California Hydrogen Leadership Summit
Legislative Keynote
Monday, June 17, 2024

Good morning. I'm very grateful for the invitation to speak today as part of today's program.

[For those of you whom I may not have yet met, I'm State Senator Josh Newman, and I have the honor of representing California's 29th Senate District, which includes parts of Orange, Los Angeles and San Bernardino counties.]

[I currently serve on the Senate Committees on Transportation; Energy, Utilities & Communications; Budget & Fiscal Review, and the Budget Subcommittee #5, which includes transportation within its jurisdiction. I'm also a member of the Senate Select Committee on Hydrogen Energy as well as Chair of the Senate Select Committee on Transitioning to a Zero-Emission Energy Future, which I had created expressly to explore some of the issues facing you and your companies and trade associations.]

Like everyone here today, I'm a firm believer in the promise of hydrogen as a key to the decarbonization of California's economy. As many of you may also know, I am, not uncoincidentally, the committed owner and driver of a hydrogen fuel cell car. I bought my first Toyota Mirai in early 2021.

It's from this vantage point, as both an everyday participant of the hydrogen economy and as one of the policymakers responsible in part for that economy's development and growth, that I look at the current state of play in California with real concern. I've become increasingly worried that, absent dramatic changes, California runs the very real risk of not only falling well short of its ambitious decarbonization and clean energy goals, but stranding massive amounts of public and private investment in the process.

This is especially frustrating to me, since by all indications we started out on the right foot. But somewhere along the way, for reasons that are generally not the fault of the various stakeholders in this room, California's ambitious plans for decarbonization, and the role of hydrogen within those plans, run the risk of becoming irreconcilably misaligned.

The canary in the coal mine on this, as it were, is light-duty hydrogen. As some of you may recall, fully two decades ago, in 2004 then-Governor Schwarzenegger issued Executive Order S-07-04, the State's first policy directive promoting the use of hydrogen and fuel cell technology, which he enthusiastically promoted, in his inimitable style, as the "Hydrogen Highway."

In 2007, the Legislature appropriated the first funding for this directive with the establishment of the Clean Transportation Program, and in 2013, California expanded its commitment by allocating up to $20 million a year for the development of at least 100 hydrogen refueling stations. Automotive OEMs responded by bringing hydrogen fuel cell vehicles to the California market. In 2014, Toyota launched the Mirai, and in 2016 Honda started offering a hydrogen fuel cell model of the Clarity.

In 2018, the state, with the support of then-Governor Brown, doubled down on its original commitment, setting a target of 200 hydrogen refueling stations by 2025. That number was both fairly modest and very important, since it represented, by CARB's estimation, the number of retail stations needed to get the fuel cell ecosystem to self-sufficiency, from which its subsequent expansion would proceed organically, *a la* the classic virtuous circle model, where as demand for vehicles grew, opportunities for both OEMs and providers of fuel would mutually reinforce the growth and efficiency of each other.

As with so many great plans, it seems that reality, and especially politics, has gotten in the way. California's current statewide network of hydrogen fueling stations is nowhere close to that 200-station goal. In fact, as of right now, the number of stations currently in place, across this massive state with nearly 40 million people and

roughly 30 million cars, is 54, and that's actually a misleading number, since on any given day somewhere between 30 and 50 percent of them, sometimes even higher, are either closed or inoperable for whatever reason.

This failure of implementation is coupled with the unfortunate reality that, despite substantial investment over the past decade, the price of retail hydrogen for fuel cell drivers remains well above the cost of conventional gasoline. When I bought my first Mirai in early 2021, the average cost per kilogram of hydrogen was just over $13. On a normalized basis, that would translate to the equivalent of roughly $6.50 a gallon for gasoline. At that price, a pollution-free fuel cell vehicle was a pretty good bet, especially when buttressed by the very generous subsidies provided to drivers at purchase in the form of pre-loaded debit cards with $15,000 of value on them.

Those OEM subsidies were supposed to provide a temporary cushion and a bridge to eventual fuel cost parity for drivers of FCEVs, as the combination of increased volume and system efficiencies brought the cost of retail hydrogen down to the same or less than gasoline. Unfortunately, something much closer to the opposite has transpired, as the cost of retail hydrogen has increased nearly three-fold over the past three years.

At a current average price of roughly $33 per kilo statewide, retail hydrogen costs the equivalent of about $15 a gallon. That's obviously not sustainable, as my fellow Mirai drivers will tell you, and as they tell me virtually every time our paths cross paths while refueling.

As you're probably aware, the contributors to that rise in price are many. System shocks in the natural gas market, supply chain problems around the availability of hydrogen at wholesale, especially gaseous hydrogen, dispenser equipment challenges and failures, the impact of the rapidly evolving LCFS market—all of these issues, as well as shifting sentiment at both the consumer and policy levels combine to call into question the long-term viability of California's light-duty hydrogen fuel cell platform.

Having said all that, I'm still a believer in the broader value proposition and prospects for hydrogen in California. I dwell on the light-duty situation for a couple of reasons, and not just because there's a pretty good chance that within the next few years, I'll have a white Toyota Mirai *objet d'art* sitting in my front yard. Rather, it's probably a good barometer of the state of play overall in relation to the hydrogen innovation sector, its role in California's plans for decarbonization, and both the state's commitment and competence in achieving our goals.

First, as I point out to my colleagues and committee staff on a very regular basis, California's ostensible national leadership position in light-duty hydrogen fuel cell vehicles didn't happen by accident. Two governors and multiple legislatures, over the course of more than a decade and a half, articulated and funded a set of policy goals that included light-duty hydrogen as part of the solution to transitioning California's transportation fleet to zero-emissions by 2035.

If we're serious about meeting that deadline, there are a whole host of driver use cases that will not be satisfied by battery electric vehicle options within that time frame, such that light-duty hydrogen has to be a part of that mix. Maybe not even with BEVs, but certainly at a meaningful scale, probably something along CARB's estimate of 30% of the total fleet. To get there, we're going to need a robust network of fueling stations and an affordable market for fuel.

Second, and as my friend Jack Brouwer from UCI argues so persuasively, the progress and learnings we would reasonably expect from a well-funded, properly supported light duty platform in California are essential for the deployment of hydrogen and fuel cell technologies to the heavy-duty space, where hydrogen offers a host of advantages over electrification in hard-to-decarbonize sectors like goods movement, maritime, and industrial processes. It's unlikely we'll have the latter without the former.

And third, to the extent that the state of California, through the relevant EOs and regulatory policies, made a commitment, via a plan, and via the CTP, it's important to remain attentive to the degree to which our seriousness and effectiveness around that plan is either proven out or, in the case of light duty, allowed to be undermined and hollowed out.

In that event, everyone in the policy sphere should be very concerned about the kind of market signal that sends, especially in light of the state's big plans for the ARCHES initiative, which secured a record hydrogen hub grant partly on the promise of how the DOE's $1.2 billion would be leveraged to generate billions more in private investment toward the development of clean hydrogen at scale in California.

Over the past year and a half, I've been on two legislative trips to Japan, to learn, among other things, about their plans for rebuilding their energy system and economy around hydrogen. This is a country that built itself into a global manufacturing power from basically scratch starting in the late 1800s and then rebuilt its economy from rubble following World War II. Which is to say that they have some experience, and more than a little credibility, with big plans.

In talking to Japanese stakeholders, members of the Japanese Diet, ministerial officials, industry leaders— what was most striking to me about their approach was the shared clarity of their vision. They have a very clear framework and rationale for their plan to decarbonize their economy through hydrogen: first, by achieving energy independence, then commercializing the follow-on benefits to give Japanese companies and Japan's export-centric economy an edge in a rapidly evolving global environment where other countries are working toward decarbonizing their own economies as part of a concerted, increasingly global effort.

That's actually a stark contrast to our approach, where it seems fair, at this point, to ask if we here in California have as clear a rationale and frame for our efforts. "California leads." We hear that all the time. I think, as it relates to the transition to clean transportation and energy, it's more than fair to ask what that leadership entails and whether it's being properly articulated and applied.

On one level, our governor, policymakers, and other advocates deserve credit for seeking strong responses to the hazards of climate change. They deserve credit for their courage and commitment to what is clearly an eminently righteous mission.

On the other, in a world of limited resources and time, I believe it also makes sense to ask another, very reasonable question, one which I find is strikingly absent from most of the legislative policy debates around climate response and decarbonization. In a world where California, America's most populous state and the 5th largest economy in the world, still only represents a very small share of global climate emissions, what are the real benefits if we meet our 2035 and 2045 clean energy goals and the rest of the world still lags behind, especially if the costs to Californians are to the detriment of our quality of life and the competitiveness of our economy?

Against that backdrop, how then should we define progress, and how best to apply a cost-benefit rubric that properly informs that work while prioritizing our investments and other incentives? It seems to me that, especially as it relates to hydrogen and other decarbonization plans, these are the questions that really need answering. Instead, the temptation within policy circles has too often been allowed to devolve into a simplistic debate over which is better, hydrogen or electrification, molecules versus electrons, Pepsi versus Coke, In-N-Out versus Shake Shack (I take Shake Shack, by the way). This doesn't bode well for our collective ability, especially in a newly constrained fiscal environment, to simultaneously support and deploy both technologies in the service of our very ambitious goals.

Having said all that, I'll leave you more or less exactly where I found you when I spoke here last year. For better or worse, the programs, timelines, and resources that are going to need to be aligned in order to make plans, send market signals, secure investment, and make progress, are going to be materially impacted by an impressively small group of people, drawn from all over this great state and from all walks of life, but very few of whom know a whole lot about, say, science, transportation planning, industrial development, or even the business of business.

California's overall approach to decarbonization needs to change, especially at a top-line level, to be more holistic, less ideological, more pragmatic, and more ROI-centric. It's going to be up to all of you to help reshape the context in which these important, complex, and nuanced ideas are being considered and applied. Now, more than

ever, my colleagues need your input, your ideas, and your advocacy if we're going to have a realistic shot at correcting course and averting a series of suboptimal outcomes here in California.

For my part, I'm glad to do anything I can to be of service as part of that. Thanks again for the invitation today, and have a great conference.