



IDENTIFICATION

Department	Position Title	
Infrastructure	Senior Engineer, Energy	
Position Number	Community	Division/Region
33-14648	Yellowknife	Major Energy Projects/HQ

PURPOSE OF THE POSITION

The Senior Engineer, Energy is responsible for technical aspects of the identification, analysis and development of conventional and renewable community, large scale, multi-year and strategic energy projects and initiatives aimed at increasing the use of domestic energy resources and sustainable energy technologies and reducing energy costs in the Northwest Territories.

SCOPE

The Major Energy Projects Division leads in the identification, assessment and development of local and/or renewable and sustainable energy projects and initiatives that can help stabilize and reduce the cost of community and regional-scale energy systems for residents, businesses, industry and governments in the Northwest Territories (NWT).

Reporting to the Director, Major Energy Projects, the Senior Engineer is the lead project engineer overseeing the full range of activities leading to the development and implementation of conventional and renewable energy projects including concept planning, feasibility studies, design and engineering, financial modeling and business case analysis, and regulatory submissions. This function concerns the implementation of local, renewable, and alternative energy solutions for NWT communities. This includes the conception and development of innovative and effective conventional and renewable energy projects designed to reduce energy costs and increase the use of domestic energy resources.

The Senior Engineer will interface with third parties, regional project managers and be responsible for the procurement, construction and installation, commissioning, operations and maintenance for projects ranging from conceptual analysis to capital construction.

The Senior Engineer provides leadership and expert technical advice for all assigned energy initiatives and funded renewable and alternative energy projects from concept through to



capital construction. The incumbent will also work with Indigenous governments and Indigenous organizations to ensure local and traditional knowledge is incorporated appropriately into the proposed projects in advising senior leadership, the Senior Engineer will provide decision makers with expert recommendations and advice on energy projects.

The Senior Engineer will stay apprised of the challenges, opportunities and success factors associated with various sources of energy and how they match the diverse circumstances found in regions and communities across the NWT, to inform the short- and long-term planning and implementation of projects that advance the strategic objectives of the Government of the Northwest Territories (GNWT).

The Senior Engineer will be expected to work collaboratively with colleagues in the Department of Infrastructure and other GNWT departments, the Northwest Territories Power Corporation (NTPC), the Arctic Energy Alliance (AEA), NT Energy, Indigenous Government representatives, the federal government and other boards and agencies to effectively support and implement energy projects across the NWT.

Responsibilities will vary and include a host of energy projects ranging in size from small community scale to large multi-billion-dollar energy infrastructure projects. Examples include energy storage, power generation, distribution, transmission and transportation technology opportunities for both electricity and heat type energy projects. Generation sources such as hydro, LNG, wind, biomass combined heat and power, residual heat, district heating, nuclear and geothermal energy options done at a commercial or utility scale may be considered, among others. Storage solutions may include cryogenic, hydro and/or proven battery solutions and other emerging storage technologies. Transmission and distribution opportunities will include the extension of network assets funded by NWT rate payers and connecting assets funded by industry.

To fulfill the mandate, the Senior Engineer will analyze, evaluate, interpret and communicate a wide range of complex information to a variety of stakeholders, ranging from individuals, businesses, the media, and all levels of government. The Senior Engineer will guide, monitor and report on the completion of utility scale capital projects identified in the GNWT Capital Plan. The professional technical advice gathered and provided by the Senior Engineer is essential to the decision-making process respecting the furtherance of major energy projects and proposals for partnerships or funding made to the Government of Canada or to other parties. Proposed projects may range to hundreds of millions of dollars in cost.

The Senior Engineer oversees multiple energy consulting contracts that typically range from \$50,000 to \$5,000,000 annually depending on funding commitment. Project construction capital costs will range up to \$10 Million for large scale regional energy projects.



RESPONSIBILITIES

- 1.** Provide leadership and expert technical advice for all energy initiatives and funded renewable and alternative energy projects from concept through to capital construction.
- 2.** Work closely with the Advisor, Energy Funding, Research & Development to provide technical, risk assessment and capital costing support for the development and use of energy project modeling and the development and refinement of business case analysis for potential energy projects.
- 3.** Develop and maintain extensive understanding and technical knowledge on a wide variety of conventional and renewable energy technologies and applications relevant to the NWT.
- 4.** Provide financial and economic analysis for conventional and renewable energy technologies and applications relevant to the NWT.
- 5.** Work with private sector engineers, consultants and contractors to initiate, manage, review and evaluate pre-feasibility and feasibility studies on potential energy projects and initiatives.
- 6.** At all project stages, determine technical viability, economic viability and cost estimates for project costs and recommendations for projects that should proceed.
- 7.** Contributes to the development of terms of reference and scope and specifications for contract procurement documents (requests for proposal; tenders) and actively participate in the evaluation of bids and in the contract award process.
- 8.** Provide professional technical advice respecting major energy initiatives and project proposals for partnerships or for funding made to the Government of Canada or to other parties.
- 9.** Provide advice and technical support in the development of Departmental and GNWT-wide energy policies, energy plans and annual budgets and longer-term planning cycles for energy investments by Government.
- 10.** Working closely with the Strategic Energy Policy and Program Division and the Director Major Energy Projects to develop short (3-5 year) and long term (6-20 year) project implementation plans that advance the strategic objectives of the GNWT for each region of the NWT.
- 11.** Work closely with divisional staff and other GNWT staff, as well as private sector engineers and consultants to scope, design and engineer potential energy projects and initiatives.



12. Provide technical and economic advice and planning support for energy project installations and provide advice and support to resolve operational and/or maintenance issues for operational energy projects.
13. Provide technical guidance and general project development and management advice to the Director, Energy on specific energy projects or funding program applications.
14. Identify project activities and provide guidance to regional project managers related to monitoring, assessment and deployment of renewable and emerging technologies.
15. Identify potential barriers or challenges in the development of local and renewable energy projects and provide guidance and advice, as needed.
16. Maintain qualifications in professional, technical and administrative areas by attending and completing seminars, training and other professional development opportunities as appropriate.

WORKING CONDITIONS

Physical Demands

No unusual demands.

Environmental Conditions

No unusual conditions.

Sensory Demands

No unusual demands.

Mental Demands

This position deals with projects with complex, sensitive and political issues and must be prepared to provide advice and support on decisions with large financial implications. The incumbent will be required to travel approximately ten trips per year, up to 3 days per occurrence.



KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of conventional and alternative energy systems.
- Knowledge of energy program and project development.
- Knowledge of electrical generation, transmission and distribution infrastructure and systems.
- Knowledge of remote northern power generation and transmission.
- Knowledge of mechanical and electrical principles governing typical energy projects.
- Knowledge of public utility and IPP utility financial models.
- Knowledge of industry best practices.
- Knowledge of regulatory and permitting framework.
- Knowledge of codes and standards applicable to energy projects.
- Knowledge of policy and strategy development techniques.
- Knowledge of federal, provincial and territorial greenhouse gas control actions and climate change programs.
- Knowledge of business planning and assessment of cost benefit.
- Skilled in creation, design guidance and technical evaluation of energy initiatives.
- Skilled in evaluating a broad variety of energy initiatives for technical and economic considerations.
- Analytical, evaluative and constructive problem solving skills.
- Verbal and written communication skills.
- Negotiation skills and experience.
- Proficient in use of computers and software including word processing, spreadsheets and communications applications.
- Computer proficiency with Excel, and with energy modeling software.
- Ability to work in a high stress multi-tasking environment with tight deadlines.
- Financial modeling and business case development skills.
- Ability to manage, lead and collaborate effectively with energy experts.
- Ability to resolve differences of professional opinion.
- Ability to effectively interact with industry, government agencies, aboriginal organizations and the public, and to communicate scientific and technical knowledge to a non-professional audience.
- Ability to understand and manage politically sensitive and high profile issues.
- Ability to effectively resolve disputes.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion, and cultural awareness, as well as safety and sensitivity approaches in the workplace.



Typically, the above qualifications would be attained by:

A bachelor's degree in engineering and Professional Engineering designation with five (5) years of post-designation experience in the energy field including experience in northern design, construction services and commissioning of energy systems.

Equivalent combinations of education and experience will be considered.

ADDITIONAL REQUIREMENTS

Registration with the Northwest Territories and Nunavut Association for Professional Engineers and Geoscientists (NAPEG) within 90 days of hire is required, with flexibility for international registrants.

Position Security (check one)

- No criminal records check required
- Position of Trust – criminal records check required
- Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applicable)

- French required (must identify required level below)

Level required for this Designated Position is:

ORAL EXPRESSION AND COMPREHENSION

Basic (B) Intermediate (I) Advanced (A)

READING COMPREHENSION:

Basic (B) Intermediate (I) Advanced (A)

WRITING SKILLS:

Basic (B) Intermediate (I) Advanced (A)

- French preferred

Indigenous language: Select language

- Required
- Preferred