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Legal Analysis and Pathway for Incorporation of Climate Action Reserve Nitrogen Management Project Protocol 2.0 into State Law and Policy

I. Introduction and Executive Summary

Emissions of nitrous oxide are a significant source of greenhouse gas (GHG) pollution in the United States, amounting to approximately 5 percent of total U.S. GHG emissions on an annual basis. Agricultural soil management as a source category accounts for nearly three quarters of those emissions. Nitrous oxide emissions resulting from agricultural activities have significant impacts on humans and the environment. Indeed, President Biden signed an executive order on his first day in office requiring an interagency working group to calculate and publish the social cost of nitrous oxide, an estimate of the monetized damages associated with increases in this GHG based on the best available economics and science.¹ In February 2021, the group announced it would reinstate the U.S. government's 2017 estimate of the social cost of nitrous oxide, adjusted for inflation.² This quantification of externalities is intended to be used in a variety of government programs, which could include offset regimes.

To date, no significant legal controls have been applied to regulate nitrous oxide pollution from agricultural soil management in the United States, and existing incentives applied by the U.S. Department of Agriculture (USDA) have yielded limited participation and impact on cumulative annual emissions. As a result, regulation of nitrous oxide pollution from this source category presents an opportunity to achieve substantial reductions.

In *Legal Pathways to Deep Decarbonization in the United States*, Chapter 35 (2018), Jessica Wentz and David Kanter provide a robust analysis of this sector and potential legal options for realizing significant reductions of nitrous oxide emissions. Among their recommendations is for regulators to incentivize nitrous oxide emission reductions at agricultural sources by providing offset credit for reductions associated with improved soil management practices. In our review of their analysis, we determined that implementation of this recommendation would be best facilitated through creation of a model offset credit protocol for adoption by states, allowing for issuance of offset credits in the context of current or future GHG emission reduction programs promulgated at the state level.

¹ Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, E.O. 13990 (Jan. 20, 2021), <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>.

² Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (Feb. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf.

In furtherance of this, our team performed a review of existing resources for quantifying reductions from improved management practices, as well as existing protocols that have been created by registries or adopted in other jurisdictions outside the United States to serve as a template. We found that one such protocol developed by the Climate Action Reserve (CAR), as updated in 2018, very closely tracks what we had contemplated in our proposal: CAR's Nitrogen Management Project Protocol Version 2.0 (Oct. 2018) (NMPP or Protocol). The Protocol now broadly accounts for emission reductions associated with implementation of cropland nitrogen management best practices across a wide range of crops and geographies for which CAR determined adequate quantification data and methodologies existed.³

Given the breadth and quality of CAR's updated NMPP and the broad stakeholder process from which it arose, we concluded that states seeking to provide offset credit for reductions in nitrous oxide emissions through improved agricultural management practices would be best served by incorporating the CAR Protocol itself into state law, either directly or by reference, similar to the manner in which California has adopted some of CAR's other protocols and/or recognized offset credits issued pursuant thereto within the context of its Cap-and-Trade Regulation.⁴ This memorandum provides legal background and tools to better facilitate that process for state and regional policymakers. The analysis in this memorandum is limited to the use of the CAR protocol for offsets. However, some states may wish to use a rigorous offset protocol like the CAR protocol to verify mandatory reductions in nitrous oxide emissions. In fact, some jurisdictions may find that mandating reductions in these GHG emissions necessary to achieve their emissions goals in a timely manner. To remain relevant and functional, any mandatory structure should be crafted in such a way that verification procedures can be updated as new methods and methodologies are developed without requiring intervention from state legislatures.

First, this memorandum provides a background of offset credits generally, including the key legal criteria that are relied upon by a number of jurisdictions to ensure that such credits represent legitimate reductions in GHG emissions. It then proceeds by describing the current scope of CAR's NMPP and evaluating the NMPP against those hallmark criteria (e.g., additionally, permanence, quantifiability, etc.). We also describe potential areas for future expansion (in cooperation with CAR or through future stakeholder-based revisions to the NMPP) once adequate data and quantification methods become available to ensure the legitimacy of reductions from additional activities (i.e., reductions associated with improved management of organic nitrogen). This memorandum concludes by detailing how state or regional policymakers can incorporate this offset credit protocol within their current or future GHG reduction programs, and potential pitfalls and other issues that legislators and regulators should be aware of as they proceed.

³ In addition to the NMPP, CAR published the Nitrogen Management Project Protocol V2.0 Handbook, which serves as a plain-language companion to the technical protocol itself. See Climate Action Reserve, Nitrogen Management Project Protocol V2.0 Handbook (Apr. 2019), https://www.climateactionreserve.org/wp-content/uploads/2019/04/Nitrogen_Management_Handbook_v2.0a.pdf.

⁴ See discussion *infra*, Section IV.A.

II. Offset Credits and Key Criteria to Ensure Integrity of Reduction

A. Offset Credits as Legal Pathway for Achieving Reductions

In general terms, an offset credit represents the reduction or sequestration of a defined quantity of GHG emissions that mitigates for an equivalent amount of GHGs emitted elsewhere. Ordinarily measured in metric tons of carbon dioxide equivalent (CO₂e), offset credits can be procured and retired on a voluntary basis (e.g., an individual or company seeking to “offset” their GHG footprint) or by regulated entities subject to jurisdictional GHG reduction programs that authorize their use to demonstrate compliance. In the context of these regulatory programs, such as the California Cap-and-Trade Program⁵ and the Regional Greenhouse Gas Initiative (RGGI),⁶ offsets are issued for projects “outside” the scope of the regulatory program.

These regulatory programs generally operate by setting a jurisdiction-wide limit on GHG emissions from regulated sources, typically comprising large industrial sources, and then distributing “allowances” (via auctions, trading, free distribution) for each compliance period in an amount equivalent to the economy-wide cap. As the cap declines over time consistent with the jurisdiction’s emission reduction goals, the number of allowances made available by the jurisdiction declines as well, forcing regulated entities to reduce emissions or acquire an increasingly scarce (and thus more costly) quantity of allowances to cover their emissions, and thereby driving least-cost reductions as individual entities engage in a cost-benefit analysis comparing the cost of allowances to the value of emitting additional tons of GHGs.

When authorized by a regulatory GHG emission reduction program, regulated entities can cover a portion of their emissions with offset credits in addition to, and as distinct from, allowances in certain circumstances, representing a 1-for-1 mitigation of the entity’s emissions from commensurate reductions or sequestration at sources outside the capped sectors. In practice, depending on how the economy-wide cap is set, this can result in regulated sources collectively emitting more than the economy-wide cap/allowance budget, but neutralizing that overage through reductions elsewhere. In California, for example, sources have historically been permitted to cover 8 percent of their annual emissions with offset credits, instead of allowances.⁷

Offsets have been recognized as important, win-win components of these programs, as they provide cost-containment benefits for regulated sources, incentivize reductions outside of the capped sectors, and promote the positive aspects of regulating GHG emissions to a wider population (e.g., by spreading the economic benefits of regulation to a more diverse base of communities and sectors, such as dairy farmers or forest owners, which can generate revenue by

⁵ See California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, Cal. Code Regs. Tit. 17, §§ 95800 et seq., <https://ww3.arb.ca.gov/cc/capandtrade/capandtrade.htm>.

⁶ See Regional Greenhouse Gas Initiative Model Rule (Last Revised Dec. 14, 2018), https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2017-Program-Review-Update/2017_Model_Rule_revised.pdf.

⁷ While historically limited to 8 percent, covered entities may only satisfy 4 percent of their compliance obligation with offset credits from 2021-2025 and 6 percent from 2026 onward. See Cal. Code Regs., Tit. 17, § 95854. These reduced credit usage limits stem from legislative changes to the program mandated by Assembly Bill (AB) 398 passed in 2017. These and related limits, as well as the forces driving them, are discussed further in Section IV.

sequestering or avoiding their own smaller-scale GHG emissions). Reducing nitrous oxide emissions at agricultural sources fits squarely within this paradigm, as inclusion of a protocol for generating credits from improved nitrogen management practices within the context of a broader GHG reduction program would leverage market forces to positively incentivize improved behavior in a sector that heretofore has escaped direct GHG regulation.

B. Key Legal Criteria Must Be Satisfied to Ensure Offsets Possess Complete Environmental Integrity

For offset credits to function as intended, it is essential that the GHG emission reductions they represent maintain complete environmental integrity. Across existing regulatory programs, several core legal criteria are generally applied to ensure this, and represent widely-accepted standards that offset projects must achieve, regardless of jurisdiction: real, additional, quantifiable, permanent, verifiable, and enforceable. These criteria have been recognized in various incarnations for decades. More recently, the Western Climate Initiative (WCI) in July 2010 released final recommendations for its partner jurisdictions following an extensive stakeholder process that reviewed and distilled existing offset programs and protocols.⁸ In short, as set forth by the WCI, reductions or removals must be real (representing a clearly identified action or decision, conservatively and accurately quantified, accounting for leakage), additional (beyond what would occur under a baseline scenario, reflecting existing legal requirements), permanent (reductions or removals are irreversible or replaceable), and verifiable (reductions or removals are well-documented and transparent such that they are enforceable and can be objectively reviewed and confirmed by a third-party).⁹

The Regional Greenhouse Gas Initiative (RGGI) has established substantially the same criteria in the offsets section of its Model Rule, requiring that offsets represent reductions or sequestration that are real, additional, verifiable, enforceable, and permanent utilizing a standards-based approach.¹⁰ California likewise applies these same eligibility requirements for offset credits within its Cap-and-Trade Program, requiring that offsets represent reductions or removals that are real, additional, quantifiable, permanent, verifiable, and enforceable.¹¹ Each of these criteria are defined in further detail by California's Air Resources Board (CARB).¹² For example, CARB defines "additional" in explicit terms as "greenhouse gas emission reductions or removals that exceed any greenhouse gas reduction or removals otherwise required by law, regulation or legally

⁸ See Western Climate Initiative, Offset System Essential Elements Final Recommendations Paper (July 2010), http://westernclimateinitiative.org/index.php?option=com_remository&Itemid=37&func=fileinfo&id=277.

⁹ *Id.*

¹⁰ See RGGI Model Rule, Part XX CO₂ Budget Trading Program, Subpart XX-10 CO₂ Emissions Offset Projects (Last Revised Dec. 14, 2018), https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2017-Program-Review-Update/2017_Model_Rule_revised.pdf.

¹¹ See, e.g., Cal. Code Regs. Tit. 17, § 95802 (defining "ARB Offset Credit" among other related terms). Assembly Bill (AB) 32 (2006), the state legislation authorizing implementation of a Cap-and-Trade Program, mandates these criteria be met in more general terms.

¹² *Id.*

binding mandate, and that exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative business-as-usual scenario.”¹³ In 2015, the California Court of Appeals upheld CARB’s regulatory additionality standards as satisfying AB 32’s general (and otherwise undefined) requirement that reductions be “in addition to any greenhouse gas emission reduction . . . that otherwise would occur,” reinforcing the soundness of CARB’s approach.¹⁴

As detailed further *infra* in Section VI.A, CARB has adapted a number of existing Climate Action Reserve (CAR) protocols for use in California without substantial change, speaking to their general consistency with these criteria, including additionally.

III. Nitrogen Management Project Protocol V2.0 Scope

A. NMPP Version 2.0 Stakeholder Engagement Process and Updates

The first version of CAR’s Nitrogen Management Project Protocol Version 1.0 was published in 2012. This Protocol was the product of significant research and analysis regarding methods for quantifying nitrous oxide emissions, options for determining the additionality of offset projects, and opportunities for land use management in the United States, however was limited at that time to reductions in corn fields only.¹⁵

In 2016, CAR circulated a survey to key stakeholders to assess opportunities for improvement and expansion of the Protocol.¹⁶ In short order, CAR also circulated a request for proposals to support the development of a new quantification methodology¹⁷ and held four workgroup meetings as a

¹³ *Id.*

¹⁴ *Our Children’s Earth Found. v. State Air Res. Bd.*, 234 Cal. App. 4th 870, 875 (2015) (“*Our Children’s Earth*”).

¹⁵ *See, e.g.*, Quantification of Emission Reductions, Climate Action Reserve (Dec. 22, 2011), http://www.climateactionreserve.org/wp-content/uploads/2011/12/NMPP_Background_Paper_Quantification_of_Emission_Reduction_s.pdf; Methodology Synthesis for Nitrogen Management, Climate Action Reserve, (May 6, 2011), http://www.climateactionreserve.org/wp-content/uploads/2011/05/Reserve_Methodology_Synthesis_for_NM_-_Background_Paper_FINAL.pdf; Options for Determining the Additionality of Agriculture Projects, Climate Action Reserve (September 30, 2010), http://www.climateactionreserve.org/wp-content/uploads/2010/09/Options_for_Determining_Additionality_of_Agriculture_Projects_093010.pdf.

¹⁶ *See* Stakeholder Survey Results to Revise the Climate Action Reserve’s Nitrogen Management Project Protocol (NMPP), Climate Action Reserve (Mar. 7, 2017), <https://www.climateactionreserve.org/wp-content/uploads/2012/06/NMPP-Survey-Results-Memo-030717.pdf>.

¹⁷ *See* Request for Proposals to Provide Technical Consulting Services in Support of the Development of a New Standardized Quantification Methodology for the Reserve’s Nitrogen Management Project Protocol, Climate Action Reserve (May 5, 2017), <https://www.climateactionreserve.org/wp-content/uploads/2017/05/NMPP-RFP-Technical-Consulting-Services.pdf> (continued...)

part of its multi-stakeholder workgroup process to expand the protocol. CAR sought public comments in response to the August 2018 draft of the Protocol, and released Version 2.0 of the Protocol in late 2018.¹⁸ As part of this process, CAR considered a wide range of potential practices, including manure management, the 4Rs (Right Rate, Right Time, Right Source, Right Place), cover crops, and precision agriculture.¹⁹

Version 2.0 of the Protocol made a series of important changes to Version 1.0, including implementing heightened requirements for quantifying GHG emissions reductions. The revised version also included adjusted legal requirements for purposes of determining additionality and features updated monitoring, reporting, and verification requirements.²⁰ The Protocol also significantly expanded the crops and geographies for eligible project activities. Project activities eligible for quantification and credit generation under Version 2.0 include (1) reductions in the annual synthetic nitrogen application rate compared to baseline levels, without going below nitrogen demand and (2) use of enhanced efficiency fertilizers (EEFs), both of which are applicable to 8 crops across 31 states.²¹ While CAR evaluated a wide range of potential management practices described above, CAR concluded that the lack of comprehensive datasets on “business as usual” nitrogen management practices and the absence of quantification methodologies that met CAR’s criteria precluded development of standards at this time for a number of the practices that were considered, including for cover crops, manure management, precision agriculture, “right time” practices (e.g., season of fertilizer application), “right source” practices (e.g., switching from anhydrous ammonia to urea), and “right place” practices (e.g., applying nitrogen below soil surface closer to roots).²² As detailed below, we consider these and other practices as areas for future expansion of the NMPP, as adequate data becomes available.

B. NMPP Meets Basic Legal Criteria

CAR’s NMPP meets accepted offset criteria, including ensuring that offset projects represent emissions reductions that are real, additional, verifiable, quantifiable, enforceable, and permanent.²³ Although our analysis focuses on the use of the CAR protocol for offsets, given the rigor of the program, the CAR protocol could potentially be used to measure and verify emissions reductions that are required by law.

content/uploads/2017/05/RFP_Technical_Contractor_Nitrogen_Management_Project_Protocol.pdf.

¹⁸ Summary of Comments & Responses: Draft Nitrogen Management Project Protocol Version 2.0, Climate Action Reserve, https://www.climateactionreserve.org/wp-content/uploads/2018/10/Summary_of_Comments_Nitrogen_Management_Project_Protocol_V2.0.pdf; Nitrogen Management Project Protocol Version 2.0, Climate Action Reserve, https://www.climateactionreserve.org/wp-content/uploads/2018/10/Nitrogen_Management_Project_Protocol_Version_2.0.pdf.

¹⁹ See NMPP Appendix A, Nitrogen Management Review.

²⁰ See NMPP Section 3.5.2.

²¹ *Id.* Section 2.2.

²² See NMPP Appendix B, Summary of Performance Standard Test Development and Additionality Assessment.

²³ See *supra* part II.B.

1. Real

To qualify as real, offset credits should be offered only for activities that result in a net greenhouse gas emission reduction. As a result, an offset credit should either avoid or account for “leakage,” the process by which an offset credit project owner shifts the location of an emitting activity rather than eliminating a certain source of emissions. The result of leakage is that emissions are constrained locally, but not actually reduced on a global scale. The NMPP only features practices with consistent nitrogen emission reduction potential.²⁴ Furthermore the Protocol contains a performance standard to account for any reductions in yield as a result of decreased nitrogen use.²⁵ The Protocol addresses any significant decreases in yield that could result in greater nitrous oxide emissions outside of the project area.²⁶ In drafting the Protocol, CAR also took a conservative approach to quantifying nitrogen emission reductions to help ensure that all offset projects result in “real” emissions reductions, consistent with this criterion.²⁷

2. Additionality

As discussed below and referenced *supra*, the California Court of Appeals has held that CARB’s regulatory implementation of “additional” greenhouse gas emission reductions adequately implemented the relatively sparse and undefined statutory additionality requirement adopted by California in AB 32.²⁸ The definition of additionality used by CARB and affirmed by the *Our Children’s Earth* court reads as follows: “in the context of offset credits, greenhouse gas emission reductions or removals that exceed any greenhouse gas reduction or removals otherwise required by law, regulation or legally binding mandate, and that exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative business-as-usual scenario.” 17 Cal. Code Regs. § 95802(a)(4). Importantly, in squarely affirming the legal sufficiency of CARB’s regulatory definition as meeting this universal criteria, the Court also specifically referenced and effectively affirmed the standards-based approach to additionality applied by CAR in creating its protocols, some of which had already been adopted by CARB under its regulatory additionality criteria.²⁹

The NMPP is no different. CAR carefully considered whether the elements of the Protocol allowed for certification of offset projects that were truly additional in California. The Protocol indicates that fields are ineligible for inclusion in offset projects if there is no county nitrogen use efficiency threshold for use in assessing additionality.³⁰ CAR also determined that the contents of this Protocol could meet this standard based on regulations at the time of publishing version 2.0 in October 2018. As this Protocol is adopted within emissions trading schemes or by other entities, it can be adjusted to reflect the regulations existing in relevant jurisdictions. CAR or governments that adopt an offset standard could schedule protocol reviews at regular intervals and/or after key program updates to incorporate changes in mandatory government programs to ensure they are

²⁴ See NMPP Appendix B.

²⁵ See NMPP Section 3.5.1.

²⁶ See NMPP Section 5.1.3.2.

²⁷ See, e.g., NMPP Table 4.1 identifying excluded sources and sinks based on conservative assessments.

²⁸ See 234 Cal. App. 4th 870 (2015).

²⁹ See 234 Cal. App. 4th at 879.

³⁰ See NMPP Appendix B.

not identified as opportunities for additional offsets. As new voluntary management standards are developed, these can also be incorporated into offset programs as appropriate. In addition to ensuring that the Protocol includes only projects not required by laws and regulations, entities that implement it must further confirm that specific offset projects were not required by judicial or administrative orders. The Protocol is also carefully designed to ensure that qualifying projects would not have occurred in a business-as-usual scenario, effectively satisfying this core criteria.³¹

3. Verifiable and Quantifiable

Projects should only generate offset credits when their impact on net greenhouse gas emissions can be monitored, quantified, and verified. As a result, the NMPP includes careful reporting requirements and excludes projects with difficult-to-measure emissions impacts.³² The Protocol establishes a broad framework for verification as well as detailed requirements, such as a detailed sampling methodology and requirements for verifiers. The NMPP and supplemental materials provide a clear verification standard on which to base the review and identify priority areas that are key to the functioning of the program.³³

As a baseline principle, the NMPP states that a field is ineligible for inclusion in an offset project if key “NMQuanTool” cannot quantify emissions reductions for its crop-region combination.³⁴ The NMQuanTool is an emission factor-based quantification tool used to calculate nitrous oxide emission reductions from an offset project based on information about the field’s region, crop, and other farm management practices.

4. Enforceable

Transparency and clear ownership roles are key elements of ensuring that an offset project is enforceable and accurately accounts for emissions without double-counting. The NMPP clearly indicates acceptable ownership structures and implements policies to ensure that project owners coordinate with other key stakeholders that could also seek offset credit for a particular project.³⁵ In addition, the NMPP’s reporting rules help ensure the transparent disclosure of information.³⁶

5. Permanence

The permanence of an offset project is most relevant to greenhouse gas sequestration or storage projects, such as the potential for soils or forests to release emissions due to land use changes or disturbances. As discussed in III.C.2, *infra*, to the extent sequestration-based projects are

³¹ Through its deliberative process, CAR did decide to include as eligible some projects that were already growing in popularity due to market forces, so long as the practice was not mandated by state or local authorities. CAR recognized, however, that further nitrogen reduction from such practices could be difficult to ultimately achieve, if market-based adoption rates continued to grow before the start of the program.

³² See NMPP Sections 6-8.

³³ See NMPP Section 8.6.

³⁴ See NMPP Appendix F.

³⁵ See NMPP Section 2.4.

³⁶ See NMPP Section 7.

integrated into the Protocol, it would be necessary to incorporate more checks on the permanence of its offset projects, e.g., via extended crediting periods and ongoing reporting and quantification.

C. Areas for Potential Future Expansion

1. Management Practices For Which Adequate Quantification Data/Methods are Currently Lacking

As outlined above, the current NMPP is limited to a discrete set of eligible project activities over a significantly expanded, but still limited set of crops and geographies. Among those project activities considered by CAR, but ultimately rejected due to lack of adequate baseline data and/or presenting quantification problems, were use of cover crops, improved manure management, precision agriculture, “right time” practices (e.g., season of fertilizer application), “right source” practices (e.g., switching from anhydrous ammonia to urea), and “right place” practices (e.g., applying nitrogen below soil surface closer to roots). We consider all of these promising opportunities for future expansion of the NMPP, either via a subsequent update of the NMPP or for which a jurisdiction might consider inviting comment on when adopting the NMPP as a matter of local law.

2. Grazing Land Management Projects

More broadly, another important source of agricultural nitrous oxide emissions not addressed by the NMPP relates to livestock, rather than crops. Cattle waste alone accounts for nearly 16% of nitrous oxide emissions in the United States. By potentially expanding the scope of the NMPP in the future to include projects that reduce nitrous oxide emissions from cattle waste, more sources of emissions could be targeted and projects in all states could potentially be included.

The scientific literature in this area continues to develop positively. Multiple studies have indicated that in the context of livestock, modifying ground cover, increasing the percentage of ground cover, and limiting grazing are pathways to significantly reduce nitrous oxide emissions from cattle waste. A 2010 USDA report studied cattle farms in the Northern Great Plains (Montana, Wyoming, North and South Dakota) with various levels of grazing (high vs low) and different types of ground cover (native ground cover vs crested wheatgrass). The study found that, regardless of the amount of grazing, pastures with native vegetation absorbed more nitrous oxide than was deposited via animal waste. In contrast, heavily grazed crested wheatgrass pastures emitted three times more nitrous oxide than native plant pastures.³⁷ The results suggest that replacing nonnative cultivated ground cover with native species will alone reduce nitrous oxide emissions, and that a pathway for recognizing offset credits may be on the horizon as project-specific quantification methodologies develop.³⁸

³⁷ M. A. Liebig, et al., *Grazing Management Contributions to Net Global Warming Potential: A Long-term Evaluation in the Northern Great Plains*, 39 *Journal of Environmental Quality* (2010)

<https://www.ars.usda.gov/ARSUserFiles/30640500/HistoricalPasturePubs/46%20Publ1046%20Liebig%20Kronberg%20Phillips%20Hanson%20JEQ%202010.pdf>.

³⁸ Reducing the amount of grazing on pastures appears to further reduce emissions. A January 2019 Scientific Reports study found that pastures with adequate ground cover (70% or greater) (continued...)

Grazing management projects, based primarily on sequestration, would present more difficult questions of permanence than the NMPP presently does (focused instead on reduced application/emissions). If the NMPP were expanded to include grazing management, permanence would need to be considered carefully, and would need to be addressed in a manner consistent with how other sequestration-based projects operate, such as the forestry-based offset protocols in place in California.³⁹ These include much longer crediting periods (e.g., 25-100 years), annual reporting, buffers, and explicit mechanisms to address reversals.⁴⁰

IV. Pathway for State Incorporation

A. Jurisdictions May Adopt the Protocol Without Substantial Change in a Manner Consistent with CARB's Process

Because CAR's protocols are designed to conform with the same eligibility criteria relied upon across jurisdictions, they can be adopted by other jurisdictions with relative ease without substantial change through state-level rulemaking processes. For example, CARB has adapted a number of CAR's existing protocols for use at the state level, typically with relatively minor changes to each protocol's overall framework and specific requirements, and following a standardized evaluation process.

It is CARB procedure to periodically canvas protocols developed by third-parties, and then to evaluate those protocols for inclusion within the California Cap-and-Trade Regulation.⁴¹ California examines whether such protocols meet the standard offset criteria set forth in the Regulation and state law (e.g., whether they will adequately assure that reductions are real, permanent, additional, quantifiable, verifiable and enforceable). Protocols deemed to meet these and other state-specific policy preferences (e.g., cost-effectiveness, potential for California-specific projects, potential supply of credits) are then adapted for state-level adoption and subject to a standard rulemaking process under the state Administrative Procedures Act (APA).⁴² Through the state-level notice and comment process, external protocols may be refined, but they typically retain the same structure and basic content as the version initially published by CAR (or other registries) for use in voluntary programs.

To date, CARB has already adopted versions of a number of protocols first developed by CAR or developed corresponding protocols with substantial overlap, including CAR's protocols for

trapped nearly 2 times more nitrous oxide during the rainy season than low vegetative cover pastures. Rotating the fields on which livestock graze allows for ground cover time to regrow to the threshold of 70% cover.

³⁹ *E.g.*, CARB, Compliance Offset Protocol U.S. Forest Projects (2014), <https://ww3.arb.ca.gov/regact/2014/capandtrade14/ctusforestprojectsprotocol.pdf>.

⁴⁰ *Id.*

⁴¹ *See* CARB, California Air Resources Board's Process for the Review and Approval of Compliance Offset Protocols in Support of the Cap-and-Trade Regulation (May 2013), <https://ww3.arb.ca.gov/cc/capandtrade/compliance-offset-protocol-process.pdf>.

⁴² *Id.*

forestry, livestock, ozone depleting substances, mine methane capture, and urban forests.⁴³ As discussed in the footnoted material, there are typically only relatively minor differences between the CARB and CAR version of a particular protocol. CARB has also adopted a number of CAR's protocols by reference for purposes of its "early action offset credit" recognition program.⁴⁴ This speaks to the quality of the existing CAR protocols and their suitability for adoption by other jurisdictions. Based on our review of the NMPP as detailed above, it is likewise suitable for adoption without substantial change by other states and regional trading programs seeking to incorporate offset credit recognition within such programs.

B. Policymakers Must be Sensitive to Opposition to Offset Credits When Pursuing Adoption

In evaluating the feasibility of adopting the NMPP at the local level, policymakers must be aware of the broader discussion concerning offset credits that has played out over recent years and criticisms regarding their ongoing suitability within broader GHG reduction regulatory frameworks. While offset credits have long been recognized as a key cost-containment tool and pathway for incentivizing GHG reductions outside of directly regulated sectors, they have come under attack over the last decade from multiple angles. In California and elsewhere, environmental justice advocates have strenuously opposed inclusion of offset credits within market-based GHG regulatory programs, arguing that their use results in higher emissions from sources that are subject to direct regulation.⁴⁵

To briefly outline these criticisms, an industrial source subject to a cap-and-trade program must procure allowances equivalent to its emissions (which are distributed by the regulator in amounts that equal the declining economy-wide cap). By incorporating offset credits into the program, and depending on the manner in which the cap was set, it is possible for sources to collectively emit beyond the cap, and cover that overage with offset credits, which reduce emissions elsewhere and "offset" the overage (e.g., at an agricultural field). Environmental justice advocates have worked to eliminate the use of offset credits in such programs, arguing that doing so will result in sharper reductions from capped sources. Policymakers must be aware that this opposition may

⁴³ See Climate Action Reserve, Comparisons between Reserve and ARB Protocols (Forest Projects, Livestock Projects, Coal Mine Methane/Mine Methane Capture Projects, Ozone Depleting Substances Projects, and Urban Forest Projects), <https://www.climateactionreserve.org/how/california-compliance-projects/compliance-offset-program-documents/>.

⁴⁴ See CARB, Early Action Offset Credits, <https://ww3.arb.ca.gov/cc/capandtrade/offsets/earlyaction/credits.htm> (listing series of approved CAR protocols).

⁴⁵ See, e.g., Climate Justice Alliance, "Say No To Forest Offsets" (last visited Jan. 2020), <https://climatejusticealliance.org/notfs/> (describing offset credits as "a false solution to climate change"); East Bay Express, "Beyond Cap-and-Trade: Many Environmentalists Say California Will Improve Climate Policy If It Reduces Emissions at Source (July 19, 2016), <https://www.eastbayexpress.com/oakland/beyond-cap-and-tradeenvironmentalists-say-california-will-have-fewer-emissions-and-better-policy-if-it-ditches-cap-and-trade/Content?oid=4912218> (Quoting director of Asian Pacific Environmental Network, stating that "[e]nvironmental-justice communities do not consent to offsets.").

materialize in response to their own adoption of an offset program generally, including the specific protocol reviewed in this memorandum.⁴⁶

Relatedly, policymakers should anticipate that legislators and interest groups may seek to limit the benefits of the offset program to projects located within the jurisdiction. In 2018, California adopted amendments to its Cap-and-Trade Regulation in response to these pressures, which required that in future years, 50 percent of offset credits must be from projects that provide “direct environmental benefits” (DEBS) within the state. This generated some degree of controversy. In terms of atmospheric warming impact, it is immaterial where an offset project takes place, as GHGs are global pollutants and the atmospheric benefits of a project are the same whether GHGs are sequestered or avoided in the jurisdiction itself or elsewhere. Further, limiting projects to those within the jurisdiction’s boundaries raises questions of validity under the Dormant Commerce Clause, as such a limitation favors in-state projects over (arguably fungible) out-of-state projects, on ostensibly economic grounds.

The DEBS requirement was crafted in part to address this constitutional concern (by emphasizing a concern with substantive environmental policy, rather than economic protectionism), but it has yet to be challenged and withstand judicial scrutiny. Policymakers should therefore also anticipate pressure to similarly limit the scope of project eligibility, and should seek to counter this pressure in order to promote the better policy of offering offset credits for projects that meet the Protocol’s stringent requirements, regardless of their location.

⁴⁶ One potential pathway for addressing these concerns, raised in *Legal Pathways to Deep Decarbonization in the United States*, Chapter 35 (2018), would be for policy makers to reduce the economy-wide cap (and thus number of allowances for distribution) by an amount commensurate to the number of offsets issued. While this would respond to the opposition, it also results in the double counting of emission reductions, and would diminish the cost-containment value provided by recognizing offset credits generated outside the capped sectors.

Appendix: Commentary on Climate Action Reserve's Nitrogen Management Project Protocol Version 2.0

The below comments reflect our summary on select sections of the Climate Action Reserve's Nitrogen Management Project Protocol Version 2.0, published October 17, 2018. In our view, the Protocol is already highly descriptive in nature and, together with its accompanying plain-language Handbook, is accessible to policymakers without need for substantial explanatory commentary.

Comment on §2.2 (The Greenhouse Gas Reduction Project: Eligible Project Area)

This section defines eligible project activities for credit generation. As discussed in the legal memorandum, the Protocol could be expanded in the future to include additional project activities, such as manure management and precision agriculture, as adequate data becomes available. Another potential avenue for expansion would be to include grazing projects, which would entail more substantial changes to the Protocol or adoption of a complementary version.

Comment on § 5 (Quantifying GHG Emission Reductions)

Quantifiability represents a key criterion for ensuring the environmental integrity of offset credits. This section establishes rigorous quantification methods and uniform standards, consistent with this criterion, that nitrogen management projects eligible for generating credits under the Protocol must utilize and meet to quantify emission reductions. It provides a standardized approach for determining baseline emissions, requires accounting for leakage, and includes equations for addressing increases in emissions from previous cultivation years, among other conservative, science-based calculation requirements (e.g., secondary effect emissions).

Comment on § 7 (Reporting and Record Keeping)

These specifications for record keeping ensure that key information is collected on projects on an ongoing basis. This method of accountability and verification is robust and can be duplicated for state-level emissions trading schemes (ETS). ETSs with existing record keeping forms and processes may prefer to integrate nitrogen management into existing processes and systems.

Comment on § 8 (Verification Guidance)

Emissions trading schemes (ETS) may choose to use documents produced by the Climate Action Reserve, including the Verification Program Manual and Program Manual. An ETS incorporating the Protocol by reference may also adopt its own program guidelines to match existing ETS structures and processes.