

**Unhooking California:  
Eleven Things Californians Can Do NOW to Save  
Gasoline (and Money)**

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## I. INTRODUCTION

California is on the verge of what some call a second energy crisis. Residents' demand for gasoline and diesel has grown so large that the dozen or so refineries based here can no longer meet it. We're relying more on gasoline refined in other states to feed our cars and SUVs, and our economy has become more vulnerable to the highs and lows of geopolitics and fluctuating petroleum prices. As we saw in the spring and summer of 2000, a single, unexpected refinery outage can cause weeks of unusually high prices. As we're seeing today, political instability in other countries is spiking prices at the pump again.

Californians have more than 26 million vehicles and use more than 18 billion gallons of gasoline and diesel fuel each year. Those numbers continue to climb as the state's population climbs. In addition to the economic roller coaster, our growing demand for gasoline also causes environmental and public health damage. Cars and trucks and other vehicles are responsible for more than two-thirds of the air pollutants in the state. They're also responsible for about half of the global warming pollutants emitted in the state. Despite these threats and problems, we remain hooked on gasoline and diesel fuel.

There are ways, though, to change this trend. Californians can take action today to begin to become unhooked. Last summer, after more than two years of research, workshops and hearings, the California Energy Commission and the California Air Resources Board adopted a joint agency report recommending ways California can reduce its dangerous dependence on petroleum fuels in cars and trucks.<sup>1</sup> The report determined that Californians could reduce their on-road fuel demand at least 15 percent below 2003 levels by 2020 if we begin taking action now. That is, if we commit ourselves to follow a smart plan that begins with relatively simple actions and progresses to more complicated approaches, including emerging technologies, we will actually use *less* gasoline by 2020 than we do today, even though there will be more of us.

Now, as we enter another period of high gasoline prices, it makes sense to look at some of the simpler things that we can do right now to conserve liquid energy. This paper briefly outlines 11 ways Californians can begin to save gasoline—and money. Most of these ways are mentioned in the joint agency report. Some are not. But together, they form a menu from which every Californian can choose at least one way to help become unhooked on gasoline.

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<sup>1</sup> California Energy Commission and California Air Resources Board. *Reducing California's Petroleum Dependence: A Joint Agency Report*. August 2003. This report was mandated by Assembly Bill 2076 (Shelley).

## II. EASY AND EFFECTIVE WAYS TO SAVE GASOLINE

Some of the ways to save gasoline are obvious, like walking more for short trips. Others are less obvious but equally easy to do, like keeping auto tires properly inflated. The list that follows offers something for everyone who now drives and wants to help reduce the gasoline appetite. The list is followed by an explanation of each of these measures. A one-page table that summarizes what we can all do as individuals, businesses or government agencies is at the end of this paper. Print out the table and post it somewhere you will see it everyday to inspire you to save gasoline and money.

### *11 Easy and Effective Things We Can Do Now:*

1. **Fuel Efficient Replacement Tires**
2. **Proper Tire Inflation and Alignment**
3. **Vehicle Maintenance**
4. **Public Transit**
5. **Telecommuting**
6. **Reducing Speed**
7. **Voluntary Vehicle Retirement<sup>2</sup>**
8. **Ridesharing**
9. **Bicycling**
10. **Walking**
11. **Trip Planning/Route Planning**

### *The Gasoline Saving Details:*

#### **1. Fuel Efficient Replacement Tires**

*Issue:* Most new cars come with tires that are designed to have low rolling resistance. The combination of the tires' design and the type of rubber in these tires make them roll farther with less effort. In tech-speak, these tires reduce the movement-resistant effects of friction by up to 20 percent.<sup>3</sup> The result is that cars with these tires use less fuel to go the same speed and distance as cars that have typical, off-the-shelf tires. They can provide 3 to 4 percent better fuel economy "without compromising vehicle safety and handling."<sup>4</sup> It also means that the amount of gasoline a car uses can increase just by buying replacement tires that aren't as efficient as the original tires on the vehicle.

*Solution:* When buying replacement tires, ask for low-rolling-resistance tires. Many manufacturers do not routinely supply tire stores with LRR tires, but most stores can order them and have them in the shop within days.

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<sup>2</sup> The fuel economy value of this strategy may be offset by more driving, so that the real benefit is in emissions control, NOT a reduction in gasoline consumption.

<sup>3</sup> CEC and CARB. *Appendix C: Petroleum Reduction Options (Task 3)*. August 2003.

<sup>4</sup> Ibid.

Gasoline Saved: The CEC estimates that if an average vehicle got 4 percent better fuel economy from LRR replacement tires, and traveled about 12,500 miles per year, the vehicle would save about 22.8 gallons of gasoline a year.<sup>5</sup> A consultant's report to the CEC that looked specifically at the effects of low-rolling resistance tires, estimated that assuming a 3 percent improvement in fuel efficiency would be gained if every car, light-duty truck and SUV now using replacement tires in the state had LRR tires, then Californians would save more than **300,000 gallons** of gasoline each year.<sup>6</sup>

## 2. Proper Tire Inflation

Issue: More than a fourth of all passenger cars, and nearly a third of all light trucks and SUVs are rolling down the road with at least one under-inflated tire.<sup>7</sup> Poorly inflated tires increase resistance and friction and, thus, increase the amount of gasoline needed to move the vehicle. When considering a set of four tires on a vehicle, the U.S. EPA estimates that fuel economy decreases by .4 percent for every pound per square inch of pressure below proper inflation.<sup>8</sup>

Solution: Keep tires inflated to manufacturer specifications. Proper alignment also maximizes fuel economy.

Gasoline Saved: The Natural Resources Defense Council estimates that if all tires were properly inflated, fuel consumption would decrease by about 2 percent.<sup>9</sup> In California, that would mean a savings of more than **300 million gallons** of gasoline each year.

## 3. Vehicle Maintenance

Issue: Clogged air filters and oil filters, a poorly tuned engine, or poor engine lubrication can all reduce fuel economy. A car that's maintained uses less gasoline than one that is not. Nationwide, about 10 percent of vehicles on the road have improperly maintained air filters and 20 percent need an oil and oil filter change.<sup>10</sup>

Solution: Get regular tune-ups, filter changes and engine lubes.

Gasoline Saved: The U.S. Department of Energy estimates that fuel economy can improve from 1 to 10 percent by maintaining air filters and 1 to 2 percent by changing dirty oil and oil filters.<sup>11</sup> If one assumes an average fuel economy improvement of just 2 percent for maintaining filters and getting oil changes, Californians would save an average of more than **27 million gallons** of fuel per year.<sup>12</sup>

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<sup>5</sup> CEC and CARB. *Attachment B: Staff Papers on Petroleum Reduction Options*. August 2003.

<sup>6</sup> TIAX, LLC. "California State Fuel-Efficient Tire Report: Volume II." January 2003.

<sup>7</sup> CEC and CARB. *Appendix C: Petroleum Reduction Options (Task 3)*. August 2003.

<sup>8</sup> Ibid.

<sup>9</sup> Hwang, Roland. *Fueling the Future: A Plan to Reduce California's Oil Dependence*. NRDC. September 2002.

<sup>10</sup> CEC and CARB *Appendix C: Petroleum Reduction Options (Task 3)*. August 2003.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

#### 4. Public Transit

Issue: Public opinion surveys consistently show that the public intuitively understands that public transit—buses and trains—provide one way to both avoid congestion and conserve petroleum fuels. Transit use has been up across the country and in California in recent years. In 2003, bus ridership in Los Angeles was up 5 percent over the previous year, and in San Diego, light rail ridership was up more than 25 percent over the previous year.<sup>13</sup>

Solution: Ride the bus or light rail or commuter train just once a week to cut gasoline use.

Gasoline Saved: For every passenger mile traveled, public transportation uses about half the fuel as private autos because of the greater efficiency of carrying dozens of passengers in a single vehicle.<sup>14</sup> In the U.S., public transportation saves the equivalent of about 855 million gallons of gasoline every year.<sup>15</sup> Specific fuel savings for California alone are not available. Individual fuel savings depends on public transit use frequency and distance. However, if a Californian who never rides the bus or train, and whose personal vehicle gets about 25 miles to the gallon, decided to ride the bus or train to work just one day a week, for six months of the year, and the roundtrip is 10 miles, then that person would reduce annual fuel consumption by about 10.4 gallons. If just one million Californians adopted the bus for one day a week for six months, fuel consumption would be reduced by 10.4 million gallons.<sup>16</sup>

#### 5. Telecommuting

Issue: Increased reliance on computers, email and teleconferencing has made it possible for many employees to be productive without leaving home. Telecommuting reduces travel time and often allows workers to feel fresher when they start the workday. It also reduces the amount of fuel consumed to get to and from the workplace. The CEC notes that data suggests that “nationally, about 11 million people or 9 percent of the workforce telecommute at least once a month.”<sup>17</sup>

Solution: On days when it is not absolutely necessary to be in the central workplace, telecommute from a home office.

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<sup>13</sup> Communication from Josh Shaw of the California Transit Association, 2003.

<sup>14</sup> American Public Transportation Association. *The Benefits of Public Transportation: An Overview*. September 2002.

<sup>15</sup> Ibid

<sup>16</sup> This assumes that new buses and rail would not have to be put in service, a fair assumption because not all of the 1 million will people will be riding on the same day or on the most used routes at the most used times.

<sup>17</sup> CEC and CARB *Appendix C: Petroleum Reduction Options (Task 3)*. August 2003.

Gasoline Saved: Telecommuting impact data is scarce, although it appears that it may have a fairly small effect on overall vehicle miles traveled and fuel saved. However, a focused campaign emphasizing telecommuting for a specific period of time may have some slight but measurable effect on gasoline demand.

## **6. Reducing Speed**

Issue: When a car travels at high speeds, its fuel efficiency decreases. According to the CEC, a study from the Federal Highway Administration looking at 1988-1997 cars and light trucks “show fuel economy declines by 3.1 percent going from 55 to 60 mph and 9.9 percent from 55 to 65 mph.”<sup>18</sup> Nevertheless, as car engines have become more powerful, drivers have increased their average speed well beyond the speed limit, especially on major highways.

Solution: Drive the posted speed limit.

Gasoline Saved: Uncertain, but a clear savings if drivers slow to 55 on those roads so posted.

## **7. Voluntary Vehicle Retirement (Scrappage)**

Issue: Cars and light-duty trucks that were built before 1983 tend to get significantly worse fuel economy than today’s average fuel economy.

Solution: Trade in the oldest cars for something newer.

Gasoline Saved: Gasoline will only be saved with this strategy if vehicle owners do not increase the amount they drive after getting a newer car. CEC analysis and the general theory of the “rebound effect” suggests that people tend to drive more when they trade up to newer vehicles.

## **8. Ridesharing**

Issue: Carpooling or ridesharing puts more people in a single vehicle, and fewer single vehicles on the road. It saves time, fuel and money. Ridesharing during daily work commutes tend to vary around the state.<sup>19</sup> Sacramento surveys suggest that 9.7 percent of commuters travel in carpools or vanpools, while in Bay Area the number is about 17 percent.

Solution: Share a ride more often. If you have a business or manage a government agency, offer incentives to carpoolers (e.g. better parking; guaranteed ride home in an emergency).

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<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

Gasoline saved: Uncertain. But if one uses the assumptions in the discussion of public transit for a commuter who decides to carpool a ten-mile roundtrip just one day a week for six months, then savings could be about 10.4 gallons. A million Californians adopting this strategy could save 10.4 million gallons a year.

## 9. Bicycling

Issue: National transportation surveys indicate that more than half the auto trips in the U.S. are less than two miles long. A 1996 Air Resources Board study of Southern Californians' driving habits found that drivers took an average of seven trips a day. The average trip length was 7.6 miles, and more than 31 percent of the trips were one mile or less. That means about two of those seven trips were within a very easy and short bicycle ride, which would save gasoline and provide exercise.

Solution: Choose the most appropriate form of transportation for each trip. That is, when trips are relatively short, take a bicycle.

Gasoline saved: When bike routes are safe and convenient, and public policies support bicycling, then car owners leave their cars behind more often. In the Netherlands and Denmark, bicycles are used for up to a third of all trips, and in German cities, where increasing biking to reduce congestion has been a goal, bicycling increased by as much as 50 percent between 1972 and 1995.<sup>20</sup>

The U.S. Department of Transportation has estimated the amount of gasoline saved by bicycling as between .11 percent and .63 percent of the total consumed by passenger vehicles in the U.S.<sup>21</sup> Extrapolating from these numbers, the California Bicycle Coalition estimates that in 1998, bicycling saved nearly 18 million to more than 100 million gallons of gasoline in the state. The coalition concluded that "[r]aising the bicycles share of all transportation trips from its current one [to] two percent to five percent will reduce California's petroleum dependency by up to one-half billion gallons per year."<sup>22</sup> If one assumes a bicycling for gasoline reduction campaign could raise bicycling by just one quarter of one percent, then California's gasoline savings will amount to **4.5 million to 25 million gallons.**

## 10. Walking

Issue: Walking is an effective and easy form of transportation. In Southern California, Air Resources Board researchers found that 31 percent of all vehicle trips are one mile or less in length. That means the trips were ten city blocks or less. In congested areas, walking that distance takes less time than finding parking. Plus walking provides exercise.

Solution: Choose the most appropriate form of transportation for each trip. Walk when trips are under short.

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<sup>20</sup> Morfas, Chris and Max Stevenson. *Bicycling: A Simple, Elegant and Viable Solution for Reducing California's Petroleum Dependence*. California Bicycle Coalition. September 2001.

<sup>21</sup> Ibid

<sup>22</sup> Ibid.

Gasoline saved: Uncertain. But if a car owner chose to walk five blocks four times a week (two one-mile roundtrips) that he or she would normally drive, then that person would save approximately 4 gallons of gas each year (assuming the vehicle gets 25 miles per gallon). One million Californians who similarly substituted walking two miles for driving each week, would save 4 million gallons of gasoline in a year. Plus they would be more fit than before they started walking.

## **11. Trip Planning/ Route Planning**

Issue: More fuel is consumed—and more pollution generated—from cold engine starts.

Solution: Combine multiple errands and activities into a single trip to reduce cold starts and save time and fuel.

Gasoline saved. Unknown.

## Menu of Things We Can Do NOW to Save Gasoline

Gasoline Saving Measure	Potential New Gasoline Savings in California (million gal/yr)	Putting Measures Into Action		
		<i>Individuals</i>	<i>Businesses</i>	<i>Government Agencies</i>
<b>Fuel Efficient Replacement Tires</b>	0.3	Request and buy low-rolling resistance tires as replacement tires	Use only low-rolling-resistance tires on fleet vehicles	Use only low-rolling-resistance tires on fleet vehicles
<b>Proper Tire Inflation and Alignment</b>	300	Keep tires inflated to manufacturer specifications (check them at least once a month) and properly aligned	Keep fleet vehicle tires properly inflated and aligned.	Keep fleet vehicle tires properly inflated and aligned.
<b>Vehicle Maintenance</b>	27	Get regular tune-ups, filter changes, and engine lubes.	Keep fleet vehicles properly maintained.	Keep fleet vehicles properly maintained.
<b>Public Transit</b>	10.4	Ride the bus, light rail, or commuter train at least once a week.	Provide transit incentives for employees to ride public transit (e.g. discounted passes; guaranteed ride home in event of emergencies).	Provide transit incentives for employees to ride public transit (e.g. discounted passes; guaranteed ride home in event of emergencies).
<b>Telecommuting</b>	Unknown	Work at home on days when being in the office is not absolutely necessary.	Offer employees telecommuting option.	Offer employees telecommuting option.
<b>Reducing Speed</b>	Unknown	Drive the posted speed limit.	Require fleet vehicles be driven at posted speed limit.	Require fleet vehicles cars be driven at posted speed limit
<b>Voluntary Vehicle Retirement</b>	Unknown	Trade in very old cars for something newer.	Retire very old vehicles.	Retire very old vehicles.
<b>Ridesharing</b>	10.4	Share a ride one day a week for just six months.	Offer ride-sharing incentives (e.g. preferred parking; guaranteed ride home in event of emergency).	Offer ride-sharing incentives (e.g. preferred parking; guaranteed ride home in event of emergency).
<b>Bicycling</b>	4.5 to 25	Ride at least 3 miles a week.	Offer safe bicycle storage; arrange safe bicycling instruction.	Offer safe bicycle storage; arrange safe bicycling instruction.
<b>Walking</b>	4	Walk two miles a week.	Encourage walking for short trips; offer walking incentives (e.g. free movie passes)	Encourage walking for short trips.
<b>Trip Planning/Route Planning</b>	Unknown	Combine multiple errands.	Encourage combining multiple out-of-office errands/trips.	Encourage combining multiple out-of-office errands/trips.

