February 15, 2010

Cities Prepare for Life With the Electric Car

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SAN FRANCISCO — If electric cars have any future in the United States, this may be the city where they arrive first.

The San Francisco building code will soon be revised to require that new structures be wired for car chargers. Across the street from City Hall, some drivers are already plugging converted hybrids into a row of charging stations.

In nearby Silicon Valley, companies are ordering workplace charging stations in the belief that their employees will be first in line when electric cars begin arriving in showrooms. And at the headquarters of Pacific Gas and Electric, utility executives are preparing “heat maps” of neighborhoods that they fear may overload the power grid in their exuberance for electric cars.

“There is a huge momentum here,” said Andrew Tang, an executive at P.G.& E.

As automakers prepare to introduce the first mass-market electric cars late this year, it is increasingly evident that the cars will get their most serious tryout in just a handful of places. In cities like San Francisco, Portland, Ore., and San Diego, a combination of green consciousness and enthusiasm for new technology seems to be stirring public interest in the cars.

The first wave of electric car buying is expected to begin around December, when Nissan introduces the Leaf, a five-passenger electric car that will have a range of 100 miles on a fully charged battery and be priced for middle-class families.

Several thousand Leafs made in Japan will be delivered to metropolitan areas in California, Arizona, Washington state, Oregon and Tennessee. Around the same time, General Motors will introduce the Chevrolet Volt, a vehicle able to go 40 miles on electricity before its small gasoline engine kicks in.

“This is the game-changer for our industry,” said Carlos Ghosn, Nissan’s president and chief executive. He predicted that 10 percent of the cars sold would be electric vehicles by 2020.

Utilities are gearing up to cooperate with the automakers, a first for the two industries, and governments on the West Coast are focusing intently on the coming issues. Price and tax incentives need to be worked out. Locations must be found for charging stations. And local electrical grids may need reinforcement.

The California Public Utilities Commission, whose headquarters are in San Francisco, has brought together utilities, automakers and charging station companies in an urgent effort to write the new rules of the road.

Much of the attention on electric cars has been on the vehicles' design, cost and performance. But success or failure could turn on more mundane matters, like the time it takes car buyers to navigate a municipal bureaucracy to have charging stations installed in their homes.

When the president of the California Public Utilities Commission, Michael R. Peevey, leased an electric Mini Cooper, he said, it took six weeks of visits by installers and inspectors before he could plug in his new car at home.

"It was really drawn out and frustrating and certainly is not workable on a mass basis," Mr. Peevey said.

Such issues are being hashed out here first. The San Francisco area is home not only to a population of early technology adopters but to companies like Coulomb Technologies and Better Place that are developing the networks and software to allow utilities to manage how cars are charged.

Tesla Motors, a Silicon Valley company that makes electric cars, says it has already sold 150 of its $109,000 Roadsters in the Bay Area. One customer bought the sleek sports car on the spot after a test drive.

"We asked him how he heard of Tesla and why he bought the car," said Rachel Konrad, a Tesla spokeswoman. "He said, 'Well, three other guys on my block have them.' "

In Berkeley, a town known for its environmental sensibility, one out of five cars sold today is a hybrid Prius. If electric cars are adopted that broadly in the next few years, problems could ensue.

"If you just allow willy-nilly random charging, are we going to have neighborhood blackouts?" asked Mr. Tang, the utility executive. He said a single car could consume three times as much electricity as a typical San Francisco home.

Mr. Tang is working to make sure that does not happen by monitoring where electric cars are sold in Northern California. And later this year P.G.&E. will lead a "smart charging" pilot project, connecting 200 cars to special charging stations that let utilities control the electrical demand at a given moment.

Robert Hayden, the clean transportation adviser for San Francisco, said the city hopes to have 60 charging stations installed in public garages by year's end, with a thousand more available across the Bay Area in 2011. And in Oregon, an advisory group is working on charging stations and related issues.

To avoid problems in areas with high car concentrations, utility executives said they would encourage people to charge their vehicles at night or to use smarter electric meters that help control demand.

"We are trying to be proactive about how to make sure that the transformers that serve these homes and neighborhoods are robust enough," said Doug Kim, an executive at Southern California Edison, which serves Los Angeles.

Mr. Kim said the popularity of electric vehicles "will be a function of a lot of different things: the state of the economy, how many people can actually afford to buy the cars and the price of gasoline — how high does it have to be?"

Some transportation experts are skeptical that electric vehicles will catch on anywhere in the country, in large

part because the batteries and the installation of home recharging units are expensive.

Dan Sperling, the director of the Institute of Transportation Studies at the University of California, Davis, estimated that a typical electric car battery would cost the automaker $12,000, and a 240-volt charging unit would cost a household at least $1,500.

Without huge subsidies, “the reality is, these electric vehicles are not going to sweep the industry and become a major share of the market for a very long time,” Mr. Sperling said.

Despite such skepticism, Washington is putting considerable money into the effort, including billions of dollars in loans to Ford, Nissan and Tesla Motors.

Under last year’s stimulus package, nearly $200 million will support Nissan’s introduction of the Leaf by permitting the installation of 13,000 charging stations around cities in Oregon, Washington, California, Arizona and Tennessee in the next year or so. (Nissan plans to build the Leaf in Tennessee eventually.)

If electric cars do take off, consumers and society could benefit. Battery-powered motors are more efficient than gasoline engines. They cost drivers on average only 2.5 cents a mile for fuel, less than a third of the cost for a highly efficient gasoline car, according to proponents.

The Energy Department says electric cars produce less of the emissions linked to climate change than traditional vehicles, though how much less depends on the source of power on the local electricity grid.

Before the first Nissan Leafs and Chevrolet Volts reach the show room, an electric car infrastructure is getting a test drive in the Bay Area, in a limited way.

Google, which is talking to automakers about using its PowerMeter energy management software, has already become something of an electric transportation hub. At Google’s Mountain View headquarters, a handful of employees drive to work in Tesla Roadsters, and more drive a fleet of modified Priuses that Google owns. The employees pull into carports that are covered with solar panels and plug their cars into the 100 available charging stations.

Nearby, in downtown San Jose, the city has reserved street parking for electric vehicles and installed charging stations. Nearby, at Adobe Systems’ headquarters, an executive showed off a dozen charging stations in the parking garage. Eighteen more will be installed this year.

“No one wants to be left behind,” said Richard Lowenthal, chief executive of Coulomb Technologies. “We’re preparing for an onslaught of demand.”