

Ministry

Energy and Minerals

Describe: Basic Job Details

Position Name (200 character maximum)

Engineer, Facilities and Infrastructure

Current Class

Engineering & Related Level 2

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Organizational Structure

Division, Branch/Unit

Ministry Services, PPS Branch / Engineering

Supervisor's Position Name (30 characters)

Manager, Engineering

Job Purpose and Organizational Context

Why the job exists:

Professional and Program Services (PPS) Branch

The PPS Branch provides scientific and technical services to Alberta Energy and Minerals (and other Departments at times) to facilitate the development of policy and delivery of programs in a strategic and integrated manner across the Government of Alberta. It is the Department of Energy and Minerals' nucleus of professional engineers and geologists, mapping expertise and program specialists, which are grouped into four areas: (i) Resource Mapping and Analysis, (ii) Engineering, (iii) Geology, and (iv) Program (design, implementation and monitoring) Services. The task of responding to and delivering upon the Branch's client needs is managed by an active and comprehensive management structure with the objective of providing technical integrity and expertise, in accordance with APEGA standards of professional practice for professional members in the branch including engineering.

Engineer

Reporting to the Manager of Engineering, the position is responsible for delivering critical technical inputs (assessments, advice, and opinions) to support Government of Alberta policy. The position provides technical advice relating to resource assessments, reservoir modeling, facility constraints for resource development, enhanced oil recovery schemes, energy metrics (including environmental emissions related to energy), upgrading and refining technology assessments and modeling, energy infrastructure assessments, oil sands, petroleum and natural gas reserves, coal and mineral projects, CCUS, and land-use framework related projects. The assessments will facilitate the development of policy and delivery of programs with respect to energy resources. The work is done using accepted engineering principles and professional practices and standards. The Engineer will interact with policy and technical staff throughout the department as well as external stakeholders and manage the workflow for the team. This position will have substantial influence in decisions around significant policy initiatives for resource development.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Technical and economic assessments related to energy facilities and infrastructure to ensure Albertans benefit economically from investment in responsible energy and mineral development.

Activities:

- Assesses oil sands integrated projects (especially royalty and non-royalty project shared facilities and costs).
- Writes Ministerial Orders to establish cost allocation methodologies for various engineering systems within multiple oil sands projects.
- Writes engineering reports (Professional Work product) supporting the Ministerial Orders. Tracks and documents technical and engineering methodologies; the incumbent will be expected to stay current with technological developments as they occur and will demonstrate and document compliance with the CPD (Continuing Professional Development) requirements of APEGA.
- Evaluates annual cost allocation methodology reports to ensure accuracy of reporting on engineering systems and appropriate allocation of costs.
- Petroleum and natural gas, coal and mineral, CCUS, disposal, renewable and/or alternative energy related projects.
- Project economics (actual and forecast) - especially reviewing class 3 cost estimates for oil sands projects.
- Project feasibility, performance and production.
- Modelling energy facilities (upgraders, refineries, and petrochemical facilities).
- Review innovative energy related technologies.
- Provide technical input on Life Cycle Analysis and the emissions from oil and gas facilities.
- Provide technical input to briefings and working groups on energy infrastructure within Alberta.
- Provides technical input to other business areas to support the decision making process for operations, program decisions and policy development.
- Prepares and conducts technical presentations.
- Provide technical support to Alberta Energy Auditors and Legal.

2. Provides resource related technical and economic assessments:

Activities:

- Oil sands, coal, minerals, petroleum and natural gas reserves and land use framework related projects requiring an analysis of the values of resources within projects areas. Includes assessment of pore space for disposal and/or CCUS.
- Projects economics (actual and forecast).
- Project feasibility, performance and production.
- Modelling footprint input matrix variables and resource evaluations to support policy decisions
- Provides technical input to other business areas to support the decision making process for operations, program decisions and policy development.
- Assesses data/information to determine impact of proposed development on government resource interests.
- Assesses resource potential of lands being considered for native or Metis land claims, parks, restricted sites and integrated land use management plans.
- Prepares and conducts technical presentations.

3. Technical support in development and implementation of Land-use Framework regional plans.

Activities:

- Building forecast models for production of energy resources (e.g. in situ bitumen, oil, natural gas and unconventional natural gas, including in situ coal gasification).
- Supporting the analysis of landscape disturbance/industrial footprint in relation to energy development.
- Providing interpretations of modeling results and advice to support the provision of strategic options and recommendations to senior Alberta Energy and Government of Alberta representatives and Executive.
- Presenting to internal and external stakeholders on the effect and extent of forecast models and research results.
- Researching the requirements for developing quantitative energy data inputs for off-site landscape modellers:
- Documentation of research methodology and results.
- Providing supplementary data analysis and/or interpretations in response to questions raised by Government of Alberta decision-makers, cross-ministry teams, and/or multi-stakeholder Regional Advisory Councils.
- Performing detailed evaluations on small scale portions of a planning region through:
 - verification of industry supplied data,
 - evaluation of in-place petroleum resources and reserves,
 - forecasting production rates over a long term, and
 - construction of regional computer models for oil, gas, unconventional gas production and footprint.
- Develop and maintain effective and collaborative relationships with representatives from Alberta Energy, other Government of Alberta ministries, and key external stakeholders.
- Tracking and documenting technical and engineering methodologies; the incumbent will be expected to stay current with new technological developments as they occur.
- Working closely with technical, geological and engineering staff in the Professional and Program Services Branch and more broadly within Alberta Energy and Minerals and Government of Alberta.
- Providing a bi-weekly work summary and a monthly report of accomplishments.

4. Participates on internal and external committees and groups to provide technical input and advice to department planning and policy development activities and to maintain awareness of industry trends and issues.

Activities:

- Maintains technical expertise and industry awareness through industry, academic, and government networks and contacts.
- Participates in professional association forums and committees to remain current with developments within the industry and within the field of geology and engineering.
- Participates on joint industry/government committees to provide administrative staff with technical opinions related to proposed changes in legislation and policy.

5. Meets with industry and the Alberta Energy Regulator (AER) representatives to resolve complex and/or contentious technical interpretations.

Activities:

- Works in internal and external (intra-ministerial) teams to resolve complex scientific problems impacting delineation and management of non-renewable resources.
 - Meets with industry geologists, geophysicists and engineers to discuss complex issues and review inconsistencies in technical data.
6. Other related activities as required.

Problem Solving

Typical problems solved:

The work expected from the Engineer is complex and requires input from various areas to otherwise be successful in solving problems related to understanding potential impacts on resource development. The types of problems encountered will be technical in nature but the results will significantly impact decisions made at all levels of government and society. Overall, it is expected that the engineer will consider the application of professional judgment, knowledge of legislation and industry trends, economic issues, and government/department policies in providing credible recommendations/technical advice.

Types of guidance available for problem solving:

Work is guided by accepted engineering principles and practices, and various Energy documents such as Oil Sands Royalty Regulations and Guidelines, Mines and Mineral Act of Alberta, and business unit policies. Finally, the engineer is expected to interact regularly with key internal contacts (e.g., other divisions and ministries) and external contacts (e.g., industry, academia) in solving critical problems and providing technical advice to key policy/regulatory issues.

Direct or indirect impacts of decisions:

Technical advice are the basis of the type of requests submitted primarily by key internal contacts outlined below. Provincial royalty revenue generated on the basis of any cost allocation reviews and/or resource development technical analysis are directly affected. Credible technical support, through formal advice (Engineering authenticated documents) and/or being witness for dispute resolution, litigation, or compensation files will protect the Crown's interest, both reputation and financially.

Key Relationships

Major stakeholders and purpose of interactions:

The main contacts for this position include:

Internal

- Manager, Engineering
- Director, Engineering
- Executive Director, Professional and Program Services
- ADM, Ministry Services
- Energy Policy Division, Directors, Managers and Staff
- Energy Operations Division, Directors, Managers and Staff
- Ministry Services Division, Directors, Managers and Staff
- PPS Engineers, Geologists, Consultants and Staff
- Legal/Financial Services

External:

- Environment and Protected Areas (EPA)
- Treasury Board and Finance (TBF)
- Alberta Energy Regulator (AER)
- Other agencies (Alberta Innovates) and Ministries
- Energy Producers, Service and Supply Sector, Industry Associations, Academic and Research Institutions, NGOs.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Bachelor's Degree (4 year)	Engineering		PEng

If other, specify:

Engineering (Chemical, Petroleum), plus 5 years experience.

Job-specific experience, technical competencies, certification and/or training:

- This position will work on complex assignments requiring professional judgment.
- A minimum of an undergraduate degree in Engineering.
- Must be eligible to be registered with APEGA, and maintain in good standing with APEGA.
- Fluency in English and excellent written and verbal communication skills.
- Experience as an engineer working on bitumen, oil and natural gas projects.
- Sound knowledge and experience in operating oil sands related facilities and expertise in determining energy and mass flows and balances for integrated projects.
- Experience in the downstream sector of the oil and gas industry would be an asset.
- Sound knowledge of engineering principles, industry standards and practices, knowledge of facilities used for resource development, and knowledge of the stratigraphy of the Western Canada Sedimentary Basin - including but not limited to unconventional resources such as shale gas and oil sands.
 - cost engineering and practices related to major oil sands, oil and gas, and upgrading projects.
 - project or process engineering and project management at multi-billion dollar upgrading, mining or refinery projects or similar experience relevant to the oil sands sector.
 - oil sands, oil and gas recovery methods and processing
- Ability to interpret information from data provided to draw reasonable conclusions related to well productivity, future potential, forecasting, reservoir evaluation, facility constraints, or to assess impact of proposed development on province's resources and presenting results or recommendations.
- Experience assessing reserves, associated production capacities, and determining production profiles (e.g. well life, peak production, well decline, and material balances).
- Knowledge of oil and gas industry to assess validity and applicability of technical data.
- Some knowledge of related legislation, including the Mines and Minerals Act, Oil Sands Royalty Regulation, Oil Sands Allowed Costs Regulation, Petroleum and natural Gas Tenure Regulations and the Oil and Gas Conservation Act and Regulations is desirable.
- Computer literacy including knowledge of the AER database, working knowledge of Microsoft Office, and SharePoint.
- Ability to use various programs such as GeoScout, Frac Database and Surfer would be an asset.
- Communication skills to provide and obtain clarification and question inconsistencies in technical data.
- Strong presentation skills.
- Strong project management knowledge and experience.
- Experience in leadership capacities would be an asset.
- General understanding of the business goals of the Department.
- General knowledge of oil companies and their involvement in the energy industry.
- General knowledge of the oil and gas markets (and bitumen market as it develops) as this ultimately affects project development (configuration and timelines) as well as project economics.

Experience: more than 5 years related experience with:

- The oil and gas and oil sands industry.
- Project management exposure would be an asset
- Exposure to government acts and regulations would be an asset

NOTE: Individuals with lesser experience may be considered at a lower classification.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level					Level Definition	Examples of how this level best represents the job
	A	B	C	D	E		
Systems Thinking	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Considers inter-relationships and emerging trends to attain goals:	Possesses strong ability to exercise consistent due diligence practices to discern technical merit.

		<ul style="list-style-type: none"> • Seeks insight on implications of different options • Analyzes long-term outcomes, focus on goals and values • Identifies unintended consequences 	Possesses sound knowledge of the oil sands regulations, acts, policies, business rules, and processes.
Drive for Results	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<p>Works to exceed goals and partner with others to achieve objectives:</p> <ul style="list-style-type: none"> • Plans based on past experience • Holds self and others responsible for results • Partners with groups to achieve outcomes • Aims to exceed expectations 	<p>Regularly completes work assignments within expected timelines.</p> <p>Values accuracy and precision in their work outcomes.</p> <p>Actively seeks background, context, and policy/economic implications of potential technical options.</p>
Agility	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<p>Works in a changing environment and takes initiative to change:</p> <ul style="list-style-type: none"> • Takes opportunities to improve work processes • Anticipates and adjusts behaviour to change • Remains optimistic, calm and composed in stressful situations • Seeks advice and support to change appropriately • Works creatively within guidelines 	<p>Possesses effective personal time management skills</p> <p>Exhibits ability to be flexible while ensuring task prioritization</p>
Build Collaborative Environments	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<p>Facilitates open communication and leverages team skill:</p> <ul style="list-style-type: none"> • Leverages skills and knowledge of others • Genuinely values and learns from others • Facilitates open and respectful conflict resolution • Recognizes and appreciates others 	<p>Practices active listening habits to carefully hear the opinions of others to otherwise ensure respect and understanding.</p> <p>Possesses strong ability to communicate technical concepts and decisions in plain language.</p>