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# Request for Proposal (RFP)

## Workforce Planning for the Canadian Nuclear Sector

- The Canadian Nuclear Association is seeking a contractor to complete a workforce projection model for the Canadian nuclear industry.
- Please review the following RFP document for information on scope and submission criteria.
- The timeline for the competition is as follows:
    - Any questions of clarification regarding the RFP are to be submitted to Megan Janecka (janeckam@cna.ca) no later than end of day on June 14.
    - Answers to all questions will be provided by June 21.
    - **Proposals will be accepted until end of day of July 12.** Please send all proposals to Megan Janecka (janeckam@cna.ca).

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## Introduction

The Canadian nuclear energy sector currently has an unprecedented opportunity for growth. The increasing demands for clean, reliable energy, along with commitments to reduce greenhouse gas emissions (GHGs) are driving this growth, and are amplified by recent geopolitical pressures in the world.

The Canadian Nuclear Association (CNA) has been exploring the potential workforce needs of the sector specific to small modular reactors (SMRs) over the past two years, and now is turning its attention to all new nuclear growth of the sector out to 2050. With the potential significant expansion of nuclear energy, a major constraint is the necessary workforce and talent pool required to deliver on this potential. The CNA's recent engagement on workforce issues has found that the lack of workforce data, specifically an analysis of the forecasted demands, could pose a barrier in the advancement of nuclear in Canada. The CNA has heard that there is a necessity for a national workforce needs assessment; this need is reflected across stakeholders and partners spanning industry, universities, colleges, youth, unions, trades, government, Indigenous advocacy and engagement groups, global bodies, and the utilities involved in nuclear energy.

The CNA is seeking a consultant who will provide analysis, assessment, and recommendations in support of the development of a growing and sustainable workforce for the Canadian nuclear sector. The overall goals of the work are to: understand the potential growth scenarios for the labour force; where the talent pool will be needed on a regional basis; and, the variety of talent that will be needed; for example, scientists, engineers, skilled trades, cybersecurity specialists, and regulators. The results of the work will inform the private sector on where they may need to focus their efforts, but equally of importance, help formulate recommendations for governments with regard to policies and strategy.

The overall objective of this project will involve a number of phases:

Phase 1. Development of a number of nuclear energy growth demands to 2050 (CNA is completing).

Phase 2. Development of a workforce project model that can produce in-depth needs assessments and projections of the nuclear workforce required to enable the growth projections of the sector out to 2050.

Phase 3. Development of a national workforce plan that includes key areas of development for the private sector to act upon, and key policy and program recommendations for governments that will enable the necessary growth and development of a nuclear workforce that can reliably support the growth of the nuclear sector out to 2050.

**CNA is currently undertaking Phase 1 with another consultant. Phases 2 and 3 are the focus of this RFP.**

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The workforce assessment should account for a national scope of the full nuclear energy ecosystem including the six major steps of the nuclear energy lifecycle (mining, milling, refining, conversion, enrichment, fuel fabrication, energy generation), waste management and storage, and large and small-scale reactor buildouts.

CNA is currently undertaking an assessment of the current workforce across the nuclear sector, and this information will be provided to help form the basis of the workforce projections. The workforce needs assessment will also need to be based on a number of nuclear energy demand forecasts (scenarios) out to 2050, which will be conducted by a separate consultancy and is described by Phase 1 above. Accordingly, the findings of the assessment

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should also result in a number of forecasts to match the nuclear energy demand forecasts. The scenarios will depict at minimum low, medium, and high growth projection scenarios. It is important that the project accounts for data and growth opportunities for underrepresented groups to illustrate employment potential in the sector, particularly among Indigenous peoples and women.

## Scope

This project will identify the potential growth that may be required between now and 2050 to ensure that a capable workforce is developed to support new nuclear (SMRs and large-scale) deployments across Canada. This will necessarily include accounting for the changing needs of the current workforce, which will be impacted by attrition. The potential growth will be presented in a number of scenarios that are aligned with different nuclear energy demand scenarios. The results for these forecasts will:

- Define potential for long-term workforce requirements, which will help the sector better understand where efforts will be required, and therefore start the necessary workforce planning now; and,
- Form the basis for key messages for government and the public clearly stating the scope of the challenge of achieving the net zero emission in Canada; and,
- Support the development of policy recommendations to governments which will highlight their role in enabling the development of a reliable nuclear workforce to support the growth of the nuclear sector out to 2050.

Finally, this project, through engagement and consultation on the approach, findings, and draft recommendations, will strengthen the sector's collaborative efforts to unite around this critical challenge.

As noted above, CNA is currently undertaking Phase 1 with another consultant and so Phases 2 and 3 are the focus of this RFP.

**Phase 2.** **Development of a workforce projection model that can produce in-depth needs assessments and projections of the nuclear workforce required to enable the growth projections of the sector out to 2050.**

Phase 2 will result in a model that can provide workforce projections over time, that can be updated and improved periodically as more information and data become available in the future. The forecasted needs assessment report that is initially developed will change over time, and so the dynamic model is a necessary planning tool that can be revisited and updated as new information becomes available regarding the new nuclear growth, new inputs, and new assumptions.

The initial step of the work should include a landscape assessment to identify similar projects, projections, or partnership opportunities that can incorporate existing information into the meta-analysis of the projection, which have not yet been identified. The CNA has ongoing discussions with the University Network of Nuclear Engineering (UNENE) and the Crown Investments Corporation (CIC) to this end and will provide these connections and information to the consultant. CNA will also engage with key nuclear organizations to

seek out information that may be useful in the needs assessment, that the consultant may not have access to.

The workforce projections should occur on a national scale and account for the life story of the Canadian nuclear industry including the six major steps of nuclear energy (mining, milling, refining, conversion, enrichment, fuel fabrication, energy generation), waste management and storage, and large- and small-scale buildout.

There are a few studies currently available that provide estimates of energy growth needs projections of the nuclear sector.[1] The workforce needs assessment will need to be based on a number of nuclear energy growth scenarios that will be required to achieve a number of targets. In other words, these scenarios will be energy demand forecasts, including a commitment of the federal government to achieve carbon neutrality in Canada by 2050. At least two other growth scenarios will be provided, for a total of at least 3 scenarios. These projections will be developed by the CNA, under the guidance of sector experts, and will be provided to the consultant.

Based on these energy demand scenarios, the consultant will develop a forecasting model that will assess a number of scenarios that will project the workforce requirements to achieve these build-out scenarios. The forecasts will be presented as a timeline for the future build-outs in the near-term to medium term, out to 2050. Such a timeline will be useful for the industry to establish the resources that may be needed for different aspects of the industry's growth.

These workforce scenarios will include: skilled labor for the construction of new reactors, engineering and technical expertise for the design and operation, as well as support staff for ongoing administration and regulatory compliance. Benchmarks such as previous IAEA studies can be leveraged to determine staffing requirements. The nuclear industry has a vision for central fleet services with the goal of minimizing the number of staff at a given station to be more efficient within a resource-sharing model, therefore this projection should assume a fleet approach. Where it is relevant to do so, common elements and jobs that are likely to feature transferability between provinces should be summarized in approximate aggregate estimates.

Ontario, New Brunswick, Alberta, and Saskatchewan should be represented to a higher degree of detail, if possible. Quebec and opportunities in remaining provinces and territories can be addressed where evidence is available. Every province will have a unique nuclear workforce, education/training programs, post-secondary academic institutions, and plans for buildouts deployments, including supply chain (which necessitate supply chain growth, nuclear fuel supply, and waste management needs at the provincial/territorial level), all of which should inform the workforce need. Each regional analysis should also include a specific Indigenous workforce development analysis.

The projected needs assessment should feature as much detail as possible, ideally including but not limited to the fields, job titles (ex. project manager) or trade specializations (ex. boilermaker), skills and competen-

[1] For example, the Independent Electricity System Operator (IESO) found in its 'Pathways to Decarbonization' study that Ontario will need to more than double its electricity generation capacity to 88 GWe in 2050 from 42 GWe today. Under this scenario nuclear's current capacity of 13.6 GWe would require an additional 17.8 GWe of nuclear power to meet that demand increase, totaling 31.8GWe.

cies, and educational requirements that make up the projected work force. This information can be categorized in several ways, such as by nuclear life stage, by province, or type of labour (or whatever improves accessibility of the data and work).

The development of the scenarios and forecasts should be informed by a number of engagement meetings and workshops with nuclear sector representatives that the CNA will convene with the consultant. These meetings and workshops will inform the approach including the scenarios to be assessed, the data sources to be used, the initial and final findings of the forecasts, along with the key messages and policy recommendations for governments.

**Phase 3.** **Development of a national workforce plan, that includes key areas of development for the private sector to act upon, and key policy and program recommendations for governments.**

The consultant, with the assistance of nuclear sector experts, will provide a draft national workforce plan which should be derived from the projected needs established in the forecast results. The plan will highlight the key areas of the labour/workforce that the sector should focus on. The plan should focus on the necessary recommendations for the buildout of the workforce that will ultimately feed into a national nuclear energy roadmap, and across all stakeholders and partners, including industry, government, education, trades, and unions. This national workforce plan will guide collective forward movement towards growing the workforce in tandem with development of the nuclear fleet.

The plan should also include recommendations for federal and provincial governments, focused on policies and programs that are needed.

Where necessary the plan should also include calls to action for the federal and provincial governments, the nuclear industry, universities, colleges, research institutions, laboratories, trade unions, and civil society.

## Project Deliverables and Timeline

The successful contractor will provide a detailed workplan, with key deliverables and timeline. Note the major milestones, and key points in the workplan where you plan to consult with industry including all expected meetings and workshops.

Key deliverables will include:

- Summary of existing relevant information and how it will be used in Phases 2 and 3;
- a workforce projection model;
- definition of the assumptions made in defining the model
- a number of in-depth needs assessments and projections of the nuclear workforce required to enable the growth projections of the sector out to 2050;
- Using the model, the development of a number of scenario forecasts for the nuclear workforce;
- Development of a national workforce plan for the nuclear sector;
- Recommendations for federal and provincial governments, focused on policies and programs that are needed.

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## Budget and Resources

The successful contractor will provide a detailed budget, broken down by project phase, key tasks, and deliverables. Include a breakdown of the consultants who will work on the project, including their rates and time spent on the various tasks and deliverables, so it is clear who on the team is responsible for each of the tasks.

## Contractor Profile

The CNA is looking for a consulting team who comprises the following qualifications:

- A good understanding of the Canadian nuclear energy sector;
- Has experience contributing to workforce initiatives, market analyses, or labour trends in the Canadian nuclear industry;
- Has 5-10 years of experience in technical skills (such as statistics and modelling) required to develop an evidence-informed projection model (for the modeler);
- Demonstrates the expertise to adjust the idealized scope indicated above for feasibility given the assumptions that buildouts require;
- Has experience in developing strategies and/or work plans related to government policies or programs; and,
- Be legally eligible to work in Canada

Most work will be completed remotely, but the consultant should be available to travel in order to participate in at least 3 meetings on the work and results as it progresses, including workshops as proposed.

## Proposal requirements

In the proposal, provide a project strategy and implementation plan including as a minimum:

- Review of existing information related to the work;
- Preliminary conceptualizations of the model to forecast the workforce scenarios;
- Any adjustments to the projected timeline that can be predicted (assumptions and risks to the timeline);
- Contingency/risk prevention considerations for the team members and work plan;
- Explicit workplan and timeline that identifies key deliverables;
- A detailed, itemized budget;
- Identification of any additional input that will be required to support the model
- Invoicing expectations;
- All project team members and their CVs, with clear indication of who will be assigned to strategy components/deliverables; and,
- At least 3 project examples that demonstrate the consultants experience completing similar work.

Proposals will be accepted up until July 12. Proposals should be submitted to the CNA, directly to Megan Janecka at janeckam@cna.ca.

Any questions should also be directed to Megan Janecka at janeckam@cna.ca. Questions regarding the RFP will be accepted until June 14, and responses will be provided to all bidders by June 21.

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