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## Cross-Cutting Issues Technical Working Group *Draft* GHG Inventories and Forecasts Design Characteristics Matrix

*Note: This is the same version as used for the CCAC #4. No changes.*

### **Purpose and Goals of Inventories and Forecasts:**

1. Tracking GHG emissions trends
2. Identifying opportunities and areas for action
3. Others?

#	Design Element	Options	Design Considerations	Preliminary Recommendation
1.	<b>Responsibility for Preparing Periodic Inventories and Forecasts</b>	<ul style="list-style-type: none"> <li>• Sole responsibility with MT DEQ.</li> <li>• Shared responsibility between DEQ and other state agencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Purpose is to develop consistent, systematic inventories and forecasts from one year to the next.</li> <li>• Subject matter expertise is evolving rapidly.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
2.	<b>Inventory Frequency</b>	<ul style="list-style-type: none"> <li>• Annual.</li> <li>• Other.</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory reflects historical emissions.</li> <li>• Different sized sources currently required to report emissions on different schedules (e.g., major sources annually; minor sources every 5 years).</li> <li>• Must be consistent with any MT GHG Reporting Program, and should strive for consistency with other inventory and forecasting programs.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

#	Design Element	Options	Design Considerations	Preliminary Recommendation
3.	<b>Forecast Frequency and Periods</b>	<ul style="list-style-type: none"> <li>• Annual.</li> <li>• Intervals.</li> <li>• Other.</li> </ul>	<ul style="list-style-type: none"> <li>• Forecasts reflect estimates of future emissions.</li> <li>• Define future years for which emissions inventory is prepared (i.e., frequency and overall forecast period).</li> <li>• Define intervals for future year forecasts (e.g., annual, 5-year intervals relative to a base historical year).</li> <li>• Limitations exist on availability of activity data for projecting emissions (e.g., current Energy Information Administration (EIA) projections of fuel consumption only go to 2030).</li> <li>• Should strive for consistency with other inventory and forecasting programs.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.	<b>Greenhouse Gases Included</b>	<ul style="list-style-type: none"> <li>• Six “Kyoto gases” (CO<sub>2</sub>, HFCs, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, SF<sub>6</sub>).</li> <li>• Black Carbon.</li> </ul>	<ul style="list-style-type: none"> <li>• Must be consistent with any MT GHG Reporting Program, and should strive for consistency with other inventory and forecasting programs.</li> <li>• Broader array promotes inventory building, public information, identification of GHG strategies, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

#	Design Element	Options	Design Considerations	Preliminary Recommendation
5.	<b>Basis for Calculating and Reporting Emissions</b>	<ul style="list-style-type: none"> <li>• Production based.</li> <li>• Consumption based.</li> </ul>	<ul style="list-style-type: none"> <li>• Production refers to emissions generated by sources in-state (e.g., emissions from power generated in-state whether consumed in-state or exported).</li> <li>• Consumption refers to “Production” based emissions plus imports and minus exports, at least for the energy sector.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.	<b>Emissions Quantification</b>	<ul style="list-style-type: none"> <li>• Calculation methods &amp; tools.</li> <li>• Federal 1605(b) program details quantification of black carbon emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply current best practice methods (e.g., <i>GHG Protocol</i> and calculation tools).</li> <li>• Strive for consistency with other reporting and quantification programs.</li> <li>• Some “other” or “home grown” approaches may be necessary (e.g., Flashing emissions; IPIECA<sup>1</sup> and API’s<sup>2</sup> SANGEA™ GHG Emissions Software).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
7.	<b>Public Access &amp; Reports</b>	<ul style="list-style-type: none"> <li>• Internet access and/or online reports.</li> <li>• Paper reports.</li> <li>• Both.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

<sup>1</sup> IPIECA is the International Petroleum Industry Environmental Conservation Association.

<sup>2</sup> API is the American Petroleum Association.

#	Design Element	Options	Design Considerations	Preliminary Recommendation
8.	<b>Funding</b>	<ul style="list-style-type: none"> <li>• State-funded.</li> <li>• Emission-based fees (would require legislative approval).</li> <li>• Some combination?</li> <li>• Other?</li> </ul>	<ul style="list-style-type: none"> <li>• Inventories and forecasts can only be accomplished if adequate DEQ resources exist, so creative funding sources should be investigated (e.g., transaction fees, GHG credit sales, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
9.	<b>Periodic Reassessment of Inventory and Forecast Approach</b>	<ul style="list-style-type: none"> <li>• Authority.</li> <li>• Purpose.</li> <li>• Frequency.</li> </ul>	<ul style="list-style-type: none"> <li>• DEQ and involved agencies should have the ability to periodically reassess and revise (if necessary) designs element of the inventory and forecasting program.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
10.	<b>Other?</b>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>



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## Cross-Cutting Issues Technical Working Group *Draft* GHG Reporting Design Characteristics Matrix

### **WRI/WBCSD GHG Protocol's**

#### **Principles for GHG accounting and reporting:**

1. Relevance.
2. Completeness.
3. Consistency.
4. Transparency.
5. Accuracy.
6. Enable other goals.

#### **Potential Goals of GHG Reporting:**

1. Identifying reduction opportunities.
2. Reducing risks (e.g., start learning curve).
3. Tracking GHG emissions, assisting the state in constructing annual inventories.
4. Participating in voluntary programs.
5. Participating in – or preparing for – mandatory programs.
6. Precursor for registry participation.
7. Opportunities for recognition.
8. Public reporting.
9. Consistency with other programs.
10. Others?

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
1.	<b>Type of Program</b>	<ul style="list-style-type: none"> <li>• Voluntary.</li> <li>• Mandatory.</li> </ul>	<ul style="list-style-type: none"> <li>• May need or want to constrain mandatory applicability to certain sectors and/or sources pending availability of accepted quantification protocols.</li> <li>• Mandatory reporting is in place in some states for permitted sources (ME, CT, etc.); anticipated soon for several others in Northeast and far West.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
2.	<b>Sectors</b>	<ul style="list-style-type: none"> <li>• All sectors eligible.</li> <li>• Limited to certain sectors.</li> </ul>	<ul style="list-style-type: none"> <li>• Participation may be limited by availability of quantification methods; may need to “stage” sector participation.</li> <li>• WRI calculation protocols: Stationary combustion, mobile, electric power, cement, iron &amp; steel, aluminum, pulp &amp; paper, wood products, lime, ammonia, purchased heat or power, others.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.	<b>Sources</b>	<ul style="list-style-type: none"> <li>• All.</li> <li>• Stationary combustion emissions.</li> <li>• Mobile combustion emissions.</li> <li>• Process emissions.</li> <li>• Fugitive emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Could limit sources even within sectors, (e.g., via types, size thresholds, etc.).</li> <li>• Broader array promotes inventory building, public information, identification of GHG strategies, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
4.	<b>Organizational Boundary</b>	<ul style="list-style-type: none"> <li>• Entity-wide (e.g., corporation-wide).</li> <li>• Facility.</li> <li>• Emissions unit or source point.</li> <li>• Other (?).</li> </ul>	<ul style="list-style-type: none"> <li>• Clear definitions needed to avoid double counting where shared ownership exists.</li> <li>• Should strive to have design be consistent with possible future directions (e.g., mandatory reporting would not be enforceable above the facility level).</li> <li>• Combinations are possible (e.g., finer resolution aggregated to a greater whole).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.	<b>Reporting Period</b>	<ul style="list-style-type: none"> <li>• Annual. <ul style="list-style-type: none"> <li>– Calendar.</li> <li>– Fiscal.</li> </ul> </li> <li>• Other.</li> </ul>	<ul style="list-style-type: none"> <li>• Should strive for consistency with other reporting programs.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.	<b>Greenhouse Gases Included</b>	<ul style="list-style-type: none"> <li>• Six “Kyoto gases” (CO<sub>2</sub>, HFCs, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, SF<sub>6</sub>)</li> <li>• Black Carbon</li> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• Should strive for consistency with other reporting programs.</li> <li>• Broader array promotes inventory building, public information, identification of GHG strategies, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
7.	<b>Scope of Emissions Covered</b>	<ul style="list-style-type: none"> <li>• Direct. <ul style="list-style-type: none"> <li>- “Scope 1.”</li> </ul> </li> <li>• Indirect. <ul style="list-style-type: none"> <li>- “Scope 2” - Indirect from purchased Heat &amp; Electricity.</li> <li>- “Scope 3” - other indirect (e.g., outsourced activities, employee travel, etc.).</li> </ul> </li> <li>• Both.</li> </ul>	<ul style="list-style-type: none"> <li>• May need or want to “stage” coverage (e.g., start small &amp; expand).</li> <li>• Direct emissions most like current reporting requirements, but may omit GHG reduction opportunities or encourage direct-indirect trade-offs.</li> <li>• For many entities, most GHG emissions are from indirect emissions sources.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
8.	<b>Emissions Quantification &amp; Monitoring</b>	<ul style="list-style-type: none"> <li>• Calculation methods &amp; tools.</li> <li>• Direct measurement (e.g., continuous emissions monitors (CEMs), stack testing).</li> </ul>	<ul style="list-style-type: none"> <li>• Should strive to use current best practice methods, such as <i>GHG Protocol</i> calculation tools, and to have consistency with other reporting programs.</li> <li>• Some “other” or “home grown” approaches may be necessary (e.g., Flashing emissions; IPIECA<sup>3</sup> and API’s<sup>4</sup> SANGEA™ GHG Emissions Software).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
9.	<b>Verification</b>	<ul style="list-style-type: none"> <li>• State verification.</li> <li>• 3<sup>rd</sup> party verification.</li> <li>• Self-certification.</li> </ul>	<ul style="list-style-type: none"> <li>• If mandatory, the state may be able to use current verification procedures for criteria pollutants.</li> <li>• Montana DEQ does 3<sup>rd</sup> party verification?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

<sup>3</sup> IPIECA is the International Petroleum Industry Environmental Conservation Association.

<sup>4</sup> API is the American Petroleum Association.

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
10.	<b>Public Access &amp; Reports</b>	<ul style="list-style-type: none"> <li>• Internet access and/or online reports.</li> <li>• Paper reports.</li> <li>• Both.</li> </ul>	<ul style="list-style-type: none"> <li>• “Confidential Business Information” (CBI) concerns.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
11.	<b>Project Level Reporting or “Offsets”</b>	<ul style="list-style-type: none"> <li>• Yes/No.</li> <li>• Constrain.</li> </ul>	<ul style="list-style-type: none"> <li>• WRI: Raises quantification, baseline, “additionality,” secondary effects, reversibility, and double-counting issues.</li> <li>• Location of co-benefits achieved.</li> <li>• May be most useful when there is an externally-imposed constraint (e.g., a “Cap”).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
12.	<b>Funding</b>	<ul style="list-style-type: none"> <li>• State-funded.</li> <li>• Mandated requirement.</li> <li>• Emission-based fees (would require legislative approval).</li> <li>• Other? A combination?</li> </ul>	<ul style="list-style-type: none"> <li>• Reporting is a necessary cornerstone for a GHG registry, so it may be appropriate to have registry participants share support costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
13.	<b>Others?</b>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>



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## Cross-Cutting Issues Technical Working Group *Draft* GHG Registry Design Characteristics Matrix

### Notes:

- Builds upon GHG Reporting Design Characteristics Matrix.
- Some Reporting preferences could be outweighed by Registry preferences (e.g., if a regional registry has different specs).

### Potential Goals of GHG Registry:

1. Recording of GHG reductions (vs. emissions).
2. A central, independent repository for credible info about emissions activities.
3. A “transaction ledger” – providing data management & accounting critical for trading (with or without a cap).
4. “Baseline protection” – enabling early action current or future credit for trading.
5. An incentive to track & manage emissions, seek productivity and energy efficiency gains, accelerate learning curve regarding competitiveness & carbon markets.
6. Enhance public recognition and demonstrate corporate citizenship.
7. Possible vehicle for regional, multi-state, & cross-border cooperation.
8. Others?

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
<b>1.</b>	<b>Key Design Criteria (beyond <i>GHG Reporting Design Characteristics Matrix</i>)</b>			
1.1	Define geographical boundaries	<ul style="list-style-type: none"> <li>• State-only.</li> <li>• Regional (or broader).</li> </ul>	<ul style="list-style-type: none"> <li>• Span of control.</li> <li>• Cost, economies of scale, &amp; broader = better?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.2	Verification	<ul style="list-style-type: none"> <li>• State verification.</li> <li>• Third-party verification.</li> </ul>	<ul style="list-style-type: none"> <li>• See GHG Reporting Design Characteristics Matrix.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.3	Base Year	<ul style="list-style-type: none"> <li>• Single specified year.</li> <li>• Single entity-chosen year.</li> <li>• Average of multiple years.</li> <li>• Adjustment rules?</li> </ul>	<ul style="list-style-type: none"> <li>• Flexibility vs. Simplicity.</li> <li>• Must have good data for Base Year.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.4	Project-level submittals	<ul style="list-style-type: none"> <li>• Yes / No / Constrain</li> </ul>	<ul style="list-style-type: none"> <li>• Against what baseline?</li> <li>• Additionality issues (what would have happened anyway)?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.5	“Offsets”	<ul style="list-style-type: none"> <li>• Yes / Some / No</li> </ul>	<ul style="list-style-type: none"> <li>• Co-benefits location?</li> <li>• Nature / character?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.6	Start Date	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Establish a “to-be-in-operation” date?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.7	Ownership	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of double-counting.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.8	Transparency	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
1.9	Others?	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
<b>2. Technical Issues</b>				
2.1	Treatment of minority ownership	• Pending.	• <i>GHG Protocol</i> .	• Pending.
2.2	Merger & acquisition issues	• Pending.	• <i>GHG Protocol</i> .	• Pending.
2.3	Quality Assurance; Uncertainty Analysis	• Pending.	• <i>GHG Protocol</i> .	• Pending.
2.4	Regulatory guidance (Protocols, guidance documents, etc.)	• Pending.	• Pending.	• Pending.
2.5	Data flow; filing methods, etc.	• Pending.	• Confidential business information (CBI), legal authority, etc.	• Pending.
2.6	Others?	• Pending.	• Pending.	• Pending.
<b>3. Ancillary, Administrative, &amp; Operational Issues</b>				
3.1	Location (Agency)	• MT DEQ? • Other?	• Regional potential.	• Pending.
3.2	Software; Web Interface, etc.	• State-specific. • CCAR, RGGR, CCX, ERT, EATS? • Other?	• Multiple needs (emissions inventory, allowances, mandatory, voluntary, etc.). • Rapidly changing “state of the art.”	• Pending.
3.3	Cost	• Transaction fee. • Publicly supported? • Other?	• Development costs. • Ongoing operating costs.	• Pending.

#	Design Element	Characteristics	Design Considerations	Preliminary Recommendation
3.4	Oversight & Management	<ul style="list-style-type: none"> <li>• MT DEQ.</li> <li>• Publicly appointed board.</li> <li>• Other?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.5	Reporting of Results; Recognition	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.6	Others?	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>	<ul style="list-style-type: none"> <li>• None Cited.</li> </ul>



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## Cross-Cutting Issues Technical Working Group *Draft* Education Design Characteristics Matrix

### Goals of Public Education & Outreach:

1. Overarching goal: Promote awareness among citizens about the impacts of climate change, solutions, and co-benefits of action.
2. Education provides a foundation essential for all climate action.
3. Provide access to information, products and processes that assist in improving quality of life and quality of the environment to all Montanans.

### General Approach:

1. Target the key general audiences and efforts below:
  - a. “Walking the Talk” in terms of the State’s own efforts and outreach activities.
  - b. Policymakers (legislators, executive, agencies, regulators, etc.).
  - c. Future Generations.
  - d. Community Leaders and Organizations.
  - e. Business and Industry.
  - f. The General Public.
2. Ensure long-term sustenance of education and outreach efforts regarding climate change.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
<b>1.</b>	<b>State Government Actions</b> The State should lead by example (i.e., “walk the talk”) regarding education and outreach.		
1.1	Create a multi-agency body to oversee on-going state climate efforts, starting with the implementation of CCAC policies adopted by the Governor; report progress to the public annually.	<ul style="list-style-type: none"> <li>Assemble annual progress reports &amp; make them publicly available.</li> </ul>	<ul style="list-style-type: none"> <li>Staff the effort adequately; should have one or more “outreach coordinators” specifically tasked with outreach and coordination among agencies and organizations.</li> </ul>
1.2	Establish an Education & Outreach Subcommittee of the body established in §1.1 to educate audiences regarding CCAC policies, and to oversee those relating to education.	<ul style="list-style-type: none"> <li>Lead implementation of education &amp; outreach measures.</li> <li>First task: Identify already existing resources &amp; programs.</li> <li>Identify additional needs and potential funding sources.</li> <li>Conduct/review polling to identify public attitudes and points of access/resistance to change.</li> </ul>	<ul style="list-style-type: none"> <li>Identify diverse and efficient ways to disseminate the information collected, especially existing programs and resources.</li> </ul>
1.3	Include state public education and higher education officials in the bodies established in §1.1 & §1.2.	<ul style="list-style-type: none"> <li>Pending.</li> </ul>	<ul style="list-style-type: none"> <li>A “two-way street”: education officials bring research &amp; info to the body, act as outreach arm for reaching students and others.</li> </ul>
1.4	Educate state employees across-the-board, and assign “point persons” to do so on an on-going basis.	<ul style="list-style-type: none"> <li>Pending.</li> </ul>	<ul style="list-style-type: none"> <li>Pending.</li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
1.5	Disaggregate the State’s GHG emissions to the agency level and require annual agency-specific reports on GHG reduction progress.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Make agency-specific reports public as part of the report in §1.1.</li> </ul>
1.6	Issue regular press releases (weekly?) relating climate change news, developments, events, etc.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
<b>2.</b>	<b>Target Audience: Policymakers (legislators, regulators, executive branch, agencies)</b> Implementation of climate actions hinges on policymakers’ understanding and approval.		
2.1	Educate policy makers on climate change & CCAC policies in order to promote acceptance and implementation.	<ul style="list-style-type: none"> <li>• Conduct regular legislative briefings.</li> <li>• Identify &amp; offer agency-specific information on climate issues &amp; opportunities.</li> <li>• Involve town, city and county officials, school boards</li> </ul>	<ul style="list-style-type: none"> <li>• Use input derived from policy maker interactions to develop new mitigation measures going forward.</li> </ul>
2.2	Provide continuing outreach & assistance to Governor’s office, legislature, and implementing agencies on a regular basis.	<ul style="list-style-type: none"> <li>• Educate press liaisons from agencies, etc.</li> <li>• Provide regular press releases or updates on reductions, events, etc.</li> <li>• Require/request baseline and progress reports.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide research and background information necessary to craft effective policy and legislation.</li> </ul>
<b>3.</b>	<b>Target Audience: Future Generations</b> Integrate climate change into educational curricula, post-secondary degree programs, and professional licensing.		
3.1	Organize groups of educators to identify, assemble, and employ climate change curricula appropriate to age groups.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Check out British Petroleum’s <a href="http://www.aplusforenergy.org">www.aplusforenergy.org</a></li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
3.2	Public Education Department: include climate change in science and social studies performance standards; identify (a) gaps in climate change education, and (b) curriculum to fill any gaps.	<ul style="list-style-type: none"> <li>• In addition to specific curricula, incorporate Cl. Ch. concepts as examples in reading, art, culture, geography, drivers education, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.3	Integrate “best practices” into public school design & construction to educate student (and parent’s) first-hand in their communities & colleges (i.e., walk the talk). For example: - Institute climate-neutral bonding: upgrade existing buildings to offset new construction. - Reduce GHG emissions in school transportation.	<ul style="list-style-type: none"> <li>• Investigate whether Montana could provide bonding for school districts to fund energy efficient construction.</li> <li>• Include in-building signage &amp; displays to explicitly point out efficiency aspects built in to public buildings.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.4	Promote research into climate change and solutions at state universities. COTs offer curricula/AA degrees in climate friendly technologies.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
3.5	Integrate climate change into existing and/or new educational competition programs (e.g., Envirothon, science fairs, CC questions in academic competitions, a debating team topic, etc.).	<ul style="list-style-type: none"> <li>• Climate change topics as specific categories.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
3.6	Work with science centers, zoos, and museums, and other non-profits to include a climate science focus appropriate to their core mission.	<ul style="list-style-type: none"> <li>A key area for an Outreach Coordinator to focus on.</li> </ul>	<ul style="list-style-type: none"> <li>Examples exist in other regions (e.g., Clean Air-Cool Planet science center initiative).</li> <li>Could provide speaking opportunities for teachers; have college professors host forums for high school students on weekend, etc.</li> </ul>
3.7	Introduce core competencies on climate change into professional licensing programs (e.g., energy efficiency in building design and construction, use of recycled materials, etc.).	<ul style="list-style-type: none"> <li>Look at all licenses for professions and facilities, for potential for education and outreach, plus examine their operations for savings potential, perhaps as part of licensing requirements where appropriate (e.g., hospitals, professional firms).</li> </ul>	<ul style="list-style-type: none"> <li>Pending.</li> </ul>
<b>4.</b>	<b>Target Audience: Community Leaders &amp; Community-Based Organizations</b> (Institutions, municipalities, service clubs, social & affinity groups, NGOs, etc.) Recognize leadership; share success stories & role models; expand involvement and participation; within civic society.		
4.1	Identify individual community leaders who are acting effectively on climate change; showcase and share their successes.	<ul style="list-style-type: none"> <li>Enlist/encourage them to be a de facto “speakers’ Bureau.”</li> <li>Host discussion forums featuring them.</li> <li>Bring in speakers from other communities to public venues to share successes.</li> </ul>	<ul style="list-style-type: none"> <li>Include all walks of work &amp; life (retail, services, manufacturing, healthcare, auto, facilities, etc.).</li> <li>Put examples, guidance, links, contacts, etc. up on the web clearinghouse.</li> </ul>
4.2	Identify “late bloomer” individuals and target a special effort to include, educate, and prod them to act.	<ul style="list-style-type: none"> <li>Pending.</li> </ul>	<ul style="list-style-type: none"> <li>Pending.</li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
4.3	Engage associations and participate in their meetings periodically to educate them about climate change and sector-specific mitigation actions.	<ul style="list-style-type: none"> <li>• Set up competitions and challenges between organizations and/or communities to achieve broader participation and effective solutions to GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.4	Develop statewide recognition program(s) for community leaders and entities.	<ul style="list-style-type: none"> <li>• Small incentive grants/awards for individual/small non-profit successes.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.5	Organize & host outreach events that focus on leading by example, sharing how-to, co-benefits, illuminating financial risks and opportunities, etc.	<ul style="list-style-type: none"> <li>• Assist organizations and localities in self assessment, opportunities, risks.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.6	Identify, assist, and leverage community-based organizations with expertise or interest in climate-related issues.	<ul style="list-style-type: none"> <li>• Faith community.</li> <li>• Service clubs; sportsmen; recreational/hobbyist groups.</li> <li>• Metropolitan planning organizations.</li> <li>• Environmental, social, &amp; civic advocacy organizations.</li> <li>• Any non-profit.</li> <li>• If they're not already interested, give them reasons to be, based on their raison d'etre.</li> </ul>	<ul style="list-style-type: none"> <li>• Include the health and human services sector.</li> <li>• Libraries play a key role in information dissemination. All publicly funded libraries should provide a prominent section with resources on ameliorating climate change.</li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
4.7	Work with community-based organizations to identify & build upon climate issues related to their core mission.	<ul style="list-style-type: none"> <li>• Public health vs. new disease vectors?</li> <li>• Low-income vs. additional stressors?</li> <li>• Help them move from mission statement to seeing how climate change might be relevant.</li> <li>• For those that organize their members to affect policy, facilitate their development of lobbying campaigns.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.8	Support and facilitate outreach and education within community-based organization regarding climate change issues and actions.	<ul style="list-style-type: none"> <li>• Provide content for websites, newsletters, listservs?</li> <li>• Coach &amp; assist Community Outreach coordinators?</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.9	Develop & coordinate a network of community-based organizations acting on climate change so they can link up, organize joint events, etc.	<ul style="list-style-type: none"> <li>• Community Outreach coordinators, assisted by state climate outreach function(s) noted above.</li> <li>• Assistance in organizing.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.10	Develop & coordinate a network of community-based organizations acting on climate change so they can link up, organize joint events, etc.	<ul style="list-style-type: none"> <li>• Community Outreach coordinators?</li> <li>• Assistance in organizing.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.11	Encourage cities to join ICLEI's <sup>5</sup> Cities for Climate Protection program.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
4.12	Encourage cities to join the U.S. Mayors Climate Protection Agreement <sup>6</sup> .	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

<sup>5</sup> See [www.iclei.org](http://www.iclei.org).

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
<b>5.</b>	<b>Target Audience: Business and Industry</b> Promote best practices, recognize leadership; share success stories & role models; expand involvement and participation.		
5.1	Extend training programs for RCI building and facility operators.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.2	Promote energy-tech economic development.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.3	Promote R&D & demo projects for economic development.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.4	Promote combined heat and power (CHP) in order expand its use and technological penetration.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.5	Inform sources of the advantages of registering GHG emission reductions.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
5.6	Develop and provide concrete information on co-benefits to entities in order to boost their climate efforts.	<ul style="list-style-type: none"> <li>• Publicize and provide incentives, funding avenues and recognition for those businesses and industries reducing climate impacts.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
<b>6.</b>	<b>Target Audience: General Public</b> Increase awareness and engage in climate actions in personal and professional lives.		
6.1	Educate broadcasters, reporters, editorial boards, etc. about climate change, the risks it imposes, and solutions.	<ul style="list-style-type: none"> <li>• Provide access to information and success stories.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>

<sup>6</sup> See <http://www.ci.seattle.wa.us/mayor/climate/>.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
6.2	Work with state broadcasters and print media associations to develop & run climate change public service announcements.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.3	Conduct public polling to benchmark strength and depth of climate understanding; track over time to measure progress and better tailor outreach efforts.	<ul style="list-style-type: none"> <li>• (There’s an insert above that repeats this, but it may be worth repeating.)</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.4	Keep a high profile on climate change issues and actions through regular public mention by Governor and other public leaders.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.5	Develop and use a state-based “brand” on climate awareness and action.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.6	Develop & maintain a state climate change website for the public; establish & maintain a web-based clearinghouse for climate change information and education resources.	<ul style="list-style-type: none"> <li>• Link to scientific developments, What you can do, How you can help, What the state is doing, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.7	Build recognition of the sources (causes) of GHG emissions.	<ul style="list-style-type: none"> <li>• Create a hierarchy checklist, from easiest/cheapest to progressively more difficult, of things individual can do, with benefits for each.</li> </ul>	<ul style="list-style-type: none"> <li>• Include agriculture, food production, etc. to make it as personal as possible.</li> </ul>

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
6.8	Work with existing company outreach efforts to customers (e.g., utilities) to enhance awareness of climate change issues & actions.	<ul style="list-style-type: none"> <li>• Retail advertising and/or “bill stuffers”.</li> <li>• Environmental disclosure of electricity fuel mix/emissions; recycled content, etc.</li> <li>• Product messages (e.g., yogurt labels).</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.9	Promote local farm produce (including biofuels and biopower).	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.10	Promote clean fuel technologies, especially local ones.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.11	Promote green power in order to expand subscription.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.12	Require environmental disclosure on utility bills.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>
6.13	Add GHG to air quality awareness efforts.	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>	<ul style="list-style-type: none"> <li>• Pending.</li> </ul>