

Study Session Ad Hoc Meeting #1 Summary

Part 1: August 26, 2026, 1:00-3:00 PM (Virtual)

Part 2: September 4, 2026 2-3 pm (Virtual)

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Part 1 Summary (8/26/26)

This meeting focused on planning the September 14 virtual Study Session for the full Consultation Group. That session will cover two topics: how to assess the health benefits of Community Air Protection (CAP) incentives using an OEHHA model called ECHO-AIR, and CARB's draft Roadmap to Reduce Air Toxics and its relationship to community air protection.

- CARB staff announced some staffing changes: Sarah Sullivant is now the staff lead along with Andrea supporting the Consultation Group. Michelle Byars, who used to be staff lead, now manages the section.
- CARB's Transportation and Toxics Division walked through the background, goals, and timeline for the draft Roadmap.
- OEHHA gave a draft presentation on ECHO-AIR analysis of CAPP incentives.

Members raised several concerns for the study session to address: whether CARB is sequencing control plans ahead of needed inventory improvements, the slow pace of CARB's regulatory process, the need for presentation materials community members can understand, and the importance of looking at more health outcomes and being clear about what the OEHHA analysis does and doesn't cover.

Members also noted that this meeting spent most of its time on the substance of the two topics rather than on planning how the study session itself should run. To catch up, the group agreed to use the September 4th planning meeting for ad hoc members to finish the September 14 agenda.

Part 2 Summary (9/4/26)

This meeting was the second Ad Hoc planning session focused more on preparing for the September 14 study session, with participants discussing how to structure presentations on the Toxics Roadmap and measuring health impacts from CAP (Community Air Protection) incentives. Deldi emphasized the importance of thinking "meta" and ensuring substantive

conversations occur with the full group. Some participants shared thoughtful substantive insights that will be shared with the consultation group on the 14th.

The group addressed confusion among stakeholders about the order of events and timeline for the Toxics Roadmap, with participants emphasizing the need to clearly explain how the roadmap connects to AB 617 community protection efforts and avoid getting too technical about source apportionment and regulatory strategies. Participants emphasized the importance of highlighting how lessons learned from AB 617 should inform the roadmap, particularly regarding cumulative impacts, monitoring and policy coordination, and the role of community engagement and anchor institutions. There was a suggestion to update the theory of change to include cognitive health and neuroprotection metrics beyond standard cancer and respiratory measures,

The discussion also covered how to present the ECHO-AIR health benefits tool developed by OEHHA, with participants suggesting focusing on both its policy accountability value at the state level and its potential as a local decision-making tool for air districts and communities. OEHHA explained that the ECHO-AIR tool was developed for OEHHA and can help answer specific AB 617 questions about health benefits and equity, though it wasn't specifically designed for cumulative impacts assessment. The group acknowledged that while no current tool effectively measures cumulative health impacts, the AB 617 questions are driving innovation in this area, with ongoing work focused on developing better methods to assess combined chemical and non-chemical stressors. Participants noted the importance of addressing health impacts beyond traditional cancer and respiratory endpoints. Additionally, it was noted to propose adding an objective to advance the science and invest in creating new datasets or improving reduced complexity models to enable more precise census tract-level analysis over time.

CARB proposed adding a budget update slide for the Study Session based on previous feedback from the Consultation Group.

Jasmine volunteered to also report out from the ad hoc planning.

Action Items

#	Action Item	Owner	Notes
SS1.1	Post the meeting summary and the September 14 study session agenda.	CARB staff	September 14 Study Session Agenda posted 9/4. Targeted for the end of the week of August 24. The agenda must be posted at least 10 business days before the study session.
SS1.2	To extend the Study Session planning discussion, add all ad hoc members to the September 2 debrief OR the	CARB staff; ad hoc members	Done. The September 4 meeting was used to walk through the draft September 14 agenda and get additional planning feedback.

#	Action Item	Owner	Notes
	September 4 pre-brief meetings; members to RSVP so staff can gauge turnout.		
SS1.3	Identify one or two ad hoc volunteers to report out at the September 14 study session and stay available to help plan the final agenda.	Ad hoc members; CARB staff	Done. John Balmes, Christine Zimmerman, and Jasmine Beltran volunteered.
SS1.4	Follow up on the question about monitoring emissions from airports and other low-altitude sources.	CARB staff (TTD, with MLD input)	Raised in the chat by Jasmine Beltran. Staff will check with the Monitoring and Laboratory Division before committing to a timeline.
SS1.5	Include ad hoc feedback in the September 14 presentations: plain language for community audiences, clearer wording on cumulative impacts, more health outcomes, and more detail on investment levels.	CARB staff; OEHHA	Done.
SS1.6	Share the Toxic-Metal Aerosol Real-Time Analysis (TARTA) paper mentioned in the chat with the group. Article on TARTA : Goftari et al. "Building Capacity for Advanced Community Air Monitoring in California's Overburdened Communities."	Jonathan London	Expected within a couple of months.
SS1.7	Present CARB Research Division's approach to estimating health benefits, including more health outcomes, at the October 29 study session.	CARB Research Division staff	This is part two of the health-measurement conversation, will present at 10/29 session.

#	Action Item	Owner	Notes
SS1.8	Add a slide on budget updates	CARB staff	Done. Slide added to the 9/14 Study Session Deck.

Topic No. 1 - Draft Roadmap to Reduce Air Toxics

Draft Roadmap to Reduce Air Toxics: Background and Timeline. TTD staff described the Roadmap as a document that explains why CARB needs to restart its non-diesel air toxics program and what it will take to succeed. A few things are driving this: expanded reporting under the amended Emissions Inventory Criteria and Guidelines (EICG) regulation, new OEHHA health values for ethylene oxide and acrolein, new monitoring tools including the completed Statewide Mobile Monitoring Initiative, and continued pressure from community advocates.

A public workshop on the Roadmap on August 25 drew more than 200 people. Public comments are open from August 12 through September 16, a separate 30-day formal comment period will run alongside the Board item, and the Roadmap goes to the Board in November.

Statutory grounding. Staff opened with the AB 617 requirement that CARB, working with the Scientific Review Panel on Toxic Air Contaminants, air districts, OEHHA, environmental justice organizations, affected industry, and other interested parties, build a statewide strategy to cut toxic air contaminants and criteria air pollutants in communities facing high cumulative exposure. Staff noted that toxic air contaminants are inherently local, that AB 617 emphasized non-vehicle sources of air toxics, and that the law repeatedly centers toxics – through the Criteria and Toxics Reporting regulation, the technology clearinghouse, monitoring plans, and community emissions inventories.

Program history. After CARB adopted the Diesel Risk Reduction Plan in 2000, it shifted a lot of its internal resources away from what's now called non-diesel air toxics and toward diesel PM control. Meanwhile, air districts kept working on non-diesel toxics through AB 2588 and their own rules – for example, South Coast's rules on hexavalent chromium and PCBTF. About three years ago, an internal conversation that started around the fixed toxics monitoring network grew into a cross-divisional effort (TTD, OCAP, MLD, AQPSD, and Research) to restart the program and put in writing why CARB needs to act now and what success will take.

Emerging toxics of concern. These aren't newly emitted chemicals, including PCBTF (described as a regrettable substitute for a VOC) – we're only now understanding how much they affect public health, and staff expect to find more like them as phased-in reporting continues.

Path to success. The Roadmap's goals include: strengthening relationships with air districts and partner state agencies; building real engagement with communities and industry, including possible voluntary reduction options; improving scientific capacity – especially

emissions inventory data quality, toxic source testing, and measurement methods; prioritizing toxics through a publicly developed Toxics Decision Framework; being transparent and sharing data publicly; modernizing the AB 2588 Hot Spots and AB 1807 toxics identification processes; developing policies for cumulative impacts analysis, recognizing that CARB's analyses and districts' permitting-level analyses will differ; and finding ways to reduce emissions beyond the ATCM process.

Roadmap Discussion Themes. Members raised sequencing, pace, and engagement considerations for the study session:

1. **Sequencing of control plans and data.** Tim Carmichael relayed industry concern that CARB seems to be moving ahead with control plans for acrolein and ethylene oxide before it has resolved gaps in its emissions inventory and source data. Staff clarified that these statewide plans are early internal drafts, will go through public review, and call for better data collection as a first step. Staff agreed clearer communication on this point would help.
2. **Foundational science vs. regulatory triggers.** Ryan Hayashi suggested CARB separate two kinds of work: foundational investments it can speed up now (rebuilding the toxics inventory, updating emission factors and chemical profiles, improving how it tests and monitors sources) from steps that carry direct permitting, enforcement, and legal consequences (like automatically designating toxic air contaminants or requiring source-level risk reduction). He stressed that sound science needs to underpin any regulation – some of the underlying data is about 20 years old – and that districts' concerns about unintended effects of the automatic-designation proposal should keep being considered.
3. **Pace of regulatory tools.** Members pointed out that the airborne toxic control measure (ATCM) process usually takes about five years, that communities often feel let down by how slowly emission sources get addressed, and that the study session should explore what faster options exist or would need new legislation. Staff acknowledged CARB relies almost entirely on ATCMs today and wants to pursue other approaches, including possible voluntary reduction agreements with industry.
4. **Scope and prioritization.** Answering a chat question from Jasmin Beltran about airports and other low-altitude sources, staff explained the Roadmap doesn't lay out a plan for any single pollutant. Instead, CARB will prioritize among emerging toxics through a Toxics Decision Framework that will be developed publicly – the right place for stakeholders to push for specific concerns. Dr. Balmes noted that existing research already shows airports are a source of toxic air contaminants beyond diesel.
5. **Accessibility and partnership.** Members urged CARB to involve community members in building the study session materials so they're understandable – since giving meaningful input depends on understanding the material. Staff agreed that success depends on real partnership among CARB, air districts, other state agencies with related authority (like DPR, DTSC, and OEHHA), communities, and industry.
6. **Federal context.** Tim Carmichael flagged a developing U.S. EPA proposal for heavy-duty trucks that would pair a much lower emissions threshold with the near-elimination

of penalties and requirements to use emission controls – which could mean real-world emissions end up higher than today's. Staff noted separately that federal rollbacks of toxics standards, including for ethylene oxide, don't affect California's rules, since California's authority comes from the Health and Safety Code.

7. **Science needs for specific pollutants.** In response to a question about whether studying ethylene oxide source apportionment causes problems given its existing regulatory designations, staff explained that a statewide rule already regulates ethylene oxide from sterilizers, but background levels appear higher than sterilizer emissions alone would explain – meaning more research is needed. Acrolein source characterization needs similar work.
8. **District support.** District representatives supported the effort and stressed that updated, well-supported science is what will make any resulting rules durable.

Topic No. 2 - Using ECHO-Air to Assess Health Impacts of CAPP Incentives

Framing. Dr. Balmes opened the topic by describing cumulative impacts as a driver of AB 617 from the start: regional-level criteria pollutant regulation doesn't cover all the chemical, physical, social, and psychological exposures that affect health in overburdened communities. He recalled that environmental justice stakeholders raised health outcomes at the very first Consultation Group meeting back in 2018, and that districts have consistently lacked the data and funding to measure health outcomes in AB 617 communities – making it hard to show the program's health impact.

OEHHA framed ECHO-AIR not as a final answer but as the start of a conversation about what more the program needs to know: are emissions reductions actually improving public health, who's benefiting, are those benefits reaching the communities with the highest cumulative burdens, and are these investments closing environmental health gaps? OEHHA is required to assess the benefits and impacts of California's climate policies, which is what led to this focus on California Climate Investments (CCI), not just CAPP.

OEHHA ECHO-AIR Presentation. OEHHA presented ECHO-AIR, a model built with UC Berkeley's Josh Apte lab that connects emissions, exposure, health, and equity. It uses PM2.5 and precursor emissions, models resulting PM2.5 levels on a 1-kilometer grid and estimates how many premature deaths are avoided. The CCI database covers PM2.5, NOx, and VOC emissions reductions; of about 120 CCI programs, roughly 39 reduce PM2.5. ECHO-AIR is a screening tool and doesn't replace more detailed models like CMAQ.

Applying the model to California Climate Investments (CCI) data from 2017–2023, OEHHA found that CAP incentives made up about 16% of PM2.5 reductions across CCI programs, but about 34% of the avoided-death benefits – an outsized health return because those reductions happen where people live. About half of the health benefits went to communities of color, and about 76% of investments landed in priority populations, a share that's been growing. A Central Valley mapping example compared high-burden areas with high PM2.5

reductions to high-burden areas with low reductions, showing where future investment could do the most good. See slides.

OEHHA noted some limits: it's a screening-level tool best used at the regional or statewide level, not the neighborhood level; it only looks at one health outcome (mortality); and it leaves out SO_x and ammonia, which weren't in the underlying CCI data – meaning the results may understate the real benefit.

Deldi Reyes flagged an important point for the full group: this analysis covers *a//CAP* incentives that air districts receive statewide through the Greenhouse Gas Reduction Fund – not just the 19 selected AB 617 communities. And the analysis time period ends at 2023, when many CERPs were still in earlier phases of implementation. Two laws, SB 535 and AB 1550, direct CCI investments toward populations identified through CalEnviroScreen.

Theory of Change Discussion Themes. Members offered framing and methodological feedback for the study session:

1. **Health outcomes beyond mortality.** Dr. Balmes recommended looking at more outcomes, like asthma flare-ups and reproductive health effects, since mortality – while important – is a severe endpoint. Jonathan London suggested disability-adjusted life years as a solid complementary measure, used in other models like [Integrated Transport Health Impact Model](#).
2. **Cumulative impacts framing.** Jonathan London noted a possible mismatch between introducing the tool through a “cumulative impacts” lens and its current focus on criteria pollutants, mainly PM_{2.5}. He suggested CARB clarify this for the public, look into a combined multi-pollutant index, and describe how more pollutants could be added later. OEHHA agreed ECHO-AIR is a starting point that can grow, including possibly exploring how the relationship between PM_{2.5} and health might change with community-level stressors, noting however, that no tool exists that can address cumulative impacts with quantitative assessment.
3. **Co-benefits, investment types, and timing.** Tim Carmichael asked staff to make clear at the study session that CCI investments are mainly meant to cut greenhouse gas emissions, with this analysis estimating the co-benefits; he also asked whether the analysis can tell which types of investments (not just which programs) worked best, and whether it can show how quickly benefits show up. OEHHA confirmed CAP incentives were the most effective CCI program on health and equity, that breaking results out by investment type hasn't been done yet but is possible within ECHO-AIR, and that timing hasn't been analyzed program-by-program yet.
4. **Related CARB work.** Deldi Reyes noted that CARB's Research Division has built a similar approach for estimating local health benefits over time, including more health outcomes, which will be presented at the late-October study session as part two of this conversation.
5. **Next steps on this feedback.** Presenters welcomed this feedback as ways to refine the September 14 session and confirmed that several of the suggested analyses are possible extensions of the tool.

Study Session Planning and Additional Preparation. Deldi Reyes had framed the ad hoc's task at the outset, noting that a little over 500 business days remain before the third Blueprint is due to the Board in 2028, and asking members to listen with two things in mind at once: taking in the material themselves, and anticipating how the full Consultation Group will react to it. Diane Takvorian pointed out that the group got absorbed in the substantive material and didn't finish planning the study session itself, and asked whether more planning time is needed given open questions about how this material connects to Blueprint 3.0 and to what the Consultation Group can actually do. Staff agreed to use the September 4 pre-brief meetings for continued planning.