EV Riders

https://www.climateone.org/audio/ev-riders
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Greg Dalton: Welcome to Climate One at the Commonwealth Club, I'm Greg Dalton. Most major automakers are now selling or leasing cars that run on electricity all or part of the time. Electrified and hybrid vehicles account for about three to four percent of new US car sales, a figure that goes up and down with gasoline prices. Today, we'll talk with owners of the new plug-in cars about their lives as early adopters. We'll discuss their new wheels, how they deal with range anxiety, and what it's like living in the transportation frontier. We'll also get in to the complicated world of charging electric vehicles at home and public locations such as garages, offices, and corporate -- and retail centers. Along the way, we'll include questions from our live audience here at the Commonwealth Club in San Francisco.

Our guests are three EV owners who have deep knowledge about the transition from petroleum to electricity to power our personal mobility. John Kalb is founder of EV charging Pros and Consultancy and an owner of a BMW ActiveE. Andrea Kissack is Senior Science Editor at KQED and a proud owner of a Nissan LEAF. Felix Kramer is the founder of CalCars and the soon to be launched website DrivingElectric.org and owner of a Chevy Volt and a Nissan LEAF. Please welcome them to Climate One.

Before we begin, I should mention that we approached different auto companies and asked for owners of Teslas and Toyotas, et cetera. And it just so happened that we ended up with a bounty of LEAF owners up here.

But we did -- I want you to know we did try to reach out to other auto companies and there just are not as many of those, at least currently available to us, from the Bay Area. Andrea, let's begin with you, tell us how you came to buy an electric car.

Andrea Kissack: Well, my Honda was getting pretty old, and I needed to buy a new car. And I just -- it was two years ago, I guess, now that I started thinking about it. And I just couldn't stomach the idea of getting an old gasoline car in 2010, it just seemed wrong. So I started looking at -- and the hybrids -- just the Prius wasn't a really satisfying drive for me. Which sounds funny for me to hear myself say the fact that I'm on a panel talking about cars at all is hysterical, because I just could have cared less about cars for my entire life. So here I am -- except to use them for things. So -- and it also appealed to me, the all-electric drive I got in one. I tried a few, actually. A Roadster is one of my -- well, I actually like the LEAF more, which I know you would find amazing but--

Greg Dalton: So did you test the Roadster?

Andrea Kissack: I did. And it's just -- I don't think I was the demographic for it. But the LEAF was just smooth, fast. All of a sudden cars were like, you know, amazing they can be silent and wow. So I liked the drive a lot, and it appealed to me that I could get a HOV sticker and get over the bridge -- I live Oakland Hills -- into the city easier when I needed to. And so is the, you know, it's the environmental thing that was also that the car was fun to drive, yeah.

Greg Dalton: John, you are very much of a driving enthusiast. Tell us how you got into an electric car.

John Kalb: Well I've been a BMW driver for many years and really appreciate the performance aspect of their cars. And I got involved in the electric vehicle industry about two or three years ago before BMW actually announced that they were having a car. And I test drove a lot of the other vehicles, models that were out there, but wasn't very satisfied with -- comparing it against my BMW driving experience.

So when I learned that BMW was going to have a program, I stayed on top of the -- what they're now calling the Electronaut program, and was fortunate enough to become one of 700 people who have this car in the United States right now.

Greg Dalton: And so this car is only available to a select few, and it's only leased right?

John Kalb: It's a lease-only vehicle for two years. I have to turn it back in 20 -- the early spring of 2014. And they're going to use that as -- they're using us as a test bed, if you will, to understand drivers' experiences as they continue to build their electric platform.

Greg Dalton: Are they going to take them out in the desert and crush them like General Motors did?

John Kalb: No, not.

Felix Kramer: Can I be there to see that?

Greg Dalton: Yeah. No, there's not going to be a movie. Okay. And just for the record, you wouldn't be caught dead in a Nissan LEAF, right?

John Kalb: I prefer the BMW driving experience. I like to think it's the ultimate electric driving experience.

Greg Dalton: Felix Kramer, you're a twofer. Tell us about your -- both of your plug-in cars.

Felix Kramer: Well, actually my story started as an advocate in 2006 when I got a plug-in Prius conversion. And the first thing I did was I wanted to find out how inconvenient it was to have this car. So I tested by going into my garage and plugging it in and driving and then coming home and unplugging it, and it added nine seconds either side to my day, my trouble. So it really was not much of an inconvenience at all. And that -- I've been an advocate for all this time and my dream came true when the Chevy Volt came to market in 2009. We got one, the first ones. And--

Greg Dalton: Number nine or--

Felix Kramer: Number nine, yeah. And Ron Gremban, the co-founder of CalCars, got an early one also. And we drove up to Nevada and picked them up, and we were in heaven, because these cars were finally on the road. And then a month and a half later, we got a LEAF because we needed two cars. So we have a plug-in hybrid, which we -- I actually -- many people with the Volts are getting 150, 200-mile average, you know, miles per gallon.

We're much lower than that because this is the car that we drive around in the neighborhood all the time, but we can take it up to Tahoe anytime we want. And so it's a -- it was the first commercial mass-produced plug-in car to be able to tour around in Tahoe and get back and forth to the Bay Area. And then for everyday driving, we got the LEAF because that's the first car out of the driveway every day because it's a little more efficient. It's got a longer range. So we use the LEAF all the time. When we're both driving, we use the LEAF and the Volt or when we're going for a long trip we have the Volt.

Greg Dalton: Which one is more fun to drive?

Felix Kramer: Well, they're each fun in different ways. The LEAF is kind of like a Colt, a sleek-down vehicle that's tremendously fun. All these cars -- the zero to 30 miles per hour acceleration is phenomenal, because an electric vehicle has instant torque. Zero to 60 can be pretty good. But office, the stoplight, you know, if you wanted to, you can just charge out there. The Volt is a more sophisticated car. Some people actually say they feel it's like a little bit like -- feels like a BMW. It's a very high-tech -- these are iPod or iPhone cars. They are super high-tech cars, but they also are just like real cars, and that's the most important thing about them. They just drive like any other car except better.

Greg Dalton: Let's talk about living with EVs and the Volt is a little bit different because it has that gasoline engine, so you don't have to worry about running out of juice. Let's talk with Andrea and John about living with EVs and how you have to plan your day, and the change you've gone through knowing that there's that limited range. Andrea?

Andrea Kissack: Well, I drive by bars now instead of mileage. They call the guessometer, but the mileage thing doesn't really give you the best idea. And there's a series of bars on the LEAF, I think 12 in total, so I can tell how long, you know -- and if it's a three-bar trip or a seven-bar trip, that kind of thing. But the -- there's a lot of -- If I go outside of my usual routine which, you know, if I'm driving to work is -- it takes a lot of planning, you know. If I'm going to go -- trying to go to Marin or go to Stanford, because the rollout of the infrastructure, the electric charging infrastructures, I think is fairly slow, and there's just not a lot of chargers out there, and it takes a while to charge even on a Level 2, which we might wanna explain the different charging levels. But-

Greg Dalton: Level 2 is just the faster charge, 240 -- we could--

Andrea Kissack: Right. Right.

Greg Dalton: --charge the LEAF in two or three hours versus eight hours.

Andrea Kissack: So there's the trickle charge, which is, you know, 120 unit, and the Level 2 is a 220 charge like your dryer is. And then there's this Level 3, and I think there's only two of those in Northern California right now, and those will charge a LEAF in something like 25 minutes, in the 2013 LEAF in maybe 15 minutes. So that will be a different experience. So I've run out -- well, I haven't run out. I've gotten close and I showed up at stations where the charger wasn't working. Drivers use a lot of different third-party apps to help us get around, and know if there are charging stations available, if it's online and working or not, and sometimes it's not and then you have to go drive a little further to find another one. So--

Greg Dalton: So John Kalb, you are a driving enthusiast, how is your life changed living in an EV, getting a ride in an electric vehicle?

John Kalb: I think the main thing that changed is I can't drive the EV as far as I would like sometimes, but that's not really range anxiety. I know the distances that I'm able to travel in my car. I live in Northern Marin, it's very easy for me to travel to San Francisco for this meeting and to return home, and know I have more than enough energy, and I don't have to charge here. But when I start to get to -- you know, as a kind of a Silicon Valley guy, if I have a meeting in Palo Alto, that begins to get a little dicey. Or if I have to start in Oakland and then go to Walnut Creek and then come back to Novato, I always have to be clear that I have a place to charge.

And that's the main difference, it's just kind of being aware of where am I going to charge during my

day.

Greg Dalton: Have you ever run out of juice?

John Kalb: I have not run out of juice yet.

Greg Dalton: Did you come close?

John Kalb: I have come within six minutess.

Greg Dalton: Felix?

Felix Kramer: So one thing to know is that AAA now has trouble trucks just like for regular cars. They'll give you 10 to 15 miles just -- when you call them. Another thing is the apps, you can also find an entire network of people who would say, my charging station on the outside of my house is available to all of you folks, just come, and I've used those sorts of things, drive-friendly community.

Greg Dalton: But if you go up to some stranger's house and plug-in, you're not worried about the dog or anything like that?

Felix Kramer: Well, it's all noted on the app, the information saying, you know, "Open the side door," or whatever it is. And people are really open to that. And so, you know -- but beyond that, more fundamentally, the owners of the cars, of the first cars, are self-selecting. They are people who have -- can do most of the charging at home. Because most -- if you're charging at home, you're paying 3 cents a mile. And you can't come close to that with any other car. So you know, most of the people, they're saying, "I can -- I want this car because right now without any infrastructure, this car really works for me." And many other people have two cars. And for every family in America, even though cars are marketed about, you know, you can drive this car to the Grand Canyon if you want. In fact, second cars are used locally. And so a 75-mile range LEAF is perfect as a second car for every family in the San Francisco Bay Area and places all over the country.

Andrea Kissack: But AAA, from what I understand, they have two trucks in the Greater Bay Area, the whole Greater Bay Area, that can actually handle that, to do that charging.

Felix Kramer: Yeah, they're just prototypes.

Andrea Kissack: So you're going to wait a while for that. But I do think that it doesn't behoove Nissan to have a bunch of stranded LEAFs on the side of the road. So, you know, responding quickly would be a good idea.

But you were also mentioning this third-party apps again, this crowd sourcing apps are kind of interesting, because they allow people to post their home. And then when you go somewhere if there's not a commercial charger available, there may be somebody in that membership whose home you can go use their charger. So--

Greg Dalton: We drove for the first time -- I have a LEAF, we drove to San Jose for a concert and had some people in the backseat who were joking about taking Zanax for range anxiety, and they posted it on Facebook. And immediately, people on Facebook said, well, if you run out go here or go there, and people are very supportive on Facebook. And there's actually these drivers groups on Facebook that my wife is really comforted to know that she posts something and there's responses immediately, go here, do this, plug in that, turn this screw. It's quite phenomenal. It doesn't kind of exist with many other cars. But this community is very small, but very evident and very knowledgeable.

Felix Kramer: One other thing is that car-sharing has taken off in a big way, and that's an adjunct to this. So if you have a car, if you're a one family -- one-car family, you can always rent a car that can go further or you can swap your car with somebody else or you can go to -- get around the relay rides or those kinds of places, and you can get somebody else's car and switch. And we've, you know, we've said to our neighbors "Hey, we're going away and we need a four-wheel drive vehicle, would you be willing to take my quiet, smooth, free-to-drive car for the weekend and lend us your big gas-guzzling SUV?" And we kind of get a lot of people saying, "We'd love to switch with you."

Andrea Kissack: But -- And then they have to charge, they need a home charging unit.

Felix Kramer: They use their 120 charger. So that's the -- this is the charger and people need to understand what -- they call it a charger, it's actually a cable set. So this side is 120, plugs in to any 50amp charger -- outlet, and this is the J plug, this is universal. Every car has this and it goes right in there--

Greg Dalton: Except for the Teslas, but that's the standard right now, right?

Felix Kramer: Yeah, and Tesla has an adaptor for it. But there may be some problems in the future, but as of now, there's universality in these chargers. So basically, you know, when I lend the car to someone, this comes with the car. And they can plug it in their garage and they can get plenty of -- they can get about 5 miles in an hour of charging. So if they want 20 hour -- 20 miles they can get it in four hours. But that's -- they only need it if the car is completely depleted, which is probably isn't anyway.

Greg Dalton: Let's get a sense of the audience here. And I want to -- I didn't know we're doing this. How many people own an electrical vehicle in the audience?

Andrea Kissack: Maybe you guys should be up here.

Greg Dalton: Okay. So that's almost half. How many people are considering or thinking about an electric vehicle? So that's why you're here, to get your money's worth. It's about half and half, close to half and half. Either have them or considering them. Let's talk about cost, because this is really complicated. Everyone knows what a gallon of gasoline costs. But converting this into kilowatt hour, I don't even know what a kilowatt hour is, how much it costs, that's really complicated.

John Kalb: Well, I think that's actually an interesting thing if you ask about living with an EV. And becoming aware of your actual energy usage and your interface with, in our case, PG&E has become a new thing for me. I didn't -- a year ago, I didn't really get all of that, but now I'm well versed in what it costs to drive the car, what the different tiers and rates from the utility company are, what the different options are. And it's been a very interesting and useful learning curve for my house and my family because now we're really aware of what our overall energy usage is, and it's kind of shifted how we think about overall energy usage. We wouldn't have gone there if we didn't have the EV.

Greg Dalton: So total dollars in your gasoline life, in your new electric life, what's your transportation bill?

John Kalb: Well, it's a -- well, the example I use is that it costs me about $1.30 to get 100 miles on my ActiveE charging overnight.

And that same amount of gas in my other car cost you know, 20 bucks, so the difference between a dollar 30 and 20 bucks, I'm coming out ahead.

Greg Dalton: Andrea and Felix, have you calculated the cost before and after?

Andrea Kissack: I have still not calculated. I didn't even know when I was driving a gas car what I was getting. I just know it's less. You know, I was maybe spending $50 or $60 a month on gas if I wasn't doing a lot of out-of-town trips. We have solar panels and so we are giving back to the grid, and something to say, too, but sounds like you all buy into this anyways. But that the -- as you drive each year and your car gets cleaner as the grid gets cleaner. Like in California where we have renewable goals by 2020 to have 33% of our energy coming from renewables. But anyway, so I don't know what it is. I just know that it was difficult to go through PG&E, there was no system setup because you've got your time of day use, tiers, all of that so you have to figure that out. What I do know is that it's very cheap to charge in the middle of the night at home and that's how most people charge.

Felix Kramer: And like if you do the Math, I mean, a kilowatt in -- for most people, is somewhere 8 to 12 cents a kilowatt hour. And you get about three or four miles on a kilowatt hour. So that's where you get the two to four cents a mile for driving electric. If you do the same Math for a 25 mile-per-gallon car at $4 a gallon, then you're talking, you know, about eight -- let's see, 25 -- I had that--

Greg Dalton: Much more, you know that it's much cheaper.

Felix Kramer: Yeah. No, it's eight to 50 cents a mile, depending on what kind of car you're driving. But there's other kinds of costs, too. There's the initial first cost, that's the one that a lot of people are concerned about, your operating cost are going to be way lower. Your initial first cost, if you only look at that, the car is going to be more expensive than many other cars. They're not exactly comparable because they have many more bells and whistles.

But your first cost are going to be higher, it helps that there's $7,500 federal tax credit and some states like California have $2,500 local tax credit as well. The underlying factor and fleets on mostly are the only ones who think about it, is total cost of ownership over the lifetime of the car. And even at today's current gasoline cost, let alone much higher in the future probably, you're going to be better off with your total operating cost for the car. And just think about it if you have your all electric vehicle, the only time you're going to take your car in to get service is to rotate the wheels, because there's nothing else that needs servicing in that car. So you're going to save on that side--

John Kalb: The fan belt, oil change--

Felix Kramer: Spark plugs.

Greg Dalton: All that stuff, that's -- yeah. Right.

John Kalb: All gone.

Greg Dalton: John Kalb, anything on that in terms of the cost, and is it better to -- you lease yours, it sounds like you purchased -- I think, Felix, you bought one and leased one?

Felix Kramer: Bought one and leased one, yeah.

Greg Dalton: Is it better to lease?

John Kalb: Well, on our whether it's better to lease, that was the only thing that was available in this program.

Greg Dalton: Oh, you didn't have much choice.

John Kalb: But I find the lease amount to be comparable with -- an equivalent BMW lease. So it's not like a -- there's not a premium for it, if you will. The cost that does get challenging is I decided to put a 240 system into my house, and I had to upgrade some electrical infrastructure in order to support that in a location I was trying to go to. And we are finding that a lot of drivers are really trying to figure out how to make that choice between just going with the Level 1 charge for overnight or feeling like they'd be able -- they'd like to be able to increase the speed from which they charge their car, you know, maybe it's the middle of the day and they got to pick their kids or you know, there are various scenarios where one charge overnight may not actually cut the whole story. So that can be a significant cost.

Greg Dalton: For me it was about $1,600, $800 for the charger, $800 for the electrician, we didn't have to do any upgrades, but that added to the high cost of the car.

John Kalb: Right. I was $2,200 to do the same thing.

Andrea Kissack: I got it for free, because I was eligible for the EV project in the East Bay and various parts of the Bay Area. So that's stimulus funds coming through the local air district.

Greg Dalton: And is that still available to people?

John Kalb: Yes. I think it is.

Andrea Kissack: Still available right now.

Greg Dalton: So free chargers if you join a project and make the deal as you share some information, so they kind of study your patterns.

Andrea Kissack: Exactly. Yeah.

Greg Dalton: So you get some equipment, they get some information, and it's a good deal. We're talking about electric vehicles at Climate One. Our guests are John Kalb, founder of EV Charging Pros, Andrea Kissack, Senior Science Editor at KQED, and Felix Kramer, founder of CalCars. Let's talk a little bit more about the clean electrons going into the car. Some of the auto companies are pairing with solar companies, is that a key part of this, you know, do you have to have solar, is that just a nice option to have solar on your--?

Felix Kramer: We found that about half the people who buy plug-in cars within a year or two go solar at the same time. And they're not directly charging the car, they're in the grid-tied system. So they're getting a lot of electricity in the daytime when the rates are very high, they go through a time of use rate. And then at night when it's cheaper they're charging their car. But effectively, they are offsetting the price of the car, of operating the car, with free energy. And that's huge and because this is Climate One, we're talking about exactly what Andrea was saying, which are these cars get cleaner as the grid get cleaner. They're already better even on all-coal state, a plug-in car is better than a gasoline car. But in places where there's a substantial amount of renewables or a lot even natural gas, they're better off. So these cars are part of these -- of a puzzle, they're a key element in a puzzle of getting the world off fossil fuels. And another thing it's important to say since we're all driving cars here, is reducing the miles traveled by mass transit or bicycling or walking or all the other kinds of things are even better than driving an electric car.

Greg Dalton: John Kalb, you've looked at the recent state of charge report that looks at different states and regions. Let's talk nationally a little bit about their cleanliness, relatively cleanliness, of

electric vehicles in other parts of the country.

John Kalb: Well, the Union of Concerned Scientists report came out recently and it basically stated, just as Andrea was saying, the cleaner your fuel is the cleaner you drive. And they rated a number of different -- actually every state, on how clean their energy infrastructure was. And of course California has a pretty significantly clean infrastructure now. There are states in the middle of the country that are basically caught in the coal cycle that are less clean. And when you look at the tailpipe to the actual use of all of the energy in the car in a state that's heavily coal dependent, it's not as necessarily of larger benefit as driving one of those cars here. But we are all moving towards a new kind of energy infrastructure. When you ask about solar, I believe that solar is the tipping point for electric vehicles, that when that we have a way to store solar energy collected during the day and charge at night off at that in a completely off-grid environment, we will have millions of people all of a sudden go for electric vehicles because they will completely be able to see how they're off gas. And that's going to be a very significant undertaking.

Greg Dalton: Well, let's talk about the sales so far -- this protection in terms of the adoption of electric vehicles. Barron's recently wrote in the last couple of days there's 20,000 electric vehicles sold through July, 60% of those were the Chevy Volt that was the dominant car, then the plug-in Prius, and then the LEAF. So 20,000 cars is what, 15 or so, 12, 14, 15 million cars sold in United States every year.

This is still very early days, very, very, small part of the market. As much as we might see them around the street in San Francisco, it's still very early days.

Andrea Kissack: I think the huge transition is with the hybrid plug-ins, and that's what people are going to go for because they--

Greg Dalton: That's -- the Volt is the number one seller, because it got a gasoline--

Andrea Kissack: Yeah, it wasn't getting great publicity early on, and I think that's partly just because it was new and people were, you know, as people are with new things. But I think that's the big thing. I think that's what people are going to go for, hybrid plug-ins over all-electric until you have an infrastructure.

Felix Kramer: Or you have a plug-in and have a second car as my family does and--

Greg Dalton: John, do you have a second car?

John Kalb: I have two other cars.

Greg Dalton: Okay, so -- okay. So any other comments on the adoption?

Felix Kramer: Well -- the really early adopters have mostly gotten their cars now. So the question is how we're going to get to the early majority -- when will we even get to them? And what plug-in advocates are discovering is that the best people to make the case for a plug-in car are the drivers. And so this new project that we're doing, Driving Electric, is going to enable people anywhere in the country to put in their zip code and connect with an existing driver who will show them the car and maybe give them a test drive and so forth. Because on my experience, when people get in the car, they suddenly -- all the preconceptions go away. And the first thing that happens is they shut the door and they hear this solid metal closing of the door, and the first thing they almost all say is, "This is a real car."

Greg Dalton: Yeah.

Felix Kramer: And they don't really believe that until that moment. And then they drive around--

Greg Dalton: They're expecting a golf cart, right?

Felix Kramer: Yeah, and then if they borrow it for a day, they realize, "Hey, this car would work for me." And so there's a process here. And the car makers are building great cars, but they need the help of this currently 40,000, 50,000 drivers who are the best advocates for this cars, they need their help to get these cars out into the marketplace.

Greg Dalton: I think your website is a good idea. But I also -- I often say that the audience here at Climate One is just as important as what happens up here on stage.

So some of you out here with EVs are those who can give test drives to the people sitting next to you who want to look at an EV, we might have some good things going around in the audience today.

John Kalb: I'd like to say that that's really true experience for me as well. I'm always giving people test drives, but I don't drive them, I let them drive my car.

Greg Dalton: Yeah.

John Kalb: And you know, I live out in West -- in Marin, and have easy access to the road Point Reyes. And when you put somebody in an all-electric vehicle and say go to Point Reyes and drive it like you see on the commercials, drive it fast, drive it hard, go around the curves, give it some speed, frequently it's a mind-blowing experience to their drivers. I like to call my car a slot car on steroids, because it really handles incredibly well. It's very well balanced, the batteries are structured in the vehicle so that the extra weight -- my car weighs significantly more than a normal BMW, but the engineers really thought about that in this particular environment. And it drives like a champ. And the experience -- I call it the EV grin, it's really hard to let somebody else drive your car and they get out of it and they're smiling, they're like, "Wow, that was fun." And that's the enthusiasm factor that we're actually able to impart to other people. And I agree with you, that's going to be how they get it.

Greg Dalton: And there is -- September 23rd is National Plug-in Day and Plug In America, Electric Auto Association, Sierra Club, they're cosponsoring events all over the country to give people these kinds of experiences.

Felix Kramer: I've also loaned people the car and seen that grin, and we should also mention that BMW has a new project here in San Francisco where people can rent these BMWs by the hour or by the minute.

Greg Dalton: Oh well, okay. All right. And that's a new program where -- which I think none of the other auto companies are doing, where you can actually go by the hour and -- 'cause it's difficult to try to rent even plug-ins or hybrids at Avis or Hertz, et cetera, you know, they don't have many of them at least that's when I checked.

But tell us a little bit about renting a BMW by the hour or minute here.

John Kalb: Well, the idea here is to get people to experience all-electric cars. And so they've setup a number of locations around the city where you can drive a car, pick one up and return it. And it's a car share Zipcar kind of, you know, sign up for a membership, credit card kind of thing. But you can take the car for as long as you want and it's time based. So if you're out for 38 minutes to drive across town, then you'll get charged for 38 minutes, it's that kind of program. And I think they're adding the ActiveEs in the program today. So--

Greg Dalton: And no annual membership fee, right?

John Kalb: Not to my knowledge.

Greg Dalton: So you could just do it once and--

John Kalb: I believe that's true.

Greg Dalton: --it could be a one-time fling and that's it.

Andrea Kissack: But, you see, I think auto manufacturers would be smart to reverse that as well, so people who bought the electric car but, you know, need to get to Monterey for the weekend or whatever, can go to the dealer and, you know, exchange their car, their LEAF, somebody else can try the LEAF and you can get, you know, a gas car that can get you down there since it's too difficult right now to make that trip on all-electric.

Felix Kramer: One thing I should mention is the Ford Focus has a slightly longer range than a LEAF. And the Tesla model S, which is out now and it's -- people are just saying it's the best car ever built, that has a choice for a 160, 240 or 300-mile range on that car. So at that point, all -- I mean it's an expensive car, but it's a five adult and two adult -- two kids car, and it's got a rear trunk and a frunk in the front, because there's no engine so it's got a front trunk, too. And so these cars are -- the range issue is gone with that car.

Greg Dalton: Right. Let's talk a little about people who live in multi-family buildings or renters. You know, if you got your own dedicated garage, that's one thing, but a big part of San Francisco and a lot of people in America don't have a dedicated parking space. John Kalb, you're on that business, what's available for them?

John Kalb: Well, I think that the charging infrastructure in multi-families is the big problem that the industry is trying to really solve today. And there are a number of pilot programs. There's one in San Francisco. There's soon to be one, I believe, in San Diego where the homeowners or the property owners will have a chance to install infrastructure. What we're finding in San Francisco is a lot of buildings don't yet have cars and they're using the idea of an electric vehicle charging station in their property as an amenity, as a way to encourage tenants to come to their property and actually rent their buildings. And for tenants who are in their buildings, an opportunity to actually stay, to be more greened buy a Leaf, buy any of the -- and be able to have a place to charge it. There are certainly some problems with homeowners associations and how they think about this and the liabilities. There's also a lot of issues that relate to deeded parking and how the parking layouts are structured. None of those are really insurmountable as long as a homeowners association is willing to make some serious considerations about what's good for their tenants, what's good for their business, and, you know, take a risk to install those.

Greg Dalton: General Electric makes a street side charger, at least, that I've seen for a year or so, but I haven't seen one actually deployed. Street side charging sort of, you know, in residential areas where people don't have large garages, is that happening? Will that happen?

John Kalb: It is actually happening, but that's mostly a municipal project as opposed to a private project. Most of the homeowners are private property so they don't have a chance to have the city install something on their curbs. There are some cities, especially in the North Carolina area, they're very high-tech focused down there. There are some projects that are driven by municipalities that are all about putting chargers on the street and creating lessons learned and use cases that would allow the rest of the country to understand what might be possible.

Greg Dalton: Felix Kramer.

Felix Kramer: I've met some people who'd done a surprising turnaround on this whole thing. They don't have any place to charge at home and they charge only at work, and that solves the problem for them.

Greg Dalton: And their work can provide -- their workplace provides free or low-cost charging, these people who work at Electronic Arts or Google or something like that.

Felix Kramer: Yeah. And there are issues involved in that because if they're providing a benefit, there may be tax issues and companies are dealing with those issues.

Greg Dalton: Let's talk about the infrastructure that's out there now in the Bay Area and what will be there in, say, 6 or 12 months, or some big things coming down the pipe in terms of charging infrastructure in the Bay Area. So Andrea Kissack.

Andrea Kissack: Well, I mean, first of all, I think that the infrastructure has rolled out. Everybody knew it wasn't going to roll out quite as fast as the charging companies PR folks were saying, but it's been quite slow and there's also a lack of coordination, so you have this Coulomb that has charge point and ECOtality which has this linked charger. NRG, the energy company, won a settlement -- not won a settlement -- in a settlement with California over long-term energy contracts basically agreed to install hundreds of new chargers fast in level two around the state. And so that's going to be -- you have cards that you swipe for each one of those. We finally just put one charger in the KQED garage and that's a General Electric that's going to take token. So you need that like all these cards and tokens and so forth. So I think it's going to be interesting to see what happens as -- you know, how fast these chargers roll out because I think that's really going to have to do with the adoption. And if we can get some more level three chargers out on the road at rest stops and in more convenient places. But you said some interesting things about charge point and stuff, that some of the companies are poised a little bit better than others. I don't know the competition.

John Kalb: I think the thing -- there is a lot of competition in the network charging business today and the business models in the business are emerging. So everybody has a different idea about how they think in a six months' or six-year period they're going to charge to this energy. Is it going to be free? Is it going to be by kilowatt hour? Is it going to be by a charging or a parking session? Will it be tied to your rent? And different companies are creating software which allows them to be flexible or, in some cases, inflexible to those kinds of user needs. I think we're also seeing a lot of confusion from the drivers themselves about what would really work for me and, you know, this is all part of the -- as you were saying, Felix, the early industry adoption cycle, and I think some of these things will get worked out over the next year to kind of help take us into a more mainstream position.

Felix Kramer: There's also some mistakes being made and at least -- the last thing you want is to have a charging structure built and then no one using it, especially in prime parking spaces where people drive by and see these spaces and never being taken. So it's -- the coordination levels are not very good and they could go -- they could do it wrong, but I kind of think this industry is stumbling through its way to success.

John Kalb: I actually have a story about the Oakland Airport where I needed -- I went for a business trip and I drove my car there and I had to charge, and there are chargers right at the front of the Oakland Airport and I drove in the daily parking and expected I could park there, but I found that I couldn't park there unless I went out and went back in in the premiere parking area, and that was a $38-a-day charge.

Greg Dalton: Oh, but the juice is free and there's -- installed its chargers in the short-term parking lot and they should install 120s in the long-term.

John Kalb: Right. So there's some things that need to be worked out. It was quite a surprise and I think that's the other thing you ask about living with the EV being a new driver is that there are surprises out there and the people I know are -- who are driving cars tend to be very flexible about this. We're not really shocked about it, "Oh, it's got to be a certain way." We understand we're participating in a really interesting experiment and possibly our grandchildren will see us with our electric vehicles as pictures of model T's, you know. So it's kind of cool.

Greg Dalton: Where does this go? Would it be consolidation? Will there eventually be some kind of one universal card or some of these companies will go away? Is it truly to say this is kind of natural messy birth of a new industry?

John Kalb: Well, it's like a cell phone industry, you know. When you first started a cell phone industry, you were on one network and you couldn't roam. And I think that what we'll see is roaming standards in between charging manufacturers in the near future both in the United States and in Europe.

Greg Dalton: Or ATMs. You could only use your ATM at one network.

John Kalb: Exactly.

Greg Dalton: Now, there's -- for a fee, you can kind of use someone else's ATM, someone else's cell phone network.

Felix Kramer: The other thing to mention is that there is now a charging network up and down I-5 from Canada all the way down to Washington and Oregon, and it will go through California within a year or two as well.

Greg Dalton: Andrea knows of a guy who said he's going to drive his BMW to LA and back in 24 hours?

Andrea Kissack: Yeah. In 24 hours, he's going to get to LA, stop at Canter's Deli, and turn around and come back. He's figured the whole thing out, it will only take $10, I think, and that is a fee that he has to charge at an RV park for dumping because they don't have any fees for charging. And then he's found free chargers all along the way through an app called Recargo, right? Yeah. So we'll see. He's going to call me halfway and let me know how he's doing.

Greg Dalton: Andrea Kissack is Senior Science Editor at KQED. We're also discussing electric vehicles with Felix Kramer, founder of CalCars, and John Kalb, founder of EV Charging Pros. I'm Greg Dalton. We're going to put our microphone out here and invite your participation. Come up and present one -- one part question or comments and we encourage you to keep it brief so we can get as many participants as possible.

Again, if you're on this side, we invite you to go out that door. The line starts with our producer, Jane Ann, who's over there. And while we're doing that, I also want to thank the fantastic crew we have here tonight, Jane Ann and Adam and Eva and Joe and Laura, who -- they're greener than us. They usually ride their bicycles around. Some of them don't even own cars, but maybe EVs when they get them. So let's have our first audience question. Yes, welcome.

Male Participant 1: Well, I'd like to add an important element to this discussion that somehow got passed over, but I just -- my background is that I was driving a Prius for 11 years -- 12 years, take

that back -- 12 years and I was almost at the point where I was going to buy one of Felix's conversion kits and have a converted Hybrid. Then the Leaf came along and so that swayed me. I now own a Leaf. I sold the Prius. But you know what, all those 12 years, it really stuck in my throat that I had to buy petroleum products. You know, that really got to me, especially when you read the headlines about what we did in Iraq, what we're going to do and--

Greg Dalton: So now you got your EV and you're happy. Is this a first?

Male Participant 1: I sleep well at night because I'm not contributing to that and I didn't contribute a nickel to the last quarterly report for British Petroleum and there's an obscene profits that they make.

Greg Dalton: Thank you.

Male Participant 1: I think that's something that you guys should not compare.

John Kalb: I sometimes wear a t-shirt that's called "Petrocide" which is a picture of a gas tank, and the nozzle, instead of going into cars, is going at your head.

And I believe that fossil fuels are destroying the world and so anything we can do to reduce fossil fuel use is the most important thing we can do in our lives.

Greg Dalton: Let's have our next audience question. Welcome.

Male Participant 2: Yes. I'm glad there was a discussion about sort of the mix in the grid and there's someone with a BMW. BMW is now currently pairing sort of these vehicles with what are known as renewable energy certificates so basically a way in the market to track renewable energy and you have solar on your house as well. From the consumer side of things, have you found that the companies have approached you at all with that looking at charging your car with 100% renewables or just, you know, deal with what you have in the grid, and as a consumer, would you like to see something like that in the future?

Greg Dalton: I will mention briefly that Ford has a partnership with Sun Power, similarly trying to pair solar electronic into their cars. Who'd like to answer that?

John Kalb: Well, I have been approached by BMW to purchase carbon credits through their program. I have not yet chosen to do so and I do think long-term that the vehicle-to-grid interface will become much more significant and when that does happen, a player that we really haven't talked a lot about will enter the mark and that is utilities. That they will actually be much more interested in controlling the charging sessions and setting more baseline prices for those people who choose to participate with them because managing the grid is their business and EVs definitely add a factor of X to that.

Greg Dalton: Felix Kramer.

Felix Kramer: Yeah. If you fast forward five -- probably 10 years from now, all the people who spend $5,000 or $10,000 for back-up diesel generator for their house in case of power outages which are somewhat frequent in some parts of the country, including here, they will be able to power the lights in their kitchen and their refrigerator with their car. The device that enables that to happen is now on sale by Nissan in Japan.

We did a renovation in our house and we re-wired the house so we could do that and so that we will be able to, in case of an outage of power to the house by our rooftop for the Voltaic System and

recharge the battery of the car at that point, and then if it's a cloudy day, we can -- with the volt, we can actually run the car and power the house.

Greg Dalton: Let's have our next audience question.

Male Participant 3: Thanks, Greg, for putting together such a great program. Very informative. I did get that EV Smile 'cause I test-drove my wife and I a Fisker which is their high-end equivalent competitor to a Tesla Roadster. It's a four-door -- it's a four-seater car so--

Greg Dalton: It's gorgeous.

Male Participant 3: It's gorgeous and it's got a lot of play down at Hollywood. But my question had to do with how -- we have a debate in our house about whether it's cost-effective to do so and this is just our own experience. My marginal rate for my electricity is close to 40 cents a kilowatt hour because my house is very energy-intensive and so I'm a tier-4 house as far as what PG&E charges me and we don't have time-of-use pricing. I think we are quoted 8 to 12 cents per kilowatt hour if you average it over my bill overall the hours, but at the margin, I take close to 40 cents. So--

Greg Dalton: Are you growing pot in the closet, is that -- [laughter]

Male Participant 3: No, no. I just have -- I have a hot tub and a swimming pool, and I live in a hot climate and I got two air conditioners.

Greg Dalton: Oh, yeah, okay.

Male Participant 3: Okay. So my question then comes now to, you know, obviously if I had time-of-use pricing, I could reduce that, but give me a feeling for -- do you go to the average rate to calculate or should I -- am I misthinking about this at my marginal rate because I'm going to be adding this amount of electric consumption on top of what I already have.

Felix Kramer: In your situation, you could get a separate meter for your electric vehicle and you could charge it at 5 to 10 cents a kilowatt hour, just the electric vehicle.

But you're the kind of person who, in looking at the whole big picture, might decide to go solar. The other thing is that in terms of pricing, we're constantly asked about paybacks and so forth, but no one buys a car based on that kind of calculation. They buy it based on features and if it gives them what they want. It just happens you can do the calculation, but you never get someone to say, "I'm buying a V8," and the friend says, "Buy a V6. There's a better payback on it." Or you never get someone saying, "I'm putting stainless steel appliances in my kitchen," and someone says, "There's no payback in that. Why are you doing that?" People buy features in vehicles.

Male Participant 3: Thank you.

Andrea Kissack: But I think we need someone like Felix at our local utility who can advise us on, you know, what's the best rate plan and -- based on our driving and our energy use, and that's not happening.

Felix Kramer: At the end of the year, PG&E will have that calculator for you based on your actual bill.

Greg Dalton: It is complicated 'cause when you get the EV, if you have solar or not, you got to choose a rate plan, the time of use, it's complicated. I got the price levels of my garage 'cause I can't remember what they are and they change summer and winter and--

Felix Kramer: You can set the timer on the car so that it automatically charges at night.

Greg Dalton: Right, right, which is about 4 cents a kilowatt hour, very cheap. Let's have our next audience question.

Male Participant 4: Hi, this is for John. You have three cars, one's electric?

John Kalb: Yes.

Male Participant 4: So when you go out to drive a car daily, I'm curious, which one do you go to automatically?

John Kalb: I take my electric car.

Male Participant 4: You automatically choose the electric--

John Kalb: Automatic is my go-to car. I don't drive my 330i anymore, except if, you know, I'm going beyond the distance.

Male Participant 4: And I have a question for the panel, if it's all right?

Greg Dalton: Sure.

Male Participant 4: I'm reading I think the Sierra Club Magazine, with charging stations, you won't have to plug in anymore. That's coming -- technology is coming along, is that right?

Felix Kramer: Wireless charging, yeah. You drive over a mat and it's inductive charging. There's a small loss, power loss, in doing that, and it is a convenience, but it can't be the only thing you have because then if you want to charge at your friend's house, they don't have the mat.

So there's a chicken and egg problem. But that's, I think, addressing a non-existent problem which is the inconvenience of putting the -- of plugging in your car just like you plug in your cell phone.

Greg Dalton: So that's sort of a gadget that -- a gimmick that doesn't really add any feature--

Felix Kramer: It adds some additional universality to--

John Kalb: You know, what's interesting though, you say it's like a cell phone, is that the company that's really promoting that is Qualcomm which is a very large cell phone company, so there is some kind of connection.

Andrea Kissack: It's still pretty much in the research phase at Stanford, isn't it?

Felix Kramer: It's a couple of years out.

Andrea Kissick: Yeah.

Greg Dalton: Let's have our next question. Yes, welcome to Climate One.

Male Participant 5: Hi, there. Mike Kerrigan with City Car Share. I just want to point out that City Car Share is actively adding electric vehicles, plug-in vehicles, to its fleet. Currently we have 10 plug-in Priuses with -- that go about 40 miles electric, one volt --

Felix Kramer: 40? I thought the Prius was 14 electric?

Male Participant 5: No, this is a converted Prius.

Felix Kramer: Oh, okay.

Male Participant 5: With a 10-kilowatt hour lithium-ion battery system.

Felix Kramer: So you've upgraded them okay?

Male Participant 5: We've upgraded them. We have two Leafs, a Mitsubishi i-MiEV and a Chevy Volt, and we're about to add two Ford Focus electrics to the fleet with a goal of being a 30 electric vehicles in a 400-car fleet by the end of the year. And our experience so far with members of City Car Shares has been really excellent. People love the cars. They love driving them. They -- we have not had any really issues at all with them. So we couldn't be more--

Felix Kramer: Are those cars cheaper for City Car Share to buy and operate the total cost of ownership or--

Male Participant 5: Well, I think that remains to be seen. We're -- because we're non-profit, we can't directly take advantage of the tax credit situation.

Felix Kramer: So you pay full price, okay.

Male Participant 5: Well, we've been fortunate to find leasing, that means it will give us a little bit of capital reduction on the cars, so that's been helpful to us. But I think there's a lot of people here who said, "We're not doing this just because it's less expensive. We're doing it because it's the right thing to do."

City Car Share has a goal of having a very green fleet, you know, all around. In fact, we have a goal of being 50% alternative fuel by 2015.

Felix Kramer: Lots of ways to get your hands on an EV out there through BMW, City Care Share, others if you'd like to get them--

Male Participant 5: And we welcome BMW to the fold. Glad to see them here.

[Applause]

Greg Dalton: We are talking about electric vehicles, and our guests are Andrea Kissack, Senior Science Editor of KQED; Felix Kramer, Founder of CalCars; and John Kalb, Founder of EV Charging Pros. Let's have our next audience question.

Male Participant 6: I have two questions. One is sort of a practical one I just don't quite grasp yet; I'm not a driver of it. If I'm getting a charge in San Jose and I want to drive another 50 miles and you have to stop and get that charge, how long does it take you to get that charge, or if you have to drive 100 miles, is that -- I don't have a consensus to how long that is. And the second question is a broader question which is I realize the focus here isn't on money, but the cost of these cars is pretty excessive compared to other potential cars, even the Prius. And do you have a sense with your knowledge of the industry on whether or not the cost of these cars will be able to go down soon?

Felix Kramer: Right now, if you're in San Jose, you can drive and stop and you top off in Palto Alto, 80% of the charge of your Leaf in 30 minutes and there are places like that that are coming along. So basically, 120 volts is about five miles in an hour, 240 is about 10 to 15, depends on some other

factors, and the fast charge is half an hour.

John Kalb: So just to kind of give you a little bit more insight into what's happening with charging, not to get too technical here, but the car itself has a charger and the car itself has a battery. And the charging infrastructure that you plug in is simply a flow of electrons; it's either fast or it's slow.

And your car -- and the battery size actually determine how fast you can charge your car. So I can get my 100 miles in my BMW in four hours, four and a half hours 'cause I have a very fast charger, 7.1-kilowatt charger, inside the car. The Leafs have a 3.3 --kilowatt charger, so they can't allow as much energy into their system as my car can. And so the details of each car that's a feature, just like we were talking earlier about the, you know the difference between one engine type and another engine type. It really depends on how big is your battery, you know, is it a small battery like the Leafs or Volts tend to have smaller batteries. My car or the Teslas have bigger batteries. So the truth is that there is no specific one answer that you can say, "Oh, it takes this much time to charge a car because it's car-dependent.

Andrea Kissack: Although the 2013 Leaf, they say they're trying to get the same size, so it would charge in twice the time.

Felix Kramer: On the cost, basically the Leaf after the federal tax and state tax credits is about a $20,000 car and that's a pretty good deal. And the lease is, as John mentioned, you can lease plug-in cars for $200 to $300 a month. Some of them there's no down payment.

Greg Dalton: My Leaf was 32 out the door. How are you getting to 20?

Andrea Kissack: How did you get down to 32? I thought I got a good deal. [Laughter]

Greg Dalton: I'm a tough negotiator. But you know that 32 minus 10. No, no. It was 42 minus 10.

Andrea Kissack: Oh, 42 is not good. You probably could have it down to 37.

Greg Dalton: I got hosed. Oh, all right. 2012?

Andrea Kissack: No. Okay.

Greg Dalton: 2011 was cheaper. Please don't tell me I got -- okay, let's have our next audience question.

Male Participant 7: Hi. I just wanted to address something that maybe some prospective electric car owners are concerned about and that's longevity. I have a 2002 RAV4 EV, has 106,000 miles on it.

Everything in the drive train is original. The batteries were checked out in the fall of last year, and as for all intents and purposes, we can see that it's going to go another 50,000 miles at least. So that fact that a car can actually last that long without having belts, spark plugs, tune-ups, oil changes is incredible to me, and it's one of the main reasons that I drive electric cars.

Greg Dalton: So to get to a question, people often raise questions about he battery life. I've had people on this stage here before saying, "Well, your battery's going to run out. That's going to be reflected in your re-sale value. Battery is only guaranteed for, what, eight or nine years, 100,000 miles--

John Kalb: 100,000 miles, that's a long time. And basically, the expense with the Prius battery was

at $4,000 or $5,000 battery when it came out, and then a number of years later, it was around $2,000 or $3,000 battery. And somebody who really needed it because they've driven so much that was beyond 150,000-mile warranty in California, they went to a local shop and they got a battery from a crash car, perfectly good battery, for $700. So there's a lot of different solutions. And long term, we think batteries are getting better maybe 15% a year and cheaper 15% a year. They're chemistry. They're not physics. So they're not getting cheaper like hard drives or memory. But 15% a year is a lot. And so 10 years, when the warranties are out, or eight years from now, the batteries are going to be a lot cheaper.

Greg Dalton: And, John Kalb, do you think there's going to be some -- the industry is going to solve some problems here for use of those degraded batteries that maybe 70% of what they use--

John Kalb: Well, it goes back to that solar question again is that how do you actually store solar energy during the day in your own environment, so there are a number of conversations going on in the charging and battery world, if you will, to say, can we pull out a battery when it's gone beyond its use of life to drive a car and can we put it in a solar array and actually use it to store and serve battery charging?

And I think that that's a very exciting future potential. There's also a number of companies that are involved in battery sharing. Better Place obviously comes to mind where in a deal with a car manufacturer, they actually engineer a way for the battery to be easily removed in a charging station, then they install a new battery and the person goes away within, you know, five to seven minutes. But in that case, Better Place or Renault actually owns the battery and the owner of the car does not -- is not paying for that battery. It really--

Greg Dalton: That's had a tough slog in the States, that's not going so well [crosstalk]

Andrea Kissack: Yeah. Israel, they're doing a little better in trying that out, yeah.

Greg Dalton: Right, in Europe. Let's have our next audience question. Welcome.

Male Participant 8: I got a quick comment/clarification on the financial side. The rebate issue you see $10,000 benefit upfront from the 2,500 state, 7,500 federal, two things to be aware of. One, the 2,500 state rebate is subject to California financial problems in the future and the 7,500 federal is a tax credit which you only get if your bill adds up to that much. So it's only a one-time if you're only going to take advantage of it to the extent you get $7,500 tax bill.

Greg Dalton: Quickly, Felix Kramer, I think you said the Obama administration wants to make that $7,500 cash on the hood by California?

Felix Kramer: They're proposing -- raising it to 10,000 and making it a rebate instead of a credit. It's also subject to the alternative minimum tax, you know, right now as a credit. So those are issues. So we don't know what's going to happen. The federal -- the state credit is actually dependent on a revenue stream that's somewhat separate from the financial issues, but the legislature still has to--

Greg Dalton: But none of these things are guaranteed forever. They could go away.

John Kalb: There's also one interesting thing going on in California which is the California legislature is looking at being able to allow auto dealers to finance chargers and the installation of those chargers in people's home as a price -- as a part of the price of the car. Now, whether that goes to the legislature or not remains to be seen, but they are trying to definitely make it easy to purchase cars.

Felix Kramer: There's a point on that charging issue. It can easily cost $2,000, $3,000 'cause you need electrician, need a building permit and all that to get the 220 charging station installed. There are after-market adaptor kits for about $250 that will allow you to plug in to an electric dryer outlet.

Greg Dalton: Right.

Felix Kramer: So it's very, very cheap, if you go that way.

Greg Dalton: Thank you. Let's have our next audience question here at Climate One. Yes?

Male Participant 9: I love your stories earlier about the social -- smartphone apps that allow you to learn from other drivers where's the nearest place I can plug in and is it working, is it occupied, things like that. It shows it's really a vibrant community. I'm wondering what kinds of forums there are, either social media or elsewhere, to share your enthusiasm and just your basic experience with non-EV drivers, much like Climate One is doing tonight, a wonderful service. Is there an ongoing forum for this?

John Kalb: There are many. There's plug-incars.com and many others. In the Bay Area, there's SF BayLEAFs which is a great energetic organization. The new non-profit effort we're doing, drivingelectric.org is intended to be a community of drivers as well.

Greg Dalton: The best thing is when someone comes up to you on the street, this probably has happened to all of us and they say, "Ooh, cool." My wife says it's like having a cute dog, people want to come up and talk and tickle and find out about it. That happens quite a bit which is -- John Kalb.

John Kalb: I'd also like to put in a plug for Charge Across Town which is an event that's coming up in San Francisco which is designed to help people see the car so -- at Justin Herman Plaza, there'll be, you know, 14 different models of cars. There'll be car ride shares. There'll be an opportunity for the general public to learn. And I think that's really where a lot of initiatives are going in terms of rather than a one-on-one kind of scenario, which we do when we pull in to the shopping cart -- shopping mart.

But the public-private organizations are trying to go for larger events just to kind of raise the visibility.

Greg Dalton: Thank you. Let's have our audience question. Yes, sir?

Male Participant 10: Thanks for an informative forum. Regarding the federal task credit, my accountant looked at how much I was paying taxes on it and said, "Well, we can only take a portion of the 7,500 this year and then we'll take the rest next year." So it--

Felix Kramer: You're better off leasing if there's a question that way. Then the leaser takes the entire credit and you get a lower lease price.

Male Participant 10: I like buying. I don't like leasing.

Greg Dalton: We're all learning here today. I learned that I overpaid. Thanks, Andrea. Okay. All right. Let's look into the future. Is the success of electric vehicles assured, Felix Kramer?

Felix Kramer: Not by any means. There could be a big deal in Washington with -- which -- on taxes, which could kill the tax credit, and if that happens, I think that the future of the cars is very much in doubt at this point. They really need that boost to get traction in the marketplace. And the second thing is I think we've gotten by a lot of bad publicity, but there's still a tremendous amount of

misinformation out there. And so the advocacy organizations and the automakers are doing their best. GM finally started a good ad campaign about people why they love their Volts. Instead of just having kind of strange ads, they still don't show people in the car is driving them. So the marketing can be a lot better, but we can't guarantee, we can't sit back and say this is going to happen automatically.

Greg Dalton: Andrea Kissack, where is this going?

Andrea Kissack: We'll, I think that the car companies could be doing more marketing. When the plug-in Prius came out, there was like a stealth campaign. I mean, it was under the radar. You heard nothing, and because Prius wanted the plug-in Prius to be part of the family of Priuses and not stick out as something unusual or weird or something. So I think it's really going to come down to the incentives, too, because these cars are already expensive and take some of the least of the expensive ones and not have a federal incentive. That's going to be a big deal because the state ones have already been cut from 5,000 to 2,500.

Greg Dalton: And there's real reasons -- Toyota is not that keen on plug-ins 'cause they think they own the Hybrid space. And different auto companies have made different bets on battery electric technology and some of them -- Felix said GM has a lot more riding on the Chevy Volt, Ford's kind of holding back a little bit, some of the European companies don't really have much except for maybe BMW, Daimler doesn't have an electric car on the market, so there's -- the auto companies have different bets on the table in terms of how far they -- how successful they really want EVs to be.

Felix Kramer: I do want to say one other thing because we're at Climate One. If we ever have the kind of crisis in the fuels, oil supply or real awareness about how we -- what we have to do in this world, at that point, we'll look around and we'll say, "Well, what can we do? We can get cars off oil really quickly if we want to. We can get that cars off oil in 10 or 15 years, most of them, by building a lot of new electric vehicles, by converting a lot of vehicles and by cleaning the grid at the same time. And that's something that is not in the cards at this point, but it might be and I certainly hope it will be.

Greg Dalton: John Kalb.

John Kalb: I think that when you look at the evolution of the electric vehicle from a global perspective, it's inevitable that it will be successful. The two things that really are happening is almost every single auto manufacturer has made long-term marathon-like plans to put out electric vehicles in one form or another as a part of their fleet, and when you talk to those auto industry executives, they say, "Don't talk to us about the sales numbers for today, we're interested in what's going to happen 10 years from now. That's how long it takes this thing to get hold in. We're all in. We're going to be doing that."

And then the other thing that's interesting to me is the global perspective. We haven't talked at all today about the Chinese, but the Chinese are making significant inroads in preparing their consumers for electric vehicles. The whole idea of electric scooters and motorcycles is something also we haven't talked about but is a significant opportunity in emerging markets in the rest of the world, and I just cannot see that this is not going to be successful long term. I'm a definite enthusiast.

Greg Dalton: We'll have to end it there. Our thanks to our participants today, John Kalb, founder of EV Charging Pros and an owner of a BMW ActiveE; Andrea Kissick, Senior Science Editor at KQED and owner of a Nissan Leaf; and Felix Kramer, founder of CalCars and owner of a Chevy Volt and Nissan Leaf. I'm Greg Dalton, owner of a Nissan Leaf. Thanks to you all for coming to Climate

One today.

[Applause]

[END]