

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

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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:

- 1) 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.
- 2) 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 (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, 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.

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

<b>TASK</b>	<b>TIMELINE</b>	<b>COST</b>
<b>Phase I – Eight State/Tribal GHG Estimates</b>		
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
<b>Total – Phase I</b>	<b>6 months</b>	<b>\$175,490</b>
<b>Phase II – EDMS Development</b>		
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
<b>Phase II Total</b>	<b>7 months</b>	<b>\$81,000</b>
<b>Project Total</b>	<b>13 months</b>	<b>\$256,490</b>

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.