

## **Comment 1 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Stephen

Last Name: Gillette

Email Address: sgillette@capstoneturbine.com

Affiliation: Capstone Turbine Corp.

Subject: Technology Assessment Workshop

Comment:

Capstone Turbine Corporation is a California-based company that designs and manufactures microturbines for use in stationary power generation as well as series hybrid vehicle applications. Our technology provides clean combustion, and several of our models are already certified by CARB to meet the stringent 2010 heavy duty diesel engine emissions levels without requiring any exhaust after-treatment. Our microturbines can operate on diesel fuel or natural gas. We are working with several system integrators in California to perfect series hybrid drive systems that can be utilized in light, medium, and heavy duty truck and bus applications. We are also working with major national OEM's and end use customers to demonstrate the viability of these advanced hybrid drivetrains. Capstone looks forward to participating in CARB's technology assessment, as we believe there is significant opportunity to reduce criteria pollutant emissions, reduce greenhouse gas emissions, and provide customer value using series hybrid drive systems with microturbine range extenders.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2014-09-02 08:56:28

No Duplicates.

## **Comment 2 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Julia

Last Name: Levin

Email Address: [jlevin@bioenergyca.org](mailto:jlevin@bioenergyca.org)

Affiliation: Bioenergy Association of California

Subject: Technology and Fuels Assessment

Comment:

Attached please find the comments of the Bioenergy Association of California on the September 3 staff presentation on Technology Assessment of Transportation Fuels.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/2-techfuel-ws-AWNdOgZkUl4CZwZp.pdf>

Original File Name: BAC Comments on Transportation Fuels Technology Assessment.pdf

Date and Time Comment Was Submitted: 2014-09-15 16:37:58

No Duplicates.

## Comment 3 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.

First Name: Joseph

Last Name: Kubsh

Email Address: [jkubsh@meca.org](mailto:jkubsh@meca.org)

Affiliation: MECA

Subject: Alternative Fuels

Comment:

In the discussion of alternative transportation fuels, ARB staff rightly draws attention to the issue of well-to-wheels methane leakage associated with the use of natural gas fueled vehicles and engines. In addition to this methane leakage issue, ARB-sponsored work with West Virginia University has also recently reported that two high mileage stoichiometric, natural gas bus engines emitted ultrafine particulates that were associated with lubricant consumption in these engines. The PM composition of these buses correlated with oil-derived elemental species. Chemical speciation showed that lube oil-based additives and wear metals were a major fraction of the PM from these buses. The composition of the PM contained oil-derived (Ca, Mg, Zn, P) and engine-wear (Fe, Cu, Al) metals. Detectable levels of K and Mn were also found. The mass-based, lube oil-derived metal emissions were an order of magnitude higher than those from DPF-equipped diesel engines. Although the two buses operated well within the U.S. EPA 2010 standards for PM and NO<sub>x</sub>, the study does indicate the possibility of PM emissions from natural gas engines to increase due to deterioration and increased lube oil consumption. This study suggests that, although the PM mass emissions from natural gas vehicles are low, the presence of nucleation mode solid metal particles could pose significant health risks in the alveolar regions of the respiratory system due to the higher surface area of these nanoparticles. The complete reference of the published report is: A. Thiruvengadam, et al., "Characterization of Particulate Matter Emissions from a Current Technology Natural Gas Engine," *Environmental Science & Technology*, DOI: 10.1021/es5005973, June 30, 2014, [pubs.acs.org/doi/abs/10.1021/es5005973](http://pubs.acs.org/doi/abs/10.1021/es5005973).

Lubricant consumption in DME-fueled engines would also be expected to generate ultrafine particles that would likely contain similar solid metal particles to those observed on these stoichiometric, natural gas bus engines. Exhaust filter technology similar to DPFs could be applied to stoichiometric, natural gas engines or engines fueled by DME that would largely eliminate these ultrafine particulate emissions. If natural gas or DME-fueled engines are to become significant actors in the transportation sector, the issue of their ultrafine particulate emissions must be dealt with through the application of exhaust filters. Policies such as controlling ultrafine particulate emissions through the use of a particulate number emission limit for mobile source engines would provide ARB with a mechanism for ensuring that these alternatively fueled engines do not create a potentially significant health risk for the state of California.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2014-09-21 08:00:27

No Duplicates.

## **Comment 4 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: john

Last Name: reed

Email Address: jreed@northamericanrepower.com

Affiliation: North American Repower

Subject: In Use Diesel Emissions and the Legacy Fleet

Comment:

North American Repower develops technology to allow the use of the lowest carbon fuel available today in Heavy Duty applications and TRUs.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/4-techfuel-ws-BWQGcgdkVHNXNANG.docx>

Original File Name: ARBtechltr.docx

Date and Time Comment Was Submitted: 2014-09-22 14:16:57

No Duplicates.

## **Comment 5 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Evan

Last Name: Edgar

Email Address: evan@edgarinc.org

Affiliation: Ca. Compost Coalition

Subject: Transportation Fuels – CARB Technology Assessment Workshops

Comment:

The California Compost Coalition (CCC) is a statewide organization representing haulers and processors of organic waste, including anaerobic digestion facility operators who produce renewable compressed natural gas (RNG). CCC members operate a fleet of hundreds of heavy-duty collection vehicles, and are transitioning from diesel to lower carbon compressed natural gas (CNG) fuel, with plans to make our own carbon-negative RNG fuel with the organic waste we collect using anaerobic digestion technologies. CCC attended the Workshop on September 3, 2014, and has the following comments attached, following the format of the CARB PowerPoint presentation.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/5-techfuel-ws-AWJVMgFyV2YKU1Uh.pdf>

Original File Name: CARB Tech Assessment Workshop Comments 091514.pdf

Date and Time Comment Was Submitted: 2014-09-28 12:57:50

No Duplicates.

## **Comment 6 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Don

Last Name: Anair

Email Address: [danair@ucsusa.org](mailto:danair@ucsusa.org)

Affiliation:

Subject: Comments on ARB Tech Assessment

Comment:

Please find attached comments related to various sectors of the technology assessment submitted on behalf of NRDC, UCS, RAMP, and Earth Justice.

Regards,

Don Anair

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/6-techfuel-ws-BXFWNVIwADsHb1c+.pdf>

Original File Name: Technical Assessment Comments 9-30-2014.pdf

Date and Time Comment Was Submitted: 2014-09-30 09:25:21

No Duplicates.

## **Comment 7 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Darren  
Last Name: Bouton  
Email Address: DBouton@ajw-inc.com  
Affiliation: AESI

Subject: Technology Assessments Workshop - Trucks

Comment:

Attached please find the comments of the Advanced Engine Systems Institute (AESI) on the September 3 staff presentation on Technology Assessment of Transportation Fuels.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/7-techfuel-ws-ATBcblNiA2kBNVVj.pdf>

Original File Name: 140926 AESI Comments on ARB Tech Assess Wkshp.pdf

Date and Time Comment Was Submitted: 2014-09-30 11:41:02

No Duplicates.

## **Comment 8 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Eric

Last Name: McCarthy

Email Address: EMcCarthy@proterra.com

Affiliation:

Subject: Medium- and Heavy-Duty Battery Electric Technology Assessment Comments

Comment:

Thank you for the opportunity to provide comments on the Medium- and Heavy-Duty Battery Electric Vehicles Technology Assessment Workshop. Attached are Proterra's comments related to the workshop.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/8-techfuel-ws-AmECZVYlAzIFXFA9.pdf>

Original File Name: CARB\_M\_HDuty\_Battery\_Assess\_Proterra Comments.pdf

Date and Time Comment Was Submitted: 2014-09-30 13:51:06

No Duplicates.

## **Comment 9 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Edward  
Last Name: Lovelace  
Email Address: elovelace@xlhybrids.com  
Affiliation: XL Hybrids

Subject: Truck and Bus Sector Technology Assessment Comments  
Comment:

Dear Mr Sax and Staff,

Please see the attached letter with comments.

Sincerely,  
Ed Lovelace

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/9-techfuel-ws-USITOVAOUGtVKIAy.pdf>

Original File Name: XL Hybrids Comments to ARB on Technology and Fuels Assessments 2014-09-30.pdf

Date and Time Comment Was Submitted: 2014-09-30 21:12:39

No Duplicates.

## **Comment 10 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Chris

Last Name: Shimoda

Email Address: cshimoda@caltrux.org

Affiliation:

Subject: Comments of the American Trucking Associations and California Trucking Association

Comment:

Please see attached.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/10-techfuel-ws-AWAFdwBgAnwHYlMn.pdf>

Original File Name: ATA-CTA Tech Assessments Comments 10012014.pdf

Date and Time Comment Was Submitted: 2014-10-01 12:17:43

No Duplicates.

## **Comment 11 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Bill

Last Name: Van Amburg

Email Address: bvanamburg@calstart.org

Affiliation: CALSTART

Subject: Tech Assessment Comments - TRUCKS

Comment:

CALSTART provides these high level comments on the truck sector technology and fuels assessment reports to date, looking across multiple fuel and tech categories.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/11-techfuel-ws-WjkHYAFsV3dVJwRl.pdf>

Original File Name: CALSTART ARB Tech Assessment Input 10-1-14.pdf

Date and Time Comment Was Submitted: 2014-10-01 17:30:59

No Duplicates.

## **Comment 12 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: John  
Last Name: Atkinson  
Email Address: [jatkinson@vng.co](mailto:jatkinson@vng.co)  
Affiliation: VNG

Subject: Transportation Fuels Technology Assessment

Comment:

Thanks for the opportunity to submit comments on the Technology Assessment for Transportation Fuels, presented September 3. The attached comments are submitted on behalf of VNG, a provider of refueling infrastructure for light-duty natural gas vehicles and a member of the California Natural Gas Vehicle Coalition (CNGVC).

Regards,  
John Atkinson  
VNG, Director of Regulatory and Government Affairs  
Los Angeles, CA

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/12-techfuel-ws-VCJQOFM1VlpVMFI9.pdf>

Original File Name: VNG comments on ARB Technology Assessment for Transportation Fuels.pdf

Date and Time Comment Was Submitted: 2014-10-01 18:03:07

No Duplicates.

## **Comment 13 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Tanya

Last Name: Peacock

Email Address: tpeacock@semprautilities.com

Affiliation: Southern California Gas Company

Subject: Comments on Sustainable Freight Strategy Technology Assessment--Methane Leakage

Comment:

Comments on Sustainable Freight Strategy Technology Assessment--Methane Leakage, as presented at the September 3, 2014 workshop.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/17-techfuel-ws-BXZWM1YwAw9RI1Uw.pdf>

Original File Name: SCG Tech Assess CH4.pdf

Date and Time Comment Was Submitted: 2014-10-03 11:25:37

No Duplicates.

## **Comment 14 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Tanya

Last Name: Peacock

Email Address: [tpeacock@semprautilities.com](mailto:tpeacock@semprautilities.com)

Affiliation: Southern California Gas Company

Subject: Comments on Sustainable Freight Strategy Technology Assessment--Truck and Bus Sector

Comment:

Comments on Sustainable Freight Strategy Technology Assessment--Truck and Bus Sector, as presented at the September 2, 2014 Workshop.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/18-techfuel-ws-ViVUMVcxAg5RI1I3.pdf>

Original File Name: SCG Tech AssessTruckBus.pdf

Date and Time Comment Was Submitted: 2014-10-03 11:29:51

No Duplicates.

## **Comment 15 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Dawn

Last Name: Fenton

Email Address: Dawn.Fenton@Volvo.com

Affiliation: Volvo Group North America

Subject: Comments on CARB Technology and Fuels Assessment

Comment:

Please find attached comments from Volvo Group North America.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/19-techfuel-ws-VjVVPFwwUmwHZAzo.docx>

Original File Name: Comments on CARB Technology and Fuel Assessment. FINAL.docx

Date and Time Comment Was Submitted: 2014-10-06 08:55:16

No Duplicates.

## **Comment 16 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Jon

Last Name: Leonard

Email Address: [jon.leonard@gladstein.org](mailto:jon.leonard@gladstein.org)

Affiliation: Senior VP, Gladstein, Neandross & Assoc.

Subject: Comments on Sept. 2, 3 and 9 Tech and Fuels Assessment Workshops

Comment:

Please see attached comments, covering all three workshops.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/20-techfuel-ws-B2BcNl09UWYDgdz.pdf>

Original File Name: Gladstein Neandross and Associates Comments on Tech and Fuel Assessment Workshops.pdf

Date and Time Comment Was Submitted: 2014-10-13 12:46:32

No Duplicates.

## **Comment 17 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Stephen

Last Name: Gillette

Email Address: sgillette@capstoneturbine.com

Affiliation: Capstone Turbine Corp

Subject: Comments on Technology Assessment Workshop

Comment:

Please see attached

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/24-techfuel-ws-B2RdOgFwWXkAcglm.pdf>

Original File Name: Capstone CARB Tech Assessment 15Oct2014.pdf

Date and Time Comment Was Submitted: 2014-10-15 14:00:10

No Duplicates.

## **Comment 18 for Technology and Fuels Assessment (techfuel-ws) - 1st Workshop.**

First Name: Veronica

Last Name: Pardo

Email Address: [veronica@crrcnorth.org](mailto:veronica@crrcnorth.org)

Affiliation: California Refuse Recycling Council

Subject: Technology and Fuels Assessment for Trucks

Comment:

The California Refuse Recycling Council thanks you for the opportunity to submit comments on the California Air Resources Board (CARB) Technology and Fuels Assessment Workshop presentations.

Attachment: <https://ww2.arb.ca.gov/sites/default/files/BARCU/barcu-attach/25-techfuel-ws-UjFXI1QnWGhQCQN3.pdf>

Original File Name: CRRC Tech and Fuels Assessment FINAL.pdf

Date and Time Comment Was Submitted: 2014-10-15 16:01:08

No Duplicates.

**There are no comments posted to Technology and Fuels Assessment (techfuel-ws) that were presented during the Workshop at this time.**