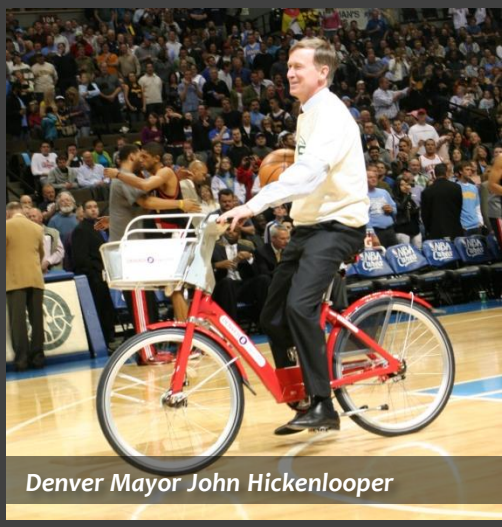
Community Block Grants Inspiring Two-Wheeled Urban Revolution

DENVER, CO - Cities across the country are inspiring people to leave their cars at home by providing bicycles that can be rented at high-traffic locations and transportation hubs for short trips.



Denver Mayor John Hickenlooper

The programs have a variety of names, from B-Cycle in Denver to Capital Bikeshare in Washington, D.C., but cities have used the funding available through the Recovery Act's new Energy Efficiency and Conservation Block Grant (EECBG) program to make the projects even better for the environment through solar-powered charging stations and other energy efficiency measures.

Denver B-cycle launched on April 22nd, as the nation's first large-scale citywide bicycle sharing program, with Mayor John Hickenlooper and hundreds of bicyclists gathering at Civic Center Park for a kickoff bicycle parade. $210,000 in EECBG funding helped bring the program to fruition along with private foundation and corporate support.

Denver B-cycle members can pick up a bike from any of the 40 conveniently located B-stations. Denver's bikes are equipped with RFID chips and computers to track mileage, calories burned and carbon offsets. Riders can monitor their personal fitness, see their contributions to the city's green efforts and connect with others online at http://denver.bcycle.com.

The San Antonio City Council approved a proposal on June 17th to create San Antonio Bike Share, a nonprofit organization that will be run by bicycle shop Bike World and offer bike rentals and bike tours out of the OK-Bar building at HemisFair Park. The bike rentals and tours would serve tourists and local residents who want to take day bike trips to places such as the many local Spanish missions.

B-Cycle Launch Party in Denver, Colorado

San Antonio Mayor Julián Castro said. "Not only will these initiatives promote healthy living, they will improve the overall quality of life in our city and make places like downtown more attractive to investment and residential living."

Capital Bikeshare will launch later this year in the nation's capital with roughly 1100 bikes at 114 stations in the District and Arlington County, Virginia and will be the largest of its kind in the U.S. The bike sharing stations are solar powered and use wireless technology to allow for easy installation and adjustments. Bicycles available to the public for short jaunts around town are 3-speed with internal hub gears, fenders, chain guard, lights, and a front rack. Annual, monthly, and daily memberships will be available for area residents and visitors.

Bike share programs make sense for several reasons, most importantly is that they give urban residents and visitors a convenient, non-polluting and healthy way to make short trips that might be too far away to walk.

As one visitor from California wrote to *The Denver Post*, "I really can't say enough about how great I think this program is and how much I enjoyed being able to commute from my hotel to the convention center by bike. In addition, I was able to get out, enjoy, shop, and dine in parts of the city I would not have gotten to on foot."

How Biofuels Could Be the Fuel of the Future

Future of Fuel?

BERKELEY, CA - With each passing day, more oil gushes into the Gulf of Mexico and the effects of the disaster are now being felt on land. Although devastating, this disaster may provide the motivation to explore alternative energy options with greater urgency.

Oil, like other fossil fuels, has a tremendous impact on the environment, wildlife, and the health of the planet. There is another option – biofuels. Although this field is in its infancy, scientists at Lawrence Berkeley National Laboratory received Recovery Act funds to support research in new biofuel feedstocks and the conversion of plant biomass to biofuels. Although considerable progress has been made on biofuels recently, the break-down of plant material commonly used for paper production remains the most difficult and costly step in the conversion of plant matter to transportation fuels. The DOE Joint BioEnergy Institute (JBEI), located in Emeryville, Calif., will address the deconstruction process. ARRA funds will go to the lab to purchase equipment and greenhouse space to this study.

"It's an extremely exciting time at the Lab," said Berkeley Lab Director Paul Alivisatos. "We've been at the forefront of clean energy and energy efficiency research, and this new injection of funds will help make the work of turning scientific study into energy solutions much faster."A portion of the funds will also go to the DOE Joint Genome Institute (JGI), located in Walnut Creek, Calif., to upgrade equipment, IT infrastructure, and, most importantly, the development of the next-generation sequencing technology and reagents that will allow scientists to identify plant traits that facilitate the efficient conversion of plant material to biofuels.

"These new initiatives will help the U.S. maintain its scientific leadership and economic competitiveness while creating new jobs," said DOE Secretary Steven Chu. "The projects provide vital funding and new tools for research aimed at strengthening America's energy security and tackling some of science's toughest challenges."

Generating a New Wave of Vehicle Generators

The team at Michigan State

EAST LANSING, MI - Did you know that currently, nearly 85 percent of automobile fuel is wasted, and that only 15 percent of fuel is actually used for propulsion?

The engines that are currently used in vehicles, both gasoline and diesel, are large, heavy, relatively inefficient and need to run a significant amount of auxiliary components. Gas turbine engines, which are currently used in airplanes, are more efficient but not appropriate for vehicle applications in their current design.

Combining the advantages of both internal combustion and gas turbine engines plus utilizing shock waves for internal energy transmission, a team at Michigan State University is developing a wave disk engine coupled with a novel generator with ARPA-E funding. This engine-generator set will make better use of automobile fuel because it can run at a higher efficiency than current vehicle engines while also being lighter, smaller and significantly simpler than internal combustion systems (the wave disk engine only has 1 moving part).

It is projected that the design improvements of the wave disk engine-generator set will enable to use 60 percent of the fuel for propulsion, thus significantly reducing the percentage of fuel that is wasted. Additionally, the novel engine-generator set is compact in size (about the size of a cooking pot) and will replace around 1,000 lbs. of engine, transmission, cooling system, and fluids. These advantages will allow automobile companies to produce lighter, more fuel-efficient hybrid vehicles. If successful, this project will significantly increase fuel consumption efficiency, reduce automobile CO_2 emissions by up to 90 percent, substantially decrease U.S. imports of fossil fuels from foreign sources, and create new jobs.

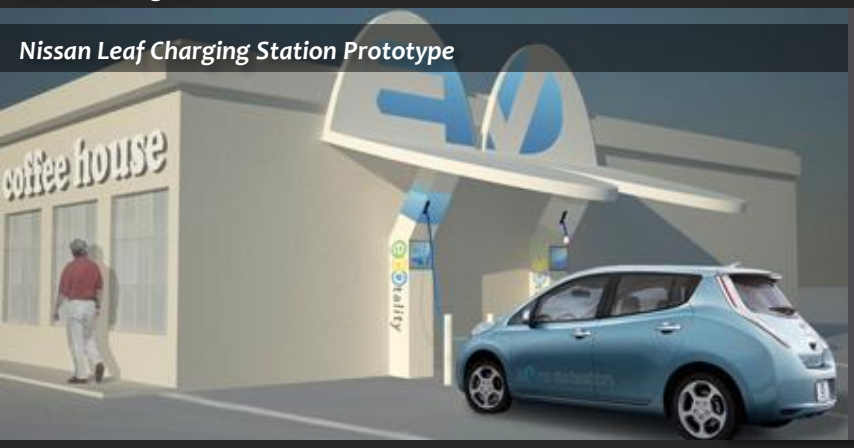
Dr. Norbert Müller, associate professor of Mechanical Engineering at MSU leads the team with over 15 years of expertise in innovative turbo machinery.

LEAFing Through New Vehicle Technology

Oil and gas price fluctuations and environmental concerns are driving innovators to find new ways to power our vehicles. That's the focus of The EV Project, a new program of ECOtality North America, which was awarded a $99.8 million Recovery Act grant from the Department of Energy. The EV Project will create a network of charging stations for participants' electric vehicles and gather data on the stations' usage.

"As [Energy] Secretary [Steven] Chu rightly pointed out, the only way this next wave of electric vehicles will be successful is if there is a robust network of charging stations to support them," says ECOtality CEO and President Jonathan Read. "Through The EV Project, we are learning what we will need to do to build out that strong infrastructure nationwide." To drive demand to the stations, ECOtality is partnering with Nissan North America to deploy up to 4,700 zero-emission electric vehicles — the Nissan LEAF — and 11,210 charging systems in five states: Arizona, California, Oregon, Tennessee and Washington.

Nissan Leaf Charging Station Prototype



The EV Project

- $ 99.8 M Recovery Act grant from DOE
- 4,700 LEAF electric vehicles (EV)
- 10,950 220V charging stations
- 260 fast-charge stations
- 750 new jobs by 2012
- 5,500 new jobs by 2017
- 11 major cities
- 4,700 EV cars will save more than 2 million gallons of gasoline per year

According to the EV Project's website, consumers who participate in the program will spend between 50 cents to $1.50 per day to charge their LEAFs, which they'll obtain by reserving the vehicles online. The LEAF is a five-passenger hatchback, powered by advanced lithium-ion batteries — with a range of more than 100 miles on a single charge. The vehicle will cost drivers about $25,000 after a federal tax credit. The lease price is about $349 per month. Project executives estimate that up to one-third of participants may be for business fleet purposes, but the majority will be private citizens. Many participants will work with Nissan to have charging stations installed at their homes as well, which the company estimates will cost about $2,200, but that amount may also be offset a 50-percent tax credit.

"What we learn from this deployment will inform the way the infrastructure is built for the next 5 million electric vehicles in America" - Jeanine L'Ecuyer, ECOtality.

"This demonstration project is primarily a study to look at places where charging behavior is likely to be focused so we can find out, aside from peoples' homes, where would there be a lot of people plugging in frequently?" says David Mayfield, area manager for ECOtality North America stakeholder services in Oregon. He adds, "We're very interested in who is raising their hands for these vehicles and where we can have public infrastructure that will best serve them." Because the average charge will take one to three hours, charging station locations are a key consideration. Mayfield says charging stations need to be at places where drivers will be comfortable spending time, such as grocery stores, coffee shops, movie theaters and civic centers. There are plans to also install some fast-charge stations, probably near areas of high traffic such as interchanges on state and federal road systems.

LED Traffic Lights Helping New Mexico Go Green (and Yellow and Red)

NEW MEXICO - Traffic might not be lighter in New Mexico's cities and towns these days, but thanks to a statewide retrofit of all traffic signals to LED (light-emitting diode) bulbs, intersections are definitely brighter and communities are benefitting with lower energy bills.

Thanks to funding provided through the Recovery Act's State Energy Program (SEP), New Mexico has become the first state to completely retrofit their traffic light infrastructure with LED bulbs that use 8 to 19 watts of energy per bulb (depending on the color) compared to 150 watts for incandescent bulbs, resulting in energy savings of up to 80 percent at the 330 signalized intersections across New Mexico.

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The statewide retrofit is estimated to save over 4 million kilowatt hours a year, with cost savings of approximately $320,000.00 given current electric utility rates in the state. Communities can also expect to see savings in maintenance costs since LED bulbs have a significantly longer life than incandescent bulbs. Approximately 10 million pounds of CO_2 emissions will be avoided annually as a direct result of this Recovery Act project.

New Mexico Governor Bill Richardson praised the effort, saying, "This LED traffic retrofit saves money and energy, reduces greenhouse gas emissions, and promotes energy conservation and efficiency – all of which help us reach our energy use reduction goals." Traffic intersections across the state are operated and maintained by the New Mexico Department of Transportation, while the electricity bills are paid by the local governments to the utility companies providing service, so all future savings will be seen in local budgets.

The entire project was budgeted at $5 million, but the actual project costs were only $2.6 million, which means the unused funds can be applied to another approved SEP project in the state. Besides saving huge amounts of electricity, LED bulbs are much brighter and provide improved safety for vehicles, bicyclists and pedestrians.

"Hybrid" Homes Ease Strain on Utilities, Grid, and Homeowner Wallets

LAS VEGAS, NV – Smart floor plans and a convenient location initially drew Jennifer Fong to visit the Villa Trieste housing community. But the benefits of living in a solar-powered green home ultimately convinced her to buy.

Trieste is the first housing community in the Southwest to provide solar power, Leadership in Energy and Environmental Design (LEED) certification, and Environments for Living building methods as standard features in every home. The program has been developed by Pulte Homes in partnership with the U.S. Department of Energy, NV Energy, and the UNLV Center for Energy Research. The community's "hybrid" homes feature energy-efficient building designs, lighting, ductwork, and appliances; solar-photovoltaic systems; centralized battery storage; and active monitoring.

These technologies are already helping Ms. Fong lower her energy bills. After moving to the community in November 2009, she was pleasantly surprised when her first month's utility bill totaled $8.41. "I was just so excited," she says. "All my friends couldn't believe that a utility bill could be so low." Ms. Fong regularly checks her energy consumption online and on the Eco-Concierge. During the first month in her hybrid home, she knew that her home's solar panels were generating enough power to almost completely offset her electricity use. Yet she was still surprised to receive a bill for less than $10, instead of the $20 to $45 that she averaged before moving to Villa Trieste.

Ms. Fong did not seek out a green housing development when she started her home search: "A lot of communities call themselves green, but I never thought much of it until I saw [Villa Trieste] in person. I loved the home plans and location, and then when I understood the impact of the energy efficiency, solar panels, and the Eco-Concierge dashboard, it was the icing on the cake."

Reducing the demand for electricity, especially during peak summer hours, is essential to ease the strain on the electric grid and prevent blackouts. According to Dr. Bob Boehm of UNLV's Center for Energy Research, Villa Trieste's "conscientious building design and practical application of new technology" will help the community achieve significant reductions in peak electricity demand.

Faces of the Recovery Act

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*The "**Faces of the Recovery Act**" newsletter is a monthly publication issued by the Office of the Secretary at the Department of Energy, highlighting people and projects impacted by the Recovery Act.*

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