DOCKETED	
Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	224598
Document Title:	Draft Solicitation on Converting Forest Biomass into Natural Gas
Description:	N/A
Filer:	System
Organization:	Shaye Wolf
Submitter Role:	Public
Submission Date:	8/24/2018 3:52:11 PM
Docketed Date:	8/27/2018

Comment Received From: Shaye Wolf
Submitted On: 8/24/2018
Docket Number: 19-ERDD-01

Draft Solicitation on Converting Forest Biomass into Natural Gas

Please see the attached comment letter submitted on behalf of the Center for Biological Diversity.

Additional submitted attachment is included below.

CENTER for BIOLOGICAL DIVERSITY Because life is good.

August 24, 2018

Re: Docket #19-ERDD-01, Notice of Request for Comments on Draft Solicitation on Demonstrating Innovative Solutions to Convert California's Residual Forest Biomass Resources into Renewable Natural Gas

Dear California Energy Commission Staff,

Thank you for the opportunity to comment on the Draft Solicitation for projects to convert forest biomass into natural gas. These comments are submitted on behalf of the Center for Biological Diversity, a national, nonprofit conservation organization with more than 1.6 million members and online activists dedicated to the protection of endangered species and wild places.

We have strong concerns about the Natural Gas Research and Development Program solicitation for projects "aimed at developing and demonstrating innovative technologies for the conversion of forest waste biomass to renewable natural gas (RNG)." The projects solicited by the CEC are likely to be counter-productive for fighting climate change and harmful to California's forest ecosystems and protected species.

As detailed below, problematic aspects of the draft solicitation include the following: (1) the solicitation is based on the incorrect premise that dead and dying trees elevate fire intensity and spread, and that removing dead and dying trees reduces the chance of catastrophic wildfire; (2) the solicitation incorrectly states that removing dead and dying trees will promote forest health and habitat protection, whereas in contrast, scientific research establishes that removing dead trees is detrimental to forest health and habitat quality; (3) the solicitation seeks projects that are "commercially viable" which will incentivize the large-scale removal of forest biomass to the detriment of forest ecosystems; (4) the solicitation will incentivize the production of natural gas at a time when California must be rapidly reducing greenhouse gas emissions; and (5) the natural gas production incentivized by this solicitation will likely have high lifecycle greenhouse gas emissions which would be a false solution for fighting climate change and a misuse of taxpayer dollars. Based on these concerns, we urge the CEC to withdraw the draft solicitation and instead invest in true clean energy solutions.

(1) The solicitation is based on the incorrect premise that dead and dying trees elevate fire intensity and spread, and that removing dead and dying trees reduce the chance of catastrophic wildfire.

The CEC's justification for this solicitation is the scientifically unfounded assertion that "dead and dying trees can elevate the risk of catastrophic wildfires" and that "removal of dead and

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dying trees can help reduce the chances of catastrophic wildfires." Instead, scientific research has established that dead and dying trees do not increase fire severity, rate of spread, or extent.

In a comprehensive study spanning forests of the entire western U.S., Hart et al. (2015) found that fires do not spread any faster or burn more intensely in forests with higher numbers of dead trees from drought and native bark beetles, compared with forests with little or no presence of dead trees.[1]

Similarly, Meigs et al. (2016) investigated whether forests with higher levels of trees killed by drought and bark beetles burned more severely, and found that they do not, concluding that: "In contrast to common assumptions of positive feedbacks, we find that insects generally reduce the severity of subsequent wildfires. Specific effects vary with insect type and timing, but both insects decrease the abundance of live vegetation susceptible to wildfire at multiple time lags. By dampening subsequent burn severity, native insects could buffer rather than exacerbate fire regime changes expected due to land use and climate change."[2]

Specifically with regard to the mountain pine beetle, a native species associated with the current snag recruitment in California's ponderosa pine and mixed-conifer forests, Meigs et al. (2016) found that fire severity was the same between stands with high levels of snags (standing dead trees) from drought/beetles and unaffected forests, and that fire severity consistently declined over time in the stands with high snag levels in the following decades.

In mixed-conifer and ponderosa/Jeffrey-pine forests of the San Bernardino National Forest in southern California, Bond et al. (2009) found that tree mortality from bark beetles and drought did not influence fire severity.[3]

Instead, studies indicate that within several years after trees die, forests actually experience *lower* fire intensity when wildland fires occur.[4] The reason is that, shortly after trees die, the combustible needles and small twigs fall and quickly decay into soil on the forest floor, leaving less fine-fuel to burn. A recent analysis from the University of California Cooperative Extension further verified these findings.[5]

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[1] Hart, S.J. et al. 2015, Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks, PNAS 112: 4375-4380, http://www.pnas.org/content/112/14/4375

[2] Meigs, G.W., et al. 2016, Do insect outbreaks reduce the severity of subsequent forest fires? Environmental Research Letters 11: 045008, http://iopscience.iop.org/article/10.1088/1748-9326/11/4/045008/pdf

[3] Bond, M.L. et al. 2009, Influence of pre-fire tree mortality on fire severity in conifer forests of the San Bernardino Mountains, California, The Open Forest Science Journal 2: 41-47, https://www.researchgate.net/publication/228498695_Influence_of_Pre-Fire_Tree_Mortality_on_Fire_Severity_in_Conifer_Forests_of_the_San_Bernardino_Mountains_California

[4] Meigs, G.W., et al. 2016, Do insect outbreaks reduce the severity of subsequent forest fires? Environmental Research Letters 11: 045008, http://iopscience.iop.org/article/10.1088/1748-9326/11/4/045008/pdf

[5] http://www.rffi.org/Understanding-the-relationship-between-Fire-and-Dead-Trees.pdf

(2) The solicitation incorrectly states that removing dead and dying trees will promote forest health and habitat protection, whereas in contrast, scientific research establishes that removing dead trees is detrimental to forest health and habitat quality.

There is broad scientific agreement that the patches of dead trees created by high-intensity fire, bark beetles, and drought —"snag forest habitat" — are incredibly important for forest health, habitat heterogeneity and biodiversity.[6] In fact, snag forests are some of the best and most biodiverse wildlife habitat in the western U.S., comparable to old-growth forest.[7] Hundreds of scientific studies document the high levels of native biodiversity and wildlife abundance in snag forest habitat.[8] Many native wildlife species in snag forests are primarily or almost exclusively found in such habitat, due to the high abundance of snags and downed logs and/or the abundance of shrub patches and young natural regeneration of conifers and oaks.

Standing dead trees and downed woody material are critical forest ecosystem components that are largely eliminated when forests are targeted for salvage logging and "fuel reduction" logging. As a result, current amounts of snag forest habitat, created by native bark beetles, drought, and fire are estimated to be lower than natural, historical levels because much of this habitat has been removed by logging.[9] Despite recent native beetle and wildfire activity in the Sierra Nevada, for example, snag forest habitat is still rare at the landscape scale, and comprises only about 6% of the forests of the Sierra Nevada, whereas this unique habitat comprised 14-30% of Sierra Nevada forests historically, before fire suppression.[10]

(3) The solicitation seeks projects that will be "commercially viable" which will incentivize large-scale removal of dead trees and other forest biomass to the detriment of forest ecosystems.

The solicitation seeks projects that will be "commercially viable," which will incentivize large-scale removal of dead trees and other forest biomass to the detriment of forest ecosystems and carbon storage. Scientific research has established that the removal of dead trees through post-fire salvage logging causes numerous ecological harms.[11] Ecological costs associated with the

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[6] Swanson, M.E. et al. 2011, The forgotten stage of forest succession: early-successional ecosystems on forested sites, Frontiers in Ecology and Environment 9: 117-125; DellaSala, D.A. et al. 2014, Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity? Natural Areas Journal 34:310-324.

[7] See review in DellaSala, D.A. and C.T. Hanson (eds). 2015, The ecological importance of mixed-severity fires: nature's phoenix. Elsevier, United Kingdom.

[8] *Id.*

[9] Baker, W. L. 2014, Historical forest structure and fire in Sierran mixed-conifer forests reconstructed from General Land Office survey data, Ecosphere 5:79; DellaSala, D.A. et al. 2014, Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity? Natural Areas Journal 34:310-324; Hanson, C.T. and D.C. Odion. 2016, Historical forest conditions within the range of the Pacific fisher and spotted owl in the Central and Southern Sierra Nevada, California, USA. Natural Areas Journal 36: 8-19

[10] *Id.*

[11] Donato, D.C. et.al. 2006, Post-wildfire logging hinders regeneration and increases fire risk, Science 311: 352; Lindenmayer, D. B. and R. F. Noss, 2006, Salvage logging, ecosystem processes, and biodiversity conservation, Conservation Biology 20:949-958.

removal of dead trees include the loss of wildlife habitat, loss of carbon storage, spread of weeds, sedimentation into streams, soil compaction, disruption of nutrient flows, and disturbance to sensitive wildlife including spotted owls, Pacific fishers, Black-backed Woodpeckers, and Olive-sided Flycatchers among others.

(4) The proposal incentivizes the production of natural gas at a time when California must be rapidly reducing greenhouse gas emissions, and uses erroneous and misleading terms from the natural gas industry such as "renewable gas."

The proposal's key purpose is to convert forest biomass into natural gas, which will increase methane production at a time when the California must be rapidly ending greenhouse gas emissions.

Natural gas is composed mostly of methane, a greenhouse gas so powerful that it is called a "super pollutant." Biogenic methane is 86 times more powerful than carbon dioxide at warming the climate over a 20-year period, and 34 times more powerful at warming the climate over a 100-year period.[12] In order to avoid the worst damages of climate change and transition to truly clean renewable energy, science dictates that California must eliminate greenhouse gas emissions over the next few decades.[13] Rapid reductions of super pollutants, such as methane, and the halt to additional natural gas infrastructure must be part of any successful climate plan.

The natural gas industry likes to claim that natural gas can be "renewable." However, projects that produce biogenic methane—like those proposed by this draft solicitation—pose a significant risk of methane leakage and would promote continued development and maintenance of a natural gas infrastructure and associated carbon lock-in,[14] when funds and efforts are urgently needed to accelerate the transition to truly renewable energy sources. Contrary to the claims of aggressive public relations campaigns by the natural gas industry, natural gas is a dirty and dangerous fuel source that must be phased out entirely and as rapidly as possible.

(5) The natural gas production incentivized by this solicitation will likely have high lifecycle greenhouse gas emissions per unit energy which would be a false solution for fighting climate change and a misuse of taxpayer dollars.

The natural gas production incentivized by this solicitation is likely to have high lifecycle greenhouse gas emissions per unit energy which will exacerbate rather than alleviate the climate crisis and cause foreseeable harms to forest ecosystems. It is a misuse of taxpayer dollars to invest in this type of project.

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[12] [IPCC] Intergovernmental Panel on Climate Change. 2013. Chapter 8: Anthropogenic and Natural Radiative Forcing. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Table 8.7.

[13] Oil Change International, The Sky's Limit California: Why the Paris Climate Goals Demand That California Lead in a Managed Decline of Oil Extraction, May 2018, http://priceofoil.org/ca-skys-limit

[14] Erickson, P. et al., 2015, Assessing carbon lock-in, 10 Environmental Research Letters 084023, http://iopscience.iop.org/article/10.1088/1748-9326/10/8/084023/meta

Forest bioenergy projects have often been falsely claimed by industry groups to be "carbon neutral" whereas robust carbon accounting and accurate assumptions have demonstrated that extracting forest residues for energy production is detrimental to the climate and forests.[15] This solicitation appears to rely on similar problematic assumptions about forest residues that will contribute to high lifecycle greenhouse gas emissions of the natural gas produced by the solicited projects, as summarized in recent research by Booth (2018):

> Treatment of bioenergy as 'low carbon' or carbon neutral often assumes fuels are agricultural or forestry residues that will decompose and emit CO2 if not burned for energy. However, for 'low carbon' assumptions about residues to be reasonable, two conditions must be met: biomass must genuinely be material left over from some other process; and cumulative net emissions, the additional CO2 emitted by burning biomass compared to its alternative fate, must be low or negligible in a timeframe meaningful for climate mitigation."[16]

For these reasons, we urge the CEC to withdraw the draft solicitation and instead invest in real clean energy solutions. Please feel free to contact me with any questions about these comments.

Sincerely,

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[15] Law, B.E. and M.E. Harmon, 2011, Forest sector carbon management, measurement and verification, and discussion of policy related to climate change, Carbon Management 2: 73-84; Holtsmark, B., 2013, The outcome is in the assumptions: analyzing the effects on atmospheric CO_2 levels of increased use of bioenergy from forest biomass, Global Change Biology Bioenergy 5: 467-473.

[16] Booth, M. S., 2018, Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy, Environmental Research Letters 13: 035001, http://iopscience.iop.org/article/10.1088/1748-9326/aaac88.