



March 31, 2014

Ms. Yachun Chow
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Submitted via web and email to ychow@arb.ca.gov

Re: Environmental Defense Fund and California Rice Commission Comments on the Discussion Draft of the Rice Cultivation Projects Compliance Offset Protocol released March 14, 2014

Dear Ms. Chow:

Please accept the following comments from Environmental Defense Fund (EDF) and the California Rice Commission (CRC) on the Discussion Draft of the Rice Cultivation Projects Compliance Offset Protocol (here forward referred to as the "Rice Cultivation Protocol").

EDF and CRC appreciate the significant time and effort the California Air Resources Board (ARB) has dedicated to the development this crop-based protocol. We acknowledge ARB's dedication to environmentally informed and scientifically sound implementation of carbon reducing projects to produce offset credits. We believe that the Rice Cultivation Protocol will set the stage for other agriculture-based protocols to supply offsets for the cap-and-trade market. With one rice project already listed on the American Carbon Registry, we are hopeful that others will follow suit, providing capped entities with high-quality offsets from California growers.

Overall, the draft clearly outlines the requirements for rice cultivation projects to receive Air Resource Board Offset Credits. We are extremely pleased with the draft and especially the ARB's inclusion of a process based biogeochemical model. These models provide the largest opportunity for farmers and ranchers to use multiple practices to generate offsets. Additionally, we recognize the yearlong process ARB undertook to identify and address all potential environmental concerns. The first draft of the protocol is very strong. Pursuant to ARB's request at its March 17 workshop, EDF and CRC provide the following changes, edits, and actions to improve the Draft Rice Cultivation Protocol:

- I. Include *aggregation* to allow cost-effective implementation of this protocol
- II. Fast-track the contract to streamline the DeNitrification DeComposition (DNDC) model
- III. Add clarification around Eligible Project Activities and associated data needs
- IV. Simplify or create a checklist for Project Eligibility criteria
- V. Incorporate answers for Stakeholder Input Questions
- VI. Address specific typos and inconsistencies
- VII. Support adoption of additional agriculture offset protocols
- VIII. Conclusion

I. Aggregation

For agricultural offset projects to be effective, GHG emission reductions need to be aggregated into larger, multi-landowner projects. Aggregation is one of the most important factors in the development of agricultural offset projects. It makes these projects cost-effective and that will encourage the engagement of the agricultural sector in GHG mitigation efforts.

The state has a precedent for aggregation in the nitrogen tracking and reporting system developed by the California Department of Food and Agriculture (CDFA).¹ This system was developed to “identify intended outcomes and expected benefits of a nitrogen mass balance tracking system in nitrate high-risk areas.”² Through this approach, farmers report to their Regional Water Board through an aggregator. Field-level records are retained by the grower and the data is compiled by an aggregator before being reported to the relevant Regional Water Board.³ The field-level data is available for review by the Water Board upon request.⁴

ARB has the ability to follow a similar approach through the current version of the cap-and-trade regulations and targeted changes to the Rice Cultivation Protocol. These changes are based on the cooperative forestry project model which is already accepted by ARB. A summary of this process is as follows:

- A. A grower implements one or more offset practice(s) and collects current and historical data for his field.
- B. Each grower registers as an Offset Project Operator (OPO) and obtains a Compliance Instrument Tracking System Service (CITSS) account.

¹ *Nitrogen Tracking and Reporting Task Force*, CDFA, December 2013, <http://www.cdfa.ca.gov/environmentalstewardship/PDFs/NTRSTFFinalReport122013.pdf>

² *ibid*, p3.

³ *ibid*, p3.

⁴ *ibid*, p18.

- C. Each of the growers select a single Authorized Project Designee (APD) who is responsible for collection of the all the data, generating the Offset Project Data Report (OPDR), and overseeing the project's verification. The data would be maintained by both the farmer (OPO) and the APD. The OPDR would aggregate the data from each of the OPOs.
- D. As a part of the verification, every OPO in the OPDR would be subject to a desk review of their data and calculations by the verifier.
- E. The verifier would then apply a risk-based sampling methodology and statistical sampling requirements for site visits at the aggregate level.

More detailed comments and process are available in the *Updated Proposal on Aggregation* developed by the Coalition on Agricultural Greenhouse Gases.

II. DNDC Model Streamlining

EDF and CRC believe that process-based biogeochemical models, such as DNDC, are important tools to quantify greenhouse gas emission reductions from agriculture-based offset projects. These models generate detailed and accurate emission reduction calculations for biological systems. The challenge is that these models require a large number of inputs and generate a large number of outputs. For the Rice Cultivation Protocol, EDF and CRC believe that default values for California and Mid-South rice fields can be pre-set in the model.

ARB has conducted extensive due diligence in determining the use of the DNDC model in the Rice Cultivation Protocol. For the DNDC model to be used by project developers beginning January 1, 2015, we recommend that ARB fast-track a contract to streamline the inputs and outputs to the model. This will lower the barriers to the adoption of the protocol.

III. Project Activities

On March 17, 2014, the first rice cultivation project was listed with the American Carbon Registry under the California module of the *Voluntary Emission Reductions in Rice Management Systems* methodology. This demonstrates a true interest from the rice industry in participating in the Rice Cultivation Protocol under development by ARB. Thus, we have been analyzing the ARB's Rice Cultivation Protocol with an eye to our experiences in implementing rice cultivation projects.

Early Drainage Activities

The Rice Cultivation Protocol should include the opportunity to use a California-based model, similar to the DD50 model, which calculates the date to drain a field. This model, currently under development, takes into account the photosensitive nature of California rice

varieties and will be an integral part of future rice farmer's decisions, as well as a tool for verifiers. A placeholder for such a tool should be included in this protocol.

IV. Project Eligibility

We want to encourage producers to participate in the Rice Cultivation Protocol and therefore, need to ensure that project eligibility criteria are clearly outlined. EDF and CRC recommend that ARB provide reasoning in a footnote for the following eligibility requirement: "Have soil with organic carbon content less than or equal to three percent in the top ten centimeters of soil in each eligible field" (3.1(6), page 12). ARB could include an explanation similar to the explanation used in the American Carbon Registry's *Voluntary Emission Reductions in Rice Management Systems* methodology v1.0 on page 14, which states "N₂O emissions become more variable with increase in soil carbon content." In addition to this clarification, we recommend the ARB create a standardized form that would allow individuals to quickly determine whether or not a project met the eligibility requirements.

V. Answers for Stakeholder Input Questions

Determination of Seventy-Five Percent Heading- Does the seventy-five percent criterion make sense and can it be applied consistently across projects? Should other criteria be used? (2.2, page 10)

Answers and Clarifications for Early Drainage and Seventy-Five Percent Heading

According to Cass Mutters, University of California Cooperative Extension farm advisor with over 25 years of experience with rice, the seventy-five percent criterion does not make sense. Other criteria should be used.

- First, fifty percent (and not seventy-five percent) heading is the correct indicator for determining when early drain should occur.
- Fifty percent heading would imply that fifty percent of plant samples taken have rice panicles exposed. Therefore, if three samples must be taken, fifty percent of the samples would have rice panicles exposed (i.e. fifty percent heading).
- As for the criteria that "at least one sample must be taken within 50 feet of the water inlet," it is unclear why this would be a requirement (2.2(b)(2), page 9). One should sample in a representative area of the field away from cold water intakes. Samples should *not* be taken within 50 feet of the water inlet, as this sample will likely not be representative of the field.
- The statement that "standing water cannot be drained within 25 days after seventy-five heading" is inaccurate and must be rewritten to reflect appropriate early drainage activities (2.2(b), page 9). Instead, the statement should read:

- “Standing water should not be present 28 days after fifty percent heading. A field should be completely drained anywhere from 24-28 days after fifty percent heading.” Also, “A ‘drained’ field will have no standing water 24-28 days after fifty percent heading but the soil is still saturated and wet.”

There is a range of time to account for differences in fields.

Replace language in Section 2.2. Early Drainage Activities

Given these clarifications, we recommend the following language be used to replace Section 2.2. Early Drainage Activities:

This protocol applies to rice cultivation projects that drain or allow standing water to subside from rice fields earlier in preparation for harvest, resulting in the reduction of methane released into the atmosphere compared to rice fields were drained on the customary date. These practices only apply to heavy clay soils, representative of much of the rice growing areas in California.

- (a) The management records specified in appendix A for the baseline period for rice fields implementing early drainage activities must be available.
- (b) Each field must be sampled to determine fifty percent heading using the following criteria:
 - (1) At least three samples must be taken;
 - (2) All samples must be taken from a representative area of the field, away from cold water intakes; and
 - (3) The samples must demonstrate fifty percent heading (fifty percent of plant samples taken have rice panicles exposed).
- (c) Farmers have two options for early drainage:
 - (1) The farmer can turn irrigation water off so that the water will subside in time for the 24-28 days after fifty percent heading deadline. Depending on the size of the field and water depth, it could take any number of days to allow the water to subside from the field. Therefore, a farmer could stop adding irrigation water to his/her field several days prior to the 24 to 28 day time period.
 - (2) The farmer can “pull the boards” to start draining the field so that the water will leave the field in time for the 24-28 days after fifty percent heading deadline. Depending on the size of the field and water depth, it could take any number of days to drain the field, although this is usually much quicker than waiting for the field water to subside. Therefore, a farmer’s decision on when to pull the boards after heading will be

determined by the time it takes for water to drain from a given field.

Documentation

In terms of documenting these practices, we suggest requiring:

- The date of fifty percent heading with time-stamped photos of rice samples. If possible an identifiable landmark should be visible in the photo.
- A time-stamped photo with the date at which the field is completely drained, but still saturated and wet without any standing water.
 - This date can be no later than 28 days after fifty percent heading.

To demonstrate that this process works, the ARB should employ a ground-truthing exercise on a subset of fields in the project to verify this from a number of fields.

VI. Specific language and edits typos

EDF and CRC noticed the following typos and suggest the following corrections to this Draft of the Rice Cultivation Protocol:

- Consistency in capitalizing “Mid-South” (not “Mid-south”) (1.2(a)(32), page 7 and Table B.1 column header, page 50)
- “Alternate wet and dry” is also known as “alternate wetting and drying” (1.2(c)(2), page 8)
- “rice cultivation process at rice fields” should be “rice cultivation process on rice fields” (2, page 8)
- “a field that is also employing early drainage activates” should be “a field that is also employing early drainage activities” (2.2(c), page 10)
- Add “under this protocol” to the end of “GHG emission reductions or removal enhancements due to changes in N₂O or soil organic carbon are not eligible for crediting” (3.5(c), page 16)
- Delete the letter “i” in Table 4.1, row 7, quantification method column (Table 4.1, page 20)
- Is “reporting year” meant to be “reporting period”? (5(c), page 21)
- What is meant by “plastic” and “cutting” information in “...management practices that include crop, tillage, fertilization, manure management, irrigation, flooding, plastic, and grazing or cutting information.”? (5.2(c)(3), page 22)
- Formatting consistency for Baseline Scenarios Establishment, “Plant Date is” vs. “Tillage Events:” (5.2.2.1, page 26-27)
- “Recovered Baseline Parameter” in Box 5.2 should be “Recovered Project Parameter” (Box 5.2, page 29)
- Provide a general summary of the calculation options in Calculating Secondary Source Emissions From Fossil Fuel Combustion. We suggest “Secondary Source Emissions from Fossil Fuel Combustion must be included for ____ equation. There

- are two ways to calculate Secondary Source Emissions... depending upon the data availability.” (5.3.1, page 33)
- Formatting consistency for Conversion Factors, “acres (ac)... kilogram (Kg)”. (5.4, page 36)
 - Notes for “*”, “**”, and “†” in Table 6.1 are not referenced (Table 6.1, page 37)
 - Define or explain the measurement frequency of “annual.” Does it mean “once per reporting period,” “once per cultivation year,” or “once per calendar year”? Is it at a certain point of the year? (Table 6.1, page 37)
 - “date” missing from “Data unit column” for “Manure amendment date of irrigation events” row (Table 6.1, page 39)
 - Formatting consistency for “Comment” column of Fuel usage “OPO records” should be three separate boxes- one for each row. (Table 6.1, pages 40-41)
 - “check” should not be in quotation marks since it is defined in section 1.2 on p. 5 (6.2.1-2, page 42-43)
 - Contact information would not be necessary once an OPO has an CITSS account (7.1(b)(3) and 7.1(b)(4), page 44)
 - Describe what is meant by “operational structures” (7.1(b)(7), page 44)
 - “latitude and longitude coordinate” should be “latitude and longitude coordinates” (7.1(b)(9), page 44)
 - Item (13) in 7.1 should be item (12)(D) (7.1(b)(12), page 45)
 - “Information for drying seeding” should be “Information for dry seeding” (Appendix A (b), page 48)
 - Table B.1 is missing data or n/a designation for “Mid-south” columns “Max_LAI” row (Appendix B, Table B.1, page 50)
 - There is only one equation for structural uncertainty. Delete the second equation in Appendix C (Appendix C, page 52)

VII. Recommendation for future protocols

This protocol demonstrates the role and opportunity agriculture can play within California’s cap-and-trade program. EDF and CRC encourage the ARB to continue its work in this area and develop additional offset protocols for agricultural practices. In particular, we recommend the development of a fertilizer management protocol. “Fertilizer application N₂O emission reductions” was one of the five protocols identified by Western Climate Initiative Partners in May of 2012. It is also worth noting that another of the protocols was “rice cultivation.”

This protocol should be developed with an overarching methodology supported by geographically specific and expandable crop-based methodologies. The fertilizer

management protocol is particularly important to growers in the Mid-South where there are significant environmental benefits from efficient nutrient application. Another crop with significant potential is almonds. The Almond Board of California has calibrated the DNDC model for California almonds and is in the process of soliciting funding to develop a fertilizer management methodology which could be added to an existing fertilizer management protocol, such as ACR's *Methodology for N₂O Emission Reductions through Changes in Fertilizer Management*.

VIII. Conclusion

ARB has continuously shown their ability to provide thoughtful, balanced and technical rulemakings to reduce air pollution in California. ARB serves as a model for regulations in other states and at the national level. EDF and CRC appreciate the hard work that went into the development of the Rice Cultivation Protocol. Overall the protocol is strong and is close to adoption.

While finalizing the Rice Cultivation Protocol, the ARB needs to determine how aggregation can be implemented. Without aggregation this protocol will not meet its potential for adoption. It will simply be too complicated and too expensive for farmers to implement. EDF and CRC look forward to continued discussions with ARB staff on options to include aggregation in this protocol.

We thank ARB for this opportunity to offer comments. We look forward to continued collaboration with ARB and other stakeholders as the implementation of this and other agricultural-based offset protocols.

If you have any questions about the content of these comments, please contact:

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