

Working Title Lead Engineer-Petrochemicals		Name	
Position Number	Reports to Position No., Class & Level SM2	Division, Branch/Unit Policy Division, Air and Climate Policy Branch/TIER Policy and Economics Unit	Ministry Environment and Parks
Present Class Engineer and Related 2		Requested Class NA	
Dept ID	Program Code	Project Code (if applicable)	

PURPOSE:

Reporting to the Director, TIER Policy and Economics of the Air and Climate Change Policy Branch, this professional position provides the department with policy advice and technical expertise in the field of greenhouse gas emission mitigation, including areas of benchmark development, quantification, measurement, verification and reporting aspects relating to development of output-based allocations.

The output-based allocations serve to drive best in class performance and improve benchmarking of performance within Alberta and with other jurisdictions.

The incumbent will support the development of Alberta's product benchmarks under the output-based allocation regulatory system. This work will include analyzing and applying current quantification approaches within Alberta and in other jurisdictions, including the identification of areas where further analysis and development are required. The incumbent will be capable of processing a high level of data/information and utilizing it to inform the development of the standardized benchmarking and emissions quantification methodology. This will include working with sector emission specialists to ensure quantification methodologies are consistent with policy intent, as well as working with carbon pricing policy specialists to ensure no duplication and expected coverage. The incumbent will also support stakeholder engagement as well as assessment of approaches in other jurisdictions as the options for the methodology will be informed by such input.

The position will also support policy development and the assessment and evaluation of key GHG mitigation technologies related to various emission sources.

Detailed knowledge of engineering processes, emission sources, emission reporting, and emission control technologies will be required to develop and evaluate emission quantification methodologies. Comprehensive knowledge of estimation methodologies used to calculate emissions from industrial and non-industrial sources such as transportation, agricultural operations, commercial and residential buildings are also of value for this position.

RESPONSIBILITIES AND ACTIVITIES:

1. The Lead Engineer – Petrochemicals will assess and develop product-based emissions intensity benchmarks for Alberta facilities under the Technology Innovation and Emissions Reduction (TIER) system using current emissions quantification methodologies through a comprehensive understanding of processes and emission quantification methodologies applied to various emissions inventories in sectors / products that will be subject to the performance standard approach. For this position, this includes benchmarks for all products under the chemicals, fertilizers, minerals, and metals sectors subject to the TIER regulation. Activities include, but are not limited to:

- Assess and develop emissions intensity benchmarks for all products in the chemicals, fertilizers, minerals, and metals sectors regulated under the TIER. This includes performing calculations to separate and assign emissions to each product in multi-product facilities.
- Work with external stakeholders to collect emissions and production data, as well as information on heat, electricity, and hydrogen consumption/generation, separated by individual product or processing module. This includes providing

RESPONSIBILITIES AND ACTIVITIES:

technical guidance to stakeholders on how to separate and allocate emissions to each product.

- Provide data and recommendations to economists and consultants, from an engineering perspective, for their analysis of economic impacts of various options.
- Identify and assess product-based quantification methods deployed in other jurisdictions for products produced in Alberta, including differences and similarities with Alberta's current approach to inform methods considered under the performance standards system. This includes details of emissions coverage and treatment (industrial process emissions, indirect emissions, etc.) to enable comparison to other jurisdictions.
- Analyze and interpret greenhouse gas quantification methodologies, including opportunities for improvement for effective transition to the performance standards system across all sectors/products.
- Identify any gaps and inconsistencies in benchmarking methodologies (across sectors / products and with other jurisdictions), and develop and execute plans to address them, including options, implications, and recommendations.

2. The Lead Engineer – Petrochemicals will develop potential options and recommendations for a standardized quantification methodology to be applied across all sectors / products subject to the emergent performance standard system, including assessment of impacts. Activities include, but are not limited to:

- Identify and assess options related to Alberta's benchmarking approach including establishing a standardized benchmarking quantification methodology across sectors, develop a methodology for how to assign benchmarks to new products not previously covered under the regulation, comparing benchmark options to methodologies used in other jurisdictions for given products
- Assess environmental and socio-economic considerations and impacts for the options, including competitiveness risks, GHG reductions, revenue, and investment confidence.
- Provide advice, and recommendations around the integrity of underlying science and applicability of the science to Alberta circumstances. Articulate areas of high and low confidence.
- Revise relevant standards when necessary to add new information and/or incorporate changes such as performance standard benchmarking methodologies, new facility and/or new product treatment, methodologies and criteria for the Cost Containment Program, and requirements for emission reduction projects.
- Assist the Climate Regulatory and Compliance branch from time to time by performing a review of emissions compliance reports submitted by facilities in chemicals, fertilizers, minerals, and metals sectors to ensure that policy objectives are met and that there are no outstanding, unresolved policy issues which require clarification or policy decisions.
- Provide technical guidance and assistance to other sector leads as well as staff in the branch, division, and department on relevant topics such as development of benchmarks and methodologies, the Cost Containment Program and policy, and opt-in and benchmark applications for facilities in the chemicals, fertilizers, minerals, and metals sectors

3. The Lead Engineer – Petrochemicals will support regulations and policy development related to transition to and implementation of performance standards. Activities include, but are not limited to:

- Identify and assess options to inform regulations and standards to support performance standard system delivery.
- Identify and assess policy changes (e.g., reporting requirements, etc.) to support effective transition and implementation of performance standards.
- Identify implementation tracking and reporting options and measures to communicate performance standard system requirements, especially in comparison to the quantification and reduction requirements of other jurisdictions with comparable products.
- Consult with policy advisors and engineers in other governments (provincial and federal) and provide technical feedback for the development of their own climate change policies.

4. The Lead Engineer – Petrochemicals will support evaluation of project proposals which are seeking funding for emissions reduction projects under the Emissions Management and Climate Resilience Act. Activities include, but are not limited to:

- Participate in review of proposals for emissions reduction projects submitted to Emissions Reductions Alberta, Alberta Innovates, or Alberta Environment and Protected Areas which relate to facilities in the chemicals, fertilizers, minerals, and metals sectors.
- Provide appropriate feedback and comments to project proposals.

RESPONSIBILITIES AND ACTIVITIES:

- Attend presentations and proposal consensus meetings.

5. The Lead Engineer-Petrochemicals will identify needs and priorities as well as consider potential impacts to greenhouse gas quantification for performance standard development and implementation resulting from emergent climate and environment related policy. Activities include, but are not limited to:

- Identify impacts of emerging national and international policies and programs relevant to Alberta.
- Identify impacts of complementary Alberta policies and programs such as methane reduction, oil sands emission limit, electricity transition, etc. to inform the methodology.
- Remain current on the scientific literature by reading international scientific journals and conference proceedings in the fields of greenhouse gas emissions quantification.
- Identify emerging issues of relevance to Alberta.
- Develop processes, and products that are responsive to other regulation spaces and incorporate sector-specific benchmarking concepts and application (such as development of factors for the Alberta Offset System).
- Distill understanding of benchmark impacts, mechanics, and interactions for others to consider in development of other regulation or policy (such as development for source air emissions standards).

6. The Lead Engineer – Petrochemicals will build models and tools and/or provide input into the development of models and tools that incorporate benchmark costs and impacts from an engineering perspective with a comprehensive understanding of the technical aspects of the emissions quantification and pricing. Activities include, but are not limited to:

- Conversion of benchmarks to other cost unit basis for input to other models
- Develop and/or provide input into the development of carbon pricing models and tools
- Understand the differences between and appropriate uses of economy-wide, sector-wide, or facility-specific modeling
- Interpret model outputs for sectors / facilities
- Net present value cash flow analysis
- Analysis of model results prepared by others including evaluation of input assumptions and comparability to previous modeling or modeling for other third parties.

SCOPE:

This position involves the development, analysis and technical support around the development of emissions intensity product benchmarks for regulated facilities in Alberta. The expectations of the position range from technical support and analysis to methodology development and involve significant technology and sector specific knowledge. Quantification methods for various sectors must be assessed, including chemicals, fertilizers, minerals, and metals.

The position requires a high degree of problem solving and analytical skills to ensure the successful design and implementation of a standardized benchmarking and greenhouse gas quantification methodology and to ensure the successful design and implementation of policies. The position also requires the ability understand the compliance implications, which have an impact on financial, environmental, and reputational outcomes. Sector-specific understanding of intra-sector competitiveness is required, the jurisdictional scope of competitiveness will vary by sector.

As the position involves a range of exploration and technical analysis of regulatory and non-regulatory aspects of environment management not currently employed by the department, significant emphasis is placed on creativity and innovation. Remaining informed and current of policy options, developments, and interactions is paramount as carbon policy is rapidly being developed, deployed, and refined.

The development of a robust standardized benchmarking and quantification methodology across sectors will affect decisions on provincial emissions management. Some of the management programs affected include:

- Alberta's regulatory framework for greenhouse gas emission reductions including compliance options (payments to a government fund, carbon offsets).
- The province's climate-related commitments, including oil sands limit, methane reduction target, and a capacity and energy only power market.
- Greenhouse gas management policies developed by the Alberta, which can also influence those of Canada.

SCOPE:

KNOWLEDGE, SKILLS & ABILITIES:

The Lead Engineer – Petrochemicals requires strong analytical skills with background in greenhouse gas quantification and benchmarking methodologies used provincially, nationally, and internationally for calculating greenhouse gas emissions.

- A minimum of a bachelor's degree in engineering.
- Qualification for membership in the Association of Engineers, Geologists and Geophysicists of Alberta (APEGA) or a similar professional association. Willingness to meet professional requirements on an ongoing basis and increase knowledge by pursuing professional and continuing education opportunities.
- Knowledge of the Emissions Management and Climate Resilience Act and associated regulations.
- Detailed knowledge in industrial technologies and sources for greenhouse gas emissions and associated accounting principles.
- Understanding of economic instruments, including carbon offsets.
- Strong understanding of greenhouse gas emissions management systems used in Alberta and nationally.
- Policy development knowledge, with ability to identify options and environmental and socio-economic implications.
- Ability to interpret existing scientific information and integrate new data and information as it arises, using the latest scientific methods, and present the information in terms understandable to scientific experts, non-scientific stakeholders, and members of the public.
- Knowledge and understanding of provincial, national, and international activities as context for the setting of environmental guidelines and objectives or the establishment of policy.
- General knowledge of Alberta industry, where they are, what they produce, and how they operate.
- Detailed knowledge of facilities in Alberta's chemicals, fertilizers, minerals, and metals sectors.
- Detailed knowledge of unit operations within industrial facilities, how they interact, and how they impact facility emissions.
- Leadership skills to be able to motivate and work with other department staff and industry to enhance the quality of emission inventories in Alberta.
- Understanding of multiple regulation areas and how carbon policy interacts across various regulation spaces.
- Capable of working independently, in a multi-disciplinary team environment, or as the leader of specialist and/or multi-disciplinary teams as the situation requires.
- Strong written and oral presentation skills to be able to effectively share ideas with team members and other stakeholders.
- Strong written skills for the development of technical standards and guidance documents.
- Strong skills in mathematics and data analysis to be able to effectively determine appropriate methodologies for benchmark development and to carry out the corresponding analysis.
- Strong systems thinking and design; ability to analyze ripple effect of changes through complex systems.
- Strong communication skills required for developing emission management strategies for Alberta in partnership with other branches and regional staff, facility operators, industrial associations, and other government agencies.

CONTACTS:

The Lead Engineer – Petrochemicals will report to the Director, Industrial Climate Policy. In addition, key contacts for this position are members of the TIER Policy and Economics Project Team, housed in the Air and Climate Policy Branch but drawing from staff across the Government of Alberta. This position will have regular contact with the other technical leads of the performance standards system as well as sector-specific policy analysts and sector-specific standards teams (made up of policy advisors, policy engineers and compliance engineers). The incumbent will also work, alongside cross-jurisdictional policy analysts, policy advisors, economists, and engineers as well as with colleagues in other jurisdictions to understand and assess methodologies and approaches deployed for benchmarking purposes.

The incumbent will engage with stakeholders, including industry, non-government organizations, academia, etc. Focus will be on garnering information to inform potential options for the quantification methodology as well as associated assessment of impacts

CONTACTS:**SUPERVISION EXERCISED:**

Not Applicable.

CHANGES SINCE LAST CLASSIFICATION REVIEW:

Not Applicable.

This information is being collected under the authority of Section 10 of the Public Service Act and will be used to allocate positions within a classification plan and to manage the Alberta government human resources program. If you have any questions about the collection of this information, contact the Job Evaluation Unit, 6th Floor, Peace Hills Trust Tower, 10011 - 109 Street, Edmonton, Alberta, T5J 3S8, phone 780/408-8400 or contact your Ministry Human Resource Office.

Signatures**Incumbent**_____
Name_____
Date**Manager**_____
Name_____
Signature_____
Date**Division Director/ADM**_____
Name_____
Signature_____
Date