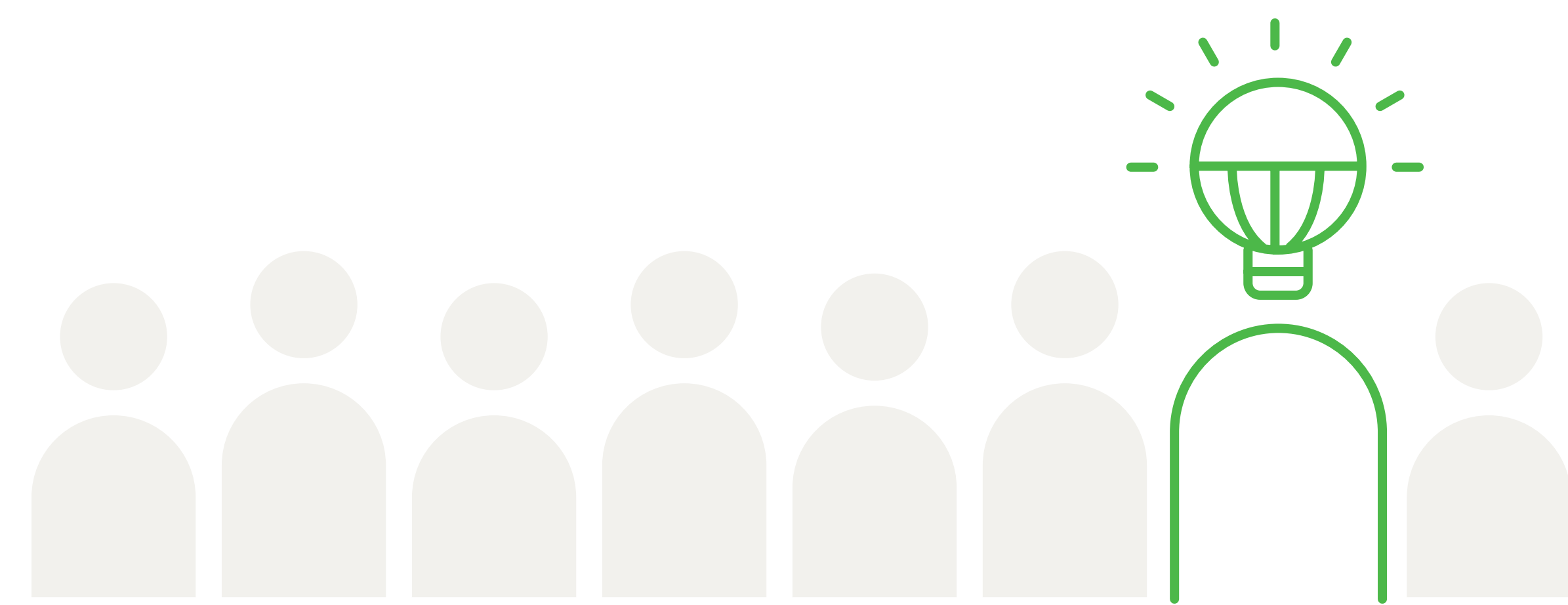


Welcome

Metro North Transmission Study – Anmore Community Information Open House – June 23, 2016

Thank you for attending this Community Information Open House about the Metro North Transmission Study.

We're here to provide you with updated information on a conceptual design of the power line upgrade along the existing right-of-way in Anmore, and other considerations as we do further study and technical work on this alternative.



About the Metro North Transmission Study

We need an additional transmission line between Coquitlam and Vancouver to address the growing demand for electricity resulting from the region's increasing population.

We're working to ensure the line is in place as early as 2020¹ to improve the region's transmission network by increasing electrical transmission capacity and strengthening reliability.

Our current transmission system is approaching its limit and without these improvements the network faces reduced service reliability. Under certain conditions, this could mean outages for the equivalent of about 30,000 homes and businesses, and service interruption for the equivalent of about 90,000 homes and businesses.

¹ Required in service date is influenced by load forecast, which is monitored annually.

Engaging with communities

Since July 2013, we've had more than 60 meetings with local and regional governments, transportation authorities, community groups, property owners, and others to discuss the need for transmission improvements and the alternatives being studied. At the same time, engagement has also been ongoing with First Nations. Information about previous engagement can be found at bchydro.com/mnt.

Further study and technical work underway

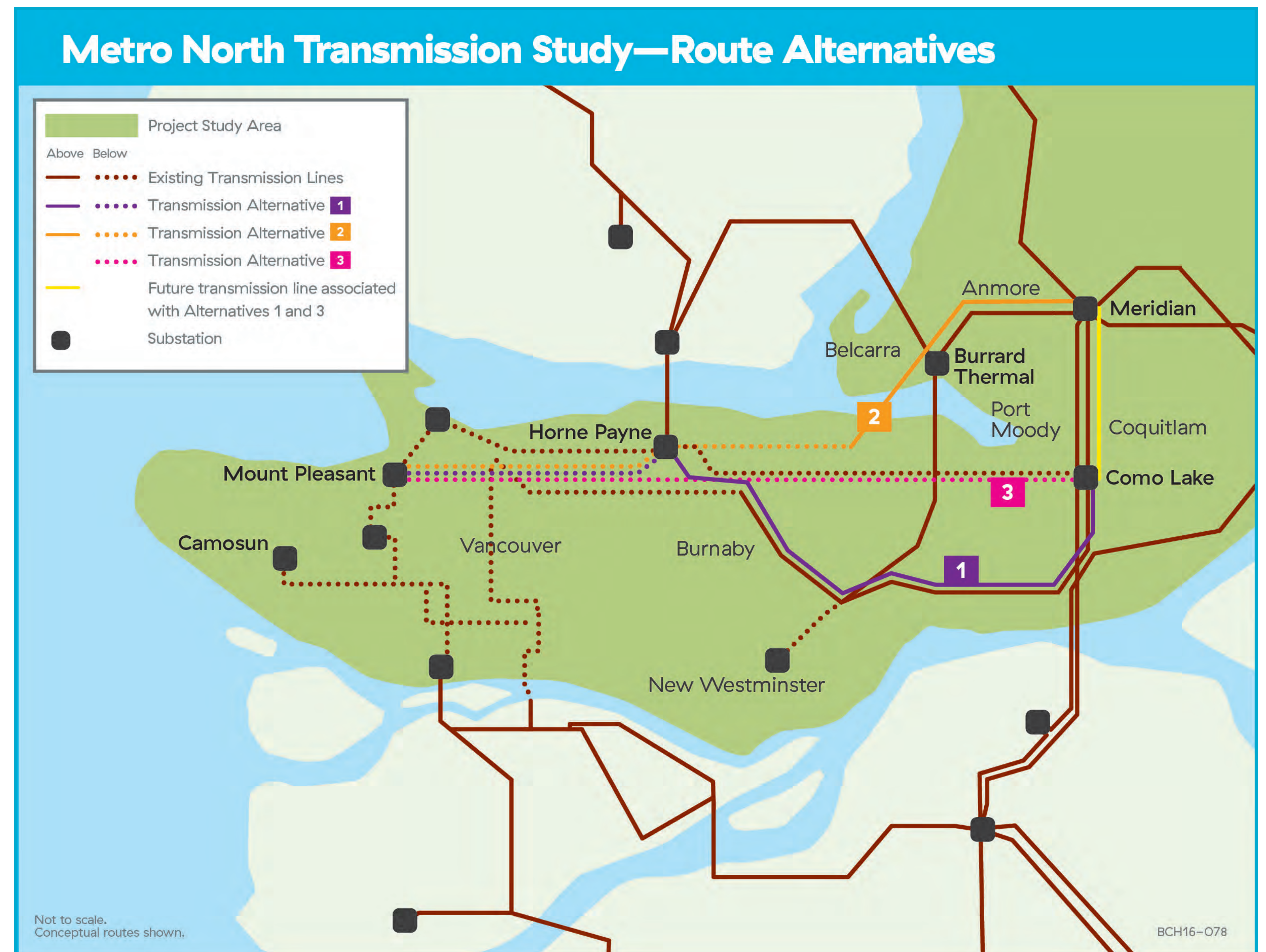
We've been studying three alternatives as part of the Metro North Transmission Study and have identified Alternative 2 (see map) for further study, technical work and consultation.

Alternative 2 affects fewer residents and property owners, has lower seismic and construction risks, and offers the best value in terms of capacity for investment, compared to the other alternatives studied.

The transmission improvement will consist of a combination of overhead transmission lines and underground transmission cables, running from the Meridian Substation in Coquitlam to the Mount Pleasant Substation in Vancouver. Generally, we'll be able to use our existing rights-of-way.

While further technical work and study is needed, the improvement could include:

- Replacement of existing overhead lines in Anmore and Port Moody, resulting in fewer, taller poles than currently exist in these areas.
- An overhead crossing of Burrard Inlet, within the current right-of-way.
- A new underground route through Burnaby and Vancouver.



Further study and technical work underway

We are exploring options for:

Positioning the line as it leaves the Meridian Substation

- Technical challenge: Crossing an existing 500 kilovolt (kV) power line given the constraints of the existing right-of-way.

Positioning the line south of Sasamat Lake

- Technical challenge: Routing the line through an area that includes a FortisBC gas pipeline, seven existing transmission lines of varying voltages and structure types, and a regional park, given the constraints of the existing rights-of-way.



South of Sasamat Lake

Crossing Burrard Inlet

- Technical challenge: Consolidating the additional line with existing infrastructure that currently crosses Burrard Inlet.

Positioning the cable around Burnaby Mountain

- Technical challenge: Routing the underground cable around the north side of Burnaby Mountain so that it is seismically secure. Along Barnet Highway, placing the cable in the roadway reduces the seismic risk.



An area of slope instability along Barnet Highway, west of the velodrome



Existing Burrard Inlet crossing, looking south

We'll also work with local governments to determine the routing of the underground cable through Burnaby to the Horne Payne Substation, and from there through Vancouver to the Mount Pleasant Substation.

Alternative 2 overview

Anmore

In developing the design of the overhead portion of the line for Alternative 2, we have been mindful of these guiding principles:

- Stay within the existing right-of-way
- Minimize the number of poles
- Use existing monopoles as the basis for design
- Preserve and/or enhance existing vegetation where possible to screen views of towers and disturbed areas
- Minimize access roads and laydown areas
- Re-vegetate affected areas

Alternative 2 would involve adding an additional 230 kV transmission line originating at the Meridian Substation in Coquitlam and extending through Anmore, using our right-of-way that has been in place since the 1960s.

Although additional technical work is required, the current preliminary design in the residential area of Anmore includes:

- Consolidating the proposed additional line with an existing line by replacing six wooden H-frame structures totaling 13 poles, with three taller steel monopoles, resulting in a reduction of 10 poles.
- Three existing monopoles, supporting two 230 kV lines, would remain in place with an added grounding wire.

We would also do a landscape and visual impact assessment, and work with landowners to discuss options to reduce impacts.



Existing structures (monopole and wooden H-frame) in Anmore



Preliminary rendering showing a new steel monopole replacing a wooden H-frame in Anmore (tower design and placement subject to change). With Alternative 2, there would be 17 fewer poles than existing in the Anmore area.

Alternative 2 overview

Port Moody/Burrard Inlet Crossing

Through Port Moody, the alignment would generally be within our existing right-of-way in and adjacent to Belcarra Regional Park and Admiralty Point.

Within the existing right-of-way, we are looking to consolidate existing lines onto fewer, taller poles. The location of these poles will be the subject of further study.

Three options were looked at for crossing Burrard Inlet. The option identified for further study:

- Uses our existing right-of-way, eliminating the need for a third transmission line crossing of the inlet.
- Uses our existing property on the south side of Burrard Inlet to transition the line from overhead transmission line to an underground transmission cable.
- Considers input from First Nations, Burnaby, Port Moody, Metro Vancouver, and the Federal government.

Burnaby/Vancouver (Mount Pleasant Substation)

Alternative 2 would require an additional transmission cable to run underground in Burnaby and Vancouver to the Mount Pleasant Substation in Vancouver. The exact alignment would be determined through technical work and discussions with stakeholders, including the City of Burnaby and the City of Vancouver.

The additional transmission line will be built underground in Burnaby and Vancouver because we don't have an overhead right-of-way. Along Barnet Highway, placing the cable in the roadway reduces the seismic risk.



Existing Burrard Inlet crossing,
looking north



Existing Burrard Inlet crossing,
looking south

Underground cable versus overhead line

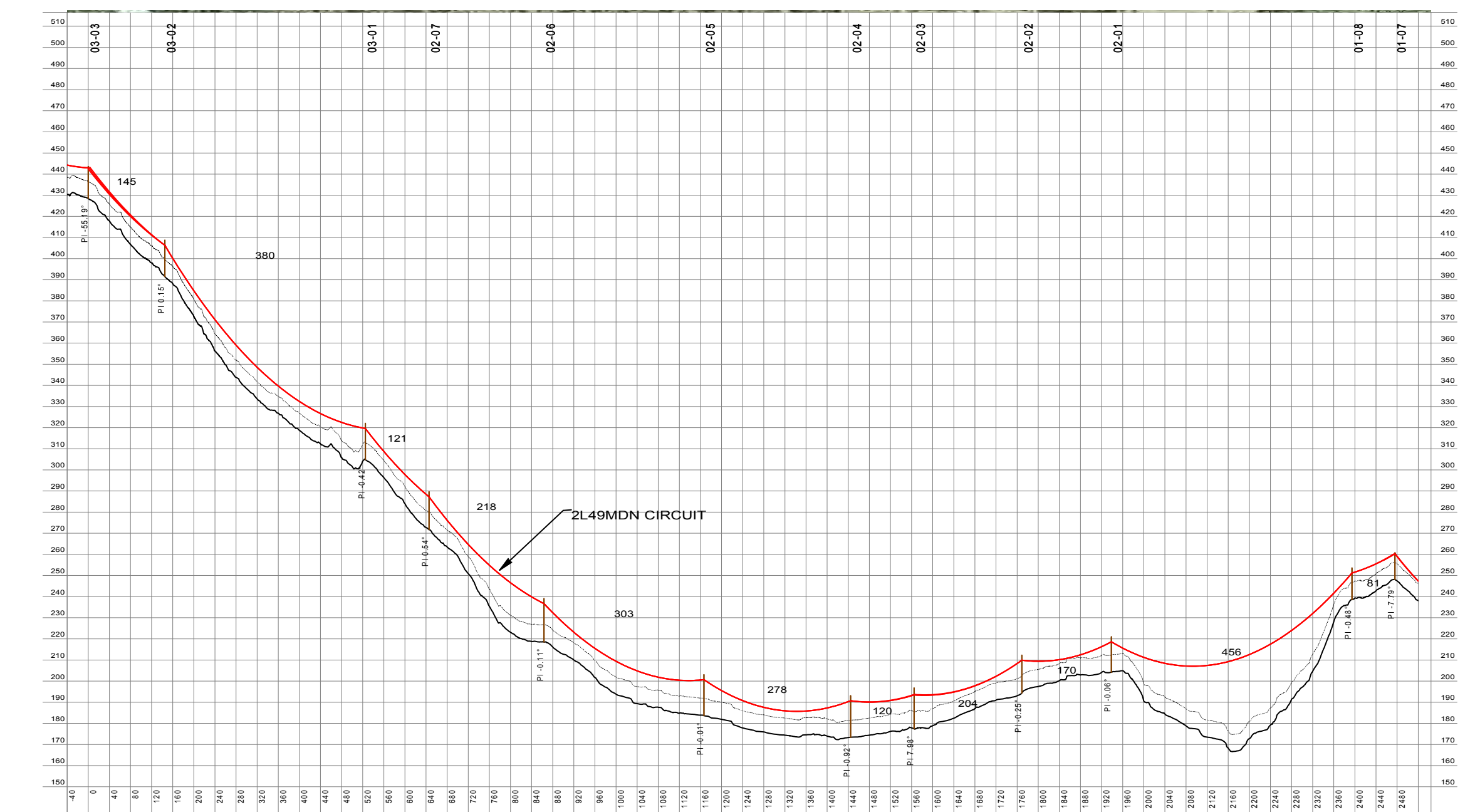
Some of you have asked “Why can’t you build the transmission line underground in Anmore”?

Our right-of-way doesn’t include the rights to place the lines underground; however, we did take a look and here’s what we learned:

- It is difficult to excavate a trench in uneven, rocky terrain along the entire existing right-of-way, especially at the west end where the topography is very steep. Extensive blasting would be required for new cable and casing.
- The crossing of the creek at the west end of the right-of-way (west of Fern Drive) would require horizontal directional drilling.
- The cable would require terminal stations and manholes (12 metres long x 3 metres wide x 3 metres deep) within the right-of-way, potentially on private land.

For these reasons, it’s technically challenging to build an underground cable within the existing right-of-way, so we looked at what is involved with building it underground in local streets, and here’s what we learned:

- The cable length would be about 4 kilometres to replace 3 kilometres of overhead line.
- We would need to build a large termination station just east of Legget Drive to transition from an overhead line to an underground cable.
- We would also have to build a second large termination station so the cable can transition to an overhead line and travel along this right-of-way to cross Burrard Inlet.
- Three existing lines would remain in the right-of-way.



Profile of the right-of-way through Anmore

The difference in cost*?

- **Overhead (3 kilometres):**
Approximately \$9 million*
- **Underground (4 kilometres):**
Approximately \$35 million*

It would cost approximately 3.5 to 4 times more to build an underground cable. It would be difficult for us to justify the significant cost increase to underground the line when there is sufficient space in an existing-right-of-way for an overhead line.

* Given the early stage of this study, costing is based on a conceptual level estimate only (+100/-35%).

Health and safety

We are committed to ensuring the safety of our communities and our workers.

Safety considerations

As with the existing transmission lines and poles in the right-of-way, our infrastructure is designed to withstand large seismic and weather events, as per industry standards. Our wires and poles are inspected yearly to ensure that they remain safe.

The line would be designed to withstand a large seismic event, and weather events including:

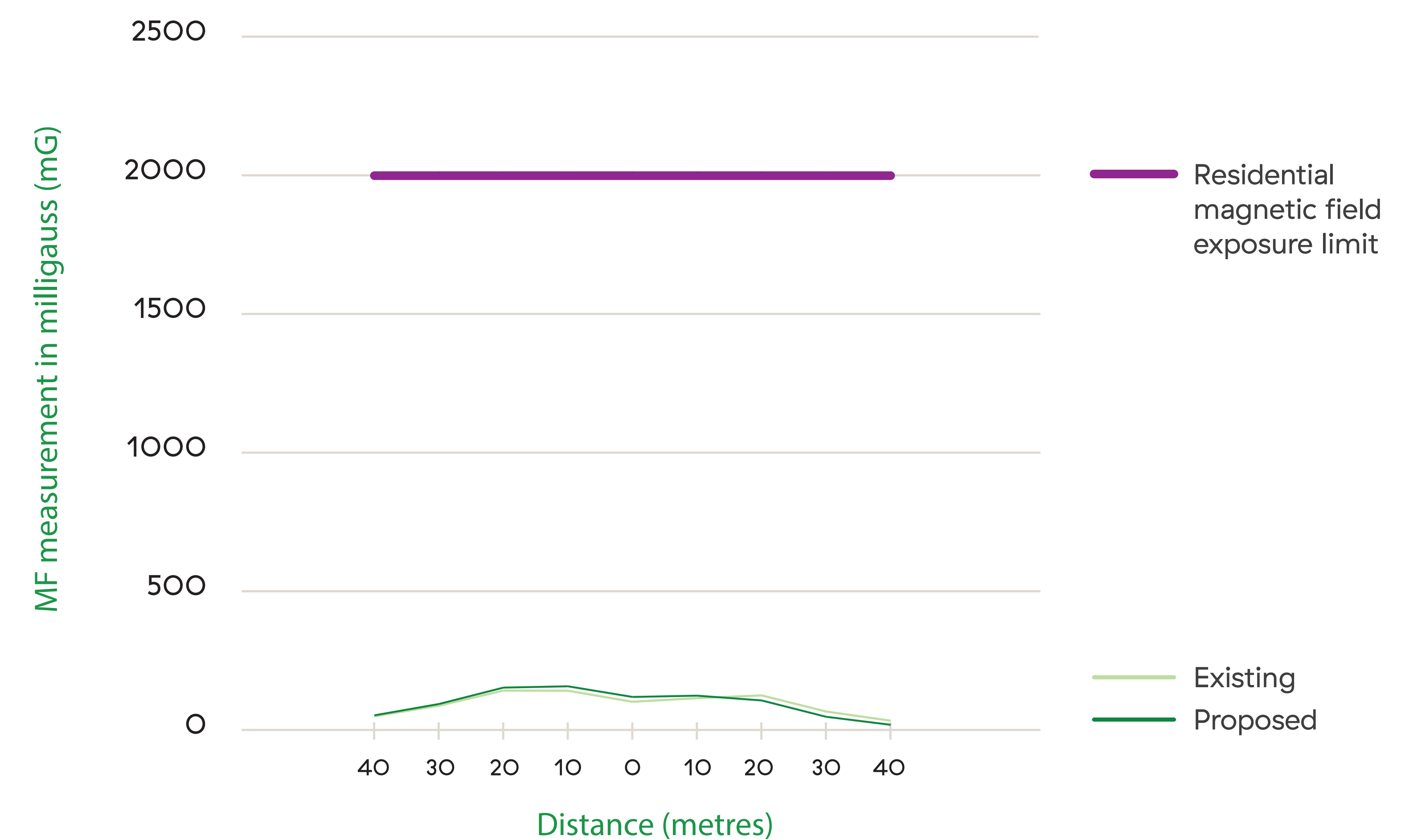
- 155 km/h winds
- 25 mm of ice accumulation around each wire

What are the EMF guidelines?

The World Health Organization endorses the guideline established by The International Committee on Non-Ionizing Radiation Protection (ICNIRP). In its guideline update in 2010, ICNIRP recommends a residential magnetic field exposure limit of 2,000 milligauss (mG) and an electric field exposure limit of 5 kilovolts per meter (kV/m).

We follow the ICNIRP guidelines when we build our infrastructure.

The relationship between EMF and health remains a subject of ongoing research. We will continue to monitor scientific research, as well as policy and regulatory developments.



Electric and magnetic fields

Magnetic field levels

The proposed work will replace the wooden H-frames with fewer, but taller, steel monopoles that will support two 230 kilovolt lines, instead of one, and a grounding wire. The existing monopoles that support two 230 kilovolt lines will remain in place with an added grounding wire.

For the new monopoles, we are arranging the order of the lines to minimize magnetic field levels resulting in lower magnetic field levels at the northern right-of-way edge.

These estimates are based on an estimated average electricity load when the line reaches its maximum rating (or the maximum amount of current the line is designed to carry) in about 30 years. The World Health Organization endorses a residential magnetic field exposure limit of 2000 milligauss (mG).

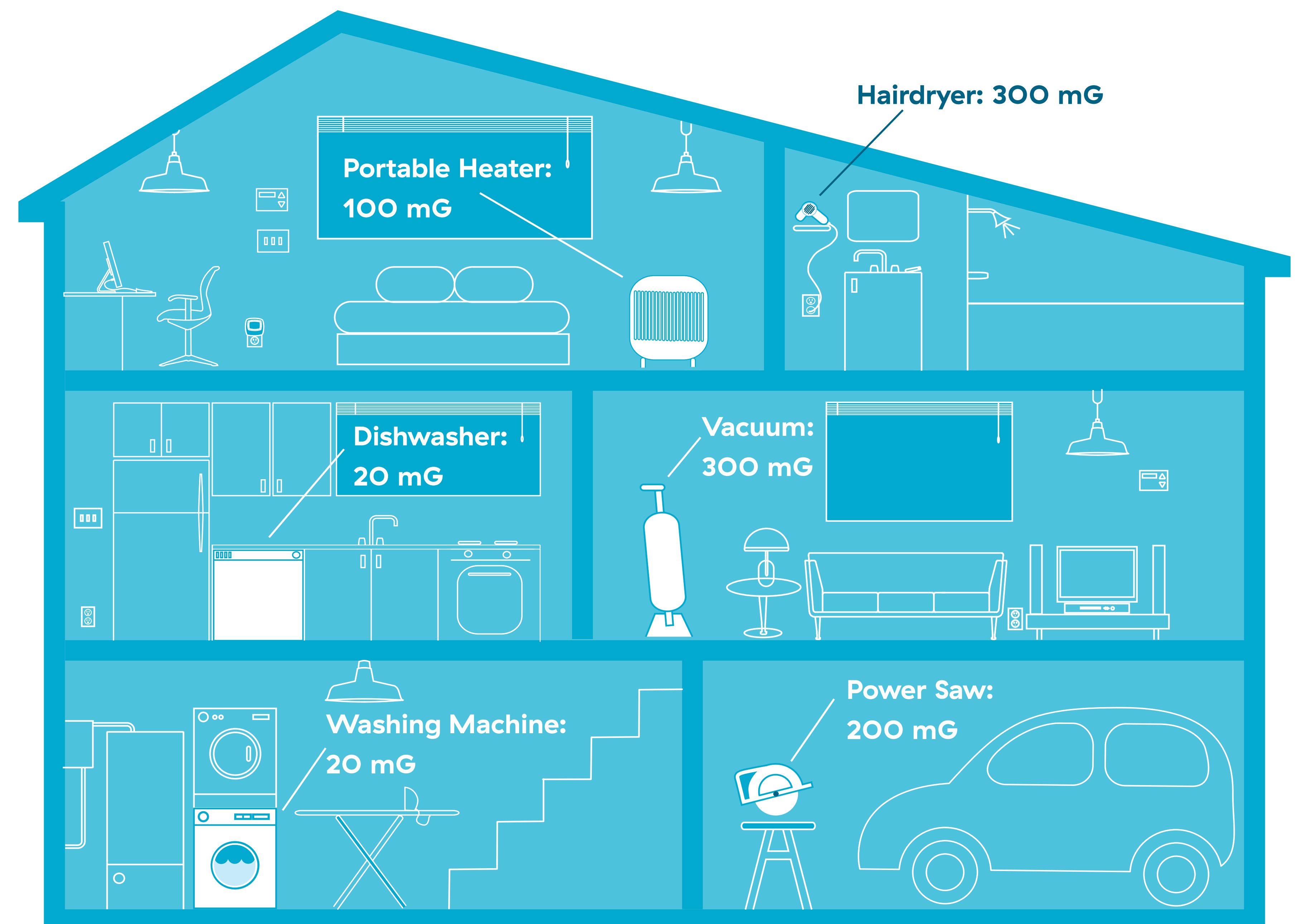
Electric field levels

On the northern right-of-way edge, the electric field level would decrease by 25% to less than 0.5 kV/m.

On the southern right-of-way edge, the electric field level does not change and remains less than 0.3 kV/m.

If you would like to learn more about electric and magnetic fields, please review the resources listed on our EMF profile, or visit our website at bchydro.com/emf.

TYPICAL MAGNETIC FIELD LEVELS IN THE HOME



Source: *EMF in your Environment*, U.S. Protection Agency, 1992.
All measurements were taken 6 inches from the sources.

Environment and archaeology process

For a project of this size, BC Hydro will conduct a number of environmental and archaeological studies.



The Anmore environment

We're committed to planning new infrastructure in an environmentally responsible manner. Studies are underway to determine how best to avoid or mitigate environmental and archeological effects.

Wildlife

- The proposed additional line would pass over top of residential backyards. Vegetation is mainly limited to planted trees, gardens, and manicured lawns. Wildlife habitat suitability is limited to species that can co-exist in suburban areas, including birds, small mammals, and some large mammals tolerant of human interactions, such as coyote, deer, and black bear.
- Forested areas are located to the west of the community associated with Belcarra Regional Park and Port Moody, and to the east associated with Crown land within Anmore. These forested areas provide increased wildlife suitability for a variety of species.



Fish habitat

- The proposed additional line would cross suspected fish-bearing Schoolhouse Creek, just west of Fern Drive, and fish-bearing Mossom Creek to the east of Leggett Drive. Mossom Creek is known to support Chinook salmon, Chum salmon, Coho salmon, Pink salmon, and Cutthroat trout. A small tributary of Anmore Creek runs to the east of Sunnyside Road.

Vegetation

- Metro Vancouver Sensitive Ecosystem Inventory (SEI) Young Forest polygons are located in Port Moody and Anmore, including one polygon east of Mossom Creek identified as mature forest.
- There have been several invasive species identified in Anmore and within 100 metres of the right-of-way, including Scotch Broom, Himalayan Blackberry, Japanese Knotweed, and Orange Hawkweed.

Archaeology

- The existing right-of-way through the Anmore area has been assessed as an area of low archaeological potential. Further archaeological assessment would be conducted if necessary.

Next steps

We'll continue discussions with First Nations, local and regional governments, stakeholders, and property owners throughout the summer. We anticipate arriving at a decision this fall regarding a preferred alternative.

Ultimately, this transmission upgrade will require a Certificate of Public Convenience and Necessity (CPCN) from the BC Utilities Commission (more information can be found at bcuc.com). Subject to receiving that certificate, we anticipate construction could start as early as 2018 and be complete as early as 2020² to meet growing demand for electricity and avoid impacts to reliability.

More information will be available at bchydro.com/mnt and we encourage you to email us at stakeholderengagement@bchydro.com to provide your feedback or to sign-up for updates.

² Required in service date is influenced by load forecast, which is monitored annually.

