

Comment 1 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: William
Last Name: Leighty
Email Address: wleighty@earthlink.net
Affiliation: The Leighty Foundation

Subject: 19 Aug webinar: C3 presentation
Comment:

19 Aug 20 0900: "CA C-neutral by 2045" Good analysis, good presentation. Thank you.

Two questions, please: First, related to Tim's & Bud's earlier questions. Bud forgot to mention Alaska-source CO2-emission-free energy, perhaps as tanker-loads of C-neutral Hydrogen carrier liquids, such as ammonia (NH3) and methyl cyclohexane (C7H14) .

1. Have you considered, and should we all consider and develop as a case, alternatives to assuming "high electrification", which I assume means that the electricity Grid is the primary decarb vector ? Given CA's large transportation energy demand, and that a dedicated gaseous hydrogen pipeline system will probably be required by 2045, and that "packing" the pipeline network provides a large amount of free energy storage, and that hydrogen will be used for industrial feedstocks as well as for energy, then perhaps the optimized C-free CA economy in 2045 will be an [energy + feedstocks] economy, using the hydrogen infrastructure system of generation, gathering, transmission, storage, distribution and end-use, as the backbone infrastructure -- much of it underground -- with electricity limited to the "first and last km, or few km" of the total CA C-free [energy + feedstocks] system ? Should you, and we, develop this as a case ?

2. Should you, we, assume that by 2045 CA's transportation modal mix will be the same as today's ? By 2045, to accommodate millions fleeing rapid sea level rise, CA may need to overlay on its low-density urbanized areas novel, high-density modules of 100,000 people or more, entirely excluding personal vehicles from the urbanized area, a topology based on new fixed-guideway closed loops -- i.e donut, torus. Should you, and we, develop this likely "CarFree" trend as a case, as an alternative ?

I've spent the past 20 years researching renewables-source, CO2-emission-free, energy systems based on hydrogen, and "the other hydrogen", anhydrous ammonia, presenting the results at energy conferences worldwide and in USA, so I hope I have some useful insights. Presentations are available at www.leightyfoundation.org/earth.php Thank you.

Attachment: www.arb.ca.gov/lists/com-attach/1-cn-e3-report-ws-VyBRJ1NjVTBWfQBh.pdf

Original File Name: WP16-A-Merge.pdf

Date and Time Comment Was Submitted: 2020-08-19 11:57:05

No Duplicates.

Comment 2 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: David

Last Name: Bezanson

Email Address: bezanpsy3506@hotmail.com

Affiliation:

Subject: Achieving Carbon Neutrality

Comment:

Thanks for the webinar featuring the E3 report.

Of the 3 options, I favor Zero Carbon Energy (ZCE) most because it is likely to be most effective and the lowest risk.

CDR is the most risky and is likely to be less effective than the ZCE and Balanced plans. CDR technologies have the following problems.

- * The US Dept. of Energy declared that it is not cost-effective on a commercial scale. Recently, these technologies have an operating cost of about \$100/tCO₂.

- This excludes the cost of manufacture, maintenance, transportation, subterranean injection, land for equipment and storage, disposal and recycling of used equipment, and insurance.

- * CDR technologies have been researched and developed for over 16 years and innovations have been marginal in recent years, despite burgeoning scientific understanding.

- * CDR technologies do not remove toxic co-pollutants from combustion of fossil fuels or biomass. Worldwide, annually, 8.8 million people are killed by air pollution.

- Such mass homicide is primarily due to toxic co-pollutants rather than GHGs.

- * The feasibility of long-term subterranean storage and leak prevention is unknown.

In contrast, natural sequestration by marine and terrestrial botanicals has been well-proven. Old-growth forests store more carbon than any other habitat. They have been shown to remove many co-pollutants including sulphur oxides, nitrogen oxides, particulate matter, and ground-level ozone. Forests provide an impressive array of ecosystem services. Expanded protection of ocean and land in CA has been proposed in AB3030, which has passed the Assembly and is proceeding through Senate committees. Legislation to preserve the ecological integrity of working lands is also making headway in the Senate. Organic agroecology that maximizes carbon storage is needed. Another natural measure that would significantly drive down GHGs is to replace livestock raising with crop agriculture. I look forward to the 2022 Scoping Plan re. natural sequestration

and have numerous recommendations re. policies that will facilitate this.

Replacing fossil energy (including NG) with renewable electricity for all sectors is the most important policy objective and is the core of the ZCE plan.

The renewable portfolio standard energy sources specified in SB100 are wind, solar, geothermal, and existing large-scale hydro. It excludes fossil, biomass, biofuels, and nuclear energy. Since passage of SB100, it has been discovered that electrolytic hydrogen may be produced with 100% renewable energy, e.g., wind. It is likely that it meets the RPS definition.

A major problem with biofuels and biomass is that they remove plant material from the environment. We need every botanical that is not grown as a crop for humans to be preserved so it may continue to store carbon. And expired plants must be naturally recycled into the earth to enrich the soil and store carbon in the soil. Combustion of botanicals immediately loads the atmosphere with GHGs and toxic co-pollutants. There are 22 biomass facilities in CA. All are 3 to 4 decades old lack state of the art CDR technologies. Emissions from biomass incineration equal that of thermal coal combustion. The cost of biomass electricity is more than double that of fossil electricity. Though woody biomass, even when imported, is classified as renewable energy in Europe, it in fact is far from renewable or zero carbon.

Efficiency, heat pumps, and concrete that has a cement substitute are keen ideas.

Curbing GHGs via carbon pricing may be effective for decreasing GHGs only if numerous policy provisions are followed. I have lots of research on this if you are interested.

Let me know if you wish clarification or citations.

Thanks,

David Bezanson, Ph.D.
CA resident and voter

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2020-08-20 15:20:19

No Duplicates.

Comment 3 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Daniel
Last Name: Chandler
Email Address: dwchndl@gmail.com
Affiliation:

Subject: E3 Carbon Neutrality Scenarios report in August 2020
Comment:

Please see attached file.

Attachment: www.arb.ca.gov/lists/com-attach/3-cn-e3-report-ws-VDddNF0xBDpXNAZo.docx

Original File Name: Comments on E3 report on achieving carbon neutrality.docx

Date and Time Comment Was Submitted: 2020-08-21 11:42:34

No Duplicates.

Comment 4 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Jean-Guillaume
Last Name: Lonjaret
Email Address: jgl33@nau.edu
Affiliation:

Subject: Comments
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/4-cn-e3-report-ws-AGoAYQNuUV1XMlc4.docx

Original File Name: JGL Commentaires ARB webinar 19 aug.docx

Date and Time Comment Was Submitted: 2020-08-31 13:32:40

No Duplicates.

Comment 5 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Glen
Last Name: Murrell
Email Address: glen.murrell@wyo.gov
Affiliation: Wyoming Energy Authority

Subject: Wyoming Comments on the Carbon Neutrality Report
Comment:

Dear CARB:

Attached please find the comments of the Wyoming Energy Authority on the carbon neutrality report.

Regards,

Dr. Glen Murrell
Executive Director
Wyoming Energy Authority

Attachment: www.arb.ca.gov/lists/com-attach/5-cn-e3-report-ws-AnVSMVIyWFQFYFU6.pdf

Original File Name: WEA Comments CARB Carbon Neutrality Pathways Report.pdf

Date and Time Comment Was Submitted: 2020-09-08 10:48:57

No Duplicates.

Comment 6 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Claire

Last Name: Broome

Email Address: cvbroome@gmail.com

Affiliation:

Subject: Critical information needed to improve E3 model

Comment:

see attached: E3 model is incomplete without data on costs of health impacts from fossil fuel combustion and NWL data on costs of carbon sequestration.

Attachment: www.arb.ca.gov/lists/com-attach/6-cn-e3-report-ws-BmVcO1ckAzJXDgRh.docx

Original File Name: CARB energy sector informal comments E3 study.docx

Date and Time Comment Was Submitted: 2020-09-08 16:12:42

No Duplicates.

Comment 7 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Maris

Last Name: Densmore

Email Address: maris.densmore@crc.com

Affiliation: California Resources Corporation

Subject: CRC Comments on Achieving Carbon Neutrality in California

Comment:

Thank you for the opportunity to provide comments.

Attachment: www.arb.ca.gov/lists/com-attach/7-cn-e3-report-ws-UzBWIIU3Aw9VNgMw.pdf

Original File Name: CRC_E3_Comments.pdf

Date and Time Comment Was Submitted: 2020-09-08 16:48:04

No Duplicates.

Comment 8 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

This comment was posted then deleted because it was unrelated to the Workshop item or it was a duplicate.

Comment 9 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Sam

Last Name: Wade

Email Address: sam@rngcoalition.com

Affiliation: Coalition for Renewable Natural Gas

Subject: RNG Coalition Comments on Achieving Carbon Neutrality in California

Comment:

Please see our attached comments.

Attachment: www.arb.ca.gov/lists/com-attach/9-cn-e3-report-ws-W2kFM1VkBKG5WYAI1.pdf

Original File Name: 200907 RNG Coalition Comments on CARB Carbon Neutrality Modeling Workshop FINAL.pdf

Date and Time Comment Was Submitted: 2020-09-09 12:31:32

No Duplicates.

Comment 10 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Shannon

Last Name: Harroun

Email Address: sharroun@placer.ca.gov

Affiliation: Placer County Air Pollution Control Dist

Subject: Comments on Draft E3 Carbon Neutrality Report

Comment:

Please see attached comments from Placer County Air Pollution Control District on Draft E3 Carbon Neutrality report.

Attachment: www.arb.ca.gov/lists/com-attach/10-cn-e3-report-ws-BnZWPAFhUWELaAJw.pdf

Original File Name: Placer APCD Comments on Draft E3 Carbon Neutrality Report.pdf

Date and Time Comment Was Submitted: 2020-09-09 13:32:03

No Duplicates.

Comment 11 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Emanuel

Last Name: Wagner

Email Address: ewagner@californiahydrogen.org

Affiliation: California Hydrogen Business Council

Subject: Comments by CHBC on Public Workshop to Discuss Achieving Carbon Neutrality in California:

Comment:

CHBC submits the attached comments on the Public Workshop to Discuss Achieving Carbon Neutrality in California: A Report by E3

Attachment: www.arb.ca.gov/lists/com-attach/12-cn-e3-report-ws-WzhdM1EyAzMEXQZl.pdf

Original File Name: CHBC_Comments_E3_CN_DraftReport.pdf

Date and Time Comment Was Submitted: 2020-09-09 13:33:37

No Duplicates.

Comment 12 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Julia

Last Name: Levin

Email Address: jlevin@bioenergyca.org

Affiliation: Bioenergy Association of California

Subject: BAC Comments on Draft E3 Carbon Neutrality Report

Comment:

Please find BAC's comments attached.

Attachment: www.arb.ca.gov/lists/com-attach/13-cn-e3-report-ws-AWMHYAZkU18BZAdo.pdf

Original File Name: BAC Comments on Draft E3 Carbon Neutrality Report.pdf

Date and Time Comment Was Submitted: 2020-09-09 14:08:44

No Duplicates.

Comment 13 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: chelsea

Last Name: sexton

Email Address: evchels@gmail.com

Affiliation: Strong Plug-In Hybrid Coalition

Subject: Comments: August 19 workshop: Achieving Carbon Neutrality in CA: A Report by E3
Comment:

Please see the attached letter.

Attachment: www.arb.ca.gov/lists/com-attach/14-cn-e3-report-ws-UyAHdVQnU28BaQZh.pdf

Original File Name: Strong PHEV Coalition Letter to CARB Staff on E3 study Sept 9 2020 final.pdf

Date and Time Comment Was Submitted: 2020-09-09 15:26:11

No Duplicates.

Comment 14 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Vincent

Last Name: Wiraatmadja

Email Address: vincent@weidemangroup.com

Affiliation:

Subject: IHI Power Services Comment Letter on E3 Report

Comment:

IHI Power Services Comment Letter on E3 Report

Attachment: www.arb.ca.gov/lists/com-attach/15-cn-e3-report-ws-B3UFZgd1AiFVPFc5.pdf

Original File Name: Response to E3 Workshop- A Comprehensive Approach to Biomass.pdf

Date and Time Comment Was Submitted: 2020-09-09 15:39:16

No Duplicates.

Comment 15 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Janice

Last Name: Lin

Email Address: regulatory@ghcoalition.org

Affiliation: Green Hydrogen Coalition

Subject: Comments of Green Hydrogen Coalition (GHC) on E3 Carbon Neutrality Report
Comment:

Please see attached Comments of the Green Hydrogen Coalition (GHC) on the Public Workshop - Achieving Carbon Neutrality in California: A Report by E3.

Attachment: www.arb.ca.gov/lists/com-attach/16-cn-e3-report-ws-VDdUPVU5AD4HZFU7.pdf

Original File Name: Comments of Green Hydrogen Coalition on E3 Carbon Neutrality Report.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:05:05

No Duplicates.

Comment 16 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Thomas

Last Name: Lawson

Email Address: thomas@cngvc.org

Affiliation:

Subject: Coalition Comments on E3 Study on Carbon Neutrality

Comment:

Please see our attached comments.

Attachment: www.arb.ca.gov/lists/com-attach/17-cn-e3-report-ws-Wz5SZwNdU2NVMlcl.pdf

Original File Name: E3 Carbon Neutrality Report Comment Letter Final.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:02:17

No Duplicates.

Comment 17 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Rock

Last Name: Zierman

Email Address: rock@cipa.org

Affiliation: CIPA

Subject: E3 CN Study Comments

Comment:

See attached CIPA Comments

Attachment: www.arb.ca.gov/lists/com-attach/18-cn-e3-report-ws-UzBdMgR1VmRXDglq.pdf

Original File Name: CIPA Carbon Neutral Comments 9-9-20-final.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:18:55

No Duplicates.

Comment 18 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Fariya

Last Name: Ali

Email Address: fariya.ali@pge.com

Affiliation:

Subject: PG&E Comments on E3 Report: Achieving Carbon Neutrality in CA

Comment:

See attached comments.

Attachment: www.arb.ca.gov/lists/com-attach/19-cn-e3-report-ws-UDUFMFULBzcCaghX.pdf

Original File Name: E3 CN Study_PGE Comments_09-09-20.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:25:50

No Duplicates.

Comment 19 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Evan

Last Name: Edgar

Email Address: revanevan@hotmail.com

Affiliation:

Subject: Draft E3 Report on Carbon Neutrality

Comment:

Letter attached

Attachment: www.arb.ca.gov/lists/com-attach/20-cn-e3-report-ws-Wj1SNVMgAzIFXFUw.pdf

Original File Name: CARB E3 Carbon Neutrality Report Comments.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:47:04

No Duplicates.

Comment 20 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Katelyn

Last Name: Roedner Sutter

Email Address: kroedner@edf.org

Affiliation: Environmental Defense Fund

Subject: EDF comments re: draft E3 Carbon Neutrality report

Comment:

Attached please find comments from Environmental Defense Fund regarding the draft report by E3, "Achieving Carbon Neutrality in California."

Attachment: www.arb.ca.gov/lists/com-attach/21-cn-e3-report-ws-BWBTMVE2Ag4FYANs.pdf

Original File Name: EDF comments - E3 draft CN report.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:43:39

No Duplicates.

Comment 21 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Clayton
Last Name: Munnings
Email Address: munnings@ieta.org
Affiliation:

Subject: IETA Comments on CARB's Workshop Covering E3 Report
Comment:

Dear CARB,

Please find IETA's comments attached.

Thank you for the opportunity to provide comment.

Sincerely,

Clayton Munnings
West Coast Representative
International Emissions Trading Association

Attachment: www.arb.ca.gov/lists/com-attach/22-cn-e3-report-ws-UzpQMwZzUmABWFUw.pdf

Original File Name: ieta_e3_comment_letter.pdf

Date and Time Comment Was Submitted: 2020-09-09 16:52:01

No Duplicates.

Comment 22 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Ignacio

Last Name: Fernandez

Email Address: ignacio.m.fernandez@sce.com

Affiliation: Southern California Edison

Subject: CE comments on Achieving Carbon Neutrality in California: A Report by E3
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/23-cn-e3-report-ws-WygBZFw4WVVXMglo.docx

Original File Name: SCE_CARB_E3.draft.comments.Final_09092020.docx

Date and Time Comment Was Submitted: 2020-09-10 09:39:34

No Duplicates.

Comment 23 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Mary
Last Name: Solecki
Email Address: ombcomm@arb.ca.gov
Affiliation: AJW

Subject: Comments
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/24-cn-e3-report-ws-ADJda1RIA2kKPAQ9.pdf

Original File Name: 200909 Carbon Neutrality AJW Comments.pdf

Date and Time Comment Was Submitted: 2020-09-10 09:43:21

No Duplicates.

Comment 24 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Brooke

Last Name: Beebe

Email Address: ombcomm@arb.ca.gov

Affiliation: Hemlock Semiconductor Operations

Subject: Comments

Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/25-cn-e3-report-ws-V2UANgEwWDJQZIRt.pdf

Original File Name: 200909 HSC CARB E3 Comments .pdf

Date and Time Comment Was Submitted: 2020-09-10 09:45:42

No Duplicates.

Comment 25 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Neil
Last Name: Koehler
Email Address: neilk@pacificethanol.com
Affiliation:

Subject: Comments
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/26-cn-e3-report-ws-UDVXYgAsBTVVPAVo.docx

Original File Name: e3-comments.docx

Date and Time Comment Was Submitted: 2020-09-10 09:49:54

No Duplicates.

Comment 26 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Bryan
Last Name: Sherbacow
Email Address: ombcomm@arb.ca.gov
Affiliation: World Energy

Subject: Comments
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/27-cn-e3-report-ws-W2kHMVRIWDJVYwQw.pdf

Original File Name: 200904 WE Carbon Neutrality Draft Comments(BJS-RL).pdf

Date and Time Comment Was Submitted: 2020-09-10 11:11:49

No Duplicates.

Comment 27 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: Ryan
Last Name: McCarthy
Email Address: ryan@weidemangroup.com
Affiliation:

Subject: Comments
Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/28-cn-e3-report-ws-WjkAZ1IhV2ZVDAdk.pdf

Original File Name: CARB Carbon Neutrality Scenarios Workshop
Comments_TNRE_MP_Orsted.pdf

Date and Time Comment Was Submitted: 2020-09-11 09:03:56

No Duplicates.

Comment 28 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: George

Last Name: Peridas

Email Address: peridas1@llnl.gov

Affiliation: Lawrence Livermore National Laboratory

Subject: Comments on draft E3 carbon neutrality report

Comment:

See attached.

Attachment: www.arb.ca.gov/lists/com-attach/29-cn-e3-report-ws-BmMANVcJBzdRCAdp.pdf

Original File Name: E3_C neutrality draft_LLNL comments_14Sep2020.pdf

Date and Time Comment Was Submitted: 2020-10-07 10:23:41

No Duplicates.

Comment 29 for Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) - 1st Workshop.

First Name: William

Last Name: Zobel

Email Address: wzobel@californiahydrogen.org

Affiliation: California Hydrogen Business Council

Subject: Comments

Comment:

See attached

Attachment: www.arb.ca.gov/lists/com-attach/30-cn-e3-report-ws-AWJWOAFiBTUCWwVp.docx

Original File Name: CHBC Letter_CARB E3 Carbon Neutrality Report_11.16.20 (002).docx

Date and Time Comment Was Submitted: 2020-11-18 09:06:11

No Duplicates.

There are no comments posted to Public Workshop- Achieving Carbon Neutrality in California: A Report by E3 (cn-e3-report-ws) that were presented during the Workshop at this time.