



DATE: April 10, 2017  
TO: California Air Resources Board  
FROM: Ryan Schuchard, Policy Director  
RE: Scoping Plan

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**Clean Transportation  
Technologies and Solutions**

[www.calstart.org](http://www.calstart.org)

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Thank you for this opportunity to provide comments on the California Air Resources Board's (CARB) 2017 Climate Change Scoping Plan Update, dated January 20, 2017 (Plan). Our comments focus on transportation. CALSTART has provided input on several previous versions of the Plan, including during December 2015, July 2016, September 2016, and December 2016.

### **CARB's "Proposed Scenario"**

***Among the four strategies considered (pp. 31-33), we support the Proposed Scenario, which continues Cap-and-Trade and includes a more stringent Low Carbon Fuel Standard (LCFS).*** Of all strategies, we believe the Proposed Scenario creates the highest certainty that California will achieve its climate targets and the greatest flexibility to allow industry to reduce the emissions needed.

Cap-and-Trade is working and should continue to be the backbone of California's future climate policy. Because of Cap-and-Trade, the state is on course to reduce emissions to 1990 levels by 2020. Also, critically, Cap-and-Trade creates a mechanism for investing in new clean transportation technologies, which is resulting in new businesses and jobs throughout the state. Today California's Clean Transportation Technology Industry (CTTI) represents well over 300 companies and more than 20,000 jobs. The Cap-and-Trade program has helped spur the growth of the CCTI, as shown by companies like BYD, Proterra, and Green Power Bus, who have recently established new manufacturing facilities in-state.<sup>1</sup>

As a complement to Cap-and-Trade, the Low Carbon Fuel Standard (LCFS) creates incentives that help transit agencies, vehicle manufacturers, and fuel providers invest in technologies today that will bring down the costs for all Californians in the future. The LCFS rewards any technology that can reduce GHG emissions from transportation fuel, including biodiesel, ethanol, hydrogen, next generation biofuels, renewable natural gas, and vehicle electrification. Because the LCFS is so inclusive, the program is favored by businesses, as shown by the nearly 100 companies that signed letters of support for the LCFS this past year.<sup>2</sup> Looking ahead, companies who are relying on the LCFS today are counting on stronger targets to create incentives for expanded levels of investment in low-carbon fuel production and higher rates of zero emission vehicle adoption as demand for low carbon fuel technologies increases in the future.

Cap-and-Trade and a strong LCFS go hand in hand. Both Cap-and-Trade and the LCFS directly benefit disadvantaged communities, as the many transit agencies which have relied on a combination of the programs to deploy over 100 zero-emission buses to date—predominantly in and around low income communities—demonstrate. Also, new research shows that Cap-and-Trade and the LCFS are complementary, and that strong LCFS reduction targets will reduce the cost of compliance for Cap-and-Trade.<sup>3</sup> Finally,

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<sup>1</sup> See CALSTART (2016). [California's Clean Transportation Technology Industry: Time to Shift into High Gear.](#)

<sup>2</sup> See [letter from transit agencies](#) (2016) and [letter from fuel producers](#) (2016)

<sup>3</sup> ICF (2017). [Post-2020 Carbon Constraints: Modeling LCFS and Cap-and-Trade](#)



many clean vehicle and fuel producers indicate that a key barrier to their expansion is a lack of investment capital, and the investors who are needed to provide that capital say that more certainty and continuity will help them to do so. Continuing Cap-and-Trade and strengthening the LCFS together will support the market's stability.

## **The Transportation Policy Framework**

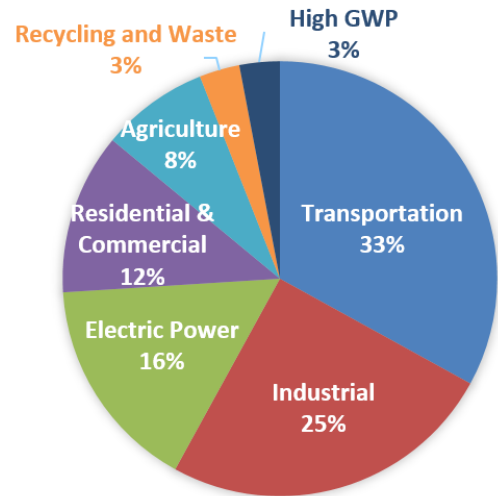
***We support the Plan's policies for transportation and recommend that a few additional issues to be addressed.*** California's #1 source of GHG emissions is transportation, accounting for 37% of direct emissions as outlined in the Scoping Plan, and nearly 50% when considering the full well-to-wheels cycle. Furthermore, despite measures to date, diesel and gasoline consumption have continued to rise. It is therefore appropriate that the Plan emphasizes transportation, calling for around 33% of direct GHG reductions to come from transportation, the highest contribution from any sector (see Figure).

We believe the Plan does a good job of evaluating the transportation industry's current situation (pp. 97-101), and we agree with the overall portfolio of transportation goals (pp. 101-102). We also observe some additional issues that do not lead to easy, concrete answers now but will be fundamental to successful transportation policymaking over the next decade:

1. Well over ninety percent of vehicles on the road are fueled by petroleum, which is a consequence of billions of dollars and decades of subsidies. Furthermore, the full external costs of petroleum fuels and petroleum fuel based vehicles are not recognized in the price paid at the pump. Thus, clean transportation technologies in California are on an uneven footing with conventional fuels, and significantly increased incentive investments are needed for clean transportation to begin leveling the playing field with petroleum-based gas and diesel, which are at historically low prices.
2. The rise of two disruptive technologies, autonomous cars and networked car companies, are under way and could each significantly help or hinder progress towards California's 2030 climate goals. Of paramount concern is the risk that advances in self-driving and greater car sharing could dramatically increase vehicle miles traveled by fossil-fueled cars. However, it is difficult to predict with any certainty where advances may take the industry over the next few years.

Through the Plan, we encourage CARB to address these issues, which are relatively long term in their effects and needs, into an ongoing process of review and consideration that includes other agencies and lawmakers.

*Figure 1: Contribution to Total GHG Emission Reductions by Sector in the Proposed Plan*



*Share of GHG reductions from each sector as a percentage of GHG reductions from all sectors (260 MMTCO<sub>2</sub>e from 1990-2030) for the Proposed Plan using data in Table II-2 on page 43. High and low contributions for each sector are averaged. Figures refer to direct emissions only; emissions from upstream petroleum production are not included in the 33% contribution by transportation since the Plan counts them in the "industrial" sector.*



## **Low Carbon Fuel Standard Stringency**

***CALSTART supports the use of an LCFS program that includes a reduction target of at least 18% for the period of 2010-2030 and potentially higher.*** We appreciate CARB staff's thorough consideration of carbon intensity (CI) reduction targets for the LCFS. On examination of the current models and discussion with staff, we are optimistic that the LCFS can achieve a 18% reduction and potentially more than 20%.

We appreciate that the 18% reduction target outlined in the Proposed Scenario is based on technology deployment levels that may seem ambitious today, including the conversion of all the natural gas used for transportation fuel to renewable natural gas (RNG). We also recognize that reductions in the CI of liquid fuels in California is inherently limited by the availability of feedstocks, and California must operate within a national and global supply market which includes other jurisdictions that also have use for low carbon fuel feedstocks.

Nevertheless, we are optimistic about the potential for deploying clean medium- and heavy-duty (MHD) vehicles over the next decade, and think there may be reason to anticipate higher deployment levels than are included in the Proposed Scenario—and which could create opportunities for increasing LCFS beyond 18%. For example:

- **MHD Electric Vehicles:** The Proposed Scenario contemplates 38,000 MHD EVs. We can imagine higher numbers, with growth led by transit, shuttle and circulator bus; as well as regional delivery, regional goods movement, and other equipment. Greater deployments will be possible if battery technology continues to improve, if incentive funding is adequate, and if charging infrastructure with attractive utility rate programs are deployed widely.
- **MHD Natural Gas Vehicles:** The Proposed Scenario considers 101,000 MHD natural gas vehicles. We can envision higher figures, driven by expansion in refuse, regional delivery, and city-to-city and corridor-based heavy hauling vocations. Higher levels of deployment will be possible if incentive funding for vehicles is adequate—including for Low NOx vehicles in support of the Mobile Source strategy—and if the state begins to incentivize in-state RNG production and the use of RNG for transportation fuel in earnest.
- **MHD Range-Extended Vehicles:** We anticipate the growth of a new class of commercial vehicles with mixed drivetrains that include zero-emission and internal combustion systems onboard the same vehicle. These so-called range-extended vehicles will be able to run primarily on ZE when stopped and in sensitive environments.

We appreciate that the Proposed Scenario does not count on as much growth in these categories as CALSTART believes is possible both because their expansion will require policy support that is not guaranteed, and because it is difficult to forecast adoption levels for emerging technologies. However, with sufficient incentives and price signals, we can imagine deployment levels for clean medium and heavy duty vehicles that could increase California's CI reduction by an additional 1-3% beyond the 18% represented in the Proposed Plan.



A more stringent LCFS target means more incentives and faster paths to commercializing new technology. Indeed, when California has established strong standards, industry has met and surpassed expectations. Prior to establishment of the LCFS in 2010, critics warned that the policy would lead to price spikes at the retail pump. That did not happen. Despite the LCFS' successes, the program has added only around a half a cent per gallon to gasoline.<sup>4</sup> Also over the life of the LCFS, vehicle battery costs have fallen dramatically, from around \$1000/kWh for battery packs in 2010 to under \$190/kWh today—much faster and further than was earlier predicted (for example, a report in 2010 by BCG said that “substantial challenges” stood in the way of achieving 250/kWh even by 2020).<sup>5</sup>

### **Incentive Funding**

***Finally, more work is needed to secure higher levels of predictable and sustained funding for clean transportation.*** As mentioned above, transportation is both the #1 source of California's GHG emissions and the sector that will need to make the deepest GHG cuts. However, current levels and the predictability of incentive funding for clean vehicles and fuels are significantly inadequate to meet the state's ambitious goals.

California needs around \$700 million per year for clean, low carbon vehicle and fuel incentive funding for at least the next few years.<sup>6</sup> Looking further forward, we expect this amount to continue for several years, through around 2025, though the makeup of funding needs will change over this period. We project that funding needs for Light Duty Vehicles (LDVs) will taper and then decline by the middle of the 2020s, while funding needs for emerging Medium and Heavy Duty Vehicles (MHDVs) and advanced fuels will increase over the same period.

The net effect, assuming low oil prices continue and federal funding and other planned policies remain relatively constant, is that we expect the overall sum of incentive funding required to support California's climate and air quality goals to remain roughly similar to now through 2025.

### **Conclusion**

CALSTART supports the Plan and commends CARB for its exhaustive work over the past few years to evaluate the different options, tradeoffs, and interdependencies involved with securing California's aggressive goal of 40% greenhouse gas reduction below 1990 levels by 2030, and to present a cogent plan that balances the interests of different stakeholders while positioning California to be an advanced clean technology leader in the future. CALSTART continues to stand ready to partner with CARB and other agencies and the legislature to accelerate the commercialization of clean transportation technology in support of California's ambitious climate goals.

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<sup>4</sup> Sonia Yeh (2017). Why a low-carbon fuel standard is good for transportation and California. The Sacramento Bee.

<sup>5</sup> McKinsey & Company (2017). Electrifying insights: How automakers can drive electrified vehicle sales and profitability. See also: BCG (2010). Batteries for Electric Cars: Challenges, Opportunities, and the Outlook to 2020.

<sup>6</sup> CALSTART (2016). [California's Clean Transportation Technology Industry: Time to Shift into High Gear](#).