

A Comparison of Greenhouse Gas Emissions Offsets Project Development and Approval Processes¹

Background Paper for the EPRI Greenhouse Gas Emissions Offset Policy Dialogue Workshop #8

June 2010

I. Background

This paper has been prepared for a workshop to be held by the Electric Power Research Institute (EPRI) on June 24, 2010 in Washington D.C. It is the eighth in a series of workshops sponsored by EPRI in 2008, 2009 and 2010 on the subject of greenhouse gas (GHG) emissions offsets.

The purpose of this paper is to provide background for workshop discussions on the methodology development, offset project approval and credit issuance processes; how existing offset programs have addressed and are addressing key issues in these processes; and notable distinctions between programs. The paper covers the following specific programs:

- The United Nations' Clean Development Mechanism (CDM);
- The Climate Action Reserve (CAR);
- The Voluntary Carbon Standard (VCS);
- The American Carbon Registry (ACR);
- The Chicago Climate Exchange (CCX); and
- Australia's New South Wales Greenhouse Gas Reduction Scheme (NSW GGAS).

The paper does not attempt to include every offset system. We have not included several existing offsets programs, including the Environmental Protection Agency's Climate Leaders program, the United Nations' Joint Implementation program, the Regional Greenhouse Gas Initiative's (RGGI) offsets program and the Alberta-based Offset Credit System in Canada. We did this strictly for the sake of brevity, and because the programs included in the paper cover most of the key differences among existing offset programs.

II. Overview of Steps in the Methodology Development, Offset Project Approval and Credit Issuance Process

To provide a basis for comparing offset programs, this section addresses the following question: What are the basic elements, or building blocks, of any offset program? The discussion uses the methodology development, offset project approval and credit issuance process of the United Nations' Clean Development Mechanism (CDM) to illustrate each of these basic elements, along with examples of alternative approaches from other programs.

¹ Prepared by Rob Youngman of Natsource Advisory and Research Services and Adam Diamant of the Electric Power Research Institute (EPRI). Copyright © 2010 Electric Power Research Institute, Inc. All rights reserved.

The CDM, one of the “project-based mechanisms” created by the Kyoto Protocol, is the largest offset program in the world that has been developed to date.² It has stimulated billions of dollars in investment in reducing GHG emissions, and many observers believe it has contributed to significant levels of emission reductions in developing countries.

Carbon offset credits issued by the CDM (known as Certified Emissions Reductions (CERs)) have become a sort of common currency in the evolving global carbon markets. They can be purchased for compliance use by companies regulated under the EU Emissions Trading Scheme (EU ETS), by countries that are party to the Kyoto Protocol (KP), and by Japanese companies committed to meeting governmental voluntary targets.

The process by which an offset project moves from inception through the CDM offset approval process to be issued offset credits is shown in Figure 1. Each of the steps in the offset approval process is described below.

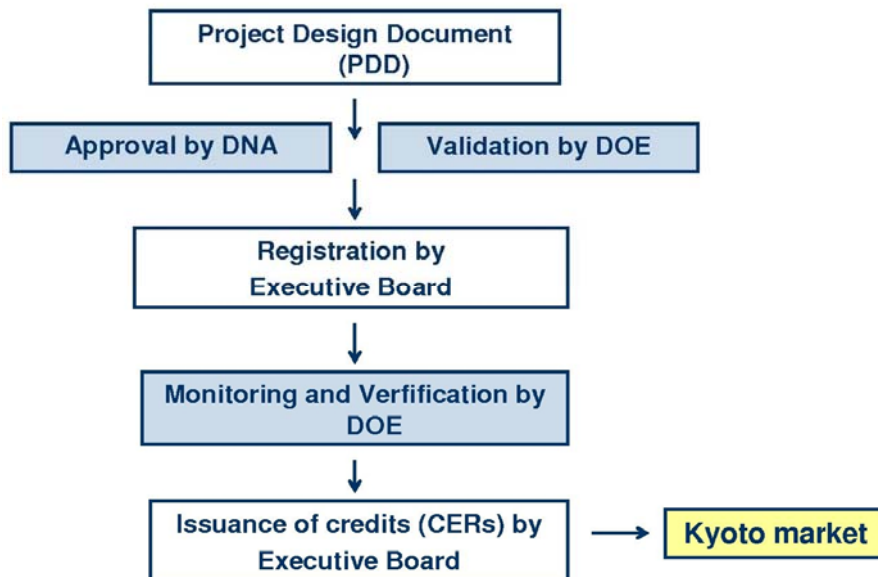


Figure 1 – CDM Approval Process Chart

Source: Point Carbon.³

A. Methodology development

In every offset program, a methodology is required to estimate an eligible project’s GHG **emissions baseline** – i.e., the “without project” emissions level against which the project’s emission reductions are measured – and for monitoring those reductions over time. With respect to establishing eligible project types, a program may choose between a “positive list” approach and an approach that approves eligible project types one at a time and which allows for the

² The other project-based mechanism created by the Kyoto Protocol is Joint Implementation (JI), which allows industrialized countries or emitters in those countries to invest in projects located within other industrialized countries to generate Emission Reduction Units (ERUs).

³ Excerpted from *A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions* EPRI, Palo Alto, CA: 2007 1014085.

addition of new project types over time. Eligible projects could be limited to those included in a list at the start of the program – i.e., a “positive list.” An offset program that uses a positive list approach can provide greater certainty to project developers and investors, and support the early development of an offset market, by identifying at the start of the program existing external or in-house methodologies approved for use. A positive list approach also can allow for other methodologies to be developed by the program administrator or proposed by other entities after the start of a program. This approach may be more flexible, facilitating emission reductions in a broader range of activities not covered by a cap-and-trade program. Hybrid approaches like the one adopted by the Northeast Regional Greenhouse Gas Initiative (RGGI) can incorporate both an initial positive list of eligible project types along with a regulatory pathway that allows new project types to be added over time.

The CDM uses a **project-by-project approach** for methodologies (and for additionality, as discussed below), and is very open to consideration of new methodologies. No methodology is excluded *a priori* from the CDM, except for emission reductions from nuclear energy and carbon sequestration from land use, land use change, and forestry (LULUCF) activities, other than afforestation and reforestation.⁴ In practice, this prohibition also has meant that emissions reductions derived from “Reduced Emissions from Deforestation and Degradation” (REDD) do not qualify under the CDM. The only other eligibility constraint on CDM projects was imposed (on European Union buyers) by the EU ETS Linking Directive. The Directive disallows covered entities from using for compliance CERs from LULUCF activities, or from large hydroelectric power projects (over 20 MW) that do not comply with World Commission on Dams criteria and guidelines.

If a project proponent wishes to use a new **baseline and monitoring methodology**⁵, it can propose one as part of its draft **Project Design Document (PDD)**. The new methodology is submitted via a **Designated Operational Entity (DOE)** to the **CDM Methodologies Panel (Meth Panel)** for its consideration and approval. As part of the review process, the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat prepares a draft pre-assessment, a Meth Panel expert does an initial quality assessment, and the Secretariat posts the proposed methodology for public input. If the methodology passes the pre-assessments, four members of the Meth Panel review the Secretariat’s pre-assessment, and they and the Chair and Vice-Chair of the Meth Panel select two experts from a roster of experts to undertake a “desk review” to assess the validity of the methodology. The Panel then prepares its preliminary recommendation and presents it to the project proponents, who are given four weeks to provide technical clarifications. The Meth Panel then prepares and forwards its final recommendation (which is made publicly available) to the **CDM Executive Board (EB)**, and the EB considers the proposed new methodology at its next meeting. If it is approved, it is made publicly available and the DOE may proceed with the validation of the project activity and submit the PDD for registration. In addition to providing this review function, the Meth Panel and EB also develop consolidated baseline and monitoring methodologies based on existing approved methodologies.

⁴ The rules for CDM project eligibility were formalized in the Marrakesh Accords in 2001.

⁵ Details on various elements of the CDM’s methodology development, offset project approval and credit issuance process are available at CDM official website (<http://cdm.unfccc.int/Projects/pac/index.html>) and from “CDM in Charts,” November 2009, Japan Ministry of the Environment and the Institute for Global Environmental Strategies, <http://enviroscope.iges.or.jp/modules/envirolib/view.php?docid=835>.

Comparison of CDM approach to other programs: In its approach to methodology development, the Voluntary Carbon Standard (VCS) is similar to the CDM in that methodologies are proposed by project proponents rather than by the program itself. In contrast, the New South Wales Greenhouse Gas Reduction Scheme (NSW GGAS) uses a “positive list” approach, and established its methodologies in regulations. Other programs such as the Climate Action Reserve (CAR), the American Carbon Registry (ACR), and the Chicago Climate Exchange (CCX) develop methodologies internally, with differing levels of input by expert external advisors and other stakeholders. (ACR also allows proponents to use certain existing methodologies (e.g., CDM methodologies), or to bring new and modified methodologies to ACR for approval. In all cases, methodologies are reviewed in a public consultation and scientific peer review process.) These and other differences between these existing offsets programs are discussed in more detail below.

The approval process, or CDM project cycle, is intended to safeguard the environmental integrity of the CDM, which rests on CERs providing real and permanent reductions in global GHG emissions. But the approval process also has been criticized for placing an onerous bureaucratic burden on project developers, engendering transaction costs of up to \$100,000 per project, and creating a process that takes up to two years or longer for some projects to be approved. Delays in obtaining project approval from the host country’s Designated National Authority (discussed below), the EB or a DOE can mean that project developers receive significantly fewer CERs than originally planned, affecting the financial viability of some projects.

B. Submission of project design documentation

The process of reviewing and approving an offset project begins with preparation and submission of project documentation by the project developer. In the CDM, this documentation is called a **Project Design Document (PDD)**. The PDD includes detailed information on the proposed project activity, and the baseline and monitoring methodology, including the plan for **monitoring, reporting and verification (MRV)**. (The baseline and monitoring methodologies must be existing approved methodologies for the project to be eligible to be considered for validation; otherwise the new methodologies must be approved first.) The PDD provides the basis for subsequent decisions on validation, registration and verification of the project. For this reason, project developers (“**project proponents**,” in CDM parlance) need to carefully consider at the planning stage the CDM’s various requirements for registering an offset project. For example, the CDM requires that project proponents inform the host country government and the UNFCCC Secretariat of the start of the project activity and their intention to seek CDM approval, within six months of the project start date.

The PDD also indicates the project proponents’ choice of **crediting period** for the project. The crediting period is the amount of time that a registered offset project is approved to generate offset credits. Crediting periods in the CDM may either be for a maximum of seven years, with the possibility of renewal up to two times (i.e., a maximum of 21 years in total), or for a maximum of 10 years with no renewal option. Under the first option, the baseline is reviewed and updated if appropriate at the start of the second and third crediting periods. Under either option, the crediting period cannot start prior to the date of registration.

Prior to seeking validation of a project in the next step, project proponents must obtain written approvals for the project – including an affirmation that the project will contribute to sustainable development in the host country – from the host country government’s relevant regulatory agency (its “**Designated National Authority (DNA)**”). In the CDM, the “host country” is the non-Annex 1 nation where the proposed offset project would be implemented.

The CDM also establishes a number of specific requirements relating to MRV. These include but are not limited to:

- 1) The monitoring report must include information on emission factors, Intergovernmental Panel on Climate Change (IPCC) and other reference values used in the calculation; the parameters that are to be monitored and reported, and at intervals defined in the monitoring plan in the PDD; calculations (in both written and spreadsheet form, with references to formulae and methods) of baseline emissions, project emissions, leakage, and emission reductions; and a comparison of actual emission reductions and the estimate in the registered PDD, with an explanation of any significant increase;
- 2) The PDD must identify specific uncertainty levels, methods and the accuracy level of measurement instruments, calibration procedures for parameters and variables that are to be monitored and reported, and detailed quality assurance and quality control procedures;
- 3) Recommended standards must be national or international; and,
- 4) The DOE’s verification report must include a verification of the accuracy of uncertainty levels and instruments.

Comparison of CDM approach to other programs: Other offset programs have varying requirements on different elements of MRV (most of which are not discussed in detail in this report for the sake of brevity). For example, CAR requires project proponents to demonstrate actual emissions will be within +/- 5% of measured or calculated values, at a 95% confidence level. ACR requires overall uncertainty of +/- 10% of the mean at 90% confidence, applied to the final calculation of emission reductions or removal enhancements. If this target is not met, proponents must report the lower bound of the confidence interval. NSW GGAS requires forest managers to demonstrate a 70% probability exists that the actual net increase in carbon stocks will be greater than the amount of credits issued for afforestation and reforestation projects.

C. Validation and registration of the project

The next major step in the offset project approval process is the formal review and approval of the project. In the CDM process, before the project can be approved – or **registered**, in CDM parlance – the PDD must first be **validated** by an independent, accredited third party, such as an auditing or accounting firm, known as “**Designated Operational Entities (DOEs)**.” Project proponents contract directly with approved DOEs, who must be accredited by the EB. The DOE posts the PDD on a website for comments from stakeholders and non-governmental organizations (NGOs), reviews the PDD and the comments, and makes a determination on whether the project should be validated based on the PDD’s compliance with all CDM requirements. These include, but are not limited to, additionality, requirements in approved baseline and monitoring methodologies, and monitoring, verification and reporting requirements. (With respect to **baselines**, the EB has identified three approaches that may be considered: existing actual or historical emissions; emissions from a technology that represents an

economically attractive course of action, taking into account barriers to investment; or the average emissions of similar project activities undertaken in the previous five years, and whose performance is in the top 20th percentile for the category.)

If a DOE approves a project for validation, it submits a request for registration to the EB in the form of a **validation report** including the PDD and host country approval letter, and an explanation of how comments were taken into account. The DOE makes the report publicly available after its submission to the EB.

Registration is the formal acceptance by the EB of a validated project as a CDM project activity, and is the prerequisite for verification and certification of emission reductions, and issuance of **Certified Emission Reductions (CERs)** for the project activity. The request for registration is considered received once the EB has undertaken a **completeness check** of the request, and has received a registration fee. Unless at least three members of the EB **request a review** of the project, it is automatically deemed to be registered eight weeks after the request for registration is received. If there is a request for review, project proponents are given an opportunity to respond to issues raised in the request, and the review must be completed no later than at the second EB meeting following the request. If the project is rejected, it may be reconsidered for validation and then registration if the project proponents make the necessary changes to its PDD to meet all requirements and respond to stakeholder comments.

Additionality determinations

A key consideration that must be addressed under any offset program and project approval process is **additionality**. A GHG emission reduction project designed to create offsets is considered to be “additional” if the reductions created by the project activity would not have occurred but for the implementation of the project and the incentives created by the offset program. This means that the project activity creating the offsets would not have been implemented under so-called “Business-as-Usual” (BAU). In general, there is no analytic method that can be used to “prove” the additionality of a proposed offset project.

In the CDM, the EB considers at registration the project’s demonstration of additionality in the PDD. The CDM has established an “**additionality tool**” which provides guidance to project developers regarding the demonstration of additionality. The CDM has adopted a **project-by-project** additionality test, in which each project must demonstrate its additionality based on tests that consider the project’s specific circumstances, rather than a **standardized additionality test**, such as a performance standard. Generally speaking, offset projects must demonstrate their additionality in the CDM using:

- 1) An investment test (often referred to as a financial additionality test); *or*
- 2) A barrier test; *and*
- 3) A common practice test.

If a project is deemed to meet the requirements of two tests – either 1 *or* 2, *and* test 3 – it is considered to be additional under the CDM. These three tests are described below. A more

detailed summary of the CDM's additionality tests is provided in the Appendix to the background paper prepared for the EPRI Greenhouse Gas Emissions Offsets Workshop #2.⁶

Investment Test: In an investment test, the project developer must demonstrate that if revenue associated with offset credits to be created by the proposed project were not available, the project would not be economically feasible, or its rate of return would not be attractive. This approach assumes that CERs created by the project are a decisive reason for undertaking a proposed project. It assumes that the project would not be viable or attractive absent the revenue created by the sale of offsets.⁷

Barrier Test: A barrier test considers whether there are significant barriers to implementing a project – such as local resistance to new technologies – in the absence of revenue from GHG reductions. If such barriers exist, the project is assumed to be additional. The barrier test applied by the CDM requires that at least one realistic alternative to the project must not confront these barriers for the project to be additional. This approach assumes that GHG reductions are decisive for the project to be able to overcome existing barriers.

Common Practice Test: This test typically compares the emissions performance of the project to that associated with “common practice” technologies or activities in the relevant sector and region. If the project does not achieve greater emission reductions than other technologies/activities, it is assumed that they were not a decisive reason for undertaking the project. Consequently the project is not considered to be additional. The CDM's application of this test differs somewhat. It identifies other technologies/activities operating in the region that are similar to the project activity, and considers whether those activities faced barriers or enjoyed benefits that were not applicable to the project to make an additionality determination.

Comparison of CDM approach to other programs: Other programs have strived to establish more streamlined additionality tests than the CDM. For example, CAR uses standardized additionality requirements and baselines. It requires projects to demonstrate that emission reductions are not required by law and go beyond BAU or common practice, but does not require proof of financial additionality. Other programs such as VCS and ACR provide the CDM's multi-pronged additionality test as one option, but provide other options to demonstrate additionality, such as approved performance standards.

Other requirements

In addition to the additionality test, the EB considers the same elements of the PDD considered by the DOE at validation. Considerations include, but are not limited to, the following:

- Baseline and monitoring methodologies must comply with requirements pertaining to methodologies previously approved by the EB;
- The PDD's provisions for monitoring, verification and reporting must be in accordance with CDM “modalities and procedures” and other relevant rules; and,

⁶ http://mydocs.epri.com/docs/PublicMeetingMaterials/0809/6CNS9RLUQLS/404416__E230717_Additionality_EPRI%20Workshop2_090208_Final.pdf .

⁷ See Table 1 in Trexler, Broekhoff and Kosloff, “A Statistically-Driven Approach to Offset-Based GHG Additionality Determinations: What Can We Learn?” in *Sustainable Development Law & Policy*, Winter 2006.

- The PDD must demonstrate revenue from the CDM was seriously considered in the decision to proceed with the project if the starting date was before the date of validation.

For afforestation and reforestation projects, **leakage and impermanence** are particular concerns that most offset programs explicitly consider and try to address. In the CDM, leakage for these project categories is calculated based on approaches incorporated in accepted baseline and monitoring methodologies. To address impermanence, the CDM has adopted a **temporary crediting approach** for afforestation and reforestation projects.⁸ Project participants may choose to be issued tCERs (temporary CERs) or ICERs (long-term CERs). Temporary CERs expire at the end of the commitment period in which they were issued, and ICERs expire at the end of the crediting period for the project.⁹

When retired tCERs and ICERs expire, they must be replaced by other Kyoto Protocol compliance units. For this purpose, national emissions registries must have tCER and ICER replacement accounts in which valid “Kyoto units¹⁰” are canceled to replace expiring tCERs and ICERs. It should be noted that only 15 small-scale afforestation/reforestation projects have been registered to date under the CDM – compared to over 2,000 registered projects total – perhaps in part because of the significant discount assigned to temporary credits, and the eventual need to replace them at unknown future prices.

Comparison of CDM approach to other programs: Other programs have opted to issue permanent rather than temporary offsets for terrestrial sequestration projects, and to address impermanence through other approaches. For example, CAR and NSW GGAS both require projects to demonstrate that sequestration will be maintained for 100 years. ACR mandates a 40-year minimum project term for projects with a risk of impermanence, beginning on the project start date, but does not propose that 40 years is “permanent.” Instead, ACR states that it relies on assessment and mitigation of all unintentional and intentional reversals to make these offsets effectively permanent and fungible with other offsets. CAR, VCS and ACR also require that project proponents set aside a portion of total offsets – to be determined based on a variety of factors – in a reserve or buffer pool to address potential reversals. CCX requires a fixed 20 percent of project offsets be set aside for this purpose.

D. Certification / Verification of emission reductions

After an offset project is approved (or registered) by the relevant authority, the project developer implements (or continues implementing) the project, monitors emission reductions, and starts a process that ends with a request for crediting of emission reductions. Under the CDM, project proponents must monitor emission reductions consistent with the monitoring methodology, contract with a DOE to perform a **verification**, and submit a **monitoring report**. Verification is

⁸ Information in this paragraph derived from “CDM Rulebook” entries for tCERs and ICERs, Baker & McKensie, <http://cdmrulebook.org/PageId/332>

⁹ For more information about the issues of permanence and leakage, please see the background paper and speaker presentations from EPRI’s GHG Emissions Offsets Workshop #4 available online here: http://globalclimate.epri.com/annual_events__ghg_offset_policy_dialogue__archive.html#d20081120.

¹⁰ “Kyoto units” include CERs issued under the CDM program, Emission Reduction Units (ERUs) issued under the Joint Implementation (JI) program, and Assigned Amount Units (AAUs) issued directly to Annex B nations under the Kyoto Protocol.

the review and *ex-post* determination of the monitored emission reductions attributable to the project during the verification period. In performing the verification, the DOE must:

- Make the monitoring report publicly available;
- Conduct on-site inspections as appropriate (which may involve collecting measurements, testing monitoring equipment, and other activities);
- Determine whether the project documentation provided is in accordance with the requirements of the registered PDD;
- Verify that monitoring methodologies have been applied correctly and that documentation is complete and transparent;
- Determine the credible level of emission reductions consistent with the registered PDD and the monitoring plan;
- Inform the project proponents of any inconsistency between the project's actual operation and the registered PDD (the proponents must address the concerns and provide any necessary information to the DOE); and,
- Provide a verification report to the project proponents and the EB.

Based on the verification report, the DOE certifies, in a **certification report**, that the project achieved the verified amount of emission reductions that would not have occurred in the absence of the project. The DOE submits the verification and certification reports to the EB in a form to **request issuance of CERs**.

Comparison of CDM approach to other programs: Approaches for third-party verification of emission reductions adopted by CAR, ACR and CCX are similar to the CDM. The VCS' approach differs in that verifications by approved third-party verifiers are checked for completeness by approved VCS registries rather than by a central program administrator. In the NSW GGAS, the program administrator has the prerogative to determine the frequency of verifications based on its assessment of risk. In addition, while GGAS is similar to other programs in that third-party auditors are commissioned by project proponents, it establishes terms ensuring that auditors' primary duty of care is to the administrator, rather than the project proponent.

E. Issuance of offset credits

After monitored emission reductions from a project have been reviewed and approved, a project developer can initiate the final step in the process – requesting issuance of offset credits. Under the CDM, once the UNFCCC Secretariat receives the **request for issuance** from the DOE, it performs a **completeness check**. If the request is complete, it is assigned to a **Registration and Issuance Team (RIT)** member that does not have a conflict of interest, who assesses the request. If the EB approves the request, based on the RIT member's assessment, it informs the project proponents, makes its decision public, and instructs the **CDM Registry Administrator** to issue the specified number of CERs for the specified time period. If the EB rejects the request, it includes its reasons in a public document. In some cases, the reasons for rejection can be addressed through a revised monitoring report and verification report, and the DOE may request to submit a revised request for issuance, but only one such request is permitted.

Comparison of CDM approach to other programs: Like the CDM, CAR, ACR and CCX all issue offset credits through a central program administrator. In contrast, VCS offsets (called Voluntary Carbon Units (VCUs)) are issued by three approved VCS registries after the registries perform a completeness check of the third-party verification. However, the VCS Project Database, which sits at the core of the registry system, generates VCU serial numbers and ensures uniqueness of both projects and VCUs. In the NSW GGAS, Abatement Certificate Providers – i.e., offset producers – can register their own offset certificates on-line, depending on their accreditation.

Table 1 provides a non-comprehensive comparison of some of the key process elements and requirements associated with each of the existing offsets programs described in this background paper, and how these elements and requirements differ from those in the CDM program.

Table 1: Comparison of Some Key Elements of Offset Programs

Offset Program / Offset Units	Methodology Development	Additionality Determinations and Baselines	Validation and Verification Procedures	Other Notable Elements
Clean Development Mechanism (CDM) / Certified Emission Reductions (CERs)	Project proponents develop and propose new methodologies as part of draft Project Design Document. Methodologies Panel and CDM Executive Board (EB) review and approve or reject.	Project-by-project additionality tests. Additionality demonstrated using regulatory surplus test plus: 1) investment (financial) additionality test, OR 2) barrier test AND 3) common practice test.	Validation by independent third party auditor ("Designated Operational Entity") that is accredited by CDM Executive Board (EB) and commissioned by project proponent. Review and approval of validation report by EB results in registration of project. Project proponent commissions another DOE for verification/certification of emission reductions, and submits request to EB for issuance of CERs.	As part of validation process projects must receive approval from host country's Designated National Authority. Impermanence in afforestation and reforestation projects is addressed through temporary crediting.
Climate Action Reserve (CAR) / Climate Reserve Tonnes (CRTs, or "carrots")	Methodologies developed by CAR through multi-stakeholder process including a public workshop.	Additionality demonstrated using regulatory surplus test plus standardized additionality requirements (usually performance standards) and baselines.	CAR uses a streamlined "listing" process to determine project eligibility. Verification of reductions (which under CAR incorporates validation) is undertaken by approved, ISO-accredited verifiers (commissioned by project proponents) through standardized report uploaded to CAR. If verification is approved, CRTs issued by CAR.	Two CAR protocols (livestock methane and small-forest forest projects allow for the aggregation of projects. To address impermanence, sequestration projects must ensure that carbon is stored for at least 100 years. In addition, projects must contribute offsets into a buffer pool account based on their risk rating as assessed by verifiers.
Voluntary Carbon Standard (VCS) / Voluntary Carbon Units (VCUs)	Methodologies proposed by project proponents, and reviewed under the VCS Double Approval Process, in which 2 approved third-party auditors independently assess the methodology. If both auditors approve, the methodology is automatically approved by the VCS Association.	Additionality demonstrated using regulatory surplus test, plus one the following: 1) a project test (i.e., CDM's additionality tests); 2) an approved performance standard; or 3) a technology test (i.e., positive list).	The VCS Association does not review projects, but instead sets standards by which VCS-approved entities can assess projects. Validations and Verifications by VCS-approved Validators and Verifiers (commissioned by project proponents) are checked for completeness by approved VCS Registries when project proponents submit projects for registration and/or request issuance of VCUs.	VCS allows for grouped projects, in which a project can bring together several similar activities into one project description in which monitoring is undertaken centrally. To address impermanence, sequestration projects must contribute offsets into a buffer reserve based on a risk assessment conducted by the project proponent. VCS also is developing a compensation mechanism to provide project proponents who develop and receive VCS approval for new methodologies with compensation in the form of a payment for each VCU issued from a project using the methodology during an agreed timeframe. This is intended to encourage the development of broadly applicable methodologies.

Offset Program / Offset Units	Methodology Development	Additionality Determinations and Baselines	Validation and Verification Procedures	Other Notable Elements
American Carbon Registry (ACR) / Emission Reduction Tons (ERTs)	ACR develops standards and methodologies using an expert technical team that includes external experts, and provides a public comment period. Standards and methodologies are subject to a scientific peer review process. Project developers are allowed to submit new and modified methodologies for evaluation.	Additionality demonstrated using: 1) an approved performance standard plus a regulatory surplus test, or; 2) a regulatory surplus test, a common practice test, and a barrier test (i.e., institutional, financial or technical).	Validation consists of project review by ACR and does not involve third party review. ACR reviews projects after verification by approved, ISO-accredited independent third parties (commissioned by project proponents) to ensure they meet ACR standards, reserving the right to reject any project.	Land use Land Use Change and Forestry (LULUCF) projects must address impermanence by using either an approved insurance product to guarantee offsets, a buffer pool, or access to a secure source of replacement offsets.
Chicago Climate Exchange (CCX) / Carbon Financial Instruments (CFIs)	CCX develops its protocols with the assistance of Technical Advisory Committees comprised of CCX members and a wide range of external experts, and takes public feedback into account.	Additionality based on regulatory surplus test, common practice test, and recent project test. Baselines may be project-specific or performance standards.	Validation consists of project review by CCX and does not involve third-party review. CCX and the Financial Industry Regulatory Authority review projects after verification by approved, independent third parties, and CCX issues CFIs if the verification is approved.	To reduce transaction costs, CCX allows for the use of Offset Aggregators, who act as administrative agents for multiple small projects in agricultural soil carbon sequestration, landfill methane collection and combustion, and renewable energy systems. CCX addresses impermanence issues in forestry projects by requiring a carbon reserve pool for each project equal to 20 percent of all offsets issued, and a commitment to long-term maintenance of carbon sequestered by the project (but not 100 years).
New South Wales Greenhouse Gas Abatement Scheme (NSW GGAS) / NSW GHG Abatement Certificates (NGACs)	Methodologies are included in a positive list in implementing regulations for the GGAS (the Electricity Supply (General) Regulation 2001).	Additionality addressed through eligibility requirements (i.e., positive list) and baseline scenarios established in regulations for each project and technology type. Baselines are generally expressed as performance standards.	Program administrator (IPART) reviews projects for eligibility, and is given the prerogative to determine the frequency of verifications based on its assessment of risk. NSW GGAS establishes terms ensuring that auditors' primary duty of care is to the administrator.	To address impermanence, forestry projects are required to demonstrate that sequestration will be maintained for at least 100 years. In addition, forest managers must demonstrate based on an uncertainty analysis that a 70% probability exists that the actual net increase in carbon stocks will be greater than the amount of credits issued.

Source: Natsource and EPRI.

III. Climate Action Reserve

A. Overview¹¹

The Climate Action Reserve (CAR, or “the Reserve”) is an offset program that establishes protocols for GHG offset projects in North America, provides oversight to independent third-party verification bodies, issues carbon offset credits known as **Climate Reserve Tonnes (CRTs)**, and tracks issuances and transactions of credits in a publicly accessible offsets registry.

The predecessor to CAR was the California Climate Action Registry (CCAR), which the State of California created in 2001 to encourage emissions inventory reporting. CCAR also produced

¹¹ Information on CAR derived from <http://www.climateactionreserve.org/> and <http://www.co2offsetresearch.org/policy/CAR.html> .

offset project protocols, starting with a forestry protocol in 2005. The protocols were previously adopted by the California Air Resources Board (CARB) to encourage early emission reductions. However, in February 2010 this adoption was withdrawn for procedural reasons, pending review of the updated protocols in light of CARB's efforts to implement AB-32 – the California Global Warming Solutions Act.¹² Nevertheless, CARB Chair Mary Nichols was quoted saying that CARB had been involved in facilitating CAR's work, and wants "to make sure that [it], to the maximum extent possible, honor[s] the work that has been done under that program."¹³

Since 2001, CCAR (or the "California Registry") has worked with other states and countries to expand the use of its reporting methodologies to other states and Canada and Mexico in a single voluntary registry. In 2007, CCAR formally spun-off **The Climate Registry** as a separate non-profit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry. Starting in 2010, The Climate Registry will take over emissions inventory reporting for California. However, **the California Registry** will continue to represent its members' emissions reports to the State of California. It exists as a separate entity under CAR, its parent organization.

To date, CAR has approved 10 offset protocols. The protocols are eligible to be used throughout the U.S. and its territories, except those designed specifically for Mexico. The 10 protocols are:

- Forest projects (conservation or avoided conversion projects; conservation-based forest management and regeneration of native trees; and reforestation projects with native trees on land that has not been forested for at least 10 years);
- Livestock methane abatement;
- Landfill gas collection and combustion;
- Urban forests;
- Mexican livestock methane abatement;
- Mexican landfill gas collection and combustion;
- Coal mine methane;
- Organic waste digestion;
- Nitric acid production; and,
- Ozone depleting substances.

In addition, two protocols currently are under development: composting and Mexican forest projects.

Importantly, given that CAR was created by the State of California, CRTs likely would be eligible as "early offsets" under certain federal cap-and-trade legislation. Both the American Clean Energy and Security Act (ACES or the "Waxman-Markey" bill) passed in the House of Representatives in 2009 and the Clean Energy Jobs and American Power Act (the "Kerry-Boxer" bill) passed by the Senate Environment and Public Works Committee in November 2009 contain

¹² <http://www.arb.ca.gov/cc/capandtrade/meetings/022510/febresolution.pdf> .

¹³ http://www.climateactionreserve.org/wp-content/uploads/2009/03/2010.05_Climate_Action_News.pdf .

a provision stipulating that offsets issued by voluntary offset programs **established under State or tribal law or regulation prior to January 1, 2009**, and meeting other requirements, will be eligible to receive early offset crediting under the federal offset program. Other U.S. offset programs established to date (apart from the Regional Greenhouse Gas Initiative) were not created under state law. However, the American Power Act (APA) introduced by Senators Kerry and Lieberman in May 2010 includes offset provisions – originally introduced in separate legislation (S. 2729) by Senator Stabenow – that would broaden eligibility for early offsets, allowing projects registered under any program that meets criteria established in the bill to create early offsets. Some observers believe both the VCS and the ACR, and perhaps other existing voluntary offset programs, would qualify under this proposed legislation to issue early offsets.

Nearly 5 million CRTs have been issued to date. As of December 2009, forestry projects were the largest contributor by project type, followed closely by landfill projects.¹⁴

B. Methodology development

To develop its project protocols, CAR states that it uses an “intensive multi-stakeholder process” involving “extensive data collection and analysis with review and input from a diverse range of experts and stakeholders.” This “unique and rigorous” process results in “high quality, well-vetted, and credible protocols based on best practices from national and international standards.”¹⁵

The first step in this process is an internal screening process, which is used to identify promising project types. Considerations include, but are not limited to, whether the project type: 1) creates direct or indirect emission reductions; 2) is amenable to standardized additionality and baseline determinations; and, 3) can yield significant emission reductions. Promising project types are examined in more detail in an issue paper examining the “feasibility and desirability” of developing a protocol, considering approaches to GHG emission quantification, and assessing the availability of existing data. The Reserve develops a draft protocol based on insights from the issue paper and from experts selected to participate in a voluntary, multi-stakeholder workgroup. Experts may include representatives from industry, state and federal agencies, environmental organizations, research and academic institutions, trade associations and others. The workgroup gathers for at least one in-person meeting to discuss issues relating to the protocol, which undergoes revisions until it is presented for public review and discussion in a public workshop. After recording feedback and comments and taking them into account, the Reserve produces a final protocol, which is published if approved by the Reserve’s Board.

C. Additionality determinations and baselines

Unlike the CDM, CAR uses **standardized additionality requirements and baselines**. Projects must demonstrate that reductions are not required by law (regulatory surplus) and go beyond BAU or common practice (usually through a comparison to a performance standard). In contrast to project-specific additionality determinations, CAR’s approach is intended to avoid “the need to interpret individual project developers’ assertions about additionality, and [to send] a clear

¹⁴ <http://www.climateactionreserve.org/wp-content/uploads/2009/03/2009-Annual-Report.pdf>

¹⁵ CAR Program Manual, March 16, 2010, http://www.climateactionreserve.org/wp-content/uploads/2009/04/Climate_Action_Reserve_Program_Manual_031610.pdf

signal to market participants about which projects will be eligible and which ones will not.”¹⁶ Also unlike the CDM, CAR does not include “financial additionality” or barrier tests. However, such considerations are taken into account when CAR sets its performance standards. CAR states that

“Projects that pass a performance standard test should be those that – in the absence of a carbon offset market – would have insufficient financial returns or would face other types of insurmountable implementation barriers.”¹⁷”

Additionality tests and baselines for each project type are summarized below.

- **Forest management projects** are additional if the practices go beyond the baseline. The baseline is defined as a management scenario reflecting the maximum amount of harvesting and regeneration of trees permitted under mandatory forest management laws.
- **Reforestation projects** must demonstrate that the project area has not been forested for at least 10 years, and that they go beyond the baseline. The baseline assumes that in the absence of laws or regulations requiring reforestation, the project area would not be forested during the project time period.
- **Conservation projects** must demonstrate that the project would have been converted to a non-forest use in the absence of the project, and that it goes beyond the baseline. The baseline is defined using county- and state-level land-use conversion trends or site-specific circumstances if there is an immediate threat of conversion.
- **Livestock methane abatement projects** must pass a performance standard test (against a technology-based threshold) and a regulatory surplus test. The baseline scenario is calculated based on continuation of the use of the technology currently in use for a given geographic area, animal type, and farm size. The baseline must be determined to be an uncontrolled methanogenic process, such as an anaerobic lagoon for projects to be eligible.
- **Landfill gas collection and combustion projects** must pass a performance standard test (against a technology-based threshold) and a regulatory surplus test. Landfill projects that already collect and combust gas using a non-qualifying technology cannot get credit for associated reductions as offsets; only reductions associated with installation of a new, qualifying system at an existing landfill qualify for offsets. The baseline scenario is defined as all uncontrolled methane emissions on the site, excluding the portion that would be oxidized by soil bacteria if the landfill does not utilize a synthetic cover material. It also takes into account current regulatory requirements for methane capture, if applicable.
- **Urban forest projects** must pass a performance standard test and a regulatory surplus test. If these projects are implemented by utilities, they are additional if they are not a power line replacement, or if they are residential tree planting programs. Municipalities and educational campuses must maintain a stable population of existing trees and demonstrate a net positive tree gain. Baseline scenarios are calculated based on a performance standard equivalent of “better than BAU.”

¹⁶ Ibid.

¹⁷ Ibid.

D. Validation and verification procedures

CAR takes a different approach to validating projects than other programs. Instead of requiring a project to be validated by an independent third party, CAR first requires projects to undergo the “listing” process. Project developers must open an account on the Reserve, and complete and submit online initial project registration forms, known as **listing documents**. The Reserve approves, denies or returns listing documents for revisions. Approved projects are listed on the Reserve and eligible to be verified. After projects are listed, project developers are invited to do an initial verification (which incorporates validation under CAR). Listing is not dispositive with regards to eligibility to create offsets. CAR notes that eligibility determinations usually are straightforward using the standardized additionality and eligibility approaches in CAR’s protocols. The final determination of eligibility is made once a verifier verifies the information included in a project’s listing documents and concludes – and CAR staff concurs – that the project is eligible under the terms of the protocol. As a consequence, projects may be denied eligibility even after they are listed. CAR’s approach reflects its view that a distinct formal validation step is not necessary because determining eligibility seldom requires any analytical judgments like what is required under the CDM for additionality. Instead, verifiers simply check the facts of a project against the eligibility criteria enumerated in the protocol.¹⁸

CAR’s verification approach is similar to that of the CDM. Following implementation of the project, a project developer hires an independent, accredited verification entity to verify emission reductions or removals from the project. These entities must be accredited under International Organization for Standardization (ISO) 14065 (starting January 1, 2011), and approved by CAR. Ten days prior to starting a verification, the verifier must submit a Notice of Verification Activities and Conflict of Interest evaluation form. If CAR concludes no conflict exists, the verifier may undertake the verification. CAR project protocols provide guidance to verifiers on assessing reductions and removals. Verifiers provide reporting information directly into CAR’s software, and upload their final report and opinion on the project’s reductions. If the verification is approved by the Reserve, the project is deemed “**registered**,” and the appropriate amount of CRTs is credited to the project developer’s account. Verifications of non-forest projects must occur at least once annually, and forest projects must be verified annually or, if an annual monitoring report is provided, at least once every six years. CAR has the right to require verification oversight (undertaken by CAR or another entity on behalf of CAR) for any project to provide quality assurance.

E. Other notable elements

Two CAR protocols allow for the **aggregation** of projects, in which activities in several locations may be considered as a single project. The livestock methane abatement protocol allows for a project involving a centralized processing facility to include in its project boundary livestock operations that contribute manure to the facility as well as the facility itself. CAR is also developing guidelines for aggregating small-scale forest projects. Aggregation has the potential to significantly reduce transaction costs, and increase the amount of emission reductions included in projects.

¹⁸ More information on CAR’s approach to listing and verification is provided in its Program Manual (<http://www.climateactionreserve.org/how/program/program-manual/>).

With respect to **quantification methods**, CAR has established a general rule that actual emissions should be within +/- 5% of measured or calculated values, at a 95% confidence level. However, required accuracy levels may depend on the magnitude and materiality of specific measurements.

With respect to ensuring **permanence** of carbon sequestration, CAR requires that all reversals be compensated such that the total quantity of CRTs issued does not exceed the amount of carbon stored over a defined period of time. Projects must ensure that credited sequestration tonnes are stored for at least 100 years (which is commonly considered to represent permanent storage¹⁹). This requirement effectively means that qualifying forest projects must be monitored on an ongoing basis for a total of 200 years. Each project must enter into a Project Implementation Agreement with CAR establishing the obligation of the landowner and its “successors and assigns” to comply with the forest project protocol for 100 years, and rights and remedies in cases of noncompliance. A conservation easement may be used in addition to the agreement. Each project is required to contribute offsets into a buffer pool account based on the project’s risk rating, which is assessed by verifiers. Changes in carbon stocks (broadly defined to include all net GHG removals, reductions and avoided emissions relative to project baseline levels) are monitored, calculated and reported annually to test earlier estimations of project performance. **Leakage** adjustments are made for any offsite harvesting caused by the project. Furthermore, CAR makes an important distinction between “intentional” and “unintentional” reversals. Intentional reversals result from landowner actions that result in sequestered carbon being re-emitted into the atmosphere, such as timber harvesting. Unintentional reversals occur as a consequence of events outside of a landowners’ direct control, such as a forest fire. If a project experiences an *unintentional* reversal, the project’s own buffer pool offsets are used to compensate for the reversal. If the reversal exceeds the project’s buffer pool, other projects’ buffer pools are drawn upon proportionally to fully compensate for the reversal. In the case of an *intentional* reversal, the landowner is required by contract to remedy the loss through financial restitution including possible penalties.

A recent Det Norske Veritas (DNV) review of offset protocols²⁰ to assess their compatibility with the Western Climate Initiative’s offset criteria concluded that CAR’s was the only afforestation and reforestation protocol that adequately addressed impermanence by ensuring that carbon is stored for at least 100 years. However, DNV also notes that CAR’s urban forestry protocol does not require that all project proponents reserve a certain percentage of offsets to ensure permanence.

¹⁹ “Permanence Discounting for Land-Based Carbon Sequestration,” M-K Kim, B.A. McCarl, B.C. Murray, 2007, op. cit., p. 766.

²⁰ “Review of Existing Offset Protocols Against WCI Criteria for the Western Climate Initiative,” Det Norske Veritas (DNV), February 26, 2010.

III. Voluntary Carbon Standard

A. Overview²¹

The Voluntary Carbon Standard (VCS) Program aims to establish a rigorous, global standard for voluntary GHG emission reductions. The VCS 2007 was launched in November 2007 by the **VCS Association** (VCSA), a non-profit organization responsible for developing and maintaining the VCS Program in consultation with the VCS Board. The launch followed a public review of the standard and approval of it by a 19-member Steering Committee that includes start-up funders (The Climate Group, the World Business Council for Sustainable Development (WBCSD), and the International Emissions Trading Association (IETA)), NGOs, auditors, industry associations, project developers and large offset buyers.

The VCSA manages the VCS Program and is responsible for responding to stakeholder questions, managing relationships with registry operators²² and accreditation bodies, supervising the VCS website and project database, and overseeing validators/verifiers. The **VCS Board** is responsible for making final determinations on the approval or suspension of other GHG offset programs whose issued offsets may be considered fungible with VCUs, for approving accreditation bodies to be used for accrediting validators and verifiers, for approving registries, for sanctioning validators and verifiers, and for making final decisions on appeals. The Board is assisted by **Technical Advisory Groups (TAGs)** which provide recommendations on technical elements of the program such as Agriculture, Forestry and Other Land Use projects (AFOLU) methodologies.

The VCS program provides the standards and framework for independent third-party validation and verification of GHG emission reductions and removals based on ISO standards 14064-2:2006 and 14064-3. In addition, there is an AFOLU guidance document which addresses analysis of non-permanence, buffer determination, and methodological issues relating to these project types. Eligible AFOLU project types include Afforestation, Reforestation and Revegetation (ARR), Agricultural Land Management (ALM), Improved Forest Management (IFM), and Reducing Emissions from Deforestation and Degradation (REDD). Unlike other programs, VCS includes all of these activities under a single verification framework.

²¹ Information on VCS derived from Voluntary Carbon Standard Program Guidelines, November 18, 2008, http://www.v-c-s.org/docs/Voluntary%20Carbon%20Standard%20Program%20Guidelines%202007_1.pdf, Voluntary Carbon Standard 2007.1, November 18, 2008, http://www.v-c-s.org/docs/Voluntary%20Carbon%20Standard%202007_1.pdf, and <http://www.co2offsetresearch.org/policy/VCS.html> .

²² The VCS does not have a single registry, but instead gives VCS registry operators authority to approve projects and issue VCUs. The VCS Registry System was launched on 17 March 2009. APX Inc., Markit and Caisse des Depots are the three companies that have contracted to act as VCS registries. These registry operators are responsible for “verifying that all required VCS documents have been submitted to the registry; issuing and maintaining accounts of VCUs for account holders; tracking and reporting the deposit/withdrawal of buffer credits, to/from the centrally managed AFOLU Pooled Buffer Account; and maintaining custody and records of VCU original legal ownership.” Voluntary Carbon Standard Program Guidelines, November 18, 2008.

Other program components address “group” projects, project registration, terms and conditions for project proponents, validators and verifiers, and a gap analysis methodology that considers the compatibility of other offset programs and methodologies with VCS.

To date, **the VCS Program has recognized CDM, Joint Implementation, and the Climate Action Reserve.** In practice this means all auditors and methodologies approved under these programs are approved under VCS, and offset credits issued under these programs are fungible with VCUs.

In addition to these approved methodologies, VCS has approved methodologies or revisions for the following project types:

- New gas-fired cogeneration facilities in which all electricity produced other than that required to operate the cogeneration facility is exported to an electrical grid, thereby displacing other electricity generation and producing emission reductions (developed by Camco International Limited).
- Revisions to UNFCCC-approved consolidated methodology ACM0008 Version 5 – “consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation” (developed by the Carbon Neutral Business Network).
- The installation of infra-red, real-time leak detection systems on U.S. retail DX refrigeration equipment systems in order to reduce leaks of HFC refrigerants (developed by the Carbon Neutral Business Network).
- Improved Forest Management through extension of rotation age (developed by Ecotrust Forest Management Inc).

More than 19 additional methodologies currently are under review. There are no geographical restrictions on projects using approved methodologies unless such restrictions are specified in the methodology itself. The VCS Association has also approved a tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities.

B. Methodology development

The VCS Association does not develop its own methodologies. Project proponents can propose new methodologies and have them reviewed under the **VCS Double Approval Process** in which two approved independent parties – VCS Validators – independently assess the methodology following a 30-day public consultation period. The first assessment is carried out by an approved validator hired by the project proponent, and the second is carried out by a validator appointed by the VCSA and paid for by the project proponent. If both Validators approve the methodology, the VCSA undertakes an internal review, and typically approves the methodology, although it may be rejected based on VCSA’s internal review under extraordinary circumstances. Validators that have been approved under a VCS-approved GHG program or under ISO 14065 are eligible to approve methodologies (as well as perform validations and verifications in the sectoral scopes for which they have been accredited).

In addition to new methodologies, certain other tasks also are subject to the VCS Double Approval Process. These include risk assessments to determine the buffer for AFOLU projects, forest management and REDD market leakage assessments, and additionality performance standards. If a methodology or additionality performance standard is rejected, the project proponent can appeal the decision.

VCS makes a distinction between methodology “deviations,” which involve a project-specific change to an approved methodology due to a change in conditions, circumstances or nature of a project, and methodology “revisions,” which involve a change to a methodology itself. The latter is subject to the Double Approval Process, while the former can be addressed by validators in the validation process.

C. Additionality determinations and baselines

In addition to requiring that all projects demonstrate regulatory surplus, VCS allows project proponents to use one of three possible additionality tests. The first test is the “**project test**,” which is consistent with the CDM’s additionality tests – i.e., a financial additionality (investment) test, or a barrier test and a common practice test (see Section II.C). One distinction from the CDM’s test in the VCS additionality requirements is that the common practice analysis must be based on guidance in the WBCSD/WRI (World Business Council for Sustainable Development/World Resources Institute) GHG Protocol for Project Accounting, Chapter 7.²³

The second additionality test is the “**performance test**,” which requires projects to demonstrate that emissions generated (or carbon sequestered) per unit of output by the project are below (or above, for sequestration) the level that has been approved as a performance standard by the VCS Program for the product, service, sector or industry. Performance standard-based additionality tests are approved through the Double Approval Process. To date, VCS has approved the Climate Action Reserve’s methodologies, which include its additionality performance standards, and there is one performance standard currently being developed under the Double Approval process.

The third additionality test is the “**technology test**,” which requires that projects using less emissions-intensive technologies meet certain performance criteria, which when met results in crediting up to a pre-determined threshold (e.g., market penetration).

In cases where an existing (approved) methodology (e.g., a CDM methodology) is being used, the additionality test stipulated by that methodology must be used. The VCS is convening a steering committee that will provide guidance with respect to the development of performance and technology tests so that these approaches can be developed under the Double Approval process.

With respect to baselines, VCS requires that the project proponent select the most conservative baseline scenario for the project based on the requirements of the applicable approved VCS

²³ The Greenhouse Gas Protocol, The GHG Protocol for Project Accounting, World Business Council for Sustainable Development and World Resources Institute, November 2005. Online at http://www.ghgprotocol.org/files/ghg_project_protocol.pdf.

methodology. For AFOLU projects, the project proponent must use the VCS “Tool for AFOLU Methodological Issues” to determine the project baseline (as well as various other elements such as project eligibility and leakage).

D. Validation and verification procedures

The VCSA does not review projects, but rather sets standards by which VCS-approved entities can assess projects. Validations and Verifications by VCS-approved Validators and Verifiers are checked for completeness by approved VCS Registries when project proponents submit projects for registration and/or request issuance of VCUs. The VCS believes this approach “creates an efficient process that can be completed without the involvement of the VCSA.”²⁴ This approach differs from most other programs in which the program administrator reviews verifications before issuing offset credits. As such, it could raise questions regarding whether it is sufficient to guarantee environmental integrity, even with VCS oversight of auditors.

VCS’ validation and verification process must conform to ISO 14064-3:2006 and ISO 14065:2007. Validation can occur prior to, or simultaneous with, the first verification, and unlike CDM, these activities may be undertaken by the same accredited body. The body must be accredited for both validation and verification, and for the scope of the applicable methodology, under an approved GHG program within the scope of their accreditation or under ISO 14065:2007 with an accreditation scope specifically established for the VCS Program. Validators and verifiers are subject to VCS Terms and Conditions, which include a requirement to replace VCUs that have been determined to have been issued in excess due to fraud or negligence.

The auditor, who is commissioned by the project proponent to validate the project, evaluates the project using the **VCS Validation Report template**. The template reflects ISO 14064-3 validation requirements, and includes a description of the project design, a description of the method used to validate the project, and findings regarding various aspects of the compliance of the project with VCS rules and requirements. The auditor also must sign a validation statement and, where verification is simultaneous, a verification statement. The verification report states the amount of VCUs that have been verified, describes the level of assurance of the verification, and provides the auditor’s conclusion. After a project is validated, a project proponent can request that it be registered. The project is registered and listed on the **VCS Project Database** if it is validated by the auditor and if the **VCS registry administrator** confirms that the correct process has been followed. The registry administrator is responsible for undertaking a completeness check on documentation, which includes unilateral representations (project registration and VCU issuance), and ensuring that the VCS rules have been adhered to, before it then uploads information to the VCS Project Database. The VCS Project Database provides the central repository for all project information and documentation and is responsible for ensuring uniqueness of projects, issuing VCU serial numbers and tracking VCU retirement. The VCSA charges a registration levy for every VCU issued on the VCS Project Database. The levy will increase from €0.04 to \$0.10 per issued VCU starting in June 2010.

²⁴ <http://v-c-s.org/faq.html>

Projects are classified into three size categories: 1) “micro” projects less than 5,000 metric tons tCO_{2e}²⁵ per year; 2) projects of 5,000 to 1 million tCO_{2e}; and, 3) “mega” projects greater than one million tCO_{2e}. Rules differ somewhat based on the size category. For example, micro projects can be validated and verified by micro-project validators and verifiers that may consist of one person teams, and that meet additional requirements under ISO 14065:2007. In addition, if a project is part of a grouped project including two or more subgroups, the grouped project only is sampled by the project auditor. (Grouped projects are discussed below.) Finally, VCS stipulates ISO thresholds for “materiality” are to be replaced by a 5% threshold, except for mega projects, for which the threshold is 1%.

For non-AFOLU projects, validation must be completed within two years of the project start date, or completed or contracted before November 19, 2008. If a project is contracted by November 19, 2008 but not validated within two years of the project start date, validation of the project must have been completed by November 19, 2009. This is intended to ensure that only projects which intended to pursue carbon finance from the outset are eligible. AFOLU projects starting on or after January 1, 2002 are not required to complete validation within a specific time frame.

E. Other notable elements

VCS allows for **grouped projects**, in which a project can bring together several similar, generally small-scale, activities into one project description in which monitoring is undertaken centrally. This approach is similar to the CDM’s “Program of Activities” approach (i.e., “Programmatic CDM”). Under the VCS program, it is not required that all instances of the project activity be identified at the beginning of the project in the project description. For such grouped projects, the start of the crediting period is when the first activity begins reducing emissions. VCS currently is developing further guidance on project grouping and associated requirements for determining additionality within the entire project area in advance, while retaining flexibility for adding new instances of the project activity.

Emission reduction units registered under a GHG program approved by VCS may be **converted into VCUs** by cancelling those units (e.g., CRTs from the Climate Action Reserve) with the administrator of the program and presenting evidence of cancellation to a VCS registry as part of the registration and issuance process. However, CRTs from CAR forest projects cannot be converted directly into VCUs due to differences in the two programs’ buffer approaches. Under the VCS’ approach, projects must conduct a risk assessment to assess transient and permanent potential losses in carbon stocks to determine the appropriate buffer reserve. The risk assessment occurs every time a project seeks VCS verification. All AFOLU projects must conduct non-permanence risk assessments and REDD and IFM projects must conduct leakage assessments, the results of which must be validated by a VCS validator (and which are subject to assessment through the Double Approval Process for the leakage assessed at the first verification event).

The VCS also is in the process of developing a **compensation mechanism** to provide project proponents who successfully develop new VCS methodologies with compensation in the form of

²⁵ Carbon dioxide equivalent (CO_{2e}). A unit of measure that allows all greenhouse gases to be compared relative to CO₂ based on Global Warming Potentials.

a payment for each VCU issued from any project using the methodology during an agreed timeframe. This is intended to encourage the development of broadly applicable methodologies, since methodologies that are approved and used frequently will receive greater compensation via the compensation mechanism.

IV. American Carbon Registry

A. Overview²⁶

The American Carbon Registry (ACR) is a non-profit voluntary registry that was founded in 1997 as the GHG Registry by two non-profit environmental organizations, the Environmental Resources Trust (ERT) and the Environmental Defense Fund. At its founding, it was the first private voluntary GHG registry in the U.S. In 2007, ERT became part of Winrock International, another non-profit organization, and its registry was renamed the American Carbon Registry (ACR) in 2008. In that year, ACR was the most widely used voluntary carbon market registry in the world.

To date, the ACR has issued just over 30 million Emission **Reduction Tons (ERTs)**, including 25 million tradable ERTs.²⁷ Over 18 million of these offsets were generated by five carbon capture and storage/enhanced oil recovery (EOR) projects.²⁸

B. Methodology development

ACR's standards and protocols are developed internally by Winrock staff. Project developers also can submit new and modified methodologies for evaluation and approval via public consultation and scientific peer review. Methodologies are applicable to projects in any country unless otherwise specified. The ACR methodology development process also includes a public comment period.

In contrast to other programs, ACR subjects its protocols and standards to public consultation and an internal and external **scientific peer review process** – a rigorous technical review by recognized experts in the relevant field. ACR believes this unique approach yields standards and methodologies of the highest quality.

The ACR has issued standards, methodologies, protocols and tools for GHG accounting, all of which are based on ISO 14064. To date, ACR has published version 2.0 of the ACR Standard and version 2.0 of the ACR Forest Carbon Project Standard, and has closed public comment on the ACR Livestock Manure Management Project Standard. ACR also has two tools in development: the ACR Tool for the Demonstration and Assessment of Additionality in Forest Carbon Project Activities, and the ACR Tool for Impermanence Risk Analysis and Buffer Determination.

²⁶ Information on ACR derived from <http://www.americancarbonregistry.org> and <http://www.co2offsetresearch.org/policy/ACR.html>.

²⁷ <http://www.americancarbonregistry.org/carbon-registry>

²⁸ <http://www.americancarbonregistry.org/carbon-registry/projects>, and e-mail communication from Nick Martin, Chief Technical Officer, ACR, June 17, 2010.

ACR notes that it “generally accepts” CDM methodologies and tools, and accepts some methodologies from the U.S. Environmental Protection Agency (EPA) Climate Leaders Program and the VCS, to the extent that they comply with ACR’s Standards. **ACR presumptively has approved all CDM methodologies which are fully approved by the CDM Executive Board**, the VCS Improved Forest Management through Extension of Rotation Age methodology, the VCS Baseline and Monitoring Methodology for Conservation Projects that Avoid Planned Land Use Conversion in Peat Swamp Forests, and the EPA Climate Leaders Greenhouse Gas Inventory Protocol Offset Project Methodology for Landfill Methane Collection and Combustion.

ACR’s other methodologies that are either approved or under review include:

- Conversion of high-bleed pneumatic controllers in oil and natural gas systems (published);
- Livestock waste management (public comment period closed, peer review pending);
- Reducing Emissions from Deforestation and Degradation (REDD) (public comment closed, peer review pending);
- Landfill methane (in development);
- U.S. Improved Forest Management (in development);
- Reducing N₂O emissions through fertilizer management (in development);
- Carbon Capture and Storage (CCS) (in development);
- Retrofitting reciprocating compressors with Low Emissions Packing (in development);
- Coastal wetland restoration and/or avoided loss (in development);
- China – Panda Standard improved forest management (in development);
- China – Panda Standard agricultural/grazing lands improvement (in development);
- U.S. improved grazing land management (scoping); and,
- Biochar production and use (scoping).

C. Additionality determinations and baselines

ACR registers only project-based carbon offsets that are real, additional, permanent and verifiable and comply with ACR standards. Similar to VCS, ACR requires that every project must pass either an **approved performance standard** (i.e., in an approved methodology) plus a regulatory surplus test, or an additionality test in which the project must demonstrate regulatory surplus, that it goes beyond common practice, and that it overcomes an institutional, financial or technical barrier (i.e., the CDM’s additionality test).

With respect to baselines, ACR allows the use of specific protocols in methodologies approved by the CDM, EPA Climate Leaders, and the VCS for calculating and updating baselines. For LULUCF projects, ACR requires that the baseline be calculated at the start of the project. Crediting periods (i.e., baseline validity periods) are up to 10 years for REDD projects, and 20 years for afforestation/reforestation projects and most Improved Forest Management projects

(except stop-logging). There is no limitation on crediting period renewals, provided that additionality and all other criteria are met at the time of renewal.

D. Validation and verification procedures

Similar to VCS, ACR uses independent, accredited third parties for verification, and automatically issues Emission Reduction Tons (ERTs) upon verification. However, ACR reviews projects for eligibility instead of using third parties for validation, and reviews projects after verification to ensure they meet ACR standards, reserving the right to reject any project, even verified projects. Once a project is verified and the verification statement is reviewed and accepted by ACR, the Registry issues and registers ERTs, posts the GHG Project Plan, verification statement and other documentation on the ACR website, and issues ERTs into the project proponent's registry account.

The verification process must conform to ISO 14064-3:2006 and ISO 14065:2007, and ACR verifiers must be accredited for project verification and the scope of the applicable methodology. All ACR verifiers must at least have begun the process of accreditation under ISO 14065 by the American National Standards Institute (ANSI) by December 31, 2010. Verifiers must sign a verification agreement and have no conflicts of interest.

The Project Proponent must submit a verification statement from an approved verifier based on a "desk audit" each time it requests issuance of ERTs. At least every five years, Project Proponents must submit a verification statement based on a full verification, including a field visit to the project site.

ACR lists 9 approved verifiers. In addition, it presumptively approves Accredited Independent Entities approved under Joint Implementation, and Designated Operational Entities approved under the Clean Development Mechanism, provided they meet all ACR requirements, and are ANSI accredited or have begun the process of ANSI accreditation by December 31, 2010.

E. Other notable elements

ACR requires LULUCF projects to address **impermanence** and the risk of reversal by using either an approved insurance product to guarantee offsets, a buffer pool, or access to a secure source of replacement offsets. Projects with a risk of impermanence are given a 40-year minimum project term, beginning on the project start date. ACR states that it relies on assessment and mitigation of all unintentional and intentional reversals to make these offsets effectively permanent and fungible with other offsets. **Screening and transaction fees** vary by the transacting entity and the transaction.

V. Chicago Climate Exchange

A. Overview²⁹

The Chicago Climate Exchange (CCX) is a voluntary GHG cap-and-trade program and associated registry that was launched in 2003. Participants commit to legally binding emission reduction targets, and can use offsets to meet up to 50% of their compliance requirements. **Only CCX members are permitted to buy CCX offsets.** Original members are required to meet an emissions reduction target of 6% below average 1998-2001 emissions by 2010, a target that new members who start in 2007 also must achieve by 2010. CCX membership now is open to participants from outside of the U.S. Offset projects may be located in countries other than industrialized countries that have taken on emission reduction targets under the Kyoto Protocol.

Members also include **Offset Providers** and **Offset Aggregators**, which represent multiple, small-sized (less than 10,000 metric tons of reductions per year) offset projects. Project types that have used Aggregators include agriculture soil carbon sequestration, landfill methane collection and combustion, and renewable energy systems. Aggregators act as administrative agents for multiple small project owners to reduce transaction costs. They accept initial registration forms from owners of the participating projects, assemble project reports and retain project verification records, submit offsets registration fees to CCX, have sole authority to access the registry account holding offsets issued to the participating projects, execute sales on the **CCX Trading Platform** on behalf of project owners, and distribute sales proceeds to owners according to terms agreed among the parties. One example of an Aggregator is the North Dakota Farmer's Union (NDFU), which has 17 projects operating under CCX, with participation ranging from 40 to 800 individual sites per project. A total of 3,900 farmers participate in NDFU's 17 projects, which include continuous conservation tillage, sustainable rangeland soil carbon sequestration, grassland conversion soil carbon sequestration, and afforestation.³⁰

A **Committee on Offsets** made up of CCX members appointed by the CCX Executive Committee is responsible for reviewing and approving offset projects. A similar **Committee on Forestry** reviews forestry projects. A **Regulatory Services provider** reviews offset verifiers' reports and audits members' baseline and annual emissions reports. Finally, **Technical Advisory Committees** consisting of external experts assist in the development of offset rules.

CCX has developed standardized rules for the following offset project types:

- Agricultural methane collection and combustion;
- Coal mine methane collection and combustion;
- Landfill methane collection and combustion;
- Avoided emissions from organic waste disposal;
- Agricultural soil carbon sequestration - continuous conservation tillage;

²⁹ Information on CCX derived from <http://www.chicagoclimatex.com>, "CCX General Offset Provisions," August 2009 (http://www.chicagoclimatex.com/docs/offsets/CCX_General_Offset_Program_Provisions_Final.pdf), and <http://www.co2offsetresearch.org/policy/CCX.html>.

³⁰ Conversation between author and Liz Mathern of NDFU, June 17, 2010.

- Sustainable rangeland soil carbon sequestration;
- Grassland conversion soil carbon sequestration;
- Afforestation and reforestation;
- Sustainable forest management;
- Small-scale renewable biogas;
- Renewable energy systems; and
- Ozone depleting substance destruction.

CCX also has developed, in conjunction with experts from the scientific, non-profit, private, public and academic sectors, a draft project methodology on Avoided Tropical Deforestation.

CCX may consider energy efficiency and CDM-eligible projects on a case-by-case basis. In particular, CCX must assure that CERs only may be used for compliance once, and that emissions reductions from CDM projects that occur prior to their acceptance by the CDM meet CCX program rules. In addition, CDM hydropower and forestry projects, and CDM projects that result in net increases in emissions to the atmosphere (e.g., new fossil fuel fired facilities), also must meet CCX project methodologies.

As of December 2009, CCX had registered nearly 82 million offsets since 2004. The three largest contributors by project type are agricultural soil carbon (approximately 26.7 million tCO₂e), coal mine methane (approximately 17.8 million tCO₂e), and forestry (approximately 14 million tCO₂e).³¹

B. Methodology development

CCX develops its own protocols with the assistance of Technical Advisory Committees comprised of CCX members and representatives from governments, NGOs, academia and industry. CCX members also may submit new offset project methodologies for CCX's consideration. CCX notes that it develops its protocols using an open process, and that its agricultural soil sequestration protocol, for example, took into account input from hundreds of individual experts.³² When it revises its protocols, CCX considers insights gained through project-related experience, public feedback, and other information. However, CCX does not appear to use a formal public stakeholder process.

C. Additionality and baseline determinations

CCX assesses projects based on the following characteristics: they must be "rare" (i.e., best in class), voluntary (i.e., meet the regulatory surplus test), recent, verifiable, and conservative. They also must properly address impermanence, and avoid the creation of perverse incentives resulting in net increases in GHG emissions. CCX states that its rules ensure that all of the principles in ISO 14064-2 are adopted. One of the principles applied in CCX's assessments is relevance – i.e., "CCX Protocols are designed to balance requirements for adequate

³¹ http://theccx.com/docs/offsets/Reports/CCX_Offsets_Report_Vol1No5_Sept_Dec.pdf

³² http://www.chicagoclimatex.com/docs/offsets/Soil_Carbon_Offsets_faq.pdf

documentation and verification of environmental effectiveness with the goal of minimizing transaction costs while maintaining environmental integrity.”³³

Baselines for some project types are project-specific, such as large reforestation projects where the baseline is measured based on site-specific conditions at the start of the project. Other baselines are determined based on performance standards, such as avoided deforestation projects in Brazil, which use *ex-ante* estimates of annual deforestation rates in specific states.³⁴

CCX allows farms that have practiced no-till agriculture for many years to receive CCX offset credits, thereby raising questions regarding additionality.³⁵ However, CCX believes offset crediting should be provided in such cases to reward – and avoid punishing – early actors, and also to avoid creating perverse incentives to stop no-till activities to subsequently restart them to be able to receive offsets.

D. Validation and verification procedures

The project review process begins with the submission of a **CCX Project Implementation Document (PID)**. CCX does not use independent third-party validation. Instead, CCX staff validate projects that meet the requirements of the CCX offset protocol (i.e., through “direct registration”), while projects that request a deviation from elements of a standardized protocol, or that use non-standardized protocols, must be approved by the CCX Offsets Committee or the Forestry Committee with the assistance of a Technical Advisory Committee, as appropriate. Such a review is always required for afforestation/reforestation projects that do not use carbon accumulation tables, sustainable forest management, energy efficiency, and fuel switching. All projects must receive a CCX Project Approval Letter prior to initiating verification.

Once a project receives the Approval Letter, it must hire an independent, CCX-approved verifier – of which there are nearly 60 – and obtain verification. Verifiers must submit a project-specific conflicts-of-interest form and receive CCX’s approval before undertaking the verification. Verifiers perform an initial on-site inspection, an annual desk review, and periodic follow-up site inspections for the duration of the project’s enrollment. Verification reports are reviewed by CCX staff and CCX’s regulatory services provider, the Financial Industry Regulatory Authority (FINRA). CCX staff may also conduct on-site inspections of registered projects and related documents. If the verification is approved, **Carbon Financial Instruments (CFIs)**, denominated in 100 metric ton CO₂e units, are issued into the registry account of the project owner or the project aggregator.

E. Other notable elements

CCX addresses impermanence issues in forestry projects by requiring a carbon reserve pool for each project equal to 20 percent of all offsets issued, cancellation of reserve pool offsets in cases of reversal (and release of pool offsets at the end of the five-year crediting period), and a commitment to long-term maintenance of carbon sequestered by the project. For soil carbon projects, there are similar requirements to address impermanence. A 2007 CCX document notes

³³ “CCX General Offset Provisions,” August 2009 (http://www.chicagoclimatex.com/docs/offsets/CCX_General_Offset_Program_Provisions_Final.pdf)

³⁴ See <http://www.co2offsetresearch.org/policy/CCX.html>

³⁵ *Ibid.*

that reversals have not been material.³⁶ However, farmers are not obligated to continue to maintain sequestered carbon after the five year crediting period. CCX points to research suggesting that farmers who switch from conventional to conservation tillage are likely to stay with the practice after a three to six year transition period.³⁷

CCX agricultural soil sequestration projects often are undertaken by aggregators. Based on compliance inspections conducted by independent experts, CCX has concluded that farmers are complying with requirements, and that reporting errors were limited (as of 1997) to 1-2 percent of inspected sites, in which case adjustments were made to avoid over-crediting.³⁸ According to CCX, verification requirements for forestry, continuous conservation tillage, grassland conversion and sustainably managed rangeland projects are adapted so as to ensure the verification is representative of the entire pool of aggregated project participants. All other elements of validation, verification and reporting in “regular” projects are the same for aggregated projects.

DNV’s evaluation of offset protocols against the WCI’s offset criteria concluded that CCX did not justify why leakage was not a concern for soil sequestration, forest management, urban forestry or landfill projects. It also concluded that CCX’s agricultural soil sequestration and sustainable rangeland soil carbon sequestration protocols do not meet WCI’s permanence criteria, because they do not adequately ensure that carbon is stored for at least 100 years.³⁹ In addition, CCX does not consider leakage emissions for afforestation and reforestation projects.

VI. New South Wales Greenhouse Gas Reduction Scheme⁴⁰

A. Overview

In 2003, the Australian state of New South Wales (NSW) established the Greenhouse Gas Reduction Scheme⁴¹ (GGAS), a mandatory emission reduction program that covers 21 NSW electricity retailers, one large direct electricity user, and (through their voluntary participation) nine large consumers of electricity. (The Australian Capital Territory (ACT), which is a separate jurisdiction but physically located within NSW, also has introduced legislation to become part of the NSW GGAS.) The GGAS regulator, the **Independent Pricing and Regulatory Tribunal of NSW (IPART)**, sets a per-capita carbon dioxide (CO₂) intensity target for the state (7.27 tCO₂ per capita starting in 2007). Per capita targets are set at levels intended to help meet state-wide absolute emissions targets that are comparable to Kyoto Protocol targets for industrialized countries. In 2002, NSW set its initial GHG intensity benchmark at 8.65 tCO₂ per capita. The benchmark was reduced to 7.27 tCO₂ per capita in 2007. This corresponds to a five percent

³⁶ http://www.chicagoclimatex.com/docs/offsets/Soil_Carbon_Offsets_faq.pdf

³⁷ Ibid.

³⁸ Ibid.

³⁹ Det Norske Veritas, “Review of Existing Offset Protocols Against WCI Offset Criteria for the Western Climate Initiative,” February 26, 2010, http://www.westernclimateinitiative.org/component/remository/function/download/230/chk,a5be6e617640f76e5a4cecd57831b192/no_html,1/

⁴⁰ Information on NSW GGAS derived from “Introduction to the Greenhouse Gas Reduction Scheme,” <http://www.greenhousegas.nsw.gov.au/documents/Intro-GGAS.pdf>; EPRI, “A Comprehensive Overview of Project-Based Mechanisms to Offset Greenhouse Gas Emissions,” 1014085, 2007; <http://www.co2offsetresearch.org/policy/NSWGGAS.html>; and <http://www.greenhousegas.nsw.gov.au/>

⁴¹ Formerly known as the Greenhouse Gas Abatement Scheme.

reduction of emissions below the Kyoto Protocol 1990 baseline. The per-capita amount will continue at this level until 2012, or until the federal government establishes a nationwide GHG mitigation scheme.⁴²

The emissions targets of program participants (called “**benchmark participants**”) are calculated by multiplying the per capita benchmark by the state’s population and the benchmark participant’s share of electricity sales or consumption as shown in Figure 2. Benchmark participants that do not surrender enough abatement certificates to meet their benchmark are assigned a penalty (as of 2009) of AUS\$12.50 per metric ton of shortfall.⁴³

$\text{GHG Target}_{\text{Company A}} = \frac{\text{Total NSW CO}_2\text{e} \times \text{NSW Population} \times \text{Electricity Sales}_{\text{Company A}} \text{ or } \text{Consumption}_{\text{Company A}}}{\text{NSW Population} \times \text{Total Electricity Sales}_{\text{NSW}} \text{ or } \text{Consumption}_{\text{NSW}}}$

Figure 2. GHG Emissions Targets for Benchmark Participants in the NSW GGAS program.

To meet their benchmarks, regulated companies may reduce the emissions intensity of the electricity they sell or use, or may purchase “**New South Wales GHG Abatement Certificates**” (NGACs).⁴⁴ GGAS is a “baseline-and-credit” trading program in which reductions are only credited *ex post*. Unlike cap-and-trade schemes, GGAS does not place a total cap on GHG emissions in NSW, nor does it issue and allow the trade of emissions allowances. Instead, the only trading permitted is trading of NGACs. Four types of projects and activities can generate NGACs:

- Projects that generate low-emission electricity;
- Activities that result in reduced consumption of electricity;
- Forest carbon sequestration (i.e., afforestation or reforestation projects that qualify under the UNFCCC, and that are located in NSW); and,
- On-site emission reductions from sources other than electricity generation.

Thus, some of the certificates created under GGAS are created by covered entities, and others are covered by sources that are not required to meet emission targets. This approach is different from other offset programs in which only emission sources and activities outside of an established emissions cap can generate offsets.

Like offsets in other programs, NGACs are denominated in metric tons of CO₂e reductions. Projects that reduce emissions at the point of electricity generation in any part of the regional electricity grid (which extends beyond NSW) may create NGACs. However, eligible projects that reduce electricity demand, sequester carbon or reduce industrial process emissions must be located within NSW or the ACT.

⁴² NSW GGAS website at <http://www.greenhousegas.nsw.gov.au/>.

⁴³ <http://www.greenhousegas.nsw.gov.au/documents/FS-Comp-Penalty-09.pdf>

⁴⁴ Renewable Energy Credits (RECs) created under the separate Mandatory Renewable Energy Target program may also be used for compliance.

As of March 5, 2010, approximately 104 million NGACs have been created since the start of the program.⁴⁵ Approximately two-thirds of these were created by electricity generation activities (i.e., generation at emissions intensity levels lower than average NSW intensity, through such activities as cogeneration or renewable energy generation) or supply-side energy efficiency activities that reduce emissions intensity. Just under 30 percent of NGACs was created from demand-side abatement activities (e.g., energy-efficient light bulb projects). The remainder has been split between carbon sequestration and “Large User Abatement” – i.e., activities carried out by voluntary participants (large users of electricity) that reduce on-site emissions not related to electricity consumption (e.g., reducing on-site fuel use, switching to lower emissions intensity fuels, reducing industrial process emissions, and abating on-site fugitive GHG emissions).

As the scheme administrator, IPART is responsible for assessing abatement projects, accrediting participants (**Abatement Certificate Providers**) to undertake eligible projects and then create certificates, and monitoring compliance with GGAS. It also manages the **Greenhouse Registry** in which the registration and transfer of NGACs is recorded. Program audits are undertaken by auditors appointed to the **Audit and Technical Services Panel**.

B. Methodology development

Methodologies for quantifying emission reductions from eligible activities are included in implementing regulations for the GGAS (the Electricity Supply (General) Regulation 2001). These methodologies are included in five Greenhouse Gas Benchmark Rules – the **Compliance Rule**, which provides the calculation methodology for determining compliance with benchmark participants’ targets; the **Generation Rule**, which addresses activities relating to reducing the GHG emissions intensity of electricity supply; the **Demand Side Abatement (DSA) Rule**, which relates to demand-side energy efficiency activities; the **Large User Abatement Certificate Rule**, which addresses non-electricity related GHG emission reductions from large electricity users; and, the **Carbon Sequestration Rule**.⁴⁶

C. Additionality and baseline determinations

GGAS does not specify a particular additionality test, but instead addresses additionality through its eligibility requirements and the baseline scenarios established for each project and technology type, which are generally expressed as performance standards. For example, the baseline for electricity generation activities that reduce emissions intensity is set relative to a regional emissions intensity benchmark or to the facility’s historic emissions intensity. These requirements are effectively equivalent to using a positive list approach to additionality.

Some observers have questioned the additionality of some NGACs. One study claims the vast majority of NGACs issued in the 2003-05 period came from low-emission power plants that existed before GGAS, and that didn’t have to alter their operations relative to pre-GGAS levels to create NGACs.⁴⁷ The study also asserts GGAS reporting lacks transparency with respect to

⁴⁵ http://www.greenhousegas.nsw.gov.au/Documents/Newsletter_Issue15_Mar10.pdf

⁴⁶ http://www.greenhousegas.nsw.gov.au/overview/legislative_framework.asp#rules

⁴⁷ “The NSW Greenhouse Gas Reduction Scheme: An analysis of the NGAC Registry for the 2003, 2004 and 2005 Compliance Periods,” Centre for Energy and Environmental Markets, CEEM discussion paper DP_070822, Rob Passey et al., August 2007, University of New South Wales, Australia, http://www.ceem.unsw.edu.au/content/userDocs/CEEM_DP_070827_000.pdf.

which method or equation was used to determine reductions, how baselines were calculated, or how participants achieved compliance.

D. Validation and verification procedures

GGAS does not have formal requirements regarding validation and verification of projects. Instead, GGAS allows ACPs to calculate their emission reductions using GGAS equations, and to self-certify their emission reductions. GGAS uses a **risk-based approach** for determining auditing frequency, and IPART is given discretion to determine whether the eligibility of a project or the reductions claimed by a project need to be audited. Under this approach, ACPs must apply to IPART for approval (“**accreditation**”) of their abatement activity. IPART reviews the application to assess whether the activity is eligible to create NGACs, and whether the ACP can calculate abatement appropriately. As part of this assessment, IPART may commission a validation audit. If the ACP receives accreditation, it is required to report the status of the project and the emissions abated every year. In addition, NGACs generated must be verified, and the frequency of these verifications is determined by IPART. In the last step in the process, ACPs may register certificates on-line in the GGAS registry, depending on their conditions of accreditation. A registration fee is imposed on each NGAC that is created.

IPART may call for an audit to be performed on an ACP prior to accreditation, prior to allowing an ACP to create certificates, or in other cases where issues arise that in IPART’s view call for independent evaluation. IPART’s assessment of the need for audits is based on participants’ compliance history, the complexity of the offset project, the number of projects that share a common process and other factors.

A novel element of GGAS’ approach to independent third-party auditing is that while auditing costs are shared between benchmark participants and ACPs, **the auditor’s primary duty of care is to IPART**. This differs from the approach taken by the CDM and several other programs, in which the project proponent hires the auditor, thereby creating a potential conflict of interest.

E. Other notable elements

Like CAR, GGAS addresses **impermanence** by requiring afforestation and reforestation projects to demonstrate that sequestration will be maintained for at least 100 years. In addition, forest managers must demonstrate, based on an uncertainty analysis, that a 70% probability exists that the actual net increase in carbon stocks will be greater than the amount of credits issued.

As discussed in this background paper, all high-quality GHG emissions offsets programs essentially must develop standards and practical approaches to address the key procedural steps in the design and implementation of offsets projects. In many cases, each of the offsets programs described in this report has adopted different policies and approaches to define, review and approve eligible offsets projects, including approaches to methodology development, project design and submittal, project approval /registration, monitoring, reporting, verification and offset credit issuance.