

**From:** [Clegern, David@ARB](mailto:Clegern, David@ARB)  
**To:** [Kato, Stephanie@ARB](mailto:Kato, Stephanie@ARB)  
**Cc:** [Sahota, Rajinder@ARB](mailto:Sahota, Rajinder@ARB)  
**Subject:** FW: scoping plan questions  
**Date:** Thursday, May 19, 2022 10:40:29 AM

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Here's the original string.

Dave

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**From:** Clegern, David@ARB  
**Sent:** Tuesday, May 17, 2022 3:48 PM  
**To:** Ronayne, Kathleen <KRonayne@ap.org>  
**Cc:** Young, Stanley@ARB <stanley.young@arb.ca.gov>  
**Subject:** RE: scoping plan questions

We set out to use a 5 year averaging for nwl that would give us the 15 mmt in 2045.

After public discussion, we also workshopped a 20 year average that ends up with a source for the nwl. We decided that the 20 year average was more appropriate for the draft Scoping Plan for NWLs, given how emissions and sequestration from lands fluctuate over long timescales.

We are taking comment on the draft plan. Which averaging period we use will be part of the process in finalizing the plan. Under our original work of the 5-year average—the math in the draft plan gets to zero.

The draft will go to the board in June, then staff will evaluate comments, new modeling, data, etc. Any changes will be made during that period. This is a draft and is not final.

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**From:** Ronayne, Kathleen <[KRonayne@ap.org](mailto:KRonayne@ap.org)>  
**Sent:** Tuesday, May 17, 2022 2:58 PM  
**To:** Clegern, David@ARB <[dave.clegern@arb.ca.gov](mailto:dave.clegern@arb.ca.gov)>  
**Cc:** Young, Stanley@ARB <[stanley.young@arb.ca.gov](mailto:stanley.young@arb.ca.gov)>  
**Subject:** RE: scoping plan questions

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Thanks.

What I am still not understanding is why all four scenarios in a carbon neutral plan do not actually show carbon neutrality. Am I misunderstanding this? The entire document is based on four different scenarios but the underlying data doesn't show those scenarios reaching net zero.

Can you remind me of all the next steps before this is finalized? At what stage are the numbers and CDR assumptions redone?

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**From:** Clegern, David@ARB <[dave.clegern@arb.ca.gov](mailto:dave.clegern@arb.ca.gov)>  
**Sent:** Tuesday, May 17, 2022 2:33 PM  
**To:** Ronayne, Kathleen <[KRonayne@ap.org](mailto:KRonayne@ap.org)>  
**Cc:** Young, Stanley@ARB <[stanley.young@arb.ca.gov](mailto:stanley.young@arb.ca.gov)>  
**Subject:** RE: scoping plan questions

[EXTERNAL]

Contract docs are attached.

The modeling in the draft plan is not incorrect. The purpose of looking at multiple scenarios is to understand the trade-offs. The way the scenarios are presented, they are an apples-to-apples comparison. So, they meet the objective of providing the detail and analyses to inform how they compare to each other as we work towards finalizing the plan.

We did not go back and re-run the scenarios because they are always a snapshot in time. And, there will always be new information that can be incorporated and we needed to get a stable set of assumptions to be able to compare the scenarios and inform the process in working towards a final plan by the end of the 2022 which is the statutory deadline for the update. We had the same issue in the 2017 SP, where there was emerging legislation-SB 350-that we could not integrate into the plan because we need to lock down the emissions modeling to then do the economic and other analyses.

The draft plan included the footnote to be clear there would be a change in the status of the NWL for the final. And, the draft plan included the statement that the eventual need for CDR would depend on the success in reducing emissions and the role of the NWL.

For the final plan, the amount of CDR needed will depend on the changes to reduce emissions from the AB 32 sectors and any updates to the nwl modeling. This is not the final plan, it provides the opportunity for all parties to compare across different scenarios. The final plan needs to reconcile as much of any updates as it can. But, again, it will still be a snapshot in time.

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**From:** Ronayne, Kathleen <[KRonayne@ap.org](mailto:KRonayne@ap.org)>  
**Sent:** Tuesday, May 17, 2022 2:05 PM  
**To:** Clegern, David@ARB <[dave.clegern@arb.ca.gov](mailto:dave.clegern@arb.ca.gov)>  
**Cc:** Young, Stanley@ARB <[stanley.young@arb.ca.gov](mailto:stanley.young@arb.ca.gov)>  
**Subject:** RE: scoping plan questions

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Thanks for getting back to me well ahead of deadline.

Some follow ups:

You say It **was too late** to go back and redo the health and econ modeling with different numbers for CDR for the E3 side.

Too late in what context? Was CARB unable to push back the release date of the draft to better reflect the modeling? What is the purpose of releasing a draft based on modeling assumptions that CARB knows to be incorrect? More specifically, why is it fair to call this a plan for achieving carbon neutrality when all of the scenarios do not actually demonstrate carbon neutrality based on the incorrect NWL assumption?

Also, am I interpreting your response correctly to mean that CARB will account for this change in NWL by relying on more CDR to meet the targets?

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**From:** Clegern, David@ARB <[dave.clegern@arb.ca.gov](mailto:dave.clegern@arb.ca.gov)>  
**Sent:** Tuesday, May 17, 2022 1:57 PM  
**To:** Ronayne, Kathleen <[KRonayne@ap.org](mailto:KRonayne@ap.org)>  
**Cc:** Young, Stanley@ARB <[stanley.young@arb.ca.gov](mailto:stanley.young@arb.ca.gov)>  
**Subject:** Re: scoping plan questions

[EXTERNAL]

Kathleen,

Please remember that this is a draft, not a final document. We will be adding updated data and other information.

I'm checking on the E3 contract, but the RFP is posted [here](#). The contract was awarded based on the proposal.

Our answers are below the questions:

**From:** Ronayne, Kathleen  
**Sent:** Tuesday, May 17, 2022 11:11 AM  
**To:** Stanley Young <[stanley.young@arb.ca.gov](mailto:stanley.young@arb.ca.gov)>; Clegern, David@ARB <[dave.clegern@arb.ca.gov](mailto:dave.clegern@arb.ca.gov)>  
**Subject:** scoping plan questions

Hi there,

The BAU Reference included in the Scoping Plan assumes different levels of GHG emissions from 2015-2019 than what actually happened, according to the state's GHG inventory data. The attached spreadsheet shows this difference. For example, the BAU Reference Scenario lists the state as emitting 410MMTCo<sub>2</sub> equivalent in 2018, but the CARB GHG inventory data puts 2018 emissions at 425MMT. That's a 15MMt difference. What is the explanation for this?

CARB worked with E3 to take our inventory data to “calibrate” PATHWAYS. That entails breaking down the inventory categories for the years made public so far (each year must be verified before it is made public), into much finer detail and then mapping those into energy and technology paths in the PATHWAYS model. (For instance, we had high level data for the commercial and residential sectors for gas. We had to assume how many gas water heaters were out there and then how much fuel they use. We translate the high level fuel to very disaggregate technology points in the model itself. So we had to make some assumptions in that process going from fuel use to technology paths. We don’t capture the number of water heaters in the inventory process.) When, we summed up the totals in the PATHWAYS model, there was not an exact match to the inventory at the sector level. The mapping showed a 96.5% agreement. Given the long planning nature of the scoping plan, the more detailed analyses that are conducted when programs/regs are ultimately moved forward after the Plan is approved. This mapping agreement was sufficient for the intended purposes and role of the scoping plan.

In each of the Pathways Alternatives, total emissions do not pencil out to 0 in 2045 when you add together expected emissions from each sector and subtract the carbon removal assumptions. In fact, they all come out to 15MMT.

On page 94 of the scoping plan, footnote 165 says: **For purposes of the Draft 2022 Scoping Plan, CARB assumed NWL could compensate for 15 MMTCO<sub>2</sub>e of residual emissions. This assumption was made prior to completion of the NWL GHG analysis described in Chapter 2.**

This seems to indicate that all of the modeling that CARB is relying on to achieve net 0 assumes that NWL will help with carbon removal, despite the scoping plan also stating that in the Proposed Scenario (alt 3), NWL will contribute 8MMTCO<sub>2</sub>e annually. That would seem to indicate the model is actually 23 MMTCO<sub>2</sub>e off achieving carbon neutrality om 2045. Can you please explain this discrepancy? Why did CARB model an entire scenario around NWL assumptions that it knows are incorrect? How does CARB plan to achieve that additional 23MMT in emissions reductions?

The initial modeling in March showed a potential sink for NWL of about 15 mmt:

[2022 Scoping Plan Update Initial Modeling Results \(March 15, 2022\) \(ca.gov\)](#)

We used that as a place holder in all of the alternatives, so the alternatives are an apples-to-apples comparison.

The NWL modeling lagged the E3 modeling a bit. We had to lock the assumptions down for the E3 modeling to get data to other contractors to do the economic and health analyses. The NWL work ultimately showed NWL would be a source in 2045. Hence the footnote on page 94. It was too late to go back and redo the health and econ modeling with different numbers for CDR for the E3 side. What was critical was that the alternatives remained an apples-to-apples comparison.

And, here is the NWL deck that shows the negative 8 MMT.

[https://ww2.arb.ca.gov/sites/default/files/2022-04/SP22-Initial-AQ-Health-Econ-Results-ws-CARB-NWL\\_0.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-04/SP22-Initial-AQ-Health-Econ-Results-ws-CARB-NWL_0.pdf)

slide 9 for the negative flux.

This is one of the assumptions that we will reconcile for the final modeling/plan over the summer. We note a few places in the plan where we need to reconcile the final plan with updated information.

And, on page 74 we state, “Ultimately, the role for mechanical CDR will depend on the success of reducing emissions directly at the source in the AB 32 GHG Inventory sectors and the ability of the NWL to sequester carbon.”

Thanks,  
Kathleen



Kathleen Ronayne

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