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Memo

To: Steve Owens, WRAP Chair; Pat Cummins, WRAP Staff Director

From: Tom Peterson, CCS Executive Director

CC: CCS Inventory & Forecast Team

Re: Status Report on the Assistance Agreement with the WRAP to Develop
Greenhouse Gas Inventories & Forecasts for Western States and Tribes

Date: September 11, 2006

On June 1, 2006, CCS and the WRAP completed the attached agreement to provide assistance to nine western states with the production of comprehensive and current greenhouse gas emissions inventories and forecasts for years 1990-2020. Since that time, CCS has been working with the WRAP and participating states at an individual level to complete a series of tasks noted in the table below.

Presently we are in the process of obtaining approval from individual states on proposed technical work plans. As of today, we have received approval from Alaska, Nevada, South Dakota, Utah, Washington and Wyoming; also work had already begun in Montana and is complete. We are waiting for approvals from Colorado and Idaho. Assuming completion of state reviews and approvals shortly, we are on schedule to begin analysis of emissions and production of draft results for state review.

The following table identifies the initial target dates for delivering the draft and final work plan and inventory and forecast report to the states. The draft work plans were submitted to all of the states between August 2 and 22. The draft work plans were delayed for some states due to delays in connecting with the appropriate state contacts in order to collect information to customize the inventory and forecast methodology to incorporate state-specific data.

CCS requested that the states provide review comments within two weeks of receiving the draft work plan. We have received comments from three states (Nevada, Utah, and Washington) and held calls with these states to discuss their comments. We are revising work plans accordingly and received a notice to proceed also from Alaska, Nevada, South Dakota, Utah, Washington and Wyoming. We have contacted Colorado and Idaho to request that they provide their comments on the draft work plans as soon as possible.

- All states will need to be extremely responsive in providing contacts for their agencies from which we need to collect data in order to meet project deadlines.
- Some states are requesting that we provide the underlying data (spreadsheets, databases, etc.) used to prepare their inventory, so that they will have a starting point for future revisions. CCS is happy to do this provided that:
 - The states understand that CCS' budget does not provide for formatting these materials to be easily understood by agency staff (spreadsheets are not user friendly); and
 - It is understood by the states that CCS' existing budget does not allow for on-going support to answer questions on how to use these materials.
 - In Phase II of the proposed project CCS would produce a consolidated database system for agency use, including training, to provide ongoing capacity for greenhouse emissions inventories and forecasts. This would be done as an expansion to the EDMS developed for regional haze for the WRAP states (see Phase II in the attached process proposal).

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TASK	TIMELINE	STATUS
Phase I – Nine State/Tribal GHG Estimates		
Gap analysis of current GHG inventories and forecasts for individual WRAP states and tribes	June 1–30, 2006	Completed
Development of recommended principles and guidelines for western state and tribal inventories and forecasts	July 1-28, 2006	Completed
Identification and initial coordination of technical contacts for project assistance	July 1-28, 2006	Completed
Expert review of recommended technical work plans (i.e. methods, data sources and key assumptions for each state level sector) for individual states and TEISS module.	July 21 – August 10, 2006	Completed
Approval of suggested technical work plans by state agency contacts.	August 16 – September 5	In process - AK, UT, NV, MT, SD, WA, WY completed; approvals waiting from CO, ID
Calculation of initial GHG inventories and forecasts for each state in review format	September 1 – November 1, 2006	November 1, 2006 (MT is completed and under advisory group review)
Comparison of state results and methods, with revisions as needed to address consistency and compatibility issues	October 15-29, 2006	Due November 1, 2006
Reports with state results and comparative review and documentation of tribal methods through TEISS	November 15- December 1, 2006	Due December 1, 2006
Completion – Phase I		

Assistance Agreement with the WRAP to Develop Greenhouse Gas Inventories and
Forecasts for Western States and Tribes

June 1, 2006

Prepared by: Center for Climate Strategies

Background

This agreement between the Center for Climate Strategies (CCS) and the Western Regional Air Partnership (WRAP) documents a proposal approved by the WRAP Board at its meeting in Salt Lake City, Utah on April 4, 2006 (attached) to develop greenhouse gas (GHG) emissions inventory assessments for a group of eight WRAP states that have not already completed such assessments. The WRAP Board agreed to Phases One and Two of the proposed project, but authorized work on Phase One only at this time with the anticipation that additional funding would be developed for Phase Two at a later date.

The GHG emissions estimates provided in this project will provide important outputs for the WRAP, western states and tribes, including:

- 1) Individual state GHG emissions assessments for years 1990-2020 for all emitting sectors and GHG's in a current, comprehensive and consistent policy and planning format (Phase One).
- 2) Comparative reviews of measurement approaches across states to ensure that consistency in future information exchange between the states (Phase One).
- 3) Expansion of the regional air quality Emissions Data Management System (EDMS) database to include all GHG's in a public format (Phase Two).

These emissions assessments will characterize and quantify the sources, regional locations, driving variables and uncertainties behind GHG emissions in the West. They also will support development of more refined GHG estimates for specific sectors, sub sectors and GHG's that support general knowledge and planning.

Scope of Work

Through this agreement CCS agrees to provide technical assistance for the first phase of development of GHG emissions inventories and forecasts for participating WRAP states.

The second phase involving expansion of the Environmental Data Management System (EDMS) of the WRAP is not covered under this scope of work.

For Phase One, nine states have stated their interest in the project. They are AK, CO, ID, MT, NV, SD, UT, WY and WA. Additional states may be added by the WRAP following conferral with CCS provided that CCS is able to develop additional funding sources. CCS will work through WRAP staff at the National Tribal Environmental Council to determine the best methods for addressing tribal needs, including the idea of incorporating a GHG module into the existing Tribal Emissions Inventory Software Solution (TEISS).

State level emissions and carbon storage inventory and forecast estimates will include all recognized GHG's (CO₂, CH₄, N₂O, SFC's, HFCs, PFCs, and potentially Black Carbon).

Covered sectors include energy supply sources for heat and power, including the impacts of geologic carbon storage; commercial, residential, and industrial activities (also known as buildings, facilities and manufacturing); transportation and land use activities; solid and liquid waste management; and agriculture and forestry activities, including terrestrial carbon storage. Covered time periods include the years 1990 through 2020.

Emissions assessments will be designed to support general planning and knowledge and not necessarily designed for policy or program compliance purposes. To the extent possible, assessments will build upon readily available state and regional data, and use methods consistent with national and state GHG inventories. CCS will augment these initial data sources and estimation methods as needed based on conferrals with states and tribes.

The tasks and deliverables identified in this agreement will be provided by CCS to participating states and tribes through coordination with the WRAP, including regular conference calls with the WRAP and the participating states and tribes in order to review work progress and project assistance needs. State and tribal level assessments will be developed through direct individual conferral and coordination with the participating states and tribes. Final assessments will be provided to the states, tribes and WRAP for use and further development in the public domain in a transparent format, including a final report for each state and supporting spreadsheets, as well as a summary report for all states.

The concepts, costs, time lines, and tasks that follow are based on CCS estimates provided to the WRAP based on participation of nine states. Financial support for technical tasks has been and will continue to be arranged by CCS through private donors in conferral with the WRAP. Phase one work products will be completed within six months from project startup, with Phase II completed in the following seven months pending additional agreements on scope of work and funding.

Technical Work Plan

Two overlapping project phases will be needed, as noted. The first will develop state level GHG estimates and estimation methods, as well as a review of consistency issues across states. The second phase will include development of a new data storage module in the EDMS with data transfer and training. Both phases will be conducted in close conferral by CCS with individual states, tribes and the WRAP. CCS will provide lead consultants for analysis as well as an expert review team for each sector, and requests designation of a technical point of contact for the WRAP and each participating state and tribe for technical coordination and guidance.

CCS will confer with the WRAP, states and tribes at each step of the process, including 1) the development and approval of proposed technical work plans for each state; 2) development of data, methods and assumptions for state level GHG estimates; 3) review of draft final results; and 4) comparison of results across states for consistency issues. Draft final reports will be provided to the WRAP and participating states and tribes for review. Final reports and spreadsheets will be provided in a transparent review format to allow later development of additional detail and revised measurement approaches.

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Final work products can be completed within 13 months from project startup, with Phase I completed in six months and Phase II completed in the following seven months. CCS will begin work immediately upon approval of a commitment letter to the WRAP that specifies project funding, timing, tasks and deliverables contained in this memo.

Funding for the first phase of this project will be provided by a number of donors supporting state assistance by CCS to states for climate change issues, including: the American Conservation Foundation; the Alaska Conservation Fund; the Compton Foundation; the Marisla Foundation; the Rockefeller Brothers Fund; and the Emily Hall Tremaine Foundation. Additional funds will be developed as needed to support participation by additional states, following conferral with and approval by the WRAP. CCS does not accept funding with contingent outcomes.

The project work plan involves the following key steps, duration and costs (to be funded by CCS) assuming participation of nine states:

TASK	TIMELINE	COST
Phase I – Nine State/Tribal GHG Estimates		
Gap analysis of current GHG inventories and forecasts for individual WRAP states and tribes	1 month from start of project	\$9,810
Development of recommended principles and guidelines for western state and tribal inventories and forecasts	1 month from start of project	\$3,066
Identification and initial coordination of technical contacts for project assistance	1 month from start of project	\$3,066
Expert review of recommended technical work plans (i.e. methods, data sources and key assumptions for each state level sector) for individual states and TEISS module	2 months from completion of task #1	\$9,810
Calculation of initial GHG inventories and forecasts for each state in review format	2 months from completion of task #4	\$147,150
Comparison of state results and methods, with revisions as needed to address consistency and compatibility issues	1 month from completion of task #5	\$14,715
Reports with state results and comparative review and documentation of tribal methods through TEISS	1 month from completion of task #5	\$9,810
Total – Phase I	6 months	\$197,426

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Phase II – EDMS Development		
Identification of EDMS expansion needs by sector, geographic region and GHG	1 month from completion of task #5	\$25,000
Design of recommended EDMS module expansion by sector, geographic region and GHG	2 months from completion of task #6	\$30,000
Data transfer and trial use of draft EDMS with new state data	2 months from completion of task #8	\$23,000
Final design modification and approval of EDMS GHG module	2 months from completion of task #9	\$3,000
Phase II Total	7 months	\$81,000
Project Total	13 months	\$278,426

Development of Greenhouse Gas Inventories & Forecasts for Western States and Tribes
April 4, 2006
Prepared for the Western Regional Air Partnership
by the Center for Climate Strategies

The Center for Climate Strategies (CCS) has prepared this proposal to provide technical assistance for the development of greenhouse gas emissions (GHG's) inventories and forecasts for several WRAP states and tribes. The concepts, costs, time lines, and tasks that follow are based on our estimation of what would be involved if CCS performed this work for WRAP and each of the states and tribes involved in the assessments.

These emissions estimates will provide two important outputs for further development and use by Western states and tribes:

- 4) Individual state and tribal GHG emissions assessments for years 1990-2020 for all emitting sectors and GHG's that are current, consistent, and state of the art.
- 5) Expansion of the regional air quality Emissions Data Management System (EDMS) database to include all GHG's (optional).

These emissions assessments will characterize and quantify the sources, regional locations, driving variables and uncertainties behind GHG emissions in the West. They also will support development of more refined GHG estimates for specific sectors, sub sectors and GHG's that support general knowledge and planning. To the extent possible, assessments will build upon readily available state and regional level data, and use methods consistent with national and state GHG inventories. As is the normal practice by CCS, data and methods will be augmented through joint decisions, where needed, to provide the most accurate and comprehensive estimates possible for state, tribal and regional use.

Two overlapping project phases are planned. The first will develop state level GHG estimates and estimation methods, as well as a review of consistency issues across states. The second phase (optional) will include development of a new data storage module in the WRAP's existing Emissions Data Management System (EDMS) with data transfer and training included. Both phases will be conducted in close conferral by CCS with individual states, tribes and the WRAP staff. CCS will provide lead consultants for analysis as well as an expert review team for each sector, and will work with the designated technical contacts for the WRAP and each participating state and tribe to ensure appropriate technical coordination and guidance.

CCS will confer with WRAP staff and participating states at each step of the process, including 1) the development and approval of the technical work plan for each state; 2) development of data, methods and assumptions for state level GHG estimates; 3) review of draft final results; and 4) comparison of results across states for consistency issues. CCS will work through WRAP staff at the National Tribal Environmental Council to

determine the best methods for incorporating a GHG module into the existing Tribal Emissions Inventory Software Solution (TEISS).

Draft final reports will be provided to WRAP staff and participating states and tribes for review. Final reports and spreadsheets will be provided in a transparent review format to allow later development of additional detail and revised measurement approaches.

Emissions and carbon storage inventory and forecast estimates will include all recognized GHG's (CO₂, CH₄, N₂O, SFC's, HFCs, PFCs, and potentially Black Carbon). Covered sectors include energy supply sources for heat and power, including the impacts of geologic carbon storage; commercial, residential, and industrial activities (also known as buildings, facilities and manufacturing); transportation and land use activities; solid and liquid waste management; and agriculture and forestry activities, including terrestrial carbon storage. This proposal is based on developing inventories for a group of eight WRAP states that currently lack such estimates.

Final work products can be completed within 13 months from project startup at a total cost of \$256,490, with Phase I completed in six months at a cost of \$175,490 and Phase II (optional) completed in the following seven months at a cost of \$81,000. Funding for the first phase of this project will be provided by a number of private grants from donors to CCS who support its assistance to states for climate change issues on an ongoing basis, including: the American Conservation Foundation, the Marisla Foundation, the Rockefeller Brothers Fund, the Compton Foundation (pending) and the Tremaine Foundation (pending). CCS does not accept funding with contingent outcomes.

CCS will enter an assistance agreement with WRAP on behalf of the participating states and tribes through a commitment letter that specifies project purpose, goals, funding, work process, roles and responsibilities of the parties, and the timing, tasks and deliverables contained in this memo. CCS can begin work immediately upon WRAP approval.

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The project work plan involves the following key steps, duration and costs:

TASK	TIMELINE	COST
Phase I – Eight State/Tribal GHG Estimates		
Gap analysis of current GHG inventories and forecasts for individual WRAP states and tribes	1 month from start of project	\$8,720
Development of recommended principles and guidelines for western state and tribal inventories and forecasts	1 month from start of project	\$2,725
Identification and initial coordination of technical contacts for project assistance	1 month from start of project	\$2,725
Expert review of recommended technical work plans (i.e. methods, data sources and key assumptions for each state level sector) for individual states and TEISS module	2 months from completion of task #1	\$8,720
Calculation of initial GHG inventories and forecasts for each state in review format	2 months from completion of task #4	\$130,800
Comparison of state results and methods, with revisions as needed to address consistency and compatibility issues	1 month from completion of task #5	\$13,080
Reports with state results and comparative review and documentation of tribal methods through TEISS	1 month from completion of task #5	\$8,720
Total – Phase I	6 months	\$175,490
Phase II – EDMS Development		
Identification of EDMS expansion needs by sector, geographic region and GHG	1 month from completion of task #5	\$25,000
Design of recommended EDMS module expansion by sector, geographic region and GHG	2 months from completion of task #6	\$30,000
Data transfer and trial use of draft EDMS with new state data	2 months from completion of task #8	\$23,000
Final design modification and approval of ESMS GHG module	2 months from completion of task #9	\$3,000
Phase II Total	7 months	\$81,000
Project Total	13 months	\$256,490

Members of the CCS team have led the development of several state GHG emissions inventories and forecasts in the last five years in support of state climate change mitigation policy initiatives in AZ, CA, CT, ME, NC, NM, NY, OR, PA, Puget Sound, and RI. In addition, team members have been involved in numerous regional, national and international emissions assessments and GHG policy implementation programs.

The experience of the CCS team in formulating and implementing GHG mitigation policy, as well as estimation procedures for past and future emissions and carbon storage enables it to fully integrate technical and policy considerations needed in GHG inventory and forecasting assessments. As well, E. H. Pechan and Associates developed and managed the EDMS for the WRAP and has extensive experience in the development of air quality compliance inventories and baselines at the state and regional level. Bios and other technical qualifications of team members are available on request. We would be happy to explore modifications to this work if needed.