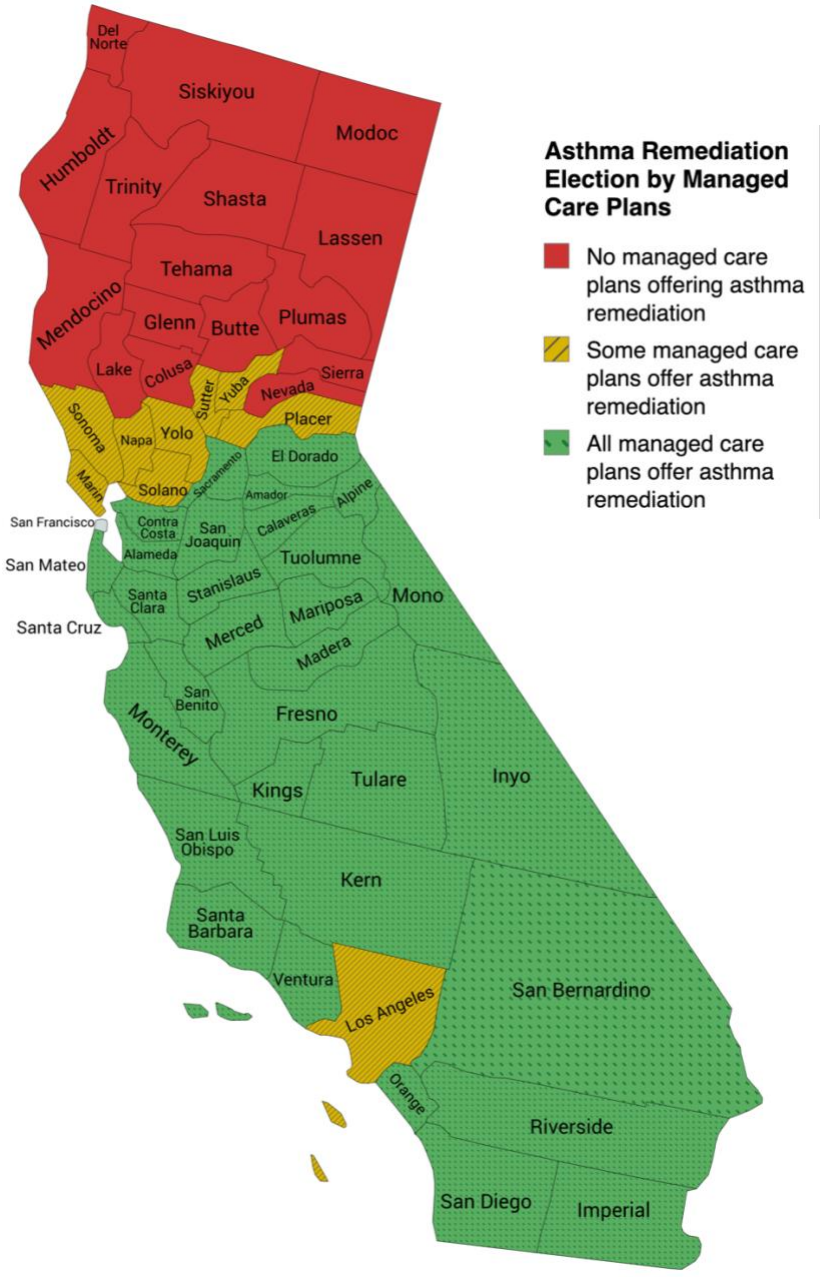
Both DMHC-regulated plans and CDI-regulated policies may be designated high deductible health plans (HDHPs).[45] HDHPs are a type of health plan with requirements set by federal regulation.[46] For the 2025 plan year, the Internal Revenue Service (IRS) defines an HDHP as any plan with a deductible of at least $1,650 for an individual and $3,300 for a family.[47] Annual out-of-pocket expenses for coverage of in-network tests, treatments, and services, which would result from cost sharing[48] applicable after the deductible is met, are not allowed to be more than $8,300 for an individual and $16,600 for a family.[49] One type of HDHPs, known as Health Savings Account (HSA)-qualified HDHPs, must follow specified rules regarding cost sharing and deductibles, as set by the IRS. If enacted, the cost-sharing prohibition under AB 546 may conflict with federal requirements for HSA-qualified HDHPs; in these cases, the language of AB 546 states these plans would be exempt from the cost sharing requirements.

Allowed Cost Amounts for Medical Services

Insurers usually negotiate how much they will pay for the costs of covered health care services with health care providers and suppliers (Center on Budget and Policy Priorities, 2022). These negotiated amounts are known as the "allowed cost amount." Health care providers, including hospitals and physicians, participating in a plan's network agree to accept these payment amounts when an enrollee covered by the plan uses covered services. The cost-sharing charges the enrollee owes (for example, a 20% coinsurance rate) are based on this allowed cost amount. If an enrollee uses a service that is not covered or sees a provider that is not within the insurer's network, the overall charge, including an enrollee's cost sharing, could be higher than the allowed amount.

[45] For enrollment estimates, see CHBRP's resource *Deductibles in State-Regulated Health Insurance*.
[46] HealthCare.gov, Glossary: High Deductible Health Plan (HDHP). Accessed March 5, 2021.
[47] IRS Revenue Procedure 2024-25.4.
[48] Such as copayments and coinsurance applicable to the covered test, treatment, or service.
[49] There is no annual out-of-pocket expenses limit for coverage of out-of-network tests, treatments, and services.

Appendix C. California Counties Without Asthma Remediation Community Support



Source: California Health Benefits Review Program, 2025. Created with mapchart.net.

Appendix D. Cost Impact Analysis: Data Sources, Caveats, and Assumptions

With the assistance of CHBRP's contracted actuarial firm, Milliman, Inc., the cost analysis presented in this report was prepared by the faculty and researchers connected to CHBRP's Task Force with expertise in health economics.[50] Information on the generally used data sources and estimation methods, as well as caveats and assumptions generally applicable to CHBRP's cost impacts analyses, are available on CHBRP's website.[51]

This appendix describes analysis-specific data sources, estimation methods, caveats, and assumptions used in preparing this cost impact analysis.

Analysis-Specific Data Sources

Baseline coverage of air filtration equipment for commercial enrollees was determined by a survey of the largest (by enrollment) providers of health insurance in California. Responses to this survey represent 88% of commercial enrollees with health insurance that can be subject to state benefit mandates. As necessary, CHBRP extrapolated from responses of similarly situated plans/policies.

Health Cost Guidelines

The Health Cost Guidelines (HCGs) are a health care pricing tool used by actuaries in many of the major health plans in the United States. The guidelines provide a flexible but consistent basis for estimating health care costs for a wide variety of commercial health insurance plans. It is likely that these organizations use the HCGs, among other tools, to determine the initial premium impact of any new mandate. Thus, in addition to producing accurate estimates of the costs of a mandate, Milliman believes the HCG-based values are also good estimates of the premium impact as estimated by the HMOs and insurance companies.

The highlights of the commercial HCGs include:

- Specific major medical, managed care, and prescription drug rating sections and guidance with step-by-step rating instructions.
- Other helpful analysis resources, such as inpatient length of stay distribution tables, Medicare Severity-Adjusted Diagnosis Related Group (MS-DRG) models, and supplementary sections addressing EHBs and mandated benefits, experience rating, and individual and small group rating considerations.
- Presentation of loosely and well-managed nationwide utilization and cost information by Milliman benefit-aligned service categories used throughout the Rating Structures – inpatient hospital services for both loosely and well-managed are also supported by DRG level utilization and cost benchmarks.
- Annual updates address emerging regulatory considerations such as health care reform and mental health parity requirements.
- Annually updated benefit descriptions used in the HCG service categories.
- Annually updated medical trend assumptions and considerations.
- Presentation of two sets of nationwide area factors to facilitate development of area-specific claim costs, including separate utilization and charge level factors by type of benefit, state and Metropolitan Statistical Area for first-dollar coverage, and composite factors by deductible amount.
- Claim Probability Distributions (CPDs) by type of coverage that contain distributions of claim severity patterns for unique combinations of benefits and member types (adult, child, composite member).

[50] CHBRP's authorizing statute requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact.
[51] See CHBRP's Cost Impact Analysis landing page; in particular, see *Cost Impact Analyses: Data Sources, Caveats, and Assumptions*.

- The Prescription Drug Rating Model (RXRM), an automated rating tool that provides a detailed analysis of prescription drug costs and benefits.

Consolidated Health Cost Guidelines Sources Database

Milliman maintains benchmarking and analytic databases that include health care claims data for nearly 60 million commercial lives and over 3 million lives of Medicaid Managed Care data. This dataset is routinely used to evaluate program impacts on cost and other outcomes.

Detailed Cost Notes Regarding Analysis-Specific Caveats and Assumptions

The analytic approach and key assumptions are determined by the subject matter and language of the bill being analyzed. As a result, analytic approaches may differ between topically similar analyses, and therefore the approach and findings may not be directly comparable.

Methodology and Assumptions for Baseline and Postmandate Utilization

Enrollees with asthma or chronic obstructive pulmonary disease (COPD), and enrollees who were pregnant were identified in Milliman's proprietary 2023 Consolidated Health Cost Guidelines™ Sources Database (CHSD). This database only captures services that are filed for reimbursement by insurance and may not fully capture conditions related to noncovered benefits. CHBRP assigned enrollees into these conditions using ICD 10 diagnosis codes. Enrollees were also split by coverage status and whether they purchased an air filtration equipment at baseline.

- CHBRP assumed that at baseline and postmandate 18.6% of all households regardless of disease would use air filtration equipment.
- At baseline, an additional 0.0% of pregnant people, 2.3% of individuals with COPD, and 3.8% of individuals with asthma would purchase air filtration equipment based upon physicians' recommendations.
- Post mandate, an additional 6.3% of pregnant people, 18.2% of individuals with COPD, and 24.8% of individuals with asthma would purchase home filtration equipment based upon doctor's recommendations.

Pregnancy

- Enrollees with pregnancy were identified using the ICD 10 diagnosis codes that start with "O."

Asthma

- Enrollees with asthma were identified using the ICD 10 diagnosis codes that start with "J45."

Chronic Obstructive Pulmonary Disease

- Enrollees with chronic obstructive pulmonary disease (COPD) were identified using the ICD 10 diagnosis codes that start with "J44."

Methodology and Assumptions for Baseline Cost

- CHBRP assumed the average annualized cost of using air filtration equipment from costs of air filtration equipment on Amazon.com (as of March 2025) and an assumed distribution of costs shown in "Table 2 Cost" in the AB 546 Cost Model. The assumed average baseline cost of using air filtration equipment is $236.95 per household per year.

Methodology and Assumptions for Baseline Cost Sharing

- CHBRP assumed air filtration equipment bought by enrollees without coverage were paid in full by the enrollee out-of-pocket.

Methodology and Assumptions for Postmandate Cost

- CHBRP assumed the average cost per portable air filtration device, HEPA filter and household HVAC filter would not change as a result of AB 546, but CHBRP assumed more people would choose more expensive air filtration equipment options if they were covered 100% by insurance as a result of AB 546.

Methodology and Assumptions for Postmandate Cost Sharing

- CHBRP assumed air filtration equipment bought by enrollees with coverage were paid in full by the health plan and no enrollee out-of-pocket payments were made.

Other Methodology and Assumptions

- CHBRP assumed a pregnancy dampening factor of 1.4 to account for pregnancies spanning over 1 calendar year.
- To calculate the number of households from the number of enrollees with a condition utilizing portable air filtration devices and filters, CHBRP assumed 1 pregnant person per household, 1.5 people with asthma per household, and 1.5 people with COPD per household.
- For enrollees with asthma (Lee et al., 2020), reductions in medication use with air filtration improvements would vary depending on whether smoking occurs in the home. All enrollees with asthma would see a reduction of 3% for steroid use to address flare ups. There would also be a decrease in inhaler use — a 48% reduction among people with asthma in a household with secondhand smoke and a 3% reduction for all other populations (Lee et al., 2020). As stated in the *Background* section, 7.1% of children in California live in a household where someone uses cigarettes, cigars, or pipe tobacco in the home (America's Health Rankings, 2023). In total, inhaler use would decrease by 3.4% for all enrollees with asthma.
- 8% of the California commercial market is in HSA-qualified HDHP plans. Similar to the other plans modeled, CHBRP assumed that members in these plans would have no cost sharing. However, based on the way the bill is written, they would still need to have cost sharing before meeting the IRS minimum deductible of $1,650 per year in order for the plan to be considered an HSA-qualified HDHP. However, since the only individuals eligible for this are individuals with asthma, COPD, or pregnancy and therefore likely spend most or all of this $1,650 deductible on other services, CHBRP assumes it is unlikely that this will change the out-of-pocket spending for these members. As a result, CHBRP did not separately model the impact for individuals in HSA-qualified HDHPs.

Determining Public Demand for the Proposed Mandate

CHBRP reviews public demand for benefits by comparing the benefits provided by self-insured health plans or policies (which are not regulated by the DMHC or CDI and therefore not subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS have the largest number of enrollees. The CalPERS PPOs currently provide benefit coverage similar to what is available through group health insurance plans and policies that would be subject to the mandate.

To further investigate public demand, CHBRP used the bill-specific coverage survey to ask plans and insurers who act as third-party administrators for (non-CalPERS) self-insured group health insurance programs whether the relevant benefit

coverage differed from what is offered in group market plans or policies that would be subject to the mandate. The responses indicated that there were no substantive differences.

Back to Table of Contents

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CHBRP assumes full responsibility for the report and the accuracy of its contents. All CHBRP bill analyses and other publications are available at chbrp.org.

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