



February 24, 2010

Via Electronic Submission

James Goldstene, Executive Officer
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Re: Proposed Resolution for a Process for Adoption of GHG Compliance Protocols Including Withdrawal of Board Adoption of Voluntary Protocols, and Discussion of Offsets in the Greenhouse Gas Cap-and-Trade Program, February 25, 2009 Board Agenda Items # 10-2-9 & 10-2-4

Dear Mr. Goldstene:

The Carbon Offset Providers Coalition (the "COPC") offers these comments on the California Air Resources Board's ("CARB") proposal to withdraw Board adoption of certain voluntary protocols as a part of its process for adopting compliance protocols (Agenda Item No. 10-2-9). With regard to Agenda Item No. 10-2-4, the overview of offsets in the cap-and-trade program, we respectfully submit a copy of the COPC's January 11, 2010 comment letter on CARB's preliminary draft regulation, which focused on offsets. A copy is attached.

The COPC is a coalition of leading companies in low-carbon and clean technology investments, representing hundreds of clean infrastructure projects, millions of tons of greenhouse gases ("GHGs") reduced, hundreds of green jobs, and millions of dollars in economic benefit for local and regional communities at project locations in California, other states in the U.S., and abroad. The COPC regularly comments on federal, state and regional regulatory efforts to address climate change, and particularly those that may affect the markets for carbon emission reductions.

We note at the outset that the text of the resolution for a process to develop compliance protocols is not yet available. Thus, to some degree we are "commenting in the dark." We respectfully suggest that full stakeholder participation in any such rulemaking counsels in favor of delaying decision on this issue until comments can be received on the actual resolution. For example, while we understand the stated reason for withdrawing Board adoption of the three voluntary protocols developed by the Climate Action Reserve ("CAR") that CAR has since modified, we don't understand why the Notice does not simply propose to replace the previously adopted protocols with the updated ones. Why leave us — project developers, investors, the market as a whole and the people of the State — with *no* recognized offset protocols?

Let us be clear: the COPC fully supports CARB's development of compliance protocols.¹ Our concern is that CARB has thus far shown little progress in developing them. In the absence of a fully developed program of CARB-generated protocols, declining to adopt existing, rigorous and thoroughly vetted voluntary protocols will undermine the development of a robust offsets program for the compliance market in a timely manner. And there is not much time before the January 1, 2012 roll-out of the State's cap-and-trade program.

Withdrawing support for voluntary protocols in the absence of CARB-generated compliance protocols will send a bad signal to the market. Uncertainty with regard to qualifying standards will stifle investment in this sector, which is a crucial part of the green economy. If offset project developers cannot show that their projects can meet the standards necessary to market their emission reductions (or sequestrations), then it will be very difficult to raise the capital needed to launch these projects. In effect, there will be a concern that the goalposts might be moved after the game has begun. With 2012 just around the corner, the game has already begun if projects developers are to be able to deliver qualified offsets when the cap-and-trade program is launched. In short, CARB should be adopting *more* protocols — whether generated by CARB or by qualified third parties such as CAR — not withdrawing existing ones.

There are many existing quality protocols to draw upon. Rather than expending scarce administrative resources to reinvent the wheel, the COPC recommends that CARB build on the good work done by other governmental entities and NGOs by adopting offset standards created by those entities. This is precisely the approach being undertaken by the Western Climate Initiative (the "WCI"), of which California is a founding and leading member and Cal-EPA's own Michael Gibbs is the current Co-Chair. Last year the WCI undertook an extensive evaluation of existing offset protocols for the purpose of determining which ones it could adopt. A copy of the July 31, 2009 WCI table of existing offset protocols in just three categories (agriculture, forestry and waste management) is attached; there are many more quality protocols available to draw upon.² The WCI evaluation report on existing protocols is due out any day.

By using standards that already exist, CARB can devote precious resources to other areas of need to achieve AB 32's emissions reduction targets. Further, it will ensure implementation

¹ It is a little misleading to speak of compliance versus voluntary GHG accounting protocols. A protocol is a protocol; it is the market in which they are used that determines whether they are "voluntary" or "compliance."

² The attached WCI table lists protocols developed by the American Carbon Registry (<http://www.americancarbonregistry.org>), the Chicago Climate Exchange (<http://www.chicagoclimatex.com>), the UN's Clean Development Mechanism (<http://cdm.unfccc.int/methodologies/index.html>), U.S. EPA's Climate Leaders (<http://www.epa.gov/climateleaders/>), the Voluntary Carbon Standard (<http://www.v-c-s.org/>), and others. Without endorsing any particular organization or standard, we here note some additional examples: the Gold Standard for Voluntary Offsets (<http://www.cdmgoldstandard.org/>), the Climate, Community & Biodiversity Standards (<http://www.climate-standards.org/>), and Plan Vivo (<http://www.planvivo.org>).

of the cap-and-trade program on schedule in 2012, thereby mitigating the economic impact of compliance. Finally, use of existing standards will ensure that current offsets already created in adherence to one or more of these standards will be deemed valid under the California program, thereby lessening the burden on offset developers and purchasers.

The COPC commends CARB's commitment to including a rigorous offsets program in implementing AB 32. Offset projects achieve substantial GHG emission reductions; millions of tons of GHGs have been reduced over the last 15 years in the U.S. through the voluntary offset market. Offsets also will mitigate the cost of complying with AB 32 while augmenting early investment in green technology, carbon-reduction infrastructure, and green jobs. Without offsets, the cost of compliance could be twice as high as with the unrestricted use of offsets.³

CARB ought to ensure that more such progress is made by providing certainty with respect to the standards that will govern the marketability of offsets. In the absence of existing compliance protocols, and absent more information regarding CARB's plans with respect to the adoption of voluntary protocols, we are concerned that the proposed resolution may generate uncertainty in the market at precisely the wrong time: on the verge of launching California's landmark cap-and-trade program.

We thank CARB for this opportunity to submit these comments, and we hope that CARB finds them helpful. We would be happy to provide additional information. To that end, please feel free to contact the COPC's California representative at Beveridge & Diamond, PC, Nico van Aelstyn, at nvanaelstyn@bdlaw.com and (415) 262-4008.

Sincerely,



Roger Williams, Chairman
CARBON OFFSET PROVIDERS COALITION

Attachments

³ See, e.g., U.S. EPA Analysis of the American Clean Energy and Security Act of 2009 (H.R. 2454) (June 23, 2009); Energy Information Administration, Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009 (August 4, 2009); Congressional Budget Office, Congressional Budget Office Cost Estimate: H.R. 2454, American Clean Energy and Security Act of 2009 (as Ordered Reported by the House Committee on Energy and Commerce) (June 5, 2009); CRA International, Impact on the Economy of the American Clean Energy and Security Act of 2009 (H.R. 2454) (prepared for the National Black Chamber of Commerce (May 2009)); U.S. EPA Preliminary Analysis of the Waxman-Markey Discussion Draft, The American Clean Energy and Security Act of 2009 in the 111th Congress (Apr. 20, 2009); U.S. EPA, Analysis of the Low Carbon Economy Act of 2007 (Bingaman-Specter, S. 1766) (Jan. 15, 2008); U.S. EPA, Analysis of the Climate Stewardship and Innovation Act of 2007 (McCain-Lieberman, S. 280) (July 16, 2007).

COPC Members





January 11, 2010

Via Electronic Submission

Kevin Kennedy, Ph.D.
Chief, Office of Climate Change
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Re: Preliminary Draft Regulation for a California Cap-and-Trade Program

Dear Mr. Kennedy:

The Carbon Offset Providers Coalition (the "COPC")¹ is pleased to have this opportunity to comment on the Preliminary Draft Regulation for a California Cap-and-Trade Program (the "PDR") issued by the California Air Resources Board ("CARB") on November 24, 2009. The COPC is a coalition of leading companies in low-carbon and clean technology investments, representing hundreds of clean infrastructure projects, millions of tons of greenhouse gases ("GHGs") reduced, hundreds of green jobs, and millions of dollars in economic benefit for local and regional communities at project locations in the U.S. and abroad. The COPC regularly comments on federal, state and regional regulatory efforts to address climate change, and particularly those that may affect the markets for carbon emission reductions — also known as offsets. We appreciate the opportunity to comment on the PDR, and in particular, to address the proposed 4% cap on the use of offsets.

A. Introduction.

The COPC supports the market-based approach to addressing climate change embodied in the PDR, and welcomes CARB's commitment to including a rigorous offsets program in California's cap-and-trade program, as reflected in the Subarticle 13 of the PDR, "Offset Credits." COPC members and their many partners and customers (including industrial emitters, manufacturers, technology companies, financial institutions, and individuals) appreciate the role given to offsets to deliver necessary cost containment and early investment in clean technology, carbon-reduction infrastructure, and green jobs. A robust offset supply is essential to delivering these, particularly the cost containment element. In these difficult economic times, it is imperative

¹ The members of the COPC are listed in the attachment to this letter.



that there be a robust supply of quality offsets to mitigate the cost of complying with the many requirements of AB 32. Economic analyses by the U.S. Environmental Protection Agency (“EPA”) and others have consistently shown that creating a robust market for offsets can dramatically reduce the overall cost of meeting the goals of global warming legislation. Without offsets, the cost of compliance could be twice as high as with the unrestricted use of offsets.²

Offsets do not only serve as a critical cost containment mechanism. Offset projects achieve GHG emission reductions *now*. Millions of tons of GHGs have been reduced over the last 15 years in the U.S. through the voluntary offset market. This practical, on-the-ground experience from thousands of projects has resulted in the development of clean technology and carbon-reduction infrastructure — not to mention green jobs. This experience can be deployed quickly to create a pool of low-cost GHG emissions reductions for covered facilities under the PDR, thereby promoting many of the goals of AB 32.

B. The 4% Cap on the Use of Offsets Should be Lifted.

Section 95970(a) sets a “quantitative usage limit” on the use of offsets by covered entities to meet their compliance requirements of 3.99%. The COPC respectfully submits that CARB’s embrace of a quantitative usage limit is fundamentally flawed. Establishing a quantity limitation on the use of offsets does nothing to help ensure the environmental integrity of offsets. That can be addressed far more effectively by addressing it directly — *i.e.*, by focusing on offset quality.

The COPC welcomes the efforts by the CARB to ensure that only genuine offsets -- those that are real, additional, verifiable, and permanent -- qualify for the program. Encouraging the development of quality offsets actually promotes environmental integrity, as offsets make real contributions to the effort to mitigate climate change by reducing GHG emissions *in the near term* and by those without compliance obligations under the cap. They thus serve as an important bridge to the low carbon economy of the future. Unfortunately, implementation of the “quantitative usage limit” will necessitate a shift in the allocation of vital resources from the development and verification of quality offsets to the policing of an arbitrary limit.

² See, e.g., U.S.EPA Analysis of the American Clean Energy and Security Act of 2009 (H.R. 2454) (June 23, 2009); Energy Information Administration, Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009 (August 4, 2009); Congressional Budget Office, Congressional Budget Office Cost Estimate: H.R. 2454, American Clean Energy and Security Act of 2009 (as Ordered Reported by the House Committee on Energy and Commerce) (June 5, 2009); CRA International, Impact on the Economy of the American Clean Energy and Security Act of 2009 (H.R. 2454) (prepared for the National Black Chamber of Commerce (May 2009)); U.S.EPA Preliminary Analysis of the Waxman-Markey Discussion Draft, The American Clean Energy and Security Act of 2009 in the 111th Congress (Apr. 20, 2009); U.S.EPA, Analysis of the Low Carbon Economy Act of 2007 (Bingaman-Specter, S. 1766) (Jan. 15, 2008); U.S.EPA, Analysis of the Climate Stewardship and Innovation Act of 2007 (McCain-Lieberman, S. 280) (July 16, 2007).



If CARB determines that some type of “quantitative usage limit” is necessary, then it must be set higher than a mere 4%. This limit is far lower than those considered previously by CARB and the Western Climate Initiative (the “WCI”); the limits set forth in the leading Congressional bills also are effectively higher than 4%. Such a low limit will severely hinder the ability of offsets to provide the cost containment mechanism that will be necessary to manage the costs of AB 32’s implementation. It also will severely discourage the investment in and development of new offset projects, thereby failing to harness a powerful tool for combating climate change — the offset sector that has the practical experience and ability to begin making the GHG emission reductions that are so urgently needed *now*.

C. California’s Cap-and-Trade Program Should be Harmonized with the WCI’s Regional Cap-and-Trade Program.

California is a founder and leading Partner jurisdiction of the WCI. In addition, California is active in the international arena, reflected most recently by the State’s active delegation at the COP 15 Conference in Copenhagen, the State’s hosting of the second annual Governors Global Climate Summit last fall, its several bilateral agreements that cross international borders, and its participation in the International Carbon Action Partnership (“ICAP”). All of these important international vehicles for addressing climate change embrace market mechanisms. The State’s very participation in them reflects the recognition by virtually all observers that it is critical for the success of carbon markets that linkage between carbon markets be facilitated as much as possible.

This is particularly so with respect to offsets. Many emission reduction and sequestration projects are developed in widely dispersed and diverse rural areas — *e.g.*, those based in agriculture, forestry, and mines — across the State, the WCI region, and internationally. Thus, offsets are produced, delivered, and used on a regional, national and international level and California ought to seek to harmonize its cap-and-trade program with others. The first place to do so is the WCI, with which the PDR seeks to be consistent but is not on this critical aspect of the cap-and-trade program. Section 9.2 of the Design Recommendations for the WCI Regional Cap-and-Trade Program (September 23, 2008, corrected March 13, 2009) (the “WCI Design”)³ provides that “WCI Partner jurisdictions will limit the use of all offsets . . . to no more than 49% of total emission reductions from 2012-2020.” CARB’s Scoping Plan adopted the same measure. The PDR’s 4% quantitative usage limit represents a radical departure from the earlier measure that had been established by both the WCI and CARB after lengthy stakeholder involvement in both.

If the PDR is adopted as currently drafted, California will be at odds with its other WCI Partner jurisdictions. This is especially striking given the additional effort undertaken by California and the other WCI Partner jurisdictions in 2009 to ensure the development of complementary GHG emission reduction policies, even forming a new committee devoted to that task. Making the PDR

³ The WCI Regional Cap-and-Trade Program Design Recommendations are available at: <http://www.westernclimateinitiative.org/the-wci-cap-and-trade-program/design-recommendations>.



consistent with the WCI Design will help to ensure the success of the WCI Regional Cap-and-Trade Program by fostering cooperation and the complementarity of GHG emission reduction policies in California and the other WCI Partner jurisdictions.

D. The Start Date for Qualifying Offset Projects Should be Eliminated.

Section 96240(c)(3) sets a start date for qualifying offset projects of December 31, 2006. Offsets created before that date, as well as long-term offset projects begun before that date, will be considered invalid. The PDR explains that this date “reflects the implementation of AB 32 and makes the bounds more clear for ARB to determine if an offset project was implemented to achieve AB 32 goals.” (PDR page 64.) There are two problems with this. First, the goals of AB 32 were not created *ab initio* by AB 32: the legislation reflected years of effort by many people in many different fora, including many working on thousands of offset projects around the world.

Second, AB 32 itself mandates that credit be given to early action. Health and Safety Code Section 38562(b)(3) directs the Board, to the extent feasible, to: “Ensure that entities that have voluntarily reduced their greenhouse gas emissions prior to the implementation of this section receive appropriate credit for early voluntary reductions.” Categorically invalidating all early action efforts in this sector is clearly at odds with this statutory requirement. It also is at odds with CARB’s “Policy Statement on Voluntary Early Actions to Reduce Greenhouse Gas Emissions” adopted on February 28, 2008, which provides that CARB will “Ensure that any credits provided for voluntary early actions are based on emission reductions that are real, permanent, additional, quantifiable, verifiable, and enforceable.”

The placement of this requirement in Section 96240(c) (entitled “Additionality”) suggests that it may be intended to ensure that the offsets generated by projects are additional. However, this late date bright line is counterproductive and unnecessary. Any emission reductions will be real and additional, regardless of when the project infrastructure was placed into service, if the project meets all the criteria of the relevant offset crediting program. For example, there is no reason that a methane gas collection system that was installed at a dairy farm in 2006 or earlier should not be credited for methane gas it continues to collect and convert into green energy in 2010. The PDR as drafted would create a perverse incentive to abandon such projects, leaving greenhouse gases to be vented into the atmosphere. Exclusion of these high quality offsets also will reduce the overall volume of quality offsets available to the market, thereby hindering the overall effectiveness of the program. Rather than drawing a line at December 31, 2006, the COPC recommends that CARB simply hold older offsets to the same standards of quality and verifiability as newer offsets.

Alternatively, if CARB concludes that a bright line is necessary, the COPC recommends that it be moved back at least to the year 2001 to ensure that quality offsets established pursuant to previously existing standards are not prevented from entering the California carbon market. A start date of January 2001 would harmonize the PDR with Section 740 of the American Clean Energy and Security Act of 2009 (H.R. 2454) that was passed by the U.S. House of Representatives in June of



2009. While a 2001 start date requirement will be still potentially harmful, it will be much less restrictive than the PDR's start date requirement of December 31, 2006.

E. The Geographical Area for Permitted Offset Projects Should be Broad.

The PDR envisions four options for where offset projects may be located: (1) California; (2) the entire United States; (3) all of North America, or (4) No Geographical Limitation. (PDR page 67 (discussing the placeholder provision, Section 96260(a)(3)).) COPC strongly believes that the geographical area within which offset projects may be conducted should be unlimited (*i.e.*, Option 4) in order to serve the emission reduction goals of AB 32. Given the global nature of anthropogenic climate change, there is no scientific basis for concluding that offset projects are invalid merely because they occur in a location other than the carbon market within which they will be used. Therefore, geographic boundaries should only be contemplated when there is no other way to ensure that the offsets meet quality requirements. Rather than simply prohibiting offsets generated in other jurisdictions — many of which have been generated by projects meeting exacting standards (including third party verification) that have been in practice for years before AB 32 was adopted — CARB can ensure that the extra-territorial offsets it approves are real, additional, verifiable and permanent. The most efficient way to do so is by authorizing offset credits developed under other offset crediting programs that CARB determines to be sufficiently rigorous.⁴ Any blanket geographic limitation on offset projects will unnecessarily exclude those high-quality offsets, despite the fact that they meet or even surpass the standards that may be established or approved by CARB.

F. CARB Should Have the Flexibility to Approve Offset Credits Issued by Other Programs.

The PDR leaves CARB's role in issuing and/or approving credits undefined. (PDR page 61). To ensure rapid and successful implementation of the offset market, CARB should be responsible for approving credits, but not with issuing them. The administrative burden of running the offset market and issuing credits to individual applicants is likely to be significant. Taking on such an administrative role would heavily tax CARB's already strained resources, and would significantly slow down the approval (and thus the efficient utilization) of quality offsets. Instead, CARB should adopt a role of approving offsets developed by qualified external programs, most notably the California Climate Action Reserve. CARB has the experience and expertise to evaluate these external programs and determine which of their standards meet CARB's rigorous requirements that the resulting offsets are real, additional, verifiable, unique, and permanent. Subarticle 12 of the PDR (Linkage to External Trading or Offset Crediting Systems") provides a very good first step toward describing how this can be done. CARB, the public and the environment would be best served by utilizing, rather than supplanting, the work these other programs have done.

⁴ The State's bilateral agreements with Mexico and the agreements signed at the Governors' Global Climate Summit reflect the State's ability to do so.



G. The Requirements for Approving Offset Methodologies Should be Clear and Based on Science, and CARB Should Have the Flexibility to Approve the Protocols Developed by Other Programs.

The COPC welcomes and supports CARB's decision in Section 96240(a) to adopt standards-based offset methodologies. As discussed in the COPC's previous stakeholder submissions to CARB, standards-based offset methodologies provide the most efficient, objective and easily calculated means for determining whether a given offset project should be approved or not. That said, CARB also should provide means by which new offset project types can be approved on a case-by-case basis. That way, the offset program can continue to serve as an engine for the development of new emission reduction and sequestration techniques and technologies. This approach is consistent with the recommendation in the February 2008 Final Report of the Economic and Technology Advancement Advisory Committee ("ETAAC") that a California Carbon Trust be established that could fund the development of new emission reduction technologies. (*See* ETAAC Final Report at 2-4 - 2-5.)

Rather than expending scarce administrative resources to reinvent the wheel, the COPC recommends that CARB build on the good work done by other governmental entities and NGOs by incorporating the offset standards created by those entities into the framework established by the PDR. Many have made and are making great efforts to ensure the quality of the offsets that are delivered to the market. These efforts include the development of comprehensive standards and protocols for offsets, as well as registries. Without endorsing any particular organization or standard, we here note some of the leading examples:

- American Carbon Registry: <http://www.americancarbonregistry.org/>;
- The United Nations' Clean Development Mechanism: <http://cdm.unfccc.int/methodologies/index.html>;
- U.S. EPA's Climate Leaders Program: <http://www.epa.gov/climateleaders/>;
- The Voluntary Carbon Standard: <http://www.v-c-s.org/>;
- Gold Standard for Voluntary Offsets: <http://www.cdmgoldstandard.org/>;
- Climate, Community & Biodiversity Standards: <http://www.climate-standards.org/>;
- Chicago Climate Exchange: <http://www.chicagoclimatex.com/>; and
- Plan Vivo: <http://www.planvivo.org>

By utilizing standards and methodologies that already exist, CARB can ensure a swift implementation of the carbon market. Additionally, use of existing standards will ensure that current offsets already created in close adherence to one or more of these standards will be deemed valid by and fit for use under the California program, thereby lessening the burden on offset developers.

Finally, it is important that the standards governing offsets be driven primarily by the goal of reducing greenhouse gas emissions, and not by unrelated considerations, no matter how meritorious they may be. In this regard, we are troubled by the lack of clarity in some of the provisions of



Section 96240. For example, Section 96240(e) provides that any standardized methodology “must account for and mitigate potential activity shifting and market-shifting leakage, from an offset project of that type,” and Section 96240(e) similarly provides that, a standardized methodology “must ensure that the offset project type does not cause or contribute to adverse effects on human health or the environment.” While perhaps laudable, it is not apparent how either of these objectives could possibly be determined — and determined *in advance*. The COPC respectfully submits that these sections be removed from the PDR. If they remain, there is a very real risk that any and all standardized offset methodologies submitted for approval to CARB will become bogged-down in interminable challenges regarding their theoretical potential to cause leakage or net harm to human health or the environment. This would greatly chill the development of quality offsets that are urgently needed to achieve greenhouse gas emission reductions in the near term and to manage the costs of AB 32’s implementation.

H. Conclusion.

Once again, we thank CARB for this opportunity to submit these comments, and we hope that CARB finds them helpful. We would be happy to provide additional information to CARB. To that end, please feel free to contact the COPC’s California representative at Beveridge & Diamond, PC, Nico van Aelstyn, at nvanaelstyn@bdlaw.com and (415) 262-4008.

Sincerely,

A handwritten signature in black ink that reads "Roger Williams" with a stylized flourish at the end.

Roger Williams, Chairman
CARBON OFFSET PROVIDERS COALITION

cc: Mary Nichols (CARB) (via email) (mnichols@arb.ca.gov)
James Goldstene (CARB) (via email) (jgoldste@arb.ca.gov)
Brienne Aguila (CARB) (via email) (baguila@arb.ca.gov)
Stephen Shelby (CARB) (via email) (sshelby@arb.ca.gov)
Sam Wade (CARB) (via email) (swade@arb.ca.gov)
Ray Olsson (CARB) (via email) (rolsson@arb.ca.gov)
David Kennedy (CARB) (via email) (dkenney@arb.ca.gov)

Attachment

COPC Members



GHG Offset Protocols by Project Type and Program

Note: The WCI Offsets Committee has identified the following existing offset protocols as potentially suitable for use in the WCI cap-and-trade program, and will evaluate these proposals against WCI draft offset criteria.

- = Approved protocol or methodology
- ⊙ = protocol or methodology under development
- = protocol or methodology considered for future

	Alberta Offset System	American Carbon Registry (ACR)	Chicago Climate Exchange (CCX)	Clean Development Mechanism (CDM) ⁱ	Climate Action Reserve (CAR)	GE Energy Financial Services & AES (GE-AES)	New South Wales (NSW)	Regional Greenhouse Gas Initiative (RGGI)	U.S. DOE 1605 (b)	U.S. EPA Climate Leaders	Voluntary Carbon Standard (VCS) ⁱⁱ
Agriculture											
Soil sequestration	● ⁱⁱⁱ		● ^{iv}		○ ^v				● ^{vi}		● ^{vii}
Manure management (including anaerobic digestion)	● ^{viii}	⊙ ^{ix}	● ^x	● ^{xi}	● ^{xii}	● ^{xiii}		● ^{xiv}		● ^{xv}	
Rangeland management	○ ^{xvi}	○ ^{ix}	● ^{iv}		○ ^v				● ^{vi}		● ^{vii}
Forestry											
Afforestation / Reforestation	⊙ ^{xvii}	● ^{xviii}	● ^{xix}	● ^{xx}	● ^{xxi}	○ ^{xxii}	● ^{xxiii}	● ^{xiv}	● ^{vi}	● ^{xxiv}	● ^{vii}
Forest management		● ^{xvii}	● ^{xix}		● ^{xxi}				● ^{vi}	⊙ ^{xxv}	● ^{vii}
Forest pres. /conservation		● ^{xvii}	● ^{xix}		● ^{xxi}	○ ^{xxii}			● ^{vi}		● ^{vii}
Forest products		● ^{xxvi}	● ^{xix}		● ^{xxvi}				● ^{vi}		● ^{xxvi}
Urban forestry	⊙ ^{xvii}		● ^{xix}		● ^{xxvii}				● ^{vi}		
Waste Management											
Landfill gas	● ^{xxviii}	⊙ ^{ix}	● ^x	● ^{xxix}	● ^{xxx}	● ^{xxxi}		● ^{xiv}		● ^{xxxii}	
Waste and wastewater treatment	● ^{xxxiii}			● ^{xxxiv}		● ^{xxxv}					

Note: in some cases, a dot in this table represents more than one protocol. In other cases, a protocol addresses more than one project type or dot.

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- ⁱ We have not attempted to characterize methodologies under consideration (but not yet approved) by CDM, due to the high volume of such methodologies.
- ⁱⁱ VCS approves the use of both CDM and CAR methodologies. In addition, VCS has developed specific guidance for agriculture, forestry, and other land use projects as noted.
- ⁱⁱⁱ Alberta Environment, 2009. Quantification Protocol for Tillage System Management: Version 1.3. February 2009.
- ^{iv} CCX's Exchange Soil Offsets include methodologies for conservation tillage, grassland planting, and rangeland management, all documented in Chapter 9 of the CCX rulebook.
- ^v Climate Action Reserve is currently addressing some key methodological questions pertaining to soil carbon within its update to the forest protocol. Pending this process, it expects to further assess the potential for soil/rangeland project types by fall, 2009.
- ^{vi} All U.S. DOE methodologies are documented in its *Technical Guidelines: Voluntary Reporting of Greenhouse Gases: 1605(b) Program* (US DOE, 2007).
- ^{vii} Standards for "Agricultural Land Management" (soil sequestration through cropland management, grassland management, or cropland or grassland conversions), "Improved Forest Management", Afforestation/Reforestation, and "Reduced Emissions from Deforestation and Degradation" are included in VCS's 2008 *Guidance for Agriculture, Forestry, and Other Land Use Projects*.
- ^{viii} Alberta Environment, 2007. *The Anaerobic Decomposition Of Agricultural Materials: Version 1*. September 2007.
- ^{ix} ACR standards for Livestock Waste Management and Landfill Methane are in peer review and forthcoming public comment. A rangeland standard is in early stage development.
- ^x CCX's Exchange Methane Offsets include methodologies for landfill gas collection, agricultural (i.e., manure) methane destruction, and capture of coal mine methane.
- ^{xi} Among other CDM methodologies, AMS-III.D: "Methane recovery in animal manure management systems", addresses manure.
- ^{xii} Manure management is addressed in CAR's Livestock Protocol: Version 2.1 from August 20, 2008. A minor revision is planned for summer 2009.
- ^{xiii} GE-AES's *Methodology for Agricultural Livestock Manure Management System Methane Capture and Destruction Projects* addresses manure management.
- ^{xiv} The RGGI Model Rule (December 2008) lists standards for landfill methane, afforestation, and avoided methane emissions from agricultural manure management
- ^{xv} Climate Leaders Greenhouse Gas Inventory Protocol Offset Project Methodology For Managing Manure with Biogas Recovery Systems. Version 1.3. August 2008.
- ^{xvi} Alberta is considering development of a "Pasture Management" protocol (<http://www.carbonoffsetsolutions.ca/offsetprotocols/protocolsreview.html>)
- ^{xvii} As of early July, 2009, the Alberta Offset System afforestation protocol was retracted for revisions. It includes language for converting "urban land to plantations".
- ^{xviii} Version 1 of ACR's *Forest Carbon Project Standard* (March 2009) addresses afforestation/reforestation, forest management, and
- ^{xix} CCX's Exchange Forestry Offsets can be issued for afforestation/reforestation, forest products ("long lived wood products"), forest management, urban forestry ("widely spaced tree plantings") and "Combined Forestation and Forest Conservation Projects", which requires forest conservation activities to be on contiguous sites to forestation.
- ^{xx} Among other CDM methodologies, AR-ACM0001: "Afforestation and reforestation of degraded land (Version 3)" addresses afforestation/deforestation.
- ^{xxi} Afforestation/reforestation, forest management, and forest conservation are included in the Forest project protocol v. 2.1 (September, 2007); Version 3.0 is expected to be adopted in July 2009.
- ^{xxii} Afforestation/reforestation and "land and habitat conservation" project types are being considered for future methodology development.
- ^{xxiii} NSW's *Greenhouse Gas Benchmark Rule (Carbon Sequestration) No. 5 of 2003* addresses afforestation / reforestation.
- ^{xxiv} Climate Leaders Greenhouse Gas Inventory Protocol Offset Project Methodology for Project Type: Reforestation/Afforestation. Version 1.3. August 2008.
- ^{xxv} EPA Climate Leaders fact sheet, http://www.epa.gov/stateply/documents/offsets_factsheet.pdf, and recent presentations by EPA staff.
- ^{xxvi} Forest products are not a unique project type in ACR, CAR, or VCS but they are included as a carbon pool within the forest management project type.
- ^{xxvii} CAR's Urban Forestry protocol version 1.0 was adopted August 12, 2008. A minor revision is planned for summer 2009.
- ^{xxviii} Alberta Environment, 2007. *Quantification Protocol for Landfill Gas Capture And Combustion: Version 1*. September 2007.
- ^{xxix} Among other CDM methodologies, ACM0001: "Consolidated baseline and monitoring methodology for landfill gas project activities" address landfill gas.
- ^{xxx} CAR's U.S. landfill protocol version 2.0 was issued November 17, 2008. A draft version 2.1 is out for public comment until July 10, 2009.
- ^{xxxi} GE-AES's *Methodology for Landfill Gas Methane Capture and Destruction Projects* addresses landfill gas.
- ^{xxxii} Climate Leaders Greenhouse Gas Inventory Protocol Offset Project Methodology For Project Type: Landfill Methane Collection and Combustion. Version 1.3. August 2008
- ^{xxxiii} Alberta Environment, 2009. *Quantification Protocol for Anaerobic Treatment Of Wastewater Projects: Version 1.0*. March 2009. Alberta also has a *Quantification Protocol for Aerobic Composting Projects: Version 1.1*. December 2008.
- ^{xxxiv} Among other CDM methodologies, AMS-III.H: "Methane Recovery in Wastewater Treatment", addresses wastewater. CDM also has methodologies to address organic municipal solid waste, such as AM0025: "Avoided emissions from organic waste through alternative waste treatment processes", address solid waste.
- ^{xxxv} GE-AES's *Methodology for Waste Water Treatment Plant Capture and Destruction Projects* addresses wastewater treatment.