

Feedback and Responses for the Revised Acid Deposition Management Framework

Alberta Environment and Parks has revised the 2008 Alberta Acid Deposition Management Framework (ADMF). The draft revised ADMF was posted for stakeholder and public comments. The Acid Deposition Assessment Group (ADAG, multi-stakeholder group) reached consensus on the Framework content. The following table provides the feedback received during the public review of the draft ADMF over July 15, 2020 – November 3, 2021 and AEP responses.

Names of specific companies in the comments were changed to Industrial Association, Company, or Airshed to maintain anonymity

	Comment	AEP Response
1	We appreciate the efforts undertaken by AEP in developing the updated Alberta’s critical load maps and for ensuring that industry had an opportunity to review them prior to providing feedback on the draft framework.	Acknowledged.
2	Industry association and its members support an update of Alberta’s ADMF and its critical load maps. Acid deposition should be managed based on the best science and an accurate understanding of industry operations. Appropriate acid deposition management and the avoidance of acidification is a priority for the upstream oil and gas industry.	The revised ADMF is an effective policy tool that is designed to evaluate the effects of exposure of acid deposition stress on ecosystems that is in line with all other leading jurisdictions and is based on modern scientific knowledge.
3	<p>A number of comments (Industrial associations and one Airshed organization) were received stating that:</p> <p>The draft ADMF- associated technical document and critical load maps/data need to be reviewed to determine their effect on industry’s current and future emissions.</p> <ul style="list-style-type: none"> • Critical Loads (CL) document • The numerical thresholds that define the regions in the critical load management graph (from the “AEP, 2020” document referenced in the Framework) • The final Alberta Critical Load (CL) maps • The data used to populate the final CL maps 	<p>AEP provided advance copies of the critical load (CL) maps to an industry association who requested it to pre-determine the potential for regional acidification in relation to operational activities.</p> <p>The generation of critical load maps was discussed and agreed upon through collaborative work with the multi-stakeholder Acid Deposition Advisory Group (ADAG).</p> <p>The CL maps were generated using the best available science and Alberta-specific data using internationally recognized methodology.</p> <p>The CL document is currently undergoing final preparations for public release and will be published online alongside the revised ADMF.</p>
4	Industry Association: Industry is interested in completing a substantive regulatory impact assessment of the draft ADMF and providing their feedback.	AEP provided advance copies of the critical load maps to an industry association who requested it to pre-determine the potential for regional acidification in relation to operational activities.

5	<p>Industry Association: The ADMF be amended to specify that the Acid Deposition Assessment will be based on the province's most accurate emissions inventories and will consider the full range of acid and alkali (base) deposition sources and quantities.</p>	<p>This approach is AEP standard practice, which is already being done.</p> <p>AEP will apply the best measured or modelled base cation datasets and information as appropriate.</p> <p>The provincial assessment results and data and information will be presented in the acid deposition assessment report that will be available on the Air website (https://www.alberta.ca/acid-deposition.aspx) once completed.</p>
6	<p>Industry Association: AEP ensure that the provincial Acid Deposition Assessment accounts for base cation deposition based on the most current science and release inventories.</p> <p>AEP should not prescribe limits on base cation deposition for either regional or facility modeling. Instead, AEP should specify, in appropriate guidance (such as the Air Quality Modelling Guide (AQMG)), that modellers should rely on the best science and expertise to predict both acid and base deposition.</p>	<p>AEP included the following information in relation to base cation deposition in the AQMG (section 8.1.1; p.40): "Note: Deposition of neutralizing species, i.e., base cation deposition, may be applicable in areas where there is significant crustal disturbance. It is expected this component will settle to the ground near to the source but it is up to the professional judgement of the proponent to determine the appropriate deposition rate based on the best available monitoring data or from the literature. The Director may exercise their discretion in how the proponent incorporates these neutralizing species from the crustal disturbance."</p>
7	<p>Industry Association: AEP provide guidance (in the ADMF or Air Quality Modelling Guide) on how to perform an Environmental Impact Assessment for acid deposition when the assessment extends past the AB boundary.</p>	<p>Proponent can obtain Saskatchewan CL information and values from recent cross-boundary research, which used a similar methodology to produce the CL values for both Alberta and Saskatchewan.</p>
8	<p>Industry Association: An internal review of the critical load maps to ensure their accuracy; completion of the provincial Acid Deposition Assessment prior to finalization of the policy; and further review and amendment of the ADMF to include nuanced policies to address areas where it may not be feasible to "get below the critical load".</p>	<p>Internationally recognized subject matter experts, including four experts in Canada and USA, reviewed the CL document and maps. Additional review was also conducted by an expert from Trent University. AEP has made a substantial effort to ensure the accuracy and reliability of the development of CL maps/data through a peer-review process as agreed to by ADAG.</p> <p>Industry had an opportunity to review and determine the potential for regional acidification in relation to operational activities.</p> <p>A provincial acid deposition assessment is a screening exercise that provides an indication of areas of potential acidification issues as defined by the ADMF. The assessment can only be undertaken after the ADMF is finalized.</p> <p>ADAG achieved consensus on the draft revised ADMF content. Diverse perspectives were garnered from open discussions on managing and reducing acidification issues proactively.</p> <p>The draft revised ADMF clearly states that this is a collaborative process between AEP and stakeholders to work out a reasonable plan of action over a period of time.</p>

9	<p>Industry Association: the following two technical comments were provided.</p> <ol style="list-style-type: none"> 1) Defining base cation levels for industrial applications (oil sands area), and 2) Exceeding a baseline condition in a vulnerable ecosystem due to conservative ecosystem thresholds 	<p>Response to comment 1):</p> <ul style="list-style-type: none"> • One bullet was included in the revised ADMF: "Assessment report will include...a discussion on how base cation deposition is accommodated in the assessment in regions with significant crustal disturbances and also how monitored base cation data are used in the assessment", which was suggested wording by the industry association • See also the response in item 6 above. <p>Response to comment 2):</p> <ul style="list-style-type: none"> • A sentence was added to the revised ADMF stating that "where exceedance cells contain organic soils or other potentially sensitive receptors, regional acidification monitoring should be undertaken to ensure the necessity and impact of any mitigating management."
10	<p>Industry Association: They requested to obtain Excel scripts to be used when performing acid deposition modelling for Environmental Impact Assessments (EIAs) and renewal applications using the CALPUFF model.</p>	<p>Modelling related regulatory requirements are described in the Air Quality Model Guideline. The 2021 version of the guideline comes into force on November 15, 2021. All air quality modelling for regulatory applications started on or after this date must follow this guideline (https://open.alberta.ca/publications/air-quality-model-guideline-2021).</p>
11	<p>A number of comments were received (Industry Association and one Airshed organization):</p> <p>Recommend pausing the draft revised ADMF finalization until all supporting documents are completed and can be shared publicly as part of a transparent and thorough consultation process. A review of the CL document is required to have an adequate understanding of the ADMF and to subsequently conduct a thorough review and provide valuable feedback.</p>	<p>AEP provided advance copies of the critical load maps and all supporting documents to interested stakeholders to review or pre-determine the potential for regional acidification in relation to operational activities. Industry had an opportunity to review the CL document and maps prior to providing feedback on the draft framework.</p>
12	<p>One individual provided feedback on the revised ADMF action levels and management approach:</p> <p>The Draft Framework's management process is a reversal of AEP's historical acid deposition management approach that identifies management units receiving elevated acidic deposition before deposition reached an assigned critical load. This reactionary approach is counter to the stated objective of Keeping Clean Areas Clean (KCAC) and it is not consistent with the provincial objective of KCAC.</p>	<p>Management actions and approaches are essentially unchanged between the current ADMF (2008 version) and the draft revised ADMF.</p> <p>The revised ADMF still applies a tiered management approach to ensure consistency of management intent and process with Alberta's air quality management system for achieving desired environmental outcomes. It also includes a green level assessment score corresponding to KCAC or below the critical load.</p> <p>Given the substantial scientific modernizations, the revised ADMF will improve Alberta's ability and credibility in the development of proactive management actions as well as supporting Alberta's KCAC principle.</p>
13	<p>One individual commented about the selection of air deposition estimation tool, CMAQ that:</p>	<p>CMAQ is an established USEPA regulatory ambient air quality model that supports air quality management and informs policy to protect public health. The CMAQ modelling system is being</p>

<p>It is necessary to release the model guidance for review and understanding before the adequacy of the draft Framework can be assessed.</p> <p>The draft Framework is premature and incomplete due to the absence of CMAQ modelling guidance, no description of model parameters, including boundary conditions, meteorological modelling, time-to-effect, or model uncertainties and sensitivities. This makes it impossible to understand the implications or consequences of model outcomes, and how they may be interpreted according to the Management Levels described in the draft Framework.</p> <p>It is therefore impossible to know whether the draft Framework is an effective regulatory instrument.</p>	<p>developed and maintained under the leadership of the USEPA.</p> <p>CMAQ is publicly available and continually refined/updated to incorporate scientific knowledge, widely used, and peer-reviewed. Using CMAQ is a reliable and cost-effective way to calculate the potential benefits of air pollution reduction strategies and assess the impact of human influences on the future state of our environment.</p> <p>The deposition pathways modelled in CMAQ are well described in Pleim and Ran, 2011 (Surface Flux Modeling for Air Quality Applications, Atmosphere, 2, 271-302. doi:10.3390/atmos2030271). Also, numerous studies have been completed on CMAQ-Acid deposition and published in peer-reviewed journals.</p> <p>CMAQ operational guidance and user's guide documents are released in the public domain that contain the installation, configuration and practical examples of how to set up and run CMAQ. To reduce red tape, AEP does not provide any duplicative information that is already provided by other jurisdictions or available in the public domain.</p> <p>The revised ADMF can be reviewed without the CMAQ modelling information. The CMAQ model will be used to support acidity exceedances calculations as a part of the Framework implementation process and the findings and key results will be included in the provincial assessment report and posted on the Air website (https://www.alberta.ca/acid-deposition.aspx).</p>
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