

NATURAL RESOURCES CANADA DETAILED ACTION PLAN
to the recommendations of the audit of Hydrogen's Potential to Reduce Greenhouse Gas Emissions
2022 Reports of the Commissioner of the Environment and Sustainable Development

Report Ref. No.	OAG Recommendation	Departmental Response	Description of Final Expected Outcome /Result	Expected Final Completion Date	Key Interim Milestones (Description/Dates)	Responsible Organization/ Point of Contact (Name, Position, Tel #)	Indicator of Achievement (For Committee Use Only)
3.34	<p>Natural Resources Canada should perform a comprehensive bottom-up modelling for the use of hydrogen. This modelling should account for the following:</p> <ul style="list-style-type: none"> • emission reduction efficiencies by sector (cost of emission reductions per megatonne of carbon dioxide equivalent) • substitutional fuels (for example, biofuel, electrification, credit systems) • feasible deployment of technologies and supporting infrastructure 	<p>Agreed. Natural Resources Canada agrees that it is important to model the potential role for hydrogen use across all sectors of the economy, including resulting emission reductions potential and cost. The modelling undertaken for the Hydrogen Strategy for Canada focused on the nearest term, most likely and economically viable end-uses—such as heavy-duty transportation, natural gas blending, cement and steel manufacturing, and low-carbon fuel production. This sector-by-sector analysis of hydrogen end-uses included aspects of technology readiness levels, economic competitiveness, adoption potential, and other factors, including supporting infrastructure. This analysis will be updated as new deployment activities occur and new technologies enter the market.</p> <p>Results of the energy use modelling can then be used by Environment and Climate Change Canada to inform their modelling of potential emissions reductions, while also contributing to Environment and Climate Change Canada's efforts to address the recommendation identified in paragraph 3.65.</p> <p>We acknowledge that the modelling undertaken did not include a specific cost per tonne, given the focus was on hydrogen's full potential for use across the economy, as opposed to focusing on the cost and impacts of a specific measure or combination of specific measures.</p> <p>Because costs per tonne are dependent on a number of variables, including production technologies (and feedstocks), distribution, type of investment, and specific end-use, the Government analyzes cost per tonne on a measure-by-measure basis when considering possible new regulatory, fiscal, or program measures, as opposed to economy-wide modelling.</p>	<p>Modelling of the full economic and environmental potential of hydrogen use in multiple sectors of the Canadian economy is updated to include the most comprehensive data available.</p> <p>This updated modelling will be made public as part of the first biennial Hydrogen Strategy Implementation Progress Report (identified in response to recommendation 3.35)</p> <p>Modelling will be updated by Dec. 31, 2022, and again by Dec. 31, 2024 and will continue to be updated every two years, shared across the Government of Canada and the results will continue to be made public</p>	February 28, 2023	<p>December 2022 - stakeholder engagement workshop to review modelling results (including key objectives, assumptions and data points) with subject area experts from across the key sectors and jurisdictions.</p> <p>January 2023 - Draft modelling to be shared and vetted with ECCC, the Canadian Energy Regulator, other federal departments, as well as the Hydrogen Implementation Strategic Steering Committee.</p>	Natural Resources Canada Paula Vieira, Executive Director, 613-513-3789 Paula.vieira@nrca-n-rncan.gc.ca	

3.35	<p>Based on the updated modelling, Natural Resources Canada, in partnership with interested stakeholders, should publish a hydrogen market development roadmap to track progress and outcomes of the deployment of the hydrogen in Canada.</p>	<p>Agreed. Natural Resources Canada agrees that it is important to explore specific market opportunities in greater detail and develop and release regional roadmaps, then track progress. This echoes a recommendation in the Hydrogen Strategy for Canada to develop regional blueprints that can go a level deeper in identifying regionally specific opportunities and potential challenges, as well as clear actions that must be taken to seize those opportunities. The Hydrogen Strategy for Canada also identified the need to establish a comprehensive reporting framework to track progress as being an essential early action for implementation.</p> <p>Natural Resources Canada is already advancing work on blueprints in partnership with provinces and territories and key stakeholders. Natural Resources Canada has provided technical and financial support to the development of several regional strategies that have been released or are currently under development, including those in British Columbia, Alberta, Ontario, Quebec, and the Atlantic region.</p> <p>Given the evolving nature of the hydrogen market, additional analysis will continue through the 16 thematic working groups that have been established to support the implementation of the Hydrogen Strategy for Canada. This analysis is focused on all aspects of the hydrogen value chain—from production to distribution and multiple end-use.</p> <p>Natural Resources Canada is also working on the development of the reporting framework for the biennial progress report, which will track progress on the recommendations outlined in the Hydrogen Strategy for Canada, as well as data and market analysis related to the expected growth in Canada and globally. The biennial report will be a single compendium of information and results on all hydrogen-related activities undertaken across the country, including activities directly receiving federal or provincial/territorial support, as well as those undertaken strictly through the private sector. It will include key metrics and data related to hydrogen production, end-uses, investments, jobs, and exports.</p>	<ul style="list-style-type: none"> Regional blueprints have been released for key jurisdictions. The first biennial Hydrogen Strategy Implementation Progress Report is released. The report will include key metrics pertaining to the state of hydrogen production, distribution and end-use across multiple sectors of the Canadian economy, as well as for export. It will also track progress on the 32 recommendations outlined in the <i>Hydrogen Strategy for Canada</i> and present the state of play of hydrogen production, distribution and deployment in other key jurisdictions around the world, to serve as a comparison to status in Canada. 	<ul style="list-style-type: none"> April 1, 2023 April 1, 2023 	<p>January 2023 – Three thematic engagement sessions - focusing on 1) production, 2) end use in transportation and industry, and 3) infrastructure/export will be held bringing together key representative from the private sector, Provinces and Territories, Indigenous businesses, Non-government organizations, and academia, to review progress to date, and prioritize actions for the next two years. A dedicated session with provincial and territorial representatives will also be held.</p> <p>February 2023 - Draft 2022 Hydrogen Strategy Implementation Progress Report shared with other federal government departments, and the Strategic Steering Committee</p> <p>December 2022 - Regional blueprints released for some jurisdictions (BC, AB, ON, QC, Atlantic). Opportunities related to hydrogen will also be discussed with all jurisdictions, through the department's Regional Energy and Resources Tables.</p>	<p>Natural Resources Canada Paula Vieira, Executive Director, 613-513-3789 Paula.vieira@nrca.n-rncan.gc.ca</p>	
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