Treading Lightly
Steps Toward Reducing Our Carbon Footprint

This is one section of The University of Arizona’s Climate Action Plan. You may also download the entire document.
Curb Transportation Emissions

By not driving alone at least one day a week, members of the University of Arizona community have saved:

- **7,668,501 driving miles**
- **383,425 gallons of gasoline**
- **$3.7 million**
- **219,100 pounds of pollution**

Source: 2007 PAG/UA Travel Demand Survey
Change Your Habits. Change the Planet.

A Small Commitment Makes a Big Difference.

For more than a decade the University of Arizona has encouraged faculty, students, staff and visitors to join together to reduce transportation-related greenhouse gases and fuel consumption – even if it’s just one day a week.

This campus community includes nearly 55,000 students, faculty and staff, plus visitors. Of those, approximately 11,000 ride bicycles, 1,234 employees carpool and 2,600 ride the bus to campus.

A tagline used by the UA Parking and Transportation Services is “Change Your Habits. Change the Planet.” And it’s working.

According to the UA Travel Demand Survey, the university community has saved 7,668,501 driving miles, 383,425 gallons of gas, $3.7 million and 219,100 pounds of pollution by carpooling at least one day a week.

It’s not easy. Folks in the wide-open West like their cars, pickups and SUVs. The Tucson metro area spans roughly 600 square miles – with bus service, but no subway or light rail to serve the roughly one million residents. People are used to commuting long distances to the UA main campus in central Tucson. The daily roundtrip from Marana in the northwest or Vail in the southwest is 50 miles or more. That five-times-a-week commute produces greenhouse gas emissions of roughly 229 pounds of carbon dioxide every week.

It’s challenging to change habits, so the UA promotes a variety of transportation alternatives to further encourage members of the Tucson community to choose more sustainable travel modes. These include park-and-ride options throughout the metro area, carpooling connection assistance, carpool parking lots, bus pass discounts, the free Cat Tran campus bus system, private student-apartment shuttle buses to and from campus, car-sharing and bicycle-sharing programs, secured bicycle parking, bike valet service and repair stations.

These alternative transportation programs help to significantly reduce greenhouse gas emissions and serve as a standard for others to follow. Every year since 2003, the UA has earned the national “Best Workplaces for Commuters” award. In 2011, the UA was recognized by the League of American Bicyclists as a silver-level bicycle-friendly university.

By offering a variety of options, the UA is impacting the decisions people make about how they travel. Once they try alternative transportation, many find they like the benefits of sharing carpool time with colleagues, reading or studying on the bus, or checking out a free bike and cycling across campus in the fresh air – while doing their part to reduce greenhouse gases in the atmosphere.
First in Nation

On Earth Day 2011, the University of Arizona became the first university in the nation to add an all-electric car to its car-sharing fleet. The Nissan Leaf is the first zero-emissions car in the UA’s pool of vehicles available on campus for students, faculty and staff. The UA partners with Connect by Hertz, a global car-sharing club, to provide this cost-effective alternative to owning and maintaining a personal vehicle.

An hourly rental fee covers all expenses, including gas, insurance and roadside assistance. The program quickly attracted more than 700 members who rent a car, and is perfect for alternative transportation users needing access to a vehicle for emergencies, to run errands or to explore Southern Arizona. Anyone 18 years or older who has a valid driver’s license and a good driving record for the past 12 months can sign up.

The new zero-emissions all-electric car can be charged at any of the four charging stations on campus. Tucson is one of 11 cities taking part in an electric charging station development initiative called the EV Project.

This car-sharing program was introduced in 2009. The Nissan Leaf joined the UA car-sharing fleet of seven Toyota Prius hybrids, two Smart Cars, a Mini Cooper and two Ford Escape sport utility vehicles. Enrollment is free and Hertz waives the first-year membership and application fee.

The UA also was one of the first universities in the nation to add an all-electric Nissan Leaf to its “green” motor fleet, along with numerous vehicles that run on ethanol. The 2011 All Electric Nissan Leaf can be rented by those on university business. It has a range on one charge of approximately 100 miles and takes just eight hours to fully charge. The operating cost to charge the Leaf is approximately two cents a mile, depending on utility rates.

Sixty percent of the interior of the Leaf is made from recycled materials, including water bottles. The back of the Leaf has a small solar panel to help keep the 12-volt auxiliary battery charged. With more charging stations being installed throughout Tucson and surrounding areas, the reality of practical, all-electric vehicles for campus use is moving ahead.

Photos courtesy of UA Parking and Transportation.
UA Rated Bicycle Friendly

On a typical day there are more than 11,000 bikes on the UA campus. The League of American Bicyclists, a national program that identifies colleges and universities that create exceptional environments where bicycling can thrive, rated the UA as a silver-level bicycle-friendly campus.

Tucson ranked #1 for road biking by Outside magazine
Tucson ranked #9 on Bicycle magazine’s 50 most bike-friendly cities in America
700 miles of designated bikeways
UA campus rated silver-level bike-friendly campus by the League of American Bicyclists

With 350 days of sunshine a year and more than 700 miles of designated bikeways, Tucson is one of the best places to ditch a car and hop on a bicycle. Tucson is ranked No. 9 on Bicycling magazine’s 50 most bike-friendly cities in America and was ranked No. 1 by Outside magazine for road biking.

Innovative services make it easier to choose cycling as an alternative to gas-powered transportation.

The Employee Bike to Work program allows access to the campus recreation center where sweaty bike commuters can use locker rooms and showers at no charge.

Riders needing quick bicycle assistance can now fix a flat or make minor repairs at either of two fully equipped self-service bike repair stations on campus.

The Campus Bicycle Station is a one-stop shop for all bicycling needs – from maps and cycling information to quick bike fixes. This service is operated by the UA Parking and Transportation Services in conjunction with the Pima County Bicycle Ambassador Program. Most attendants are bicycle instructors certified through the League of American Bicyclists.

Cat Wheels is a bike-sharing initiative that provides a total of 55 single-speed cruisers at nine UA locations, including parking garages, the campus recreation center and the Bike Valet parking area. Bikes can be checked out for 24 hours at no charge with a valid UA CatCard.

The UA provides bike racks all around campus and discounts on sturdy U-locks. There also are bike lockers, enclosures and even a Bike Valet Program where cyclists can leave their bikes in a secure location with watchful volunteers.
Students Turn Cooking Oil Into Biofuel

University of Arizona students are learning to convert used cooking oil into biofuel that ultimately will fuel the campus motor fleet, reduce greenhouse gas emissions and boost their careers.

About 3,300 pounds or 400 gallons of cooking oil converts into an equal amount of biodiesel.

Starting in 2012, students are producing the fuel themselves in a small pilot-scale facility at the UA Campus Agricultural Center, where they process the waste cooking oil from two busy campus student union facilities in 100-gallon batches.

Eventually their biodiesel will be used to power UA vehicles, blending their fuel with standard diesel and helping to reduce greenhouse gas emissions.

These students are learning how to run a biodiesel production plant to generate a product that can meet the standards set by the American Society of Testing and Materials. Students gain valuable hands-on experience in process engineering, quality assurance and control, logistics, biofuels and green chemistry before they enter the job market.

This program is believed to be the only model of its kind on a university campus.

Chemically, the oil used for frying turkeys is not all that different from what powers the semis that hauled the turkeys to market. Both contain hydrocarbons, chain-like molecules made up of carbon and hydrogen. The conversion is a relatively straightforward and mild chemical process.

This collaborative project is funded in part by the UA Green Fund, financed by student fees to support projects that involve students and employees in making the UA a more environmentally sustainable institution.
Transportation Choices

**CAT TRAN**

The UA introduced the free campus-wide shuttle service, popularly known as the “Cat Tran,” in 1988 and has been contributing to reduced greenhouse gas emissions ever since.

The shuttles initially ran on regular diesel fuel, then biodiesel and today on ultra-low-sulfur diesel – which produces fewer emissions than any other biofuel on the market. This means the fleet has better mileage, lower fuel costs, and pumps fewer emissions into the environment.

The 30-passenger wheelchair accessible buses transport 3,500 riders a day. The shuttles make 58 stops on five different routes, connecting the main campus, medical center and downtown Tucson. The Cat Tran operates Monday through Friday from 6:00 a.m. to 6:00 p.m. with the UA Night Cat providing more limited service after hours.

**CARPOOLING**

The UA partners with the Pima Association of Governments to connect people who are interested in carpooling. The Sun Rideshare program provides a computer-generated “match list” with names, phone numbers and email addresses of other commuters who live and work nearby and are interested in joining a carpool.

The UA provides designated carpool parking lots and spaces in parking garages for those who carpool with three or more people, further encouraging carpooling and the sharing of parking expenses, and directly reducing commuting-related emissions.

Commuters in outlying areas can meet their carpool at Sun Rideshare’s Park and Ride lots throughout the metro area. For UA football games, any car with four or more people can park in Sixth Street, Tyndall, Main Gate or Highland Avenue garages free of charge.

**U-PASS**

The UA provides incentives for students, faculty and staff to ride the bus to and from campus through the Sun Tran U-Pass program.

Parking and Transportation Services subsidizes passes up to 40 percent, and UA affiliates can have unlimited access to the Sun Tran, including the twelve routes that lead to the university. In addition to the regular semester pass, express passes are available for both Sun Tran and Sun Express routes.

Photos courtesy of UA Parking and Transportation.
Next Steps*

To Reduce Transportation-Related Emissions

These alternative transportation activities are just the foundation for what’s yet to come.

Research shows that 40 percent of those who currently drive to the UA campus, and live within five miles of the university, drive alone. That is a huge opportunity to reduce greenhouse gas emissions further by encouraging more members of the campus community to get out of their cars and walk, bike, take the bus or carpool.

The UA is working with the Pima Association of Governments to study and improve bicycle and pedestrian conditions on and around the campus. Plans include analyzing bicycle and pedestrian flow, identifying choke points, and creating solutions to better manage traffic flow and reduce accident risk. These strategies will guide the UA and City of Tucson in implementing beneficial improvements and programs.

Developing strategies to offset and reduce the greenhouse gas impact of air travel to and from this top-research university proves to be yet another challenge. Air travel accounts for 15.43 percent of the UA carbon footprint – more than student, faculty and staff commuting combined.

The City of Tucson is developing a $197 million all-electric modern streetcar project that will span four miles, connecting the UA main campus and medical center to downtown Tucson and the redevelopment area west of downtown. The streetcars are expected to ease traffic congestion and reduce emission levels on and around the university.

For more information on UA alternative transportation visit: http://parking.arizona.edu/sustainability.

*This portion of this report currently undergoing peer review
Next Steps* (continued):
Reducing Transportation-Related Emissions

Offset Air Travel

- The approximately 5 million passenger air miles travelled per year by University of Arizona faculty, staff and students make up more than 10 percent of the UA carbon footprint – and this only includes what is tracked through the UA financial system. Building on its innovative air-travel-emissions tracking system, the UA is working to develop a voluntary carbon-offset purchasing system that is integrated into the process of purchasing individual airline tickets using the UA financial system. The system would pool contributed funds and maximize purchasing power with a single request for proposal for purchasing offset credits in large quantities that in turn would be applied to the UA. This system would also allow the UA to consider the benefits of sourcing offsets from local or regional projects.

Encourage Greener Commuting Behavior of Students and Employees

- The university will continue to expand existing alternative-transportation programs that reduce single-passenger car commuting. While the UA benefits from an effective regional survey of employee commuting, the university also is working to improve the UA’s capacity to survey students on their commuting patterns. The university also expects that rising fuel prices and improving fuel efficiency will continue to reduce its commuting and UA-vehicle-related emissions.

- As the UA develops the carbon-offset program for air travel, it also may expand this as an option for employees and students to voluntarily offset emissions from their commuting.

- The UA is a partner in a modern street car project that planned for completion in 2013. This will connect the main campus and medical center with downtown Tucson. The street car will increase development within central Tucson that will offer UA students and employees additional housing options with shorter commutes.

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Learn more about our environmental initiatives, visit http://portal.environment.arizona.edu.