

# 6. Transportation

TRANSITION



STREETS

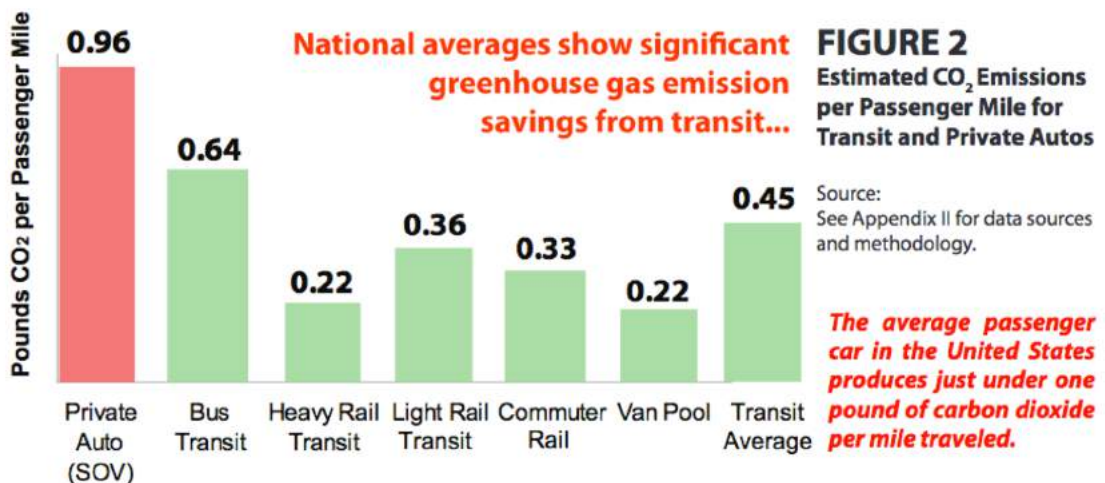


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Since transportation accounts for 28% of greenhouse gas emissions in the U.S., our decisions about how we get from A to B can have far-reaching effects.<sup>[1]</sup>

The majority of the world's vehicles are powered by oil. Planes, trains and cars all contribute to the growing concentration of greenhouse gases and pollution. Even trains and cars powered by electricity indirectly rely on fossil fuels being burned in power stations. But how do these modes of transportation compare and which is the worst?

Let's look at the variation in CO<sub>2</sub> per passenger mile between different methods of transportation. You'll see that cars use significantly more CO<sub>2</sub> per passenger mile than public transit.<sup>[2]</sup>



While cars get us around in comfort and convenience, they are costly in a variety of ways: vehicle accidents are a primary source of injury and death, they are expensive to operate and repair, traffic congestion and parking add to daily stress, and car-focused urban planning leads to communities more comfortable for cars than people.

We now know that pollution from car exhaust has significant health impacts, from increased asthma attacks in children to dementia, impaired lung function and COPD in adults.<sup>[3]</sup> Research points to the role of particulate matter in car exhaust as a factor in the worldwide increase in Type 2 diabetes. In 2016, an estimated 8.2 million lives were lost globally to pollution-linked diabetes.<sup>[4]</sup>

There are many good reasons to cut back on our use of personal vehicles: saving money, improving health, less stress, more peace and quiet, and reducing carbon in the atmosphere.

The EPA's Green Vehicle Guide asks us to imagine: "What if we kept our cars parked for trips less than one mile?" What if we walked or rode a bike? The savings would be tremendous. In 2009, car trips under one mile accounted for 10 billion miles.<sup>[5]</sup>

And what about the daily commute? According to the U.S. Department of Energy, most one-way car trips (59.4%) are less than 6 miles.<sup>[6]</sup> It may be both time- and cost-effective to consider carpooling, busing or taking a train for those miles.

It can be very useful to complete a travel diary to help you understand your travel habits and needs, especially your regular trips (see a sample on page 6.19). Armed with information, you can identify which actions mentioned below may be most appropriate for you.

Some actions will cost little or nothing; others may have a cost that is offset by savings. In your group, talk about each item and then decide which ones you want to tackle and when. Record your own action plan.

- **Walk this way** (6.3)
- **Get on your bike** (6.4)
- **Take buses and trains** (6.6)
- **Try car-sharing** (6.8)
- **Try carpooling** (6.9)
- **Fuel-efficient driving** (6.11)
- **To fly or not to fly?** (6.13)
- **Vacation locally** (6.15)



Photo from Transition Culver City, CA Bike Parade

# Transition Streets

## 6.3 WALK THIS WAY

The Practical  
Action Plan

Cost: none

\$ Savings: varied

Effort: varied

CO2 saved: varied

### Challenge

Walking is the greenest and one of the healthiest forms of transportation, but Americans don't do nearly enough of it. In 1969, 89% of children walked to school; by 2007-2008 that figure was 14%. Recent surveys by the National Center for Safe Routes to School show a promising rise in biking and walking.<sup>[7]</sup>

### Savings and benefits

- Walking is free! You'll save money on gas, parking, insurance, and repairs. That could add up to many thousands of dollars a year!
- Walking releases endorphins, the body's happiness hormone. People who walk 8 minutes or more a day, report better mental health.<sup>[8]</sup>
- Walking has many health benefits. It strengthens your heart, reduces your blood pressure, increases bone density, and even reduces the risk of developing chronic diseases like Type 2 diabetes.<sup>[8]</sup>
- More pedestrians in an area reduces crime because there are more "eyes on the street." That benefits everyone!<sup>[8]</sup>

### Next steps, hints & tips

- For short trips, walking is the easiest way to cut back on car use.
- If you start to use mass transit, you may find that you automatically do more walking to get to and from transit stops.
- Join a group. Healthy walking programs are often organized by employers, healthcare organizations and municipalities.
- Join or organize a "walking school bus" for your children's school.
- Comfortable walking shoes and rain gear are essential. Wheeled shopping carts help with the shopping load.
- Consider getting a pedometer to measure your progress.

**Yes, but ... It's raining and cold.** Follow the lead of outdoor enthusiasts who say: "There's no such thing as bad weather—just poor clothing choices." Get some good rain gear, waterproof shoes or boots, a windproof jacket, and a sunhat. You may even be able to find it used. Consider bringing a backpack to store your gear upon arrival at your destination.

**Yes, but ... I don't have time.** As you begin to walk more, you will learn how much time it takes to get from A to B.



# Transition Streets

## 6.4 GET ON YOUR BIKE

The Practical  
Action Plan

Cost: low-med

\$ Savings: varied

Effort: varied

CO2 saved: varied

### Challenge

Good News! The number of trips made by bicycle in the U.S. more than doubled between 2001 and 2009. In Bicycle Friendly Communities (BFCs), the rate of bicycle commuting increasing 105% (versus 31% in non-bike-friendly cities).<sup>[10]</sup>

There is real momentum to the trend of bicycle use not only for leisure, but also as a primary mode of transportation. But there is plenty of work to be done to make biking a safe and accessible option in many cities and townships across our nation.



### Savings and benefits

- Depending on distance and traffic, you may be able to arrive at your destination faster by cycling than by driving.
- You can save thousands of dollars on gas, car maintenance and parking costs, and hundreds on bus or train fare.
- It's relatively inexpensive. After your initial investment, it costs around \$100 a year or less to maintain a bike. (And you may be able to find a decent bike used.)
- Bicycling is an aerobic workout with multiple health benefits. It builds muscles and bones, burns fat and improves cardiovascular health and balance.<sup>[9]</sup> Plus, it's fun!

**Yes, but ... what about safety?** As our roadways become more multi-use, we have to learn new skills and teach more awareness to drivers of motor vehicles. Look into local bike safety programs and groups that are promoting safe multi-use transportation infrastructure, like Complete Streets.<sup>[10]</sup> Learn and teach cycling skills with programs like the League of American Bicyclists Cycling Coaches:

<https://bikeleague.org/content/league-cycling-coaches>.

# Transition Streets

## 6.5 GET ON YOUR BIKE

The Practical  
Action Plan

### Tips for safe, enjoyable cycling

- You can buy a perfectly serviceable bike from a local bike shop, thrift store, or Craigslist.
- You can do most (or all) of your own bike maintenance. Visit <http://bicyclehabitat.com/how-to/a-simple-bike-maintenance-chart-pg366.htm>.
- If you have physical limitations, are a bit out of shape, will be climbing a lot of hills along your route, or want to take longer trips, consider an electric bike (or converting your bike to electric by adding an electric wheel). Be sure to try a few before you buy. Different models provide different levels of assistance.
- Balance issues? Consider riding a trike – it's more stylish than you think!
- If you will be traveling with your bike by plane or train, consider a folding bike.
- Be ready to ride. Keep your bike maintained, accessible and loaded with a lock, lights, helmet and rain gear.
- Transform your bike with panniers (side saddles), baskets and a rack to accommodate shopping trips.
- Work out your regular travel routes and try them on your bike, especially ones that are within a five mile radius of where you live.
- Try biking on alternate days, or practice "car-free" Mondays.
- Plan ahead. Leave enough time to get there in a leisurely fashion.
- If parking your bike in the city, check out where you can securely store your bike. Some cities have bike lockers for rent.
- Find a safe bike route to school for your children. Check Safe Routes to School (<https://www.saferoutespartnership.org/>). Cycling to school, either on a tandem bike or independently of your child, or with them in a trailer or bike seat, is a great way for kids to learn road safety and get some exercise.
- Join your local cycling group and gain confidence. Or "buddy up" with someone who does the same route as you do.



Schwinn Meridian model adult trike

# Transition Streets

## 6.6 TAKE BUSES AND TRAINS

The Practical  
Action Plan

Cost: varied

\$ Savings: varied

Effort: varied

CO2 saved: varied

### Challenge

The average gasoline-powered vehicle on the road today gets 22 miles per gallon and emits 404 grams of CO<sub>2</sub> per mile. Over the course of a year of average driving, that adds up to 4.6 metric tons of carbon dioxide.<sup>[11]</sup> Multiply that by the 85% of Americans who travel to work by car and you can see that we've got a real problem.

City buses, long-distance buses and trains consume a lot of energy, but when you divide that energy (and greenhouse gas production) by the number of passengers, these vehicles are usually a far more climate-friendly option. From a carbon perspective, motor coaches and trains are among the lowest emission choices you can make, especially on shorter (less than 500-mile) trips.

### Savings and benefits

- If you can get by using only public transportation (supplemented with occasional carpooling and car-sharing), you could sell your car and see a huge cash savings. (See what the Kelly Blue Book says about ownership and operating costs for your particular vehicle: <https://www.kbb.com/new-cars/total-cost-of-ownership/>.)
- Some states and employers offer financial incentives or tax breaks for commuting by public transportation.
- Taking a bus saves money on parking, as well as time if the bus has a reserved lane or right of way in heavy traffic.





### Next steps, hints & tips

- If you've never taken a bus before, ask an experienced friend to take a trip with you.
- Plan your most common trips in advance. You can use the transit provider's website or Google maps. Using Google, click on Directions, and choose the bus or train icon.
- When on the bus, pick up a paper bus/train schedule for the routes you normally take and keep one at home and one with you.
- Or, add a phone app to your smartphone for local transit providers so you can check on schedules and routes.
- See if your employer offers incentives for taking the bus to work.
- Buy Amtrak Multi-Ride Tickets and become a Guest Rewards member (<http://www.amtrak.com/home>).
- Try Megabus (<http://usmegabus.com/>) and Greyhound.
- When on vacation, try to use local mass transit to see the city as the locals see it. You'll save a lot of money on car rentals.

### Local resources

Complete this section with local resources (helpful websites, recommended train and bus routes, public transit incentive programs, etc.)

### Notes:

# Transition Streets

## 6.8 TRY CAR-SHARING

The Practical  
Action Plan

Cost: medium

\$ Savings: med-  
high

Effort: low

CO2 saved: med-  
high

### Challenge

Are you hostage to the costs of a car you hardly use? AAA estimates that the true cost of owning and operating a new vehicle in 2017 was \$8,469 annually – and that's a new car, before the repair costs start adding up!<sup>[11]</sup> But can you really get rid of a car completely? What could you use instead where a car is the only option?

### Solution

A “pay-as-you-go” car-sharing service could be the answer, providing you flexibility while also saving you money. Car-sharing services like Zipcar (<https://www.zipcar.com>), Car2Go (<https://www.car2go.com/US/en/>) and Hour Car (<https://hourcar.org/>) are membership organizations that exist in dozens of major cities. For very low fees, you can book the use of a car online or from your cell phone, and pay for the time and miles you use. Infrequent drivers save money and generally cut their mileage by about two-thirds.

You could set up a car-share agreement with roommates or close neighbors. The book, *The Sharing Solution*, by Janelle Orsi and Emily Duskow,<sup>[12]</sup> offers guidelines on how to set up sharing contracts.

## Savings and benefits

Car-sharing members save an average of \$500 each month compared to folks who own and operate their own cars—and you won't have all the hassle of cleaning, insuring and maintaining a vehicle.

Each car-sharing vehicle replaces 6-10 vehicles on the road and in parking lots. Car-share members tend to combine trips, leading to significant carbon savings. They also tend to replace short trips with walking, cycling and public transportation.



**Yes, but ... will I really save money? I need to use my car a lot.** Car-sharing services are less valuable for frequent drivers. As a guide, if you drive five or more times a week, it may not be the right choice for you. You could consider carpooling.

# Transition Streets

## 6.9 TRY CARPOOLING

The Practical Action Plan

Cost: low

\$ Savings:  
med-high

Effort: low-med

CO2 saved:  
med-high

### Challenge

Currently 76% of Americans drive to work alone, putting 115 million cars on the road and resulting in traffic congestion, stressful commutes and high levels of carbon emissions. Only 9% of Americans carpool, and 77% of carpoolers travel with just one other person.<sup>[13]</sup> Think of all those unused seats!



### Solution

Give carpooling a try! By having more than one person using a vehicle, carpooling reduces each person's travel costs as well as the environmental cost of driving. In 2014, carpoolers saved \$1.1 billion and 85 million gallons of gas, while eliminating 56,000 miles of traffic. If everyone carpoled once a week, traffic congestion could decrease by an additional 20%.<sup>[14]</sup>

According to Wikipedia, most carpools in the U.S. involve family members, but it could be friends going to a movie together, fellow students getting to school together, or coworkers going to work. You can start carpooling just by asking someone for a ride, or you could use an online carpooling website or app, like:

- Waze (<https://www.waze.com/carpool>),
- CarpoolWorld (<https://www.carpoolworld.com/>),
- Rideshare (<https://www.shareyourride.net>)
- Your local mass transit company may also offer carpool assistance

### Savings and benefits

- Save money on parking and gas, compared to driving alone.
- Make new friends you wouldn't have met otherwise.
- Use the carpool lane and avoid the worst of rush hour traffic.
- Your employer may provide commuter benefits for carpooling and other alternative transportation. Your employer may even assist with carpooling matches.
- Reduce stress from being behind the wheel all the time; share the responsibility of driving.

### Next steps, hints & tips

- Use social media, such as Facebook and online community boards such as Craigslist, to find ride-shares.
- Check to see whether your local public transit authority offers help with ridesharing or has a guaranteed ride home service for people who use car- or van-pools.
- The book, *The Sharing Solution* (Nolo Press) also has a chapter on carpooling, with issues to consider before you start sharing, and a sample written agreement.

**Advice on personal safety** (which applies to anyone who shares a car with a stranger): Everyone is responsible for their own safety. Avoid exchanging home addresses with your traveling companion before you meet them. Arrange to meet in a public place. You are under no obligation to go ahead with any carpooling arrangement. If you have any doubts about your traveling companion, for any reason, you should avoid traveling with them.

Notes:

# Transition Streets

## 6.11 FUEL-EFFICIENT DRIVING

The Practical  
Action Plan

Cost: none

\$ Savings: low

Effort: low

CO2 saved: med

### Challenge

Every vehicle has a sweet spot where speed and fuel economy meet. That's the most efficient speed to drive. For most vehicles that's about 50 mph. Each 5 mph over 50 is like paying an additional \$0.22 per gallon.<sup>[15]</sup> Aggressive driving—with quick accelerations and sudden starts and stops—lowers gas mileage by as much as 33% at highway speeds, and by 5% around town.

### Solution

Changing *how* you drive could save more energy than changing *what* you drive. Fuel-efficient driving has a significant impact on our fuel use and, therefore, our emissions.

Sensible driving is also safer for you and for others, saving lives as well as money.<sup>[15]</sup>



**Yes, but ... If I close the windows and switch off the air conditioning in July, I'll cook.** If you're overheating on the freeway, it's more fuel efficient to use AC than opening the window or sunroof. At lower speeds, opening windows is more efficient.

Notes:

### Tips for better fuel efficiency

- Get your car serviced regularly so it's operating at peak performance levels.
- Stay at or within the speed limit.
- Keep your tires inflated to the correct pressure. Under-inflated tires create more resistance when your car is moving, so your engine has to work harder.
- Improve aerodynamics and reduce drag by leaving the roof rack at home and closing the windows and sunroof.
- Be gentle with your right foot—rapid acceleration takes a toll on your fuel economy.
- Anticipate road conditions and drive smoothly, avoiding sharp acceleration and repeated braking.
- Don't idle! This is a hold-over behavior from older cars. Idling uses more fuel in ten seconds than turning the engine off and on. Drive away immediately when starting from cold.
- Check your revs. Move up a gear before 2,500 rpm in a gas-fueled car and 2,000 rpm in a diesel.
- Don't carry around unnecessary weight. Empty your trunk.
- Use air conditioning sparingly as it significantly increases fuel consumption.
- Plan your trips to avoid congestion, road work, and getting lost by using a wayfinding app such as Waze.
- Combine trips.
- Avoid short trips. A cold engine uses fuel almost twice as quickly as a hot one (conveniently, these journeys are the easiest to walk or cycle).
- If you're stuck in a traffic jam, switch the engine off if you expect to be there for more than a minute or two.

# Transition Streets

## 6.13 TO FLY OR NOT TO FLY

The Practical  
Action Plan

Cost: varied

\$ Savings: varied

Effort: varied

CO2 saved: high

In the U.S., more than 80% of Americans say they have flown.<sup>[16]</sup> Flying accounts for 13% of transportation-related carbon emissions and 2% all global carbon emissions.<sup>[17]</sup> That's a lot of CO2 and it's expected to get worse as a growing global middle class begins to fly more frequently.

The question everyone wants answered is this: "How does air travel stack up against car travel?" Well, there are a few things to consider.

- The amount of fuel required to get a plane off the ground is great; the amount to keep a plane in the air is much less, so a longer flight is more fuel-efficient than a shorter one.
- Airplane emissions include black carbon, nitrous oxide, sulfur oxide, black soot and water vapor. All of these increase the greenhouse effect. So the impact of flying on our climate is a factor of 6 to 47 times higher than the impact of car travel.<sup>[17]</sup>



But the research doesn't point to one straightforward, simple answer. There is some evidence of benefits in which airplanes increase the ozone layer, block some sunlight and reduce methane.<sup>[18]</sup>

Michael Sivak, a researcher at the University of Michigan Transportation Research Institute, looked at "energy intensity" (BTU per passenger mile) for different types of transportation. Most car trips involve only one person and most vehicles get only 22 miles per gallon. That puts the energy intensity for most car trips at 4,200 BTUs per passenger mile. That's high.

U.S. airplanes, on the other hand, are flying with 86% of the seats occupied<sup>[19]</sup>, so the energy a plane uses is divided across a large number of passengers. That cuts the energy intensity of flying to around 2,033 BTU.

**The moral of the story? Whenever possible, don't drive alone! Don't take short plane trips. And avoid flying when it's not essential – it's still damaging.**

Unlike driving to work, flying is usually a luxury, not a necessity. There are many trips we can avoid and if we do need to travel, there may be alternatives.

- If a work commitment requires your presence, see if you can use teleconferencing technology. Increasingly, organizations are hosting webinars and teleconferences in place of in-person conferences.
- Consider a “staycation,” seeing the sights and events in your own community (see section 6.15).
- Plan your vacation in the U.S. so you can take a train, a ferry, or a bus.
- See [www.seat61.com](http://www.seat61.com) for info about how to get to any destination in the world without flying.

Considering carbon offsets to cover the damage of your flight? Do your research. An investigation into carbon offset schemes by the *Guardian* newspaper in the U.K. found some to be “unreliable.”<sup>[20]</sup>

### Savings and benefits

- On a train, the journey becomes a greater part of the experience. You go slower and watch the scenery and culture change.
- A no-fly lifestyle means no airport lines, no security checks, no lengthy delays, no tiny seats, no bad airplane food and no jet lag.
- When you stop flying, it means less noise pollution for the millions living under the flight path and massive carbon savings. You are doing your part to fight climate change.



Notes:



# Transition Streets

## 6.15 VACATION LOCALLY

The Practical  
Action Plan

Cost: varied

\$ Savings: varied

Effort: low

CO2 saved:  
med-high

### Challenge

In 2017, 41 million international visitors came to the U.S. to see the sights, according to *USA Today*. And millions of Americans hopped on a plane and left the country to vacation abroad, leaving contrails and carbon behind to impact the climate. Isn't it time we take a vacation from damaging climate impacts?



### Solution

Top vacation destinations in the U.S. include the Grand Canyon, Yellowstone, Mt. Rushmore, San Francisco, New York City, Disneyland and Disneyworld, Hollywood, Yosemite, Washington, DC, Niagara Falls, Las Vegas ... the list is long! There are great spots to visit in every state so try planning your next vacation closer to home. Here are a few ideas to get you started:

1. Go camping at a national park or see a monument ([www.nps.gov](http://www.nps.gov)).
2. Visit an iconic city such as New York, Los Angeles, or Chicago.
3. Stay on a farm with Farm Stays US ([www.farmstayus.com](http://www.farmstayus.com)).
4. Stay on a houseboat (<https://www.houseboating.org/>).
5. Plan a bike touring trip with friends. Try bike camping with a small trailer.
6. Visit a local spa or retreat center.
7. Volunteer with an organization you care about.

**Yes, but...it's cheaper to vacation abroad.** That depends on where you are going, and whether you are counting the cost of carbon and damage to the climate. If you want your vacation to be less carbon-intensive, you'll find plenty of fun options right here.

# Transition Streets

## 6.16 VACATION LOCALLY

The Practical  
Action Plan

### Local tourism resources

Use this section to list ideas and resources for vacationing in your part of the country.



Notes:

# Transition Streets

Reminder

Possible actions:

- Walk this way (6.3)
- Ride your bike (6.4)
- Take buses and trains (6.6)
- Try car-sharing (6.8)
- Try carpooling (6.9)
- Fuel-efficient driving (6.11)
- To fly or not to fly? (6.13)
- Vacation locally (6.15)

What other ideas does your group have that aren't covered above?  
Add them below if you think they are relevant for you.

My actions	Already done	When I'll do this	Notes

Group actions

How can you help each other out in your group? List team actions here (with named person and due date).



### Where to go for local information

Add your own information about local resources to help you with transportation options.

**Local transit services to your preferred destinations:**

- **Is there a transit service app**

**Regional transit services that will take you to the places you go to occasionally:**

**Carpool service (through employer or transit provider or other):**

**Local car sharing service:**

**Local bike sharing service:**

**Good local bike shop for classes and maintenance:**

**Where can you buy clothing and accessories for walking and biking in bad weather:**



## Transition Streets

### 6.20 THE BIG PICTURE: TRANSPORTATION

#### Questions for discussion

It seems that giving up our cars is one of the hardest things to do. Obviously, this is influenced by the cost and availability of suitable public transportation options. Given that this may take some time to change,

- What sort of changes would you need to make in your life to significantly cut your dependence on your car?
- What would your friends and family think?
- Given what we've learned about air travel, when do you think it is appropriate or responsible to fly?

Notes:

# Transition Streets

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