20 YEARS OF AB 32

CALIFORNIA'S LANDMARK CLIMATE LAW & ITS LEGACY

NEXT 10

USC Schwarzenegger Institute for State and Global Policy

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ASSEMBLY BILL NO. 32

CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

EXECUTIVE SUMMARY

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Following decades of work to reduce air pollution across the state, the California Legislature passed Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, co-authored by Assemblymember Fran Pavley and Speaker of the Assembly Fabian Nunez, and signed into law by Governor Arnold Schwarzenegger on September 27, 2006.[1]

In the first legislation of its kind, it placed an economy-wide cap on greenhouse gas emissions in California. The law directed the California Air Resources Board (CARB) to develop a plan to meet the target, including the use of market-based mechanisms. The state's cap-and-trade program put a price on carbon emissions by creating a market mechanism to regulate and reduce GHG emissions from large polluters in the state. The program puts a cap on the emissions of large emitters, such as power plants and large industrial facilities, and allowances are auctioned off quarterly to cover their emissions under the cap. The money raised from the auctions is deposited into the Greenhouse Gas Reduction Fund (GGRF) and is appropriated by the legislature to fund climate-related projects across the state, referred to as California Climate Investments (CCI). In addition to putting a price on carbon through the cap-and-trade program, it also set statewide emissions reductions targets. The first emissions target, which required California to reduce emissions to 1990 levels by 2020, was met four years early. Senate Bill 32 (SB 32), passed in 2016, set an emission reduction goal of 40% below 1990 levels by 2030.[2]

AB 32 and its subsequent legislation remain popular with Californians, demonstrating that good policy can be both effective and successful. Twenty years later, 75% of Californians still support the state reducing greenhouse gas emissions in line with the goals set by the Global Warming Solutions Act of 2006 and subsequent legislation. About two in three favor the state government making its own policies separate from the federal government on climate change. 60% favor requiring that all electricity come from renewable energy by 2045.[3]

The culmination of decades of climate work at the state and local levels, AB 32 represented a critical stepping stone in California's emergence as a global climate leader, laying the foundation for increasingly ambitious climate policies and demonstrating that meaningful climate solutions could be achieved at the state level. It laid the groundwork for future climate policy, encouraged climate innovation, provided clean technology jobs across the state, and has led to robust economic benefits – all while reducing emissions. Since its passage in 2006, California's GDP per capita has grown by 41% (as of 2023) while GHG emissions per capita fell by 29%.[4] California's climate initiatives have made our energy services more reliable while inspiring imitators worldwide and helping to catalyze a remarkable twenty-year U.S. clean energy transition that has delivered dramatic economic and environmental gains for the entire nation.

California's climate leadership also spurred action beyond our borders as AB 32 was intended to be the beginning of a global movement toward climate action. One such example of California's global climate leadership is the International Carbon Action Partnership (ICAP), established in 2007 by more than 15 signatories – a key leader being then-governor Arnold Schwarzenegger – as an international forum for governments that have implemented or are planning to implement emissions trading systems.[5] At the time of its inception California was evaluating options to achieve its 2020 greenhouse gas emissions target, and Europe had just launched the world's first ever emissions trading system. As these systems have developed over time, ICAP has been an important venue for sharing

1 "AB 32: California Global Warming Solutions Act of 2006." *California Legislative Information,* 27 Sept. 2006. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32

2 "SB 32: California Global Warming Solutions Act of 2006: emissions limit." *California Legislative Information,* 8 Nov. 2016. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32

3 Baldassare, M. et al., "PPIC Statewide Survey: Californians and the Environment." *Public Policy Institute of California,* July 2026. Available at: https://www.ppic.org/?show-pdf=true&docraptor=true&url=https%3A%2F%2Fwww.ppic.org%2Fpublication%2Fppic-statewide-survey-californians-and-the-environment-july-2026

4 "Figure 6. Greenhouse Gas Emissions and Gross Domestic Product, California Relative Trends Since 1990." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-6/

5 "About ICAP." *International Carbon Action Partnership.* Available at: https://icapcarbonaction.com/en/about-icap

information between jurisdictions, providing support to emerging systems and strengthening the programs of all signatories. Today, ICAP has 36 full members and 9 observers.[6]

Since then, the state has gone on to establish the Western Climate Initiative (WCI) with Québec, join 10 European and North American governments as founding partners of the International ZEV Alliance to accelerate the world's adoption of ZEVs, sign the Under 2 Memorandum of Understanding (Under2MOU) agreeing to limit global temperature rises below 2°C, and create climate-related agreements with various foreign governments, including China's Ministry of Science and Technology to reduce emissions through investments in emerging clean technologies.[7, 8, 9, 10]

Within the U.S., California Governor Brown, New York Governor Cuomo, and Washington Governor Inslee established the U.S. Climate Alliance to reduce emissions in response to President Donald Trump's announcement to withdraw from the Paris Climate Agreement in 2017 (before the U.S. formally withdrew in 2020). Today, the Alliance includes governors from 24 states and territories, representing approximately 55% of the U.S. population, and 60% of the U.S. economy.[11]

Other key achievements of AB 32 and subsequent legislation include:

- Met goal of reducing emissions to 1990 levels by 2020 four years ahead of schedule.[12]
- Achieved 1 million solar roofs in December 2019 with over 3,000 MW of rooftop solar capacity installed.[13] By the end of 2023, the state had over 2 million solar roofs and similar small systems with nearly 16,000 MW of capacity.[14]
- Achieved 100% clean electricity for periods on time on 219 and 279 days in 2024 and 2025, respectively.[15]
- Increased installed utility-scale solar generation by 7,847% from 2008 to 2024.[16]
- Installed over 21,000 MW of battery storage by mid-2026, an increase of 2,500% since 2019 and 41% of the way toward meeting the state's goal of installing 52,000 MW of battery storage by 2045.[17]
- Achieved 2.7 million electric vehicles sold in California as of July 2026.[18]
- From 2018 to Q2 2024, clean tech investments in California totaled $191 billion – the most of any state.[19]

6 "15-year Anniversary of ICAP." *International Carbon Action Partnership*. Available at: https://icapcarbonaction.com/en/15-year-anniversary-icap

7 "Our Work." *Western Climate Initiative*. Available at: https://wci-inc.org/

8 "2026 Focus Areas." *ZEV Alliance*. Available at: https://zevalliance.org/focus-areas/

9 "Under2 Memorandum of Understanding." *The Climate Group*. Available at: https://www.theclimategroup.org/under2-memorandum-understanding

10 "China and California sign deal to work on climate change without Trump." *The Guardian,* 6 Jun. 2017. Available at: https://www.theguardian.com/us-news/2017/jun/07/china-and-california-sign-deal-to-work-on-climate-change-without-trump

11 "About Our Coaliton." United States Climate Alliance. Available at: https://usclimatealliance.org/about/

12 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

13 "California Celebrates Reaching One Million Solar Roofs Milestone; New Focus On "One Million Solar Batteries" Goal." *California Solar + Storage Association*, 12 Dec. 2019. Available at: https://calssa.org/press-releases/2019/12/12/california-celebrates-reaching-one-million-solar-roofs-milestone-new-focus-on-one-million-solar-batteries-goal

14 "California's Clean Energy Journey." *California Energy Commission*. Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

15 "Tracking Progress Towards 100% Clean Energy." *California Energy Commission*. Available at: https://www.energy.ca.gov/data-reports/clean-energy-serving-california/tracking-progress-toward-100-clean-energy

16 "Figure 29. California Renewable Electricity Generation." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/renewable-energy/figure-29/

17 "California surpasses 21,000 megawatts of battery resources supporting the state's electric grid." *Office of Governor Gavin Newsom,* 7 Aug 2026. Available at: https://www.energy.ca.gov/news/2026-08/california-surpasses-21000-megawatts-battery-resources-supporting-states

18 "New ZEV Sales in California." *California Energy Commission*. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/new-zev

19 "Clean Energy Investment in Every State." *Climate Central*. Available at: https://www.climatecentral.org/climate-matters/clean-energy-investment-in-every-state

- Created 552,300 clean energy jobs in California as of 2024 – the most of any state in the U.S. and nearly twice the second-ranked state (Texas).[20]
- 51% of California's electricity in May 2026 was produced by solar (utility-scale and rooftop) – the first time the clean energy source surpassed the halfway mark for an entire month and the first global economy to do so.[21]
- California set the first energy efficiency policies in the U.S. in the 1970s and those rules have saved Californians more than $200 billion in energy costs and inspired similar standards across the country.[22]
- Awarded over $21.6 billion through the cap-and-trade program to fund CCI programs to support over 143,000 jobs cumulatively.[23]

Economic Benefits

Funding from AB 32's cap-and-trade program, known as California Climate Investments (CCI) when invested in climate-related programs, has led to robust economic benefits across the state. Since its inception in 2014, the cap-and-trade program has raised over $36.2 billion as of July 2026 for climate projects across the state with $16 billion returned to residents and small businesses through the California Climate Credits program that provides a twice-yearly credit on electricity bills to all customers.[24] So far, CCI has implemented more than $15.5 billion across more than 604,891 projects since the Legislature first appropriated funds from cap-and-trade in 2014—making major investments in affordable housing, low-carbon transportation, forest health, community air protection, and more – while supporting over 143,000 jobs.[26] This includes building 17,776 new homes, of which 16,638 are affordable, and making investments that will lead to a 115.3 billion reduction in vehicle miles traveled over the project lifetimes.[27] Over the lifetime of projects, California Climate Investments will have also resulted in $44 billion in estimated cost savings from reduced travel costs like fuel and parking, along with energy cost savings from energy efficiency and clean energy projects.[28] The energy cost savings alone are expected to be $9.9 billion.[29] All together, these programs are projected to reduce GHG emissions by an estimated 130.5 million metric tons of carbon-dioxide equivalent ($MMTCO_2e$) over the project lifetimes.[30] The 2022 Scoping Plan forecasts that all of the state's climate action will help grow California's GDP to $5.1 trillion by 2045, up from $3.2 trillion in 2021, while creating an estimated 4 million jobs.[31]

Figure ES1. California Climate Investments

CALIFORNIA CLIMATE INVESTMENTS

$15.5 billion across more than 604,891 projects. Making investments in affordable housing, low carbon transportation, forest health, community protection and more.

Source: 2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds, California Climate Investments[25]

20 "Clean Jobs California Factsheet." *E2,* Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

21 McCarthy, Dan. "California was mostly solar-powered in May – a global first." *Canary Media,* 31 July 2026. Available at: https://www.canary-media.com/articles/solar/california-solar-power-record-may

22 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

23 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* July 2026 (p.9, 21). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

24 Ibid. (p.31)

25 Ibid.

26 Ibid. (p.9, 21)

27 Ibid. (p.12)

28 Ibid. (p. 9)

29 Ibid. (p. 12)

30 Ibid. (p. 9)

31 "CARB approves unprecedented climate action plan to shift world's 4th largest economy from fossil fuels to clean and renewable energy." *California Air Resources Board,* 12 Dec. 2022. Available at: https://ww2.arb.ca.gov/news/carb-approves-unprecedented-climate-action-plan-shift-worlds-4th-largest-economy-fossil-fuels/printable/print

Other CCI highlights include:

- As of April 2026, the Clean Truck and Bus Voucher Incentive Project (HVIP) has delivered more than $1 billion in funding to California fleets – supporting more than 2,000 fleets, enabling the deployment of 11,600 clean vehicles, and accumulating 181 million miles statewide.[32]
- Since June 1, 2025, the Clean Cars 4 All program has implemented $241 million (out of over $500 million allocated) to provide 26,900 vehicles to recipients. This is estimated to have led to reductions of 6.7 tons of particulate matter (PM), 47.5 tons of hydrocarbon (HC) and reactive organic gases (ROG), 281.2 tons of oxides of nitrogen (NOx), and 221,100 metric tons of carbon dioxide-equivalent (CO_2e).[33]
- As of November 2025, $315.6 million from the Safe and Affordable Drinking Water Fund (SADW) had been implemented across 142 projects with nearly all of the funding ($314 million) benefiting priority populations.[34] In 2025, the full $78.2 million allocated went to disadvantaged communities and supported 72 full-time jobs.[35]
- According to the 2024 Annual Progress Report, the Community Air Protection Program (CAP) has spent $1.4 billion on more than 9,000 incentive projects since 2017 – reducing over 23,000 tons of oxides of nitrogen (NOx), 950 tons of particulate matter (PM), and 282,600 metric tons of greenhouse gas (GHG) emissions statewide.[36, 37]
- In 2025, Governor Newsom announced that CARB has directed $632 million in cap-and-trade funds to more than 9,000 local-level air-quality improvement projects since 2017, with 85% of the funding reaching disadvantaged and low-income communities, to reduce harmful air pollutants and emissions by replacing old diesel equipment and upgrading vehicles, among other actions.[38]

Outside of CCI funds, the economic benefits of California's climate commitments and investments in climate programs have led to robust job growth across emerging industries such as, solar, wind, energy efficiency, electric vehicles, and biofuels. In 2024, California led the U.S. in total clean energy jobs with 552,300 workers employed across these technologies – nearly twice as many as the second-ranked state, Texas. The amount of California workers in clean vehicle jobs grew by 58.3% by 2022 and 75.4% by 2024 compared to 2020, representing a huge shift towards electric vehicle production across the state. Notably, more than seven times as many workers were employed in clean energy jobs than in the fossil fuel industry (80,600) in 2024 and 79% of all new energy jobs in California are clean energy jobs.[39] Since 2014, integration of California's grid with other states in the West has also resulted in

32 "Clean Truck and Bus Voucher Incentive Project." *California HVIP.* Available at: https://californiahvip.org/

33 "Outcomes and Results for Clean Cars 4 All." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/clean-cars-4-all/outcomes-and-results-clean-cars-4-all

34 "Safe and Affordable Drinking Water Fund." *California State Water Resources Control Board.* Available at: https://www.caclimateinvestments.ca.gov/safer-drinking-water

35 "FY 2025-26 Fund Expenditure Plan, Safe and Affordable Drinking Water Fund." *California Climate Investments and the California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water_issues/programs/grants_loans/docs/2025/fy2025-26-fep-final-1125.pdf

36 "Community Air Protection Incentives Factsheet." *California Air Resources Board,* May 2024. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-12/CAP%20Incentives%20Fact%20Sheet%20Nov2023%20English.pdf

37 "Community Air Protection Program Annual Progress Report." *California Air Resources Board*, July 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/2025-06/OCAP_APR2024_Final.pdf

38 "New report shows Cap-and-Invest dollars are improving air quality in California's most polluted communities." *Office of Governor Gavin Newsom,* 25 July 2025. Available at: https://www.gov.ca.gov/2025/07/25/new-report-shows-cap-and-invest-dollars-are-improving-air-quality-in-californias-most-polluted-communities/?utm_source=chatgpt.com

39 "Clean Jobs California Factsheet." *E2,* Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

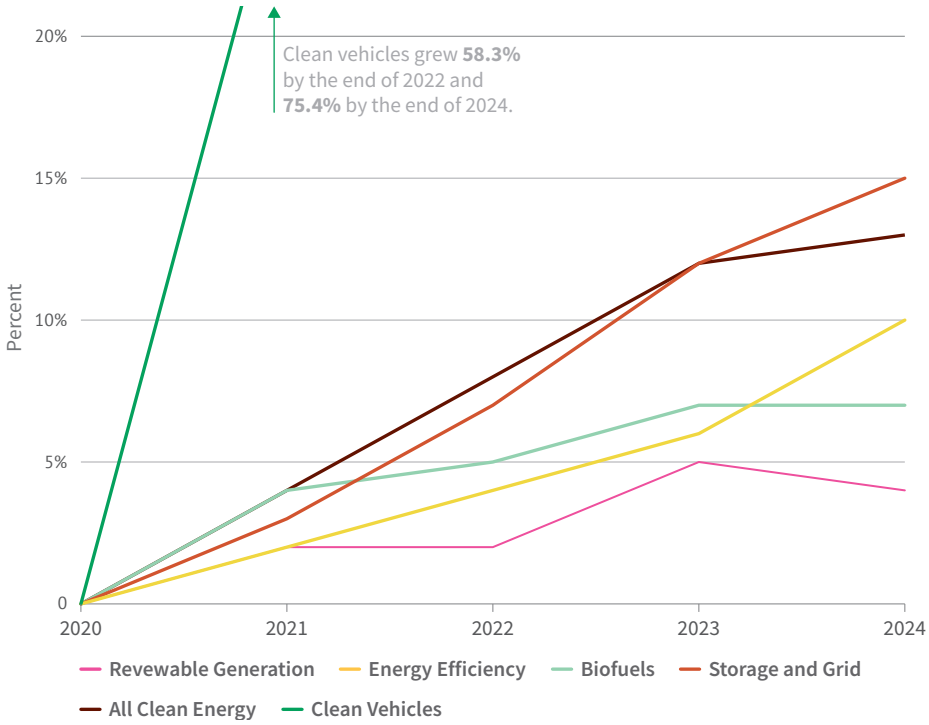
$9 billion in economic benefits while reducing emissions by 1.18 $MMTCO_2e$, roughly equivalent to emissions from 236,276 passenger cars driven for a year.[40, 41]

Environmental Benefits

Since the passage of AB 32 in 2006, California has made tremendous progress by reducing total statewide emissions of greenhouse gases 23.3% as of 2023 (the latest year for which data is available).[42] In 2006, California was the 12th-largest emitter of greenhouse gas emissions in the world, just after Mexico.[43, 44] In 2023, California stood as the 20th-largest, producing fewer emissions than smaller economies such as Brazil, Australia, and Indonesia.[45]

The largest source of emissions in the state comes from the transportation sector. Despite this, emissions from that sector had fallen by 26.7% from 2006 to 2023.[46] Within the sector, emissions from passenger vehicles and heavy-duty vehicles have seen reductions of 19.7% and 45.3%, respectively.[48]

Figure ES2. California Energy Employment Growth by Clean Energy Sector



Source: Clean Jobs California Factsheet, E2[47]

These reductions are largely due to policies like the Low Carbon Fuel Standard (LCFS), created in response to AB 32 goals coupled with subsequent efforts to electrify transportation and improvements in fuel economy through regulations developed in California. Assembly Bill 1493 (AB 1493), passed in 2002, was the first measure passed in the U.S. to

40 "Western Energy Markets Quarterly Benefits Report debuts with first Extended Day-Ahead Market results." *CAISO,* 30 July 2026. Available at: https://www.caiso.com/about/news/news-releases/western-energy-markets-quarterly-benefits-report-debuts-with-first-extended-day-ahead-market-results

41 "Western Energy Imbalance Market continues to deliver with over $8.6 billion in total benefits to date." *CAISO,* 28 Apr. 2026. Available at: https://www.caiso.com/about/news/news-releases/western-energy-imbalance-market-continues-to-deliver-with-over-8-6-billion-in-total-benefits-to-date

42 "Figure 1. Total California Greenhouse Gas Emissions." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

43 "GHG emissions of all world countries." European Commission. Available at: https://edgar.jrc.ec.europa.eu/report_2024

44 Pavely, F., "California Climate Change." *California Coastal Commission,* Dec. 2006. Available at: https://documents.coastal.ca.gov/climate/gw-12-2006-pavley.pdf

45 "International Scorecards" *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/international-scorecards/

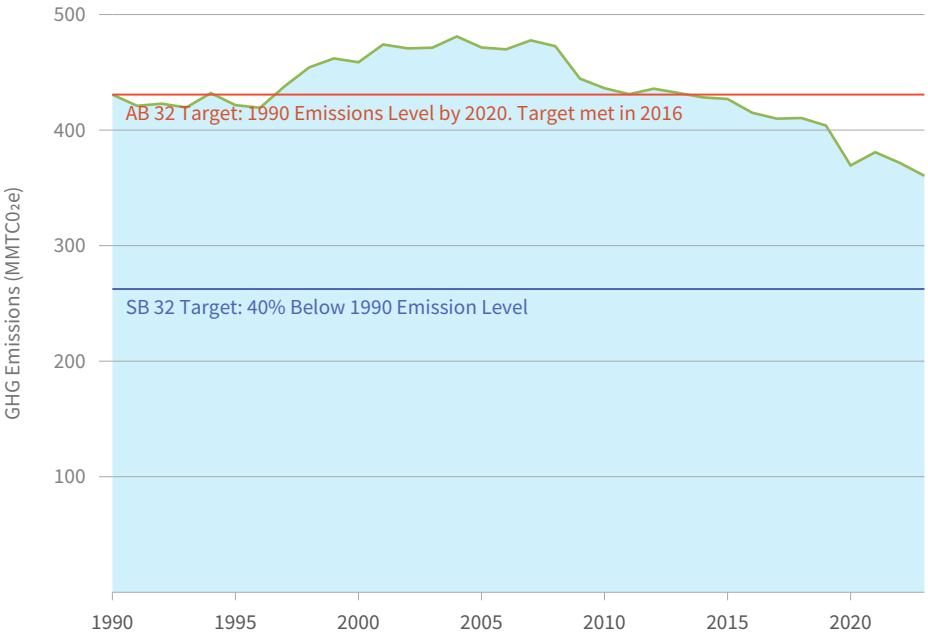
46 "2025 California Green Innovation Index." *Next 10,* 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/

47 "Clean Jobs California Factsheet." *E2,* Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

48 "Figure 2. Green House Gas Emission by Source." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-2/

regulate emissions from passenger vehicles and an important precursor to AB 32. It ultimately led to the creation of national emission standards in 2009.[49] In 2012, the state set a goal of 1.5 million ZEVs on California roads by 2025 – a goal that California met in 2023 – and introduced the Advanced Clear Cars rules that set more stringent tailpipe emissions standards for cars model years 2017 through 2025.[50, 51] Meanwhile, the LCFS has been largely responsible for the significant reduction in emissions from heavy-duty vehicles.[52]

Figure ES3. Total California Greenhouse Gas Emissions, 1990-2023



Source: 2025 California Green Innovation Index, Next 10[55]

The state has also made enormous progress in decarbonizing the electric power sector since 2006, due to the state's renewable portfolio standard and subsequent clean electricity policies. Emissions from electricity generation overall have fallen by 45.2%, with those from electricity imported from neighboring states falling by 70.9% and those from in-state generation dropping by 17.4%. These reductions are a testament to the regulations put in place to meet the AB 32 goal.[53] Emissions have also fallen by 15.4% and 18.4% in the agriculture and industrial sector, respectively.[54]

In combination, utility-scale and rooftop solar panels produced 51% of California's electricity in May 2026 – the first time the clean energy source surpassed the halfway mark for an entire month. This milestone is particularly notable as California is the world's first major economy to cross the 50% threshold (Hungary came the closest at 47% in June 2025, though it has a far smaller GDP). Better still, solar outproduced natural gas not only during May, but throughout every month in 2026 leading up to it too. Achieving this milestone would not have been possible without batteries to store the excess solar energy so it can be used later in the evening.[56]

49 "California's Greenhouse Gas Vehicle Emission Standards under Assembly Bill 1493 of 2002." *California Air Resources Board*. Available at: ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley

50 "Figure 21. Trends in Zero-Emission Vehicle Registrations and Projected Needs to Meet 2025 and 2030 Goals."*Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/transportation/figure-21/

51 "California Air Resources Board Releases Proposed Advanced Clean Car Rules." *California Air Resources Board,* 7 Dec. 2011. Available at: https://ww2.arb.ca.gov/news/california-air-resources-board-releases-proposed-advanced-clean-car-rules

52 "Figure 2. Green House Gas Emission by Source." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-2/

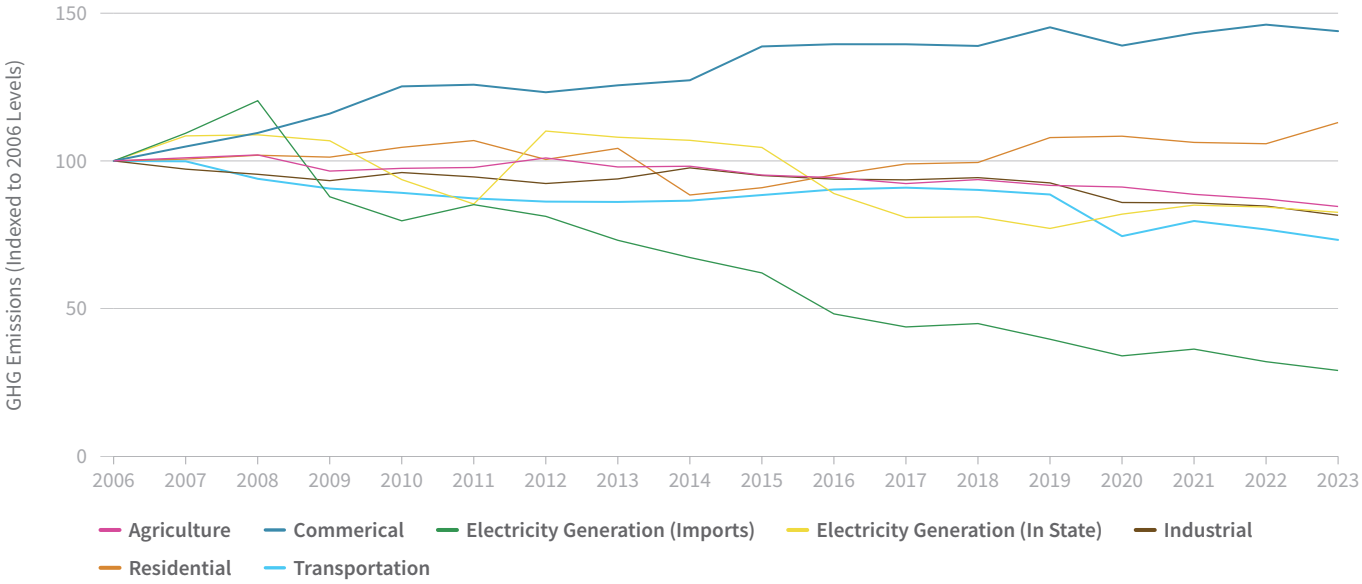
53 "The Economic Impact of AB 32 on Localities." *The Union of Concerned Scientists,* 7 Dec. 2010. Available at: https://www.ucs.org/resources/economic-impact-ab-32-localities

54 "Figure 3. GHG Emissions Indexed to 2006 Levels." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-3/

55 "Figure 1. Total California Greenhouse Gas Emissions." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

56 McCarthy, Dan. "California was mostly solar-powered in May – a global first." *Canary Media,* 31 July 2026. Available at: https://www.canarymedia.com/articles/solar/california-solar-power-record-may

Figure ES4. Greenhouse Gas Emissions (Indexed to 2006 Levels)



Source: 2025 California Green Innovation Index, Next 10[57]

As of August 2026, battery storage across the state had increased by 2,500% since 2019 to over 21,000 MW of battery storage—41% of the way to the 2045 goal.[58] 21,000 MW is equivalent to roughly one-third of the statewide peak demand, which exceeded 63,000 MW during the September 2022 heat wave.[59] The world's largest battery storage project, Edwards & Sanborn, is in Kern County.[60]

Despite this progress, California still has a long way to go to meet its ambitious climate targets. In order to meet the SB 32 (2016) goal to further reduce GHG emissions to 40% below the 1990 levels by 2030, California must achieve an annual average reduction of 4.4% as of 2023 – nearly double the average annual reduction from 2019 to 2023 of 2.8%. At this rate, the state is on track to reach its SB 32 goal in 2035.[61]

Subsequent Legislation

Innovative climate policies followed the passage of AB 32 to achieve the state's climate goals and the policies outlined in the Scoping Plans. **SB 375** (2008), the Sustainable Communities and Climate Protection Act directed the California Air Resources Board (CARB) to set regional targets for reducing greenhouse gas emissions from passenger vehicles consistent with AB 32, providing the basis for inter-agency collaboration (with a focus on land use policies) across the state.[62]

The 2008 Scoping Plan led to the creation of the **Low Carbon Fuel Standard** (LCFS), designed to reduce emissions from mobile sources (transportation fuels), that assigns transportation fuels a carbon intensity score and fuel suppliers must gradually lower the average carbon

57 Figure 3. GHG Emissions Indexed to 2006 Levels." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-3/

58 "California surpasses 21,000 megawatts of battery resources supporting the state's electric grid." *Office of Governor Gavin Newsom,* 7 Aug 2026. Available at: https://www.energy.ca.gov/news/2026-08/california-surpasses-21000-megawatts-battery-resources-supporting-states

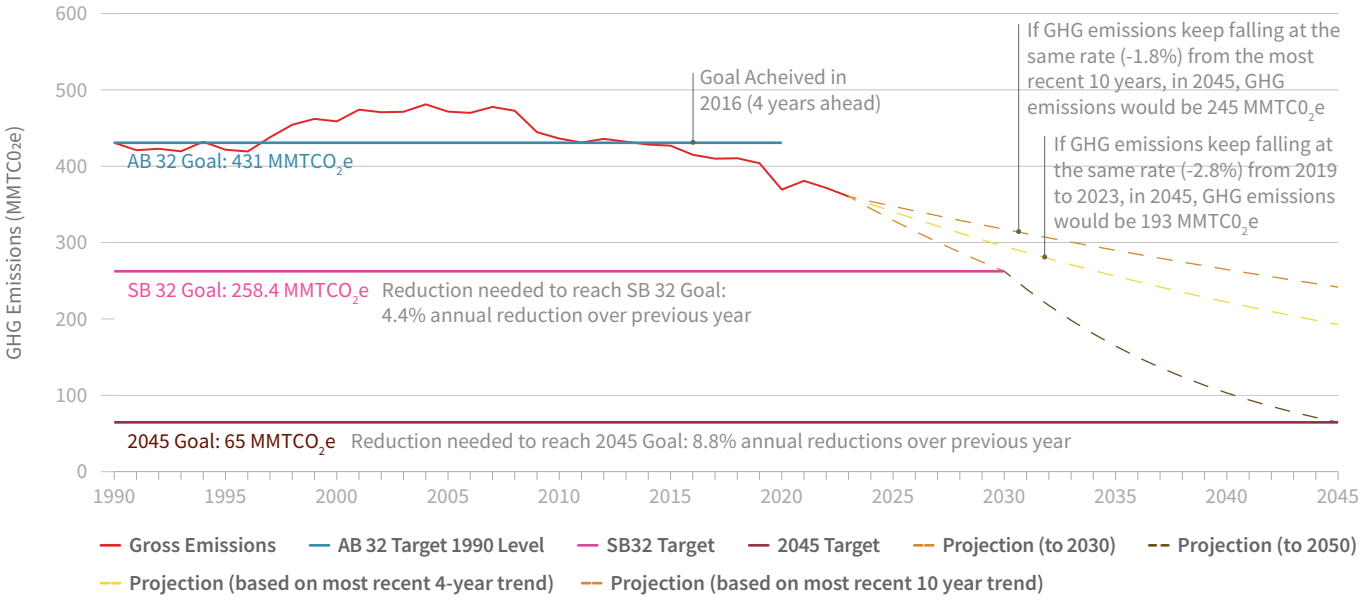
59 Ibid.

60 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

61 "2025 California Green Innovation Index." Next 10, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/

62 "The Basics of SB 375." *Institute for Local Government*. Available at: https://www.ca-ilg.org/post/basics-sb-375

Figure ES5. Greenhouse Gas Emissions and Projected Reduction Goals



Source: 2025 California Green Innovation Index, Next 10[63]

intensity of all fuels they sell in California over time.[64] **Executive Order B-16-12** (2012), signed by Governor Jerry Brown, built on the goals of his predecessor Arnold Schwarzenegger by establishing long-term milestones to facilitate the commercialization of zero-emission vehicles (ZEVs), including a target of 1.5 million ZEVs on the road by 2025.[65] That same year, CARB adopted **Advanced Clean Cars I,** regulations to control motor vehicle emissions through 2025 model years.[66] **SB 32** (2016), the California Global Warming Solutions Act of 2016, expanded upon AB 32 to set a new target to reduce GHG emissions to 40% below the 1990 levels by 2030.[67] In order to achieve these goals, new legislation was crucial. **SB 100** set the most ambitious Renewable Portfolio Standard (RPS) goals of achieving 60% of the state's electricity from carbon-free sources by 2030 and 100% by 2045.[68] In 2022, the **California Climate Crisis Act** (AB 1279) codified the state's goal to reach net-zero greenhouse gas (GHG) emissions by 2045, requiring reductions of at least 85% below 1990 levels.[69] Most recently, **AB 1207** (2025) reauthorized and extended the state's cap-and-trade program through December 31, 2045 while renaming it "Cap-and-Invest" – recommitting to the goals established by AB 32 and pushing California to continue leading the transition to a clean economy.[70]

63 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

64 "Low Carbon Fuel Standard." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

65 "Zero-Emission Vehicles Over the Years." *California Business and Economic Development.* Available at: https://business.ca.gov/industries/zero-emission-vehicles/zev-timeline/

66 "Advanced Clean Cars." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/drive-forward-light-duty-vehicle-program/advanced-clean-cars#:~:text=Advanced%20Clean%20Cars%20I,and%20greenhouse%20gases%20(LEV%20III)

67 "SB 32: California Global Warming Solutions Act of 2006: emissions limit." *California Legislative Information,* 8 Nov. 2016. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32

68 "SB 100: California Renewables Portfolio Standard Program: emissions of greenhouse gases." *California Legislative Information,* 10 Sept. 2018. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

69 "AB 1279: The California Climate Crisis Act." *California Legislative Information,* 19 Sept. 2022. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279

70 "AB 1207 Climate change: market-based compliance mechanism extension." *California Legislative Information,* 22 Sept. 2025. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260AB1207

National Leadership

As California continues to work to achieve these goals, California's leaders have shown continued commitment to advancing climate policies and achieving goals set by previous administrations. AB 32 has served as a model for multiple state level greenhouse gas emissions regulations as Hawaii, New Jersey, Massachusetts, and Connecticut all implemented their own versions of the Global Warming Solutions Act, shortly after California's implementation.[71, 72, 73, 74] California's Cap-and-Invest program, formerly known as Cap-and-Trade, was adopted by Washington state as well as Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont through the Regional Greenhouse Gas Initiative (RGGI).[75] In addition to the replication of AB 32, Oregon, Washington, New Mexico, and Hawaii have implemented versions of California's Low Carbon Fuel Standard and 17 states and the District of Columbia are beneficiaries of California's Clean Air Act Waiver, preempting standard federal regulations to set stricter tailpipe emission and zero-emission vehicle (ZEV) standards under Section 117.[76] This has been monumental as "Section 177 States" accounted for 40% of new light-duty vehicle registrations and 28% of new heavy-duty vehicle registrations in the United States in 2025.[77] Despite this, the federal government has recently attempted to revoke California's Clean Air Act Waiver, defying decades of precedent and affecting California, the District of Columbia, and 17 other states.[78]

71 "AB 234 H.B. NO. 226." *Legislature of the State of Hawaii,* 30 June 2007. Available at: https://health.hawaii.gov/cab/files/2023/05/SLH2007_Act234.pdf

72 "Greenhouse Gas Emissions Goals." *New Jersey Department of Environmental Protection*. Available at: https://dep.nj.gov/ghg/ghg-emissions-goals/

73 "Global Warming Solutions Act Background." *Massachusetts Executive Office of Energy and Environmental Affairs.* Available at: https://www.mass.gov/info-details/global-warming-solutions-act-background

74 "Public Act 08-98: An Act Concerning Connecticut Global Warming Solutions." *Connecticut State Legislature,* 2008. Available at: https://www.cga.ct.gov/2008/SUM/2008SUM00098-R03HB-05600-SUM.htm

75 "The Regional Greenhouse Gas Initiative, an initiative of the Eastern States of the US." *RGGI, Inc.* Available at: https://www.rggi.org/

76 "States Adopting CARB Emission Standards." Fuel2Electric. Available at: https://www.fuel2electric.com/states-adopting-carb-emission-standards

77 "States that have Adopted California's Vehicle Regulations." *California AIr Resources Board.* Available at: https://ww2.arb.ca.gov/states-have-adopted-californias-vehicle-regulations

78 "'Assault on California continues': Governor Newsom sues Trump over illegal attempt to revoke state's clean air policies." *Office of Governor Gavin Newsom,* 12 July 2025. Available at: https://www.gov.ca.gov/2025/06/12/assault-on-california-continues-governor-newsom-sues-trump-over-illegal-attempt-to-revoke-states-clean-air-policies/

ASSEMBLY BILL NO. 32

CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

I. INTRODUCTION

NEXT 10

USC Schwarzenegger Institute for State and Global Policy

In 1966, California established the first tailpipe emission standards in the nation and the California Air Resources Board (CARB) was created a year later.[79]

In 1970, the U.S. passed the Clean Air Act to address emissions and air pollution across the country. Due to California's heavy smog, particularly in Los Angeles, the state received a waiver to set stricter tailpipe emissions than the national standard which it still maintains to this day – despite recent federal attempts to revoke it. In 2002, the state passed its first Renewable Portfolio Standard (RPS), setting increasing targets for generating electricity from renewable energy. Assembly Bill 1493 (AB 1493), also passed in 2002, mandated that the California Air Resources Board (CARB) develop and implement limits on greenhouse gas emissions from vehicles beginning with model year 2009.[80] It was the first measure passed in the U.S. to regulate emissions from passenger vehicles and ultimately led to the creation of national emission standards in 2009 during the Obama administration.[81]

By 2005, Governor Arnold Schwarzenegger gave a speech in San Francisco declaring the debate on climate change was "over" and he signed Executive Order S-3-05, which laid out a series of goals and target dates to reduce California's emissions of greenhouse gases.[82]

At the time, California was the 12th-largest emitter in the world. Lawmakers and experts were acutely aware of the economic, public health, and environmental cost of inaction on climate change – in no small part due to the findings of the first California Climate Assessment in 2006.[83, 84] These impacts would translate into real costs for Californians including flood damage, crop loss, water scarcity, and wildfire destruction resulting in inflation, job losses, and adverse health outcomes across the state.[85] California leaders also understood that there was an economic opportunity and other benefits to acting on climate change. By investing in renewable energy, clean transportation, energy efficiency, and green tech innovation, California would make energy services more reliable and affordable while creating jobs in new industries.

The culmination of decades of bipartisan work and collaboration between experts, policymakers, and advocates led lawmakers to pass the Global Warming Solutions Act of 2006, establishing the nation's first comprehensive program to reduce the greenhouse gas emissions causing climate change and harmful air pollution while supporting economic growth and technological innovation. It served as a critical stepping stone in California's emergence as a global climate leader, laying the foundation for increasingly ambitious climate policies and demonstrating that meaningful environmental action could be achieved at the state level. AB 32 proves that the government can set ambitious climate goals, create multifaceted implementation plans, and achieve widespread success across sectors – all while growing the economy. Twenty years later, 75% of Californians support the state in reducing greenhouse gas emissions in line with the goals set by the Global Warming Solutions Act of 2006 and subsequent legislation.[86]

1.1 Overview of Assembly Bill 32

In 2006, the California Legislature passed Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006, co-authored by Assemblymember Fran Pavley and Speaker of the Assembly Fabian Nunez. It was signed

79 "California Air Resources Board History." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/about/history

80 "California's Greenhouse Gas Vehicle Emission Standards under Assembly Bill 1493 of 2002." *California Air Resources Board.* Available at: ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley

81 Ibid.

82 Krakoff, S., "Arnold Schwarzenegger and Our Common Future." *Buffalo Law Review,* 29 Nov. 2005. Available at: https://lawweb.colorado.edu/profiles/pubpdfs/krakoff/KrakoffBuffLR.pdf

83 Pavely, F., "California Climate Change." *California Coastal Commission,* Dec. 2006. Available at: https://documents.coastal.ca.gov/climate/gw-12-2006-pavley.pdf

84 "About the Assessment." *California's Fourth Climate Assessment*. Available at: https://www.climateassessment.ca.gov/about/

85 Kosmala-Dahlbeck, K. et al. "Costs of Climate Change: Financial and Economic Impacts on California and U.S. Households." *Next 10,* 25 Sept. 2025. Available at: www.next10.org/publications/costs-of-climate-change

86 Baldassare, M. et al., "PPIC Statewide Survey: Californians and the Environment." *Public Policy Institute of California,* July 2026. Available at: https://www.ppic.org/?show-pdf=true&docraptor=true&url=https%3A%2F%2Fwww.ppic.org%2Fpublication%2Fppic-statewide-survey-californians-and-the-environment-july-2026

into law by Governor Arnold Schwarzenegger on September 27, 2006.[87] In the first bill of its kind, it established a cap on statewide GHG emissions and directed CARB to establish regulations to meet this cap, authorizing CARB to implement a market-based mechanism to control emissions. In 2010, California created a cap-and-trade program—effectively putting a price on carbon emissions. The program puts a cap on the emissions of large emitters, such as power plants and large industrial facilities, and allowances are auctioned off quarterly to cover their emissions under the cap. Some allowances are also allocated at no cost to entities like utilities. The money raised from the auctions is deposited into the Greenhouse Gas Reduction Fund (GGRF) and used to fund climate-related projects across the state. These funds are then appropriated by the legislature to the California Climate Investments fund for various uses, with five agencies receiving approximately 65% of the proceeds from each quarterly Cap-and-Invest auction through continuous appropriations and additional programs allocated through the legislative appropriations cycle.[88] The 2026-27 budget set new allocation standards for GGRF funding, prioritizing the High-Speed Rail project over other programs such as the Affordable Housing and Sustainable Communities Program, Community Air Protection Program, and the Low Carbon Transit Operations Program.[89]

California linked its cap-and-trade program with the Canadian province of Québec's beginning on January 1, 2014 and the linked jurisdictions hold auctions together.[90] Sources of greenhouse gases in each jurisdiction can use allowances issued under either program and it is an important step forward in developing international cooperative mechanisms to address climate change.[91] In 2024, it was announced that Washington's cap-and-trade program would pursue linkage with California and Québec and an agreement was reached in June 2026. The joint program is expected to begin operating in 2027.[92]

In addition to putting a price on carbon through the cap-and-trade program, it also set emissions targets for the state to meet through a combination of regulations, incentives and these market mechanisms. The first target required California to reduce emissions to 1990 levels by 2020—a target that was met four years early in 2016. To meet these targets, it required the creation of a Scoping Plan that would specify how the emissions reductions would be achieved. The Scoping Plan is updated every five years, with the first one released in 2008 and the next one scheduled for 2027.

The first scoping plan in 2008 was a roadmap developed by CARB to achieve the AB 32 goal of reducing greenhouse gas emissions to 1990 levels by 2020. This plan outlined a variety of strategies designed to "reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health."[93] The Scoping Plan also expanded and strengthened California's energy efficiency programs as a significant way to reduce emissions. It established efficiency targets of 32,000 gigawatt-hours (GWh) of electricity savings and 800 million therms of natural gas

87 "AB 32: California Global Warming Solutions Act of 2006." *California Legislative Information,* 27 Nov. 2006. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32

88 "California Climate Investments - About." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/california-climate-investments/about

89 "The 2026-27 Budget Cap-and-Invest Expenditure Plan." *Legislative Analyst's Office,* 10 Feb. 2026. Available at: https://lao.ca.gov/Publications/Report/5114

90 "Cap-and-Trade Program Linkage." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-linkage

91 "The California-Quebec Adventure: Linking Cap and Trade as a Path to Global Climate Action?" *UCLA Law,* 31 Mar. 2014. Available at: https://law.ucla.edu/academics/centers/emmett-institute-climate-change-environment/california-quebec-adventure

92 Swanson, C. "Wa to Agree to Link Carbon Markets with Ca, Quebec." *The Seattle Times,* 23 June 2026. Available at: https://www.seattletimes.com/seattle-news/climate-lab/wa-to-agree-to-link-carbon-markets-with-ca-quebec/

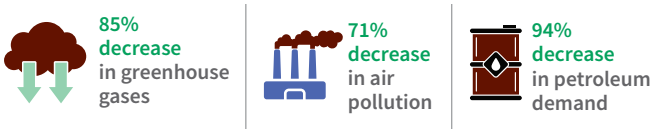
93 "Climate Change Scoping Plan." *California Air Resources Board,* Dec. 2008. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf?_gl=1*vcfhbv*_ga*MTI5NTk4NDI1MS4xNzczOTUwNzk3*_ga_7M1ZZPXDBL*czE3ODEwNDA4NDQkbzE0OCRnMSR0MTc4MTA0MTQ4MyRqNTQkbDAkaDA.

savings by 2020.[94]

The most recent AB 32 Climate Change Scoping Plan, released in 2022, lays out the path to carbon neutrality and to reduce anthropogenic greenhouse gas emissions by 85% below 1990 levels by 2045.[95] Previous scoping plans focused on specific greenhouse gas (GHG) reduction targets for industrial, energy, and transportation sectors. The 2022 plan added carbon neutrality as a science-based guide, outlining how it can be achieved by taking bold steps to reduce GHGs to meet the 2045 emissions target and by expanding actions to capture and store carbon through the state's natural and working lands.[96] California must employ a wide array of strategies to achieve these ambitious targets: move to zero-emission transportation; improve energy efficiencies throughout the economy; phase out the use of fossil gas used for heating; reduce the use of chemicals and refrigerants, the fastest-growing source of GHG emissions in California;[97] support walking, biking, and public transit to reduce reliance on cars; and build out renewable energy sources to displace fossil fuels. Successfully achieving the outcomes called for in this Scoping Plan would reduce demand for liquid petroleum by 94% and total fossil fuel by 86% percent in 2045 relative to 2022.[98]

AB 32 also led to the creation of the Low Carbon Fuel Standard (LCFS) by CARB, a state regulation designed to reduce emissions from mobile sources (transportation fuels), similar to how the cap-and-trade program reduces emissions from stationary sources. Instead of banning specific fuels, it assigns each fuel a carbon intensity score and fuel suppliers must gradually lower the average carbon intensity of all fuels they sell in California over time. It incentivizes the production of low-carbon fuels, such as electricity, hydrogen, and biofuels, to displace petroleum-based fuels like gasoline and diesel. It also operates on a market-based system where high-carbon fuels create deficits and low-carbon fuels create credits. Companies must balance their deficits with credits or buy credits from other producers.

Figure 1. 2022 Scoping Plan Outcomes



Source: 2022 Scoping Plan for Achieving Carbon Neutrality Executive Summary, California Air Resources Board[99]

Overall, these mandates have set California on a path of national and global climate leadership. California continues to build upon the 2008 Scoping Plan, setting new targets and implementing new programs to meet our ambitious goals and improve conditions for our communities and our environment. Today, California has dropped to the 20th-largest emitter of greenhouse gas emissions in the world while growing to be the 4th-largest economy globally, and has reduced emissions by 23.3% since 2006 (based on most recent 2023 data).[100, 101]

94 "Energy Efficiency Potential and Goals Studies." *California Public Utilities Commission*. Available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/energy-efficiency/energy-efficiency-potential-and-goals-studies

95 "2008 AB 32 Climate Change Scoping Plan." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

96 "2022 Draft AB 32 Climate Change Scoping Plan." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

97 "Figure 13. Use of Substitutes for Ozone-Depleting Substances by Sector." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-13/

98 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

99 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board*, (p.1). Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

100 "International Scorecards" *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/international-scorecards/

101 Hayes, Christal. "California passes Japan as fourth largest economy." *BBC News*, 25 Apr. 2025. Available at: https://www.bbc.com/news/articles/cly80zlk1lyo

1.2 Landmark Legislation

AB 32 was not only revolutionary for California, but it was also the first comprehensive, economy-wide law of its kind in the United States to mandate GHG reductions with state-level enforceable caps. It created not just the state's climate goals, but the regulatory structure and mechanisms needed to achieve them.

It set the stage for the state's transition to a clean economy and the subsequent legislation that put us on the path toward achieving carbon neutrality by 2045. There have been several bills that built on the foundation laid by AB 32:

- SB 375 (2008)[102]
  The Sustainable Communities and Climate Protection Act directed CARB to set regional targets for reducing greenhouse gas emissions consistent with AB 32. It leverages the regional transportation planning process to achieve emissions reductions, offers California Environmental Quality Act (CEQA) incentives, and aligns the regional housing needs allocation process with the regional transportation process while maintaining local authority over land use decisions.
- Executive Order B-16-12 (2012)[103]
  EO B-16-12 established long-term milestones to facilitate the commercialization of zero-emission vehicles (ZEVs), including a target of 1.5 million ZEVs on the road by 2025.
- Advanced Clean Cars I (2012)[104]
  In 2012, CARB adopted regulations to control motor vehicle emissions through 2025 model years. These included the low-emission vehicle regulations for smog-causing criteria pollutants and greenhouse gases (LEV III) and Zero-emission vehicle regulation.[105]
- SB 32 (2016)[106]
  The California Global Warming Solutions Act of 2016 expanded upon AB 32 to reduce GHG emissions to 40% below the 1990 levels by 2030 through technologically feasible and cost-effective regulations to achieve the targeted reductions. SB 32 was paired with AB 197 to increase legislative oversight of CARB, adding two members of the Legislature to the board as ex officio, nonvoting members.[107]
- AB 398 (2017)[108]
  AB 398 reauthorized and extended the cap-and-trade program from 2020 to 2030 and introduced multiple market design changes, including an allowance price ceiling and a reduction in offset usage limits and offset requirements for in-state benefits. It also required CARB to consider the social cost of carbon and economic impacts when setting price containment.[109]
- AB 617 (2017)[110]
  This bill directed CARB and local air quality districts to develop a new community focused program to more effectively reduce exposure to air pollution. The measures included community-level air quality monitoring, a statewide strategy and community specific emission reduction plans, accelerated re-

102 "The Basics of SB 375." *The Institute for Local Government.* Available at: https://www.ca-ilg.org/post/basics-sb-375

103 "Zero-Emission Vehicles Over the Years." *California Business and Economic Development.* Available at: https://business.ca.gov/industries/zero-emission-vehicles/zev-timeline/

104 "Advanced Clean Cars." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/drive-forward-light-duty-vehicle-program/advanced-clean-cars#:~:text=Advanced%20Clean%20Cars%20I,and%20greenhouse%20gases%20(LEV%20III)

105 "Zero-emission Vehicle Regulation." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-program

106 "SB 32: California Global Warming Solutions Act of 2006: emissions limit." *California Legislative Information*, 8 Nov. 2016. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32

107 "AB 197: State Air Resources Board: greenhouse." *California Legislative Information*, 28 Jan. 2015. Available at: https://www.leginfo.ca.gov/pub/15-16/bill/asm/ab_0151-0200/ab_197_bill_20160908_chaptered.html

108 "AB 398: California Global Warming Solutions Act of 2006: market-based compliance mechanisms: fire prevention fees: sales and use tax manufacturing exemption." *California Legislative Information*, 25 July 2017. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB398

109 "California Cap-and-Trade Reauthorization: What It Means for Market Participants." *Latham and Watkins LLP,* 4 Nov. 2025. Available at: https://www.lw.com/admin/upload/SiteAttachments/California-Cap-and-Trade-Reauthorization-What-It-Means-for-Market-Participants.pdf

110 "AB 617: Nonvehicular air pollution: criteria air pollutants and toxic air contaminants." *Legiscan*. Available at: https://legiscan.com/CA/text/AB617/id/1642678

view of retrofit pollution control technologies on industrial facilities subject to cap-and-trade, enhanced emission reporting requirements, and increased penalty provisions for polluters.[111]

- SB 100 (2018)[112]
  In 2002, California's Renewables Portfolio Standard (RPS) program required that 20% of electricity retail sales must be served by renewable resources by 2017, subsequent legislation increased this target to 50% by 2030. SB 100 set the most ambitious goals of 60% by 2030 and 100% of the state's electricity to come from carbon-free resources by 2045.[113]
- Advanced Clean Cars II (2022)[114]
  Advanced Clean Cars II updated and extended the 2012 policy to increase the stringency of the standards governing toxic air pollutants (LEV IV) and updated the zero-emission vehicle regulation to require that 100% of new passenger vehicles meet zero-emission standards by the 2035 model year.
- AB 1279 (2022)[115]
  The California Climate Crisis Act codified the state's goal to reach net-zero greenhouse gas (GHG) emissions by 2045, requiring reductions of at least 85% below 1990 levels.
- AB 1207 (2025)[116]
  This bill reauthorized and extended the state's cap-and-trade program through December 31, 2045 while renaming it "Cap-and-Invest." AB 1207 aligns covered emissions with statutory targets, aiming for net-zero greenhouse gas (GHG) emissions by 2045.

Prior to AB 32, California received its first waiver to set its own more stringent tailpipe emission standards than the federal government following the passage of the 1967 Air Quality Act in recognition of the state's severe smog crisis, particularly in Los Angeles. Three years later, when the Clean Air Act was passed in 1970, California was allowed to continue setting its own stricter emission standards.[117] In 1977, an amendment under the Clean Air Act known as Section 177 allowed other states to adopt California's standards and today 17 states plus Washington D.C. have taken advantage of that provision.[118] From the 1970s to 2008, the federal government routinely granted additional waivers for new tailpipe emission standards, including one that created the first-in-the-nation 1990 Zero-Emission-Vehicle (ZEV) Program.[119] As the country's largest auto market, a waiver granted in 1973 that required catalytic converters to be installed in vehicles to reduce pollution led to their nationwide adoption beginning with model year 1975.[120]

111 "AB 617 Background." Sacramento Metropolitan Air Quality Management District. Available at: https://www.airquality.org/air-quality-health/community-air-protection/ab-617-background

112 "SB 100: California Renewables Portfolio Standard Program: emissions of greenhouse gases." California Legislative Information, 10 Sept. 2018. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

113 "Renewables Portfolio Standard (RPS) Program." California Public Utilities Commission. Available at: https://www.cpuc.ca.gov/rps/#:~:text=California's%20RPS%20program%20was%20established,by%20renewable%20resources%20by%202017

114 "Advanced Clean Cars." California Air Resources Board. Available at: https://ww2.arb.ca.gov/our-work/programs/drive-forward-light-duty-vehicle-program/advanced-clean-cars

115 "AB 1279: The California Climate Crisis Act." California Legislative Information, 19 Sept. 2022. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279

116 "AB 1207 Climate change: market-based compliance mechanism extension." California Legislative Information, 22 Sept. 2025. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260AB1207

117 "California Air Resources Board History." California Air Resources Board. Available at: https://ww2.arb.ca.gov/about/history

118 "States Adopting CARB Emission Standards." Fuel 2 Electric. Available at: https://www.fuel2electric.com/states-adopting-carb-emission-standards

119 "Zero-emission Vehicle Regulation." California Air Resources Board. Available at: https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-program/about

120 "The catalytic converter: the environmental technology that changed everything." Energy in Demand, 25 June 2026. Available at: https://energyindemand.com/2026/06/25/the-catalytic-converter-the-environmental-technology-that-changed-everything/

In recent years, federal administrations have debated the validity of these waivers with the Trump administration revoking California's waiver in 2019 only for it to be reinstated under President Biden in 2022.[121, 122] In 2025, Congress passed Congressional Review Act resolutions reversing California's waivers for three vehicle emission rules: Advanced Clean Cars II, Advanced Clean Trucks and the Omnibus Low NOX regulation.[123] In June 2026, it was announced that four more waivers would be sent to Congress for review under the Congressional Review Act.[124] In total, California has been granted more than 100 waivers under the Clean Air Act since the first one was granted in 1970.[125] These waivers have led to significant improvements in air quality and reduced pollution from vehicles across the country and world, from the introduction of catalytic converters to improved fuel efficiency to spurring electric vehicle adoption. Cars on the road today are 99% cleaner than they were in the 1970s and lead levels in Los Angeles are 50 times lower today than they were then.[126]

Figure 2. AB 32 Legislative Timeline

1970
Clean Air Act
Regulates air emissions from stationary and mobile sources to protect public health and the environment.

2002
SB 1080
Established the Renewables Portfolio Standard (RPS) Program requiring electricity procurement from renewable sources.

2006
AB 32
Established a cap on statewide GHG emissions and directed CARB to establish and implement market-based regulations to meet this cap.

AB 1493
Established tthe nation's first law to regulate GHGs from the tailpipes of automobiles and light-duty trucks.

2016
SB 32
Set the next GHG emission goal of 40% below 1990

2017
AB 398
Extended the cap-and-trade program to 2030.

2018
SB 100
Updated the RPS to require renewable energy and zero-carbon resources supply 100% of electric retail sales by 2045.

2022
AB 1279
Codified the state's goal of net zero GHG emissions by 2045, and required reductions of 85% below 1990 levels.

2025
AB 1207
Extended the cap-and-trade program to 2045 and renamed it the "cap-and-invest program" going forward.

121 Ebbs, S. "Trump revokes California's waiver on emissions standards, setting up legal fight." ABC News. Available at: https://abcnews.com/Politics/trump-revokes-californias-waiver-emissions-standards-setting-legal/story?id=65693063

122 Cattaneo, L. "EPA's Revived Clean Cars Waiver for California." Environmental and Energy Law Program Harvard Law School, 6 April 2022. Available at: https://eelp.law.harvard.edu/epas-revived-clean-cars-waiver-for-california/

123 Fisher, T. "Advanced Clean Trucks is dead." Land Line Media, 27 May 2025. Available at: https://landline.media/advanced-clean-trucks-is-dead/

124 Aber, A. "EPA Sends 4 More California Vehicle Emission Waivers to Congress for Potential Nullification." Holland & Knight, 23 June, 2026. Available at: https://www.hklaw.com/en/insights/publications/2026/06/epa-sends-4-more-california-vehicle-emission-waivers-to-congress

125 Barczewski, B. et al. "California and the Clean Air Act (CAA) Waiver: Frequently Asked Questions." Congress.gov, 9 May 2025. Available at: https://www.congress.gov/crs-product/R48168

126 "The catalytic converter: the environmental technology that changed everything." Energy in Demand, 25 June 2026. Available at: https://energyindemand.com/2026/06/25/the-catalytic-converter-the-environmental-technology-that-changed-everything/

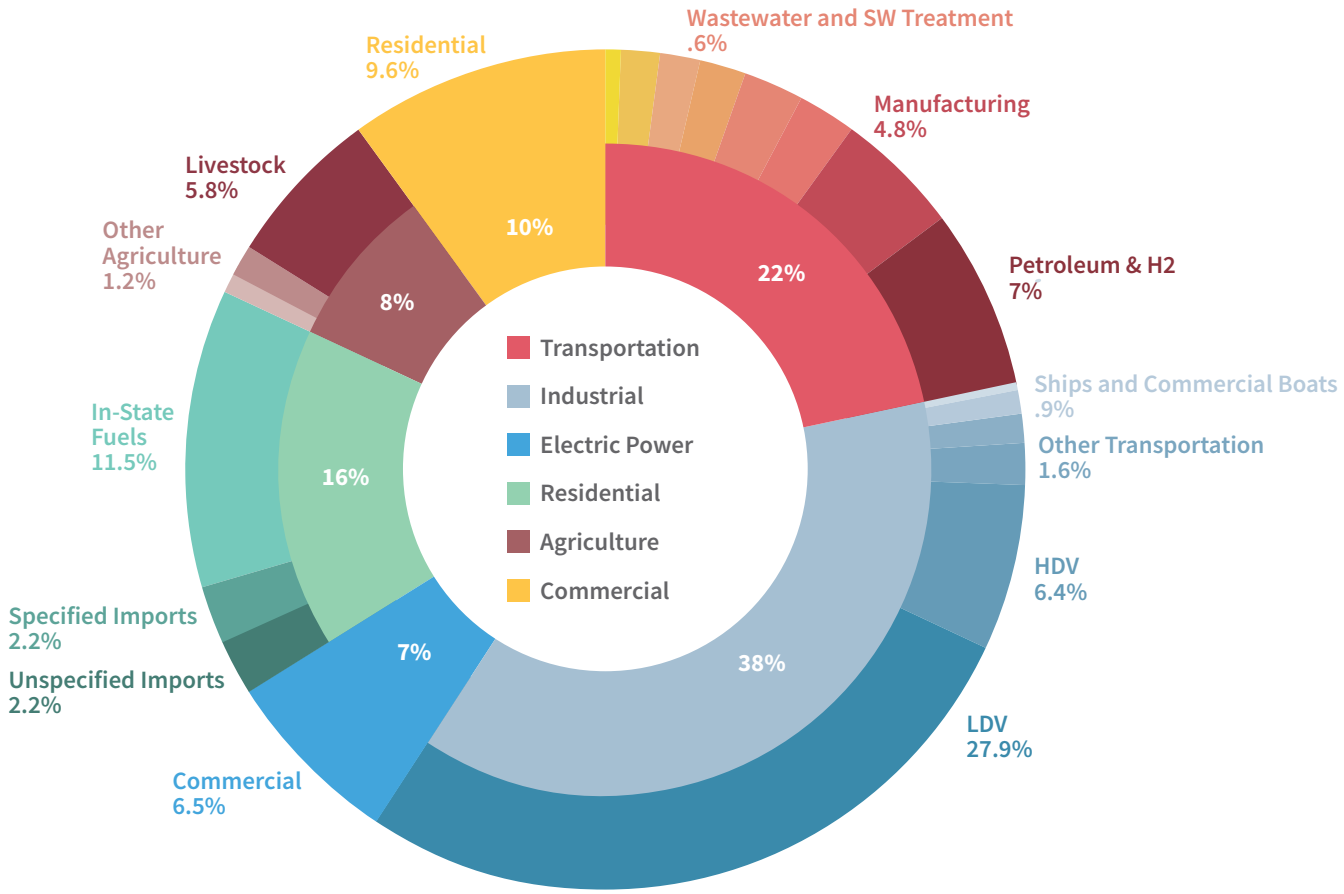
II. ENVIRONMENTAL BENEFITS

There have been substantial environmental benefits as a result of AB 32 that have led to healthier and more resilient communities across the state. California has made incredible strides in reducing greenhouse gas emissions, particularly in the electric power sector, in large part due to renewable energy standards and strict energy-efficiency measures. In this effort to meet AB 32 goals, California also implemented programs to reduce vehicle emissions, increase wildfire resilience, support nature-based carbon sinks, and support overall community health and resilience.

2.1 Greenhouse Gas Emissions Reductions

California has seen dramatic reductions in emissions since the passage of AB 32 in 2006 – demonstrating the effectiveness of the legislation without sacrificing economic growth. Total statewide emissions have fallen by 23.3% between 2006 and 2023 (the latest year for which data is available).[127] Transportation remained the largest-emitting sector at 38.1% in 2023, but this is a reduction

Figure 3. Greenhouse Gas Emissions by Source, 2023

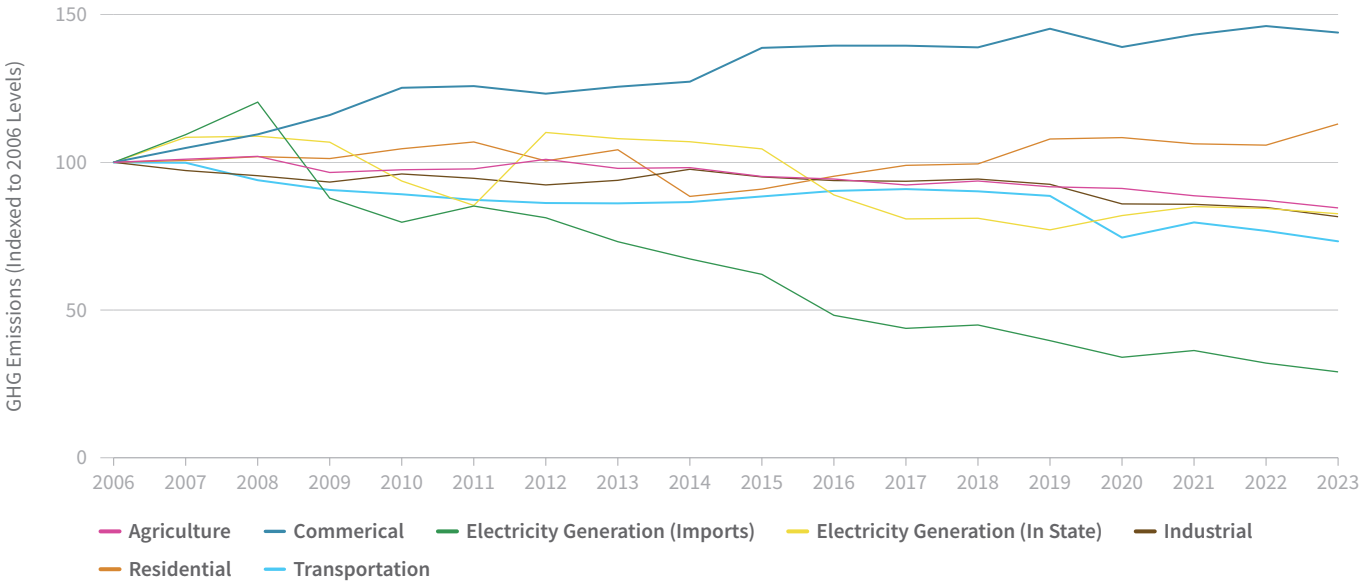


Source: 2025 California Green Innovation Index, Next 10[128]

127 "Figure 1. Total California Greenhouse Gas Emissions." Next 10 California Green Innovation Index, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

128 "Figure 2. Green House Gas Emission by Source." Next 10 California Green Innovation Index, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-2/

Figure 4. Greenhouse Gas Emissions (Indexed to 2006 Levels)



Source: 2025 California Green Innovation Index, Next 10[129]

from 38.7% in 2022. The industrial sector makes up the second-largest share, followed by the electric power sector.[130]

However, when looking at emissions by sector, the state has made enormous progress in decarbonizing the electric power sector from 2006 to 2023. Emissions from electricity generation overall have fallen by 45.2%, with those from electricity imported from neighboring states falling by 70.9% and those from in-state generation dropping by 17.4%. Greater integration of California's grid with neighboring states in the West likely contributed to the significant reduction in emissions from imports. For example, 25% of the state's power mix was made up of electricity generated by renewable sources in the Northwest and Southwest in 2024.[131] These reductions are a testament to the regulations put in place to meet the AB 32 goal. Emissions fell by 15.4% in the agriculture sector and by 18.4% in the industrial sector.[132]

Even though transportation remains the largest-emitting sector, emissions have fallen by 26.7% since 2006.[133] Within the sector, emissions from passenger vehicles and heavy-duty vehicles have seen reductions of 19.7% and 45.3%, respectively.[134] These reductions are largely due to California's clean car standards policies, the Low Carbon Fuel Standard (LCFS), and subsequent efforts to electrify transportation in California, such as the 2012 goal of 1.5 million ZEVs on California roads by 2025—a goal that California met in 2023.

The increased use of renewable diesel and biodiesel in lieu of petroleum diesel, driven by the LCFS, has had a

129 "Figure 3. GHG Emissions Indexed to 2006 Levels." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-3/

130 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

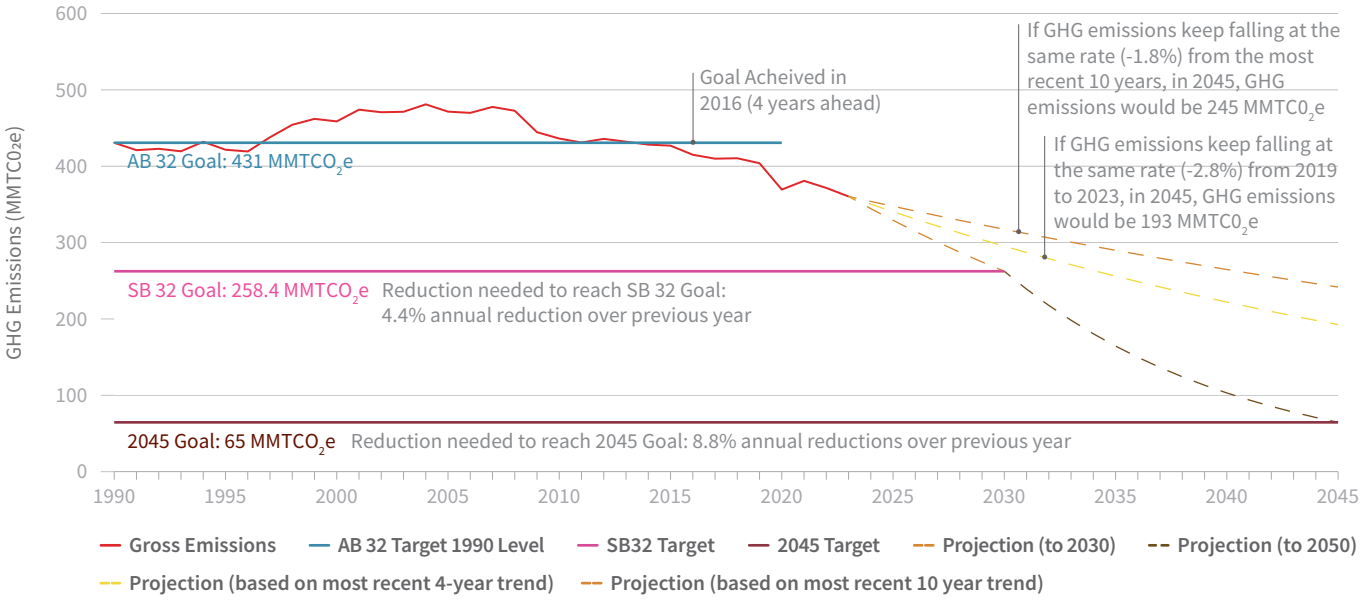
131 "2024 Total System Electric Generation." *California Energy Commission.* Available at: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2024-total-system-electric-generation

132 "Figure 3. GHG Emissions Indexed to 2006 Levels." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-3/

133 "2025 California Green Innovation Index." *Next 10,* 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/

134 "Figure 2. Green House Gas Emission by Source." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-2/

Figure 5. Greenhouse Gas Emissions and Projected Reduction Goals



Source: 2025 California Green Innovation Index, Next 10[135]

significant impact on emissions from heavy-duty vehicles. From 2022 to 2023 alone, emissions from that subsector fell by 17.2% compared to only 0.6% from passenger vehicles. The bio-component percent in diesel used in heavy-duty vehicles increased from 29.8% in 2021 to 40.8% in 2022 to 55.8% in 2023. Other factors may include improved technologies, more efficient fuel usage, or regulations aimed at reducing emissions from heavy-duty diesel vehicles.[136]

The only two sectors to experience growth since the passage of AB 32 are the commercial (+43.9%) and the residential (+13%) sectors. These increases have been driven primarily due to the use of substitutes for ozone-depleting substances (SODS) used in refrigeration and air conditioning. SODS, which emit high global warming potential (GWP) gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), are the fastest-growing source of GHG emissions in California. As the name suggests, these substances are substitutes for ozone-depleting substances that were phased out under the Montreal Protocol in 1987 to repair the hole in the ozone layer.[137] Emissions from the use of SODS have increased extremely quickly from 2008 to 2023, rising by 149.8% in the commercial sector, by 68.9% in the industrial sector, and by 533.0% in the residential sector. GHG emissions from SODS have grown from 2% of statewide emissions in 2006 to 5.8% of statewide emissions in 2023.[138]

Each year, Next 10's California Green Innovation Index tracks California's progress toward meeting our climate goals.[139] In 2016, SB 32 established the further emissions reductions target of reducing emissions 40% below 1990 levels by 2030. While the state is still not on track to meet

135 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

136 "Figure 10. GHG Emissions from the Transportation Sector and as a Share of Total GHG Emissions." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-10/

137 "International Actions - The Montreal Protocol on Substances that Deplete the Ozone Layer." *United States Environmental Protection Agency,* 23 March 2026. Available at: https://www.epa.gov/ozone-layer-protection/international-actions-montreal-protocol-substances-deplete-ozone-layer

138 "Figure 14. Subsectors with Increasing GHG Emissions Over Time." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-14/

139 "2025 California Green Innovation Index." *Next 10,* 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/

its 2030 target, the increased rate of emissions reductions puts those targets closer in sight. From 2022 to 2023, total emissions fell by 3%—the largest single-year reduction outside of a recession—and 2023 emissions were lower than those in 2020 during the height of the pandemic.

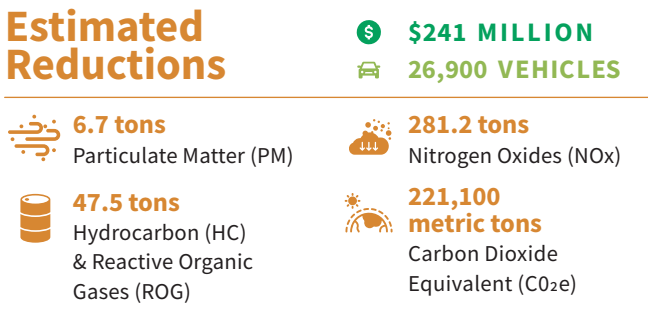
The annual average reduction required to meet the SB 32 goal by 2030 is 4.4% as of 2023 – nearly double the average annual reduction from 2019 to 2023 of 2.8%. Using that five-year average, the state will reach its SB 32 goal in 2035. However, this is a significant improvement from two years ago, when the state would not have met the goal until 2047, based on the five-year average reductions as of 2021. Emissions have also been falling at a faster pace since SB 32 became law in 2016, averaging 2.0% per year from 2016 to 2023. From 2006 when AB 32 became law to 2016, the average decline was 1.2% per year.[140]

2.2 Air Quality

AB 32 set a goal for the state to reduce greenhouse gas emissions to 1990 levels by 2020, subsequent legislation extended this—SB 32 requires a 40% reduction below 1990 levels by 2030 and AB 1279 set a 2045 target of 85% below 1990 levels.[141,142] While greenhouse gas emissions (CO_2, N_2O, methane) do not directly impact local air pollution, the polluting facilities that the cap and trade program regulates are major emitters of local air pollutants – such as particulate matter, nitrogen oxide, carbon monoxide, and sulfur oxides. As such, AB 32 creates multiple levers for communities, polluters, and local governments to improve air quality.[143]

California has made significant progress in reducing air pollution. However, fine particulate matter air pollution, linked to a wide range of adverse health effects, is estimated to cause more than 5,000 premature deaths in California each year. A recent study by researchers at UC Berkeley, University of Washington, and the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) found that statewide average exposures to particulate matter 2.5 (PM2.5) has dropped by 65% since 2000.[145] Despite these reductions, significant racial disparities in pollutant exposure still exist. Hispanic and Black communities, historically the most burdened by vehicle pollution, have experienced the largest reductions in pollution while still experiencing the highest levels of air pollution in the state. The report finds that light-duty vehicle emissions are the main driver of this exposure, while heavy-duty vehicles, such as port drayage trucks, have a higher impact on overburdened communities. Despite this, most of the reduction comes from the decarbonization of light-duty vehicles, and CARB's mandates to increase the use of electric vehicles will continue to help overburdened communities in lessening their pollution exposure.

Figure 6. Clean Cars 4 All Outcomes as of June 2025



Source: Outcomes and Results for Clean Cars 4 All, California Air Resources Board[144]

140 "2025 California Green Innovation Index." *Next 10,* 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/

141 "SB 32: California Global Warming Solutions Act of 2006: emissions limit." *California Legislative Information,* 8 Nov. 2016. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32

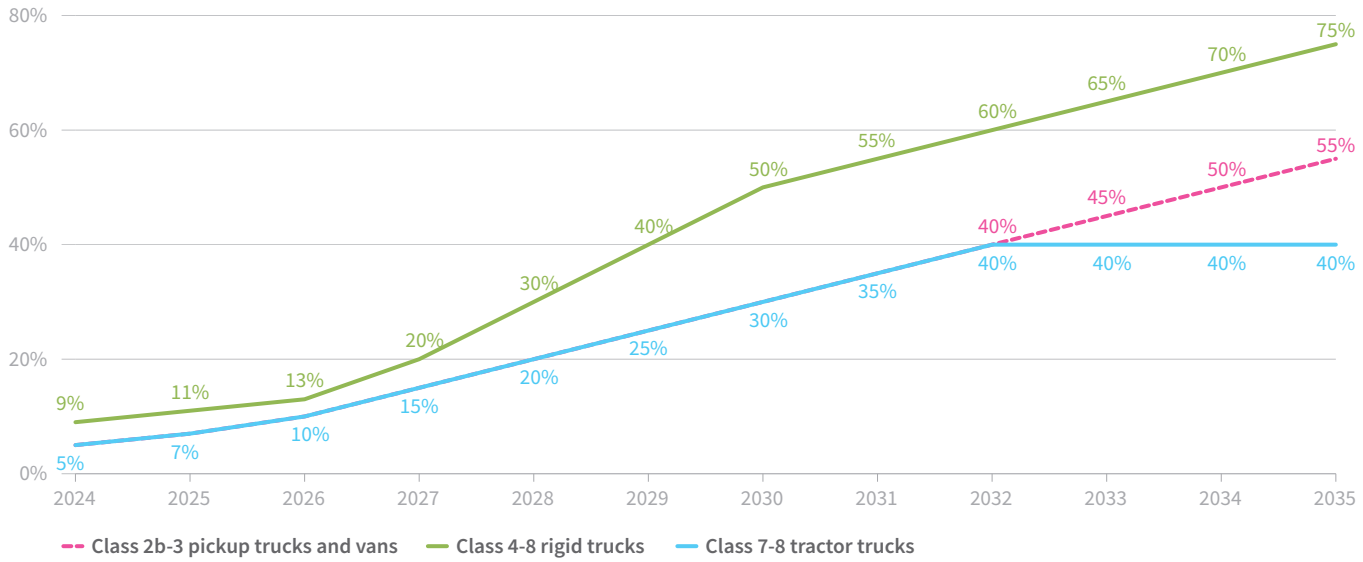
142 "AB 1279: The California Climate Crisis Act." *California Legislative Information,* 19 Sept. 2022. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279

143 Yang, S. "Co-benefits of CO2 and PM2.5 Emission Reduction." *School Of Environment, Beijing Normal University,* Dec. 2016. Available at: https://www.researchgate.net/publication/311914417_Co-benefits_of_CO2_and_PM25_Emission_Reduction

144 Ibid.

145 Koolik, L. et al. "PM2.5 exposure disparities persist despite strict vehicle emissions controls in California." *Science Advances,* 11 Sept. 1014. Available at: https://www.science.org/doi/10.1126/sciadv.adn8544

Figure 7. Advanced Clean Truck Annual Sale Percentage Requirements by Weight Class



Source: Understanding California's Advanced Clean Truck Regulation, RMI[146]

Addressing light-duty vehicle emissions, California's Clean Cars 4 All, an incentive program funded by cap-and-trade dollars, helps low-income drivers replace their old, gas-powered vehicles with newer electric options.[147] Incentives, based on income and location, allow recipients to purchase plug-in hybrid electric vehicles (PHEV), zero-emission vehicles (ZEV), or zero-emission motorcycles (ZEM) as well as alternative mobility options such as an e-bike or a voucher for public transit. Since June 1, 2025, the Clean Cars 4 All program has implemented $241 million (out of over $500 million allocated) to provide 26,900 vehicles to recipients. This is estimated to have led to reductions of 6.7 tons of particulate matter (PM), 47.5 tons of hydrocarbon (HC) and reactive organic gases (ROG), 281.2 tons of oxides of nitrogen (NOx), and 221,100 metric tons of carbon dioxide equivalent(CO_2e).[148] Not only has this program led to tangible air quality improvements, but provides low income participants with increased vehicle reliability as the incentives must be used on vehicles less than 8 years-old.

In addition to light-duty vehicle decarbonization, California is working to reduce air pollutants associated with heavy-duty vehicles, such as trucks and buses. According to the 2022 Scoping Plan, both heavy-duty vehicles and facilities subject to the cap-and-trade program have reduced emissions of co-pollutants, with heavy-duty vehicles showing a clearer downward trend compared to stationary sources.[149] California's Advanced Clean Trucks Program (ACT), which "requires original equipment manufacturers (OEMs) of medium- and heavy-duty vehicles to sell zero-emissions vehicles (ZEVs) or near-zero-emissions vehicles (NZEVs) such as plug-in electric hybrids, as an increasing percentage of their annual sales from 2024 to 2035," serves to further decarbonize this sector.[150]

146 McNamara, M. "Understanding California's Advanced Clean Truck Regulation." *Rocky Mountain Institute,* 27 June 2023. Available at: https://rmi.org/understanding-californias-advanced-clean-truck-regulation/

147 "Clean Cars 4 All." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/clean-cars-4-all

148 "Outcomes and Results for Clean Cars 4 All." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/our-work/programs/clean-cars-4-all/outcomes-and-results-clean-cars-4-all

149 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board*, (p.33). Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

150 McNamara, M. "Understanding California's Advanced Clean Truck Regulation." *Rocky Mountain Institute,* 27 June 2023. Available at: https://rmi.org/understanding-californias-advanced-clean-truck-regulation/

In addition to the ACT program, California operates the Clean Truck and Bus Voucher Incentive Project (HVIP), funded by cap-and-trade dollars, to further incentivize the adoption of electric heavy-duty vehicles.[151] As of April 2026, HVIP has delivered more than $1 billion in funding to California fleets—supporting more than 2,000 fleets, enabling the deployment of 11,600 clean vehicles, and accumulating 181 million miles statewide.[152] Overall, California has made large strides in decarbonizing the heavy-duty vehicle sector, and as of 2024, 1 in 6 new trucks in California are zero-emission.[153] Emissions reductions of heavy-duty vehicles have major health benefits, including a reduction in premature pollution-related deaths.[154]

Funded by AB 32's cap-and-trade program and established by AB 617, the Community Air Protection Program (CAP Program) aims to reduce toxic air contaminants and criteria air pollutants in communities with the highest cumulative exposure by developing and implementing a statewide strategy, in consultation with program partners and stakeholders.[155, 156, 157] According to the 2024 Annual Progress Report, the CAP Program has spent $1.4 billion on more than 9,000 incentive projects since 2017—reducing over 23,000 tons of oxides of nitrogen (NOx), 950 tons of particulate matter (PM), and 282,600 metric tons of greenhouse gas (GHG) emissions statewide.[158, 159] The majority of CAP Program funding has gone to the South Coast ($551 million) and San Joaquin Valley Air Districts ($403 million), with 94% of the funding reaching disadvantaged and low-income communities. Projects include air monitoring, diesel equipment replacements, burning restrictions, reducing truck idling, piloting electric tugboats, purchasing electric school buses, and incentives for electric lawn and garden equipment as well as for zero-emission vehicles. As this work continues, it contributes to meaningful public and environmental health gains for communities across the state.

2.3 Climate Resilience

EO S-3-05 mandated the first California Climate Assessment in 2005, projecting the future impacts of climate change on California's environment and economy, playing an important role in making the case for the passage of AB 32.[160] These assessments were also important for demonstrating the need for California to start preparing for these impacts by building resilience to climate change. These assessments and the leadership demonstrated through the implementation of AB 32 provided the foundation for Executive Order S-13-2008 which mandated the state's first comprehensive climate adaptation strategy.[161] The California Natural Resources Agency adopted the first Climate Adaptation Strategy in 2009, and "summarized the best known science on climate change impacts in the state to assess vulnerability" and outlined solutions to promote

151 "Clean Truck and Bus Voucher Incentive Project." *California HVIP*. Available at: https://californiahvip.org/

152 "California's clean truck and bus incentive program surpasses $1 billion milestone." *California Air Resources Board*, 2 April 2026. Available at: https://content.govdelivery.com/accounts/CARB/bulletins/411347b

153 "California's clean truck and bus incentive program surpasses $1 billion milestone." *California Air Resources Board,* 2 April 2026. Available at: https://ww2.arb.ca.gov/news/1-6-new-trucks-buses-and-vans-california-are-zero-emission#:~:text=Advanced%20Clean%20Trucks%20requires%20manufacturers,flexibility%20in%20meeting%20CARB's%20requirements

154 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board,* Dec. 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

155 "AB 617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants." *California Legislative Information,* 26 July 2017. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617

156 "About CAP Program." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/capp/ab/about-cap-program/about

157 "New report shows California law funded by Cap-and-Invest dollars improves air in the state's most polluted communities." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/news/new-report-shows-california-law-funded-cap-and-invest-dollars-improves-air-states-most

158 "Community Air Protection Incentives Factsheet." *California Air Resources Board*, May 2024. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-12/CAP%20Incentives%20Fact%20Sheet%20Nov2023%20English.pdf

159 "Community Air Protection Program Annual Progress Report." *California Air Resources Board*, July 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/2025-06/OCAP_APR2024_Final.pdf

160 "About the Assessment." *California's Fourth Climate Assessment*. Available at: https://www.climateassessment.ca.gov/about/

161 California, Office of the Governor. "Executive Order S-13-08." *Governor Arnold Schwarzenegger,* 14 Nov. 2008. Available at: https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/38-S-13-08.pdf

resiliency.[162] At the time, it was widely regarded as the first step in an evolving process to reduce California's vulnerability to climate impacts.

Since then, AB 1482 (2015) explicitly created the California Climate Adaptation Strategy which provides a statewide framework to build resilience against climate impacts (e.g., wildfire, drought, sea-level rise, extreme heat) through prioritized actions across sectors.[163, 164] The most recent plan, released in 2024, addresses 6 climate resilience priorities:

- Strengthen Protections for Climate Vulnerable Communities
- Bolster Public Health and Safety to Protect Against Increasing Climate Risks
- Build a Climate Resilient Economy
- Accelerate Nature-Based Climate Solutions and Strengthen Climate Resilience of Natural Systems
- Make Decisions Based on the Best Available Climate Science
- Partner and Collaborate to Leverage Resources

The previous 2021 Strategy reflected a major shift from earlier documents, which were often lengthy inventories of sector-specific actions developed by individual agencies. The state recognized that successfully reducing climate risks and building long-term resilience required a more integrated approach, enabling flexibility to keep pace with rapid climate change. The 2024 Strategy reflects lessons learned from this shift, such as developing new, more specific metrics and consistent timelines to increase accountability and support reporting requirements. This Strategy also integrates initiatives from the State's Extreme Heat Action Plan (2022) and California's Water Supply Strategy (2022), seeking to align priorities and actions across agencies.[165, 166] The 2024 plan also prioritizes solutions that engage with and build capacity in climate vulnerable communities to improve climate resilience by implementing wildfire mitigation programs and partnerships, providing support to meet housing needs while ensuring climate resilience, and promoting sustainable land use planning and transportation investments.[167] Overall, the California Climate Adaptation Strategy seeks to align communities and state agencies on the priorities and tasks needed to protect California's communities from the impacts of climate change, particularly extreme heat, drought, wildfire, flooding, and sea-level rise. Additionally, Senate Bill 1320 (SB 1320), passed in 2020, directs the Governor's Office of Planning and Research (now called the Office of Land Use and Climate Innovation) to conduct a California-specific assessment to determine the costs and risks faced by Californians if the state fails to address the climate emergency.[168]

In addition to the actions laid out by the California Climate Adaptation Strategy, California funds many resilience projects across the state including with funding from the cap-and-trade program. California Climate Investments (CCI) operates 117 programs administered by 27 state agencies that direct billions of dollars into our state's transition to a low-carbon and more equitable future.[169] In 2024, CCI appropriated $3.1 billion and implemented $1.9 billion, with $1.2 billion benefitting priority populations – low-income communities and those most at risk of environmental pollution and degradation.[170]

162 "2009 California Climate Adaptation Strategy." *California Natural Resource Agency*. Available at: https://resources.ca.gov/CNRALegacyFiles/docs/climate/Statewide_Adaptation_Strategy.pdf

163 "AB 1482: Climate adaptation." *California Legislative Information*, 8 Oct. 2015. Available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1482

164 "California Climate Adaptation Strategy." *State of California.* Available at: https://climateresilience.ca.gov/

165 "Protecting Californians From Extreme Heat: A State Action Plan to Build Community Resilience." *State of California,* April 2022. Available at: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Climate-Resilience/2022-Final-Extreme-Heat-Action-Plan.pdf

166 "Water Supply Strategy." *State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water-supply-strategy/

167 "Goal C: Build resilience in climate vulnerable communities through state programs." *California Climate Adaptation Strategy,* 2024. Available at: https://climateresilience.ca.gov/priorities/strengthen-protections/build-resilience.html

168 "California Must Prepare for Financial Fallout as Cost of Climate Emergency Threatens to Drain Budgets." *Office of Senator Henry Stern*, 25 Sept. 2020. Available at: https://sd27.senate.ca.gov/news/california-must-prepare-financial-fallout-cost-climate-emergency-threatens-drain-budgets

169 "Home." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/

170 "Priority Populations." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/priority-populations

Some of these programs include:[171]

- Local and state planning for sea level rise via the Climate Ready Program;[172]
- Providing clean drinking water to communities who have gone without it for too long via the Safe and Affordable Drinking Water Fund Program;[173]
- Supporting heat-resilient communities via grants such as the Extreme Heat Community Resilience Program and the Schoolyard Greening Program, while promoting heat-resilient housing through incentives for energy efficient retrofits and energy-saving appliance upgrades;[174, 175]
- Proactive forestry treatments to reduce the risk of catastrophic wildfires by supporting programs like the Forest Health and Wildfire Prevention Grants Programs.[176, 177, 178]

While California Climate Investments projects primarily focus on reducing GHG emissions, many of these programs also help to enhance climate resilience for communities and ecosystems, demonstrating that mitigating the cause of climate change and its consequences could be pursued simultaneously.

Wildfire Resilience:

State funding to perform wildfire resilience activities has increased in recent years from $200 million in 2018-19, peaking at $1.1 billion in 2021-22, and settling at approximately $620 million in 2025-26.[180] Cumulatively, GGRF programs have allocated $1.5 billion as of 2025 toward wildfire resilience efforts and are estimated to conserve, treat, or restore approximately 1.6 million acres of land.[181] Over 600,000 acres are expected to be preserved or restored by projects implemented in 2024 alone, using $228 million allocated for this purpose.

Notably, the Ponderosa-Mira Monte Shaded Fuel Break, funded by California Climate Investments through the California Department of Forestry and Fire Protection's Wildfire Prevention Grants Program, provided an effective fuel break during the 2024 Canyon Fire in Tuolumne

Figure 8. Ponderosa - Mira Monte Fuelbreak

Left: Retardent line, back burning along Ponderosa/Mira Monte Fuelbreak. Right: Blazing Bull Pine on Buchanon Road.

Source: Canyon Fire All Hands on Deck Factsheet, Tuolumne Fire Safe Council[179]

171 More information on California Climate Investments in Section 4.1 - *California Climate Investments*

172 "Climate Ready Program." *California Climate Investments.* Available at: http://www.caclimateinvestments.ca.gov/climate-ready

173 "Safe and Affordable Drinking Water Fund." *California Climate Investments.* Available at: http://www.caclimateinvestments.ca.gov/safer-drinking-water

174 "Extreme Heat and Community Resilience Program." *Governor's Office of Land Use and Climate Innovation.* Available at: https://www.lci.ca.gov/climate/icarp/grants/extreme-heat-community-resilience/

175 "Urban and Community Forestry Program." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/schoolyard-greening-program

176 "Forest Health." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/forest-health

177 "Wildfire Prevention Grants Program." *California Climate Investments.* Available at: http://www.caclimateinvestments.ca.gov/fire-prevention-grants

178 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments*, May 2025 (p.55). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

179 "Canyon Fire: All Hands on Deck Factsheet." *Tuolumne Fire Safe Council.* Available at: https://tuolumnefiresafe.org/wp-content/uploads/2024/08/Canyon-Fire-All-Hands-on-Deck_compressed.pdf

180 "Overview of State Wildfire Resilience Funding." *Legislative Analyst's Office,* 13 May 2026. https://lao.ca.gov/handouts/resources/2026/State-Wildfire-Resilience-Funding-051326.pdf

181 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.5). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

County.[182, 183] The $415,000 grant connected two existing fuel breaks, in an area that had never before been treated due to the steep terrain. As a result of the fire's altered course and intensity, firefighters were able to contain it with no injuries, no fatalities, and no structure losses.

Figure 9. Nature-Based Solutions

Credit: Mark Janzen, American Forests

Source: 2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds, California Climate Investments[185]

Nature-Based Solutions:

Assembly Bill 1757 (AB 1757), signed into law in September 2022, required California to establish ambitious, quantifiable statewide targets for natural carbon sequestration and nature-based climate solutions. The goals include managing: 33.5 million acres to reduce wildfire risk, 11.9 million acres of forest for biodiversity protection, carbon storage, and water supply protection; 3.4 million acres of croplands to boost healthy soils, drought resilience, and below-ground biodiversity; 2.7 million acres of shrublands and chaparral for carbon storage, resilience, and habitat connectivity; and planting 4.2 million trees to protect California communities from the climate crisis, remove carbon and increase access to nature where it's needed most.[184]

Subsequently, almost $2.2 billion of CCI funding has gone to projects under this umbrella, resulting in an expected GHG emission reduction of 41.6 $MMTCO_2e$, with other expected achievements over the project lifetime including:

- 243,000 acres of land conserved
- 22 million trees planted in non-urban areas
- 180,000 acres of agricultural land benefiting from or implementing healthy soils practices[186]

One such project, a recipient of a $4.9 million grant from the Forest Health Program, involved several years of work to restore more than 2,600 acres of forests in the southern Sierra.[187] The project involves replanting giant sequoias and other native trees in areas that were burned by wild-

182 "Wildfire Prevention Grants Program." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/fire-prevention-grants

183 "Canyon Fire: All Hands on Deck." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/2025-profiles/canyon-fire-all-hands-on-deck

184 "With Historic Targets, California Will Use Millions of Acres of Land to Fight the Climate Crisis." *Office of Governor Gavin Newsom*, 22 April 2024. Available at: https://www.gov.ca.gov/2024/04/22/with-historic-targets-california-will-use-millions-of-acres-of-land-to-fight-the-climate-crisis/

185 "Bringing Southern Sierra Forests Back from the Ashes." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/2025-profiles/bringing-southern-sierra-forests-back-from-the-ashes

186 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments*, May 2025 (p.43). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

187 "Forest Health." California Climate Investments. Available at: https://www.caclimateinvestments.ca.gov/forest-health

Figure 10. Rooftop Solar System on San Diego Supportive Housing Property

Note: Rooftop Solar System on San Diego supportive housing property, "The Allison," funded by the Low-Income Weatherization Program (LIWP)

Source: Multi-Family Energy Efficiency and Renewables, California Department of Community Services and Developments[188]

fires in Sequoia National Forest, the Tule River Reservation, and the Mountain Home Demonstration State Forest as well as removing dead trees to make these forests more resilient to future wildfire.

Buildings and Energy:

Projects to reduce emissions through advancing equitable building decarbonization, renewable energy generation and storage, and community resilience initiatives received nearly $2.9 billion in funding and are estimated to reduce:[189]

- 8.6 $MMTCO_2e$ of GHG emissions
- 4,389 metric tons of NOx
- 2,900 metric tons of PM2.5

The Low-Income Weatherization Program's Multifamily Energy Efficiency and Renewables Program has been instrumental in increasing climate resilience and renewable energy use in low-income communities across California, and incentivizes owners of low-income multifamily housing to retrofit their properties with energy efficiency technologies and solar panels.[190] As of 2025, the program has served 12,746 households with over $100 million in

Figure 11. California Climate Investments Project Examples

Wildfire Resilience

$1.5 billion as of 2025

1.6 million acres of land treated and restored

$415,000 to create the Ponderosa-Mira Monte Shaded Fuel Break that reduced fire intensity and spread during the 2024 Canyon Fire in Tuolumne County.

Nature-Based Solutions

$2.2 billion as of 2025

41.6 $MMTCO_2e$ of GHG emissions abated as of 2025.

$4.9 million to restore more than **2,600 acres** of forests in the southern Sierra, including giant sequoias in **Sequoia National Forest.**

Buildings and Energy

$2.9 billion to reduce:

- **8.6 $MMTCO_2e$** of GHG emissions
- **4,389** metric tons of **NOx**
- **2,900** metric tons of **PM2.5**

$100 million from the Multifamily Energy Efficiency and Renewables Program has served **12,746 households** as of 2025.

Source: 2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds, California Climate Investments[191]

CCI funding (paired with funding from other sources).[192] These upgrades reduce GHG emissions while lowering energy costs, delivering tangible benefits to communities that need them most.

The state still has a long way to go in terms of supporting climate resilient communities across the state. However, with the support of AB 32 funding, the California Climate Adaptation Strategy, and dedicated agencies and local governments across the state, California is making meaningful progress in protecting our most vulnerable ecosystems and communities from the future impacts of climate change.

188 "Multi-Family Energy Efficiency and Renewables." *California Department of Community Services and Development.* Available at: https://www.csd.ca.gov/Pages/Multi-Family-Energy-Efficiency-and-Renewables.aspx

189 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.37). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

190 "Multi-Family Energy Efficiency And Renewables." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/multifamily-energy-efficiency-renewables

191 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

192 "Ensuring Climate Resilience and Reducing Energy Costs in Multifamily Housing." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/2025-profiles/ensuring-climate-resilience-and-reducing-energy-costs-in-multifamily-housing

III. ECONOMIC BENEFITS

NEXT 10

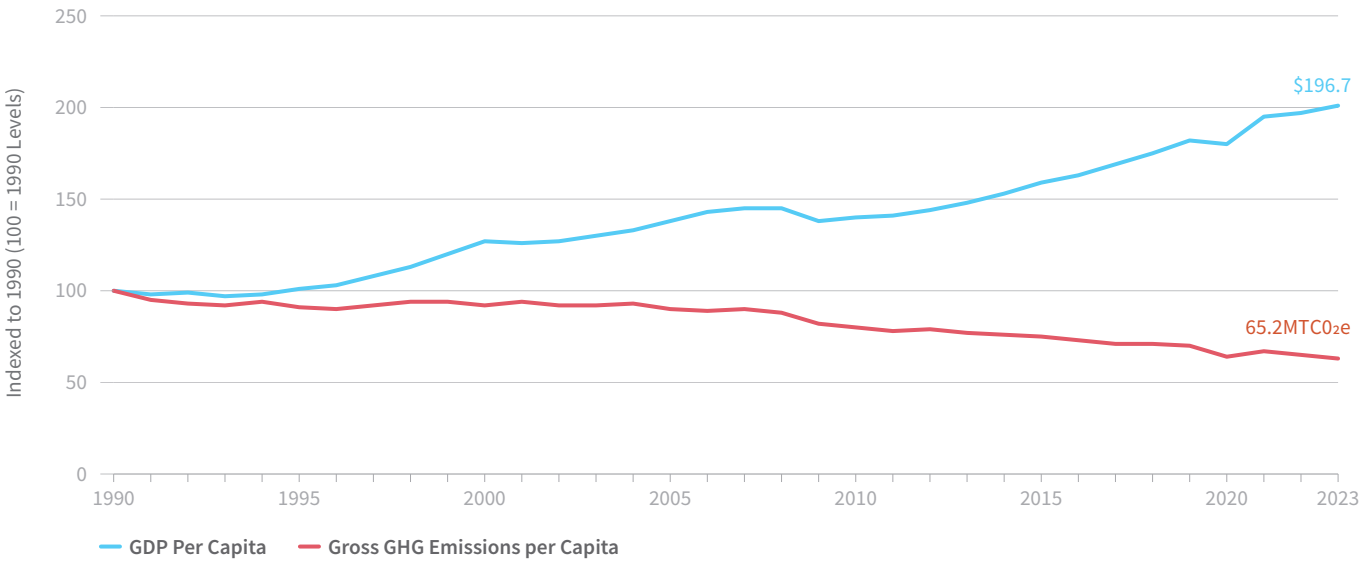
USC Schwarzenegger Institute for State and Global Policy

California is an economic powerhouse, representing the 4th-largest economy in the world, and it is home to many key industries including technology, entertainment, and agriculture. The Ports of Long Beach and Los Angeles are the largest in the United States with 40% of all imports and 30% of all exports flowing through them.[193] The Port of Los Angeles alone handles more than $300 billion worth of cargo annually.[194]

As a hub for innovation, many of the largest tech companies in the world were created in California and roughly 62% of U.S. venture capital funding goes to companies in the state.[195] Hollywood has long been the global center for entertainment and media which has influenced culture around the world. As the largest agricultural-producing state, nearly half of the country's vegetables and three-quarters of the fruits and nuts are grown in California.[196] It is also a large center for manufacturing output in the U.S., with over 36,000 manufacturing firms employing over 1.1 million Californians.[197]

All of these successes have occurred while emissions have fallen—demonstrating that climate action doesn't require sacrificing economic growth. Between 2006 and 2023 (the latest year for which data is available), GDP per capita grew by 41% while GHG emissions per capita fell by 29%.[198] The state's total GDP (in 2023 inflation-adjusted dollars) has risen from $2.4 trillion in 2006 to $3.7 trillion in 2023 to $4.1 trillion in 2025.[199] California has made clear that investments in climate are multifaceted; resulting in benefits for community health outcomes, workforce development and job growth, and business success.

Figure 12. Greenhouse Gas Emissions and Gross Domestic Product, California Relative Trends since 1990



Source: 2025 California Green Innovation Index, Next 10[200]

193 "Overview of California's Ports."*Legislative Analyst's Office,* 23 Aug. 2022. Available at: https://lao.ca.gov/Publications/Report/4618#

194 "ICYMI: Bloomberg News: How California's economy dominates in the Gavin Newsom era." *Office of Governor Gavin Newsom,* 6 April 2026. Available at: https://www.gov.ca.gov/2026/04/06/icymi-bloomberg-news-how-californias-economy-dominates-in-the-gavin-newsom-era

195 Ibid.

196 "California Agricultural Production Statistics." *California Department of Food and Agriculture*. Available at: https://www.cdfa.ca.gov/Statistics/

197 "California is now the 4th largest economy in the world." *Office of Governor Gavin Newsom,* 23 April 2025. Available at: https://www.gov.ca.gov/2025/04/23/california-is-now-the-4th-largest-economy-in-the-world

198 "Figure 6. Greenhouse Gas Emissions and Gross Domestic Product, California Relative Trends Since 1990." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-6/

199 Ibid.

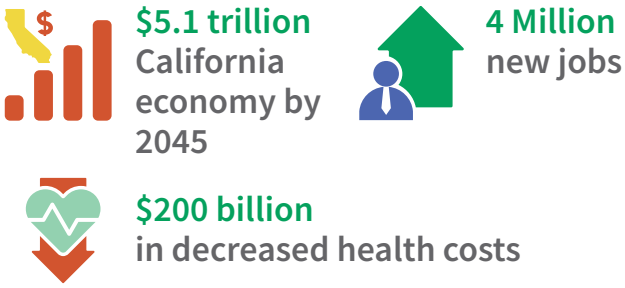
200 Ibid.

The 2022 Scoping Plan outlines the expected economic benefits of AB 32 implementation across the economy. It estimates that California's GDP would be $5.1 trillion (nearly $2 trillion more than in 2021) and add millions of jobs.[201] The plan is projected to deliver $199 billion of benefits in the form of reduced hospitalizations, asthma cases, and lost work and school days due to the cleaner air supported by AB 32 funded programs.[202] California cannot achieve these goals – or broader climate resilience – alone. Collaboration with local leaders, the federal government, U.S. states, and jurisdictions across the world will continue to be fundamental for California to succeed in achieving its climate targets. AB 32 was a landmark policy in terms of climate ambition, and California continues to prove that climate policy and economic growth are inextricably linked, setting the standard for the rest of the world.

3.1 California Climate Investments

California Climate Investments have supported economic development and increased affordability in California communities. The program has provided over 560,000 direct rebates and incentives, including roughly 5,300 in 2024 and supported the development of 13,633 affordable housing units, with 1,027 added in 2024. It has also reduced energy and fuel use costs by $38.1 billion cumulatively, including $5.2 billion reduction in 2024 alone.[203] Since 2014, more than $16 billion has also been returned to residents and small businesses through California Climate Credits, which provide qualifying utility customers a credit on their bills twice a year to reduce energy costs.[204] Customers automatically receive a credit for natural gas in April and a credit for electricity in April and October. In 2025, the credits typically ranged from $35 to $259 for electricity bills, and approximately $54 to $87 on natural gas bills.[206] Beginning in 2026, customers of the state's three investor-owned utilities (PG&E, SDG&E, and SCE) will receive their electricity climate credits in August and September when bills tend to be higher due to air conditioning needs and their natural gas credit in February beginning in 2027.[207]

Figure 13. 2022 Scoping Plan Economic Benefits



Source: 2022 Scoping Plan for Achieving Carbon Neutrality Executive Summary, California Air Resources Board[205]

These programs also play an important role in strengthening the state's economy by supporting workforce development initiatives that provide individuals with the skills needed for employment in emerging industries, supporting the transition to a clean economy that aligns with the state's climate goals. Several agencies have implemented over $118 million to support workforce training programs that prepare workers for well-paying jobs in sectors such as clean energy, forestry, and zero-emission transportation. For example, the California Conservation Corps' Training and Workforce Development Program received $75.4 million cumulatively as of 2025, contributing to the employment of 826 full-time equivalent positions to complete forest fuel reduction, habitat restoration, and energy efficiency

201 "CARB approves unprecedented climate action plan to shift world's 4th largest economy from fossil fuels to clean and renewable energy." *California Air Resources Board*, 12 Dec. 2022. Available at: https://ww2.arb.ca.gov/news/carb-approves-unprecedented-climate-action-plan-shift-worlds-4th-largest-economy-fossil-fuels/printable/print

202 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board,* (p.1). Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

203 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.32). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

204 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.31). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

205 "2022 AB 32 Climate Change Scoping Plan." *California Air Resources Board,* (p.4). Available at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

206 "CPUC To Evaluate Climate Credit to Better Support Affordability." *California Public Utilities Commission,* 24 July 2025. Available at: https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-to-evaluate-climate-credit-to-better-support-affordability

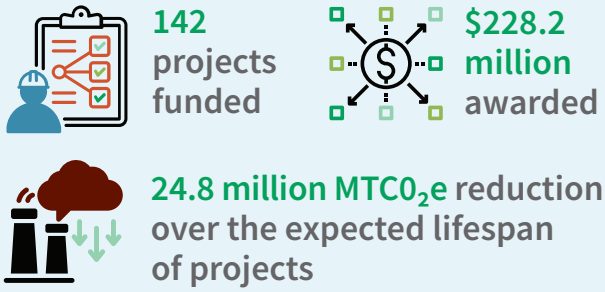
207 "California Climate Credit." *California Public Utilities Commission.* Available at: https://www.cpuc.ca.gov/climatecredit

Program Spotlight: The Dairy Digester Research and Development Program

The Dairy Digester Research and Development Program, implemented by the California Department of Agriculture, provides financial incentives (funded by cap-and-trade revenue) for the design and construction of new digester systems that decrease methane emissions.[208] Methane is a far more potent, though shorter-lived in the atmosphere, greenhouse gas emission than carbon dioxide. As part of this program, the Vander Woude Dairy, a family-owned and operated business in Merced, received over $1.8 million to implement an innovative covered lagoon digester to capture methane and convert it into renewable compressed natural gas (R-CNG) for vehicle use. This prevents methane emissions and reduces the dairy's reliance on fossil fuels for transportation. In addition to reducing emissions by nearly 24,000 metric tons of CO_2-equivalent, the project has demonstrated economic benefits. After the first year, it has generated 44 jobs and an additional $825,858 in economic output for every $1 million spent.[209]

Moreover, the R-CNG produced by the Vander Woude Digester is also injected into California pipelines to be used in larger vehicles as it qualifies for credits under the Low Carbon Fuel Standard (LCFS) created by AB 32. These credits further incentivize the production and use of low-carbon fuels, such as R-CNG, while providing an additional revenue stream that supports the project's economic viability and reduces greenhouse gas emissions from the transportation sector.[211] As of June 2026, 87% of the program's incentive projects have been completed with over 142 projects and $228.2 million contributing to 24.8 million MTCO2e reduction over project lifespans.[212]

Figure 14. Dairy Digester Research and Development Program Outcomes



Source: Dairy Digester Research & Development Program, California Department of Food and Agriculture[210]

projects.[213, 214] Cumulatively, these workforce development programs have supported 62,058 direct jobs, 21,733 indirect jobs, and 38,765 induced jobs. In addition to the workforce development programs, investments from CCI projects are expected to support over 143,000 jobs cumulatively, with over 20,000 jobs being in 2025 alone.[215]

The economic impacts of the public health benefits are also substantial. While the programs are focused on reducing GHG emissions, many other pollutants such as PM2.5,

208 "Dairy Digester Research and Development Program." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/dairy-digester

209 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.58). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

210 "Dairy Digester Research & Development Program." California Department of Food and Agriculture. Available at: https://www.cdfa.ca.gov/oars/ddrdp/

211 "Anaerobic Dairy Digester Converts Methane to Renewable Natural Gas in Merced County." *California Climate Investments*. Available at: https://www.caclimateinvestments.ca.gov/2025-profiles/anaerobic-dairy-digester-converts-methane-to-renewable-natural-gas-in-merced-county

212 "Dairy Digester Research & Development Program." *California Department of Food and Agriculture*. Available at: https://www.cdfa.ca.gov/oars/ddrdp/

213 "2025 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* May 2025 (p.59). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

214 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,*May 2025 (p.15). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

215 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,*May 2025 (p.9 & 37). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

NOx, and ozone are emitted alongside them. These are well-known to cause a wide range of health issues, including heart disease, stroke, chronic obstructive pulmonary disease, lung disease, and respiratory infections in children, among others. The increasing frequency and intensity of wildfires has only exacerbated the problem.

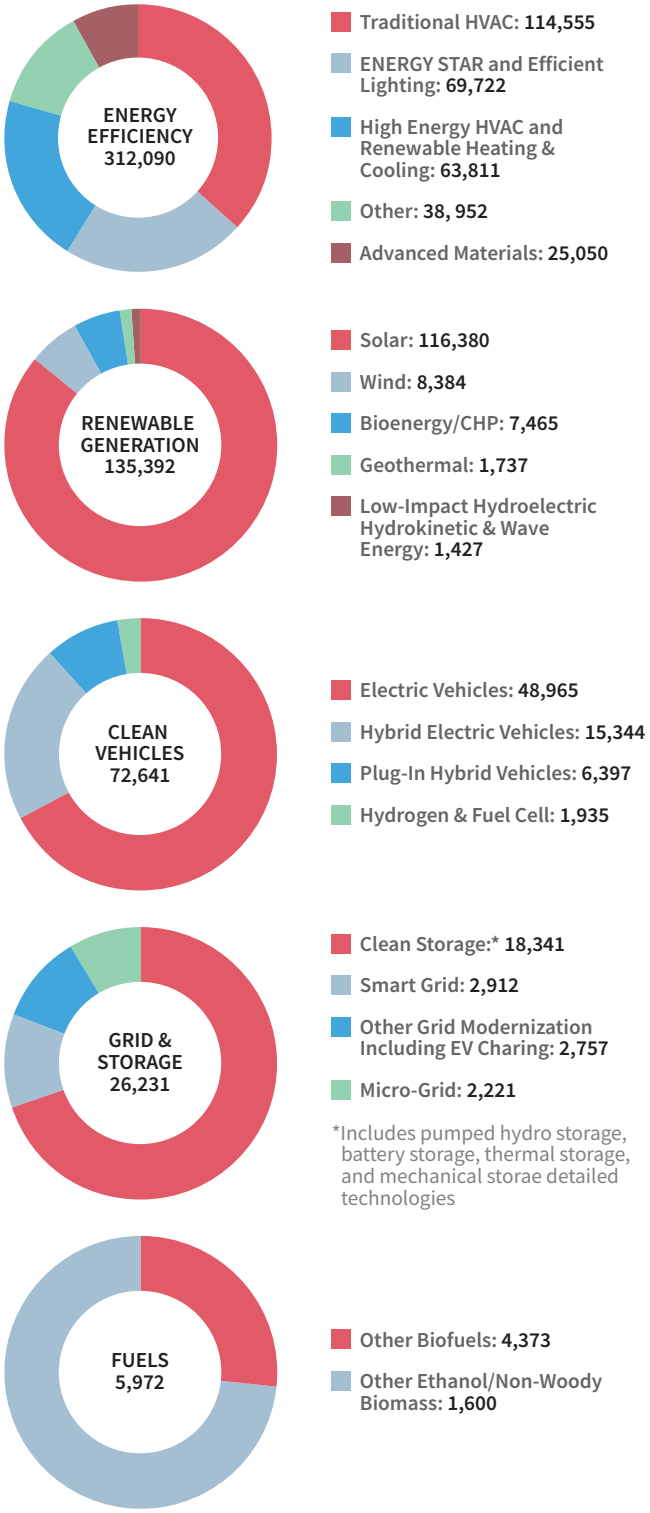
While reducing air pollution is crucial for the health of our communities, the improved health outcomes also translate into economic benefits from avoided emergency room trips and hospitalizations, treatments for lung cancer and other diseases, and premature deaths.[216]

3.2 Workforce Development

Climate legislation has led to the creation of new clean energy industries, such as solar installation, and the need for workers that goes along with it. In 2024, California led the U.S. in total clean energy jobs with 552,300 workers employed across the technologies – nearly twice as many as the second-ranked state, Texas. These jobs are spread across solar, wind, energy efficiency, clean vehicles, batteries and other sectors, but the bulk are employed in the construction (41%) and professional services (24%) industries. Manufacturing accounts for 14% of the jobs and wholesale trade for another 10.5%, followed by other smaller segments. Notably, more than seven times as many workers were employed in clean energy jobs than in the fossil fuel industry (80,600) in 2024. 79% of all new energy jobs in California are clean energy jobs.[217]

Among the different sectors, most clean energy jobs are related to energy efficiency and California has the largest energy efficiency workforce in the U.S. The sector added nearly 10,000 workers in 2024, growing by 3.3% to 312,090 jobs overall. Renewable energy generation was the second-largest sector with 135,392 workers with the majority of the workforce in solar (116,380 jobs) and wind (8,384). Clean vehicles accounted for 72,641 workers in 2024. Within that sector, workers were split among electric vehicles (48,965), hybrid vehicles (15,344), and plug-in hybrid vehicles (6,397). Employment in clean vehicles has grown 75% since 2020 while the gas and diesel vehicles sector has lost jobs each year since 2021. The fastest-

Figure 15. California Clean Energy Employment by Sectors



Source: Clean Jobs California Factsheet, E2[218]

216 More information on the public health benefits of AB 32 programs can be found in Section 4.2 - Public Health Benefits

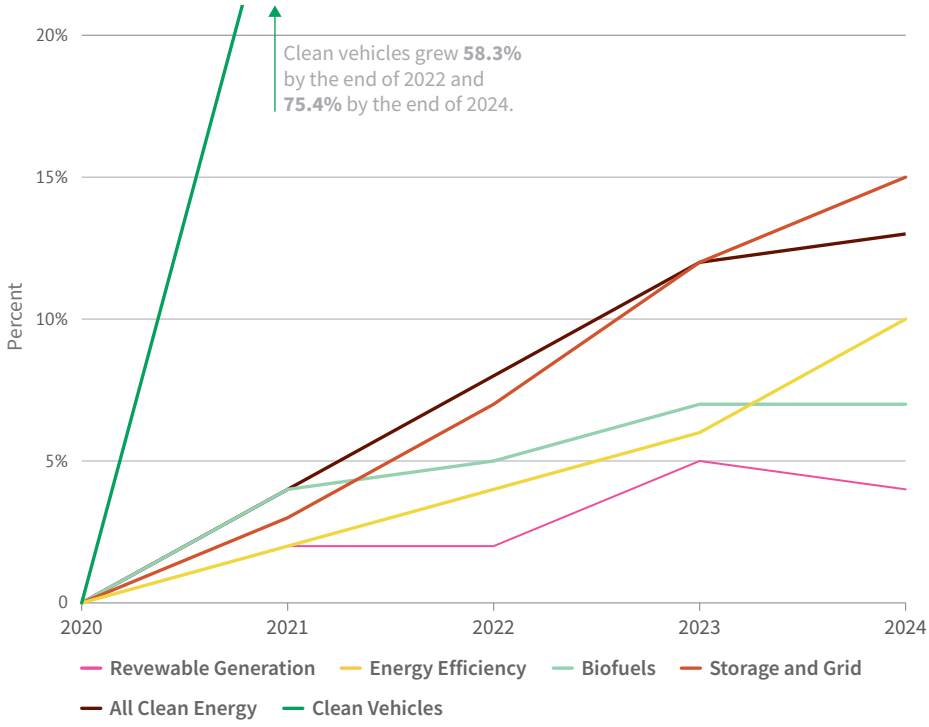
217 "Clean Jobs California Factsheet." *E2,* Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

218 Ibid.

growing sector is battery storage and grid modernization which grew by 3.4% in 2024 to 26,231—the largest in the nation. The biofuels workforce is the smallest in the state, employing only 5,972 workers in 2024.[219]

These new jobs haven't been limited to certain regions of the state as every county in California has clean energy jobs, ranging from 11 in rural Sierra County to 102,461 in Los Angeles County. Of the top 100 counties in the U.S. for clean energy jobs, 18 are in California. The top five counties include Orange (59,829 jobs), San Diego (53,888 jobs), Santa Clara (49,446 jobs), and Alameda (37,443 jobs), in addition to Los Angeles. The counties that have seen the greatest growth are more rural counties: Imperial (+13.2%), Placer (+13.1%) and Amador (+10.5%). The counties with the highest density of clean energy jobs as of 2024 (per 1,000 residents) were Yolo (63) and San Luis Obispo (61) counties. Even San Francisco, a small county by comparison, has 52 clean energy jobs per 1,000 residents.[220]

Figure 16. California Energy Employment by Clean Energy Sector Employment Growth



Source: Clean Jobs California Factsheet, E2[222]

AB 32 laid the groundwork for these new industries and workforce opportunities. The first Scoping Plan established a statewide energy efficiency target of at least 32,000 GWh and 800 million therms by 2020, making it the second-largest component in the state's overall emissions reduction program.[221] The energy efficiency targets set in 2025 are expected to result in savings of $589 million in 2026 due to reduced energy use including lower greenhouse gas emissions, and the avoided costs of electricity generation, transmission, and distribution.[223] The emissions targets set by AB 32 also required strengthening the state's renewable energy targets and investments in clean vehicles to reduce pollution from transportation. Battery storage and grid upgrades are required to adequately manage the state's growing solar resources, while demand for biofuels can be traced back to the Low Carbon Fuel Standard (LCFS) program established to meet the AB 32 target.

219 Ibid.

220 Ibid.

221 "Energy Efficiency Potential and Goals Studies." *California Public Utilities Commission*. Available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/energy-efficiency/energy-efficiency-potential-and-goals-studies

222 "Clean Jobs California Factsheet." *E2*, Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

223 "CPUC Sets New Energy Efficiency Targets to Continue California Leadership in Energy Efficiency." *California Public Utilities Commission*, 28 Aug. 2025. Available at: https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-sets-new-energy-efficiency-targets-to-continue-california-leadership-in-energy-efficiency

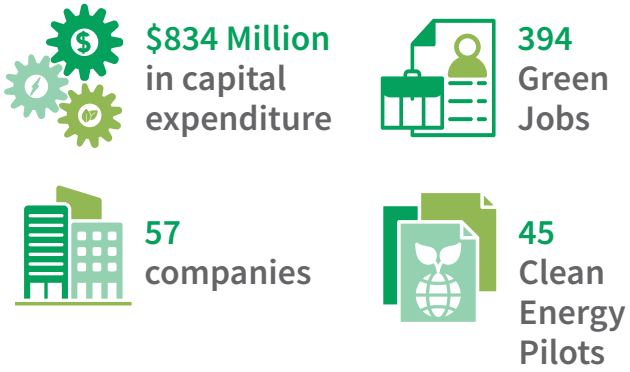
3.3 Business Development

By incentivizing investments in energy efficiency, renewable energy, and other low-carbon technologies, AB 32 helped drive demand for services such as solar installation and clean transportation manufacturing. The commitment to emissions reductions and new regulations encouraged entrepreneurship and attracted private investment into emerging clean tech sectors. New firms, partnerships, and industry clusters began to form around clean energy and sustainability solutions, and California is now a global leader in clean technology investment—continuously setting the bar for industry leaders across the world to innovate to California standards. From 2018 to Q2 2024, clean tech investments in California totaled $191 billion—the most of any state—and UK-based Octopus Energy Generation announced an investment of nearly $1 billion in Californian clean technology, focusing on carbon removal and renewable energy projects, in February 2026.[224, 225]

Los Angeles Cleantech Incubator (LACI) / Los Angeles Regional Energy Innovation Cluster

The Los Angeles Cleantech Incubator (LACI) is a nonprofit, public-private partnership that was created in 2011 to accelerate clean technology innovation and economic development in Los Angeles.[226] It was founded by the City of Los Angeles because of California's broader clean energy strategy tied to AB 32's goals to grow clean technology businesses and functions as the City's official incubator for clean tech startups. Its staff includes entrepreneurs, market specialists, and researchers combined with a 60+ mentor/advisor network providing expert advice on a full range of issues facing early to growth stage companies. In its first 10 years, it helped 340 startups raise $680 million.

Figure 17. Los Angeles Regional Energy Innovation Cluster Investments



Source: Los Angeles Regional Energy Innovation Cluster Interim Report, California Energy Commission[227]

Subsequently, LACI leveraged their experience and success as a clean tech organization for Los Angeles and formed the Los Angeles Regional Energy Innovation Cluster (LA REIC).[228] This new partnership encompasses the greater Los Angeles Region (defined as Santa Barbara, Ventura, Los Angeles, and Orange Counties). LA REIC has driven the region's efforts to meet the state's energy goals by creating a framework that addresses regional energy needs while supporting and accelerating new clean energy technologies. The goals of the LA REIC are to support and accelerate:

- Ratepayers access to beneficial new clean energy innovations
- The Los Angeles region's fulfillment of California's energy goals
- The development and commercialization of clean energy technologies that can overcome the region's barriers to achieving the state's statutory energy goals

224 "Clean Energy Investment in Every State." *Climate Central.* Available at: https://www.climatecentral.org/climate-matters/clean-energy-investment-in-every-state

225 Pattanaik, Anwesha. "Octopus Energy plans $1bn investment in Californian clean technology." *Yahoo! Finance,* 17 Feb. 2026. Available at: https://finance.yahoo.com/news/octopus-energy-plans-1bn-investment-090151711.html

226 "LA Cleantech Incubator." *Wikipedia.* Available at: https://en.wikipedia.org/wiki/LA_Cleantech_Incubator

227 "Los Angeles Regional Energy Innovation Cluster Interim Report." *California Energy Commission,* Apr. 2024. Available at: https://www.energy.ca.gov/sites/default/files/2024-04/CEC-500-2024-033.pdf

228 "Los Angeles Regional Energy Innovation Cluster Interim Report." *California Energy Commission,* 26 Apr. 2024. Available at: https://www.energy.ca.gov/publications/2024/los-angeles-regional-energy-innovation-cluster-interim-report

According to a 2024 report from the California Energy Commission, the impact has been clear. In the previous five years, LACI startups raised over $834.2 million in capital and 57 companies that graduated from the LACI's Innovators program raised $46 million of follow-on funding. They have also hosted more than 130 events across the region to bolster the clean tech innovation network and referred over 220 startups to other incubators. Their goal is to help more than 230 new startups over the next five years.[229]

Bay Area Climate Compact (BACCompact) and Bay Area Climate Collaborative (BACCollaborative)

The Bay Area Climate Collaborative (BACC) was created in March 2009 by the cities of San Francisco, Oakland, and San Jose with the Silicon Valley Leadership Group and other regional partners including nonprofits and businesses.230 The goal was to create a public-private entity that best serves the region, its municipalities, institutions, and communities to meet the state of California's goals for reducing greenhouse gas emissions under AB 32. The compact signed by the cities also stated their dedication to helping Bay Area communities prepare for and adapt to the impacts of climate change. As of April 2010, 15 Bay Area cities had joined, recognizing the need for cross-sector, regional collaboration.[231]

The Collaborative created a 10-point plan of initiatives with specific timelines and targets in the following key action areas:[232]

- Green building / Solar - Developing common standards
- Transportation Alternatives - Reducing vehicle miles traveled
- Renewable Energy - Increased renewable energy use

Figure 18. Bay Area Climate Collaborative 10-Point Action Plan

1. Adaptation
2. Clean Cars
3. Energy Efficiency
4. Green Building & Solar
5. Green Jobs
6. Public Information
7. Renewable Energy
8. Solid Waste
9. Transportation Alternatives
10. Water Use

Source: Bay Area Climate Collaborative, Joint Venture Silicon Valley Network[233]

- Energy Efficiency - Existing buildings
- Green Jobs – Training and placing the clean and green workforce
- Water Use - Increasing water conservation and recycling
- Adaptation - Developing infrastructure climate adaptation plans
- Public Information - Regional public information campaign
- Solid Waste - Increasing recycling/diversion
- Clean Cars - Regional electric vehicle initiative

In 2015, the BACC became part of Prospect Silicon Valley, a nonprofit innovation hub focused on solutions for sustainable cities. They work with government, academia, and startups to accelerate innovations in transportation, energy and the built environment. The organization has projects in over 50 cities and $90 million in funding.[234]

Cleantech San Diego

Founded in 2007, Cleantech San Diego acts as a regional clean tech trade association and innovation network with more than 130 members including businesses, universities, local governments, and nonprofits all committed

229 Ibid.

230 "Bay Area Climate Collaborative." *Wikipedia.* Available at: https://en.wikipedia.org/wiki/Bay_Area_Climate_Collaborative

231 "Bay Area Climate Compact Signatories." *Joint Venture Silicon Valley Network.* Available at: https://web.archive.org/web/20100707032235/http://www.jointventure.org/index.php?option=com_content&view=article&id=83&Itemid=45

232 "Bay Area Climate Collaborative." *Joint Venture Silicon Valley Network.* Available at: https://jointventure.org/images/stories/pdf/bacc.overview.govt.pdf

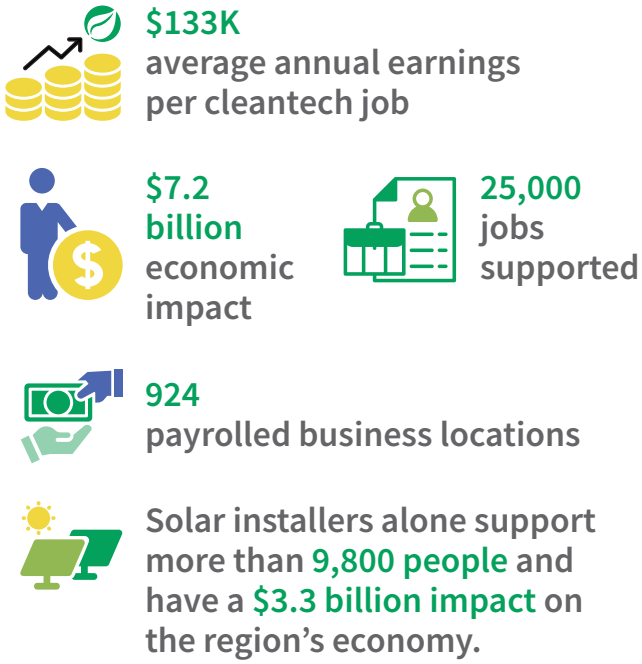
233 Ibid.

234 "Prospect Silicon Valley Vanguard." *Climatebase.* Available at: https://climatebase.org/company/6543/prospect-silicon-valley-vanguard

to advancing clean tech and sustainability in the region following the passage of AB 32.[235] As a nonprofit and member-based association, it also aims to position the greater San Diego region as a global leader in the clean tech economy. Most of the members are in the energy and technology sector (76), followed by professional services (23), community partners (14), and government (13). Clean tech has contributed $7.2 billion to the San Diego economy while supporting 25,000 well-paying jobs (average annual earnings per clean tech worker is $133,000) and 924 businesses. Solar installation alone employs more than 9,800 people and contributes $3.3 billion to the region's economy.[236]

Cleantech San Diego also created the Southern California Energy Innovation Network (SCEIN) that provides free accelerator support for early-stage clean energy technology startups across several counties, helping them commercialize technologies that contribute toward California's climate and energy goals (e.g., energy storage, efficiency, grid tech). SCEIN is a regional network that includes Imperial, Riverside, San Diego, and San Bernardino Counties. According to their 2025 annual report, 81 companies have participated in SCEIN and 28 were currently active in 2025. Together, these companies employ 853 people, have had 494 patents approved, and have raised $727 million in follow-on funding from public and private sources. The follow-on funding represents a more than 80:1 return on the California Energy Commission's investment in the regional energy innovation cluster.[237]

Figure 19. San Diego's Cleantech Economy



Source: 2025 Annual Report, CleanTech San Diego[238]

235 "About Us." *Cleantech San Diego.* Available at: https://cleantechsandiego.org/

236 "Annual Report 2025." *Cleantech San Diego.* Available at: https://cleantechsandiego.org/ar2025/

237 Ibid.

238 Ibid.

IV. COMMUNITY & ENVIRONMENTAL JUSTICE BENEFITS

AB 32 has not only advanced California's climate goals, but it also laid the groundwork to address long-standing environmental inequities. The California Climate Investments program, funded by cap-and-trade revenues, has led to development of programs that address quality of life and environmental health for communities across the state. AB 32 also led to the creation of the Environmental Justice Advisory Committee (EJAC) in 2006 to support the development of the initial Scoping Plan from an environmental justice perspective. From environmental restoration to affordable housing, California is demonstrating how climate policy can function as a tool for both decarbonization and community revitalization.

4.1 California Climate Investments

Communities that are exposed to multiple sources of pollution or lack the resources to invest in low-carbon practices, transportation, or climate resilience will be the hardest hit by the impacts of climate change. AB 32 created the funding mechanism for projects to address these inequities, while subsequent legislation (SB 535 of 2012 and AB 1550 of 2016) strengthened the state's commitment to equity by requiring that 35% of California Climate Investments be allocated to disadvantaged communities, low-income communities and low-Income households, collectively referred to as priority populations.[239] The California Environmental Protection Agency (CalEPA) is responsible for identifying disadvantaged communities and low-income communities. Low-income households are those with incomes either at or below 80% of the statewide median or below a threshold designated as low-income by the Department of Housing and Community Development.[240]

Figure 20. California Climate Investments

CALIFORNIA CLIMATE INVESTMENTS

$15.5 billion across more than 604,891 projects. Making investments in affordable housing, low carbon transportation, forest health, community protection and more.

Source: 2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds, California Climate Investments[241]

Since the Legislature first appropriated funds from cap-and-trade in 2014 through 2025, California Climate Investments has implemented more than $15.5 billion across more than 604,891 projects, making major investments in affordable housing, low-carbon transportation, forest health, community air protection, and more.[242] These programs are projected to reduce GHG emissions by an estimated 130.5 million metric tons of carbon-dioxide equivalent ($MMTCO_2e$) over the project lifetimes. Of that funding, $11.4 billion (76%) went to priority populations, greatly exceeding the statutory requirement. In 2025 alone, $2.1 billion of the approximately $2.6 billion implemented directly benefited priority and disadvantaged communities.[243]

Below are some examples of programs funded by cap-and-trade that have benefitted California's communities, especially historically underserved ones. These initiatives are especially important because research shows that low-income and disadvantaged communities are disproportionately impacted by pollution and the impacts of climate change.

Affordable Housing: It is well-known that there is a housing crisis in California and that it has become increasingly difficult for lower-income Californians to afford to live here. Exposure to harmful pollution from vehicles is also not equally distributed, with lower-income and ethnically di-

239 "SB 535 Disadvantaged Communities." *State of California Office of Environmental Health Hazard Assessment*. Available at: https://oehha.ca.gov/calenviroscreen/sb535

240 "Priority Populations." *California Climate Investments.* Available at: https://www.caclimateinvestments.ca.gov/priority-populations

241 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." *California Climate Investments,* July 2026 (p.21). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

242 Ibid.

243 Ibid. (p.8)

verse communities suffering much higher exposure to the particulate matter that causes lung and heart diseases.[244] The Affordable Housing and Sustainable Communities Program (AHSC) funds loans and grants for affordable housing, transportation, urban greening, and community programming. The program integrates housing, land use, and transportation planning to create more walkable, sustainable communities. By 2025, the program had awarded $4 billion with 56% of AHSC developments located in disadvantaged communities (DACs).[245]

According to the 2025 report, 20,361 new affordable homes have been built serving an estimated 279,964 households overall via 209 integrated housing and transportation developments funded by the program. The average rent savings from living in AHSC-funded housing are $10,566 per household per year. Of the new homes, 15% are permanent supportive housing serving formerly homeless households, 33% serve extremely low-income households, and the vast majority of the remaining units serve low-income households of 60% area-median income (AMI) and below.[246]

In addition to providing much-needed affordable housing, the program also supports the state's decarbonization goals. AHSC is expected to result in 5.7 $MMTCO_2e$ of avoided GHG emissions by decreasing reliance on driving, while investments in public transit and active transportation connect residents to services and economic opportunities. AHSC has resulted in 41,579 cars being removed from the road and 512 million fewer miles driven each year, while 1,512 miles of new and improved bike lanes have been added along with 959 new buses and 28,317 transit passes for residents.[247]

AHSC also delivers direct economic benefits to communities. The program has generated $4.7 billion in wages and business income while supporting 46,938 jobs during housing construction. An additional $1.8 billion in tax revenue has gone to the state and local governments. The program structure is diverse and flexible, providing investments in rural, suburban, and urban areas. Projects have ranged from farmworker housing paired with vanpooling services to affordable infill housing near major transit systems.[248]

Affordable Drinking Water: In September 2012, Governor Jerry Brown signed Assembly Bill 685 (AB 685) which made California the first state in the nation to legislatively recognize the human right to safe, clean, affordable, and accessible water.[249] The Safe and Affordable Drinking Water Fund (SADW) is part of the Safe and Affordable Funding for Equity and Resilience (SAFER) Program.[250, 251] SAFER provides a set of tools, funding sources, and regulatory authorities designed to meet the goals of safe, accessible, and affordable drinking water for all Californians. Senate Bill 200 (SB 200) established the Safe and Affordable Drinking Water Fund in 2019 to address the lack of funding and provide solutions to water systems, especially those serving disadvantaged communities, to address both their short- and long-term drinking water needs.[252] The drinking water crisis affects more than one million people in California communities and the funds

244 "Inequitable Exposure to Air Pollution from Vehicles in California." *Union of Concerned Scientists,* 2019. Available at: https://www.ucs.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf

245 "2025 Affordable Housing and Sustainable Communities Program Fact Sheet." *California Housing Partnership and Enterprise Community Organization,* Mar. 2025. Available at: https://www.enterprisecommunity.org/sites/default/files/2025-07/AHSC-Fact-Sheet-2025.pdf

246 Ibid.

247 Ibid.

248 Ibid.

249 "Human Right to Water Portal." *California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water_issues/programs/hr2w/

250 "Safe and Affordable Funding for Equity and Resilience." *California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water_issues/programs/grants_loans/sustainable_water_solutions/safer.html

251 "Safe and Affordable Drinking Water Fund." *California State Water Resources Control Board.* Available at: https://www.caclimateinvestments.ca.gov/safer-drinking-water

252 "Safe and Affordable Funding for Equity and Resilience." *California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water_issues/programs/grants_loans/sustainable_water_solutions/safer.html

are used to develop and implement sustainable solutions for small systems with violations of drinking water standards. The SADW is funded by up to $130 million of GGRF funds annually.[253]

As of November 2025, $315.6 million from the SADW had been implemented across 142 projects with nearly all of the funding ($314 million) benefiting priority populations.[254] In 2025, the full $78.2 million allocated went to disadvantaged communities and supported 72 full-time jobs. According to the fund's FY 2025-26 report, the program has fixed 321 failing water systems that serve 3.3 million people since 2019. While the broader cap-and-trade program reduces harmful pollution from industrial sources that tend to be located in disadvantaged communities, programs like SAFER provide these same communities with access to safe and affordable drinking water.[255] When voters passed the $10 billion climate bond (Proposition 4) in 2024, an additional $1.9 billion in funding will be spent to increase the amount and quality of water available for people to use.[256]

Extreme Heat: Extreme heat is a deadly and increasing consequence of climate change. Rising global temperatures caused by climate change are making heat waves more frequent, longer-lasting, and more intense. They can cause heat stroke along with other health issues and vulnerable groups are especially at risk. The Extreme Heat and Community Resilience Program (EHCRP) was created in 2024-25 to reduce the impacts of extreme heat.[257]

Through the EHCRP, the goal is to support local, tribal, and regional efforts to reduce the impacts of extreme heat by building long-lasting cooling infrastructure solutions and strengthening community resilience needed to withstand extreme heat events. An initial round of $32 million of GGRF funds was allocated to 46 California communities in 2025. For example, city officials will construct a heat resilient playground and splashpad in Redding while the San Bernardino community college district will work with students to provide heat safe infrastructure including shaded spaces, cool water stations, and solar-powered study spots. A notice of funding availability for a second round of $27.5 million in grants was released in June 2026.[258] In addition to this funding, Proposition 4 (2024) dedicated $200 million for activities focused on protecting communities from extreme heat and $100 million to support places for people to go during heatwaves or disasters.[259]

4.2 Public Health Benefits

California has long struggled with air pollution, leading to adverse public health impacts such as increasing the risk of premature birth, causing or worsening lung and heart disease, and shortening lives.[260] All generated from the use of factories, power plants, and diesel- and gasoline-powered vehicles and equipment, particulate matter (PM), nitrogen oxides (NOx), sulfur oxides (SOx), and ozone (O_3) have been proven to increase the risk of premature death and cause and exacerbate other health conditions, even with short-term exposure. Our air pollution also contributes to climate change, leading to extreme heat, wildfires, and floods – all of which impact public health and quality of life. Without intervention, climate change is expected to cause approximately

253 "About the SAFER Program." *California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/safer/background.html

254 "Safe and Affordable Drinking Water Fund." *California State Water Resources Control Board.* Available at: https://www.caclimateinvestments.ca.gov/safer-drinking-water

255 "FY 2025-26 Fund Expenditure Plan, Safe and Affordable Drinking Water Fund." *California Climate Investments and the California State Water Resources Control Board.* Available at: https://www.waterboards.ca.gov/water_issues/programs/grants_loans/docs/2025/fy2025-26-fep-final-1125.pdf

256 "Proposition 4." *Legislative Analyst's Office,* 5 Nov. 2024. Available at: https://lao.ca.gov/BallotAnalysis/Proposition?number=4&year=2024

257 "California Invests $32M to Help Communities Combat Extreme Heat." *State of California Governor's Office of Land Use and Climate Innovation*, 16 July 2025. Available at: https://lci.ca.gov/news/2025/05-29.html

258 "Extreme Heat and Community Resilience: Round 2 Resources." *State of California Governor's Office of Land Use and Climate Innovation,* 16 June 2026. Available at: https://lci.ca.gov/climate/icarp/grants/extreme-heat-round-2-resources/

259 "Proposition 4." *Legislative Analyst's Office,* 5 Nov. 2024. Available at: https://lao.ca.gov/BallotAnalysis/Proposition?number=4&year=2024

260 "Health Impact of Air Pollution." *American Lung Association State of the Air Report,* 2026. Available at: https://www.lung.org/research/sota/health-risks

250,000 additional deaths per year worldwide from 2030 to 2025 from undernutrition, malaria, diarrhea and heat stress alone, with direct damage costs to health estimated to be between US$ 2–4 billion per year by 2030.[261, 262]

According to the American Lung Association's annual Spare the Air report (of which the most recent data is from 2024), California has retained its position of being the state with the most metro areas on the list of most-polluted cities—with 9 of the top 25. Los Angeles is the city with the worst ozone pollution in the nation, and has been in 25 of the last 26 years. Despite these trends, California cities are improving their air quality as four California cities (Fresno, Bakersfield, Sacramento, and Visalia) recorded their fewest-ever number of unhealthy days for ozone and Los Angeles residents were exposed to 77 fewer days of unhealthy levels of ozone per year than they were in 2000.[263] A 2012 study estimated that an expected 6% reduction in PM 2.5 exposure associated with AB 32 would reduce air pollution mortality in California by 6.2%, avoiding 560–1,100 premature deaths per year for the conditions in 2030. The monetary benefit from this avoided mortality was estimated at $5.4 billion per year.[264]

Part of this progress can be attributed to the funding and work done by the California Climate Investments program. In 2025, Governor Newsom announced that CARB has directed $632 million in cap-and-trade funds to more than 9,000 local-level air-quality improvement projects since 2017, with 85% of the funding reaching disadvantaged and low-income communities, to reduce harmful air pollutants and emissions by replacing old diesel equipment and upgrading vehicles, among other actions.[265] For example, projects in West Oakland, including incentives to repower 13 tugboats with cleaner engines, led to a 31% reduction in cancer-causing diesel emissions between 2017 and 2024, across an area of 29,000 residents.[266]

Projects like those in West Oakland have resulted in large reductions in NOx, diesel PM, and GHG emissions since 2017 alone:

- 23,000 tons of nitrogen oxides (NOx) – equivalent to removing about 22.5 million cars from the road for an entire year
- 950 tons of diesel particulate matter – equivalent to annual emissions from up to two million heavy-duty trucks
- 282,600 metric tons of greenhouse gas emissions – equivalent to emissions from driving a gasoline-powered car nearly 872 million miles[267]

These reductions have real impacts on public health as communities experience less exposure to pollutants, resulting in public health benefits valued at $15.3 billion as of the end of 2024. This includes 2,989 avoided asthma onset cases, 257,920 avoided asthma symptom cases among children (valued at $254.2 million), 1,724 avoided hospital visits, 1,074 avoided premature cardiopulmonary deaths ($15.6 billion), and 164,343 avoided lost workdays (valued at $38.6 million).[268]

261 "1.5°C: what it means and why it matters." *United Nations Climate Action*. Available at: https://www.un.org/en/climatechange/science/climate-issues/degrees-matter

262 "Climate Change Impacts." *World Health Organization*. Available at: https://www.who.int/health-topics/climate-change#tab=tab_1

263 "2026 State of the Air Report Key Findings." *American Lung Association*, 2026. Available at: https://www.lung.org/research/sota/key-findings

264 Zapata, Christina, et. al. "PM 2.5 co-benefits of climate change legislation part 1: California's AB 32." *Climatic Change & Springer*, Mar. 2013 (p. 377-397). Available at: https://ideas.repec.org/a/spr/climat/v117y2013i1p377-397.html

265 "New report shows Cap-and-Invest dollars are improving air quality in California's most polluted communities." *Office of Governor Gavin Newsom*, 25 July 2025. Available at: https://www.gov.ca.gov/2025/07/25/new-report-shows-cap-and-invest-dollars-are-improving-air-quality-in-californias-most-polluted-communities/?utm_source=chatgpt.com

266 "New report shows California law funded by Cap-and-Invest dollars improves air in the state's most polluted communities." *California Air Resources Board*, 24 July 2025. Available at: https://ww2.arb.ca.gov/news/new-report-shows-california-law-funded-cap-and-invest-dollars-improves-air-states-most

267 Ibid.

268 "Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds." *California Climate Investments*, May 2025 (p. 47). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2025.pdf

4.3 AB 32 Environmental Justice Advisory Committee (EJAC)

The Environmental Justice Advisory Committee (EJAC) was created in 2006 as part of AB 32 to help develop the initial Scoping Plan in 2008. The EJAC, led by the California Air Resources Board (CARB), includes advocates from community-based organizations, tribal groups, and people from areas with significant exposure to pollution—helping to shape policy in ways that reflect lived experiences.[269] As an advisory body, recommendations made by the EJAC are not always implemented. During the development of the 2008 Scoping plan, for example, the EJAC recommended that CARB institute a carbon price through a carbon fee rather than through a cap-and-trade program, but recognized the importance of mutually supportive policies. Additionally, the EJAC suggested that California establish a three-pronged approach for addressing greenhouse gases: adopting standards and regulations, providing incentives, putting a price on carbon via a carbon fee.[270]

CARB has recognized the importance of implementing complementary measures directed at emission sources that are included in the cap-and-trade program, as suggested by the EJAC. In practice, the following measures were implemented to achieve cost-effective emissions reductions while accelerating the necessary transition to the low-carbon economy required to meet the 2050 target:

- The Light-Duty Vehicle Greenhouse Gas Standards (AB 1493) – designed to accelerate the introduction of low-greenhouse gas emitting vehicles, reduce emissions and save consumers money at the pump.
- The Low Carbon Fuel Standard (LCFS) – designed to accelerate the availability and diversity of low-carbon fuels by taking into consideration the full life-cycle of greenhouse gas emissions.
- The Regional Transportation-Related Greenhouse Gas Targets (SB 375) – provided incentives for investment into integrated development patterns and transportation infrastructure, through improved planning.
- The Renewables Portfolio Standard (RPS, SB 100) – promoted multiple objectives, including diversifying the electricity supply, including investment in the transmission infrastructure and system changes to allow integration of large quantities of intermittent wind and solar generation.
- The Million Solar Roofs Initiative – incentivized the transformation of the rooftop solar market by driving down costs over time.
- The Goods Movement program – intended to achieve criteria and toxic air pollutant reductions.

Each of these complementary measures helped to position the California economy for the future by reducing the greenhouse gas intensity of products, processes, and activities. The 2008 Scoping Plan concluded that, when combined with the absolute and declining emissions limit of the cap-and-trade program, these policies ensure the cost-effective achievement of greenhouse gas emissions goals and set the state on a path towards a clean, low carbon future.[271]

As a part of its ongoing work, EJAC has released Building Decarbonization Recommendations, including determining that the California Public Utilities Commission (CPUC) Building Decarbonization Proceeding R.19-01-011 and CARB Zero-Emission Appliance Standards resulted in policies and programs that excluded frontline communities from building decarbonization's transition, investment, and benefits.[272] The CPUC Building Decarbonization R.19-01-011 dedicated $200 million of cap-and-trade funds towards the Technology and Equipment for Clean

269 "Environmental Justice Advisory Committee." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/environmental-justice-advisory-committee

270 "Recommendations and Comments of the Environmental Justice Advisory Committee on the Implementation of the Global Warming Solutions Act of 2006 (AB 32) on the Proposed Scoping Plan." *California Air Resources Board*, Dec. 2008. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-01/proposedplan-ejaccommentsfinaldec10.pdf

271 "2008 Climate Change Scoping Plan." *California Air Resources Board,* Dec. 2008 (p. 19). Available at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf

272 "AB 32 Environmental Justice Advisory Committee Official Recommendations." *California Air Resources Board*. Available at: https://ww2.arb.ca.gov/EJAC-Recommendations

Heating (TECH) Initiative and the Building Initiative for Low-Emissions Development (BUILD) Program.[273] The CARB Zero-Emission Appliance Standards seek to reduce building-related greenhouse gas and smog-forming NOx emissions to help meet climate and air quality targets while providing important health benefits.[274] To reconcile these disparities, EJAC suggested a collaborative process to support the development and implementation of a comprehensive, statewide strategy for the phased deployment of standards and direct appliance installation programs that are accessible to frontline communities. In response, CARB committed to developing an implementation plan to achieve widespread adoption of zero-emission appliances and equipment. While the Legislature is primarily responsible for budgetary decision-making, CARB staff committed to tracking available funding to support direct installation resources for frontline communities and have commissioned UCLA to create a statewide review of available incentive resources.[275] The work of the Environmental Justice Advisory Committee has served as a powerful voice driving the impact of AB 32 in advancing environmental justice, contributing to the direction of CARB Scoping Plans and the implementation of complementary policies that support environmental and social justice across California.[276]

273 "Order Instituting Rulemaking Regarding Building Decarbonization." *California Public Utilities Commission,* 23 Feb. 2023. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M502/K693/502693015.pdf

274 "Zero Emission Appliance Standards - Public Comments." *California Air Resources Board,* May 2025. Available at: https://ww2.arb.ca.gov/public-comments/zero-emission-appliance-standards-public-comments

275 "Cliff, Steven S. "Building Decarbonization Background and Updates for the September 11, 2025 Joint Meeting." *California Air Resources Board,* 28 Aug 2025. Available at: https://ww2.arb.ca.gov/sites/default/files/2025-08/09-11-2025%20Joint%20Meeting%20Building%20Decarbonization%20Memo.pdf

276 Manke, Kara. "California has dramatically improved its air quality, but racial disparities persist." *UC Berkeley News,* 11 Sept. 2024. Available at: https://news.berkeley.edu/2024/09/11/california-has-dramatically-improved-its-air-quality-but-racial-disparities-persist/

V. LEGACY

AB 32 can be recognized for both its impact on California's environment, air, and public health and as the gold standard of environmental regulations for other jurisdictions to replicate. AB 32 has served as a model for multiple state level greenhouse gas emissions regulations as Hawaii, New Jersey, Massachusetts, and Connecticut all implemented their own versions of the Global Warming Solutions Act, shortly after California's implementation. In addition to the replication of AB 32, states across the nation have implemented versions of California's Low Carbon Fuel Standard and Renewable Portfolio Standards in addition to being beneficiaries of California's Clean Air Act Waiver, which has led to large emissions reductions nationwide. For example, emissions from electric power generation have fallen by 41% from 2005 to 2024 in the U.S.[277] Globally, California has engaged international governments in climate partnerships, consolidated cap-and-trade systems, and memorandums of understanding to guide the world towards emissions reductions. This leadership is the result of innovative and impactful climate leaders throughout California's history, all of whom continue to push California towards a cleaner and healthier future.

5.1 California's National Leadership

Hawaii

The Global Warming Solutions Act of 2007 (Act 234) mandated statewide GHG emissions reduction to 1990 levels by 2020 and formally integrated greenhouse gas emissions into the Air Pollution Control Permit process of the Clean Air Branch to regulate emissions statewide.[278,279] Hawaii met the 2020 goal of 15.48 $MMTCO_2e$ or less by almost 4 $MMTCO_2e$ (11.54 $MMTCO_2e$ in 2020). Subsequent legislation included Act 238 of 2022 and Act 15 of 2018, establishing a goal for statewide emissions to be at least 50% below 2005 levels by 2030 and net-negative by 2045, respectively. As of 2024 Hawai'i Greenhouse Gas Emissions Report, the state is not on track to meet the 2030 or 2045 goals.[280] On July 15, 2026 the Clean Fuel Standard (SB 2999) was signed into law, creating a credit market to reward the production and use of low-carbon fuels in the State, similar to California's Low Carbon Fuel Standard (LCFS).[281]

New Jersey

The Global Warming Response Act of 2007 (P.L. 2007, c. 112) required the state to cut emissions to 1990 levels by 2020 and to 80% below 2006 levels by 2050.[282] The law required the Department of Environmental Protection (DEP) to develop a GHG emissions inventory for the baseline years and a system for monitoring and reporting GHG emissions from specific sources. New Jersey met its 2020 goal of 109.20 $MMTCO_2e$ by 20.5$MMTCO_2e$, or 18%. In 2021, Governor Murphy signed Executive Order 274 to establish an interim GHG reduction target of 50% below 2006 levels by 2030 (approximately 60.6$MMTCO_2e$). New Jersey created The Comprehensive Climate Action

277 "U.S. Emissions." *Center for Climate and Energy Solutions*. Available at: https://www.c2es.org/content/u-s-emissions/

278 "AB 234 H.B. NO. 226." *Legislature of the State of Hawaii*, 30 June 2007. Available at: https://health.hawaii.gov/cab/files/2023/05/SLH2007_Act234.pdf

279 "New Release: Hawaii Greenhouse Gas Emissions Report for 2022, Final Report." *State of Hawaii, Department of Health,* April 2025. Available at: https://health.hawaii.gov/cab/hawaii-greenhouse-gas-program/

280 "Hawai'i Greenhouse Gas Emissions Report for 2020 and 2021." *Hawai'i State Department of Health, Clean Air Branch,* May 2024. Available at: https://health.hawaii.gov/cab/files/2024/05/2020-and-2021-Inventory_Final-Report_5-29-24.pdf

281 "SB2999 SD1 HD2 CD1." *Hawai'i State Legislature,* 15 July 2026. Available at: https://www.capitol.hawaii.gov/session/measure_indiv.aspx?billtype=SB&billnumber=2999&year=2026

282 "Greenhouse Gas Emissions Goals." *New Jersey Department of Environmental Protection.* Available at: https://dep.nj.gov/ghg/ghg-emissions-goals/

Plan to outline a path to meet their ambitious 2030 and 2050 targets.[283]

Massachusetts

The Global Warming Solutions Act of 2008 set economy-wide greenhouse gas emission reduction goals of 10-25% below 1990 emission levels by 2020 and at least 80% below statewide 1990 GHG emission levels by 2050.[284] Subsequent legislation in 2021 updated these goals to require a 50% reduction by 2030, 75% by 2040, and 85% reduction and net zero GHG emissions by 2050. Massachusetts met the statewide GHG emissions limit of 25% below 1990 level, reducing emissions 31.4% below 1990 levels.[285]

Connecticut

The Global Warming Solutions Act of 2008 required Connecticut to reduce its total greenhouse gas emissions to 10% below 1990 levels by 2020, and to 80% below 2001 levels by 2050.[286] In 2018, Connecticut passed Public Act 18-82, An Act Concerning Climate Change Planning and Resiliency, which set an interim goal of 45% below 2001 levels by 2030.[287] While Connecticut met the 2020 goal of 10% below 1990 levels a year early (13.9% reduction in 2019), achieving the 2030 goal will require an average annual reduction of 1.1 MMTCO2e each year from 2022 to 2030, a rate that the state had not yet achieved as of 2024.[288, 289]

Other Policies

In addition to the Global Warming Solutions Act, California has been a leader in climate policy with many of the state's most prominent climate laws being replicated by states across the country. One example of this is California's Low Carbon Fuel Standard (LCFS)—a program designed to decrease the carbon intensity of California's transportation fuel and provide an increasing range of low-carbon and renewable alternatives.290 Following California's lead, Oregon, Washington, New Mexico, and Hawaii all adopted Low Carbon Fuel Standards as recently as 2026—highlighting how impactful AB 32 has been even over 20 years later.

In addition to the LCFS to reduce transportation emissions, California has a Clean Air Act waiver, allowing the state to set stricter tailpipe emission and zero-emission vehicle (ZEV) standards, preempting standard federal regulations.[291] Section 177 of the Clean Air Act allows other states to adopt California's stricter emissions standards—17 states and the District of Columbia have fully or partially adopted California's vehicle regulations.[292] The impact of this is widespread, California estimates that itself and these "Section 177 States" accounted for 40% of new light-duty vehicle registrations and 28% of new heavy-duty vehicle registrations in the United States in 2025.[293] Despite this, the federal government has recently attempted to revoke California's Clean Air Act Waiver,

283 "New Jersey's Comprehensive Climate Action Plan, Global Warming Response Act 80x50 Report, 2025 Update." *New Jersey Department of Environmental Protection.* Available at: https://dep.nj.gov/wp-content/uploads/climatechange/new-jerseys-comprehensive-climate-action-plan.pdf

284 "Global Warming Solutions Act Background." *Massachusetts Executive Office of Energy and Environmental Affairs.* Available at: https://www.mass.gov/info-details/global-warming-solutions-act-background

285 "Statement Of Compliance With 2020 Greenhouse Gas Emissions Limit." *The Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.* Available at: https://www.mass.gov/doc/statement-of-compliance-with-2020-greenhouse-gas-emissions-limit/download

286 "Public Act 08-98: An Act Concerning Connecticut Global Warming Solutions." *Connecticut State Legislature,* 2008. Available at: https://www.cga.ct.gov/2008/SUM/2008SUM00098-R03HB-05600-SUM.htm

287 "Public Act 18-82: An Act Concerning Climate Change Planning and Resiliency." *Connecticut State Legislature,* 2018. Available at: https://www.cga.ct.gov/2018/SUM/2018SUM00082-R01SB-00007-SUM.htm

288 "1990-2021 Connecticut Greenhouse Gas Emissions Inventory." *Connecticut Department of Energy & Environmental Protection*, Apr. 2024. Available at: https://portal.ct.gov/-/media/deep/climatechange/1990-2021-ghg-inventory/deep_ghg_report_90-21_pre-22.pdf

289 "Connecticut GHG Inventory Shows Emissions Back to Pre-Pandemic Levels." *The Environmental Council of the States*, 3 May 2024. Available at: https://www.ecos.org/news-and-updates/connecticut-ghg-inventory-shows-emissions-back-to-pre-pandemic-levels/

290 "Low Carbon Fuel Standard." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

291 "California and the Clean Air Act (CAA) Waiver: Frequently Asked Questions." *United States Congress.* Available at: https://www.congress.gov/crs-product/R48168

292 "States Adopting CARB Emission Standards." *Fuel2Electric.* Available at: https://www.fuel2electric.com/states-adopting-carb-emission-standards

293 "States that have Adopted California's Vehicle Regulations." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/states-have-adopted-californias-vehicle-regulations

defying decades of precedent and affecting California, the District of Columbia, and 17 other states.[294]

California's Cap-and-Invest program, formerly known as Cap-and-Trade, was adopted by Washington state as well as Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont through the Regional Greenhouse Gas Initiative (RGGI).[295] Washington modeled their program after California's, and with the recent reauthorization of California's program, there is potential for linkage between the California, Washington, and Québec programs. The Eastern States in the RGGI have established individual CO_2 Budget Trading Programs based upon the RGGI Model Rule, composing a regional cap and market for allowances. Each state's program limits emissions from electric power plants, issues allowances, and establishes participation in regional CO_2 allowance auctions hosted by RGGI.[296] California's leadership has created a network of nationwide climate policies aimed at reducing greenhouse gas emissions, regulating polluters, and protecting communities from the harmful effects of climate change and air pollution.

In addition to setting influential policies, California leadership has a strong track record convening policymakers and leaders across the country to collaborate on climate goals. One such example of this is the U.S. Climate Alliance, established by California Governor Brown, New York Governor Cuomo, and Washington Governor Inslee in response to President Donald Trump's announcement to withdraw from the Paris Climate Agreement in 2017 (three years before the U.S. formally withdrew from the Paris Climate Agreement in 2020). Today, the Alliance includes governors from 24 states and territories, representing approximately 55% of the U.S. population, and 60% of the U.S. economy. Under the agreement, participating governors agree to:

- reduce collective net greenhouse gas (GHG) emissions below 2005 levels by at least 26-28% by 2025, 50-52% by 2030, and 61-66% by 2035,
- collectively achieve net-zero GHG emissions no later than 2050,
- accelerate new and existing policies to reduce climate pollution,
- build resilience to the impacts of climate change,
- promote clean energy deployment at the state and federal levels,
- center equity, environmental justice, and a just economic transition, and
- track and report progress to the global community in appropriate settings, including Paris Agreement convenings.[297]

5.2 California's Global Leadership

California has been a key climate leader across the world, not only setting the standard for climate policies but engaging governments from across the globe in climate conversations and partnerships. One such example of California's global climate leadership is the International Carbon Action Partnership (ICAP), established in 2007 by more than 15 signatories—a key leader being then-governor Arnold Schwarzenegger—as an international forum for governments that have implemented or are planning to implement emissions trading systems.[298] At the time of its inception California was evaluating options to achieve its 2020 greenhouse gas emissions target, and Europe had just launched the world's first ever emissions trad-

294 "'Assault on California continues': Governor Newsom sues Trump over illegal attempt to revoke state's clean air policies." *Office of Governor Gavin Newsom*, 12 June 2025. Available at: https://www.gov.ca.gov/2025/06/12/assault-on-california-continues-governor-newsom-sues-trump-over-illegal-attempt-to-revoke-states-clean-air-policies/

295 "The Regional Greenhouse Gas Initiative, an initiative of the Eastern States of the US." *RGGI, Inc.* Available at: https://www.rggi.org/

296 "State Statutes & Regulations." *RGGI, Inc.* Available at: https://www.rggi.org/program-overview-and-design/state-regulations

297 "About Our Coaliton." *United States Climate Alliance*. Available at: https://usclimatealliance.org/about/

298 "About ICAP." *International Carbon Action Partnership*. Available at: https://icapcarbonaction.com/en/about-icap

ing system. As these systems have developed over time, ICAP has been an important venue for sharing information between jurisdictions, providing support to emerging systems and strengthening the programs of all signatories. Today, ICAP has 36 full members and 9 observers.[299]

In 2009, Governor Schwarzenegger also created the Governor's Climate and Forest Taskforce (GCF Taskforce), the world's largest subnational network dedicated to protecting forests, reducing emissions, and enhancing livelihoods across the tropics.[300] Starting with just 9 other governors from Brazil, Indonesia, and the United States, it has grown to represent 54 member states and provinces from 11 countries, covering more than one-third of the world's tropical forests.[301] The GCF Taskforce operates on both political and technical levels; facilitating political engagement and leadership by Governors, enabling civil servants and their partners to implement their sustainable development agendas, supporting member states and provinces to secure finance and investment to implement jurisdictional programs, and facilitating efforts to incorporate the rights, principles, and interests of Indigenous Peoples and Local Communities (IPLCs) into jurisdictional policies for sustainable forests and land-use.[302]

An example of California's innovative cap-and-trade system as well as its global climate leadership, California and Québec established the Western Climate Initiative (WCI) in 2011.[303] WCI administers the shared emissions trading market between the two jurisdictions, representing the largest carbon market in the Americas and one of the largest in the world. WCI also administers the separate individual emissions trading system in the state of Washington—which will soon be linked to California and Québec's markets—and has resulted in over $76 billion in auction proceeds allocated to green funds of participating jurisdictions.[304]

In September 2015, California joined with 10 European and North American governments as founding partners of the International ZEV Alliance to accelerate the world's adoption of zero-emission vehicles (ZEVs). Members of the Alliance collaborate to set ambitious targets to increase ZEV adoption, share data and best practices and encourage other governments to join them. The other founding members were the Netherlands, Norway and the United Kingdom in Europe; Connecticut, Maryland, Massachusetts, Oregon, Rhode Island and Vermont in the United States; and Québec.[305] Today, there are 23 governments in the coalition and the issue areas have evolved as the ZEV market has grown in many member jurisdictions. Challenges related to affordability and universal access to charging infrastructure are of particular importance.[306]

The Under 2 Memorandum of Understanding (Under2MOU), initially signed in 2015 by California and the German state of Baden-Württemberg, was a first-of-its-kind agreement between subnational governments to limit planet warming emissions in order to keep global temperature rises well below 2°C – in line with the 2015 Paris Agreement target of limiting global warming to no more than 1.5°C.[307] Initially, the Under2MOU coalition sought to mobilize climate action from like-minded city, state and regional governments in the lead up to COP21. The agreement was updated in 2021 and signatories now commit to reaching net zero emissions by 2050.[308] There are 177 states and regions signed on to the Under2MOU, all of whom have submitted Climate Action Plans outlining how their jurisdiction will achieve these ambitious

299 "15-year Anniversary of ICAP." *International Carbon Action Partnership*. Available at: https://icapcarbonaction.com/en/15-year-anniversary-icap

300 "History." *Governors' Climate and Forests Taskforce*. Available at: https://www.gcftf.org/who-we-are/history/

301 "Our Structure." *Governors' Climate and Forests Taskforce*. Available at: https://www.gcftf.org/who-we-are/our-structure/

302 "Theory of Change." *Governors' Climate and Forests Taskforce*. Available at: https://www.gcftf.org/what-we-do/theory-of-change/

303 "Our Work." *Western Climate Initiative*. Available at: https://wci-inc.org/

304 "Results and Impacts." *Western Climate Initiative*. Available at: https://wci-inc.org/our-work/results-and-impacts

305 "Climate Change Partnerships." *California Energy Commission*. Available at: https://www.energy.ca.gov/about/international-cooperation/climate-change-partnerships

306 "2026 Focus Areas." *ZEV Alliance*. Available at: https://zevalliance.org/focus-areas/

307 "The Paris Agreement." *United Nations Climate Change*. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement

308 "Climate Change Partnerships." *California Energy Commission*. Available at: https://www.energy.ca.gov/about/international-cooperation/climate-change-partnerships

goals.[309] Thanks to California's leadership, this is the first time that some jurisdictions have developed Climate Action Plans to reduce greenhouse gas emissions.

Following the Trump administration's announcement of their intention to withdraw the U.S. from the Paris Climate Agreement, California signed climate-related memoranda of understanding (MOU) with various foreign governments under Governor Jerry Brown. In 2017, Governor Brown finalized an MOU with China's Ministry of Science and Technology to work together to reduce emissions through investments in low-carbon energy sources, cooperation on climate research, and expanded commercialization of clean technologies.[310] This partnership led to the creation of the California-China Climate Institute at UC Berkeley in September 2019.[311] Multiple California Governors and other members of the state leadership have signed bilateral and multilateral agreements with national and subnational leaders to strengthen the global response to the threat of climate change.[312]

These programs and agreements highlight the critical role that California has played as a global climate leader and innovator since the adoption of AB 32 in 2006. In the last 20 years, California has seen three governors, all of whom have worked to achieve existing climate goals and set new, ambitious targets, maintaining California's status as a global leader. Outside of these examples, California continues to lead the nation and world in setting ambitious emissions reduction targets, setting the standard for climate innovation and economic growth.

309 "Under2 Memorandum of Understanding." *The Climate Group.* Available at: https://www.theclimategroup.org/under2-memorandum-understanding

310 "China and California sign deal to work on climate change without Trump." *The Guardian,* 6 Jun. 2017. Available at: https://www.theguardian.com/us-news/2017/jun/07/china-and-california-sign-deal-to-work-on-climate-change-without-trump

311 "California-China Climate Institute." *UC Berkeley Center for Law, Energy, & the Environment.* Available at: https://clee.berkeley.edu/initiative/california-china-climate-institute/

312 "Climate Change Partnerships." *California Energy Commission.* Available at: https://www.energy.ca.gov/about/international-cooperation/climate-change-partnerships

ASSEMBLY BILL NO. 32

CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

VI. KEY ACHIEVEMENTS

Before the passage of AB 32, California struggled to manage air pollution, particularly the smog in Los Angeles, the looming threat of climate change, and the environmental impacts of industry on our communities. While implementation is still far from complete, California has achieved historic milestones in its effort to reduce greenhouse gas emissions and improve environmental and public health across the state. As we celebrate the 20th anniversary of AB 32, let's look at our recent accomplishments and what to expect as we approach the SB 32 goal in 2030.

Some of the most notable achievements include:

- **Reduced Emissions to 1990 Levels ahead of 2020–** AB 32 set the goal to reduce emissions across the state to 1990 levels by 2020. California met this goal in 2016, and had further reduced emissions by over 60 $MMTCO_2e$ below 1990 levels in 2020.[313] These reductions support the health of our environment and communities suffering from air pollution.
- **1 Million Solar Roofs–**In 2006, in the effort to reduce emissions in line with AB 32 goals, Governor Schwarzenegger signed the Million Solar Roofs Initiative into law, setting a goal of building one million solar energy systems on homes, schools, and businesses across California. The state achieved this goal in December 2019, with over 3,000 MW of rooftop solar capacity installed.[314] The push to install rooftop solar across the state has led to household energy savings, reduced reliance on fossil fuels, and a more diverse energy supply. By the end of 2023, the state had over 2 million solar roofs and similar small systems with nearly 16,000 MW of capacity.[315]
- **Economic Benefits–**California has created 552,300 clean energy jobs as of 2024–more than any other state in the U.S. and nearly twice the second-ranked state (Texas).[316] More than seven times as many workers were employed in clean energy jobs than in the fossil fuel industry (80,600) in 2024 and 79% of all new energy jobs in California are clean energy jobs.[317] From 2018 to Q2 2024, clean tech investments in California totaled $191 billion–the most of any state.[318]
- **Grid Stability–**California achieved 100% clean electricity for periods of the day on 219 and 279 days in 2024 and 2025, respectively, with solar and battery output reaching new peaks.[319, 320] This contributed to the state issuing zero Flex Alerts in 2024 and 2025, preventing dangerous power outages statewide.[321, 322] The 1,856 hours (across the 279 days) in 2025 is equivalent to 77 days of 100% clean energy powering the grid. Since Governor Newsom took office, California's battery storage has increased 2,500% and the state is now 41% toward its goal of

313 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

314 "California Celebrates Reaching One Million Solar Roofs Milestone; New Focus On "One Million Solar Batteries" Goal." *California Solar + Storage Association,* 12 Dec. 2019. Available at: https://calssa.org/press-releases/2019/12/12/california-celebrates-reaching-one-million-solar-roofs-milestone-new-focus-on-one-million-solar-batteries-goal

315 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

316 "Clean Jobs California Factsheet." *E2,* Oct. 2025. Available at: https://e2.org/wp-content/uploads/2025/11/E2-FS-Clean-Jobs-CA-2025-25-10-E_04-1.pdf

317 Ibid.

318 "Clean Energy Investment in Every State." *Climate Central.* Available at: https://www.climatecentral.org/climate-matters/clean-energy-investment-in-every-state

319 "Tracking Progress Towards 100% Clean Energy." *California Energy Commission*. Available at: https://www.energy.ca.gov/data-reports/clean-energy-serving-california/tracking-progress-toward-100-clean-energy

320 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

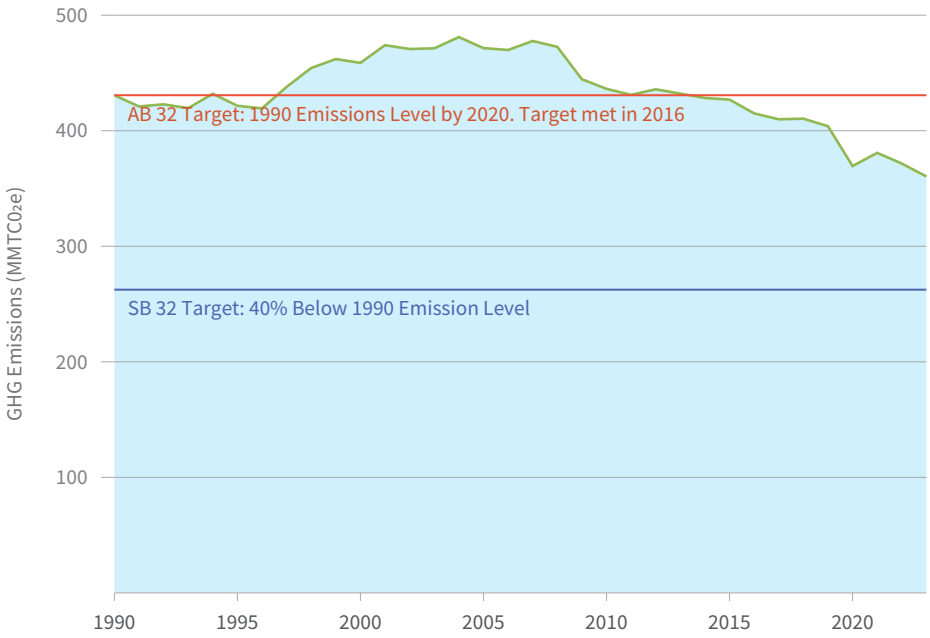
321 "What is a Flex Alert?" *California ISO.* Available at: https://www.flexalert.org/what-is-flex-alert

322 Smith, Hayley. "California invests big in battery energy storage – and leaves rolling blackouts behind." *Los Angeles Times,* 17 Oct. 2025. Available at: https://www.latimes.com/environment/story/2025-10-17/california-made-it-through-another-summer-without-a-flex-alert

52,000 MW by 2045.[323] The growth of renewable energy, paired with battery storage creates a safer and more reliable grid, utilizing stored wind and solar energy during times of peak demand.

- **International Carbon Action Partnership (ICAP)–**Established in 2007 by more than 15 signatories, with a key leader being then-governor Arnold Schwarzenegger, ICAP is an international forum for governments that have implemented or are planning to implement emissions trading systems.[324] ICAP has been an important venue for sharing information between jurisdictions, providing support to emerging systems and strengthening the programs of all signatories. Today, ICAP has 36 full members and 9 observers.[325]
- **2.7 Million Electric Vehicle Sales–**The Advanced Clean Cars Act sets ambitious goals for California to have 100% of all new cars and light trucks sold be electric vehicles by 2035. Despite federal pushback, California remains committed to electrifying vehicle sales across the state, achieving more than 2.7 million zero-emission vehicles (ZEVs) sold as of July 2026.[326, 327] This program also provides incentives to low-income customers, supporting communities in replacing gas powered vehicles with cleaner, healthier ZEV alternatives.

Figure 21. Total California Greenhouse Gas Emissions, 1990-2023



Source: 2025 California Green Innovation Index, Next 10[328]

- **Environmental Justice–**California has remained committed to advancing environmental justice throughout their climate programs. This is exemplified through the integration of the Environmental Justice Advisory Committee (EJAC) into the development of each AB 32 Scoping Plan and the passage of SB 535 (2012), and subsequent AB 1550 (2016), to mandate that a minimum of 25% of California Climate Investments are allocated to projects that provide benefits to disadvantaged communities.[329]

These achievements highlight just some of the ways that California is working towards achieving AB 32 goals – resulting in real benefits for our communities and economy.

323 "California surpasses 21,000 megawatts of battery resources supporting the state's electric grid." *Office of Governor Gavin Newsom,* 7 Aug 2026. Available at: https://www.energy.ca.gov/news/2026-08/california-surpasses-21000-megawatts-battery-resources-supporting-states

324 "About ICAP." *International Carbon Action Partnership.* Available at: https://icapcarbonaction.com/en/about-icap

325 "15-year Anniversary of ICAP." *International Carbon Action Partnership.* Available at: https://icapcarbonaction.com/en/15-year-anniversary-icap

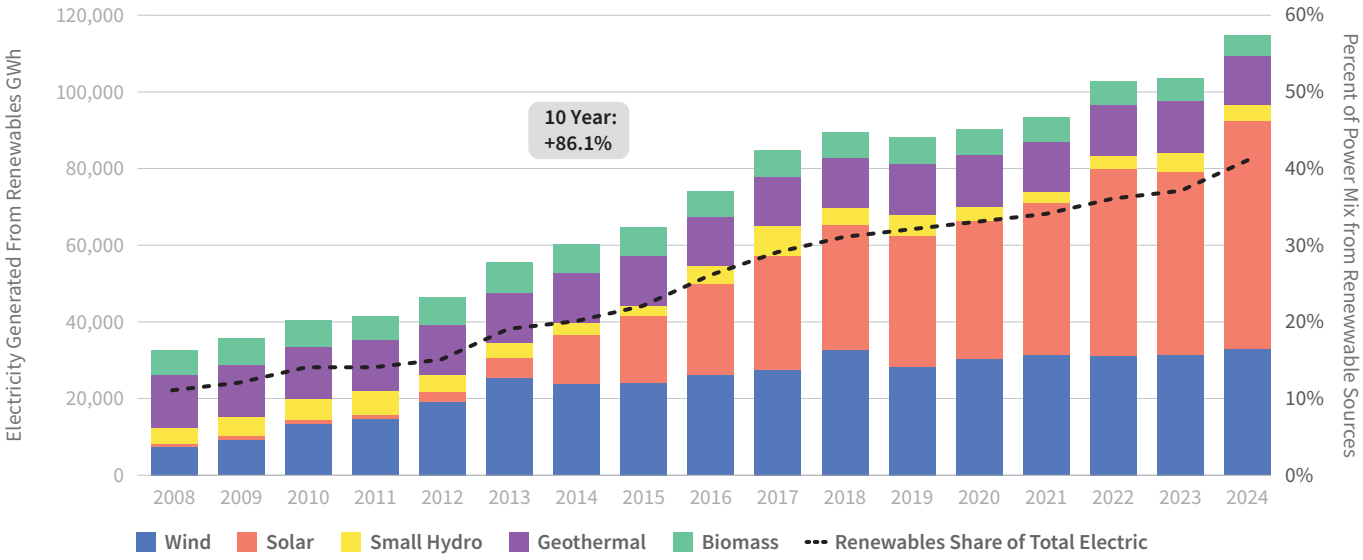
326 "Advanced Clean Cars." *California Air Resources Board.* Available at: https://ww2.arb.ca.gov/our-work/programs/drive-forward-light-duty-vehicle-program/advanced-clean-cars

327 "New ZEV Sales in California." *California Energy Commission.* Available at: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/new-zev

328 "Figure 1. Total California Greenhouse Gas Emissions." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

329 "SB 535." California Climate Investments. Available at: https://www.caclimateinvestments.ca.gov/sb-535

Fig. 22. California Renewable Electricity Generation and SB 100 RPS Goal



Source: 2025 California Green Innovation Index, Next 10[330]

6.1 Statewide Progress

From 2022 to 2023 (the latest year for which data are available), California reduced emissions by 3%—the third-largest year-over-year reduction since 2000 but the largest outside of a recession year. The only other years with a greater reduction were 2008-2009 and 2019-2020. Additionally, emissions in 2023 were 2.4% below those in 2020 at the height of the COVID-19 pandemic shutdown.

The transportation sector saw the greatest reduction, falling by 4.6% from 2022 to 2023. This was driven by a significant 17.2% decrease in emissions from heavy-duty vehicles. Emissions from heavy-duty vehicles have been falling each year since 2018 due to the increasing use of biodiesel instead of petroleum diesel under the state's Low Carbon Fuel Standard (LCFS) program. While there was also a reduction in emissions from light-duty vehicles, it was much smaller at only 0.6% from 2022 to 2023.[331]

RPS-eligible renewable energy generation also hit an all-time high in 2024, increasing by 4.4% to 41.3% of total generation. Renewables plus large hydroelectric accounted for more than half of the state's power mix for the first time, making up 52.3%, while fossil fuels hit a record low of 36.3%. Despite these impressive gains, the state fell short of meeting the RPS goal of 44% of generation from renewable sources by the end of 2024. The state needs to increase renewable generation by 8.7% to meet the 2026 RPS goal of 50%.[332]

However, both utility-scale and rooftop solar panels produced 51% of California's electricity in May 2026—the first time the clean energy source surpassed the halfway mark for an entire month. This milestone is particularly notable as California is the world's first major economy to cross the 50% threshold (Hungary came the closest at 47% in June 2025, though it has a far smaller GDP).[333] Better still, solar outproduced natural gas not only during

330 "Figure 29. California Renewable Electricity Generation." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/renewable-energy/figure-29/

331 "Figure 1. Total California Greenhouse Gas Emissions." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

332 Ibid.

333 McCarthy, Dan. "California was mostly solar-powered in May – a global first." *Canary Media,* 31 July 2026. Available at: https://www.canary-media.com/articles/solar/california-solar-power-record-may

May, but throughout every month in 2026 leading up to it too. California has increased installed utility-scale solar generation by 7,847% from 2008 to 2024.[334] Solar accounted for less than 1% of the state's power mix in 2008 and rose to 21% by 2024.[335] Achieving this milestone would not have been possible without batteries to store the excess solar energy so it can be used later in the evening.

Battery storage capacity has skyrocketed in California with over 21,000 MW added as of August 2026, representing a 2,500% increase since 2019. In the first three months of 2025, California had already added 7,272 MW of battery storage to the grid—more than in all of 2024.[336, 337] The world's largest battery storage project, Edwards & Sanborn, is in Kern County while the world's largest thin film solar photovoltaic (PV) project (Desert Sunlight Solar Project) is in Riverside County.[338] California has added more than 30,800 MWs of new, clean energy resources to the state's electric grid since 2019 – an amount equivalent to roughly half of the state's record peak demand in 2022.[339]

The state has also made significant progress in decarbonizing transportation with 2.5 million cumulative ZEVs sold and 216,000 public and shared private EV chargers installed by the end of 2025. There are also more than 20,000 medium- and heavy-duty ZEV charging and hydrogen fueling points in operation or planned. Comparatively, there are only roughly 120,000 gasoline nozzles across the state. California also leads the nation in ZEV manufacturing jobs across 55 manufacturers.[340]

California also ranks first for its policies and programs related to energy efficiency after setting the nation's first standards in the 1970s. Those rules have saved Californians more than $200 billion in energy costs and inspired similar standards across the country. California's total energy consumption peaked in 2007 and by 2023 had dropped 14%.[341] The 2025 California Energy Code that went into effect on January 1, 2026 is expected to save consumers $4.8 billion over the next 30 years and eliminate 4 million metric tons of CO_2-equivalent greenhouse gas emissions.[342]

6.2 Looking Ahead

While California has made significant progress in transitioning toward a clean economy, new challenges are emerging as the state advances its sustainability goals. Growing electricity demand, high electricity prices and the need to modernize aging infrastructure, and the increasing impacts of climate change—including wildfires, droughts, and extreme heat—require continued innovation and investment. These challenges create new opportunities for economic growth, job creation, and technological leadership. At the same time, the state is facing attacks on its authority by the federal government that is also hostile to clean energy development.

The entire country is experiencing rapid growth in electricity demand due to the rapid buildout of data centers to sustain the complex computing needs required for artificial intelligence (AI). Data centers consumed about 4.4% of total U.S. electricity in 2023 and are expected

334 "Figure 29. California Renewable Electricity Generation." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/renewable-energy/figure-29/

335 "Figure 31a. California's Power Mix Percentage by Source." *Next 10 California Green Innovation Index,* 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/renewable-energy/figure-31ab/

336 "California surpasses 21,000 megawatts of battery resources supporting the state's electric grid." Office of Governor Gavin Newsom, 7 Aug 2026. Available at: https://www.energy.ca.gov/news/2026-08/california-surpasses-21000-megawatts-battery-resources-supporting-states

337 "Figure 41. Energy Storage Capacity Addition by Storage Duration." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/renewable-energy/figure-41/

338 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

339 "As Trump embraces dirty fossil fuels, California hits major clean energy milestone, invests over $100 million more in proven technologies." *Office of Governor Gavin Newsom,* 9 Oct. 2025. Available at: https://www.gov.ca.gov/2025/10/09/as-trump-embraces-dirty-fossil-fuels-california-hits-major-clean-energy-milestone-invests-over-100-million-more-in-proven-technologies/

340 More information in Section 3.2 - Workforce Development

341 Ibid.

342 Ibid.

to consume approximately 6.7% to 12% of total U.S. electricity by 2028.[343] In California, their demand on the state's grid will increase by approximately 1.8 GW by 2030 and 4.9 GW by 2040.[344] Demand will rise further as more people switch to electric cars and appliances. The California Energy Demand Forecast from 2025 to 2045 projects that California's peak electricity demand will rise by roughly half by 2045 due to these factors.[345] Many states and companies are turning to fossil fuels to power data centers, with nearly 75% of the power to be used on site expected to be natural gas.[346] Others are turning to nuclear power which analysts indicate could meet about 10% of future demand.[347] On the other hand, artificial intelligence could be applied in different ways to help address the climate crisis. Companies are developing AI tools to map deforestation, improve climate modeling, predict disasters, and track emissions.[348] It could also be used to support the energy transition by managing increasingly complex grids and accelerating the deployment of renewables.[349] It is crucial that California maintains its commitment to carbon neutrality and meets our future demand with clean resources, including offshore wind, long-duration storage, and advanced geothermal.

While electricity prices are up around the country due to this increased demand, they are higher in California on average due to a number of factors including costly wildfire mitigation measures. In 2010, residential electricity bills were 25% below the national average, but it has shifted to 5.8% higher than the U.S. average in 2023.[350, 351] These high prices disincentivize switching from natural gas appliances or gas cars to electric versions. Innovative policies are needed to ensure that electricity remains affordable for Californians. For instance, recent research has shown that there are more cost-effective ways for utilities to reduce the risk of their equipment starting a wildfire other than undergrounding power lines.[352] Undergrounding power lines, which utilities prefer to reduce their liability, can cost between $1.8 million to $6.1 million per mile and these costs are recouped by ratepayers.[353] Policymakers could incentivize or require utilities to use these more cost-effective measures. The Public Advocate's Office at the California Public Utility Commission has also identified policy measures that would address high electricity prices in California.[354]

343 "DOE Releases New Report Evaluating Increase in Electricity Demand from Data Centers." *U.S. Department of Energy,* 20 Dec. 2024. Available at: https://www.energy.gov/articles/doe-releases-new-report-evaluating-increase-electricity-demand-data-centers

344 "Large loads." *California ISO.* Available at: https://www.caiso.com/generation-transmission/load/large-loads

345 "Item 6: Resolution Adopting the California Energy Demand Forecast, 2025-2045." *California Energy Commission*, 21 Jan. 2026. Available at: https://www.energy.ca.gov/filebrowser/download/9328?fid=9328

346 Harder, Amy. "The AI boom is making natural gas great again." *Axios,* 4 Feb. 2026. Available at: https://www.axios.com/2026/02/04/ai-natural-gas-power-data-centers

347 Hardin, Kate, et. al. "Nuclear energy's role in powering data center growth." *Deloitte Research Center for Energy & Industrials,* 9 Apr. 2025. Available at: https://www.deloitte.com/us/en/insights/industry/power-and-utilities/nuclear-energy-powering-data-centers.html

348 "9 ways AI is helping tackle climate change." *World Economic Forum,* 12 Feb. 2024. Available at: https://www.weforum.org/stories/2024/02/ai-combat-climate-change/

349 West, Devorah, et. al. "AI and Clean Energy: How Governments Can Unlock the Power of the "Twin Transitions." *Tony Blair Institute for Global Change,* 23 June 2025. Available at: https://institute.global/insights/climate-and-energy/ai-and-clean-energy-how-governments-can-unlock-the-power-of-the-twin-transitions

350 "Table 5. Electricity Prices and Bills (Inflation-Adjusted) by Sector." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/energy-efficiency/table-5/

351 "Table 18: Electricity Prices and Bills (Inflation-Adjusted) by Sector." *Next 10 California Green Innovation Index*, 14 Dec. 2022. Available at: https://greeninnovationindex.org/2022-edition/energy-efficiency/table-18/

352 Fowlie, Meredith, et. al. "Dynamic Grid Management Technologies Reduce Wildfire Adaptation Costs in the Electric Power Sector." *UC Berkeley Energy Institute at Haas,* Mar. 2025. Available at: https://haas.berkeley.edu/wp-content/uploads/archive/WP347.pdf

353 "CPUC Rule 20 Undergrounding Programs -- FAQs." *California Public Utilities Commission.* Available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/electric-reliability/undergrounding-program-description/rule-20/cpuc-rule-20-undergrounding-programs----faqs

354 "Advancing Affordable Electricity in California: Policy Levers to Address Rising Rates." *The Public Advocates Office, California Public Utilities Commission,* 13 Dec. 2024. Available at: https://www.publicadvocates.cpuc.ca.gov/-/media/cal-advocates-website/files/press-room/reports-and-analyses/241213-public-advocates-office-advancing-affordable-electricity-in-california.pdf

Energy affordability in general is a concern in California. When asked in a recent poll specifically about the current price of gasoline at the pump, 63% of Californians say this is a major problem, up 11 points since July 2025, while 27% say it is a minor problem, and 9% say it is not a problem.[355]

While 62% of adults and 59% of likely voters in the same poll said they favor the state law that requires 100% of the state's electricity to come from renewable energy sources by 2045, a solid majority of adults (60%) say they would not be willing to pay more for electricity if it came from renewable sources. On the other hand, 38% of adults say they would be willing to pay more for electricity generated by wind and solar energy.[356]

Lastly, California is not on track to meet the SB 32 climate goal of 40% below 1990 levels by 2030 on time.[357] According to the most recent California Green Innovation Index, the state would meet the goal five years late in 2035 at the current pace.[358] That may become more difficult following changes that the California Air Resources Board (CARB) made to the cap-and-invest program in May 2026. Due to concerns about high gas prices and refinery closures, CARB created a new pool of free pollution permits available to industry, with half reserved for the fossil fuel sector, in exchange for pledges to invest in clean energy or efficiency projects. However, the number of permits—118.3 million—is the exact same amount that was supposed to be removed from the program entirely under the cap in order to meet the SB 32 goal by 2030. Outside analysis found that refineries could end up with more free permits than they need to cover their emissions which essentially removes their incentive to reduce their emissions while resulting in less revenue for the Greenhouse Gas Reduction Fund (GGRF) that can be spent on climate programs. By some estimates, the GGRF will only get about $2 billion per year instead of $4 billion under these changes, which is less money for programs such as transit, housing, and safe drinking water when the impacts of climate change are only becoming more severe.[359]

However, California has faced major energy and environmental challenges before that have required us to adapt. Since the pollution-choked days of the 1970s, the state has consistently led the nation in energy efficiency, renewable energy deployment, clean transportation, and environmental policy—demonstrating an ability to balance economic growth with sustainability. By establishing ambitious greenhouse gas reduction targets and a comprehensive framework for climate action, the passage of AB 32 was a key milestone in the state's trajectory. This long record of leadership provides a strong foundation for addressing the challenges ahead. While the path forward will require significant investment, innovation, and collaboration, California's history suggests that it is well-positioned to persevere and continue serving as a model for the transition to a sustainable economy.

355 Baldassare, M. et al., "PPIC Statewide Survey: Californians and the Environment." *Public Policy Institute of California*, July 2026 (p.13). Available at: https://www.ppic.org/?show-pdf=true&docraptor=true&url=https%3A%2F%2Fwww.ppic.org%2Fpublication%2Fppic-statewide-survey-californians-and-the-environment-july-2026

356 Ibid.

357 See Figure 5 for more details on California's projected emissions reductions.

358 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

359 Lazo, Alejandro. "California overhauls carbon market – critics say it's a giveaway to oil." *CalMatters,* 29 May 2026. Available at: https://calmatters.org/environment/climate-change/2026/05/cap-and-invest-amendment-affordability/

VII. CONCLUSION

The Global Warming Solutions Act of 2006 (AB 32), co-authored by Assemblymember Fran Pavley and Speaker of the Assembly Fabian Nunez, established the first in the nation economy-wide cap on greenhouse gas emissions. AB 32 authorized the development of the state's cap-and-trade program to regulate and reduce greenhouse gas—effectively putting a price on carbon emissions. By setting emissions reduction targets and allocating millions of dollars in funding to support actions necessary to achieve them, California established itself as a global climate leader.

In the last 20 years, California legislators have passed a wide range of climate policies to support the implementation of AB 32, a testament to the collaboration between local, state, and federal leaders who have continued to make climate action a priority. This legislation included Executive Order B-16-12 which encouraged the adoption of zero-emission vehicles and set a goal of 1.5 million ZEVs on the road by 2025 and Advanced Clean Cars which adopted low-emission vehicle regulations for smog-causing criteria pollutants and greenhouse gases. SB 100, California's Renewables Portfolio Standard (RPS) program, required that 20% of electricity retail sales be from renewable resources by 2017 and 50% by 2030. Furthermore, the California Climate Crisis Act codified the state's goal to reach net-zero greenhouse gas (GHG) emissions by 2045, requiring reductions of at least 85% below 1990 levels—doubling down on its past commitments to emissions reductions. Most recently, AB 1207 (2025) reauthorized and extended the state's cap-and-trade program through December 31, 2045 while renaming it "Cap-and-Invest." AB 1207 reaffirms the state's confidence in the landmark AB 32 Global Warming Solutions Act and illustrates California's continued commitment to climate action.

AB 32, through work done by the California Air Resources Board (CARB) in partnership with the California Energy Commission (CEC) and other state agencies and departments, has guided the state through two decades of climate action across three governorships, resulting in robust environmental, economic, and public health benefits across the state. Since the passage of AB 32 in 2006, total statewide emissions have fallen by 23.3% as of 2023 (the latest year for which data is available).[360] Emissions from transportation, the largest-emitting sector, have fallen by 26.7% since 2006 – with emissions from passenger vehicles and heavy-duty vehicles having seen reductions of 19.7% and 45.3%, respectively.[361, 362] These reductions, along with those from the electric power sector, allowed the state to meet its first emissions reduction target of 1990 levels by 2020 four years early.[363] In addition to these reductions, California has significantly improved air quality, particularly in heavily polluted urban areas, such as Los Angeles and the San Joaquin Valley, while introducing programs to support climate resilience in communities across the state. Economically, California has become the 4th-largest economy in the world while prioritizing these emissions reductions—proving that climate action is not at odds with economic growth.[364] As of July 2026, the cap-and-trade program had raised $36.2 billion for climate projects across the state with $16 billion returned to residents and small businesses through the California Climate Credits program that provides a twice-yearly credit on electricity bills to all customers.[365] In 2024, California led the U.S. with 552,300 workers employed in clean energy jobs—nearly twice as many as the second-ranked state, Texas. These jobs are spread across solar, wind, energy efficiency, clean vehicles, and batteries sectors

360 "Figure 1. Total California Greenhouse Gas Emissions." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-1/

361 "2025 California Green Innovation Index." *Next 10*, 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/

362 "Figure 2. Green House Gas Emission by Source." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-2/

363 "Figure 4. GHG Emissions and Projected Reduction Goals." *Next 10 California Green Innovation Index*, 16 Dec. 2025. Available at: https://greeninnovationindex.org/2025-edition/carbon-economy/figure-4/

364 Hayes, Christal. "California passes Japan as fourth largest economy." *BBC News,* 25 Apr. 2025. Available at: https://www.bbc.com/news/articles/cly80zlk1lyo

365 "2026 Annual Report to the Legislature on California Climate Investments Using Cap-and-Invest Auction Proceeds." California Climate Investments, May 2025 (p.31). Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/cci_annual_report_2026.pdf

with the bulk employed in construction (41%) and professional services (24%). The California Climate Investments (CCI) program, funded by cap-and-trade revenues, has led to development of programs that address quality of life and environmental health for communities across the state. From 2014 to 2025, CCI has allocated $15.5 billion across more than 604,891 projects, making major investments in affordable housing, low-carbon transportation, forest health, community air protection, and more.[366] Of that funding, 76% went to support disadvantaged and low-income communities, demonstrating how climate policy can function as a tool for both decarbonization and community revitalization.[367]

AB 32 was the first legislation of its kind in the US and positioned California as a global leader with regards to climate policy and action. AB 32 served as a model for other state level greenhouse gas emissions regulations with Hawaii, New Jersey, Massachusetts, and Connecticut passing similar legislation. In addition to the replication of AB 32, states across the nation have implemented versions of California's Low Carbon Fuel Standard and adopted California's more stringent tailpipe emissions standards under the state's Clean Air Act waiver, leading to nationwide emissions reductions. Globally, California has engaged international governments in climate partnerships, consolidated cap-and-trade programs, and signed memorandums of understanding to enhance progress on reducing emissions. While California's work is still ongoing, the state has achieved historic milestones in its effort to reduce greenhouse gas emissions and improve environmental and public health for communities across the state. After achieving the 1 million solar roofs and 1.5 million ZEVs goals, California has continued to push the limits on climate action—in 2023 California had more than 2 million solar roofs (more than double that of 2019) and 2.7 million ZEVs on the road as of July 2026.[368] The state has also added more than 21,000 MW of battery storage capacity since 2019, an increase of 2,500% and 41% of the way toward its goal of 52,000 MW by 2045.[369] This growth in battery storage enabled 51% of California's electricity in May 2026 to be produced by solar—the first time the clean energy source surpassed the halfway mark for an entire month and the first global economy to do so.[370]

Now more than ever, California must continue to adopt innovative and progressive climate policies that alleviate the impacts of growing electricity demand, high electricity prices, aging infrastructure, and the increasing effects of climate change—including wildfires, droughts, and extreme heat. In order to meet the SB 32 of 40% below 1990 levels by 2030, the state must reduce emissions by an average annual amount of 4.4%—nearly double the average annual reduction from 2019 to 2023 of 2.8%.[371] However, California has overcome major environmental hurdles in the past and can do it again. With the support of local and state legislators, community organizations and advocates, state agency leaders, and a new generation of climate leaders, California can once again achieve its ambitious goals and continue to serve as a global model in the transition to a sustainable economy.

*Since the completion of this publication, the California Air Resources Board released the 2024 GHG Emissions Inventory. Since 2006, emissions have fallen by 26.4% while gross state product has increased by 56% (chained to 2017 dollars). This represents a 3.9% decrease in emissions from 2023 to 2024, the latest data represented in this publication.

366 Ibid. (p. 9, 21)

367 Ibid. (p. 8)

368 "California's Clean Energy Journey." *California Energy Commission.* Available at: https://storymaps.arcgis.com/stories/09850952609a4da7b181166f1910cdc7

369 "California surpasses 21,000 megawatts of battery resources supporting the state's electric grid." *Office of Governor Gavin Newsom,* 7 Aug 2026. Available at: https://www.energy.ca.gov/news/2026-08/california-surpasses-21000-megawatts-battery-resources-supporting-states

370 McCarthy, Dan. "California was mostly solar-powered in May – a global first." *Canary Media*, 31 July 2026. Available at: https://www.canarymedia.com/articles/solar/california-solar-power-record-may

371 "2025 California Green Innovation Index." *Next 10*, 16 Dec. 2025. https://greeninnovationindex.org/2025-edition/