

# 50 Percent Petroleum Use Reduction Explained in Four Easy Concepts

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Cutting gas and diesel use in California (CA) has been in the minds-eye of Sacramento policy makers for years. After all, fuel combustion chokes our state with exhaust ([CA is home to the top five most polluted counties in the nation](#)), releases massive amounts of climate change pollution ([transportation fuel is 37 percent of the state's greenhouse gas inventory](#)), and drags on our economy ([CA imports over 60 percent of the fuel it needs](#)). And, at nearly 20 billion gallons per year of total use, petroleum use sends tens of billions of dollars out of our state every year.

Unfortunately, over the past decade the sum of the state's efforts have yielded relatively [stagnated fuel use](#) volumes – less than 10 percent decline – with population growth erasing many of the gains achieved by fuel economy improvement. This year, things are different and an effort underway in Sacramento in the form of Senate Bill ***(SB) 350 – a bill that proposes a statewide goal of 50 percent petroleum use reduction by the year 2030 – can succeed, and would make the state stronger in the process.***

Understanding how and why California can meet a 50 percent petroleum use reduction goal by 2030 hinges on four key concepts.

**CONCEPT # 1: The growth curve for alternative fuels, and vehicles that use them, is at the acceleration point – as they become increasingly abundant and socialized, there is even more opportunity for growth.**

It's often said that the most difficult part of a journey is the first step – and for alternative fuels and vehicle deployment, the adage holds. However, for many fuels like electricity, advanced biofuels, and natural gas, that first step has been taken and growth in use is accelerating. With California companies like [Altair](#), [Community Fuels](#), [Propel](#), [Clean Energy Fuels](#), [Tesla](#), [BYD Ltd.](#), [Green Automotive](#), [Motiv Power Systems](#), and [Google](#); and international companies like [Nissan](#), [GM](#), [BMW](#), [Hyundai](#), [Toyota](#), [Volvo](#), and [Neste Oil](#) making major investments in vehicles and fuels being deployed here, it's no surprise that California is ground zero for early-stage, mid-stage, and commercial deployment of alternative fuels and vehicles that displace petroleum.

What's driving these companies to invest here? Consumer openness to new vehicles, strong regulations like the Low Carbon Fuel Standard (LCFS), zero-emission vehicle program (ZEV), cap-and-trade (C&T), and the California innovative spirit, to name a few.

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However, investments by companies are not the only evidence that high efficiency and alternative fuel and vehicle acceptance are on the rise, consumer adoption statistics are also relevant. For example, California's clean vehicle rebate program continues to be nearly fully oversubscribed at [over \\$100 million issued or pledged](#) in California's 2014-2015 fiscal year.

On the fleets side, consumer adoption of alternative fuel vehicles shows deployment proliferation at an unprecedented rate, both in private and government fleets. Examples include [FedEx](#) and Staples (delivery trucks), [United Airlines](#) (renewable jet fuel in airplanes), [Waste Management](#) (garbage trucks), [the Walt Disney Corporation](#) (buses), [the City of Sacramento](#) (garbage trucks), [Los Angeles Air Force Base](#) (vehicle to grid), the [University of California at San Diego](#) (students, faculty, staff, and the campus fleet utilization), all three Investor-Owned utilities (utility service vehicles), and municipal bus operators throughout the state. By deploying these vehicles, fleet owners can expect to save on fuel costs, have more predictable fuel bills, cut pollution, and help the state transition to a diversified fuel system.

Of course, while proliferation of electric vehicles, natural gas, hydrogen and advanced biofuels under existing policies will deliver petroleum use reductions over the long-run, some analysts suggest additional policies beyond the existing landscape are needed to meet full petroleum use reduction goals. According to projections, alternative fuel penetration in the statewide fuel mix is expected to reach [upwards of 18 percent by the year 2025](#), with even higher penetration rates of [25 – 30 percent](#) across the pacific coast region of North America by 2030.

Accordingly, for alternative fuels to shoulder a majority share of a 50 percent petroleum use goal, additional policies beyond the existing landscape are likely needed. Additional policies being considered include those that increase ethanol blending in gasoline (e.g. E15 gasoline), reduce cost of E85 infrastructure to increase use in flex-fueled vehicles, and develop and incentivize other drop-in fuels for diesel and gasoline.

### **CONCEPT # 2: Cars and trucks are getting much more efficient at using gasoline and diesel – and there is much more room for improvement.**

With regulations either on the books or proposed, the national average for vehicle efficiency is going to increase dramatically by 2030. According to the [Center for Climate and Energy Solutions \(C2ES\)](#) and the [International Council on Clean Transportation \(ICCT\)](#):

- For the combined passenger vehicle and light duty truck fleet, the average new vehicle efficiency is scheduled to improve from where it is today at 263 grams of CO<sub>2</sub> / mile driven (equal to 32.6 Miles per gallon (MPG)) to 163 grams of CO<sub>2</sub> / mile driven (equal to 48.7 MPG) by the year 2025, or a reduction of 38 percent.
- For combination tractors, which are responsible for almost two-thirds of fuel consumption from medium- and heavy-duty trucks, federal standards are scheduled to achieve a 24 percent reduction in fuel consumption of new tractors by model year 2027.

Additionally, with [newer models of plug-in hybrids](#) like the Prius, BMWi3, and Chevy Volt that switch seamlessly from gasoline to electric drive getting over 100 MPG, there's ample room to exceed existing targets – especially if new standards and incentives are developed. With the proliferation of higher efficiency gasoline and diesel vehicles in dealerships and auto-traders across the state over the next decade – those who want gasoline powered vehicles can still have them, but will have access to technology that uses less gas overall. And, by the year 2030, a

new car bought in 2015 will likely have already been taken off the road, ([the average life of a car is 11 years](#)) – meaning almost full fleet turnover by 2030. Accordingly, the opportunity for fuel savings in the gas and diesel markets is huge – and experts agree [California can cut fuel use significantly through efficiency alone](#) between now and 2030.

**CONCEPT # 3: Changes in driving habits, new mobility solutions, and coordinated urban planning are meeting transportation needs with more efficient and diversified solutions – and the trend is expected to continue**

While there is no one single reason for the long-term shifts in the driving habits of every day people, especially those in the under-35 age brackets, one thing is clear – people have a different view of how driving can meet mobility needs today than in years past. This change in perspective is yielding changes in overall vehicle miles travelled (VMT) on a year-over-year basis. According to [national statistics](#), driving declined for all age groups between 1995 and 2009 – with driving for ages 19 to 30 having “peaked circa 1995”. However, data from the [Federal Highway Administration](#) shows long-term fuel use reductions may have been somewhat eroded more recently with short-term increases of VMT in 2015 compared to 2014. So, with continued increases in alternative mobility solutions, better urban planning, and emerging technologies like mobile-app enabled car-sharing and autonomous vehicles, common sense predicts this volatility in VMT is likely to continue.

In California, new alternative mobility solutions and emerging technologies are reaching the market almost every year, meaning the state is likely going to continue as ground-zero for changes in the owner / vehicle relationship for many years to come. Overall, if developed with reduced petroleum use in mind, these solutions can yield significant fuel savings that help meet long-term goals while maintaining mobility needs of Californians across all economic strata. In one example, Lyft (a California company recently valued at over \$2.5 billion) and Uber have rolled-out carpooling services with great success, making it easier for people to get from A to B while riding in reduced cost shared ride vehicle with up to three other passengers.

Autonomous vehicles offer another emerging technology example – of which Google has already logged [over one million miles](#) and is currently driving over 10,000 miles per week on public roads. According to some studies, such as one by the [RAND Corporation](#), a vehicle equipped with this technology is likely to have fewer crashes, save energy and fuel per mile travelled, and helps cut costs associated with congestion. At the fleet level, deployment of autonomous vehicle car fleets can impact overall VMT rates, though careful implementation must be performed to minimize downside risks of increased fuel consumption overall.

And technology isn't the only story, new state and local planning processes are taking transportation into account more than ever before. For example, the [State's Draft 2040 Transportation Plan](#) targets a 25 – 30 percent reduction in personal VMT between 2010 and 2040 through integrated planning policy. Similarly, the city of Los Angeles' sustainability “pLAn” targets a [five percent decline in daily miles driven](#) for trips associated with the city by 2025, while also focusing on public transit, bicycling, walking, and locating peoples' residences near transit and the places they would want to travel. Similar plans are being deployed in cities and counties across the state, working to increase the availability of lower cost, less polluting, and more convenient mobility options for people of all economic strata.

**CONCEPT # 4: Setting a 50 percent petroleum use reduction standard drives innovation and investment while keeping California treasure in the economy, yielding massive room for additional economic development across the state.**

Part of the history and “secret sauce” that makes California great is the fact that solutions to pressing issues are developed here. Creativity, ingenuity, technology, spirit are all part of it – and a 50 percent petroleum use reduction goal can help unleash these drivers of innovation just as [renewable energy targets](#) and [leaded gas phase-out requirements](#) have done in the past. Statewide mandates have forced, cajoled and incentivized creativity at the business, personal and government levels in the past, and a 50 percent petroleum use reduction goal is no different.

What’s more, for a state that uses more gasoline and diesel than any other, of which [over 60 percent comes from imports](#) – cutting petroleum use in California means less money being sent out of the state every year. Cutting petroleum use by 50 percent means tens of billions of dollars will be reinvested in California companies and communities, cycling through our economy – adding jobs and creating activity in amounts rarely seen before.

Consider a modest reduction of 4.5 billion gallons of gasoline and diesel purchased at the pump every year (about a 1/4 decline and [what we project will be achieved](#) due to the state’s LCFS and C&T alone in 2025) – at a conservative \$3 per gallon, that’s \$13.5 billion every year that can be spent on California based fuels in 2025 – growing to much larger returns by 2030. Similarly, 50 percent reduction corresponds to \$27 billion in savings at the pump by 2030.

[According to macroeconomic modeling](#) conducted by the renowned UC Davis economist David Roland-Holst, “California household expenditure is, dollar for dollar, 16 times more employment intensive than the carbon fuel supply chain. One dollar saved at the gas pump will thus be recycled into strong net job creation.” Put in another context, by saving \$13.5 billion in gasoline and diesel expenditures every year, California can expect nearly \$216 billion in net economic activity across the state every year by 2030. And, at \$27 billion in savings (corresponding to the 50 percent reduction goal), the state can expect \$432 billion in new net economic activity in 2030 – emerging as new business opportunities, increased discretionary spending, and massive jobs growth across the state.

**Putting it all together: 50 percent petroleum use reduction is within reach and worth the effort**

Of course, not knowing the future is difficult for some, and stands in the way of supporting a goal as lofty as 50 percent petroleum use reduction. ***However, as shown by the wide array of solutions on the table now, and those on the near horizon, California has little to lose and everything to gain – and a 50 percent reduction in petroleum use is within reach.*** Long-term transitions to cleaner fuels, more efficient vehicles, reduced fuel use and imports overall, and lower cost easy-access mobility solutions are beneficial to all Californians – resulting in a stronger economy, better public health and more choices for all.

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