CALIFORNIA BIOENERGY
Helping dairies fuel a renewable future

August 8, 2022

Ms. Cheryl Laskowski,
Branch Chief, Low Carbon Fuel Standard Team
California Air Resources Board

Submitted via LCFS Comments Upload Link

RE: Comments on "Potential Changes to the Low Carbon Fuel Standard"

Dear Ms. Laskowski:

Thank you for the opportunity to provide comments to the California Air Resources Board (CARB) on your "Potential Changes to the Low Carbon Fuel Standard," as presented by Staff at the July 7, 2022, Public Workshop.

California Bioenergy LLC (CalBio) is one of the country's leading developers of dairy digester projects. These projects generate renewable natural gas and electricity, used as a vehicle fuel to power trucks, buses, and cars. Founded in 2006, CalBio works closely with local dairy farmers, CARB, the California Department of Food and Agriculture (CDFA), the California Public Utility Commission (CPUC), the California Energy Commission (CEC), the Environmental Protection Agency (EPA), and the dairy industry to develop projects that reduce greenhouse gas (GHG) emissions, protect local air and water quality, create local jobs, and provide a new revenue stream along with other meaningful benefits to the dairy.

The Low Carbon Fuel Standard (LCFS) program is the nation's leading and most successful example of a market-based carbon reduction regulation for the transportation sector. The program has been instrumental in supporting the growth of a broad portfolio of low carbon transportation fuels in California, their associated reductions in carbon and pollutant emissions, job growth in clean energy sectors, and other benefits. However, the LCFS program is now at a crossroads, as its current carbon intensity reduction targets are no longer in alignment with the State's climate targets and timelines, nor with the capacity of the market to supply low carbon fuels.

Recent growth in the LCFS credit bank and forecasts of growth in renewable diesel (RD), renewable natural gas (RNG), and low carbon electricity supplies demonstrate that the market is ready to support a realignment of the LCFS carbon intensity reduction targets to levels consistent with the Draft 2022 AB32 Scoping Plan[1] (Scoping Plan). To that end, CalBio respectfully submits the following comments on the topics raised by Staff during the July 7th LCFS workshop. Our analysis shows that, because the LCFS program has been so successful, much more aggressive 2024 and 2030 CI reduction targets are both needed and feasible to bring credit and deficit production back into balance. If the current imbalance in the LCFS program is not addressed as part of this rulemaking, the excess credit bank will disincentivize clean fuel investment, particularly from California-based dairy projects. Such a policy would undermine the significant investments already made in the state to support progress towards meeting the SB1383 requirement to reduce methane by 40% below 2013 levels by 2030[2].

The science is clear that GHG reductions are needed immediately to prevent catastrophic climate change. CARB, along with many international, national, and state authorities including the IPCC, EPA,

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[1] https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf
[2] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383

and UN Environment Programme recognize that the reduction of Short-Lived Climate Pollutants (SLCP) is the best, most cost effective and will result in the most immediate climate cooling impacts than any other climate protection strategy. According to scenarios analyzed by the Intergovernmental Panel on Climate Change (IPCC), global methane emissions must be reduced by between 40–45 percent by 2030 to achieve least cost-pathways that limit global warming to 1.5° C this century.[3] CARB's own SLCP strategy states that "the science unequivocally underscores the need to immediately reduce emissions of short-lived climate pollutants."[4] CalBio strongly urges CARB to consider the hundreds of millions of tons of additional reductions and public health and community benefits that could be achieved by strengthening the LCFS program.

As outlined in the Scoping Plan and Governor Newsom's letter recently submitted to CARB on July 22, 2022[5], more action is needed to meet the State's 2030 climate goal and 2045 statewide carbon neutrality target. The LCFS program can and must be strengthened to achieve these ends as described in the modeling scenarios below.

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[3] https://wedocs.unep.org/bitstream/handle/20.500.11822/35917/GMA_ES.pdf
[4] https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf
[5] https://www.gov.ca.gov/wp-content/uploads/2022/07/07.22.2022-Governors-Letter-to-CARB.pdf?emrc=1054d6

Program Status and Context for Scenario Analysis

As noted by Staff during the July 7th workshop, the LCFS program is currently overperforming its carbon intensity (CI) reduction targets for 2021. This overperformance has also led to the single largest quarterly increase in the credit bank in the program's history, i.e., nearly 1 million MT of net (excess) credit production in Q4 2021 almost repeated again in Q1 2022 with 0.9 million MT of excess credit production despite a more than 1% step down in the compliance schedule. Excess credit generation during 2021 and 2022 to date is largely attributed to year-over-year growth in RD, RNG, and low-CI electricity as transportation fuels. Excess credit production can now be easily and demonstrably absorbed by a more aggressive compliance schedule.

Looking forward, continuing growth in RD production and transportation electrification is expected to displace increasing volumes of deficit-generating fuels with credit-generating fuels. To further examine this trend and the potential impact on the LCFS program, CalBio has sought out a credible California LCFS supply and demand model to examine the baseline scenario (i.e., LCFS program as-is) and several of the alternative scenarios incorporating program modifications raised by Staff. In addition, CalBio sought out experts and data on the status of RD plants that are on-line, being constructed or are planned, all with intent to supply RD into California (see Exhibit A).

CalBio's scenario modeling utilized the Low Carbon Fuel Standard Scenarios Tool (v1.2) created by BloombergNEF (BNEF).[6] The BNEF model incorporates forecasts of deficit generating fuel demand (diesel and gasoline), as well as growth in electricity demand from electric vehicles (EVs) and other credit-generating fuels. Critically, the model identifies a comprehensive list of announced and operating RD production facilities, their feedstocks, their annual production capacities, and expected yields, and allows the user to adjust RD yields and additions to the California market at the project-level.

Based on the identified RD projects, there are approximately 1.4 billion gallons of RD production operational in the United States, with another 1.9 billion gallons under construction, and 2.4 billion gallons of production planned. In total, as much as 5.7 billion gallons of RD production could be online by 2025. Of this production, approximately 2.1 billion gallons is expected to be derived from waste feedstocks. The remaining 3.6 billion gallons will likely use food crops (soy and corn, primarily) as feedstocks for production. These volumes of RD production are so significant that with the additional LCFS value obtained by simply shipping the RD into CA and shipping any excess fossil diesel out of the CA, they would fully displace the entire California diesel fuel market (both on-road and off-road) and continue to be the dominant low-carbon fuel in the LCFS program. While other states have implemented similar low-carbon fuels programs (e.g., Oregon, Washington) the smaller fuel volumes and demand will not demonstrably change the magnitude of RD available to overwhelm the California market.

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[6] While the BNEF model provides the results for the baseline scenario analysis and much of the alternative scenarios, not every program modification considered in the "Policy Adjustments" group can be directly evaluated in the BNEF model. In these cases, off-model adjustments were made by CalBio to capture the impacts of the "Policy Adjustments" program modifications.

Scenarios Modeled

CalBio utilized the BNEF model to explore several potential program modifications raised by Staff, and to explore what target CI reduction could be set to fully absorb the volumes of renewable fuels expected to be delivered into California over the next decade, including:

- Increasing the 2030 CI reduction target from 20 percent to either 25 percent or 30 percent.

- Increasing the CI reducing targets from 2024 to 2030 to quickly bring the cumulative credit bank to zero by 2030 without any other adjustments to the program.

- Placing a cap on the percentage of RD that could be derived from food-based feedstocks.

- Adding traditional jet fuel used in intrastate operations as a mandatory reporting fuel.

- Adding infrastructure crediting pathways for medium heavy-duty vehicles, effectively expanding the existing Fast Charging Infrastructure (FCI) and Hydrogen Refueling Infrastructure (HRI) pathways to heavy duty vehicle applications.

- Removing electric forklifts from the LCFS program.

Changes to the CI reduction target and caps on food-based RD volumes are the two most impactful modifications raised by Staff with respect to net annual LCFS credit generation, and each are modelled separately. The three policy modifications (jet fuel, FCI & HRI, and forklifts) are less impactful, are of similar size with respect to credit/deficit generation, and tend to offset each other's impacts when taken together. Hence, these three modifications are modeled as a "policy adjustments" bundle.

While CalBio believes that each of these three policy modifications has merits, CalBio does not offer specific comments on them at this time. The policy adjustments are simply included in the modelling as a relevant set of additional changes that Staff are considering and provided to show their impact relative to the two more impactful changes being considered.

The following scenarios were modeled to evaluate the impacts of the program modifications described above. Each scenario was also modeled with the policy adjustments, labeled as Scenarios 1a, 2a, etc.

- 0 – Baseline (no changes to the LCFS program)

- 1 – 2030 CI Target of 25%

- 2 – 2030 CI Target of 30%

- 3 – RD Feedstock Adjustments

- 4 – RD Feedstock Adjustments + 2030 CI Target of 25%

- 5 – RD Feedstock Adjustments + 2030 CI Target of 30%

- 6 – RD Feedstock Adjustments + 2024 CI Target of 18% + 2030 CI Target of 25%

- 7 – RD Feedstock Adjustments (33% food-based feedstock) + 2024 CI Target of 18% + 2030 CI Target of 25%

- 8 – 2024 CI Target of 24% + 2030 CI Target of 33%

Results of Modeled Scenarios

The results of each scenario are shown in terms of annual net credit/deficit generation and the cumulative credit bank. In the baseline scenario, where no program changes are implemented and the 2030 CI reduction target remains at 20 percent, net credit generation between 2022 and 2024 could exceed 17 million credits, increasing the credit bank to 27 million credits by the end of 2023. This is nearly three times the current credit bank. Between 2024 and 2030, annual credit generation continues to grow, and the credit bank reaches over 180 million credits by 2030. This is a clear indicator that the market can support significantly more stringent CI targets.
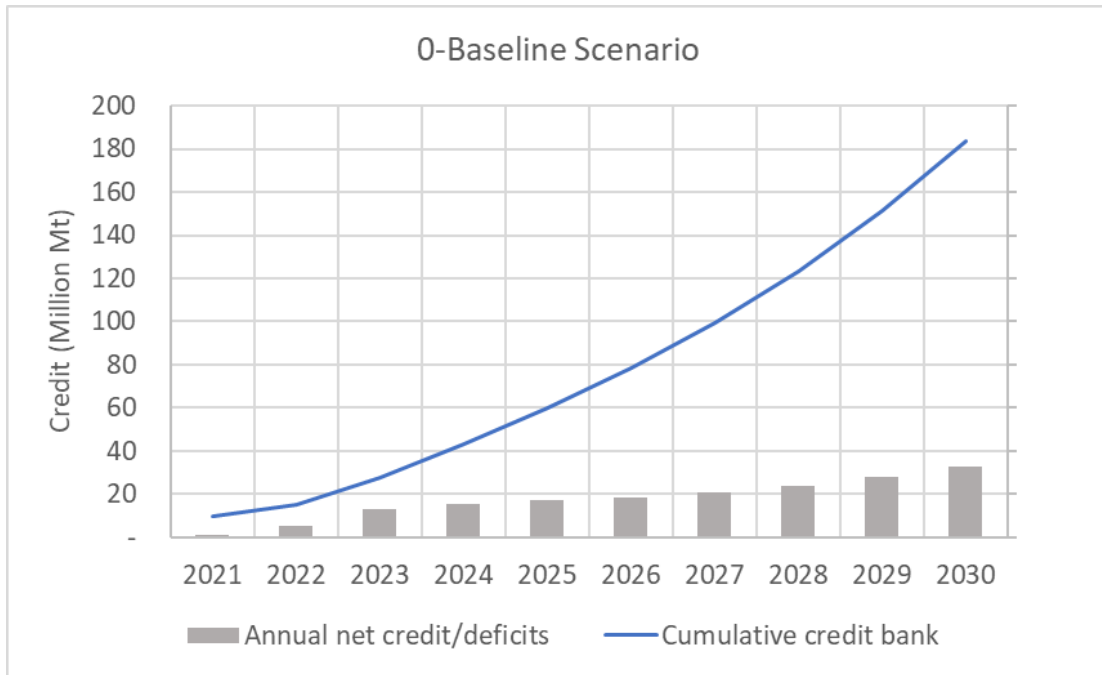
Scenarios 1 and **2** forecast the impact of increasing the CI reduction target to 25 percent or 30 percent by 2030, respectively. As shown in the graphs below, even these significant increases in program stringency do not fully absorb the excess LCFS credit generation from growth in RD production and transportation electrification. Even under the most aggressive 30 percent CI reduction target, the credit bank grows to over 80 million credits by the end of the decade, indicating that a 30 percent target is too conservative as a single means of balancing credit and deficit generation.
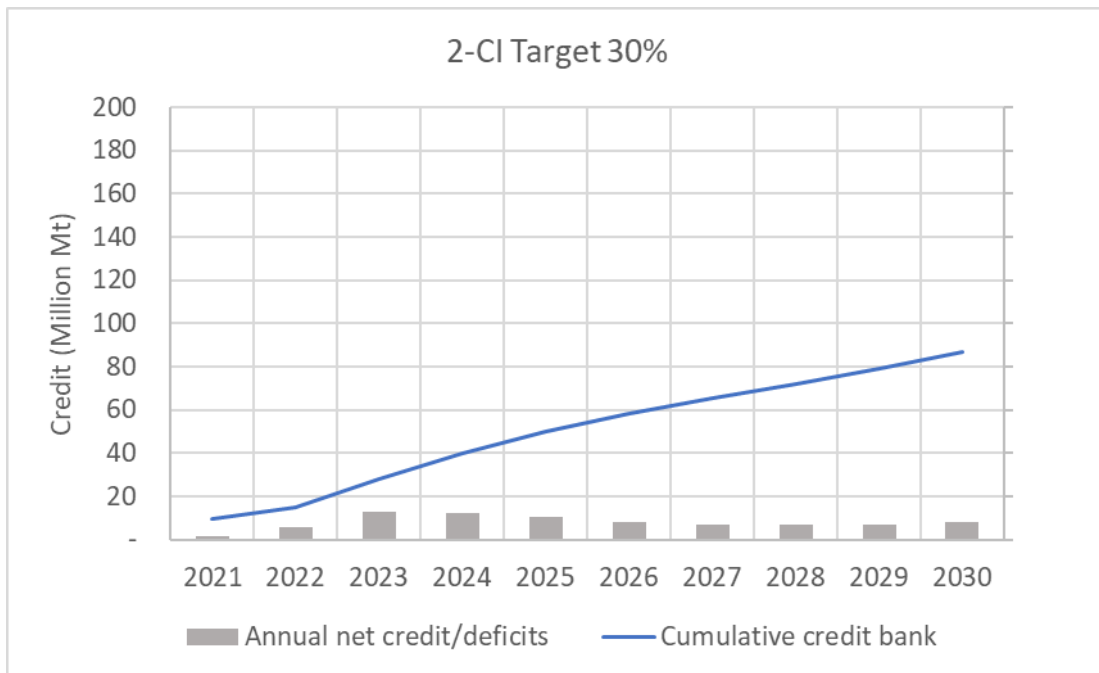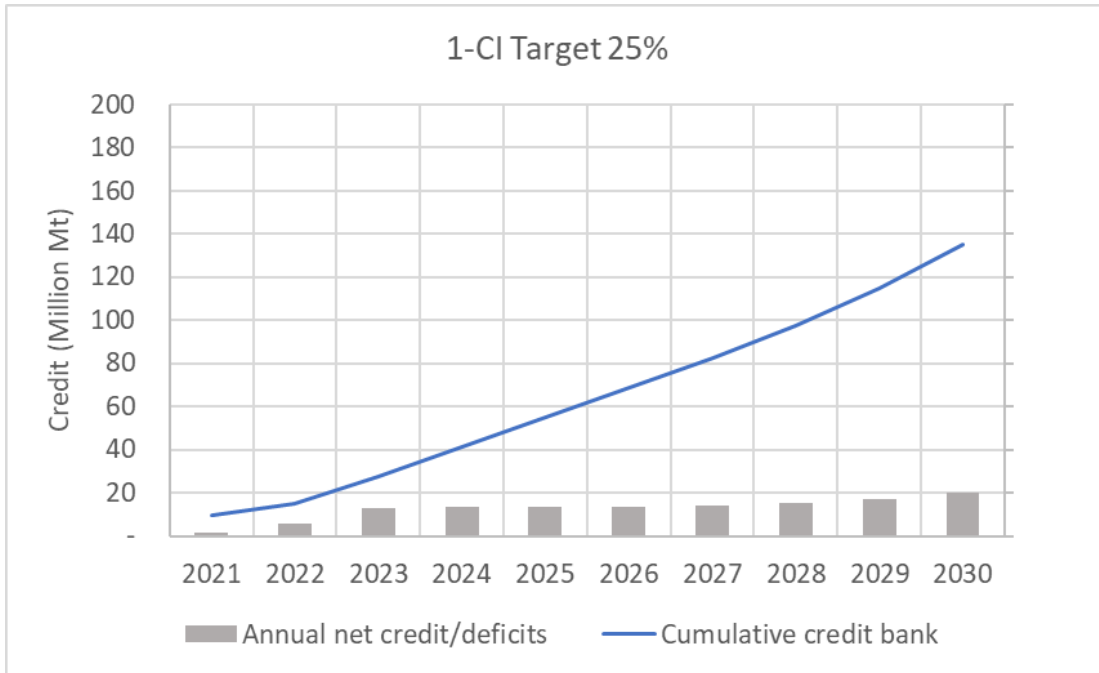
Scenarios 1a and **2a** combine the CI target reduction changes with the bundle of three policy adjustments described previously. The effect of these Policy Adjustments is small, resulting in only limited changes in the net annual credit generation or rate of growth of the credit bank.
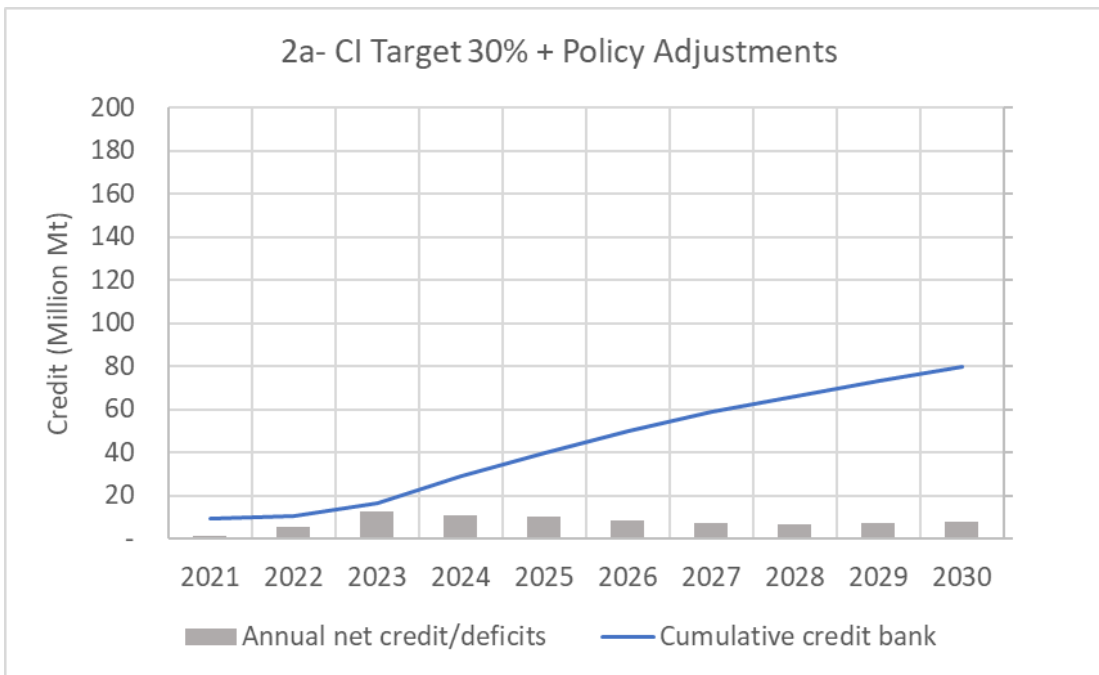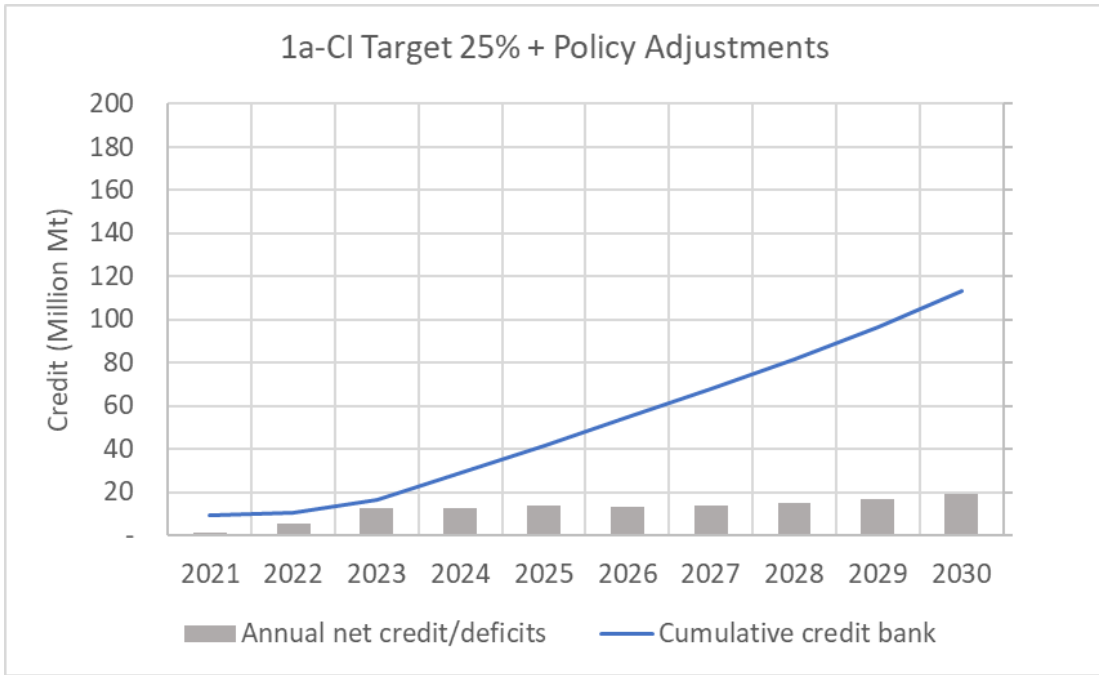
Scenario 3 examines the impact of excluding RD produced from food-based feedstocks in the LCFS program while keeping the existing target of 20% by 2030 in place. As previously discussed, about 2.1 billion gallons of RD is expected to be available from waste feedstocks. An additional 3.6 billion gallons, or 63 percent of the total RD production capacity is expected to be food-based and is excluded from the LCFS program under **Scenario 3**. This has an impact on the net credit bank similar to increasing the CI reduction targets to 30 percent.
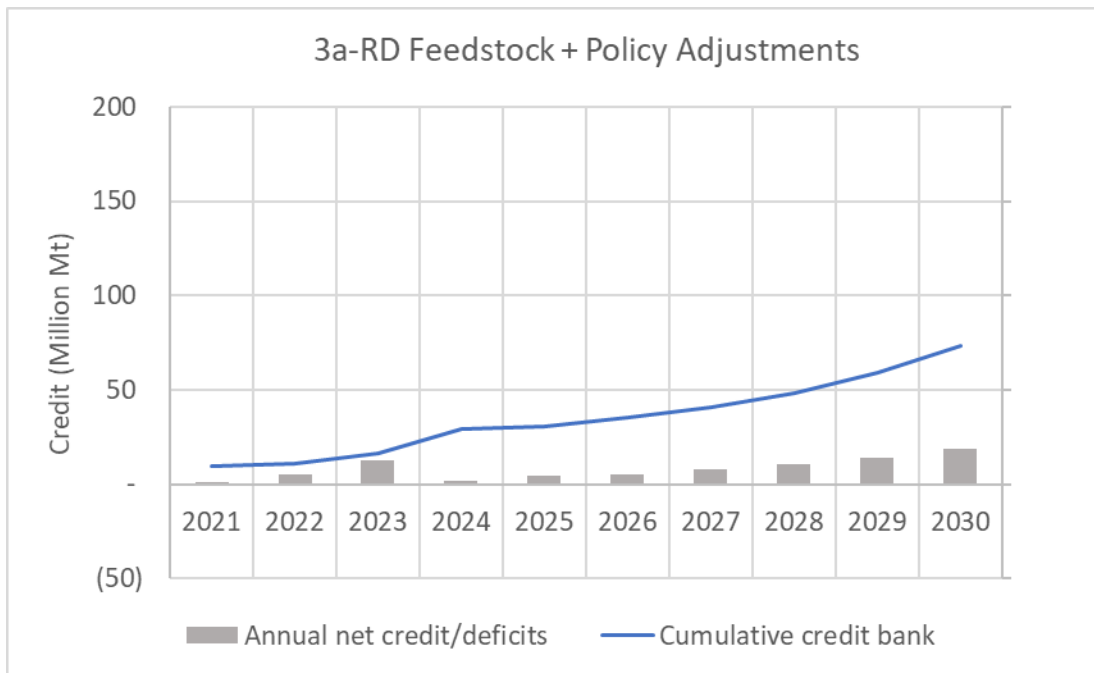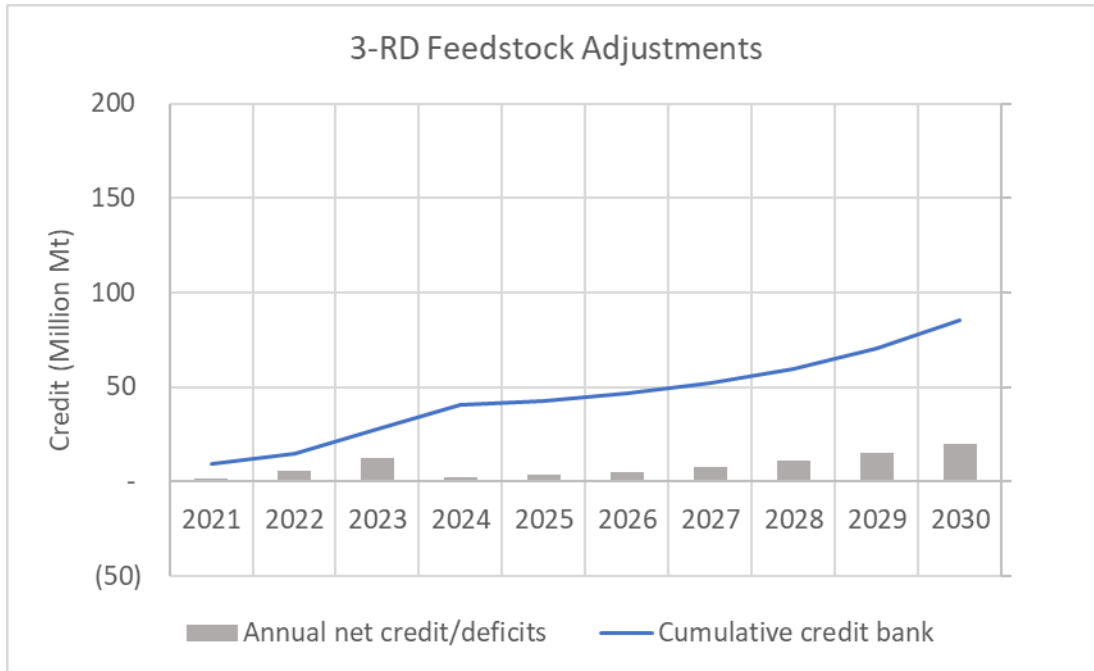
Importantly, neither the changes to the CI reduction targets (**Scenarios 1** and **2**) nor the exclusion of food-based RD (**Scenario 3**) are sufficient to bring credit and deficit generation into balance over the remainder of the decade. **Scenario 4** considers the combined effect of adopting both the 25 percent CI reduction target and the limitation on food-based RD. Under this scenario, credit and deficit generation come into balance post-2023, with the credit bank stabilizing around 50 million credits. This threshold is largely determined by the credit bank growth that is anticipated to occur in 2022 and 2023 before any of the proposed changes to the program could become effective.
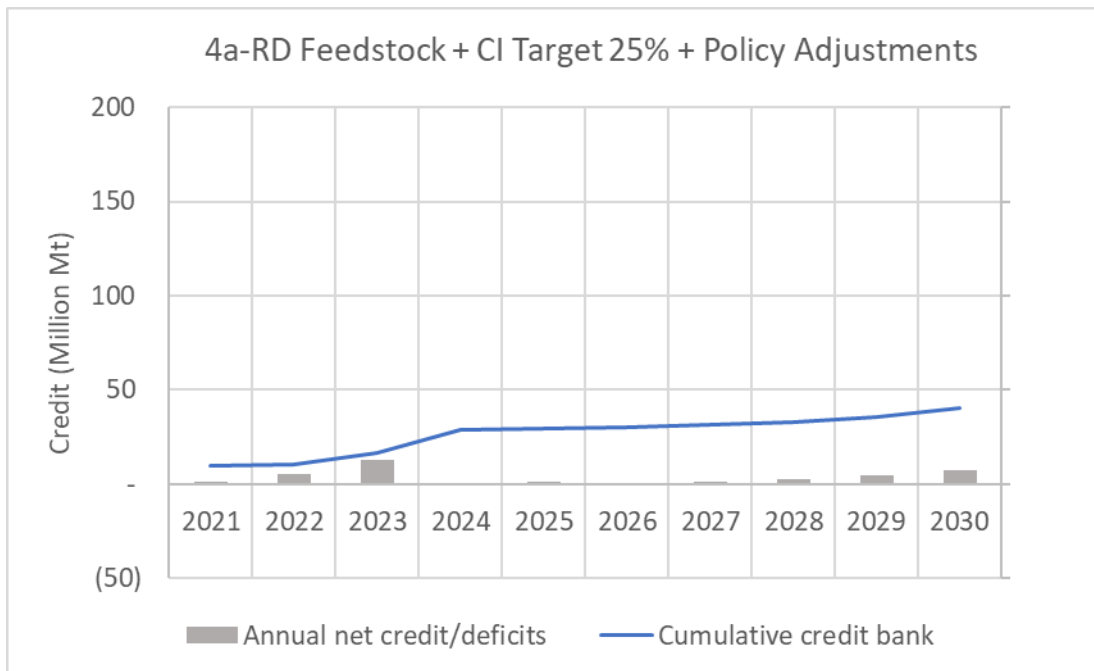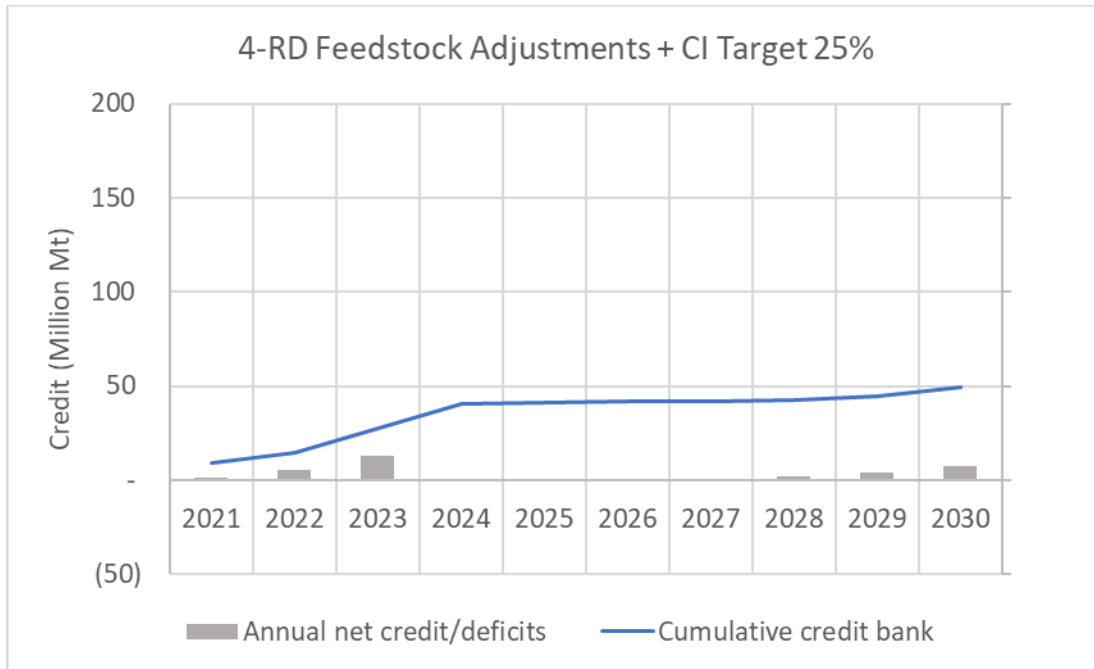
Scenario 5 is similar to Scenario 4, but instead assumes a CI reduction target of 30 percent, and is the first scenario that results in a decline in the credit bank beginning in 2024. The credit bank declines to roughly 13 million metric tons (similar to Q4 2021) by the end of the decade.
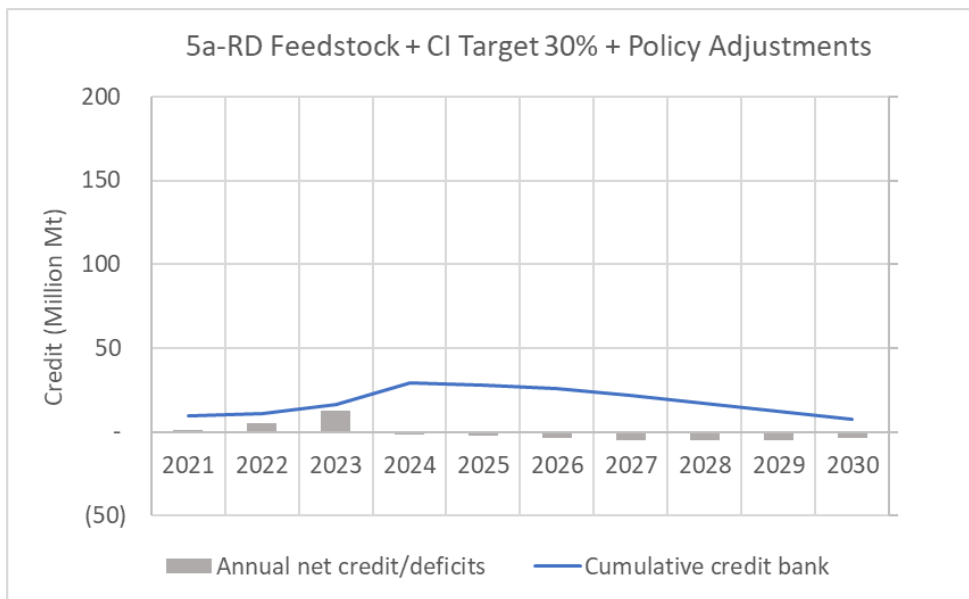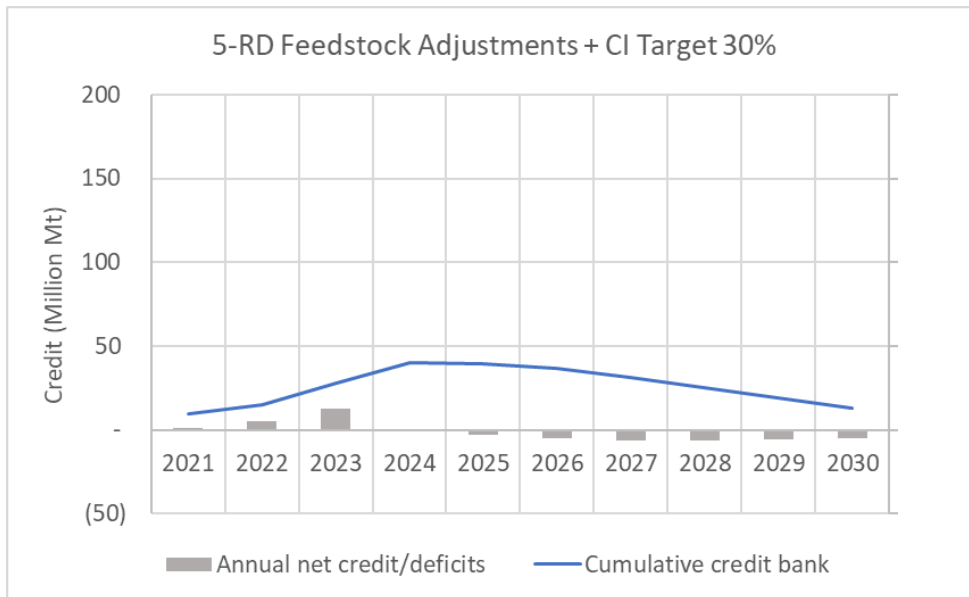
While Scenario 5 brings the credit bank down to current levels by the end of the decade, relatively little reduction in the credit bank occurs between 2024 and 2026. Combined with the growth in the bank in 2023 and 2024, Scenario 5 would likely result in at least a five-year period of significant excess credits that could warrant more aggressive CI targets. This is the same critical period of early zero-emission vehicle growth required by the Advanced Clean Trucks regulation and the proposed Advanced Clean Fleets regulation. Additionally, the Innovative Clean Transit regulation and regional programs like the Clean Trucks Program at the San Pedro Bay Ports and the South Coast AQMD's indirect source rules will all be asking fleets to deploy zero and near-zero emission vehicles whose cost-effectiveness and economic feasibility are strongly influenced by LCFS credit revenues.

Consequently, **Scenario 6** considers the effect of implementing the RD feedstock limits, 25 percent CI reduction targets of **Scenario 4**, and accelerating the 2024 CI reduction target to 18 percent, resulting in a much more rapid but manageable draw down of the excess credit bank while still stabilizing the credit bank near current levels by 2030.

6-RD Feedstock Adjustments + CI Target 18%/25%

6a-RD Feedstock + CI Target 18%/25% + Policy Adjustments
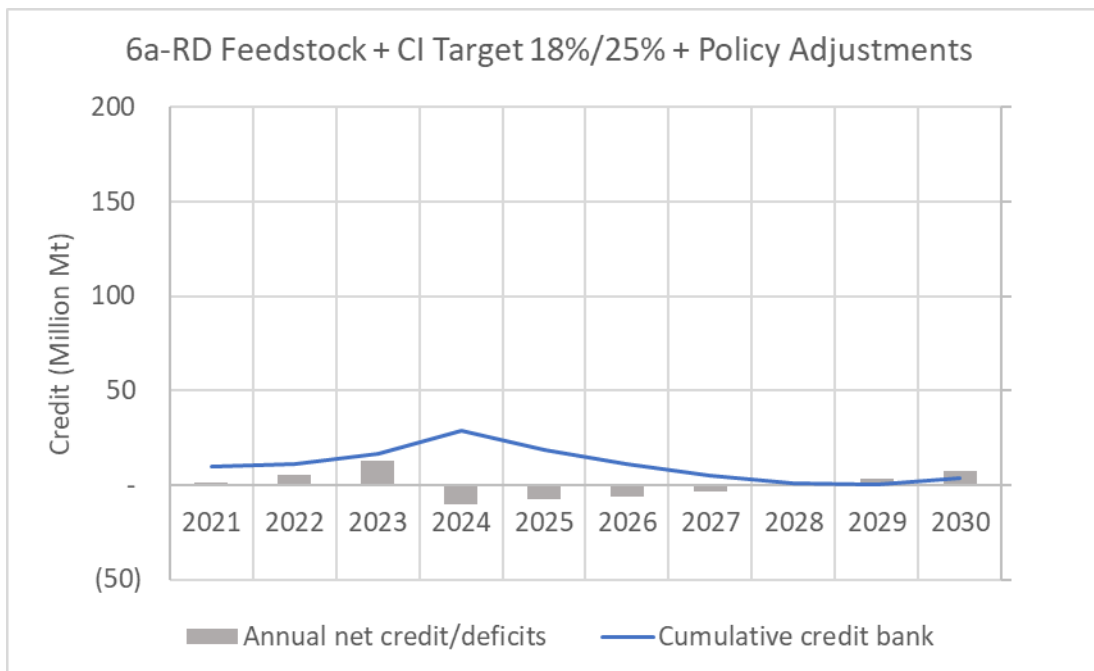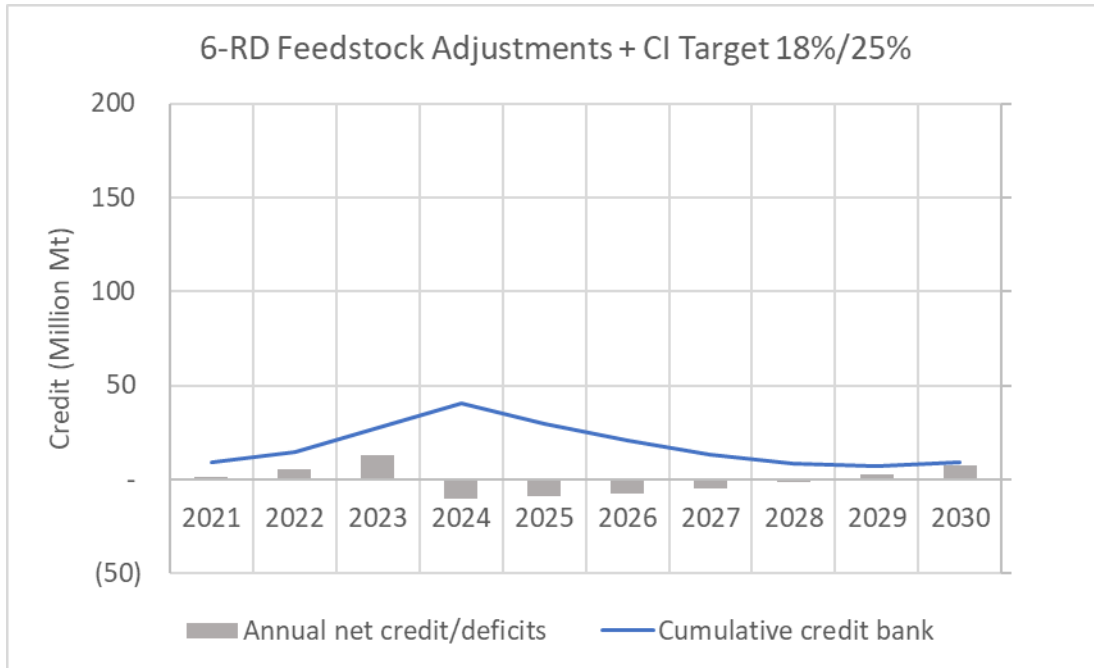
Finally, CalBio recognizes that certain transportation applications are more difficult to transition to non-liquid fuels (e.g., aircraft, rail) and that allowing for growth in RD production beyond the 2 billion gallons from waste feedstocks to serve these applications could be necessary. **Scenario 7** estimates the fraction of food-based RD that could be included in the LCFS program if the 2030 CI reduction target is increased to 30 percent, and the 2024 CI reduction target is accelerated to 18 percent. As shown, when food-based RD is limited to approximately 33 percent of total RD volumes (allowing for about 3 billion gallons per year of total RD in the LCFS program), similar results to **Scenario 6** are obtained.

7-RD Feedstock Adjustments (33%) + CI Target 18%/30%

7a-RD Feedstock (33%) + CI Target 18%/30% + Policy Adjustments
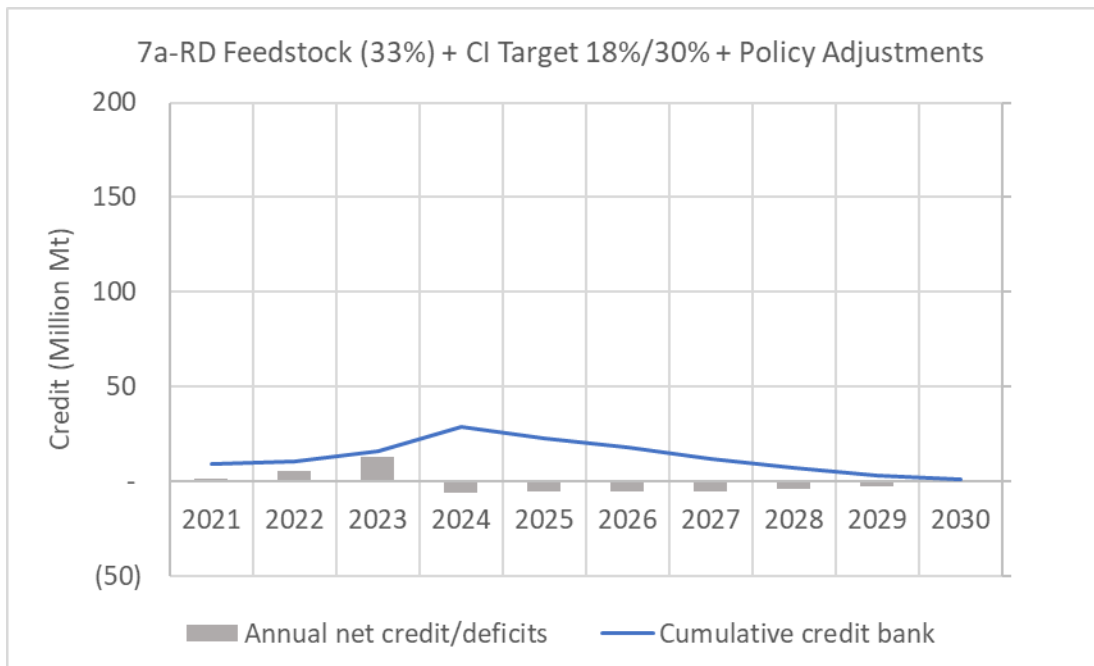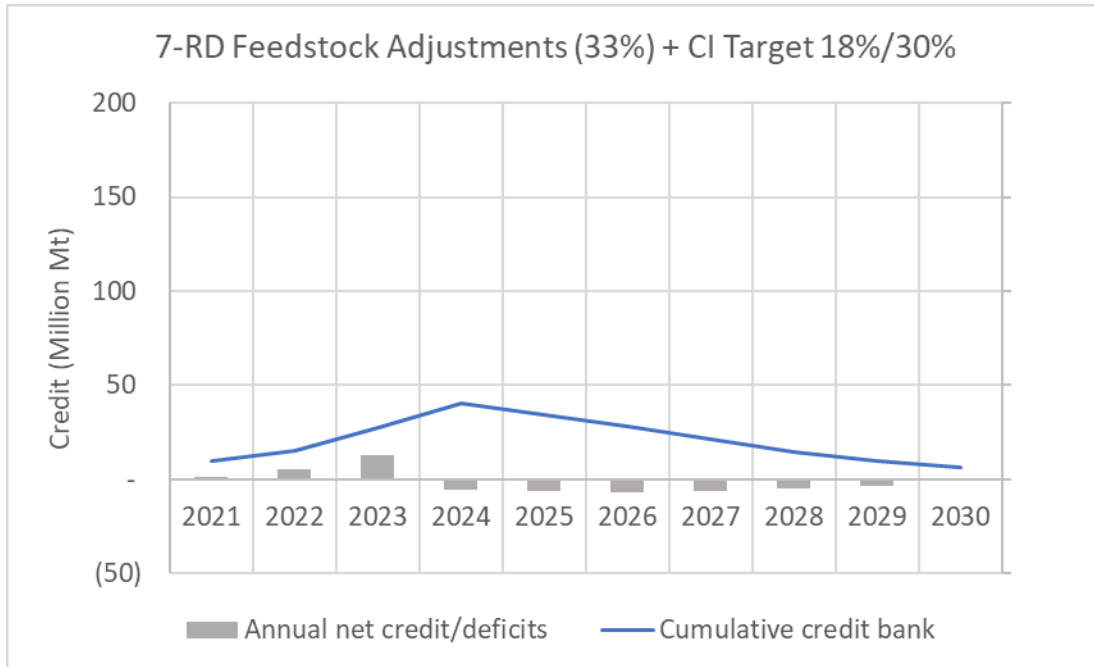
Upon evaluating the results of the scenarios described above, CalBio modeled one additional scenario (Scenario 8) to identify the CI reduction targets that would be needed to quickly bring the cumulative credit bank to near zero by 2030 without any other adjustments to the program. After iterating through several options, the following CI reduction schedule resulted in the most reasonable path to achieve balance in the cumulative credit bank without any other programmatic adjustments, as shown in the graph below. A significant increase in the 2024 CI reduction target is needed to quickly stabilize the cumulative credit bank that will grow quickly over this year and next before regulatory updates can be implemented.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Current schedule	8.8%	10.0%	11.3%	12.5%	13.8%	15.0%	16.3%	17.5%	18.8%	20.0%
Modeled schedule	8.8%	10.0%	11.3%	**24.0%**	**24.0%**	**25.0%**	**26.0%**	**28.0%**	**30.0%**	**33.0%**
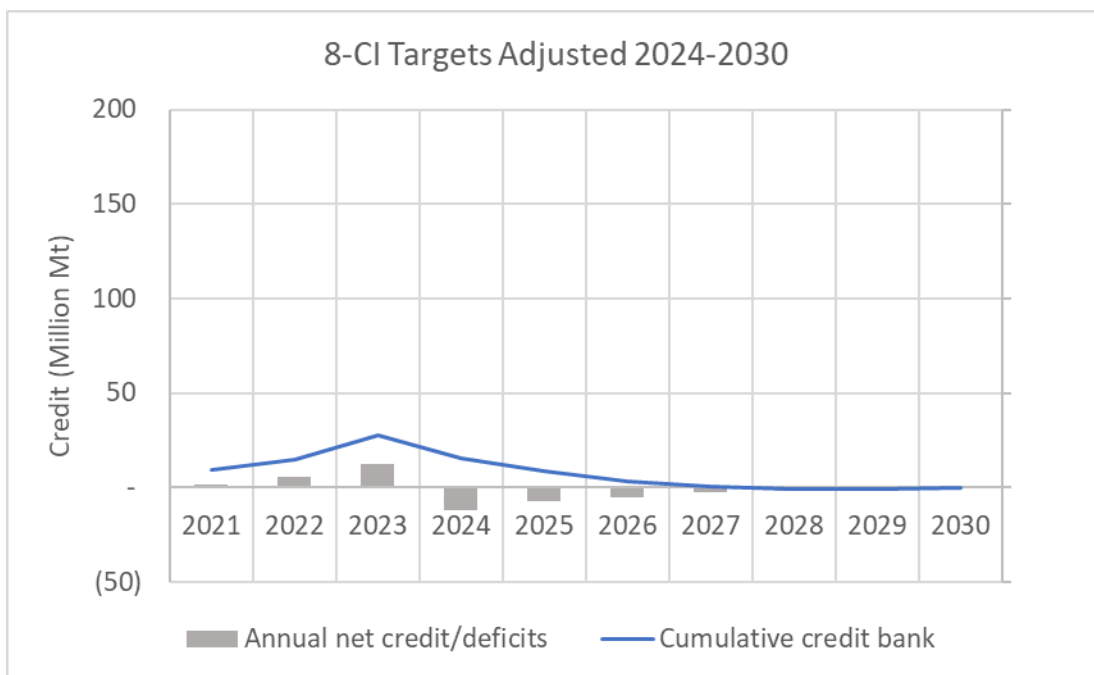
Conclusions

Based on our analysis of the key proposed changes to the LCFS program raised on the July 7th workshop, CalBio believes that:

- Neither increasing the 2030 CI reduction target (**Scenarios 1** and **2**) or restricting RD feedstocks (**Scenario 3**) will, by themselves, stabilize or bring the LCFS credit bank back to current levels.
- The 25% CI reduction target, combined with RD feedstock restrictions (**Scenario 4**), is sufficient to largely stabilize the bank but would do so somewhere between 30-50 million credits (about 3-5 times today's bank) and would likely further erode LCFS value and potentially disincentivize clean fuel investment, particularly in California-based dairy projects.
- The 30% CI reduction target, combined with RD feedstock restrictions (**Scenario 5**), brings the credit bank down to 7-13 million MT by 2030 and creates a decreasing credit bank during the middle part of the decade that offsets the tremendous credit build that will occur between 2022 and 2024.
- The other modeled policy options ("**a**") including the addition of FCI/HRI pathways for medium and heavy-duty vehicles, removal of forklifts from the LCFS program, and the addition of interstate jet fuel as a mandatory reporting fuel largely offset each other and are not significantly impactful relative to the impacts of RD-based credit generation or changes to the CI reduction targets.
- Accelerating the 2024 CI reduction target to at least 18 percent (**Scenario 6**) along with food based RD limits, is necessary to rapidly reduce the excess credit bank that is anticipated to build by 2024 as significant additional RD production comes online.
- Balancing credit and deficit generation over the majority of the decade does not necessarily require eliminating all food-based RD from the LCFS program. As much as 1 billion gallons of food-based RD could be accommodated if the 2030 CI reduction target is increased to 30 percent (**Scenario 7**). CARB could assess these Indirect Land-Use Changes (ILUC) impacts and food-based RD for limited use in hard-to-decarbonize sectors (e.g., aviation).
- Adjusting the compliance curve to balance the cumulative credit bank by the end of the decade (**Scenario 8**) allows CARB to achieve alignment with the State's climate targets and transportation fuels market without significant program modifications such as restricting RD.

An additional recommendation is to acknowledge that forecasts and models are not perfect and regulatory updates are slow and cannot respond quickly to market changes. The LCFS program does have a guard rail that limits the maximum LCFS price but it does not currently have a lower guard rail to maintain a minimum economic value that supports continued innovation and supply. CARB should consider a market-adjusting compliance curve that adjusts downward at a faster pace if the LCFS credit bank grows quarter over quarter, automatically responding to a market where low carbon fuel volumes exceed expectations.

Lastly, CalBio recognizes that strengthening the interim CI targets to 18% by 2024 as described in **Scenario 6** and 24% by 2024 in **Scenario 8** may not be feasible, in which case restrictions on food-based RD will become necessary to bring credit and deficit production back into balance. It is important to highlight that there may be broader long-term benefits to the state by doing so. For example, if CARB allows unlimited RD to penetrate the market as its primary source of credit generation, this will discourage heavy-duty fleets from transitioning to lower carbon alternatives such as renewable compressed natural gas (R-CNG). This perpetuates the use and extends the lifespan of diesel-burning trucks on the road and associated local air-pollution impacts. CNG vehicles on the other hand emit 90%

less NOx emissions than their diesel counterparts.[7] New diesel engines will not be required to meet these lower NOx emissions rates until 2027. By limiting RD, this will encourage fleet conversion to CNG vehicles and ensure credit generation occurs using fuel that results in greater environmental benefits for the state. This policy would be in alignment with the goals of addressing PM2.5, PM10, and NOx emissions identified in the Draft 2022 Scoping Plan that significantly burden disadvantaged communities.

Thank you for this opportunity to comment. CalBio urges CARB to build on the success of the LCFS program to further accelerate the reduction of GHG emissions in the transportation sector. We intend to further refine our models as CARB staff works through the amendment process and look forward to sharing our models and continuing our dialog with CARB on these issues. Please feel free to contact me at 559-667-9560 or acraig@calbioenergy.com.

Sincerely,

Andrew Craig
Vice President, Greenhouse Gas Programs

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[7] Nastri, Wayne, Executive Director of the South Coast Air Quality Management District (SCAQMD), "Letter to Partners in Environmental Justice and Environmental Health" August 3, 2021

Exhibit A:

Inventory of Plants and Projects Producing and Supplying RD to California

Location	State	Company 1	Company 2	Company 3	Feedstock	Operational date	Capacity mg/y	Status	Estimated RD yield	RD mg/y	Include project?
US announced projects											
Norco	LA	Diamond Green Diesel	Valero	Darling Ingredients	DCO, UCO, tallow	2013	290	Operational	90%	261	Y
Geismar	LA	Renewable Energy Group	-	-	DCO, SBO, UCO, tallow	2010	90	Operational	90%	81	Y
Paramount	CA	World Energy	-	-	DCO, UCO, tallow	2015	45	Operational	30%	14	Y
Garnett	KS	East-Kansas Agri-Energy	-	-	DCO	2015	5	Operational	90%	5	Y
Wyoming	WY	HollyFrontier	Sinclair oil	-	SBO, UCO	2018	153	Operational	90%	138	Y
Paramount	CA	World Energy	-	-	DCO, UCO, tallow	2025	295	Construction	30%	89	Y
Dickinson	ND	Marathon Petroleum	-	-	SBO	2020	184	Operational	90%	166	Y
Las Vegas	NV	Ryze Renewables	Phillips 66	-	SBO	Unknown	100	Construction	90%	90	N
Hull	IA	ReadiFuels	-	-	DCO, UCO, tallow	Unknown	36	Planned	40%	14	N
Port Westward	OR	NEXT Renewable Fuels	-	-	SBO	2024	598	Permitting phase	90%	538	N
Norco	LA	Diamond Green Diesel	Valero	Darling Ingredients	DCO, UCO, tallow	2021	430	Operational	90%	387	Y
Artesia	NM	HollyFrontier	-	-	DCO, UCO, UCO	2022	138	Construction	90%	124	Y
Port Arthur	TX	Diamond Green Diesel	Valero	Darling Ingredients	DCO, UCO, tallow	2023	470	Construction	90%	423	Y
Alon Bakersfield	CA	Global Clean Energy	-	-	SBO, Camelina	2022	230	Construction	75%	173	Y
Cheyenne	WY	HollyFrontier	-	-	SBO, DCO	2022	92	Operational	90%	83	Y
Newton	IL	St. Joseph Renewable Fuels LLC			N/A	Unknown	90	Abandoned	90%	81	N
Rodeo, San fran	CA	Phillips 66	-	-	SBO	2021	120	Operational	90%	108	Y
Rodeo, San fran	CA	Phillips 66	-	-	SBO, UCO, tallow	2024	680	FID	70%	476	Y
Martinez refinery	CA	Marathon Petroleum	Neste	-	SBO, DCO, tallow	2023	730	Construction	70%	511	Y
Wynnewood	OK	CVR energy	-	-	DCO, UCO	2022	100	Operational	90%	90	Y
Geismar	LA	Renewable Energy Group	-	-	DCO, SBO, UCO, tallow	2023	250	Construction	90%	225	Y
Coffeyville	KS	CVR energy	-	-	DCO, SBO	2023	150	Planned	90%	135	Y
Riverbank	CA	Aemetis	-	-	Tallow	2025	60	Planned	75%	45	Y
Cherry Point	WA	BP	-	-	Tallow, DCO, UCO	2018	42	Operational	90%	38	Y
Sierra	NV	Fulcrum Bioenergy	-	-	MSW	2022	11	Operational	40%	4	Y
Lake Preston	SD	Gevo	-	-	Corn ethanol	2025	60	Planned	15%	9	Y
Silsbee	TX	Gevo	-	-	Corn ethanol	2011	0.07	Operational	40%	0	Y
Port Charles	LA	Gron Fuels	Fidelis	-	SBO, DCO, tallow	Unknown	900	Pending FID	75%	675	Y
Soperton	GA	LanzaJet	British Airways	-	Corn ethanol	2023	10	Construction	0%	0	Y
Washington state	WA	Northwest Advanced Biofuels	Delta Air Lines	-	Wood waste	2024	60	Planned	0%	0	Y
Mississippi	MS	Velocys	-	-	Wood waste	2025	35	Planned	40%	14	Y
Lakeview, Oregon	OR	Red Rock Biofuels	-	-	Wood waste	Unknown	16	Construction paused	40%	6	N
Port Arthur	TX	Emerald Biofuels	-	-	SBO	2024	110	Planned	90%	99	Y
Bakersfield	CA	Kern Oil	-	-	Tallow	2009	4	Operational	90%	4	Y
El Segundo	CA	Chevron	-	-	SBO	2021	31	Operational	90%	28	Y
Chicago	IN	Fulcrum Bioenergy	-	-	MSW	2025	31	Planned	40%	12	Y
Great Falls	MT	Calumet	-	-	SBO, canola oil	2022	184	Construction	90%	166	Y
Hastings	NE	Heartwell Renewables	Cargill	Love's	Tallow	2023	80	Planned	90%	72	Y
Caldwell parish	LA	Louisiana Green Fuels	Strategic Biofuels	-	Wood waste	2025	32	Planned	90%	29	Y
Hugoton	KS	Seaboard Energy	-	-	SBO	2022	100	Construction	90%	90	Y
Bakersfield	CA	UrbanX	-	-	Tallow, DCO, UCO	Unknown	81	Planned	90%	73	N
Mobile	AL	Vertex Energy	-	-	SBO	2023	153	Planned	90%	138	Y
Chalmette refinery	LA	PBF Energy	-	-	SBO, DCO, UCO, tallow	2023	307	Planned	90%	276	Y
Cherry Point	WA	BP	-	-	Tallow, DCO, UCO	2022	67	Planned	90%	60	Y
Houston/Gulf Coast area	TX	Fulcrum Bioenergy	-	-	MSW	Unknown	35	Planned	40%	14	N
Riverbank	CA	Aemetis	-	-	Tallow	2026	30	Construction	75%	23	Y
El Segundo	CA	Chevron	-	-	SBO	2022	123	Construction	90%	111	Y
Mobile	AL	Vertex Energy	-	-	SBO	2023	61	Planned	80%	49	Y
Unknown	-	HOBO	Evolve Transition	-	SBO	2025	120	Planned	90%	108	Y
Imperial County	CA	Indaba	-	-	SBO, DCO, UCO, tallow	2024	100	Planned	90%	90	Y
Missouri	MO	Indaba	-	-	SBO, DCO, UCO, tallow	2024	100	Planned	90%	90	Y
Hennepin	IL	Marquis SAF	LanzaJet	-	Corn ethanol	Unknown	120	Planned	10%	12	N

Source: Low Carbon Fuel Standard Scenarios Tool (v1.2) created by BloombergNEF (BNEF)