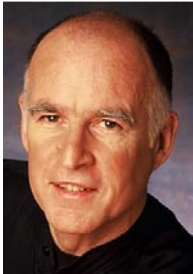


# verde xchange news

ACCESS TO INNOVATIONS AND DEVELOPMENTS IN THE GREEN ECONOMY

WINTER 2011 VOL. 2 NO. 5

## JERRY BROWN'S CLEAN ENERGY JOBS PLAN TO KEEP CA GREEN



JERRY BROWN

With the November election in the rear view mirror and a new governor set to take office, VerdeX presents the following Clean Energy Jobs Plan, which was released recently by Jerry Brown, the current state attorney general and the governor-elect. In contrast to candidate Meg Whitman's call for a one-

year moratorium on California's AB 32, Jerry Brown's tenure as attorney general proved him to be a strong supporter of the landmark climate change regulations championed by Gov. Arnold Schwarzenegger.

When I was governor, California was the world leader in renewable energy and it led the nation in efficiency standards. Our programs saved California consumers billions and created nearly 1.5 million jobs.

Until the early 1990s, nearly all renewable energy development in the U.S. occurred in California, which at one time had more than 90% of the world's wind energy capacity.

That has changed—China is now the world's top renewable energy producer, and Texas and Iowa generate more wind power than California.

*(continued on page 10)*



**SAVE THE DATE**  
**LOS ANGELES**  
**JANUARY 23-25,**  
**2011**

## CALIFORNIA'S ARB MAKES HISTORY—APPROVES CAP-AND-TRADE REGULATIONS FOR STATE



MARY NICHOLS

In November, California voters soundly rejected Prop. 23, a ballot initiative that would have rolled back regulations arising from AB 32, the landmark greenhouse gas emissions reduction law that has positioned California as a worldwide leader in green policy and technology. In December, the California Air Resources Board (CARB) approved one of the most significant portions of AB 32's policy mechanisms—cap-and-trade regulation for business and industry. With AB 32 taking shape and the state ready to take a radical step forward in green policy, VerdeX was pleased to speak with the chair of CARB, Mary Nichols, who gives a "state of the union" on AB 32 and California's political and business leadership in addressing climate change.

**VerdeX:** What do you believe are the climate change and energy policy ramifications in the wake of the November elections in which voters affirmed California's signature climate change legislation, AB 32; elected Jerry Brown as Governor; and gave control of the House to the Republicans?

**Nichols:** California is still California. Californians supported action to maintain and improve their environment. Even in a very tough economy, they recognize that there are real benefits to our state from

*(continued on page 14)*

## PLUG-IN ELECTRIC VEHICLES: CALIFORNIA REMAINS THE HUB OF THE EMERGING ELECTRIC VEHICLE INDUSTRY



DIANE WITTENBERG

On Dec. 13, 2010, the newly-created Plug-In Vehicle Collaborative released a report called, "Taking Charge: Establishing California Leadership in the Plug-in Electric Vehicle Marketplace." The report includes 30 suggested actions to develop an electrified transportation system in California. With a slew of electric vehicles hitting the market over the coming year, California is positioning itself as the point of entry for the new technology of the future and demonstrating the power of creative partnerships between the private and public sectors. The following are excerpts from a series of presentations at a press conference at Universal Studios announcing the Plug-In Electric Vehicle Collaborative and the report.

**Steve Nissen, Vice President, Legal and Government Affairs, NBC Universal:** Good morning everyone, and welcome to Universal Studios, Hollywood. We call ourselves the entertainment capital of Los Angeles, but today we are also serving as the idea and innovation capital of Los Angeles at

this very exciting event. Thank you, Ed Bagley, for being both champion of the environment and, equally important, for being an example to the rest of us of how to become environmental champions. It is my distinct pleasure to introduce the

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# PEOPLE / POLICIES BRIEFLY

The U.S. EPA granted **Gov. Schwarzenegger** the **Climate Change Champion Award** for his involvement in AB 32, the Million Solar Roofs Initiative, and the CA Hydrogen Highway project.

Researchers and scientists can now measure changes to the environment using **Google Earth Engine**, which is a compilation of 25 years of data from NASA's LANDSAT satellite.

**Nissan** officially launched the **Leaf**, its electric hatchback. The Leaf will arrive in Japan on Dec. 20 and in some U.S. states by the end of the month, with the EU launch following in Jan. The five-seater, with a range of 120 miles, will retail at \$25,000.

The **UN** predicted that 2010 will be among the three warmest years since 1850, capping a record-warm decade. According to the WMO, land and sea surface temperatures in 2010 have been 0.55° C higher than the 1961-1990 average of 14° C. A final ranking of 2010 will be published next year.

The Board of the L.A. DWP approved **Ron Nichols**, director of Seattle-based **Navigant Consulting Inc.**, as the new general manager of the DWP. He awaits City Council approval.

The L.A. City Council failed to override **Mayor Villaraigosa's** veto of a ballot measure that would have granted council members the power to fire DWP officials.

**Proctor & Gamble** recently opened its first North American zero-waste manufacturing plant in Maine. The company operates eight other zero-waste facilities in Belgium, the UK, Hungary, and Italy.

The **Port of Los Angeles** has added 5,000 solar panels to its cruise terminal rooftop. The 71,500-square-foot array is capable of generating one megawatt of energy, which, when routed to the city's power grid, is estimated to save \$200,000 annually.

The **World Bank** and the **UN Development Programme** united to launch **Climate Finance Options**, a new website aimed at simplifying the process of financing for climate projects.

Through a new \$2 million program funded by EECBG, **L.A. DWP** will conduct efficiency audits as well as retrofit the facilities of up to 80 nonprofits in L.A.

**GE** has announced a new smart grid energy project, **Ecomagination Challenge**, which will invest a total of \$200 million in smart grid and venture capital firms. Thus far, GE has received almost 4,000 proposals from 150 countries and selected 12.

**GE** recently launched **Home Energy Management**, a new business aimed at helping consumers use smart grid technologies to reduce household energy use. The system includes the **Nucleus Energy Manager**, which will allow users to monitor energy use and set thermostat controls remotely, is set to debut next year at approximately \$150-\$200.

**Siemens** announced that its new post-combustion Carbon Capture Storage project is capable of capturing up to 90 percent of carbon emissions. The **PostCap** process, a pilot project completed at a coal-fired power plant in Germany, separates CO2 from flue gas emissions using an amino acid salt-based solution.

**GM** has recruited 1,000 new engineers and researchers to bolster its **Volt** production team. To date, GM has invested \$700 million in the development of the car. The Volt will run a maximum of 35 miles on battery power alone, giving drivers a total range of 379 miles with its additional 1.4 liter engine.

An **EPA** report found that U.S. car emissions declined by 14 percent between 2004 and 2010. The decline is attributed to annual improvements in vehicle fuel economy and the collapse of SUV sales during 2009.

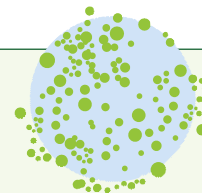
**Zipcar**, the second largest car club in the UK, purchased **Streetcar**, the largest, after approval by the UK's Competition Commission. The acquisition is expected to bolster the appeal of car-sharing in the UK and provide Zipcar with a foundation for its planned expansion across Europe.

**Honda** debuted its new **EV**, the **Fit**, at the L.A. Auto Show. The car, which Honda has announced will be introduced in 2012, runs on a lithium ion battery and has three driving modes.

**Toyota** and **Tesla Motors** united to unveil the **RAV4-EV** concept, which uses a Tesla battery and power electronics technology package to give drivers a range of up to 100 miles.

**L.A. DWP** and the **city of L.A.** have announced plans to improve the installation, permitting, and inspection process of home chargers for electric vehicles. The new process will take under seven days from permit to plug in.

**General Electric** announced that it will purchase 25,000 electric vehicles for deployment by 2015, including 12,000 **Chevrolet Volts** from **General Motors**, which will be on the market by the end of this year. This is the single largest purchase of electric vehicles in history. ●●●



## verdexchange news

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# LEGISLATIVE UPDATE

**Japan's** tax commission plans to raise petroleum and coal taxes to boost revenue from such levies by up to 50 percent. The commission expects to raise 40 billion yen in its first year of tax increases and 240 billion yen over four years; revenue will go toward energy efficiency plans.

**South Africa** has released a new program to increase renewable energy capacity and reduce its carbon-based energy supply, eventually generating a proposed 20 gw from renewable power projects and 4 gw from co-generation. The government, which began requesting bids at the end of November, has already received 384 applications for renewable power and co-generation projects. Of the proposals, wind power (accounting for 70 percent of total capacity) and solar PV (accounting for 15 percent) made up two thirds, with the remainder accounted for by concentrated solar power projects and 10 percent of total capacity. The plan's launch follows the 2009 release of feed-in tariffs for renewables and the take-over by the DOE of the renewable energy market in response to controversy over the state-run utility Eksom's monopoly over the renewables market. Today, less than 30 of the 384 proposals have received a definite time frame and quote for connection.

The Obama administration has announced plans to speed the permitting process for offshore wind farms, which in the past has taken ten years to complete. The **U.S. Interior Department** stated that officials would begin identifying locations well-suited for wind farms early next year and might begin issuing licenses to develop those locations as early as the end of 2011. In addition, the department verified that planning applications for transmission lines from offshore wind farms would be processed much more quickly than current rates. The **Department of Energy** released a report in September that claimed the U.S. offshore wind sector could potentially produce up to 54,000 megawatts by 2030.

The **Select Committee on Global Warming**, a congressional committee examining the causes and effects of climate change, will not continue to operate in the next Congressional session. Top Republicans claim the committee is an example of "waste and duplication."

The **Supreme Court** granted Review of the climate change lawsuit **Connecticut v. American Electric Power** (AEP). The case comes as the follow-up to a 2004 suit filed by eight states, the city of New York, and three land trusts against five of the nation's top carbon-emitting electric utilities. The plaintiffs, who argued that the companies' GHG emissions constituted a public nuisance under federal common law, filed for an injunction mandating that the utilities not only cap their carbon dioxide emissions but also reduce these pollutants by a specific percentage annually. The suit was dismissed in 2005, when a U.S. District Judge found that the policy determinations necessary to implement an emissions cap were reserved for Congress and the president. In 2006, the Second Circuit heard an appeal from the dismissal order. After a three-year delay, the District Court decision was reversed and remanded. The District Court ruled that 1) the political question doctrine did not bar the suit, 2) the plaintiffs had standing, and 3) the EPA's proposals to regulate GHGs under the Clean Air Act did not displace the common law claims.

The staff of the **California Air Resources Board** announced suggested changes to the **Low Carbon Fuel Standard** (LCFS), a key measure in the implementation of AB 32 adopted in 2009. The LCFS, which mandates a 10 percent phased reduction in carbon intensity of transit fuels used in CA by 2020, will be updated next year. Such changes include a revision of the land use penalty for producers of ethanol and other biofuels and the establishment of a measurement system for high carbon intensity crude oil (HCICO).

**California** and **New Mexico** are considering joining with the Regional Greenhouse Gas Initiative, a cap-and-trade system in the northeastern region of the United States. After the closure of the Chicago Climate Exchange, this move could be an encouraging development in the U.S. carbon market. The two states are current participants in the Western Climate Initiative, which involves several other Western states and Canadian provinces, but the collaboration suffered setbacks this year when Oregon and Washington failed to pass cap-and-trade legislation.

Two rules about **sequestration** will make it easier for the **U.S. EPA** to ensure that commercial carbon capture and storage technology is used safely. The first rule mandates that sequestration wells 1) be created within new EPA guidelines and 2) be monitored at all stages of construction and operation to prevent pollution of drinking water. The first rule also invents a new classification (class VI) for CCS injection wells designed to transfer CO<sub>2</sub> to long-term storage. The second rule calls for underground carbon dioxide injections by sequestration facilities, as well as any other organization, to be reported to the EPA. ●●●

GREEN BUILDING



LARRY EISENBERG

## LACCD'S BILLION DOLLAR CAMPUS BUILDING PROGRAM SHOWING RESULTS FOR COLLEGES & IMPACTING SUSTAINABILITY PRACTICES

When the Los Angeles Community College District (LACCD) launched a \$1.2 billion building program in 2001, green building and sustainability were not nearly the industry buzz words that they are today. Now, however, with the LACCD's program continuing through 2015 and spending \$6 billion, LACCD has consistently set the market for green products and can claim game-changing impacts on sustainability practices in the building industry. With the peak construction years of the program looming in 2011 and 2012, VerdeX was pleased to speak with Larry Eisenberg, executive director of LACCD facilities planning and development.

**VerdeX:** As a recognized leader in sustainability, how much more construction of LACCD facilities will there be in 2011?

**Eisenberg:** In 2011 and 2012, we will hit the peak of the program. We're expecting to spend about a billion dollars a year on construction activity. We are currently in design on probably 20 buildings that will move into construction. We have another 10 or so yet to get into design, which will conclude the program. The program will largely end in 2014. There may be a few stragglers in 2015, but that will be it.

**VerdeX:** What were the ambitions of the facilities program a decade ago? What have been the significant accomplishments to date?

**Eisenberg:** When the program began in 2001, at that point \$1.2 billion, growing today to \$6 billion, the desire was to use the opportunity to demonstrate sustainable strategies and renewable energy concepts. It's fascinating how it has proven out. My sense is that LACCD has provided leadership here in L.A., and beyond—to the state and the nation as well. We've set a very large example of what can be done.

The result that we're seeing now—those 20 buildings that we have getting ready to go into construction, with some of them under construction now, will be LEED Platinum

buildings, which I'm very excited about. In the entire United States now, there are probably less than 100 LEED Platinum buildings. At LACCD, we're going to have at least 20 LEED Platinum buildings spread across our colleges, which is quite an accomplishment.

ing, and construction teams, we are getting maximum sustainability. They really picked up the ball and carried it forward, and we're seeing fabulous results.

**VerdeX:** What is included in LACCD's Campus Sustainable Design Guidelines?

What operating efficiencies result from reaching LEED platinum? And what technologies did you employ to get to goal?

**Eisenberg:** There are simple things that are becoming common place, like the idea of day-lighting, where almost every room in the building enjoys daylight. There's an inter-tie between the windows and the lighting systems such that if enough daylight is in the building to achieve the light level one wants, the electric lights go off.

We're using sustainable materials, both in the interior and in the construction of the building, whether it's

carpeting that we've specified that creates a very high sustainable standard, or, most recently, we've been changing the concrete industry. We've been specifying concrete that is highly sustainable through the use of fly ash and now, in particular, recycled concrete, which has been a goal of the concrete industry forever. Finally, with our help, one firm has achieved that. Now they're sharing their



LACCD

*The Los Angeles Trade Technical College South Campus at night. Designed by MDA Johnson Favaro, the project won the Los Angeles Business Council's 2010 Education-Public Award and marks the largest capital investment in the history of the college and the largest project within the LACCD building program. The project achieved LEED Gold status.*

One of the interesting elements is that we had chatted about the idea of mandating LEED Platinum design concepts, but we did not do that. Instead we developed what we call Campus Sustainable Design Guidelines. That is a book of more than a couple hundred pages that goes through every element of building construction and describes what one does to create a sustainable outcome for that segment of the building. With that, and with the guidance of the architect, engineer-

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## LOCAL INITIATIVES



AARON KLEMM

## HUNTINGTON BEACH, CALIFORNIA, IMPLEMENTING MODEL, CUTTING-EDGE ENERGY EFFICIENCY PROGRAMS

While large cities like Los Angeles and San Francisco get a lot of attention for their efforts in greening operations and infrastructure, smaller cities around the state of California have been quietly making strides in adopting and implementing innovative technologies and policies at the local level. One such innovative city is Huntington Beach. In order to detail the programs and technologies enabling this local success story, VerdeX was pleased to speak with Huntington Beach Energy Project Manager Aaron Klemm.

**VerdeX:** Huntington Beach has just been noted as a National Resource Defense Council “2010 Smarter City.” What is the significance of that recognition for the work you’re doing?

**Klemm:** Last year when NRDC did their smarter cities announcement, Huntington Beach was not on the list. I got a little concerned about that so I emailed them and said, “Hey, next time, send me the questionnaire.” It happened to be such that the things I was working on were things that they were asking about and wanted to highlight, like energy efficiency or renewables. Those are the main two topics that I work on here for the city.

**VerdeX:** What’s on the agenda of the energy manager for Huntington Beach?

**Klemm:** The Energy Efficiency Conservation Block Grants, or EECBG program, is a big deal for every city that got an allocation. The projects that we’re doing with those funds are, first, geographic information system-based streetlight auditing—we have 13,000 streetlights that we pay \$2 million per year for—to be sure we’re getting good value for what we spend there. Second, we spent a portion of the EECBG funds on a large-scale municipal solar feasibility study, design-to-bridging-documents in bid support, plus entitlements. That means feasibility design, entitlements, environmental review, and bid support. We currently have a bid out to construct almost two megawatts of solar in phase one, with bids due on Aug. 26. That will be big, with about two-thirds solar car

ports and the other third as rooftop installations. We’re hoping it’s a great project. On a very short time frame, about eight months, we went from nothing to hopefully being able to sign a construction power purchase agreement.

The last project is LED streetlights. LED streetlights are the big buzz right now. A lot of local governments are looking



City of Huntington Beach

*“LED streetlights are the big buzz right now... We are moving the city toward occupancy-sensored area lights, so that if people are not around we can drop the energy consumption and the light level and kill a couple birds with one stone.”*

at LED. We had a portion of those funds go for LED street and area lights. Edison owns 90-plus percent of the streetlights in Huntington Beach, but for the ones that we own or control, we are doing some pretty cool things. One is in parks, where we’ve got an area light on either a streetlight-sized pole or a 14-foot pole. We are moving the city toward occupancy-sensored area lights, so that if people are not around we can drop the energy consumption and the light level and kill a couple birds with one stone. It enhances public safety because there’s always a

base amount of light there, but if a cop is driving by in his squad car and there are lights on in a certain part of the park, they know that there are people moving around out there. If, at 2 a.m., the lights are on, they get some immediate diagnostic information to do their job. Then there are the obvious energy and maintenance benefits as well.

Additionally, our Main Street area is very popular, this last weekend was the U.S. Open, where probably 250,000 or 300,000 people showed up to hang out at the beach, plus our normal population. Policing in that area is a bit of a challenge with all of the very successful restaurants that serve alcohol. One of the things that only LED streetlights allow us to do is to change the light levels to fit specific circumstances. Restaurant owners would like to see inviting, attractive lighting anytime it’s dark. On the other hand, the police want to maintain public safety. We took the old-fashioned acorn globe-style streetlights and used an LED version with a controller so we can have three or more settings for different times of the week. So normal times, up until, say, 11:30 p.m. or 12:00 p.m., there would be normal, attractive light levels. But as the bars are letting out, the lights will run up to 100 percent, which will help police do their job.

Throughout the rest of the city we’re looking at making our energy infrastructure, like streetlights, smarter. We provide light for people; lighting up empty parking lots seems to be a bit of a waste, so we’re working on some of the features of LEDs that save energy when there’s nobody around.

The fourth area is energy efficiency retro-

(continued on page 16)



### FIRST COMPREHENSIVE U.S. CARBON-TRADING SCHEME APPROVED IN CA

The California Air Resources Board (CARB) approved the nation's first broad-based cap-and-trade program, thanks to powers granted by the 2006 passage of AB 32. The regulation, which sets a statewide limit on emissions from 600 major industrial plants starting in 2012, will allow polluters to purchase carbon offsets from firms that are more efficient in reducing emissions. Under the law, companies that do not remain within their allotted allowances of GHG emissions must buy credits from other polluters to cover their excess. Regulated industries, which include cement producers and utilities, will be able to offset up to 8 percent of their own emissions.

### CLEAN ENERGY TAX BREAKS WILL CONTINUE

The renewable energy and biofuel industries will continue to receive tax relief, as part of the tax bill signed by President Obama in December. The Department of Treasury Section 1603 grant program has been extended for one year, meaning that renewable energy developers will continue to receive up-front grants instead of a 30 percent tax break. The 1603 investment tax credit for renewable energy sources has also been extended for a year. Ethanol producers and biofuel firms have also been awarded extensions of tax breaks. The 45 cent-per-gallon blenders credit and the 54 cent-per-gallon import tariff have both been renewed for a year, and a \$1-per-gallon biodiesel credit was reintroduced in the bill.

### OBAMA ADMINISTRATION RELEASES RENEWABLE ENERGY PLANS

The U.S. government announced guidelines for solar development on public lands, including the development of solar energy zones, a \$50 million fund for solar energy research, and a \$1.3 billion loan for a large-scale wind farm. Areas sited for future solar development include Arizona, California, Colorado, Nevada, New Mexico, and Utah. Companies that apply for permits in designated areas would be able to receive them faster, according to EPA officials.

### EPA RELEASES GHG GUIDANCE

The EPA issued legislation detailing how large emitters will be required to work with state governments to select the best available control technologies (BACT) for industrial plants. The legislation sparked opposition from senators and

business groups, who argued that polluting businesses would not be given long enough to prepare for the new regulation.

### CALIFORNIA APPROVES RIVERSIDE SOLAR THERMAL POWER PLANTS

The California Energy Commission (CEC) approved the construction of two solar power projects in Riverside County, which now await approval from the Bureau of Land Management. The 500 MW Palen Project and the 150 MW Rice Project, respectively, are the latest of nine large-scale solar thermal power plants approved over the last four months, totaling almost 4,200 megawatts of solar power in California. Altogether, the nine projects are anticipated to create 8,000 jobs during construction and over 1,000 permanent jobs.

### CALIFORNIA LEADS THE NATION IN CLEAN ENERGY

Clean Edge, a clean-tech research and advisory firm, has released its first annual U.S. Clean Energy Index, and California tops the list. The index compares all 50 states in the clean energy industry, measuring variables such as hybrid vehicles currently in use and clean-energy patent activity throughout the state. California, Oregon, and Massachusetts were ranked as the top three clean-energy leaders, with California leading in technology and capital. Though Massachusetts beat the Golden State with venture capital investments in clean energy per capita, California-based companies comprised almost 60 percent of all U.S. VC investments.

### KANSAS GIVES GREEN LIGHT TO SUNFLOWER COAL PLANT

The Kansas Department of Health and Environment has approved permits for Sunflower Electric Power's proposed coal-fired power plant after years of controversy. State officials claim that the plant, if built, would be the cleanest in Kansas history, emitting at least 40 percent fewer emissions. Environmental groups see these permits as a setback and have been critical of the KDHE, arguing that the agency is trying to avoid new federal regulations about greenhouse emissions that will be effective January 2. The 895-megawatt plant still awaits approval from the EPA, which has delayed approval based on concerns about climate change.

### TEXAS 'CLEAN COAL' POWER PLANT WINS KEY PERMITS

The Texas Commission on Environmental Quality has approved air quality permits for a \$3.5 billion "clean coal" plant in West Texas. The proposed Tenaska Trailblazer Energy Center will capture 85-90 percent of CO2 emissions, which will then be piped to oil fields in West Texas, where it will be used to boost petroleum recovery. The plant will have a net generating capacity of 600 megawatts, and its dry-cooling technology is estimated to reduce water use by 90 percent.

### CALIFORNIA RECEIVES \$600 MILLION MORE FOR HIGH-SPEED RAIL

The U.S. Department of Transportation has redirected federal stimulus funds for high-speed rail projects after the new Republican governors of Ohio and Wisconsin rejected their shares. The funds will be split among 13 states. California will receive up to \$616 million of the refused \$1.2 billion for its 800-mile high-speed rail line, with two caveats: the state must provide a matching sum of money, and nearly all the money from the federal government must be spent in the central San Joaquin Valley. Following a Federal Rail Authority mandate requiring that new federal funding be dedicated to a single segment of the project in the Central Valley, the California High Speed Rail authority recently approved the initial construction site for the California High Speed Rail Project. The \$4.3 billion project includes a 65-mile track, beginning north of Fresno near Madera, and two new stations in downtown Fresno and east of Hanford. The federal deadline for the Authority to complete environmental reviews is September 2011; construction is expected from 2012-2017.

### CHICAGO CLIMATE EXCHANGE ANNOUNCES CLOSURE

IntercontinentalExchange (ICE) has announced the closure of the Chicago Climate Exchange (CCX), its pilot program in the United States for trading greenhouse gases. Some trading activity will continue until 2012. The closure is attributed to the lack of government legislation supporting cap-and-trade mechanisms. American analysts say that the closure of CCX will kill the carbon market in the United States, but European analysts argue that there is still much room for growth. CCX was part of a larger program, Climate Exchange, which will continue operations in Europe.

## GREEN



## NOTES

### HAWAII PUSHES HYDROGEN VEHICLES

General Motors will partner with the Honolulu-based utility Gas Co. to create a fueling infrastructure that will support thousands of hydrogen fuel cell cars. The project, called the Hawaii Hydrogen Initiative (H2I), will use 20 GM Equinox fuel cell vehicles and the hydrogen produced as a by-product of the state's synthetic natural gas production. More than 12 organizations will combine resources to construct the infrastructure plan.

### REGULATORS RECOMMEND CLOSURE OF COAL-FIRED PLANT BY 2020

Oregon regulators have endorsed plans by Portland General Electric (PGE) to shut down the state's only coal-fired power plant in exchange for a smaller investment in pollution controls. The Boardman plant, built in 1977, is Oregon's largest source of GHG emissions and, if closed, will be the youngest U.S. coal plant shuttered for environmental reasons.

### PWC REPORT RECOMMENDS STRONGER BUSINESS AND GOVERNMENT LINKS

A new report released by PricewaterhouseCoopers states that alliances between the public and private sector are much too weak for economies to effectively adapt to climate change. The report found that lack of awareness to climate change risks in the business world and lack of direction in government policy-making are constraining adaptation practices, and warned that only a coordinated effort by the public and private sector can respond to the effects of climate change.

### MITSUBISHI LAUNCHES UK WIND PROJECT

Mitsubishi Power Systems Europe plans to invest \$157.2 million in a Scottish offshore wind center and has acquired Artemis Intelligent Power to support its R&D venture. It will also establish the MPSE Center for Advanced Technology in Edinburgh as part of the program. Together, the companies will develop the Digital Displacement Transmission (DDT) technology they plan to use in a large-scale offshore wind turbine project.

### CHINA WINS CLEAN TECH LOAN FROM EU

The European Investment Bank granted \$670 million, its second major clean tech loan, to China for the development of low-carbon projects. The loan is earmarked for 15 projects in multiple

areas, including onshore wind, biomass, solar, geothermal, and small hydro energy.

### CALCULATING SAVINGS FOR PLUG-IN AUTOMOBILES

The EPA estimates that consumers could save up to \$883 dollars annually with the use of electric vehicles. Comparing savings on EVs and gasoline-fueled cars is difficult but car companies and the EPA use a method of "miles per gallon equivalent" (MPGe)—the amount of electricity an EV uses to drive a distance compared to the amount of energy in a gallon of gasoline it would take to drive the same distance. In addition, the charging routines, found in the fuel economy sticker, estimate how far an EV can drive solely on electricity before a recharge, and provide a solid idea of fuel economy. Based on those rates, a consumer can calculate the projected costs and savings of an EV.

### UK HIGH-SPEED RAIL PLAN FINALIZED

Plans to update the UK's rail system to a high-speed system have been finalized and confirmed by Transport Secretary Philip Hammond. The plan includes links to Crossrail and High Speed 1, London's connection to the channel tunnel. The route will also link with current inter-city routes. Environmental groups in the UK are not satisfied with the government's insistence that emissions will be cut, given that only 1.6 percent of transportation emissions in the UK are from domestic flights and the percentage of people riding the train who would otherwise drive or fly is not expected to change significantly.

### WORLD BANK WILL LEAD GLOBAL CARBON MARKET INITIATIVE

The World Bank has launched a new multimillion-dollar fund designed to help developing countries use carbon market mechanisms to price GHG emissions. \$6 billion will fund Climate Investment; almost \$3 billion is proposed for carbon finance mechanisms.

### GERMAN GRID'S CAPACITY IS NEARLY ONE MILLION EVS, ACCORDING TO REPORT

Siemens and E.ON presented a report to the German government announcing that it could support up to one million electric cars

by 2020 in renewable electricity. This report dismisses the concern that the current grid would be unable to support the development of electronic vehicles but acknowledged that some areas would need upgrading because of a likely density in EVs. By 2020, Siemens and E.ON anticipate cable-free inductive charging as well as direct-current charging to be available if the German government makes sufficient investment in infrastructure.

### GREEN JOBS ON THE RISE IN THE UK

Acre, a green recruitment agency, recently reported that environmental and sustainability-related employment in the UK has resisted the national recruitment slowdown. The report attributes the growth of over 20 percent to the increased public desire for environmental and social accountability from organizations. The company's figures showed specific increases in the arenas of energy management and efficiency.

### CHINA MEETS 2010 EMISSIONS TARGETS

After acknowledging its role in global GHG emissions, China announced that it has managed to conserve 490 million tons of coal and 1.13 billion tons of CO2 between 2006 and 2009. Climate official Xie Zhenhua reported that the total quantity of emissions has fallen 10 percent.

### OVER 400 CONSUMER RETAILERS MAKE ENVIRONMENTAL PLEDGES

At the Cancun summit, the Consumer Good Forum of over 400 corporations pledged to help achieve net zero deforestation by 2020 and begin phasing out the use of HFCs in refrigeration equipment in 2015. The forum includes some of the world's largest consumer goods manufacturers and retailers, including Coca-Cola, Kellogg, Kraft, and Walmart. The commitments on both issues are hoped to inspire similar commitments in other companies as well as to increase demand and drive down costs for non-HFC technology.

### UPDATE: CANCUN CLIMATE TALKS

President Obama pledged that the United States will uphold the promises it made at last year's climate talks in Copenhagen, which included cutting emissions 17 percent below 2005 levels by 2020. Other developed countries committed to providing \$100 billion annually, starting in 2020, to help developing countries address climate change. ●●●

CARS 2.0



STEVE SCHNEIDER

## ZAP ELECTRIC VEHICLES APPROVED BY CHINA TO BUY 100 PERCENT OF JONWAY AUTOMOTIVE; STOCK SOARS ON NEWS

With its headquarters in California, ZAP Electric Vehicles made business history last month when it announced that it had gained approval from the Chinese government to acquire Jonway Automotive, becoming the first American company to have controlling interest in a Chinese automotive manufacturer. With this powerful foothold into the Chinese market, ZAP Electric Vehicles, whose stock price has soared since, is revolutionizing the automotive market by delivering a variety of affordable electric cars to the market. To detail the recent developments and the difference in business climate for clean tech companies in China versus California and the United States, VerdeX is pleased to present the following September 2010 interview with ZAP Electric Vehicles CEO Steve Schneider.

**VerdeX:** ZAP has received some very significant news from the Chinese Government: an approval that could position your company as a pacific rim leader in the Electric Vehicle marketplace.

**Schneider:** Today was a very significant day for ZAP. It's something we have been working on for a long time. It was something that all the experts—political, media, and otherwise—said couldn't be done, which is an American company having a controlling interest in a Chinese automobile manufacturing company. As of today,

has mandated the reduction in carbon emissions by 40 percent by the year 2020, which is an extremely aggressive challenge, especially for an economy that is growing ten percent annually—the fastest growing economy in the world. Trying to reach that challenge was one of the main reasons why there was flexibility in this particular arrangement, where there otherwise would not have been. At the Beijing Auto Show, 106 electric vehicles were introduced. When I met with the global automotive forum, the Chinese Chamber of International Trade, and all the government officials, they stated that out of all those 106

We have been and still are the oldest manufacturer of electric. We have made a lot of mistakes along the way. My life story is very similar to the movie *Tucker*, and we have had everyone taking shots at us. A lot of powerful interests wanted to see us fail. That was one of the reasons we decided to pull out of the U.S., because the politics was completely different. There isn't any politics in China—it is just: "Let's get it done." The mandates were such, and the red tape was such, to get it done.

**VerdeX:** What is ZAP's niche target market in China and the United States?

**Schneider:** The largest car market is the passenger car market. Every manufacturer that I am aware of builds mostly passenger vehicles. ZAP's niche market is corporate, fleet, and government accounts. We are the only manufacturer producing a full size electric pick up, a full size electric SUV, which is what Jonway manufactures, and a full size electric van. We have several other utility vehicles as well. No one else is doing

"We are the only manufacturer producing a full size electric pick up, a full size electric SUV, which is what Jonway manufactures, and a full size electric van. We have several other utility vehicles as well. No one else is doing those three core vehicles at the moment."

the Chinese government has approved the merger between ZAP and Jonway. It is really an acquisition. Today we officially own 51 percent of Jonway Automobile. We are following that up with another 49 percent acquisition. We are doing it in two stages because of the way we are paying for it. The significance wasn't the payment, the significance was getting the Chinese government to approve the controlling interest, and we did it in what is a first in China.

**VerdeX:** How did ZAP actually win China's approval to acquire control of Jonway? What about your merger was compelling?

**Schneider:** We believe this went forward because the Chinese government

manufacturers, only a handful would be in production to help meet this mandate. The Chinese government is aware that China still needs Western influence to bring a mature

"The Chinese government is aware that China still needs Western influence to bring a mature technology to market in China."

technology to market in China. ZAP has been working on electric vehicles longer than any company in history. ZAP has also owned the most famous brand in history, which is called the Detroit Electric, since the turn of the century. We have a 1906 Detroit Electric sitting in our show room. It is a wonderful piece of history, a wonderful story, and a wonderful car. ZAP has taken over where Detroit Electric left off.

those three core vehicles at the moment. Although they are a smaller part of the market, it's the market that is more mature for the technology available today.

Currently there is no practical infrastructure, and the consumer, it doesn't matter where in the world, will have the same issues, which is known as range

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## INFRASTRUCTURE



ANDY LIPKIS

## TREEPEOPLE'S URBAN FOREST PRINCIPLES GUIDE RETROFIT OF LOS ANGELES & SIMILAR CITIES ACROSS THE GLOBE

Andy Lipkis, the founder and president of TreePeople, was recently appointed an Ashoka Fellow for his pioneering work integrating natural systems into the infrastructure of the built environment. In the following exclusive VerdeX interview, Andy details one of his projects, the Elmer Avenue Project in Los Angeles, which blueprints TreePeople's 40-year history of proving the feasibility of new types of infrastructure development that simultaneously mimic natural processes and benefit the environment.

**VerdeX:** How do you engage the public and our governments to utilize the best, proven sustainable practice and green technologies in responding to climate change?

**Lipkis:** People are willing. There's a mythology that prevents government from thinking people will do it—the mythology that people won't change. But people will change. TreePeople has helped bring about rapid lifestyle change in Southern California through its education and community engagement programs. For one thing, people respond more positively to incentives rather than mandates. For another, government needs to be organized differently. The things that aren't happening—because of the disintegration of a true cost-benefit approach and because agencies are not working together—make sustainable approaches look fiscally infeasible. But with a systemic, multi-purpose approach, they are very feasible. There are great technologies available that need both financing to help them come online and government to help facilitate—help facilitate and get out of the way at the same time.

**VerdeX:** You are presently one of handful of Ashoka Fellows—people with big ideas to change their society. Your Ashoka profile reads: "Cities, like forests, are complex organisms with systems that can provide, capture, and reuse life-nourishing resources. By applying lessons found in nature, Andy Lipkis

is enabling citizens to manage urban ecosystems effectively and sustainably." How so?

**Lipkis:** I have spent 40 years building the capacity to move people to take effective action using trees and forest-mimicking technologies. I've worked to prove that these

**VerdeX:** The Ashoka website adds, "Andy now sees forests as synonymous with watershed management and ecosystem-based water infrastructure as the gateway to changing whole urban ecosystems." Can you elaborate?

**Lipkis:** TreePeople and partner agencies have been involved in seven urban forestry/watershed management demonstration projects over the last fifteen years that have shown how strategically planting trees and using other nature-based solutions in cities, such as mulching, appropriate landscaping, rain gardens, and cisterns, can dramatically reduce the need for imported water, solve flooding and pollution problems, increase habitat, and address skyrocketing costs from dealing with waste, energy use, and public health. Our demonstrations range from school campuses to parks, a private residence, and a residential street. We are scaling now to

demonstrate these principles in larger neighborhoods, and we are hoping to catalyze a regional response, where we're no longer demonstrating but where we're assisting agencies and neighborhoods in a large, coordinated partnership.

**VerdeX:** Is the Elmer Avenue Project in Sun Valley one of your demonstration projects?



TreePeople

*The infiltration gallery under Elmer Avenue sends water into permeable soil and then straight to the aquifer.*

technologies work, are more effective, are cheaper, and produce more sustainable jobs, and have shown that governments can partner in unusual ways with each other and the private sector to make this happen. My body of work up until now has been about proving feasibility where there have been significant barriers in the way of policy and funds. TreePeople has decided that it's time to step it up and catalyze a plan to retrofit all of Southern California on those principles—to make our region a functioning community forest.

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## BROWN: CALIFORNIA GREEN ECONOMY/MARKETS GROWING DESPITE ECONOMIC DOWNTURN

(continued from page 1)

As we face the devastation to our job market caused by the mortgage meltdown and the Wall Street debacle, we need to find a way to get California working again. Investing in clean energy and increasing efficiency are central elements of rebuilding our economy. It will create hundreds of thousands of jobs,

California has led the nation in efficiency standards and programs. When I was Governor, California adopted the first appliance and building efficiency standards in the U.S. As a result of these policies, California's per capita use has remained virtually flat even while the

### California Jobs Program through Renewable Energy and Efficiency

Throughout our history, California has led the nation in innovation, whether it was the entertainment industry, biotech, green tech or computers. To get California working again, we need to re-focus our efforts on attracting and retaining these innovative industries.

One such industry is clean energy. We need to lead again. California has tremendous potential in renewable energy. Peak electricity demand in California today is 65,000 megawatts (MW), and California has the ability to produce at least 1.3 million MW of renewable energy—concentrating solar, wind, solar photovoltaic (PV), small hydro, geothermal, and biomass—roughly 22 times our current electricity capacity.

Below is my plan to get us there. It will produce a half a million new jobs in the

**"Clean tech investment in California reached \$3.3 billion in 2008 alone and it is on track to exceed that in 2010. California attracts 60% of the clean-tech venture capital in the entire U.S."**

build the businesses of the 21st century, increase energy independence, and protect public health.

#### Renewable Energy:

Investments in clean energy produce two to three times as many jobs per dollar as gas, oil or coal. And dollars invested in clean energy tend to stay in California, instead of other states or countries. Renewable energy also reduces greenhouse gas emissions and other harmful air pollutants.

Clean energy jobs and businesses have grown much faster than the economy as a whole in the past fifteen years, and have continued to grow even during the economic downturn.

Investment in clean technology is also growing. Clean tech investment in California reached \$3.3 billion in 2008 alone and it is on track to exceed that in 2010. California attracts 60% of the clean-tech venture capital in the entire U.S., but with the right policies and incentives, California could attract even more investment and create far more jobs in the coming years. Over the next decade, the global clean energy market is expected to nearly triple to nearly \$2 trillion annually in 2020.

#### Efficiency:

Energy efficiency is the cheapest, fastest, and most reliable way to create jobs, save consumers money and cut pollution from the power sector. It is by far cheaper than the cheapest source of energy and has no negative impact on the environment.

state's economy grew by 80%. During that same time period, the United States' per capita electricity consumption has increased 50%. These standards have saved California more than \$56 billion

**"Peak electricity demand in California today is 65,000 megawatts (MW), and California has the ability to produce at least 1.3 million MW of renewable energy—concentrating solar, wind, solar photovoltaic (PV), small hydro, geothermal, and biomass—roughly 22 times our current electricity capacity."**

in electricity and natural gas costs since 1978, equivalent to more than \$1,000 per household. Savings from energy efficiency also have a multiplier effect that creates far more jobs than comparable investments in fossil fuels or other energy sources.

California's efficiency standards and programs have triggered innovation and creativity in the market—today's appliances are not only more efficient, but they are cheaper and more versatile than ever. Consider refrigerators, the biggest energy user in our homes. Since California adopted efficiency standards in 1978, refrigerators now use one-fourth the energy, are larger and have more convenient features than models 30 years ago, and are about 1/2 the price. The same story can be told for dishwashers, heaters, air conditioning units and other major appliances.

next decade.

#### Summary:

By 2020, California should produce 20,000 new megawatts (MW) of renewable electricity, and also accelerate the development of energy storage capacity. California can do this by aggressively developing renewables at all levels: small, onsite residential and business systems; intermediate-sized energy systems close to existing consumer loads and transmission lines; and large scale wind, solar and geothermal energy systems. At the same time, California should take bold steps to increase energy efficiency.

#### Specific Elements:

##### 1. Build 12,000 Megawatts of Localized Electricity Generation

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## BROWN'S GOAL: 20,000 MW OF NEW RENEWABLES VIA DISTRIBUTED POWER BY 2020

(continued from page 10)

- California should develop 12,000 megawatts of localized energy by 2020. Localized energy is onsite or small energy systems located close to where energy is consumed that can be constructed quickly (without new transmission lines) and typically without any environmental impact.

- Solar systems of up to 2 megawatts should be installed on the roofs of warehouses, parking lot structures, schools, and other commercial buildings throughout the state.

- Solar energy projects up to 20 megawatts in size should be built on public and private property throughout the state. For example, we should create the California Solar Highway by placing solar panels along the banks of state highways.

- The California Public Utilities Com-

mission (CPUC) or Legislature should implement a system of carefully calibrated renewable power payments (commonly called feed in tariffs) for distributed generation projects up to 20 megawatts in size. Holding down overall rates must be part of the design."

based on their anticipated ability to deliver clean energy to market. The permitting time for these projects—which now can take 6 to 8 years—should be dramatically reduced, and in no case be longer than three years.

- As Governor, I will ensure that all agencies involved work together with a sense of urgency to permit the new transmission lines without delay.

**3. Deal with Peak Energy Needs and Develop Energy Storage**

- The reliability of our energy system depends on the ability to meet peak power demand. California funds many “peaker” natural gas plants that run for just a few hours a year, usually on hot summer afternoons. These plants pollute more and are less efficient than other power plants. We

the development of energy storage.

- As Attorney General, I have sponsored legislation that would direct the PUC to establish policies that will encourage the building of energy storage systems. If utilities procure storage equivalent to 5% of their peak load demand, approximately 8,500 permanent new jobs would be created.

**4. Create New Efficiency Standards for New Buildings**

- A typical home uses much more energy than it needs to operate economically. New buildings can be designed today to use 1/3 to 1/2 less energy than they use today, with little or no cost increase.

- We should establish a plan and a timeline to make new homes and commercial buildings in California “zero net energy”—highly efficient structures that use onsite renewable energy for all their electricity and natural gas needs.

**5. Make Existing Buildings More Efficient**

- Half of all California’s homes were built before California’s building standards were adopted. Energy consumption in these homes can be reduced by 40% if the CPUC and municipal utilities provide incentives for retrofits and efficiency upgrades.

- Probably the most significant reason people do not make their homes or businesses more efficient is the high up-front

also import out of state coal and pay very high prices on the spot market to satisfy peak demand. Energy storage will help reduce the need for peaker plants and imports of out of state coal.

- Renewable power is often intermittent. Neither wind nor solar energy is avail-

able 24 hours a day. As a result, renewable energy can be difficult to integrate into the base load of the overall energy delivery system. Energy storage helps smooth out this variability and makes it less costly to integrate renewables into the grid.

**2. Build 8,000 Megawatts of Large Scale Renewables & Necessary Transmission Lines**

**“I will designate one person, directly accountable to the governor, who will be responsible for ensuring that all energy jobs goals and deadlines are met.”**

- The Legislature should codify a requirement that 33% of the state’s electricity be derived from renewable sources. This will create market certainty and drive investment in renewable technologies.

- The California Energy Commission (CEC) should prepare a renewable energy plan by July 1, 2011, that will expedite permitting of the highest priority generation and transmission projects.

- Federal and state agencies should carry out one integrated environmental review.

- The CEC should “fast-track” projects

- The California Public Utilities Commission and the state’s municipal utilities should adopt policies and incentives that promote

costs of major efficiency upgrades, even though they save money in the long run. To overcome this barrier, the State, local governments, and utilities should make available programs whereby businesses and homeowners could take out loans and pay back the costs of efficiency

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## SCHNEIDER: ZAP ELECTRIC VEHICLE NICHE IS THE FLEET VEHICLE MARKET IN U.S./CHINA

(continued from page 8)

anxiety. The average consumer may drive 25 miles a day in their average driving practice, but every so often they might want to drive 100 or 200 miles. In that case, they cannot make today's electric vehicle their primary vehicle. However in corporate fleets and government accounts, there is a pre-determined amount of mileage. We build vehicles to the spec of the agency that we are selling to. In the city of Hangzhou, for instance, the average taxi goes 200 km. We build the vehicle to spec, it gets back the station, they charge up, and they know what their route is going to be. It is very predictable, and there is no range anxiety. Today's technology is extremely mature for that type of application.

We recently won a postal contract award; that is another application that is very predictable. Taxis and postal vans sit at an idle, producing terrible emissions, all day long. That is an ideal application for electric vehicles. As you sit, you aren't using any power. Even though you might work all day long, you only go 25 or 30 miles. The U.S. Postal service has 156,000 of these long-life postal vans. They told us they want to convert 105,000 to electric.

We are one of five companies awarded the contract. We use Remy's motor. The CEO of Remy and the engineers at Remy were very helpful in helping this happen. We worked very well together, bringing American technology. As much as I wanted to pull out of the United States, all of a sudden we are getting DOE funding, we are getting U.S. Postal contracts, we were finalists in the automotive X-Prize, and we are one of the few approved for the TSA list. Economic development agencies in almost every state have contacted us offering all kinds of benefits. As much as I wanted to get rid of all the politics and pull out completely, here I am back to where I started. Now I am doing two weeks a month in the United States and two weeks in China.

**VerdeX:** ZAP is headquartered in Santa Rosa, California. Elaborate on the origins of your operations in California and what the

company's ambition is in China and the United States.

**Schneider:** California is where we have our headquarters—in Santa Rosa. We have an 80,000-square-foot facility there. ZAP has been miscategorized as a sales and marketing company. What we really do is R&D, and that takes place up in Santa Rosa. We integrate better than most anyone in the world, and we do it on a very practical level. We build vehicles that are inexpensive, the Volkswagen Bug of electric vehicles—we are

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the car of the people. There are companies that are building vehicles for the rich and famous—that is not our mantra. We are doing mass numbers and we are building vehicles that common people can drive and use everyday, especially here in China. Ultimately we will bring that philosophy to the United States.

**VerdeX:** In our meetings today, we also visited Holley, a partner and collaborator with ZAP. Talk about that company and the potential for synergy.

**Schneider:** We visited a legal and financial joint venture—we invested together. Holley is the largest holley meter company in the world. They have some of the most sophisticated technology in smart metering that is available, period. As you saw today, this is a major operation. We are basically a factory direct operation. There are no middlemen here. The nucleus of vehicle charging infrastructure is the smart meter. There is a little more

electronics to go with it, but the smart meter is a sophisticated part of the charging station. When you think about how to get a piece of the pie, a charging station isn't any more than a glorified extension of that. Bringing a power meter, revenue sharing, and getting everyone a part of that revenue, that is where the sophistication comes in. I don't believe there is anyone in the world that can build a charging station with the technology that Holley has. Because of the lack of middlemen, there is lower cost.

The reason anyone comes to China is to get low cost manufacturing. Even when they do

that, there are still several layers. This is factory direct on charging stations and factory direct on automobiles. In both cases there are no middlemen or brokers involved. We build charging stations for each market for the very lowest price and build an automobile also at the same level. We can put out a lot of products for the money. If you look at the cars today, they are very similar to a Toyota Rav4. And if you look at the finish and the creature comforts that most Americans are comfortable with, these vehicles have all of those things in retail for about \$15,000. You couldn't do that in the United States.

The joint venture is working on the technology for the charging station and technology transfer from ZAP U.S. to China, and the integration is taking place. The two technologies are smart meters that are the new charge stations and the powertrain that is the nucleus for all of the vehicles we will build. The powertrain is a fairly consistent thing; it stays the same. We modify the battery pack to meet the needs,

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## SCHNEIDER: ZAP HAS A ONE YEAR JUMP ON EV PRODUCERS IN U.S. MARKET

(continued from page 12)

whether it is a corporate fleet or government account, of the specs we receive. Some places have hills and we need to build a more powerful motor; some people need more range, so we give them more battery packs. We build them to spec and the engineering takes place here in Hangzhou.

**VerdeX:** You moved the locus of your efforts to China more than 10 years ago having been frustrated by the California and U.S. EV marketplace. Elaborate on the challenges and opportunities you have found in China.

**Schneider:** I have been criss-crossing China on the electric vehicle side for ten years. Now, I have a wonderful partner, Dr. Priscilla Lu, who had a lot of fantastic relationships. She is an engineer, and we, needing each other, have combined our resources together. We absolutely needed each other to make this work. We needed the government relationships; we needed the corporate relationships; we needed the financial relationships; we needed all of it.

It is so complicated to do what we did even without all of the challenges on the U.S. side, with the politics and the hidden agendas. Trying to figure out all of the nuances that a differ-

ent culture has to offer was very challenging, and not speaking the language was even more challenging. Having a high-level partner involved that ensured my understanding and the understanding between the partners was essential, because communication can be so far off the train, and had been in many of our past deals. In this case, we minimized miscommunication. We maximized political support, and we had an awful lot of good luck with market timing. Currently, the Hangzhou government is offering RMB 123,000 for every vehicle we build in the ramp. That is an unbelievable amount of money. The federal

government on the U.S. side doesn't even come close. RMB 123,000 it makes a very great business space. I don't see any end in sight, especially with the mandate of 40 percent carbon emission reductions. As you know, China is fairly well funded.

The only way they could be recognized as world leader was to increase technology. ZAP knew that there was no way we were going to get to the next level unless we had our own platform, which wouldn't be taken away from us every time we had a level of success.

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**VerdeX:** If we are able to talk a year from now about ZAP and the implementation of your business plans, what will the interview focus upon?

**Schneider:** First of all, it is too idealistic for everyone to jump into the electric vehicle business as a stand-alone business today—maybe ten years from now, but today, to survive as an electric vehicles business and bring enough revenues to pay your overhead is challenging, nearly impossible. The reality is that you have to partner up with something like Jonway.

As the new owner of Jonway, we now have a revenue-generating, 500-dealership distribution generating its own revenue, fully self sufficient, before we even have to worry about selling one single electric vehicle.

Now we have the comfort of doing it the right way. We don't have to worry about rushing, about making agendas that are sometimes misconstrued because of panic about financial capability. We can do everything properly, focus on target markets, focus on politics, focus on incentives, hit only markets that are available right now, and deliver cars right now. We are not talking about two years in the future. We are not talking about a year in the future. We are talking about delivering vehicles tomorrow. That is what we can do with this merger.

**VerdeX:** Is 2011 likely to be the year alternative fuel vehicles seriously enter the market?

**Schneider:** Yes it is. Most of the manufacturers are targeting 2012. We at ZAP have a year jump on everyone.

**VerdeX:** Except you don't have Jonway in California. What is the reality of ZAP coming back to the U.S. market without a Jonway?

**Schneider:** Jonway is the largest exporter of motorcycles in China. Jonway is the larg-

"As a publicly traded company, we are going to be profitable right away and have tremendous revenues before we even start selling one electric vehicle. ZAP is bringing all of the technology; Jonway is bringing the platform."

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Jonway comes to us completely debt free and profitable, right out of the gate. As a publicly traded company, we are going to be profitable right away and have tremendous revenues before we start selling one electric vehicle. ZAP is bringing all of the technology; Jonway is bringing the platform. They are an automobile manufacturer; we are a technology integrator. We needed each other, equally.

Jonway knew that there was no way they were going to be the number one manufacturer in China with the number of car manufacturers already in existence.

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## NICHOLS: STATE'S VOTERS VOICED CLEAR SUPPORT FOR AB 32 IN NOVEMBER ELECTION

(continued from page 1)

being seen as a leader in clean technology and that our environment is one of our most important assets.

**VerdeX:** As noted, Governor-elect Jerry Brown will be inaugurated in January. Both he and your boss, Governor Arnold Schwarzenegger, prioritize climate change and accelerating the state's transformation from fossil to a carbon-less economy. What can be realistically expected going forward? Is California still the clean and green technology portal for North America?

"We are a world hub of research and development in the area of green technology, particularly for innovative energy efficiency and renewable technologies.... Our regulations are designed in ways to reward people for doing good, and that's how you make a successful market."

**Nichols:** They can expect that we will continue down the path of transformation. It is a multi-year process, not something that will happen overnight. We have a mix of policies in place that create a good pathway toward the version that's now been set forth for zero-emission or zero-energy new homes, appliances, and a cleaner, more efficient grid. Many of the pieces are already in place. There's a lot of development going on; there certainly will be more permits issued. We've already permitted many thousands of megawatts of new solar energy within the last year to take advantage of federal stimulus money. It's going to be a very exciting and transformative time for California over the next five to ten years.

It's great that we have this backdrop to work with because we have severe problems with the way our budget is put together. We will go through harsh and difficult times until the governor, the Legislature, and the public as a whole agree on the right mix of spending, taxes, and fees to provide the level of services that Californians want. That's going to be the focus for the new governor; certainly that will consume most of his time when he first takes office.

It's important that we point to California's energy and environmental policies as a stable landscape so we can focus on the areas where the greatest attention will need to be paid.

California stands out in contrast to states that have elected representatives in Washington who believe that climate change is a hoax or, at least, assert that humanity has no responsibility for the change in climate. We are now more different, perhaps, than we were from some of these places. There's a real difference, even in states where

governorship changed hands, between the kinds of people who get elected governor and the kinds of people who get elected to seats in the House or even the Senate. I'm not going to say anything about our California delegation because it stayed close to what it was, and it's great. Some of the people who are going to be ascending into the state houses in states that we've

"It's important that we point to California's energy and environmental policies as a stable landscape so we can focus on the areas where the greatest attention will need to be paid."

worked with in the past—even where there's been a switch from Democrat to Republican—are not flat-earthers. Many of them come from backgrounds in local government where they've been involved in efforts like the U.S. Mayor's Climate Coalition. The signs of support for advanced technologies and sensible energy policy is bubbling up from the grassroots, and it's not just in California.

**VerdeX:** Many Californians who oppose AB 32 and supported Prop. 23 continually

express that if the cost of energy and goods go up in California but do not go up at the same rate elsewhere, a number of state-based firms may take their companies, jobs, and dollars out of state. Given that little on climate change for the next two years will be passed at the federal level, is that thesis valid?

**Nichols:** The opposite of that statement is true, and the voters of California rejected that argument by a wide margin. I can't speak for every business leader in California, but I read these statements of gloom, and I know that the day after the election, Jack Stewart from CMTA was back at it again with the hand-wringing. The reality is that everywhere I look there are conferences and trade shows and stories of companies that are choosing to locate or expand in California because of the market for clean technology. We are a world hub of research and development in the area of green technology, particularly for innovative energy efficiency and renewable technologies. We continue, as a state, to struggle with some issues that make it difficult for people to build and expand facilities here, and those are things that the state needs to work on, but the thing that's helping us succeed is the fact that we have strong environmental and energy policies. Our regulations are designed in ways to

reward people for doing good, and that's how you make a successful market.

**VerdeX:** We do this interview just prior to CARB's upcoming meeting, which will consider new cap-and-trade regulations. What issues will be considered when deliberating on cap-and-trade?

**Nichols:** Right now we're in the midst of working through the details of a cap-and-

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## NICHOLS: CALIFORNIA'S NEW 'CAP-AND-TRADE' PROGRAM WILL START IN 2012

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trade regulation that the board will consider at our December meeting, and it's important for people to realize a couple of key things about that regulation. First of all, because it is a cap on emissions, and the cap declines over time, it provides a way of assuring that our state will achieve the goals that we set for ourselves—of returning our emissions of greenhouse gases to 1990 levels by 2020. It's also quite clear that in reducing greenhouse gases, we will help to further reduce the kinds of air pollutants that directly cause harm to human health on the ground and also work to clean the environment.

Cap-and-trade is a policy tool that has been widely recommended by economists and business leaders—it isn't something that was invented by environmentalists in a back room somewhere—as a way to send a price signal to businesses that investing in cleaner technologies is the right way to go. Because the cap gradually declines, it gives businesses time, as well as the economic signal, to invest in the transition.

The fact that cap-and-trade is going to be adopted by the state of California doesn't mean that we're going to implement this all by ourselves. We are working simultaneously with a group of other states and Canadian provinces to design this program. By the time the program starts in 2012, it will cover electricity and large industry, and we expect that there will be a number of other states and provinces that will be ready to start programs at the same time. It's not something that's being developed as a project of some new regional government, but individually, state-by-state, province-by-province, other jurisdictions are looking at this approach. If they come up with a similar program that we feel we can accept as being equally stringent and effective, we will have other areas for trading so that the program will be larger, there will be more options, and, presumably, the prices will stay low.

**VerdeX:** What has been the reaction of the state's utilities to cap and trade?

**Nichols:** The utilities in California have been key players in the design of this

program. There are issues about how you start, how people get their allowances at the beginning of the program, and to what extent they are allowed to chart their own path toward a cleaner energy mix. Those have required a lot of thought and care in planning.

Utilities don't operate in a free market environment. They're confined in their

**"We first adopted our mandatory reporting rule in 2007, before the U.S. EPA had put their rules in place. Now that they've done that, we want to update our rules to make sure that there is consistency."**

service territories; their prices are regulated by their own boards, if they are publicly owned, or by the PUC, if they're investor-owned. There are major differences in their starting positions, based on whether they historically used hydropower versus coal power. This has been a tricky feature in designing the program, and we're still working through the details on it. There's never been anything other than a strong presence and collaboration on the part of the utilities to make this work.

**VerdeX:** The Environmental Protection Agency this month issued guidelines giving states considerable discretion in regulating carbon dioxide emissions from large industrial facilities. Is that the kind of policy signal from Washington that CARB seeks?

**Nichols:** We participate in the rule-making, and we are pleased with the result. It's very difficult for the EPA, given the structure of the Clean Air Act, to allow states to completely develop their own approaches to any pollutants the EPA regulates under the Clean Air Act. But they have worked very hard to send a signal of support for state-level initiatives, and we appreciate that.

**VerdeX:** Let's turn to the mandatory reporting provisions that the CARB board will also consider at its next meeting. Can you speak to the importance of that work and what exactly will be on your agenda for a vote?

**Nichols:** We first adopted our mandatory reporting rule in 2007, before the U.S. EPA had put their rules in place. Now that they've done that, we want to update our rules to make sure that there is consistency. We are determined to make this process as simple and transparent as possible for businesses in California that are subject to the reporting rule so that California facilities

can click one key and report to both CARB and U.S. EPA. It's going to take a little time to work that out because of differences in software and differences in need for data, but we think we can work this out within the next year or two. Those agencies are committed to making that happen.

**VerdeX:** Last year, the governor vetoed legislation to establish a 33 percent renewable portfolio standard because it would have "created barriers to clean renewable energy to meet that standard." He asked CARB to postpone and consider action on it in September. What action did CARB ultimately take?

**Nichols:** We did postpone action on a rule to give the legislature time to act, and unfortunately the clock ran out before they were able to pass a bill. The governor this year made it very clear that he hoped to sign the bill, but there was no bill for him to sign. The action that we took was to adopt a very straight-forward regulation that builds on the Public Utilities Commission's existing mandate for 20 percent renewable portfolio standard and create a renewable energy standard of 33 percent for all firms that sell electricity in California. It covers the universe of firms that sell electricity to the public, and it raises the requirement for renewables to 33 percent by 2020.

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## KLEMM ON RETROFITTING CITIES: LED AREA LIGHTING REMAINS IN 'WILD WEST' PHASE

(continued from page 5)

fits. That means the big, traditional work: change out the chiller, modify this chiller, change the duct work here, change out the lights here—the sort of retrofits that most people go to sleep when they read about. That's where the best economics are.

**VerdeX:** Elaborate on Huntington Beach's relationship with its utility, Southern California Edison.

**Klemm:** We're in an energy leader partnership with Southern California Edison. There was some controversy when that model rolled out with other local governments, but personally, and for Huntington, the energy leader partnership is very useful. In that program, the more energy you saved in the past, the higher your incentive rate goes so you can do the projects that were previously slightly un-economic. But

**Klemm:** We ran an RFP on the solar feasibility, design, entitlements, environmental review, and bid support. We had about 20 bidders show up, and there was a review committee that evaluated the criteria. The top three or four proposals were all very close in budget, and the committee had a hard choice to make. They came up with Digital Energy, who did all the site investigation, worked with the planning department, completed the environmental review, and is now supporting it through the bid process. Beyond that, the RFP that we wrote for the solar power purchase agreement is an open bid. We're looking for experience running plants of longer than five years or so. To have power purchase experience like that requires a decently sized bidder universe.

On solar, we were not specific as far as brands; we were much more concerned with the performance specification of successful plans, warranty, and performance criteria. That

and in the Blufftop parking lot, we used the KIM archetypes because that was the least cost to retrofit, where basically we kept the fixture housing and replaced the LED emitter deck with a controller. We had to replace the fixtures in their entirety for downtown.

**VerdeX:** Many small cities that don't have enterprise energy information management systems technology need such systems. Some, like Huntington Beach, have collaborated with Village Global Green to ramp up and outreach to businesses in the community. What will accelerate such efforts in cities?

**Klemm:** The break point for cities that can afford full time energy managers seems to be right around 200,000 people. The only exception that I'm aware of is in Santa Monica, but they're kind of a special case. If you look at all the smaller cities in Orange County, none of them have a full time energy manager. The PUC and the CEC wrote their long-term energy efficiency strategic plan, and one of their goals for local governments was that energy management expertise becomes widespread and typical in local governments by 2020. That's a nice, aggressive goal, but you can't ignore certain budget realities, and it always comes down to budgets and finance.

The enterprise energy information management systems (EEIMS) provide credible third party documentation of energy savings from the projects funded by EECBG grants or other capital projects funds, establishing avoided costs that can help put forth a good faith effort to secure budget for either an energy manager or energy management services from a sister agency. Our partnership with Edison includes Fountain Valley, Costa Mesa, and Westminster. Edison had a grant proposal, essentially an RFP, that the PUC directed them to spend some money supporting these long-term energy efficiency strategic plan items. EEIMS software is one of

**"The PUC and the CEC wrote their long-term energy efficiency strategic plan, and one of their goals for local governments was that energy management expertise becomes widespread and typical in local governments by 2020."**

because you've already done all the easy work to reach energy efficiency, Edison will provide you enhanced incentives. That partnership sets benchmarks: if you save five percent over what your community and your local government facilities used in 2004, you obtain a silver partner level. If you get up to 10 percent saving over 2004, you hit the gold mark, and then 20 percent savings and you hit the platinum mark, which provides increased flexibility and increased funding for future energy projects. That's a great partnership, and it's essential that the utility is on board with energy efficiency projects to be sure that you're taking advantage of the different funding sources out there.

**VerdeX:** What technologies did you select, both for the LEDs and the smart grid software? And how did you select the vendors?

was fairly simple for solar. We're doing most of the GIS streetlight audit in-house.

LED area lights are in a wild west phase right now. We ran an RFP with a fairly specific set of performance specs. Chip Israel at Lighting Design Alliance helped us come up with a set of performance specs for the Main Street retrofit, which is that controllable, acorn globe-style fixture to accommodate different stakeholders' needs at different times of the night. In the RFP for the parking lots and parks areas, we left it open whether we would want controlled or stand-alone occupancy-sensors that dim the light when nobody is around. The bidders were able to go either way. Unfortunately, or fortunately, depending on your view, the bi-level with an occupancy sensor has very few off-the-shelf-ready fixtures. BetaLED is the only one that has a built in bi-level feature that's directly off of their spec sheet. Everyone else would have to customize their fixture. In the parks, we used the BetaLEDs,

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## KLEMM: HUNTINGTON BEACH, EDISON PARTNERSHIP HAS MULTIPLE BENEFITS

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those prerequisites to be able to track and analyze utility bills.

Edison awarded us a grant to run an RFP and install enterprise energy information management systems across these four cities that one, provides analysis and recommendations on utility bills; two, helps you compete for budget; and three, makes sure that the taxpayers get good value for their utility expenditures. We're going to be doing that, hopefully hiring a few GoldenWest college energy auditing interns to go through the painstaking task of looking through 4,000 bills a year to get

helps staff diagnose what's going on with the building and treats the underlying cause rather than just papering over the symptom with more energy use.

**VerdeX:** You're going to speak at the VERDEXCHANGE Conference in January, but let me ask the central question here, where do you learn? What other cities and experiences are you drawing from for you to imagine and pursue these goals and objectives as successfully as you are doing?

**Klemm:** VERDEXCHANGE is a great

"Beyond the politics, I'm very focused with my projects on financial benefits, particularly in these budget times. There hasn't been a whole lot of adverse discussion about my projects; they've all been unanimously supported as far as capturing utility incentives, saving energy, eliminating energy waste in the city's facilities, and then with the EECBGs, the ability to tune up our infrastructure to eliminate energy waste as well as provide better services."

that system up and running to do the utility bill analysis, ensure energy savings, and ensure sustainable ongoing funding.

**VerdeX:** Elaborate on the MBCx program for monitoring-based commissioning.

**Klemm:** I came from the CSU Chancellor's office prior to joining Huntington Beach. That was a big program for retro-commissioning (i.e., top-to-bottom building tune-up), where you touch every single device that consumes or regulates the consumption of energy to be sure it's operating well as a system. Commissioning is not new, the Navy has been doing it for probably 200 years. But it is relatively new in the built environment. One of the criticisms of regular commissioning is that you can do a tune up and then see a slippage of energy savings over time. By adding the monitoring-based aspect to commissioning it becomes the business-as-usual practice to prevent slippage after major retro-commissioning efforts. The ongoing monitoring

resource on local government green activities. I'm two-thirds done with an MBA at Cal State Long Beach, but that's more for general business skills rather than specific to energy management or sustainability. The Local Government Sustainable Energy Coalition is a statewide organization with a bunch of local governments that get together to discuss energy management and dealing with the utilities. Additionally, the local government commission runs a quarterly energy manager meet-up to share best practices, cry in our beers, establish camaraderie, and keep skills current. I read voraciously on the Internet; the Rocky Mountain Institute is always great for new ideas and to see what others are doing.

**VerdeX:** What motivated the city of Huntington Beach to have an energy project manager, to pursue such aggressive projects to encourage distributed energy and generation, and to look for hidden sources of municipal energy drain? What's the politics that allow this city to be on the cutting edge?

**Klemm:** The council took a vote to create a new position for the city of Huntington Beach as an energy project manager. I believe the mayor at the time was Debbie Cook. The council voted to create my position, and then HR and the executive staff looked at how we budget for utility costs. The budgets in the utility costs are non-departmental. The bill comes in and finance AP pays it. They didn't do any cost allocation to departments, so they decided to house this position in the city administrator's office, which is the only non-departmental department, if you will. By housing the position in the city administrator's office you have a lot of visibility in a project manager sense—the ability to reach across organizational boundaries and follow the energy savings where they lead you.

Beyond the politics, I'm very focused with my projects on financial benefits, particularly in these budget times. There hasn't been a whole lot of adverse discussion about my projects; they've all been unanimously supported as far as capturing utility incentives, saving energy, eliminating energy waste in the city's facilities, and then with the EECBGs, the ability to tune up our infrastructure to eliminate energy waste as well as provide better services. I don't think any politician would not want that, right? ...



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## EISENBERG: 20 LEED PLATINUM BUILDINGS EXPECTED FOR LA COMMUNITY COLLEGE CAMPUSES

(continued from page 4)

designs with everybody across the industry. In the past, concrete could only be used as base rock underneath a building or under a road. A lot of it just went to landfill. But now with recycled concrete incorporated into the actual concrete of the building, you put it in the mix and you're good to go. It's proving to have great strength and of course it's much less expensive because it's recycled material.

The lighting technology we're putting in the buildings is amazing. The technology has evolved very rapidly. We moved away from the CFLs and to LEDs for both interior and exterior use. Our lights on the grounds of the colleges will be LEDs, and in some cases many lights will be stand-alone where the pole itself generates and stores the electricity for the light. It's a revolutionary way to think about how buildings and campuses work in terms of design process and energy requirements.

**VerdeX:** We know you and LACCD are always pushing the envelope on sustainability. Beyond energy efficiency from materials, is the district doing much to conserve and reuse water and waste?

**Eisenberg:** Some of the buildings that we're doing will be zero-energy buildings; zero-energy means that the building produces as much energy as it consumes. The key to achieving that is to make the building highly efficient from an energy standpoint, in particular the idea that designing a building well means using the gifts of Mother Nature. For example, hot air rises and cool air sinks and daylight comes in and lights the spaces.

The idea is that if we do the right design, we can actually eliminate the mechanical system from the building. We don't need to move air around because it will move by itself through the natural physics of air movement.

When we've done this correctly, we're left with basically only addressing the plug-load of the building, which is your computer being plugged into the wall or your projector on the ceiling. You need electricity for that, and the building makes its own electricity to cover that demand. In many cases, these buildings are actually energy-positive such that they generate enough energy that they can put it back onto the grid.

That's what we're going to see in buildings in the future. We're going to demonstrate that

that will achieve zero energy. The heating and cooling for the building is going to come from solar-thermal. That's the idea of pipes on the roof—the new generation of the old 1970s hippie hot-water heater kind of thing, but now it produces really hot water that we can utilize for air conditioning and for heating, and we can make our domestic hot water supply. It will even work on a cloudy day. We'll have photovoltaics on it, producing direct electricity for the complex. It's going to capture and recycle all of its water.

It has this great feature that I love, which is a water tank in the center of the complex on an elevated pedestal—a water-tower-like the old kind from a small town used to provide water pressure. With that tank we can capture the water and pressurize it so that it flows through the pipes. Then we can use it in plumbing and flush toilets, whatever the case might be. The water is collected, pumped up with a small pump into the water tower and then ultimately pressurized and reused on the complex.

At the horticulture site, we're going to have a range

of plant-growing activities because they're exploring new species, native species, and drought-resistant species. To incorporate that purpose, the building has an indoor-outdoor feel to it, with walls that will open up to allow the outdoors to come inside, a series of greenhouses that provide their own energy, highly efficient lighting that will go in the classrooms, and materials that we'll use including things like the carpeting, as I was mentioning before. The glass of the windows is high-efficiency glass to control cooling and heating of the space. The walls will be very thick to accommodate a thermal character that helps heat and cool the space as well—not to mention the lovely nature



A rendering of the Library Resource Center at Los Angeles Harbor College, currently under construction along with a new Sciences Complex.

LACCD

with several of our buildings and show that the built environment minimizes its overall environmental impact.

**VerdeX:** Choose an LACCD campus—whether it's the South Campus at L.A. Trade Tech or the new math and science building at West L.A. College—and elaborate on what technologies are being incorporated into your facilities.

**Eisenberg:** A project that I love is getting ready to start construction: the new Horticulture Building at Pierce College. It's a unique program among our colleges because at Pierce we teach horticulture for the nursery industry and agriculture. The new horticulture building has many features in it

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## EISENBERG: DESPITE PROGRESS, GREEN INDUSTRY IN NASCENT STAGES IN LOS ANGELES

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of the plant beds that will be surrounding that whole area. It's going to be a great building.

**VerdeX:** This year, East L.A. College jointly announced a program with Village Global Green to offer a job training, environmental evaluation, monitoring, and verification program, in addition to a teacher training and assessment techniques program. Is student job training to take advantage of new opportunities in the green global marketplace a new direction for LACCD?

**Eisenberg:** Absolutely. The idea, and I give all credit to the trustees in launching the program in 2002, was transforming our colleges into living laboratories, using the physicality that we create as a basis for job training and curriculum development to do that. What we're seeing now are a number of pieces of curriculum being developed that will be directly, vocationally related. A fair number of our students transfer to four-year colleges, but many of our students are vocationally oriented; when they leave us, they're going to get a job. We need to develop the spaces and the capability to create the job training skills for the new green economy that Los Angeles is ripe for. It's a little bit of the chicken and the egg issue at the moment: people debate whether there are green jobs available. Our belief is that the industry is just starting to grow. They're demanding those kinds of professions and we're starting to train for them with the kind of things that we offer and the kind of buildings that we've built to make that possible.

One specific area that is so critical for L.A. relates to transportation, in particular the idea of looking at automotive technology. Three of our colleges teach automotive technology, producing automobile mechanics. But the mechanics that we're producing starting today and into the future will be people who know about the new technologies like electric cars, hybrids, and hydrogen fuel cell vehicles. To do that we need to create spaces that feature all of those technologies. It's not what one typically thinks of as a "green" job but it certainly is. As we transform the automo-

tive base in L.A., there will be a huge demand for people trained with those skill sets. We're poised to make that happen.

**VerdeX:** You shared with us a year ago LACCD's pioneering solar program done in partnership with Edison. Give us an update. What is its potential if taken to scale?

**Eisenberg:** At the moment, we have a little more than eight megawatts of photovoltaic panels, with which we've covered parking lots, some buildings, and parking structures. I would have hoped that the program would move faster, but it's making progress, and 8-plus megawatts is probably the largest installation of any college organization in the United States at the moment.

The demand we're talking about right now is for about 40 megawatts of electricity, which is what we use annually. We've covered about 20 percent of that. Each year now our plan is to continue to install more. At the same time, we're exploring alternate technologies as we do it. We've been putting in a standard kind of solar panels, but we've been getting ready to move to the concentrated technology. We've also been putting in thin film on our rooftops as we change our roofs to make

we're providing a model that's going to let people see what happens. The other thing that we spent time working on developing as part of that was that it's not just about the technology; it's also about the financing of the technology. Although we have a huge amount of money, we have been working to husband that carefully. We've been trying to leverage the renewables by picking up money through the Federal Investment Tax Credit Program, through state incentives, and any other kind of element that we can get so we leverage the dollars that we have to provide maximum benefit to the colleges.

**VerdeX:** Lastly, how much has your team of professionals learned about these new green and clean technologies over the last ten years? How do you pick up the new technologies and do your due diligence?

**Eisenberg:** People understand that we're providing leadership and we're willing to take risk to do that. People are beating a pathway to our door. I'm getting calls from companies that have new technologies that they want to share and talk about. Every week I see at least a couple people who have something they think has promise. In turn, we employ a range

"We need to develop the spaces and the capability to create the job training skills for the new green economy that Los Angeles is ripe for. It's a little bit of the chicken and the egg issue at the moment: people debate whether there are green jobs available. Our belief is that the industry is just starting to grow."

them a more productive energy resource. That will continue. The goal, ultimately, is to generate 100 percent of our power through renewable resources. We have been exploring wind technology as well, expecting that some of the new buildings will have a series of wind turbines on them to supplement the energy generation capability.

We're still pursuing the idea of energy storage. We received a grant from the state of California for an energy storage demonstration project at TradeTech College, using a new lithium-ion battery concept. That should be a really fascinating capability. In combination,

of technical experts who can help look at those technologies, evaluate what's going on, and decide if it really is something that works in our particular environment. We've created an internal mechanism—we have an energy committee that helps vet the technology from a policy level as well, to make sure we're not too far out on the edge. In combination, it's an opportunity to really show and demonstrate a lot of interesting things that are going on. That phenomenon of people showing up on the doorstep and having a lot of really bright people working together is a winning combination. ●●●

## TREEPEOPLE PROVES FEASIBILITY OF URBAN FORESTRY CONCEPTS

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**Lipkis:** Absolutely. The Elmer Avenue Project is an example of prototyping and demonstrating feasibility. Elmer Avenue offers a general blueprint that can be applied throughout the region very quickly to meet our urgent water supply, flood control, water quality, and climate adaptation needs, much more quickly than building dams and desalination plants. I don't mean to imply that there isn't some mix needed to get through our major, long-term water emergency, but this approach, as demonstrated on Elmer Avenue, generates more sustainable jobs, at less expense, and produces more resiliency—all the things that we know that people want. The bottom line coming out of Elmer Avenue is that people chose to allow their private homes to be retrofitted as part of a public infrastructure project.

**VerdeX:** What problems does the Elmer Avenue Project address? Who are your collaborators?

**Lipkis:** This effort was led by the L.A. and San Gabriel Rivers Watershed Council, which brought together TreePeople, the city of Los Angeles, and other agencies and NGOs, including local, federal, and state funding partners. Together, we solved a severe local flooding problem on Elmer Avenue, the source of which is runoff from 40 acres of upstream neighborhood streets that were built without storm drains.

We did two things: one, we fixed the overall flood problem by capturing the water and putting it back underground by creating an infiltration gallery underneath the street; basically it's like a huge French drain in an area with soil that is very permeable, all straight to the aquifer. It can handle large volumes quickly, getting all the water down to the aquifer.

And two, most importantly, we retrofitted 55 percent of the homes on the street—people volunteered to change their

landscape to capture the flood water, clean it, and recharge it in the groundwater or store it. In so doing, they created a profoundly water-efficient landscape that in every case made the homes much safer, more attractive, and more valuable than before. Part of the break-



*The street swale works as part of a system to capture and filter water before sending it down to the aquifer—away from the street.*

TreePeople

through was that, through great outreach and education, people volunteered their homes. That's a huge breakthrough, because infrastructure is usually thought of as an invisible service. The thinking has always been that we can't expect people to make major changes to the look and function of their property for the sake of improving public infrastructure. But these folks on Elmer Avenue, when they learned about it, were happy to volunteer to make changes to their landscapes and street. And the residents are all very happy with the result; it's working.

**VerdeX:** The Elmer Avenue Project includes an initiative to inspire and equip residents so nature can heal their neighborhoods with innovative engineering technologies. Let's focus on the latter. What engineering technologies are being employed here?

**Lipkis:** It's a system approach, scaling up bits and pieces into a whole system that packs multiple outcomes. So it includes rain barrels—a rainwater-harvesting technology that can capture rain from roofs for irrigation water for the landscape. There are what we call rain gardens, which are gardens that capture a large volume of rainwater without it flowing to the street. That water is held for a very brief time—generally hours or minutes—until it can infiltrate into the ground.

The components of the rain garden include water-efficient plants and swales (a swale is a creek-shaped structure; they can be designed to be beautiful so that when water flows it is slowed, cleaned, and infiltrated by bio-remediating plants). You have a palate of native plants, mulch, and, possibly, filter fabrics that can take hydrocarbons, like oils, out of the water. You can create a whole biological and bio-mimicking treatment chain that includes plants, mulch, roots, and critters (i.e., inoculated fungi or other biology), which as water flows through, it gets treated just as it would in nature.

You help design it so that happens by directing water through and placing the right plants and habitat.

You connect that to a somewhat larger receiving swale along the parkway. In this case, those receiving swales run down both parkways along the length of the street. They collect water from the street itself and any overflow from the property. The homes that didn't want to change their landscape received a drain across the front of their driveway that picks up the home's runoff

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## LIPKIS: LOS ANGELES' ELMER AVENUE PROJECT A BLUEPRINT FOR FUTURE INFRASTRUCTURE

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and directs it into the parkway swale. Water from the street flows into the swale through a cut in the curb. That swale has the capacity to treat, slow, infiltrate, and direct anything that overflows it back onto the street, around the driveway, and into the next curb cut as it goes on down the street.

The thing that's so impressive about the performance of this street is that the project cost about \$5 million, but most of the cost came from grabbing and treating the water from the 40 acres of neighborhood upstream. Had all those upstream homes in the neighborhood done the home retrofits and the street swales the way that we did on Elmer Avenue, there would be no need for the very expensive flood-control measure under the street. In other words, the more you can support the distributed, relatively low-tech system on a block-by-block basis, the more you remove the cash burden on government down the line. That frees government resources to help give people the incentive to choose to work with their neighborhoods and coordinate to make their neighborhoods safe, which is what we did on Elmer.

"...the more you can support the distributed, relatively low-tech system on a block-by-block basis, the more you remove the cash burden on government down the line."

**VerdeX:** What specific sustainable practices and technologies have you incorporated into the Elmer Avenue Project?

**Lipkis:** Most of our contributions rely on other people's innovations from other areas that were pulled together by us to do what's appropriate for Southern California. The street swale, for example, has been executed well in Seattle and Portland. In Seattle, it's called the SEA Streets (Street Edge Alternatives) Project. What's neat about this is that there's an ongoing, cross-pollination collaboration, because Seattle was forced to take this approach to restore salmon habitat throughout the city. Seattle is under an enforcement action by the federal government because their urbanization wiped out habitat for several species

of salmon on the endangered list. Seattle got into trouble because they were trying to do the right thing with polluted stormwater—they took all their stormwater and sent it to the sewage treatment plant—and in doing so they inadvertently wiped out their watershed.

When they saw that we in Los Angeles had taken an approach to bring the functioning forest back, they were inspired

"Australia is recognized around the world as a place where severe drought created by climate change hit much faster and sooner than here. They're about 12 years ahead of us into the long-term water shortages."

by the charrette design process and the programming and intelligence of a systems-based approach. They hired the same person that TreePeople had hired to run a charrette that we had held to redesign L.A. according to watershed principles, Patrick Condon, who's from the University of British Columbia. In that process, we created the synergy that got over 100

designers from the Seattle area and from around the country to work together to design the retrofit of Seattle, just like we had done here.

Because they have a regulatory gun at their head—they've got a real deadline in which to bring back functioning salmon habitat, as opposed to just conserving water, but they also need to conserve water—they've begun implementing much faster than Los Angeles. The government's really picked it up and driven it. They've been retrofitting neighborhoods to really get that salmon habitat back up and running.

**VerdeX:** Internationally, who is doing similar work and where?

**Lipkis:** Regarding cisterns, definitely Australia. It's very exciting how they've succeeded.

Australia inspired me early on because it's common for people to have cisterns and for that to change their behaviors and meet their water supply needs in a similar or even drier climate than ours in Southern California. Australia is recognized around the world as a place where severe drought created by climate change hit much faster and sooner than here. They're about 12 years ahead of us into the long-term water shortages. Drought

is the wrong word. Their climate has changed. They know they're out of water.

Twenty percent of the homes in Queensland now have government-installed rainwater cisterns. Instead of building desalination plants, the quick thing they did was to give people cisterns. The impact was profound, in terms of human behavior change, adaptation, and survival. They moved per capita, per day consumption of water from 140 gallons to 30 gallons during the peak of their drought. According to government officials, the reason for this is that by giving them the cisterns—people got to own and directly manage their "water account"—like their bank account. It was a hugely successful methodology for waking people up, making people water co-managers, and succeeding. At the same time, they are starting to build desalination plants and things like that. But those take billions and much more time. In the mean time, the people have permanently adopted very high levels of water conservation.

I have invented a cistern that we hope to deploy here. I am working with Ashoka resources to bring it to scale. The vision is that over a million homes in Southern California can have a high-volume rainwater system that fits neatly and elegantly in the residential yard and landscape and can instantly help meet water needs.

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## ANDY LIPKIS: PORTLAND, SEATTLE EARLY ADOPTERS OF STREET DRAINAGE RETROFITS

(continued from page 21)

**VerdeX:** You've commented, in response to President Obama's announced plan to spend \$50 billion on infrastructure, that what the country most needs is 21st century infrastructure. Is the Elmer Avenue Project a way of proving that? Are there other demonstration projects that are an alternative to spending billions on de-sal and other public works projects?

**Lipkis:** Elmer Avenue is exactly that. Our economy is hemorrhaging jobs based on the old infrastructure, and that's not sustainable. When you ask, "How do we recreate the basis of the economy as we rebuild the infrastructure for sustainability, so we're both creating sustainable water, energy, and employment?" you should also ask "How do we create perpetual jobs, instead of just a few short-term construction jobs?" Elmer is an example of that, and if the project is taken to scale in the region it will take green collar workers to maintain the distributed infrastructure and the functioning of the landscapes. In the field of low-impact development, called LID, we see examples all around the country of people starting to do this. You can Google "LID" or "low-impact development" and there

Elmer Avenue project in Sun Valley. Has it been difficult for most public agencies to incorporate, despite all of our regional visioning processes, the kind of integrated public works that TreePeople pioneers?

**Lipkis:** We keep coming up against this. There are conceptual blocks. One is the belief that people won't change. Tim Brick,

years and implement a society-changing idea. How is TreePeople's work affecting what Los Angeles is now doing with respect to implementing and investing in 21st century infrastructure?

**Lipkis:** We are seeing the benefits of the partnerships we have built with the Los Angeles Department of Water and Power. That

"...we are excited and delighted that even though change is slow, the wheels of change are moving. In the DWP, in the city of L.A., and even in L.A. County, they are embracing watershed management."

the outgoing head of MWD, worked very hard in his last couple of years. He brought in the Australians; he brought in stories of success. I don't understand why, even when the president of the board champions this approach, it hasn't stuck at the agencies. I can tell you my guess as to why: they're stuck in a command-and-control mode, where they might not appreciate that they can still have the same quality assurance and supply assurance through a distributed smart system.

department is moving. The city of Los Angeles Department of Public Works and Bureau of Engineering are moving. To their credit they are working to change, despite a very complicated regulatory and political environment. Their bottom line is that they're responsible to make sure there's water and safety. They work with known quantities. They're very reluctant to do something that's going to drop the ball and potentially break it. That prevents many institutions from ever changing. Given that reluctance, we are excited and delighted that even though change is slow, the wheels of change are moving. In the DWP, in the city of L.A., and even in L.A. County, they are embracing watershed management. Given that engineering schools have hardly begun to teach this stuff yet, they are responding, partnering, and innovating.

"Part of our challenge moving forward is that new, better technologies are being blocked by well-funded special interests who are very much engaged, at the table, and driving the conversation."

are websites collecting stories from all over the country where this is happening. Philadelphia's water agency is deploying some of this in a major initiative as an alternative to traditional stormwater treatment systems.

I just got back from a climate conference in Hong Kong sponsored in part by the Chinese government. We're seeing some of the new best practices being practiced in stormwater mitigation in new developments in cities there.

**VerdeX:** The Metropolitan Water District held a water summit this month which addressed the need for "new systems to manage systems." Not mentioned was your

Second, there are very well-vested and well-funded special interests for the large, centralized approaches that include de-sal and dams. Those same forces have been the ones not so subtly holding up passage of the state budget every year of this current governor's term. You always hear that there will be no budget unless there's an agreement to build dams. Part of our challenge moving forward is that new, better technologies are being blocked by well-funded special interests who are very much engaged, at the table, and driving the conversation.

**VerdeX:** The intention is for Ashoka Fellows around the world to take three to five

That allows us to move towards, in the Ashoka spirit, bringing it to full scale in Los Angeles, where our vulnerability to droughts and to extreme weather is unprecedented. This is not climate change 30 to 50 years out. These are impacts that are hurting people now, impacting our communities today, and the agencies are feeling it. They're seeing the impacts in their budget, in their infrastructure, and in their bottom line. They're working to build and learn from demonstration projects so we can go to scale quickly. And that's what works. We're hoping to build the partnership so L.A. can undertake a bold acceleration of mitigation and adaptation. ●●●

## CA ADOPTED MANY REGULATIONS SINCE AB 32 SCOPING PLAN

(continued from page 14)

**VerdeX:** 2011 appears to be the year for “alternative fuel” cars in California. Elaborate on the actions and initiatives that CARB is advancing to create a healthy market for alternatively powered motor vehicles.

**Nichols:** I'd like to give a plug, so to speak, to an effort that I'm involved in, called the Plug-In Electric Vehicle Collaborative Council. The PEV, as it's known, is a coalition of car manufacturers, electric utilities, manufacturers of charging systems, local governments, state agencies, NGOs, fleet operators, and labor that has come together to sponsor work at U.C. Davis's Plug-in Vehicle Center. We're going to release a report on December 13—the outlines of the strategic plan for the next couple of years—to make California a leader in creating the market for plug-in vehicles. We're determined to create the conditions for the success of this market.

The car companies have done their part; they've brought some really exciting, attractive plug-in vehicles to market. Our state needs to step up to the plate to make it easy for customers to adapt to these new vehicles, embrace these new vehicles, and for our cities and our electrical systems to prepare to make the process of transforming to electric transportation as seamless and pleasant as possible.

The report has recommendations about where to focus on rolling out new charging stations and how different entities should work together to make this happen. These aren't earth-shattering revelations, but the importance of this report is that you've got a broad coalition of interests agreeing on what the priorities should be from a policy perspective to make this effort work for California.

**VerdeX:** When VERDEXCHANGE last interviewed you in 2009, you stated, regarding the AB 32 Scoping Plan, “The plan is just a plan. It's not all the regulations and programs that will achieve the results.” What significant regulations and programs have been passed since that begin to realize the goals and aspirations of those supportive of

AB 32? What policy accomplishments are you most proud of?

**Nichols:** We've been busy since that interview. We've adopted more than a dozen regulations that will reduce greenhouse gas emissions, the most notable being the renewable electricity standard, which we just talked about, and the Low Carbon Fuel standard, as well as the proposed cap-and-trade regulation, which is now out for public comment. We're working on the next round of advanced clean car regulations, which will be coming to the board early next year. That would take us up to 2017 model year vehicles, in time to have an impact on reaching the 2020 goal and to move on to the 2050 target.

We've begun working on the implementation of SB 375: we set the regional targets in conjunction with the MPOs around the state, and we're now working to provide more direct financial support and technical support for regions implementing SB 375.

Concerning the car standards, we're working in a very direct partnership with U.S. EPA to make sure that the federal government adopts greenhouse gas standards that match up with what California needs. We've succeeded in doing that for vehicles through 2017, and now we're working with them on some studies. We'll publish the first set of information based on the work that we did over the summer. We're hoping that next year we'll announce a national program for vehicle greenhouse gases.

**VerdeX:** In closing, thank you for again agreeing to participate in VERDEXCHANGE's Green Marketmaker's Conference, January 23-25 in L.A. Attendees, whether decision makers in global, national, and/or state business, government, finance, or environmental stewardship will hope to learn that there's a stable California energy and climate policy agenda that will not deviate dramatically from the precedents set over the last several years.

**Nichols:** I hope we have good news. ●●●

## GOV. BROWN, CONTINUED

(continued from page 11)

upgrades (and renewable energy projects) through savings on their property tax or utility bills.

- Another reason that people do not invest in efficiency upgrades is that they lack information about the energy use and energy costs of their homes and businesses. Disclosing information about energy performance can be a powerful motivator to improve efficiency. State law requires that, starting in 2011, commercial owners have to disclose energy use to potential buyers. This same program should be extended so that homebuyers receive information about a home's energy use before purchasing it.

### 6. Adopt Stronger Appliance Efficiency Standards

- The CEC should adopt stronger appliance standards for lighting, consumer electronics and other products. Federal law should be changed to make it easier for California to adopt standards more stringent than federal standards, as we have authority to do for automobile emission standards. For example, a proposed CEC efficiency rule for clothes washers would save enough water for all of San Diego for a year.

- We should also increase public education and enforcement efforts so that the gains promised by our efficiency standards are in fact realized.

### 7. Develop More Combined Heat & Power (CHP) Projects

- Combined heat and power projects (also known as cogeneration) use the excess heat or electricity generated by power plants or industrial facilities. They are much more efficient than traditional power plants and many industrial plants. California currently produces 9,249 MW of combined heat and power. With the right incentives, we can increase this by 6,500 MW over the next 20 years.

### 8. Appoint a Renewable Energy Jobs Czar

- I will designate one person, directly accountable to the governor, who will be responsible for ensuring that all energy jobs goals and deadlines are met. ●●●

## PEV'S STRATEGIC GOAL: SEAMLESS INTEGRATION OF ELECTRIC VEHICLES IN CALIFORNIA

(continued from page 1)

chair of the California Air Resources Board, Mary Nichols. Mary Nichols is responsible for implementing California's Greenhouse Gas Emissions legislation and for setting air pollution standards for motor vehicles and fuels. Mary's career has been dedicated to protecting the environment from the time I first met her, when she was prosecuting cases locally here in Los Angeles to enforce clean air laws to leading the state of California as secretary of the natural resources

This broad-based coalition has one goal: to ensure that California remains a hub of the emerging electric vehicle industry. This goal enjoys the enthusiastic support not only of our governor, Arnold Schwarzenegger, and our governor-elect, Jerry Brown, but also the blessing of the president and, perhaps even better, some precious tax breaks from the federal government that have bi-partisan approval. That is a very good thing because by 2025,

cars per year in California over the next decade, PEVs won't be sustainable; they won't be successfully seeded into the marketplace.

We've attempted to overview the efforts needed and help systematize that approach, bringing the correct players to the table. It's about bridging the gap from the early adopters, who will accept almost any tribulation to get their car, to the average person, who needs simple answers to questions about buying a plug-in vehicle.

At the beginning of July, the idea of this report, which is now ready for publication and on our website, was like dust under the bed, until the U.C. Davis transportation studies and the Plug-in Electric Vehicle Center began to engage in writing this report... This was really a great team effort. With all of these "braniacs" set loose on the project, the public-private sector said, "I think we need to advise them." So the PEV Collaborative pulled itself together and offered solid advice on the report-creation so that it wouldn't be too academic and it would be consumer friendly...

What does the report say? There are six goals and high-level recommendations, over

"...by 2025, to meet our air quality emissions goals, we need to have about 250,000 battery and plug-in hybrids sold in California every single year."

-Mary Nichols, chair, CARB

agency under Governor Gray Davis to serving our nation under President Clinton in the U.S. EPA. Mary Nichols is a true environmental visionary. She is the right person at the right time to ensure that California will remain a leader in clean air and green technology.

**Mary Nichols, Chair, California Air Resources Board:** Thank you, Steve, for that introduction. Thanks also to Universal, for rolling out the green carpet this morning and showcasing some of the vehicles that are going to drive the future of California. Plug-in cars are cool. They're green. They're sexy. And they're fast. Best of all, they are coming to California by the tens of thousands, beginning this year. All the car companies are betting that customers will love them once they get their hands on them. And we in government believe so strongly in the energy, power, and environmental benefits of plug-ins that we have joined hands, not only with the manufacturers, but also with the fuel suppliers, otherwise known as the electric utilities, the people who make charging stations and equipment, local and regional governments, air pollution regulators, consumers, and public health advocates to make sure that the road to electric vehicle adoption is as smooth and straightforward as possible for the customer.

to meet our air quality emissions goals, we need to have about 250,000 battery and plug-in hybrids sold in California every single year.

Now, think of all the jobs that are involved in making, selling, and servicing those cars and their parts—an economic future built on our state's goal as the center of the car culture. Today as we release

"...this report shows that if PEV sales don't reach 100,000 cars per year in California over the next decade, it won't be sustainable. It won't be seeded into the marketplace."

-Diane Wittenberg, chair, Plug-In Vehicle Collaborative

our first Plug-In Vehicle Strategic Plan, I want to congratulate the researchers from U.C. Davis, the collaborative members who have helped guide this effort, and everybody else involved in coming together around this vision to make it a reality in the months ahead.

**Diane Wittenberg, Chair, Plug-in Vehicle Collaborative:** We're here today to introduce our new report, Taking Charge: Establishing California Leadership in the Plug-In Electric Vehicle Marketplace. In a nutshell, this report spotlights the challenge: if PEV sales don't reach 100,000

30 action items. We tried to focus on recommendations that would best be achieved by working together, like issues of public charging, overnight charging, utility notification, local government leadership, permitting and inspection, and policy. We touch on all of those in the report as the starting place to pull together everything that's been done and move forward from here. The full report, as I said, is available only at the Collaborative website. This will be a positive handicap for success for smooth, successful, mainstream adoption of plug-in vehicles.

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## PEV COLLABORATIVE: ELECTRIC CARS ARE THE FUTURE

(continued from page 24)

**Ted Craver, President and CEO, Edison International:** Edison International is pleased to be part of the PEV Collaborative as one of the several utilities involved. The benefits of electric vehicles are many, but just to highlight a few that make Edison particularly excited to be part of this: first, they are exceptionally cheaper to operate than conventional vehicles, somewhere between one-third to half as expensive; they are also considerably less emitting, somewhere close to 70 percent less. One thing that isn't as well recognized is that our electricity in the nation is produced nearly entirely from domestic resources, so

"One thing that isn't as well recognized is that our electricity in the nation is produced nearly entirely from domestic resources, so there's a strong energy security component to using electricity to fuel our transportation."

-Ted Craver, president, Edison International

there's a strong energy security component to using electricity to fuel our transportation. As the assemblywoman just mentioned, this is a new industry that presents terrific opportunities to create new jobs and a vibrant economy. One of the things that's most important to have a strong electric vehicle market is to have the early customer experiences be very positive. To have positive customer experiences, our consumers need to be informed and able to make informed decisions. To that end, there are a number of activities that Edison International is involved in—I co-chair the Electric Drive Transportation Association, which has a website [www.goelectricdrive.com](http://www.goelectricdrive.com), which is really the new hub for all the information regarding electric vehicles. Edison International is very pleased to be part of this Collaborative, to be part of the new sustainable electric vehicle market.

**Tracy Woodard, Director, Government Affairs, Nissan North America, Inc.:** Utilities and automakers are now sharing customers and working together like never before. I'm

proud to be here representing Nissan and the automotive industry. I've been working on this day for about two and a half years, so I am glad we are here. We have joined together with all of the other entities you see represented here today, and it's a major commitment to ensure the success of plug-in vehicles, the development of charging infrastructure, and the policies that will support them. The California PEV Collaborative sees the future—electricity is the new fuel for cars. These cars have the potential to transform the automotive industry and the way people drive. We have an opportunity to

make a significant improvement on climate change, air quality, and quality of life through the mass adoption of plug-in electric vehicles. California can be the model for others to follow. The Collaborative is working to fit all of the pieces together and create a roadmap for a systematic, customer-focused approach so consumers can adopt these clean, cutting-edge vehicles, and the automotive industry is doing their part to bring cars like the ones you see here to the market. On Saturday, the first worldwide customer delivery of a Nissan Leaf was made in California. It will be the first of many deliveries of plug-in vehicles to come in the next year. We are looking forward to working with other members of the Collaborative to make California the leader in adoption of plug-in vehicles and the model for others to follow in electrifying the transportation sector. ●●●

[Ed.: The full "Taking Charge" report is available at <http://www.evcollaborative.org/strategic-plan>]

## SCHNEIDER/ZAP, CONTINUED

(continued from page 13)

est importer of motorcycles to the U.S.A. Electric motorcycles and ATVs can now be a very big part of revenue source and our technology development. It is the same technology. Some of the benefit that ZAP has had in its integration capabilities are that we have built tons of electric bikes, scooters, and ATVs. All of those components are the same components that are carried through in an automobile, just scaled up in power and design. If something works in a scooter, we scale it up to the next level and so on.

**VerdeX:** A year from now, what will be a home run for ZAP?

**Schneider:** The home run today was completing the merger. Jonway and ZAP are on the cover of *Popular Mechanics* for the Automotive X-Prize. The White House is announcing that winner. There were initially a couple hundred vehicles entered, which is now down to four, and there were four categories. We just recently won the Most Wanted, the Most Practical, the Most Stylish, and we were number two in the Most Innovative. We will bring that vehicle to market in the first quarter as part of this new merger, and now we have the manufacturing capability to bring it to market. We expect funding from the DOE, and we will start to build U.S. manufacturing. We are able to do that very easily with Jonway because we can start out with knock down kits, building all of our low-cost, expensive parts in China and assembling them in the U.S.

**VerdeX:** Is there a geographic requirement for the DOE grant?

**Schneider:** Just the United States. Site location is being jockeyed for right now.

**VerdeX:** Lastly, will you be at the VERDEXCHANGE Conference in January 2011?

**Schneider:** I will be sure to be there. There will be some good synergy there. ●●●

## USC'S ARCHITECTURE PROGRAM STRESSES DIGITAL TECH, SUSTAINABILITY

(continued from page 28)

know, the current urban form and its process of construction is fairly devoid of systematic sustainability thinking. If the urbanization speed goes as it is—the city at its original scope will triple in terms of its original scope and density. That would be disastrous. There is huge urgency, although at an abstract level.

**VerdeX:** Los Angeles is home to at least a half a dozen leading architecture and engineering firms. How do you draw those firms and technologies into the education and research you are doing at USC?

**Dean Ma:** The school has a long tradition of connection to the profession. That is something that we are very proud of. Newly nurtured in the school is connecting that tradition with a very well strategized mission. For example, we are forming an advisory board under the USC Architectural Guild and a few other constituencies. The technology is sometimes newer than what the education system has access to, so through different offices, practices and studios, we bring them to the school. On the other hand, we are also trying to elevate on the digital design front, trying to consolidate and put together new software and output instruments, so we can represent what the industry would look for. This is a really technical process.

Also, this has not yet happened, but my colleagues and I are conceiving two centers. One is the DataShop, a center for digital design. In that platform we can be

freer to connect to the leading industries. There are many firms that are at the cutting edge in terms of deployment of advanced digital technology. We are also conceiving what I call a Super Office Studio, which are graduate level studios taught by very intelligent practitioners throughout the region. They bring their projects and the way they approach the projects through technology to the classroom. Those are the two specific platforms we are trying to build to enhance the interaction with industries.

**VerdeX:** Both the USC Village and the new USC Health Service campuses are undergoing two massive planning processes. With the University not known presently for being a leader in sustainable planning or green facility design, how could the architecture school and you influence the evolution and development of these two USC master planned campuses?

**Dean Ma:** It is an unfortunate situation; the School of Architecture has not played an instrumental or influential role in the campaign or the construction process of the University. I don't know why we haven't been in that position. I can only look to the future to increase that dialogue and possibly to assist the university leadership to bring our academic agenda and our research excellence into the planning and building process.

In that process, the University is really a client of the project. There is a lot of


commonality in the client in their way of building their buildings. It has to be handled very intelligently. The School of Architecture should form specific task forces and a form of new consultancy where the intellectual quality and realistic outlook of the school can be part of the process. We are grouping assets and dialogues together. Let's see how we can achieve that goal.

It is very important for the School of Architecture to be a part of it to show the rest of the world that we are relevant. If we can't even be relevant to the campus, how can we be relevant to the community outside the campus? It is a challenging task, but I am willing to take that on.

**VerdeX:** In an interview you did with *The Planning Report* three years ago, you said you wanted to significantly enlarge and professionalize USC's landscape architecture program. What has been accomplished and what might be accomplished going forward?

**Dean Ma:** The biggest news I can report is very satisfactory. Our landscape degree program now has the official status of accreditation candidacy. We are in the process of getting accreditation, and it is going very positively. The accreditation team is recommending two to three years of accredited status for us to the accreditation board. That is a big accomplishment. Under that accreditation, we

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"The rate of the increase of urbanization is enormous and threatening because, as students know, the current urban form and its process of construction is fairly devoid of systematic sustainability thinking."

## DEAN MA: USC HAS BUILT A SUCCESSFUL LANDSCAPE ARCHITECTURE PROGRAM

(continued from page 26)

now have three programs running in the landscape graduate program: the post-professional, and the two and three-year professional degree. The number of students has increased from less than ten people to almost 50. That population has diverse studio offerings, which enables us to recruit and attract excellent studio critics and full-time professors into the program. Now we can start to re-envision the agenda we set three years ago with a critical mass of students and instructors.

**VerdeX:** You mentioned the school's focus on energy and technology. How might you better integrate the talent in other schools on USC's campus with the School of Architecture's programs to advance sustainability planning, design, and development?

**Dean Ma:** Integration is always a great vision, but when it comes to the University, every school has its own mission. Somehow their sustainability missions are circumscribed by the way they do things. There are a lot of things happening on campus. And I hope they will be more integrated than they are now.

The role I hope the School of Architecture can bring is the role that architects always play in industry—to bring them together through design thinking. Design is treated as the intelligence and the collaborative platform to bring other researchers and voices together. That is a traditional role for architects. If we can

follow that role, we will be much better, and the School of Architecture can lead the way to integrate this. Obviously this is a wish, and there is a lot of work to be done to fulfill that.

The second point is that, as I said earlier, our graduate school has expanded tremendously. We set a new PhD program two years ago. The PhD program is focused on the architectural approach in enclosures and monitoring of the energy profile of buildings. With the PhD program, the larger graduate population, and our faculty members—we have specifically hired two or three faculty members who represent the new species between design, sustainability, and digital technology—are now able to form research proposals. In the last two years, we have applied for all sorts of research proposals, from NSF to foundations. All research proposals are multi-discipline and cross-discipline in nature. We have collaborators, industries, and test beds to bring everyone together.

On campus, we have reached out to the other schools as well. Through the research initiatives, the real integration between faculty members can be formed. Although the faculty has such an organic connection between them in their research, the culture of integration can be improved. That is the role the School of Architecture is playing, and I hope to increase that and continue to invest in that.

**VerdeX:** Clearly, one of the enticements USC offered to induce you to accept the

deanship was that you were able to carry on your architecture practice in China. Address the insights you have gained from continuing to do that, as well as the challenges in trying to do that, given you seem to work 24 hours, 7 days a week.

**Dean Ma:** The advantage of keeping a practice while holding this position is in constantly getting feedback from society, as represented by my multiple clients. That constantly refreshes my understanding of what society needs and what the industry is up to. Obviously, dealing with students and faculty is exciting, but by encountering other forces, the group of my clients, I get a different angle.

In terms of how to practice, I am forwarding my work into sketching and communicating through electronic devices. I am taking a "hands-off" approach. I do not do the traditional architect morality of "hands-on." I am developing the dimensions of a hands-off practice. I'll get back to you when I develop the whole philosophy and its processes. I am giving a lecture this afternoon called, "Sketch and Stretch." When I sketch I have a natural tendency to stretch, both in the process of thinking and delivering. Stretching allows me to, both in terms of space and time, create a process where I can participate in the process on my terms rather than following the flow that is sometimes so automated by the design process. I am halfway through the concept and I will report back later. Two words: hands-off and stretch. ●●●

"The role I hope the School of Architecture can bring is the role that architects always play in industry—to bring them together through design thinking. Design is treated as the intelligence and the collaborative platform to bring other researchers and voices together. That is a traditional role for architects."

## GREEN DESIGN



QINGYUN MA

## USC ARCHITECTURE SCHOOL GLOBALLY ENGAGING STUDENTS & FACULTY UNDER DEAN MA'S LEADERSHIP

Since arriving as the dean of the USC School of Architecture in 2007, Qingyun Ma has set an aggressive agenda for expanding the scope and skill set of the students and faculty of the architectural school. Three years later, Dean Ma continues to focus on integrating technology and sustainability, while organizing workshops around the world—establishing USC as a world class school of architecture. In the following VerdeX interview, Dean Ma details the mission of the USC School of Architecture and elaborates on some of the international and local design issues focusing the efforts of the school, including the rapid urbanization of China.

**VerdeX:** What have you done in three years as dean of the USC School of Architecture to make your program even more world class than it was before? What are the initiatives and accomplishments of which you are most proud?

**Dean Ma:** I am most proud of our graduate energy and research agenda, which spans between new technologies in design and in the manufacturing and building industries—how new technologies can be integrated by the digital process and targeted for environmental performance. Digital technology and sustainability are the two ends of the mission and focus of the graduate school. The platform to integrate those issues is the urban issue—how cities are affected by the way we have built and the way we monitor our energy. That is the main part of my mission.

I am now in Beijing and I will be in Shanghai next week to make that energy known and to make that a global discourse. I take a lot of time to spread the word around and also to extract expertise, thinkers, and projects around the world.

**VerdeX:** Given that you are doing this interview from Beijing today, please elaborate on the USC Architecture School China Studio program. What is the focus of this Global design studio?

**Dean Ma:** The agenda of the graduate school is carried forth on multiple fronts. One is the Global Studio, now

running as part of the USC American Academy in China program. That program assumes that problems and challenges facing cities or the architectural industry have global dimensions. Only if we work from two fronts, in Los Angeles and other parts of the world, will we understand the problems and become more intelligent.

The studio in China is a very mobile workshop. It travels through four cities threaded by similar urban and environmental challenges. In Beijing,

"In Beijing, where I am now, the [USC China] studio focuses on how the city has been transformed from one paradigm or model to another, and yet another, new level. Obviously, as a traditional city, it has very rigid structure throughout the city. When socialism, with its organized urban approach, came in, certain parts of the city had to give way to allocate or anchor the new type of city in terms of density and new organization."

where I am now, the studio focuses on how the city has been transformed from one paradigm or model to another, and yet another, new level. Obviously, as a traditional city, it has very rigid structure throughout the city. When socialism, with its organized urban approach, came in, certain parts of the city had to give way to allocate or anchor the new type of city in terms of density and new organization. And yet, the economy today brings the city to a much more complicated, interactive, interconnected urban network.

Because that happened on the two layers prior to it and because it changes so fast and at such scale, the problems, both in terms of solutions and concepts, are very potent and very vividly presented in front of the eyes of our students. We are taking advantage of this fresh happening of the city. Students become very excited, and students become much more productive. Every time students go back to Los Angeles, they look at the problems in Los Angeles with a fresh eye, sometimes even with a bigger ambition to improve.

**VerdeX:** Whatever concerns Los Angeles may have about density in Los Angeles, China must be concerned with the half billion Chinese moving to the urban centers with the attendant challenges for the built environment there. Are your graduate students confronting those challenges at that scale?

**Dean Ma:** Yes, conceptually. The rate of the increase of urbanization is enormous and threatening because, as students

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