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Chart of Competency
Residential GeoExchange Heat Pump System Designer

Electricity Human Resources Canada is a non-profit organization supporting the human resources needs of the Canadian electricity sector.

Our Vision

Keeping the lights on in Canada by preparing and empowering a world-class workforce for the entire electricity industry.

Our Mission

Working to strengthen the ability of the Canadian electricity industry in meeting current and future needs for their workforce—one that is safety-focused, highly skilled, diverse and productive.

Our Values

We are a values-driven organization, committed to the improvement of our sector, the growth of Canada's economy, and the stability of our power grid. Our core values are:

Collaboration
Working with all stakeholders in Canada's electricity sector for our mutual benefit.

Trust
Forging relationships and products built on unwavering integrity.

Innovation
Leading the industry to be future-ready.

Chart of Competency:
Residential GeoExchange Heat Pump System Designer

This Chart outlines the competencies (also known as skills and knowledge) that are performed by Residential GeoExchange Heat Pump System Designers.

Occupational Definition:

Residential GeoExchange Heat Pump System Designers design systems that transfer energy between ground or water and residential buildings for the purposes of heating and cooling. Their design responsibilities include assessing the single-family house and site, determining the optimal equipment and configuration for the system, and collaborating with project-related occupations to ensure quality designs and installations. The authority and limitations of designers of GeoExchange heat pump systems for single-family houses differ among and within provinces/territories according to the authority having jurisdiction.

GeoExchange heat pump systems are also referred to as ground source heat pump systems, ground-coupled heat pump systems, earth-energy systems and geothermal systems. The term "geothermal" can be confused with utility operations that produce electricity using heat generated in the earth's core. "GeoExchange" is the preferred term going forward as it reflects industry's efforts to professionalize and communicate what quality work is to clients.

Major Category	Competency Area	Competency Unit					
Design	Conduct Pre-Design Activities	Consult with external/internal client	Consult with stakeholders	Coordinate site visit	Conduct site visit		
	Design Residential GeoExchange Heat Pump Systems	Analyze building and site	Determine type and capacity of heat pump	Determine type of heat exchanger	Design vertical closed-loop heat exchanger	Design horizontal closed-loop heat exchanger	Design submerged closed-loop heat exchanger
		Design open-loop heat exchanger	Design integration of GeoExchange system with distribution system				
	Produce Design Drawings and Construction Documentation	Produce construction/installation drawings and diagrams	Produce materials lists of suppliers, and pricing based on system specifications				
	Produce Quote for Client	Produce quote for client					
	Provide Post-Design Support	Provide technical expertise	Assist with utility and regulatory permitting applications	Prepare tender package			
Safety	Maintain a Safe Working Environment	Follow safe work practices	Use personal protective equipment (PPE)	Participate in safety meetings and emergency drills	Work in confined spaces		
	Maintain a Sustainable Environment	Follow sustainable work practices					
	Respond to Emergencies	Respond to non-electrical emergencies	Participate in incident and accident investigations				
Security	Follow Security Practices	Follow security practices for physical work environment	Follow cybersecurity procedures				
Organizational Policies and Procedures	Follow Organizational Policies and Procedures	Follow organizational policies and procedures					
Information/Record Management	Complete Information/Record Management Tasks	Maintain technical information and data					
Information and Communication Technology Foundations	Use Digital Technology	Use communication applications	Use common software applications	Use navigation and mapping applications	Use digital mobile radios		
	Use Organization's ICT System	Use organization's ICT system					
Personal Competencies	Demonstrate Professionalism	Work as member of a team	Develop professionally	Demonstrate professional and ethical conduct	Mentor/coach others	Manage stress	Manage time
	Communicate Effectively	Use active listening skills	Use speaking skills	Use writing skills	Negotiate with internal and external stakeholders	Conduct meetings and presentations	Exchange information with internal and external stakeholders

National Occupational Standards (NOS)

NOS are voluntary guidelines that have been developed to provide businesses, educators, trainers, and job seekers with practical guidance.

How are NOS used?

Employers, employees, and educational institutions can put NOS to a wide variety of uses supporting effective workforce planning:

- Support personnel certification or accreditation programs.
- Inform curricula for colleges and apprenticeships.
- Assist recruitment by informing job descriptions and providing a benchmark for employee appraisals.
- Identify career paths in order to promote employee retention.
- Help employers evaluate and determined the competencies of potential employees, including Internationally Trained Workers (ITWs).

Electricity Human Resources Canada has developed National Occupational Standards for a variety of occupations.

Visit **electricityhr.ca** for more information.

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