



Joint C-AGG, T-AGG, and M-AGG Meeting Summary

October 4-5, 2010

The Coalition on Agricultural Greenhouse Gases (C-AGG), the Technical Working Group on Agricultural Greenhouse Gases (T-AGG), and the Market Mechanisms for Agricultural Greenhouse Gases (M-AGG) held a joint meeting in Chicago, IL on October 4-5, 2010. The group received reports from each of the initiatives; heard several presentations and panel discussions; and participated in a discussion of the state of climate change rules and regulations, and strategic opportunities and directions for the initiatives, moving forward. This meeting brief provides a high-level summary of the meeting and its outcomes. Slides for each presentation may be found at <http://c-agg.org/resources.html>.

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USDA Initiatives to Develop Technical Guidelines and Scientific Methods for Farm-scale GHG Footprint Estimations

The first presentation of the meeting was delivered by Marlen Eve, Environmental Scientist with the USDA Climate Change Program Office. The USDA Climate Change Office is located within the Office of the Chief Economist, and it has responsibilities across all departments. It is charged with guiding the internal research and priorities in USDA, as well as reviewing potential legislation and policy.

Eve manages a technical program at the USDA that aims to create farm-level tools and guidelines for greenhouse gas (GHG) accounting. This tool is initially taking its lead from the COMET-VR tool (carbon only) and the soon-to-be-released COMET-FARM (carbon and nitrous oxide) and will integrate other modules for whole farm GHG accounting. This project will be comprehensive, examining animal agriculture, forestry, and cropland management. The footprint accounting will be consistent with the US's national level inventory work. This tool will assess conservation opportunities and their impact on the land. Thus far, the USDA Climate Change Office has hired a contractor to develop the technical guidelines, with help from a USDA advisory team and the academic community. The development of this footprint will be a three year process, focusing on a number of key considerations and criteria, including:

- Ease of use,
- Relevancy to a diverse set of stakeholders,
- Improving accuracy,
- Cost-effectiveness,
- Transparency, and
- Assessing the whole farm operation.

Key points from discussion:

- A public notice will soon be available in the federal register, seeking comment
- This project has a discrete focus, which is helping both farmers and USDA to make decisions about conservation practices and programs on farms. With a goal to determine the impact of USDA conservation practices on the farm, the USDA also wishes for this project to have broad applicability (i.e., beyond a programmatic approach). USDA is aware that there may be demand for the project outputs internationally, but does not intend to focus attention there initially.
- Another goal is to prove that agriculture has a role to play in GHG mitigation.
- USDA plans to rely heavily on author panels and experts, drawn primarily from within the USDA, EPA, and other agencies. To date USDA has planned to engage stakeholders only through the public comment process. However, after suggestions from participants at the workshop, Eve expressed an interest in engaging directly

with stakeholders and invited participants to submit the names of key people within the producer community and the food supply chain.

- In developing the tool and associated publications, USDA plans to rely heavily on existing resources.
 - There are many data gaps in existence currently. USDA recognizes that there are many gaps and plans to identify, but not solve, them in the next three years.
 - Transparency is a key focus for this project. Eve is optimistic that USDA can aggregate and release data in a manner that strikes a balance between transparency and protecting confidential data. With regard to this issue, some attendees asserted that clear understandings of the fundamental relationships may be more useful than a “black box” tool, so that such information could be utilized widely.
 - The tool is being designed for use by farmers, local USDA staff, and extension workers, for operations of all sizes.
 - As a farm-scale tool, the footprint tool will not address leakage, permanence, or additionality.
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Recommendations to USDA

A small work group met to discuss recommendations that C-AGG is developing for USDA regarding policy and program priorities. Key points from the work group discussion included:

- The group reiterated concerns with data quality and quantity. Some data is either incorrect or not appropriate for the scale that USDA is interested in. There needs to be more data collected, under stricter and more consistent standards.
- The work group needs a better understanding of what USDA is attempting to do in order to give more specific feedback. This will also help to prioritize pilot projects.
- Profitability is a key driver and it deserves greater attention in X-AGG discussions.
- The international effects of US agricultural policy will become increasingly important. USDA needs to be careful not to cause an increase in land conversion abroad or to disadvantage US farmers.
- On the recommendation document itself, a work group member suggested making it less high level and conceptual, and refining the focus to the pilot level.
- The issue of who the recommendations are coming from (e.g. C-AGG, or specific members of C-AGG) was also raised, with general agreement that C-AGG, without specific names, is preferable.
- On recommendations specific to the USDA project presented at this meeting, work group members suggested that USDA focus on a variety of different scenarios, in addition to Farm Bill programs; structure expert panels in order to engage the market

side; and begin a formal Federal Advisory Committee (FACA) process, in order to ensure stakeholder input and transparency.

T-AGG Review of New Products

Lydia Olander, T-AGG Director, and Alison Eagle, T-AGG Research Director, provided an overview of T-AGG's activities and major reports to date. There has been significant increase in activity in the agricultural GHG mitigation space since T-AGG began its work. All of these efforts and initiatives require a common set of technical information, which T-AGG is working to assemble.

T-AGG's first report on the biophysical potential for agricultural GHG mitigation ([Report](#)) is a full literature review of almost 400 peer reviewed articles examining the potential of a range of land use and agricultural activities to mitigate GHG emissions. Key points from questions and discussion included:

- Practices that were initially explored but removed for lack of data included increasing cropping intensity, drainage of croplands, and fire management on rangeland.
- Combined practices were not included as they are complex, there is little literature on the impacts of combinations, and the baselines are more difficult to determine. However, some of the best opportunities for mitigation may come from combining practices.
- T-AGG does not make policy recommendations, though it intends to be a resource for those that do.
- T-AGG is working to make its database and literature library publicly available.
- The majority of the papers surveyed for the report were empirical studies, though modeling studies were used when other data was not available.
- The study did not examine the differences between types of conventional tillage – this is a critical issue for defining the carbon differential between conventional (baseline) and conservation tillage practices.
- Some modelers are interested in presenting this data as spatially explicit maps.

Olander provided a summary of T-AGG's work on the technical aspects of implementation. The results of this work project the amount of GHG emissions reduced or sequestered for certain practices, based on different prices of carbon. T-AGG is currently updating the results of this study. Additionally, T-AGG completed a literature review on co-effects, and found that they are mostly positive, particularly when reducing nitrogen-based fertilizer. Finally, T-AGG examined different quantification schemes and found that most activities can be quantified at suitable levels of detail and with reasonable costs, using tier two models.

Key points from questions and discussion included:

- There are key differences, including resolution, between the different tiers of models. A question was raised as to how broadly data can be extrapolated and still be Tier 2.
- Specialty crops are only beginning to be researched now, since they have been relatively more difficult to research.
- T-AGG is attempting to highlight some of the data gaps, particularly on the uncertainty of interactions between different practice types. T-AGG has not yet had the opportunity to examine either practice adoption rates or availability of public and proprietary data. There is some interest in obtaining and making transparent the calibration data that is used for the models, especially if some of these data are not specifically reported in the scientific literature.
- Co-benefits could be examined in the context of mitigation in the future.

Finally, Olander discussed T-AGG's research on additionality and baselines. This work is just beginning and T-AGG is seeking input. T-AGG is not attempting to complete an assessment of policy choices; rather, it is examining the databases and data sources available and the gaps within and between them. Topics include monitoring and evaluation, leakage, reversals, and output-based metrics. Olander also briefly described T-AGG's focus moving forward, including scoping work on the international front and livestock management. Key points from questions and discussion included:

- T-AGG will produce an assessment of the gaps and needs identified by its research, which may be useful to researcher and funders.
- Positive leakage is still an issue that deserves further examination. It was suggested that if people are required to take responsibility for negative leakage, they should be credited for the positive leakage as well. One way to address this issue is to consider output-based accounting metrics.
- The time horizon involved makes a difference when examining reversals.

M-AGG Outcomes to Date and Next Steps

Keith Driver, Karen Haugen-Kozyra, and Daniella Malin, M-AGG Directors, provided an overview of the deliverables from Phases 1 and 2 of M-AGG's work and outlined the potential role for M-AGG in the future. M-AGG has been mapping various protocols, as distinct from tools, against a consistent set of criteria, as well as holding a series of stakeholder consultations. Driver highlighted the role of scale, cost, and risk in protocols and Malin emphasized that a range of financial mechanisms should be explored given the absence of a carbon market in the near future.

Haugen-Kozyra and Driver presented the outputs of the first two phases of M-AGG's work. Summary tables for these outputs were included in the meeting materials ([Phase 1](#) & [Phase 2](#)). Phase 1 focused on identifying, classifying, and creating an expanding database of tools.

Phase 2 examined protocols specifically, utilizing a benchmarking exercise to take stock of the current protocols.

Key points from questions and discussion included:

- It is useful to compare the current tools/methodologies and learn from them. A lot of model calibration work is needed to enhance product quality
- One danger of multiple quantification options is that people go “coefficient shopping”.
- Since the failure of national cap-and-trade legislation, the outlook for carbon markets has changed significantly. It is more likely that investment will be put into low-carbon technologies than offset projects. If investors move away from carbon markets, it may be much more difficult to get them to return. Additionally, it is increasingly likely that there will be fragmented carbon markets, as opposed to one large market. Fungibility between markets will be very important. Finally, many large offset buyers, such as those in the electricity industry, do not want to be a primary buyer of offsets.
- The role of large companies, such as Wal-Mart, leveraging action within their supply chain was noted as an important strategy. Companies have begun to leverage their supply chains in this way as a sustainability issue. However, agricultural producers have generally not been a part of these discussions.
- The Farm Bill can be an opportunity for the federal government to take action on climate change and agriculture. While this would be a small contribution, it would be a move in the right direction that could keep investors in this space, as well as encourage more analysis.
- Voluntary Renewable Energy Credits (RECs) have had much greater success in the marketplace than carbon offsets. This could be a result of the relative complexity of offsets and palatability of RECs. Windmills, like those built with RECs, also have a positive public relations image. One way to jumpstart the market for offsets would be to convince the federal government to purchase offsets, instead of RECs.
- The government has an important regulatory role to play. It can help traders understand and build confidence in offsets and a regulatory pass-through can also help to start money flowing. Additionally, the electricity industry will not begin investing in offsets until state regulatory commissions allow these companies to see a return on the investment.
- On the producer side, pilot projects have had success demonstrating to farmers the ability to create a greater revenue stream and the value of offsets and co-benefits for the farmers themselves.

Nitrous Oxide Protocols

M-AGG hosted a panel on three different nitrous oxide protocols that included:

- Rob Janzen, VP of Western Canadian Operations of ClimateCHECK Corporation, presenting the NERP Protocol for the Alberta Offset System,
- Nick Martin, Chief Technical Officer of the American Carbon Registry, presenting the ACR Methodology for N₂O Emission Reductions through Changes in Fertilizer Management, and
- Adam Diamant, Senior Project Manager of Electric Power Research Institute's Global Climate Program, presenting the EPRI-MSU N₂O GHG Emissions Offsets Protocol.

In advance of the meeting, M-AGG hosted a scoping webinar on these protocols. For all the protocols, the Intergovernmental Panel on Climate Change (IPCC) best practice guidance is followed; direct and indirect sources of nitrogen emissions are included; soil carbon pools are excluded; and organic and inorganic sources of nitrogen are included. However, the protocols use different tiers of accounting and very different levels of complexity for implementation and data requirements. ACR uses Tier 3 accounting, and is the most flexible in terms of practice change, but most intensive and likely costly in implementation. NERP uses Tier 2 accounting and offers a more streamlined implementation, but with practice changes defined according to the 4R system (right product, at the right rate, time and place). EPRI-MSU uses Tier 1 and Tier 2 accounting, which is the least complex to implement, but has restrictive management implications. Significantly different accounting approaches also emerged – while ACR and NERP accounted for all forms of N in the system as per IPCC (fertilizer N, organic N, crop residue N (e.g. legume N) and any other N sources -- EPRI-MSU only accounted for fertilizer or manure N, or so-called exogenous N sources. The differences in approaches revealed that ACR/NERP take a risk-based approach to managing N₂O emissions, based on minimizing available NO₃⁻ in the soil-plant system through annual soil and crop testing and implementing the 4R approach, whereas the EPRI-MSU approach is based more on averaged trends of N₂O emissions with rate of fertilizer application, given a specific region with typical yield. Another key issue that deserves more discussion is the assertion (in the EPRI-MSU protocol) that the relationship between N rate and N₂O emissions is non-linear in all regions of the US. However, a lack of regionally-specific data necessitates the use of linear IPCC default factors for regions other than those in the North Central region for which more detailed empirical models have been developed and applied in the protocol. M-AGG distributed a summary chart that contrasted the three approaches. ([N₂O Protocol Webinar Synopsis](#))

Key points from questions and discussion included:

- Tracking change in yields was discussed for all three protocols. Reporting N₂O emissions on a yield of crop basis is done for ACR and NERP, but not for EPRI-MSU. Metrics are important as the T-AGG output based metrics work has shown.

- Data availability and quality, both as reported by farmers and as used to test the protocols, was questioned. To improve confidence in implementation of the reported practice, the NERP requires certification by an Accredited Professional Advisor (with specified qualifications).
 - The variables measured by each protocol were discussed extensively, including how each model chooses which of the “four Rs” (right source at the right rate, time, and placement), or if the 4R’s at all were implemented and measured.
 - The scope of each protocol was discussed, both in terms of the geographic area covered as well as the activities and co-effects included. It was pointed out that Tier 1 for areas outside of North Central Region for the EPRI-MSU protocol could lead to significant over-crediting in some regions, and under-crediting in others. Tier 1 is often viewed as not an acceptable accounting tier for project-based accounting.
 - Comparing protocol applications simultaneously was suggested as a potential use of pilot projects.
 - Changing fertilizer use rate and cropping patterns are the most important factors in the EPRI-MSU N₂O GHG Emissions Offsets Protocol. EPRI-MSU’s research indicates that quantity of nitrogen fertilizer used drives N₂O emissions much more robustly than any other factor.
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Supply-Chain Initiatives and the Value Chain for Production Agriculture

Erin Fitzgerald, VP of Sustainability for the Innovation Center for US Dairy and Dairy Management Inc, and Betty Cremmins, Supply Chain Project Officer of the Carbon Disclosure Project provided an overview of supply chain initiatives in which they are involved. Then the meeting participants explored opportunities to collaborate on sustainability and carbon footprint supply chain initiatives within the agricultural sector. Erin Fitzgerald described the Dairy Sustainability Council work to reduce the dairy industry’s carbon emissions. The dairy industry recently released a life cycle analysis of a gallon of milk (17.6 lbs of CO₂e per gallon), providing a foundation for the pursuit of strategies to reduce GHG emissions (overall goal to reduce emissions by 25% by 2020), including through pilot projects to reduce carbon emissions while generating value for the industry. Their current portfolio of 10 projects have reduced GHGs and created \$238 million in value, so they also make good business sense.

Betty Cremmins presented the Carbon Disclosure Project work on the agricultural supply chain. The Carbon Disclosure Project issues an annual survey asking companies to self-report their GHG emissions. Their Supply Chain Program allows large companies to send this survey to their suppliers. This year, the Carbon Disclosure Project is piloting an agriculture-specific survey as a part of this program, in which they will ask farmers to quantify their emissions and comment on actions that may impact GHGs. Responses will be collected next year, with a report issued in November, 2011.

Key points from questions and discussion included:

- The data that companies can provide has become increasingly rigorous and granular over time. Third party verification has increased. There are efforts within both of the initiatives presented to standardize and increase reporting by companies.
 - Both initiatives are using public relations to incentivize GHG emissions reduction. Because the public cares about the environmental attributes of products, there is a business case to reduce GHG emissions.
 - For the Carbon Disclosure Project, qualitative questions are used to address variation among the conditions agricultural producers face. This Project does ask about whether companies purchase offsets, and requests data on pre-offset emissions.
 - Primarily a company's sustainability department reports to the Carbon Disclosure Project, though the project also interacts with buyers within the Supply Chain Program. In some cases, a lack of communication between sustainability departments and procurement or other management can create problems.
 - The information the dairy industry is reporting may not be useful for model calibration, but it may be a good baseline to use to identify data gaps.
 - The Carbon Disclosure Project is attempting to specifically target GHG emissions from agriculture, and is seeking guidance on how best approach this.
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Regional, State, and Local GHG Mitigation Efforts

A panel discussion on several regional and state GHG mitigation efforts included:

- Stacy Hansen, Director of the Oklahoma Carbon Program, Oklahoma Conservation Commission
- Ryan Anderson, Carbon Program Director, Delta Institute
- Susan Gammon, Executive Director, Androscoggin Valley Soil and Water Conservation District
- Kathryn Bickel Goldman, Senior Policy Manager, Climate Action Reserve

Stacy Hansen presented the Oklahoma Carbon Program, a fee-based, legislatively mandated program of the Oklahoma Conservation Commission. The Program's activities currently include creating verification protocols and methodologies; soil carbon testing; modeling water quality improvements; quantifying the Program's economic benefits; and writing a manual of their methods.

Ryan Anderson presented the Delta Carbon Program, which began in Illinois and operates in 18 states. It partners with the state EPA and local Soil and Water Conservation Districts to trade carbon offsets on the Chicago Climate Exchange, and to date \$2.1 million has been returned to land owners. The key pieces of this Program include carbon aggregation

(through the USDA/NRCS structure), protocol development, and energy efficiency improvements.

Susan Gammon presented the work of the Androscoggin Soil and Water Conservation District to develop a voluntary, local market for carbon offsets. This Initiative, funded through a state conservation innovation grant, focuses on the co-benefits of carbon offsets and takes a whole farm approach. They have found it possible to generate GHG mitigation activities, but are having trouble with marketing their “product”.

Kathryn Goldman presented the Climate Action Reserve’s Agriculture Protocol Development. The Climate Action Reserve was originally chartered by the state of California to develop high quality standards, manage an independent third party verification process, and operate a registry. This program is now focused on all of North America and has expanded its scope to include publishing issue papers and briefs.

Key points from questions and discussion included:

- Choosing baselines continues to be a difficult challenge. The group agreed that early adopters of GHG reducing practices should not be penalized since they were left out of compliance regimes. Some programs have solved this by using proportional additionality, while others use early start dates or forgo start dates all together. Regional variation in practice adoption was also raised as a challenge when determining baselines.
- Data continues to be a key issue. One presenter suggested that T-AGG could be helpful by researching data on the adoption of practices.
- The market price for carbon offsets is currently too low to make some of these programs feasible.
- Modeling for co-benefits and aggregation were offered as areas for future work.
- Proper messaging is critical for farmer buy-in. While the Climate Action Reserve is inflexible on the issue of 100 year permanence, this is a major obstacle and disincentive for farmers who do not want to bind future generations. Additionally, traditional cap-and-trade messaging does not resonate well with farmers. Also, the cost-share program with the NRCS may be helpful, but some assert that there is still the need for some market availability for people who want NOTHING to do with the government.

Progress and Directions for Agricultural Mitigation of GHG in International Policy Arenas

Lini Wollenberg, Pro-Poor Climate Change Mitigation Theme Leader of the CGIAR Challenge Program on Climate Change, Agriculture, and Food Security (CCAFS); and Elysar Baroudy, World Bank BioCarbon Fund Manager, discussed the international policy

perspective relative to agriculture and land use change. Wollenberg discussed agricultural mitigation of GHG emissions and climate change adaptation among smallholder farmers. Her program is examining low carbon development pathways (practices, policies and technologies) for these smallholders, as well as how to engage them in carbon markets (if feasible).

Baroudy presented the World Bank's BioCarbon Fund, which focuses on funding project level mitigation of GHG emissions from forests and agriculture. This Fund connects carbon offset buyers, both countries and companies, with audited emissions reductions projects. Additionally, the Fund aims to improve livelihoods, provide access to carbon markets, aid adaptation to climate change, and restore ecosystems.

Key points from questions and discussion included:

- For the IPCC process, AR5 will integrate all agriculture and forestry into land use.
- In developing country contexts, increasing yield is integral to improving farmer's ability to adapt to climate change.
- All projects have a fuzzy line between mitigation and adaptation.
- Several groups are beginning to examine moving from a project-based to a landscape-based approach, as well as how to include agriculture in the Reducing Emissions from Deforestation and Forest Degradation (REDD) framework. The policy environment around both of these issues continues to evolve.
- When selecting pilot projects, these programs use criteria such as carbon mitigation potential, poverty alleviation, environmental and social benefits, availability of financing, and the infrastructure of partner institutions.
- There are huge data gaps on the international scale as well.
- The European market does not allow the use of agricultural land and soil GHG mitigation credits, based on an assertion that they are not fungible.
- C-AGG might be helpful to international efforts by documenting its experience, organizing meetings with developing countries, and talking with donors. It was suggested that an "international C-AGG" effort is desirable.

Pilot / Demonstration Projects

Keith Driver presented a framework for advancing pilot projects and led a discussion on the role of pilot projects moving forward. Driver outlined a process for building on and extending the work of C-AGG, M-AGG, and T-AGG through a pilot project program, with the goals of increasing data availability and accuracy, gaining direct experience, demonstrating proof of concept, and priming the marketplace with initial volumes of offsets. Driver also suggested critical factors for success, including dedicated time and resources for

planning, greater engagement from agriculture and industry, increased capacity for sharing data and resources, and funding or backstopping for the offsets.

Following the presentations, the participants were provided the opportunity for questions and discussion. Key points included:

- Suggestions for the amount of funding required for the pilots ranged from \$20 million to \$200 million. It was suggested that raising funds at scale may be easier than for individual projects.
- When trying to engage farmers, energy, efficiency, and economics resonate more than climate change.
- Creating a project before the carbon reduction is realized can be difficult for farmers. Microcredit and other financing options can go a long way towards engaging farmers.
- This pilot project proposal aims to accept a broad range of protocol methodologies. Once data has been collected as a part of the pilots, some methodologies may fall out. This proposal is also designed to work with programmatic as well as legislative approaches and policies.
- There is work to be done now on developing criteria for selecting pilots.
- If there is inclusion of both offset and supply-chain incentives, what is their relationship and could double-counting occur?

Visions of the Future Policy Context and Implications for X-AGG

Participants were divided into three breakout groups, each with a different policy scenario to discuss. Participants were asked to consider the implications for their scenario for agricultural GHG markets and profit centers, and therefore for C-AGG, T-AGG, and M-AGG's work moving forward. Following these discussions, each group reported back to the full plenary.

The "Fast and Furious" scenario included no federal climate legislation, limited payments for environmental services under the Farm Bill, and some carbon regulation under the Clean Air Act. The group saw a focus on co-benefits, which could be featured in pilot projects, as critical under this scenario. A national Renewable Portfolio Standard would also be a key driver, since it would keep RECs from competing with offsets. C-AGG could work with utility regulators to frame agriculture as an attractive near term source of offsets. Supply chain initiative might be an effective strategy for non-additional projects, such as energy efficiency. Bringing an international view to this work would also be important, since other countries will have a carbon market. Key challenges would include dealing with farmer opposition and finding opportunities for education.

The “Yellow Brick Road” scenario featured a cap-and-trade bill with price control measures, limited payments for environmental services under the Farm Bill, bioenergy incentives, and an international agreement with a prominent role for agriculture. The group saw, under this scenario, a key role for C-AGG in identifying and nurturing champions in the agriculture sector. C-AGG would develop a network of demonstration sites, beginning in regions of the US already supportive of mitigation efforts and expanding over time to the entire country. These demonstration projects would allow farmers to see the benefits of GHG mitigation and create champions out of both farmers and Congressmen, particularly Midwestern Republicans. C-AGG would also play a role developing a media, outreach, and advocacy campaign.

The “Who’s on First?” scenario was characterized by no federal climate legislation, the EPA stripped of its authority to regulate GHG emissions, and limited USDA offset activities. Under this scenario, there are several state and regional initiatives, and C-AGG could work to provide some coordination, common standards, and alignment on quantification. Timing is critical in order for offset markets to function correctly and in coordination with supply chain initiatives. Other opportunities include connecting regional markets; working to strengthen NRCS, engage cooperatives, and broker relationships; demonstrate proof of concept for agriculture; and demonstrate the business case.

Participants also drew the following conclusions about strategies moving forward given the range of possible futures:

- An engagement strategy that focused on co-benefits and energy efficiency, rather than carbon and climate change, is critical. The discussion should be framed as helping farmers. Additionally, education programs to help farmers understand GHG mitigation will lessen the threat of a cap-and-trade program.
- Pilot projects should be targeted to fit identified gaps and leverage regional markets. Existing projects on the ground should not be neglected in favor of new projects; these projects are also a valuable source of lesson learned. Specialty crops should not be neglected in pilots or new protocol development. These crops are of particular importance for engaging farmers in California, a critical state for developing an offsets program.
- A robust political strategy is vital. Farmer to farmer education programs based on targeted demonstration projects are needed and can spur farmers to communicate this support for agricultural offsets to legislators. Such outreach can be very effective.
- The Farm Bill is important policy venue, both for stimulating demand and preventing harm. A Title IV program through which the USDA buys offsets would create demand in the marketplace and fuel innovation. There is some precedent for this type of earmark already. Paying for offsets would be similar to paying for land conservation, as USDA does now, with a proven methodology behind the program. The PG&E Climate Smart Program could serve as a model for this type of program.

Caution should be exercised to ensure the quantifiable nature of the offsets and correct pricing, for possible future integration into a cap-and-trade system.

- On the demand side, there are several issues with the relationship between the supply chain and offsets that still need to be resolved, such as additionality and double counting. Common standards are critical in this space and scientific research needs to be placed in the forefront. There was a proposal for a C-AGG working group or paper on this topic.
 - Funding will be needed for any future work. Foundation funding will be needed for market infrastructure development and industry capital will be needed to purchase offsets. If these fall into place government funding may follow.
 - Participants stressed the need for a politically powerful, well organized group to carry this work forward and suggested harnessing as many partners as possible, including those currently in the opposition. C-AGG, T-AGG, and M-AGG were urged to remember their strength as an independent broker of scientific information.
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C-AGG, T-AGG, and M-AGG Moving Forward

Participants suggested areas of future work for T-AGG:

- Additional synthesis of research
- Research on aggregation and synthesis of information on common practice
- Quantifying co-benefits and ecosystem services
- Disaggregation and distribution of the T-AGG data as a database that can be maintained over time

Participants suggested areas of future work for C-AGG:

- Comparative analysis of protocol and offset systems, similar to the N₂O panel at this meeting
- Continuing discussions on international linkages
- Development of white papers on life cycle analysis, and the Farm Bill (including paying for performance more explicitly)
- Continued effort to engage producers
- Discussion about job creation potential of agricultural offsets
- Connecting with farmers in the field during future meetings
- Demonstration projects, highlighting public-private partnerships and business case models
- Engaging industry and the supply chain
- Recommendations to USDA, including conservation grants and big picture infrastructure needs

- Data needs, and framing data to fit farmers' business needs
- Outreach to agriculture and industry, and strategies to shift the perception of agriculture
- International connections, including the technical, political, and policy areas

Moving forward, C-AGG will address these issues through work groups, workshops, and white papers. Ricardo Bayon volunteered to take the lead on the life cycle analysis piece. C-AGG will develop a work plan and seek volunteers to provide leadership and assistance. The next full meeting of the C-AGG will be in January.