



**TIMBERWOLVES COME UP SHORT**  
Northwood football team takes second place at Southern Division Challenge  
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COURTESY OF UC IRVINE

UCI graduate student Renee Cinar plugs a Scion iQ EV into a charging station at the Irvine Transportation Center, where commuters in a car-sharing program can pick up a car.

## COMMUTERS DRIVE ENERGY PROGRAM

A UC Irvine electric car-sharing project helps to bridge 'the last mile' for workers who travel by train.

BY JORDAN GRAHAM  
ORANGE COUNTY REGISTER

**T**he last mile" is the name given to the stretch of land that sits between transportation hubs and a rider's final destination. Often measuring more than just a mile, the distance, although close compared with the length of a train ride, can be too far to walk.

For more than a decade, a UC Irvine electric car-sharing program has operated out of the Irvine Transportation Center, helping commuters cover this final ground, encouraging train rider-

**MORE ON ENERGY**  
UC Irvine lab explores future uses.  
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ship and providing data to help develop a business model that program operators hope others can replicate.

The "zero-emission vehicle network enabled transport" car-sharing program, known as ZEV•NET, was launched in 2002 by UCI's Advanced Power and Energy Program. Since then, the program has distinguished itself from other car-sharing programs in three ways:

- The program uses only electric vehicles.
- It runs on a commuter-based model.
- Only employees of participating businesses can enroll as drivers.

Three Orange County companies pay to participate in the program.

### A GROUP EFFORT

Oakley, the Foothill Ranch-based sunglasses and sporting gear manufacturer, signed up to participate in ZEV•NET in

SEE **COMMUTE** • PAGE 4



ED CRISOSTOMO, ORANGE COUNTY REGISTER

UC Irvine's ZEV•NET car-sharing program uses only electric vehicles, and only employees of participating businesses can enroll.

### The zero-emission commute

**1** After a company joins the program and an employee signs on as a driver, the employee can go to the ZEV•NET website to reserve an available car at a given date and time. The day's first reservation usually takes employees from the Irvine Transportation Station to their office.

**2** Employees take the train to the Irvine Transportation Station, often planning to arrive at the same time so they can carpool to the office.

**3** The driver who reserved a vehicle holds a card to a monitor mounted on the windshield. The car will only open and start for the driver who reserved the vehicle.

**4** Drive to work. Workplaces have the option of installing charging stations, but ZEV•NET has found they are generally unnecessary.

**5** Throughout the day, other registered drivers at the company can reserve the vehicle to run errands.

**6** At the end of the workday, the employee drives the car back to the train station, parks, plugs the vehicle into a charging station and takes the train home.



### 'Jeopardy': What is Irvine man's dream

BY JORDAN GRAHAM  
ORANGE COUNTY REGISTER

Have you ever daydreamed about being on the quiz show "Jeopardy?" Irvine resident Jeffrey Wachs has since the eighth grade.

In April, he competed, performed well, correctly answered the final clue, finished with \$31,600 and still lost.

After his episode aired on national television July 16, Wachs spoke about his chance-of-a-lifetime, surreal, bitter-sweet experience on the game show. **MORE ON PAGE 4**



COURTESY OF JEOPARDY

Irvine's Jeffrey Wachs, right, with "Jeopardy" host Alex Trebek, competed on the show in April. The episode aired July 16.

### UCI green buildings worth platinum

BY AARON ORLOWSKI  
ORANGE COUNTY REGISTER

UC Irvine recently won five awards for green-building technology at its Verano Place graduate student housing complex, putting the school on par with top environmentally friendly universities nationwide.

The complex houses 1,200 graduate, medical and law students, and undergrads older than 25.

The U.S. Green Building Council awarded UCI five

Leadership in Energy and Environmental Design, or LEED, platinum awards for Verano Place. That brings UCI's total to 19 LEED awards, on par with green powerhouses such as University of Florida, Harvard University and Arizona State University.

Platinum awards are the highest LEED awards a building can be awarded.

Verano Place was completed in 2012. The complex has a slew of environmen-

tally friendly features: filtration systems to reduce pollutants in stormwater runoff; "cool roofs" that lessen warming of the complex's surroundings; water-efficient plumbing fixtures; a design that produces a 73 percent cost savings in energy use; and construction that diverted 89 percent of construction waste away from landfills.

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## COMMUTE

FROM PAGE 1

March to encourage train ridership, reduce the company's carbon footprint and help alleviate congestion in a parking lot that was 400 spaces short for the 2,000-employee company.

Oakley's headquarters sits seven miles from the Irvine Transportation Center. The company has previously signed up for a program that brought employees from the train station in scheduled vans, but joined ZEV•NET to provide another option.

"We're a little hard to get to otherwise," said James Ince-Scott, Oakley's environmental health and safety manager. "We're trying to have more flexible options for (employees), especially if they're going to be staying late."

A typical day for an Oakley ZEV•NET commuter begins by arriving in Irvine by train. Because 22 company employees share seats in five ZEV•NET vehicles, groups plan to arrive at the same time to catch rides with the drivers who have reserved the cars for that morning.

Once at work, other employees who don't commute by train have access to the vehicles and may reserve them throughout the day to run errands or drive to the company's Lake Forest buildings. Later, train commuters carpool back to the station, where they plug the cars into charging stations to sit overnight.

ZEV•NET operators said the program's Toyota RAV4 EVs are driven an average of 15 miles per day, well below the 50-plus mile range the vehicles possess.

### NEW MARKETS

UCI does not own the 15 RAV4s currently in ZEV•NET. Nor does it own the 30 Scion iQ EV vehicles the car-sharing program will begin to roll out within a few weeks. Toyota Motor Sales owns them all but has allowed UCI to use them for research.

"We see ourselves on this bridge between engineering science and practical application," said Shane Stephens-Romero, manager of project development and external relations at UCI's Advanced Power and Energy Program. "We focus not only on the development of these systems but also on the deployment. We feel like it's important to get these out into the work environment so they can be adopted and tested by the market."

Toyota is particularly interested in how people use its vehicles in commuter-based car-sharing programs.

A car company backing a car-sharing model might seem counterintuitive, but Craig Scott, Toyota's advanced technology group manager, said that shouldn't be the case. There's no data that say car sharing reduces the number of cars purchased, Scott said, and car-sharing programs could open up new markets for the company.

In New York City and San Francisco, where residents ride public transportation and many people don't own vehicles, car sharing could provide an alternative form of transportation. Plus, Scott said he only needs to look out of his office window to the junction of I-405 and the I01 to see that traffic congestion already presents a problem.

"As a company, we believe in the concept of sustainable mobility, and we realize that loading up freeways is not sustainable. So, what can we do to lighten the load?" Scott said.

"For us, it's about learning," Scott said. "What do people like?"

### Electric vehicle comparison

UC Irvine's ZEV•NET car-sharing program has two vehicles: the RAV4 EV and the Scion iQ EV. This is how the two electric cars compare:



PHOTOS: ED CRISOSTOMO, ORANGE COUNTY REGISTER

#### ← RAV4 EV

**Status:** On market  
**Use:** City driving or longer trips  
**Driving range:** 113 miles in extended mode  
**Charge time:** Five to six hours  
**Top speed:** 100 mph in sport mode  
**Seating capacity:** Five  
\*These specs are from the current generation RAV4 EV. ZEV•NET uses the first generation of this model.

#### ← Scion iQ EV

**Status:** Available only through car-sharing programs  
**Use:** City driving only  
**Driving range:** Around 50 miles on a full charge  
**Charge time:** Three hours  
**Top speed:** 78 mph  
**Seating capacity:** Four  
**Source:** Toyota Motor Sales, U.S.A. Inc.

Is this a business that's profitable? What are the key trends that are important for us as a business?"

To help answer these questions, Toyota is monitoring two car-sharing programs at other locations, as well.

The biggest lesson so far?

"People want to take mass transit when it's available to them but they don't want to sacrifice a whole lot of their daily conveniences," Scott said. "The benefit is easily unwound if they have to make some sort of convoluted arrangement to get a couple miles to their office. It's always about finding a balance."

### INFRASTRUCTURE CONCERNS

Researchers at UCI's Advanced Power and Energy Program are also trying to find a balance, but their concern is energy use.

One piece of data they've been monitoring is the time at which people begin charging ZEV•NET's electric vehicles. What they've discovered is that under a commuter-based model, many people plug in around 5 p.m., a period when energy use already surges and a time when increased use could overload the system.

Stephens-Romero said the lab's research into other energy systems has provided insight into what infrastructure improvements might be needed to support a future with many more electric vehicles.

"A large component and need for the smart grid in the future is going to be handling this (disturbance) coming onto the grid and plugging into homes," Stephens-Romero said. "The fact that (UCI's research) is integrated here allows us to understand these interplays."

"I think (ZEV•NET) was really ahead of its time," Stephens-Romero said. "It still is."

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ED CRISOSTOMO, ORANGE COUNTY REGISTER

Toyota Motor Sales owns the electric vehicles that UCI uses in its ZEV•NET car-sharing program. The vehicles are kept plugged in at the Irvine Transportation Center, where commuters pick them up.

## UC Irvine lab explores future energy use

BY JORDAN GRAHAM  
ORANGE COUNTY REGISTER

UC Irvine's Advanced Power and Energy Program (APEP) has a number of research projects that demonstrate the potential of next-generation energy systems. Here are a few.

### FUEL FROM WASTE

A method that turns by-products of the waste-treatment process into electricity, heat and hydrogen may sound too good to be true. But that is exactly what APEP is doing with its "tri-generation technology."

While most fuel cells run on natural gas (creating heat and electricity through a chemical reaction), APEP powers its fuel cells with bi-gases generated during the Orange County Sanitation District's treatment process.

The lab discovered that the fuel cell would run more efficiently if some of the hydrogen (produced during the fuel cell's internal chemical reactions) was removed during the process. The end result is a system that delivers three types of energy: electricity, heat that could be used to create steam for industrial processes, and hydrogen, which is being used to fill fuel-cell vehicles at the sanitation district's hydrogen fueling station.

### HYDROGEN STATIONS

Like electric cars, fuel-cell vehicles are emission-free and are being looked at as a replacement for automobiles with combustion engines. Fuel cells create their own electricity onboard, eliminating the need to plug into charging stations. Typically, it takes several hours to charge an electric car.

However, only a few stations in Orange County offer the hydrogen that powers fuel-cell cars.

To help give the industry a nudge, APEP installed two hydrogen fueling stations – one at UC Irvine in 2002 and one at the Orange County Sanitation District in 2011. The program monitors the energy required to run the equipment and assesses customer usage to determine how many stations would be needed to support early fuel-cell vehicle markets.

### SMART GRIDS

Through its array of solar panels, gas turbines and energy-monitoring technologies, UC Irvine produces nearly enough electricity to power the entire campus, said Shane Stephens-Romero, APEP's manager of project development.

By learning how to manage energy flow and usage on a smaller, campus-wide scale, the program can offer insights on how to create automated systems capable of improving efficiency on larger energy grids.

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## Nothing compares to 'Jeopardy' experience for Irvine man

BY JORDAN GRAHAM  
ORANGE COUNTY REGISTER

Irvine resident Jeffrey Wachs never thought he would finish his "Jeopardy" appearance with \$31,600 and still come in second place.

"Generally, that's a pretty good haul," Wachs said last week, one day after his episode aired July 16 on national television.

The 37-year-old attorney said he began watching the well-known quiz show with his mother when he was in eighth grade. Since then, it has been Wachs's dream to compete on the show – an aim that was realized in April, when he was called in by producers.

After falling behind early in the game, Wachs bounced back and

even briefly took the lead during the game's second round. Heading into the Final Jeopardy round, Wachs had a respectable \$17,600, but still trailed the leader by \$3,200. When he saw the final clue (a softball question about the British television show "Doctor Who" that all three contestants answered correctly), he knew he was sunk.

Wachs's game was the fourth in a row won by Mark Japinga, a legislative researcher from Washington, D.C. (whose four-day cash winnings totaled \$112,600).

**Q. How did it feel watching the episode on television three months after it was filmed?**

**A.** It was pretty surreal. I've never been on national television in that way before. There were

some things about the game that I didn't even remember, because in the heat of the moment, it's pretty overwhelming. In some ways, I felt like I was watching the game for the first time. It was difficult knowing the outcome, especially when it looked like I was making a surge toward the end of the game, and I got really close. It was really kind of heartbreaking.

**Q. Did you get to keep the \$31,600 as a second place finisher?**

**A.** I got \$2,000. Even though I came close to winning a lot of money, it was never about the money for me. It was always about the greater glory and the chance to be on "Jeopardy."

**Q. You were down big at the first commercial break, but you turned it**

**around. What changed?**

**A.** It was just calibrating my buzzing in. There's a rhythm to it, and the producers got me to close my eyes and just try to buzz in after Alex's (Trebek) voice. I'm not trying to make excuses for myself, but Japinga was on his fourth game when I started playing, and you definitely get more acclimated to the rhythm of the buzzer when you're playing.

**Q. Is there anything you wish you would have done differently?**

**A.** I got a Double Jeopardy, and the correct answer was the Red Baron. I answered that incorrectly, and I think that's what lost me the game. I wish I would have answered that question in a different way. In the heat of

the moment, I zeroed in on the wrong aspect of the clue.

**Q. Has watching the show been different since you've been a contestant?**

**A.** Last night is the first time I watched the show since the taping because I haven't been able to watch it. It's still painful. "Jeopardy" is like the Olympics, but there's only one of them. There is no other stage like "Jeopardy" that I know of where somebody like me, who is a general geek, can flex the muscle that I've developed over the years. So knowing it's a one-shot opportunity, and to know that I came close and didn't make it, I feel incredibly fortunate to have had the opportunity, but it's pretty bittersweet.