



Clean, Low Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

April 2, 2014

Capitol Plaza Ballroom

1025 Ninth Street, Sacramento

The second annual Clean, Low-Carbon Fuels Summit took place on April 2, 2014 in Sacramento. Private sector fuel providers, industry stakeholders, and government leaders came together to discuss cleaner fuels in California, challenges and opportunities for this sector, and the role of policy. Key themes are below, followed by session notes.

- To meet our clean air goals, we need to replace oil with a diversified portfolio of cleaner, lower-carbon fuels.
- California's fuel policies – LCFS and cap and trade – are well-designed and working as intended.
- Financing and incentive programs remain an important piece of the puzzle for addressing scale and penetration.

*"The **AB 32 fuels policies are working.** The industry is responding to market signals by scaling up production of cleaner vehicles and fuels, translating into more choices for consumers as well as cleaner air. To meet our air quality and climate goals, and to continue innovation and bring more clean fuels to market, **we need to stay the course with the AB 32 policies including the Cap and Trade and LCFS programs** and begin the work on moving them beyond 2020."*

Richard W. Corey, Executive Officer, California Air Resources Board

*"AB 32 fuels policies, including both cap and trade and the LCFS, are critically important. Businesses and entrepreneurs are investing in cleaner, lower carbon fuels because of the policies we have put in place. **Continuing to send clear market signals is essential for encouraging the production of cleaner fuels and reducing toxic pollution that affects the health of our communities.** Our success has broad implications, as California sets trends that can shape national policy."*

Senator Fran Pavley

More than 120 people took part in the Summit, including attendees from over 50 different fuel and vehicle companies and stakeholder organizations. This diverse group included industry leaders representing the broad array of clean fuels, including but not limited to advanced biofuels, renewable natural gas, and electricity.

The **Summit** was hosted by CALSTART in coordination with the California Electric Transportation Coalition, the California Natural Gas Vehicle Coalition and Environmental Entrepreneurs with generous support from our sponsors:

SILVER SPONSORS



BRONZE SPONSORS





Clean, Low-Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

April 2, 2014, Capitol Plaza Ballroom, Sacramento

Agenda

Kick-off, Welcome, and Policy Landscape

Welcome and Kick off: **John Boesel**, President and CEO, CALSTART

Opening Keynote: **Richard Corey**, Executive Officer, California Air Resources Board

Clean, Low-Carbon Fuels Market and Technology Progress Report: Clean fuel and vehicle companies discussed market penetration and viability of a wide range of clean, low-carbon fuels scaling up throughout the state.

Moderator – **Mike Waugh**, Chief, Transportation Fuels Branch, California Air Resources Board

Bill Boyce, Supervisor, Energy Research and Development, Sacramento Municipal Utility District

Graham Ellis, VP of Business Development and Fuels, Solazyme

Ed Harte, Low Emission Vehicle Program Manager, Southern California Gas Company

Eric McAfee, Chairman and CEO, Aemetis

The Role of Policy: Supporting California Leadership in the Transition to Cleaner Fuels: Industry leaders representing a wide range of fuels will discuss the role of California's Low-Carbon Fuel Standard, the AB 32 GHG cap and trade program, and other policies in driving investment in cleaner fuels.

Moderator – **California Senator Sam Blakeslee** (retired), Founding Director, Institute for Advanced Technology & Public Policy at Cal Poly

The Honorable Bill Quirk, California State Assembly

Harrison Clay, President, Clean Energy Renewable Fuels

Eileen Tutt, Executive Director, California Electric Transportation Coalition

Lily Wachter, Strategy and Finance Manager, Edeniq

Ryan Lamberg, Executive Director, California Biodiesel Initiative

Perspectives on Cleaner Transportation: Needs, Challenges, and Opportunities: Industry leaders and legislators discussed their interests in clean fuels, innovation, and opportunities for progress.

Moderator – **Susan Frank**, Director, California Business Alliance

The Honorable Chris Holden, California State Assembly

The Honorable Fran Pavley, California State Senate

Shawn Garvey, Chairman, Bioenergy Association of California

Ed Kjaer, Director, Transportation Electrification, Southern California Edison

Mike McAdams, President, Advanced Biofuels Association

Incentives, Innovation, and Scale: What Is the Best Role for the Public Sector? Panelists discussed the role for the public sector in accelerating progress on clean, low-carbon fuel and vehicle technologies.

Moderator – **John Boesel**, President and CEO, CALSTART

The Honorable Nancy Skinner, California State Assembly

Rob Oglesby, Executive Director, California Energy Commission

Tim Carmichael, President, California Natural Gas Vehicle Coalition

Dr. Stephen Kaffka, Director, California Biomass Collaborative, extension specialist in the Department of Plant Sciences at the University of California, Davis

Mike Lord, Vehicle Regulation and Certification Engineering, Toyota



Clean, Low-Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

Clean, Low-Carbon Fuels Market and Technology Progress Report

This is a time of rapid technological improvement and market growth across all areas of the clean fuels sector, from liquid biofuels to gaseous fuels and electricity.

- The LCFS and other California policies are important drivers for all of these cleaner fuels. They are driving investment in this sector today and are accelerating innovation and diversification in fuels.
- Market drivers are increasingly real for many of these fuels as well, as they compete favorably with petroleum fuels on price. We are finally seeing increased consumer choice and competition.
- Barriers remain. To continue moving forward, we need to stay the course on California's fuels policies and related investments.

"EV sales have doubled in the last two years, due in part to California's forward-thinking policies. The benefits of this transportation electrification are significant, not just for emissions reductions and consumer choice, but also for jobs and the electrical grid."

Bill Boyce, Sacramento Municipal Utility District

*"We're seeing a lot of interest around cleaner burning advanced fuels from customers. **Regulatory drivers are very important for clean fuels in California, but we are increasingly seeing commercial pulls and consumer demand as well.** We look forward to selling clean renewable fuel in California and we expect to see both continued growth and lower carbon feedstocks in the coming years."*

Graham Ellis, Solazyme

"With natural gas, you can get both emissions reductions and cost savings of \$1.50 to \$2.00 per gallon. With RNG [renewable natural gas], you can actually get down to negative carbon emission levels. Natural gas can also have substantial air quality benefits, with next generation natural gas engines expected to reduce criteria emissions 90% from current diesel engine levels."

Ed Harte, Southern California Gas Company

*"We are compromising new investment and innovation by compromising the certainty of the LCFS. The **positive or negative effects on investors, lenders and businesses of California's political decisions will determine how successful the renewable energy industry will be moving into the future.** Aemetis is one of the largest direct and indirect taxpayers in the Central Valley in CA. A job study showed that our Modesto biofuels plant directly and indirectly employs 700 people, many of whom were unemployed before our plant was restarted in 2011. **These jobs were created to provide fuel products that have a market due to the LCFS leadership in CA.**"*

Eric McAfee, Aemetis



Clean, Low-Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

The Role of Policy: Supporting California Leadership in the Transition to Cleaner Fuels

Industry leaders from the biofuels, renewable natural gas, and electric transportation sectors underscored the importance of California's fuels policies in supporting a portfolio approach to cleaner transportation.

- California's **cap and trade and LCFS are critical in providing regulatory certainty** and signals for this industry.
- Fuel providers believe **we need "all of the above"** approach to meet our goals. There is no silver bullet.
- Capital and **financing constraints are still an issue**. State investments and additional policies are needed to complement cap and trade and the LCFS.

*"The LCFS and RFS are essential. **We have to capture some kind of carbon price.** To compete with the largest companies in the world when you are a start-up is difficult to impossible without this sort of regulatory structure and carbon pricing. The regulatory stability of those programs, which has been compromised over the last six months, is essential."*

Harrison Clay, Clean Energy Renewable Fuels

"The LCFS is working and sending the right market signals. For example, biodiesel has taken off with California production increasing from 10 to 30 million gallons in just the past three years. If California succeeds in implementing the LCFS, it could become the most important fuels policy in the nation."

Ryan Lamberg, California Biodiesel Initiative

*"Cap-and-trade and the LCFS are transformative policies that provide flexibility to the regulated parties while also driving the innovation that we need. **We're breaking into a monopoly market in the transportation fuels sector and those who have the monopoly don't want to let it go. We need regulations, incentive programs and private sector investments to make progress.** The benefits diversification in our transportation fuels sector are substantial: more jobs; greater consumer choice; reduced air, toxic and climate change pollutants; and benefits to the electrical grid."*

Eileen Tutt, California Electric Transportation Coalition

*"The LCFS is a well-designed policy because it rewards fuels with lower carbon intensities, including those produced from cellulosic feedstocks. **The future for cellulosic fuels is looking brighter than ever before.** Though progress has been slower than expected, there are now several large plants coming online and several large companies getting involved. Capital cost has been the largest barrier, and Edeniq is addressing this through a low-cost, bolt-on approach."*

Lily Wachter, Edeniq

*"Many believe that the role of the legislature is to set goals with broad parameters and let the experts design the targets. ARB has managed AB 32 implementation well. **We see the LCFS driving progress but would like to see things move even faster.** Assemblymember Quirk has introduced AB 1992 to provide additional market certainty to facilitate capital investments in low carbon facilities."*

Colin Murphy, Office of Assemblymember Bill Quirk



Clean, Low-Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

Perspectives on Cleaner Transportation Needs, Challenges, and Opportunities

Industry leaders and policymakers in this panel discussed the role of state policies in creating opportunities for economic and environmental benefits in California.

- California's open and flexible **AB 32 fuels policies are creating opportunities** and encouraging businesses to innovate.
- **We should be able to capture clean transportation jobs as well as environmental benefits.** Industry growth and investment suggests this is happening.
- California is **succeeding on all fronts with an increasingly clean and diverse fuel supply.** We have to stay the course.

*"Forty percent of our GHG emissions come from the transportation sector and we're making some good headway in meeting our goals. We're not picking winners and losers, but allowing businesses to innovate and do what they do best. **Critics said we couldn't meet our climate goals while growing a strong economy, but we are doing it.** A decade ago, the auto industry warned of economic losses when we enacted greenhouse gas standards for vehicles, and now the industry is profiting from fuel efficient cars that customers want to buy. The fuels sector can do the same thing. AB 32 fuels policies, including both cap and trade and the LCFS, are critically important.*

Senator Fran Pavley

*"California is a leader in tackling climate change and we should be able to keep the clean tech jobs of the future as well. **Many times we hear that AB 32 puts an undue burden on businesses but I think it also creates a new frontier of opportunity.** The role of government should be to create opportunities and facilitate innovation. I see this happening in the 41st Assembly District, which is home to several organizations that are actively working on solutions and employing Californians."*

Assemblymember Chris Holden

*"The current oil and gas boom is not a good reason to stop the diversification of our fuel stocks in transportation. **AB32 is the cornerstone and all of the related policies and incentives are now working holistically. We have to stay the course.** We're succeeding. We're getting more biofuels, electricity, and natural gas into the transportation fuels market. We're going to need it all and we need policies and incentives to work in tandem. We need to accelerate the market today or we will never get to the dreams of tomorrow."*

Ed Kjaer, Southern California Edison

*"California understands the climate crisis and is taking the necessary steps to be in the right place in 2050. Fortunately, California's actions have a huge impact on the market because this state is such a big player in terms of fuel volumes. **The performance-based LCFS model is a great one and it needs to succeed for the sake of our industry.** With the right policies in place, advanced biofuels can and will provide significant benefits for California. We are grateful for California's leadership!"*

Mike McAdam, Advanced Biofuels Association

*"We are seeing innovation in California because the state has put in place **the right mix of policies, standards, and incentives to drive investment in cleaner fuels.** If we continue to move forward with smart policies, waste-based fuels alone can make a huge contribution to the state's goals, while creating jobs here in California."*

Shawn Garvey, Bioenergy Association of California



Clean, Low-Carbon Fuels Summit

Better Fuel Choices for California's Economy and Environment

Incentives, Innovation, and Scale: What is the Best Role for Public Sector?

Policymakers, industry leaders, and third-party experts discussed the role of incentives and investments in supporting the scale-up of clean, low-carbon transportation.

- We **need both carrot and stick**. Investments are a complement to strong and stable policies.
- State **investments to date have been paying off**; Increased investment in this sector is worth the cost and will pay substantial returns.
- There are **outstanding needs and opportunities all around the state** in all different fuel sectors. There may be a need for additional investment programs or approaches.

*"Investments from AB 8 and cap and trade provide tremendous opportunities to reduce greenhouse gas emissions and improve air quality. The transportation sector is the largest contributor to greenhouse gas emissions so **increased investment in transportation-specific actions, like buybacks targeted at the highest polluting vehicles and incentives for low carbon vehicles, will benefit all Californians**—especially those in communities that are disproportionately impacted by poor air quality."*

Assemblymember Nancy Skinner

*"**Incentives are a useful tool to complement standards and overcome barriers.** Where the market doesn't lead to the optimal outcome, the government needs to intervene with standards and incentives to ensure we get the right balance. CEC's investments to date in cleaner fuels and vehicles are an important complement to California's fuel policies and are providing tangible benefits for the state."*

Rob Oglesby, California Energy Commission

*"Without California's regulations and investment programs, we would not be where we are today. We are finally seeing real fuel diversity and very real benefits. **To continue making progress and increase fuel production in California, we need continued investment in a portfolio of solutions and we need to realize that some of these fuels will not pan out, while others will exceed expectations.** We also need to adjust existing programs as needed, whether it be improving the stability of market signals through a Green Credit Reserve, or facilitating access to the pipeline for renewable natural gas."*

Tim Carmichael, California Natural Gas Vehicle Association

*"**OEMs have made huge investments in getting the zero emission vehicles to market, but the state also has an important role to play in accelerating deployment.** The CVRP rebate program and HOV lane access are very important for getting vehicles to market, and state investments in infrastructure are crucial as well. All Californians will benefit from broad market acceptance of cleaner vehicles but we still have work to do."*

Mike Lord, Toyota

*"Liquid fuels provide very definite **opportunities for prudent investments that would benefit rural communities in the state** (especially if agricultural and forest biomass are used) and provide greater diversity of fuels. To meet future demand and drive investments in alternatives, we need programs that support innovation, stable policies like the LCFS and cap and trade program, and continuing strategic public investment."*

Dr. Stephen Kaffka, California Biomass Collaborative and UC Davis