

# Bipole III Transmission Project

Clean Environment Commission  
Public Hearings  
Fall 2012

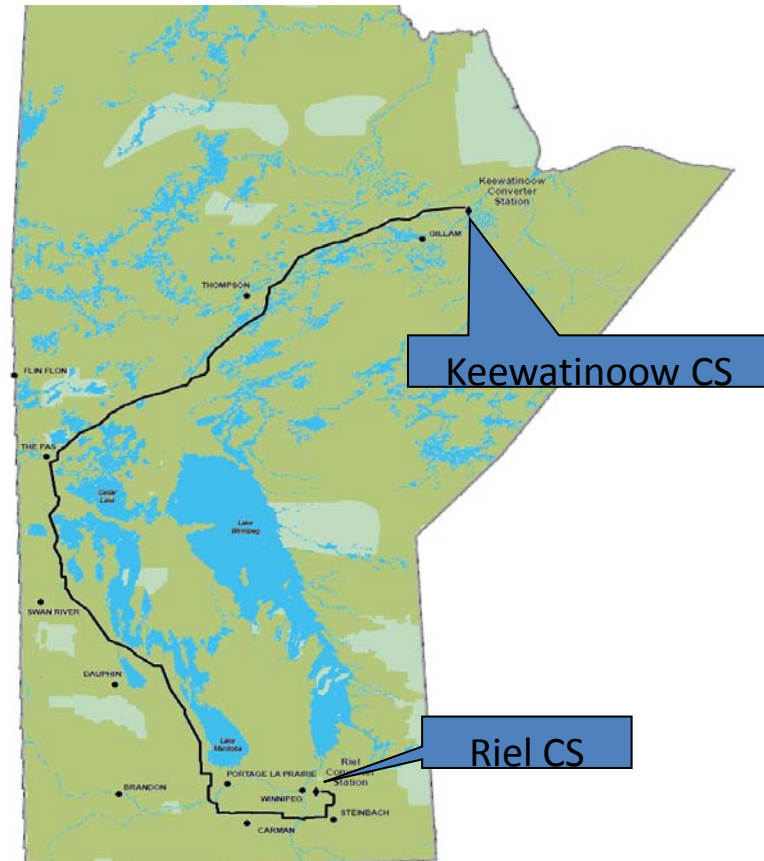
*Converter Station Construction*  
*Rob Elder*

# Presentation Overview

- What does Converter Station construction include?
- Primary work packages of the project
- What is the timing and sequence of construction?
- Keewatinoow Workforce Strategy

# What Does Construction Include?

- Construction of the Keewatinoow Converter Station
  - Northern converter station (79 km from Gillam)
  - Converting AC power to DC
- Construction of the Riel Converter Station
  - Southern converter station (just outside Winnipeg)
  - Converting DC power back to AC



# Keewatinoow vs. Riel

- Keewatinoow Converter Station:
  - Developed access, but undeveloped (new) site
  - Remote construction location, requiring full scale worker accommodations
  - Under Burntwood Nelson Labour Agreement (BNA)
- Riel Converter Station:
  - Partially developed (existing) site
  - No camp requirements
  - No specific project labour agreement

# Main Components of the Job

- Major work packages for the Converter Stations:
  - Keewatinoow Civil Site Improvements & Infrastructure
  - Keewatinoow Construction Camp
  - HVdc Converter Equipment (both sites)
  - Keewatinoow 230kV AC Switchyard
  - Electrodes (both sites)
  - Riel Synchronous Condensers (if required)
  - Keewatinoow Camp Operations

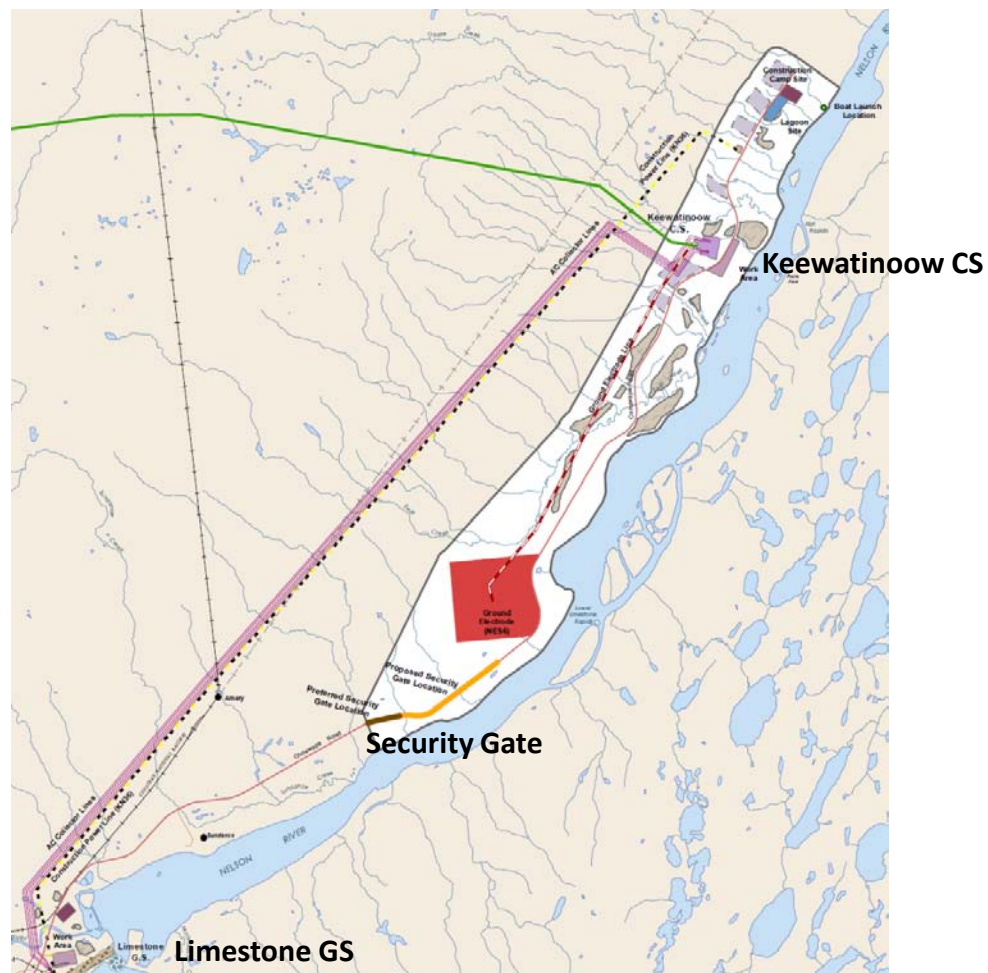
# Keewatinoow Civil Site Improvements & Infrastructure

- Development of the Keewatinoow site to allow construction of the Converter Station
- Precedes all other major work packages at Keewatinoow
- Activity to start upon licence receipt in early 2013



# Keewatinooow Construction & Camp Facilities

- Installation of main 600 person, multi-storey construction camp and associated infrastructure
- Accommodations for phase of BP-III line construction, also
- Construction of sewage lagoon and start-up camp started in Sept 2012 under a separate Environment Act Licence



# HVdc Converter Equipment

- Single contract covering work at Keewatinoow & Riel
- Largest contract of Converter Station project
- Design, supply, & commissioning awarded to single vendor. Construction may also be included
- Significant contract negotiation and design time required before construction





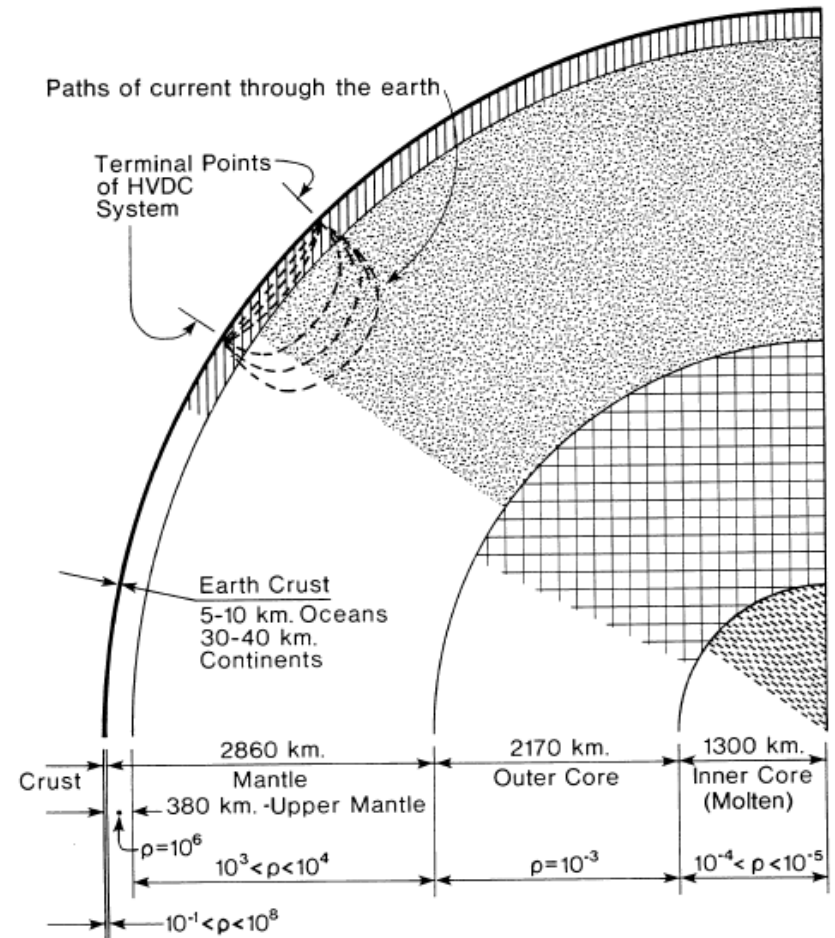
# Keewatinooow 230kV AC Switchyard

- Contract at Keewatinooow only
- Requires integrated civil & electrical design & construction
- Single contract for engineering, procurement and construction



# Electrodes

- Electrode sites in both north and south
- Located near Converter Station sites
- Provides temporary current return path during loss of a pole

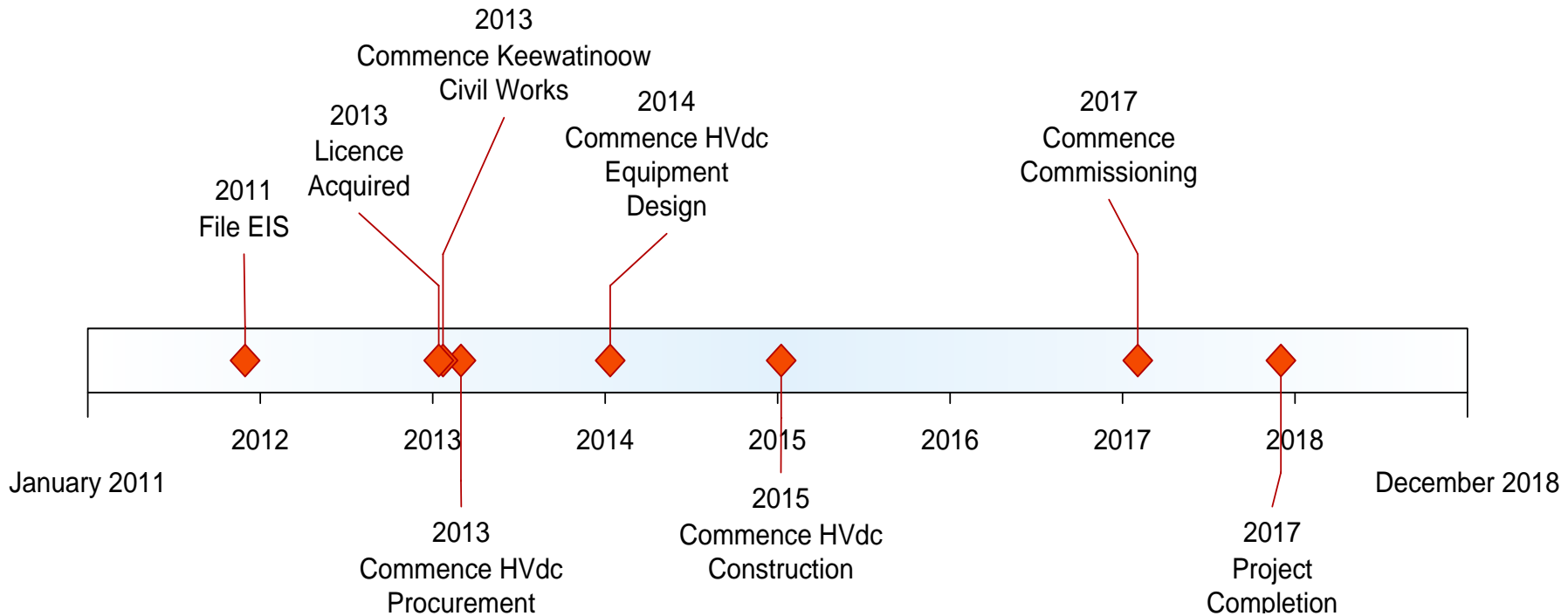


# Riel Synchronous Condensers

- Required at Riel only
- Requirement for synchronous condensers not known until after HVdc technology decision
- Design, supply, installation oversight & commissioning awarded to a single vendor



# Construction Schedule



# Current Construction Project Activities

- Procurement camp contracts
- Engineering and contract development for major work packages
- Development of project staffing

# Engineering & Procurement

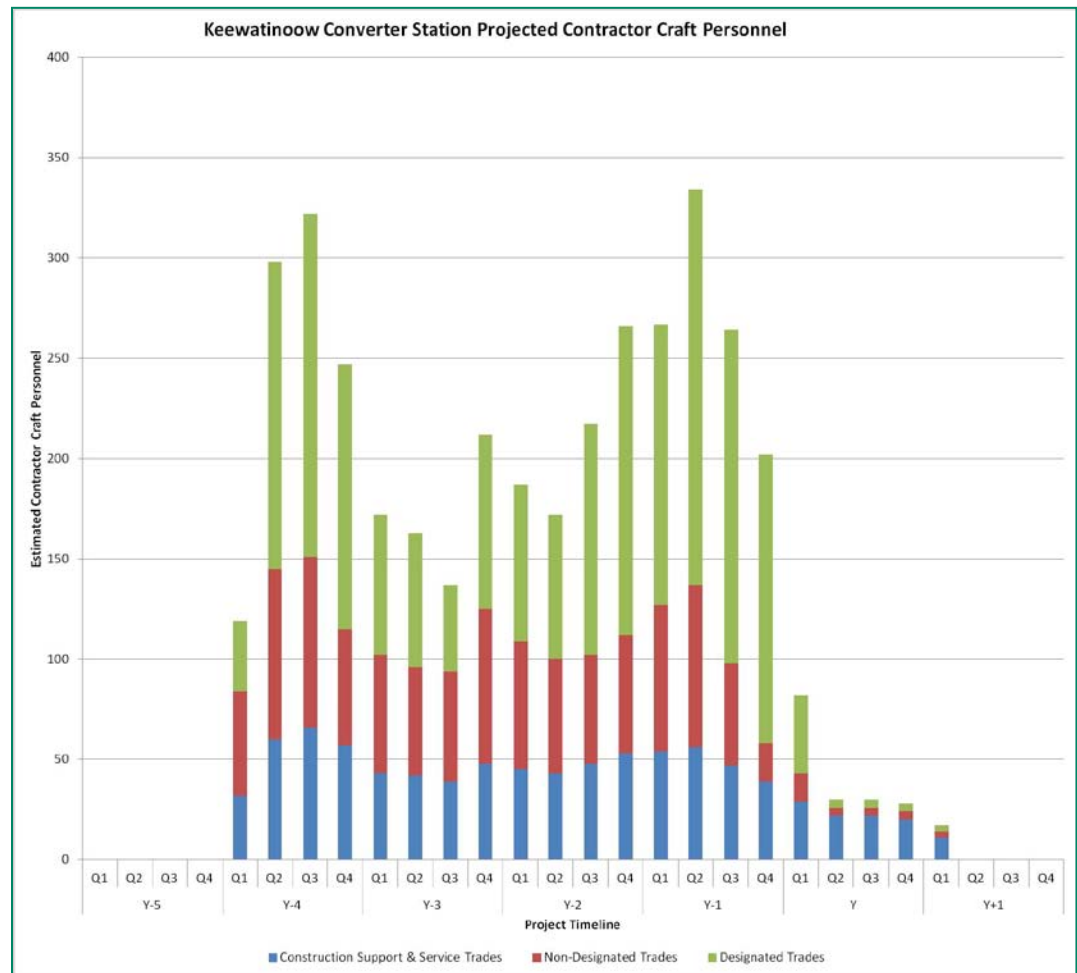
- Conceptual engineering complete
- Owner's Engineer contracts signed for remaining engineering
- Converters & AC Switchyard Request for Proposals March 2013 issue
- Synchronous Condenser RFP Sept 2013

# Keewatinoow Construction Schedule

- Civil Site Development – Winter 2013
- Construction and Camp Facilities – Winter 2013
- Camp Operations – Winter 2013
- AC Switchyard Construction – Winter 2014
- HVdc Converter Construction – Spring 2015
- Electrode – Fall 2015

# Projected Keewatinooow Craft Workforce

- Peak workforce of 334 craft workers
- 918 person-years craft employment



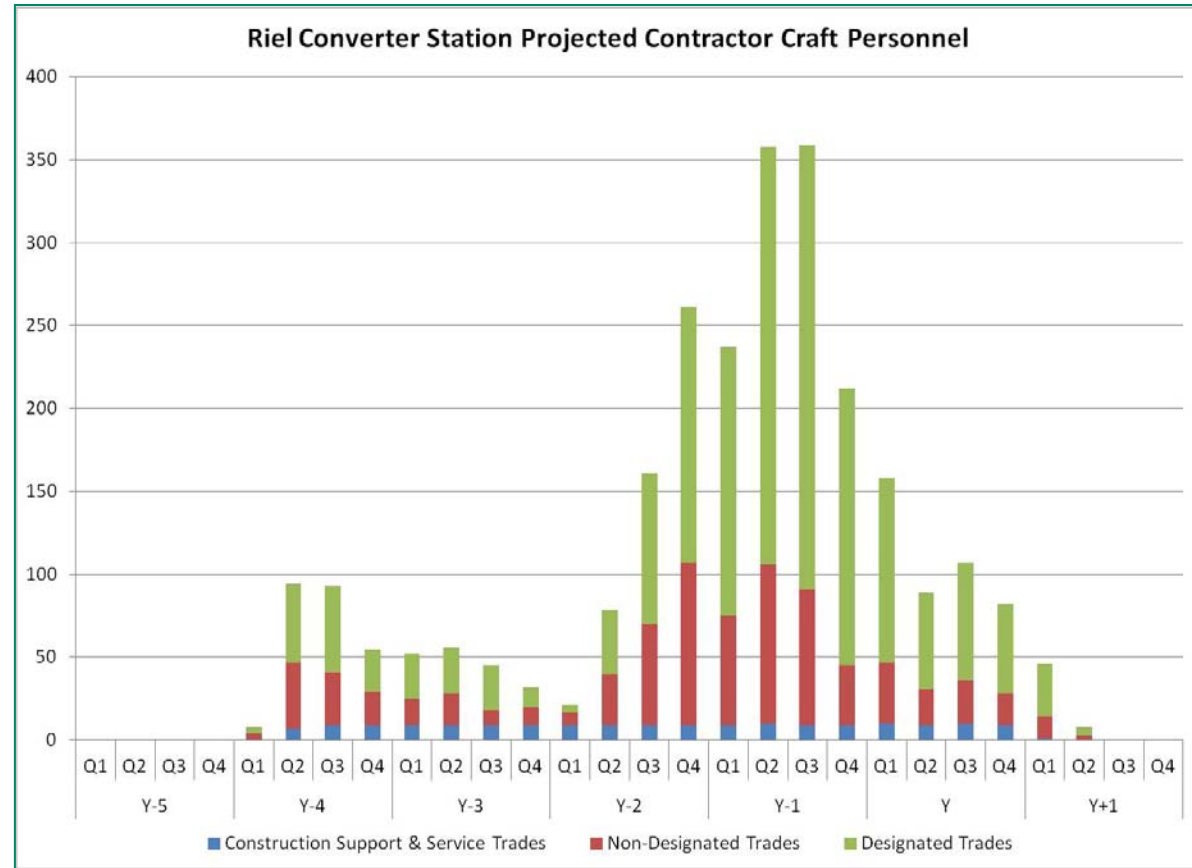


# Riel Construction Schedule

- Site preparation activities (minor) – Summer 2013
  - Work area development
  - Supporting infrastructure
- HVdc Converter Construction – Spring 2015
- Electrode – Fall 2015
- Synchronous Condensers – Fall 2015

# Projected Riel Craft Workforce

- Peak workforce of 359 craft workers
- 627 person-years craft employment

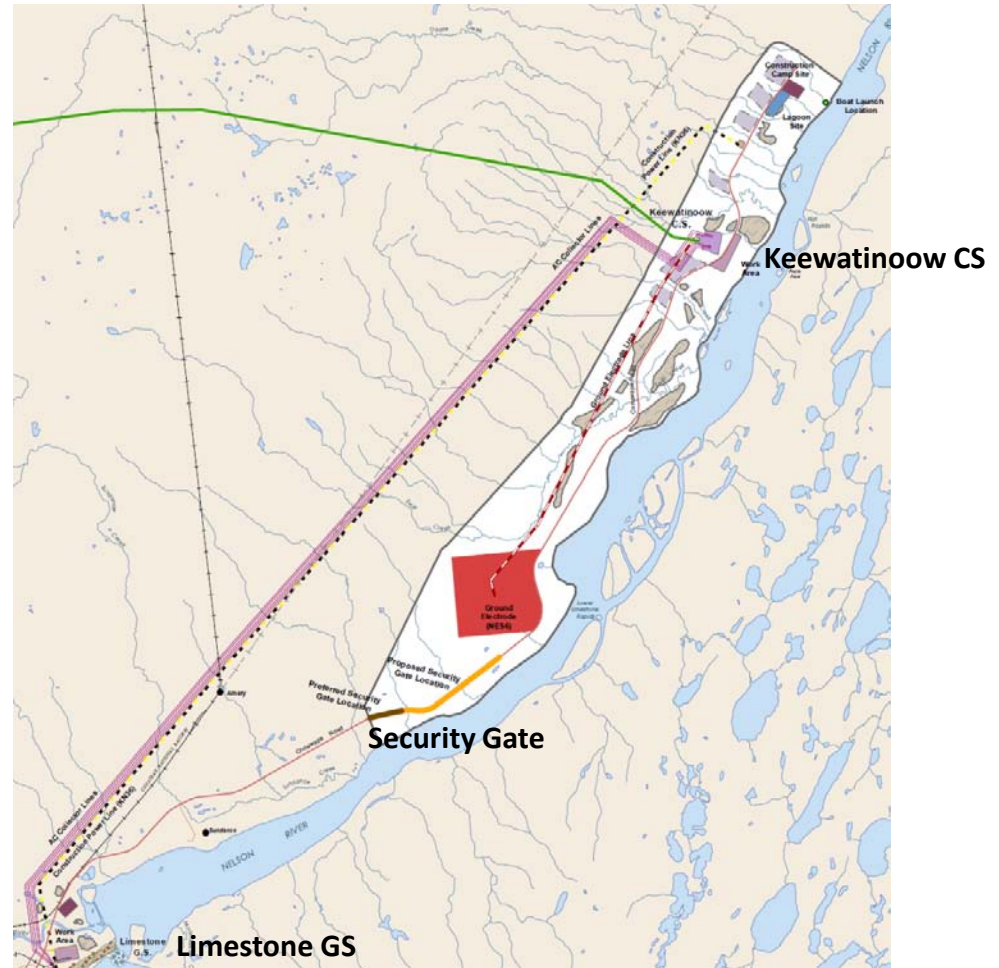


# Keewatinoow Workforce Strategy

- Several key aspects make it necessary for a specific workforce strategy at Keewatinoow
  - Remote northern location
  - Site access
  - Camp accommodations

# Access Management

- Established access, but new site
- Workforce bused directly from Gillam Airport to site
- Access to site gated & monitored for public safety
- 79 km from Gillam to site and 27 km from Bird



# Keewatinoow Camp Operations

- Activities related to operating a remote camp (catering, maintenance, security etc.)
- Camp quality & services key to attraction & retention of workers
- Discussions on-going with FLCN on camp operations contracts



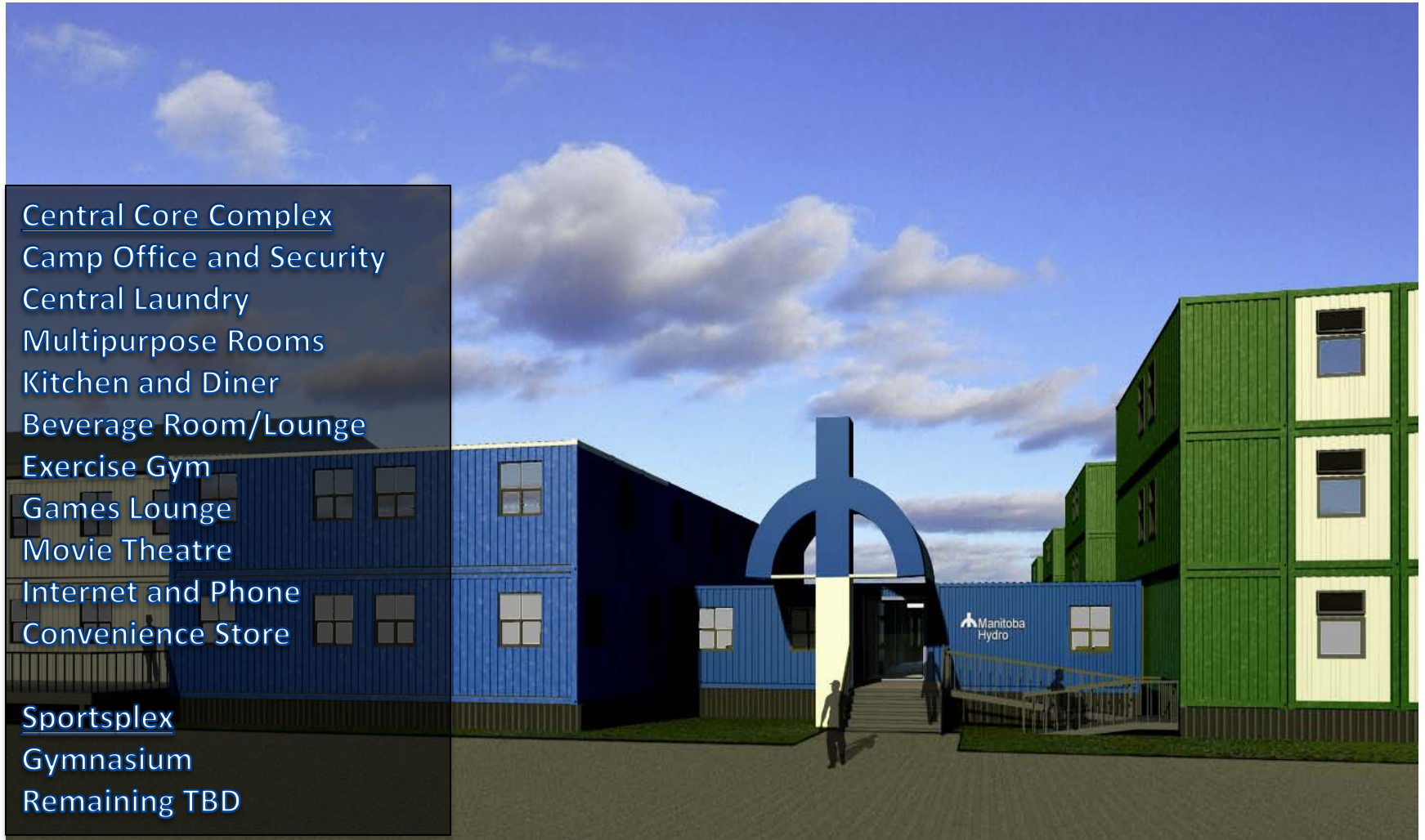
# Workforce Accommodations



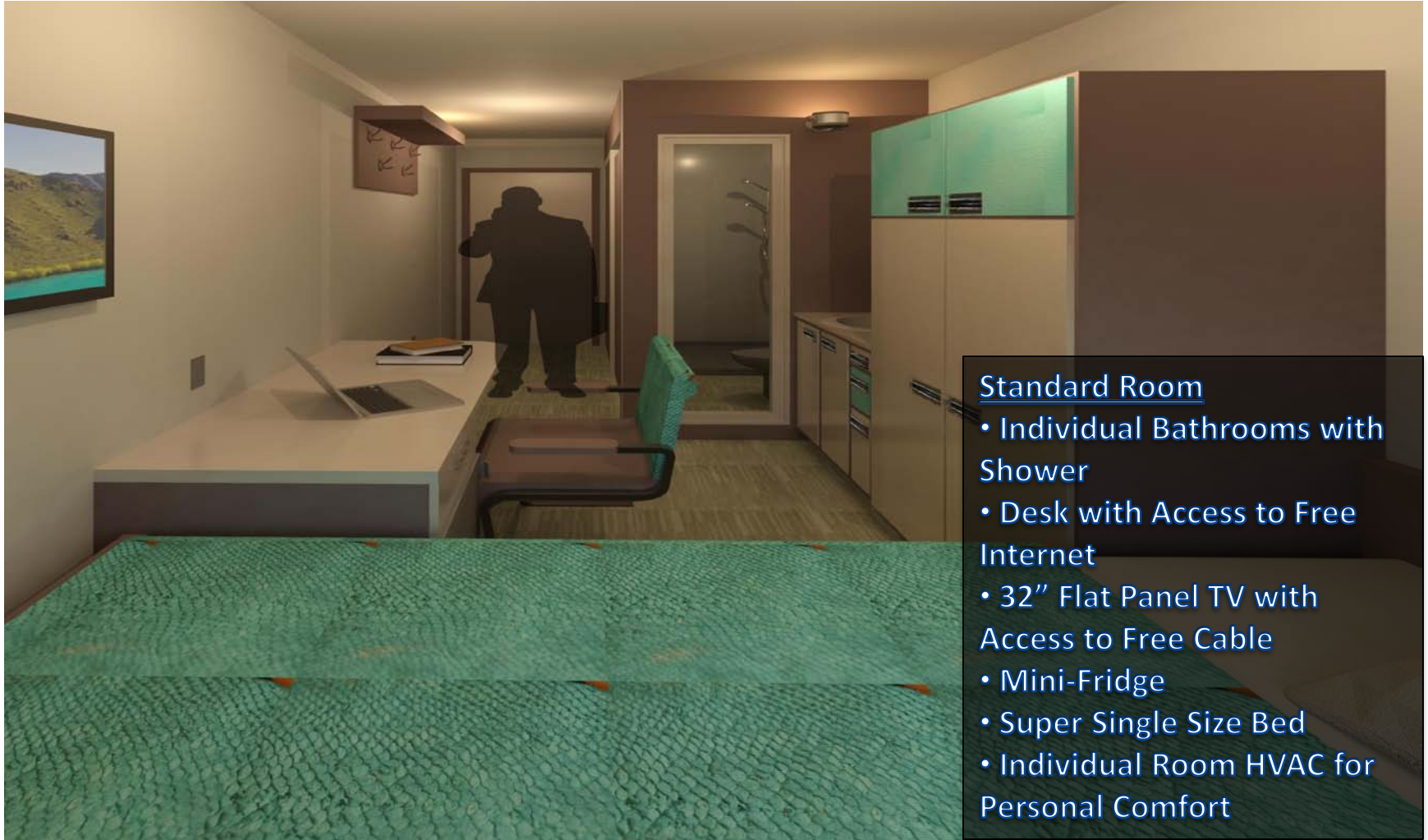
# Workforce Accommodations

Central Core Complex  
Camp Office and Security  
Central Laundry  
Multipurpose Rooms  
Kitchen and Diner  
Beverage Room/Lounge  
Exercise Gym  
Games Lounge  
Movie Theatre  
Internet and Phone  
Convenience Store

Sportsplex  
Gymnasium  
Remaining TBD



# Workforce Accommodations



## Standard Room

- Individual Bathrooms with Shower
- Desk with Access to Free Internet
- 32" Flat Panel TV with Access to Free Cable
- Mini-Fridge
- Super Single Size Bed
- Individual Room HVAC for Personal Comfort



# Over the Next Year

- Environment Act Licence
- Commencement of civil site improvements & infrastructure at Keewatinoow
- Procurement & installation of the camp expansion (350 to 600)
- Release of HVdc converter and AC switchyard requests for proposals

Thank you