

West End Substation

Public consultation April 28–May 20, 2025





Welcome

At BC Hydro, we provide clean, reliable power to homes and businesses across the West End, but our electricity system serving this community and other parts of downtown is ageing and needs upgrading.

A key step in updating our system is replacing the Dal Grauer Substation on Burrard Street, which was energized in 1953. Since this substation was powered up, your community and energy needs have changed. The Dal Grauer Substation is reaching the end of its life and can’t be redeveloped in place, so we need to construct a new substation that can accommodate future growth when needed, built to meet strict safety and seismic standards.

The West End Substation will be located underground at the Vancouver School Board’s Lord Roberts Annex property. Once we’ve finished construction, this substation will operate safely out-of-sight, topped by play space for a new school, which will be located beside the substation.

Taking this approach protects the West End’s limited housing stock and ensures that our property acquisition funds are reinvested locally in improvements to schools and parks. We believe this solution offers the best benefits for residents, businesses, and the Vancouver school community while minimizing impacts.

Since we consulted you last, we’ve obtained all the property agreements we need to build the new substation and connect it to the existing downtown power system. We’ve researched how other substations operate safely in dense, urban communities in North America and beyond, hired a leading architectural and engineering company to help advance our design, and met you at community events and the West End Farmers Market.

This discussion guide shares an update on our design progress and how we’re responding to the key themes identified during previous consultations on this project.

We’d appreciate hearing about your public art and architectural preferences, so that we can consider them as we continue to design the visible elements of the substation.

Please share your input by May 20, 2025.

An opportunity to share your thoughts

We’re taking this time to share information about how our design for the West End Substation has progressed, with a special focus on the visible parts of the substation. To learn about our plans and share your input:

- Read this discussion guide
- Join us at a public event and talk with our project team
- Visit our webpage: **bchydro.com/westendsub**
- Email us at: **westendsub@bchydro.com**

Join us in person

Join us at an open house		
To see and read detailed information about our plans and talk with members of our project team.		
Wednesday April 30 Lord Roberts School 5 pm to 8 pm	Saturday May 10 Lord Roberts School 10 am to noon	Tuesday May 13 Online – RSVP by email 6.30 pm to 8 pm

We’ll host a fourth open house for the local school community: invitations will be issued by the Vancouver School Board.

Find us at a community pop-up or the West End Farmers Market					
We’ll be out in the community for you to drop by, pick up information, and ask questions.					
Thursday May 1 Nelson Park 7 am to 9 am	Saturday May 3 Farmers Market 10 am to 2 pm	Monday May 5 Nelson Park 11 am to 1 pm	Wednesday May 14 Denman Mall 10 am to 2 pm	Friday May 16 Jim Deva Plaza Noon to 4 pm	Saturday May 17 Farmers Market 10 am to 2 pm

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The West End Substation: a unique approach


Substations are a critical link between our electricity system and your light switches and sockets. They reduce the high voltage used in our big power lines to a lower voltage for use in your homes and businesses.


Since 1953, the West End has been served by the Dal Grauer Substation, on Burrard Street. This substation is reaching the end of its life and can't be redeveloped in place, so we need to construct a new substation that can accommodate future growth when needed, built to meet strict safety and seismic standards.

Our traditional approach to developing new substations is to identify where they're needed, search for appropriate sites, and then build them above ground. This is how we've built almost all of our nearly 300 substations throughout the province because it's safe, cost-effective for our ratepayers and offers easier maintenance for our crews compared to indoor and underground substations.

How is your home powered?

 BC Hydro generates clean, renewable electricity using hydroelectric dams and generating stations.

Transmission lines move high-voltage electricity from generating stations to communities across the province. 

 In local substations, the high-voltage electricity is reduced to a lower voltage for use in your homes and businesses.

In the West End, we're taking a different approach, building underground on public property so that your community benefits from:

- A safe, modern substation to support reliable electrical service,
- Protection of local housing stock,
- Investments in local public schools, and
- Support to refresh local parks.



Dal Grauer Substation on Burrard Street

How we got here

New substations are a significant investment and take time to plan, design and construct.

Since 2017, we've consulted with First Nations, and engaged the West End community and key stakeholders, including the Vancouver School Board and Vancouver Park Board, on our proposal for a shared-use development.

Along the way, we've heard that there's support for our idea. In 2018, the largest number of respondents to our feedback form (49.5%) indicated some level of agreement with our idea. And in 2019, 53% of participants in the Vancouver Park Board's engagement process expressed some level of acceptance of our request.

We needed property rights to build the West End Substation and connect it to our existing system: these rights were granted by votes from the Vancouver School Board in 2018 and the Vancouver Park Board and City of Vancouver in 2022.

Vancouver School Board benefits	Vancouver Park Board benefits
\$75 million to fund a new Coal Harbour School and a replacement school at the Lord Roberts Annex site	\$8 million to refresh West End park spaces

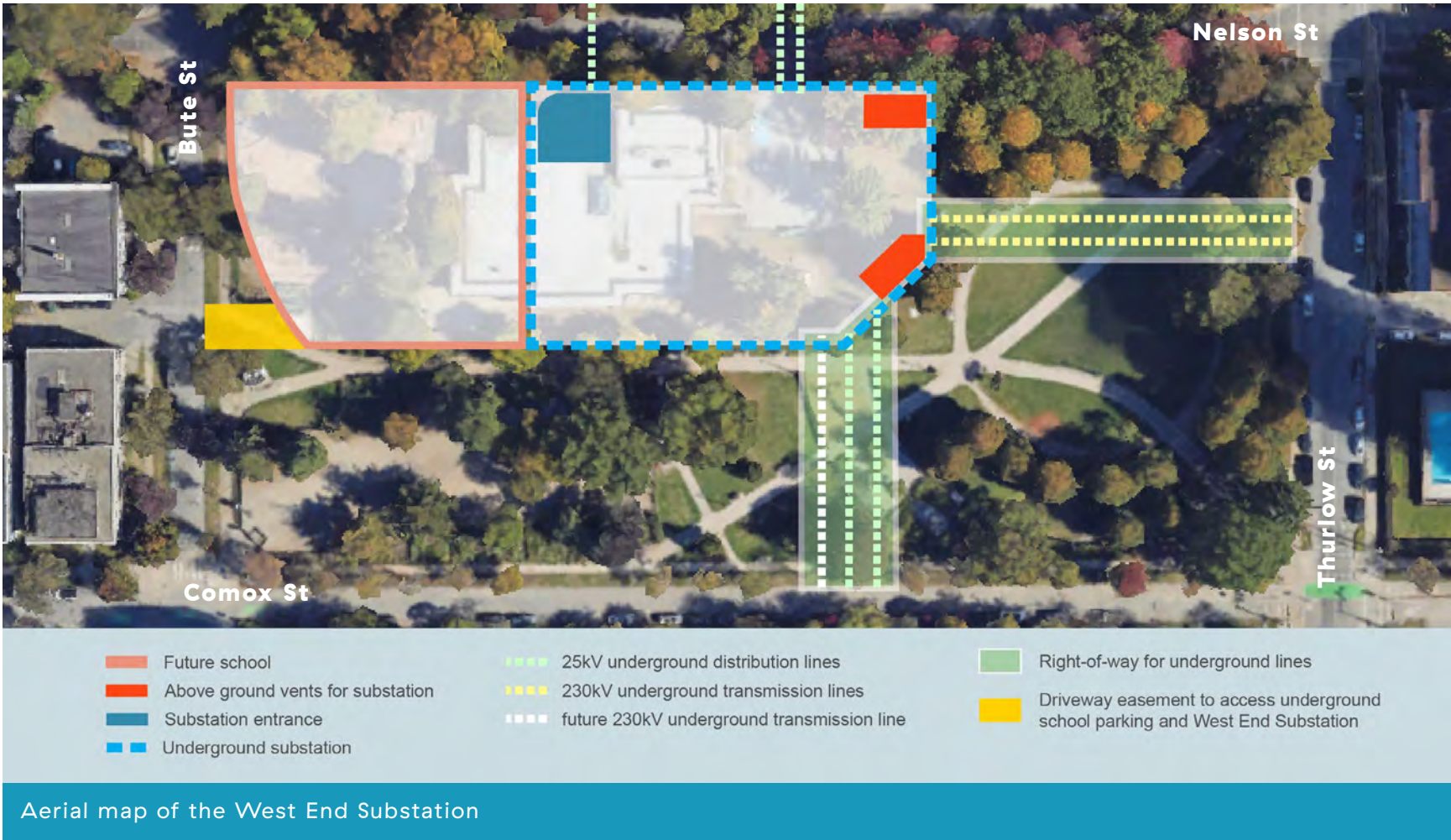


Our project to date

- 2017** Consultation on 'seed' including the West End Substation proposal
- 2018** Consultation on the West End Substation proposal
- 2018** Vancouver School Board accepted our proposal
- 2019** Vancouver Park Board consultation on park impacts
- 2022** Vancouver Park Board and City of Vancouver accepted our proposal
- 2022** Vancouver School Board started construction of Coal Harbour School
- 2022** Our ongoing participation in community events including FunFest and the farmers market
- 2025** Consultation on West End Substation design

Where we'll be working

The West End Substation will be located underground at the Vancouver School Board's Lord Roberts Annex property, adjacent to Nelson Park.



- Almost all our construction will take place within the Vancouver School Board's property.
- Our substation will be built within the eastern portion of the site and will take up to five years to construct. Once construction is complete, the substation roof will be topped with a new school field and play equipment.
- Above ground, you'll see two air vents – which will bring air into and out of the substation – and our street entrance.
- The Vancouver School Board is planning a new, multi-storey elementary school on the western portion of the Lord Roberts Annex site, adjacent to the substation.
- Access to our substation and the school parkade will be via Henshaw Lane and across Bute Street.
- The new substation will be connected to the existing electricity system by underground power lines through Nelson Park. It will take us up to three months to construct these, and we'll complete this work over winter to limit impacts to park users.

Why did we select this location to build the substation?

Substations need to be close to the center of demand to work efficiently, so we needed to find a location close to the existing Dal Grauer Substation.

In the West End, most locations suitable for a replacement substation are being used for housing. Rather than displacing homes, we believe securing underground property rights on public land is a better solution.

This approach has enabled new school facilities to be built with an increase in enrolment space, preserved valuable housing stock in the West End, and will result in an out-of-sight substation.



Our current substation design

We're working with an experienced team of architects and engineers to help us advance our West End Substation design.

Since we last shared our plans, we've refined our design, considering technical and safety requirements, and the commitments we've made to your community.

Through this process we have:

- Reconfigured our equipment layout within the substation to minimize disruption to the community during installation and maintenance in future years,
- Reduced the overall depth of the substation – which will mean less excavation and a shorter construction timeline,
- Worked with the Vancouver School Board to make sure there's maximum space for a field and play equipment above the substation,
- Determined the locations of our vents,
- Selected safe, modern transformer technology for use inside the substation, and
- Realigned our power line routes through Nelson Park in response to feedback from the Vancouver Park Board's 2019 engagement.

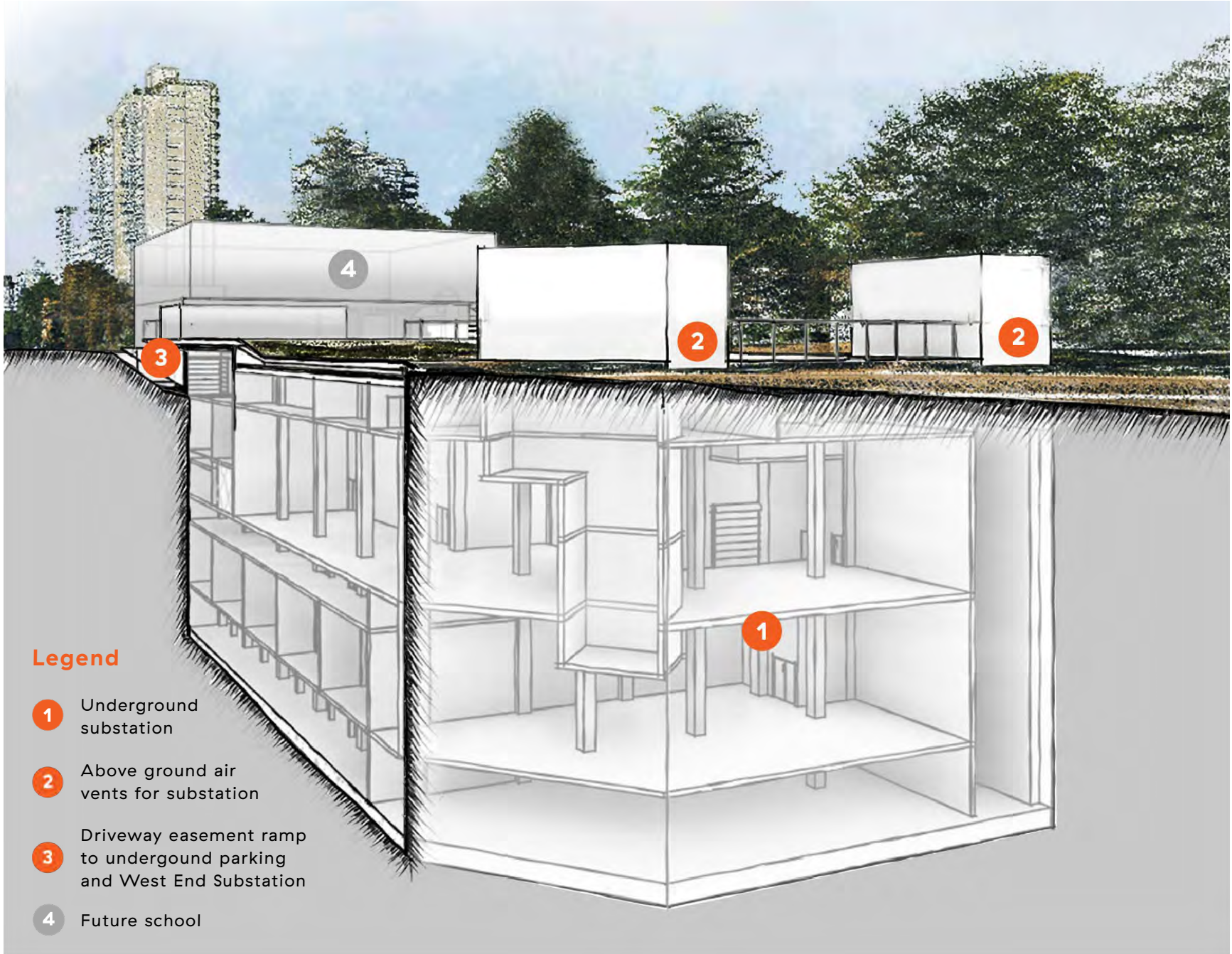
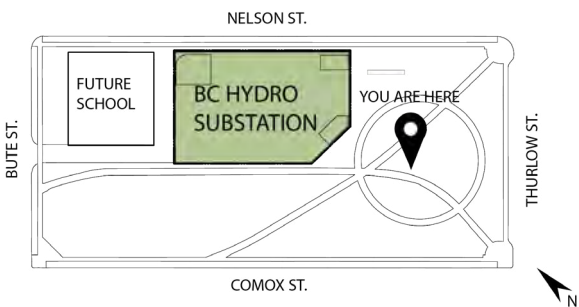
Our design will continue to advance

Between now and the start of construction, we'll continue refining our design, informed by technical, environmental and safety studies, and we'll continue our engagement with you.

We're also hiring a general contractor early in our design process so that we can ensure our final design can be built safely and efficiently, with a focus on minimizing impacts to the surrounding community during construction.

Your chance to share your input

In the following pages, we're focusing on the visible elements of our design and we'd appreciate you completing our survey to share your input on how we should advance these designs.



Legend

- 1 Underground substation
- 2 Above ground air vents for substation
- 3 Driveway easement ramp to underground parking and West End Substation
- 4 Future school



To arrive at this design, our team has considered:

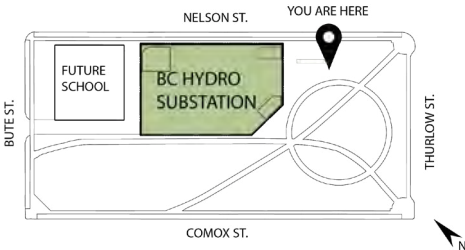
- The location of our structures adjacent to the future school, play space and a park,
- The varied uses of Nelson Park,
- Movement through Nelson Park,
- Safety and security,
- Our technical requirements,
- Examples of other industrial infrastructure integrated in public spaces, and
- Creating durable, sustainable and easy-to-maintain structures.

This image is a conceptual view. The school and substation's above-ground elements may change shape or volume.

Air vents



Looking west at air vents as currently designed



We need two vents to bring air in and out of the underground substation. One vent will be located adjacent to Nelson Street and the other will be south of this. In our current design, these vents have a minimum footprint of approximately 12 meters by 6.5 meters, and a minimum height of 7 meters. They need to be appropriately sized to ensure that enough air moves through the substation for workers and to cool our equipment.

The view in April 2025



Looking west at current conditions

What won't change about the air vents?

- Location
- Size

What's still to be decided?

- Shape
- Materials
- Artwork

Air vent FAQs

What will these vents be used for?

One vent will draw air into the substation to ventilate the space and the other will release warm air from the substation.

Will I be able to feel the air blowing from the vents?

We don't expect that you'll feel the outflow during normal operations. Modelling of our current design suggests that the warm air leaving the vent will be too slow to be felt at ground level. As our design progresses, we'll confirm this through further studies.

Will I be able to hear these vents?

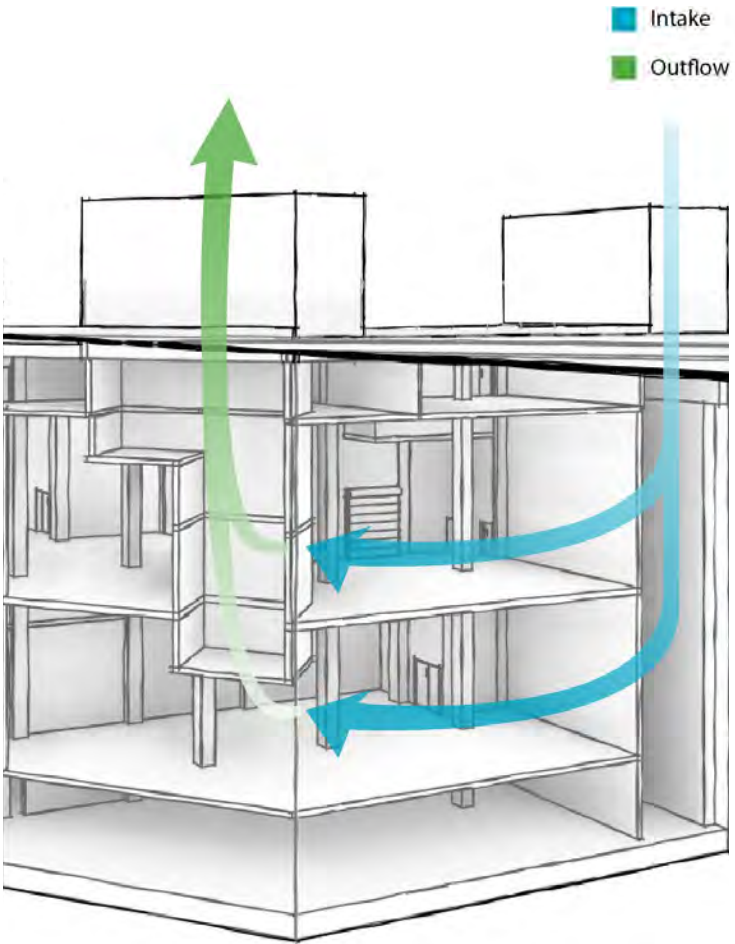
The vents shouldn't be audible above the ambient noise levels in the area. The noise generated by the vents will be due to air movement as there is no equipment installed in the structures.

Our modelling shows that the operational noise level from the substation is expected to be less than 45 dBA – which is similar to conversational speech. In 2017, Stantec measured ambient sound in Nelson Park during the day at 56–57 dBA – so we don't believe our vents will be audible, and we'll confirm this through further studies.

Will I see anything coming out of the vents?

You'll only see outflow from the vents in the unlikely event of an emergency. In this case, the vents would be used to rapidly remove smoke and heat from the building and send it high into the air to dissipate.

This approach is similar to the design of underground structures like parkades and subways, which are designed to ensure the safety of anyone inside the building during an emergency.



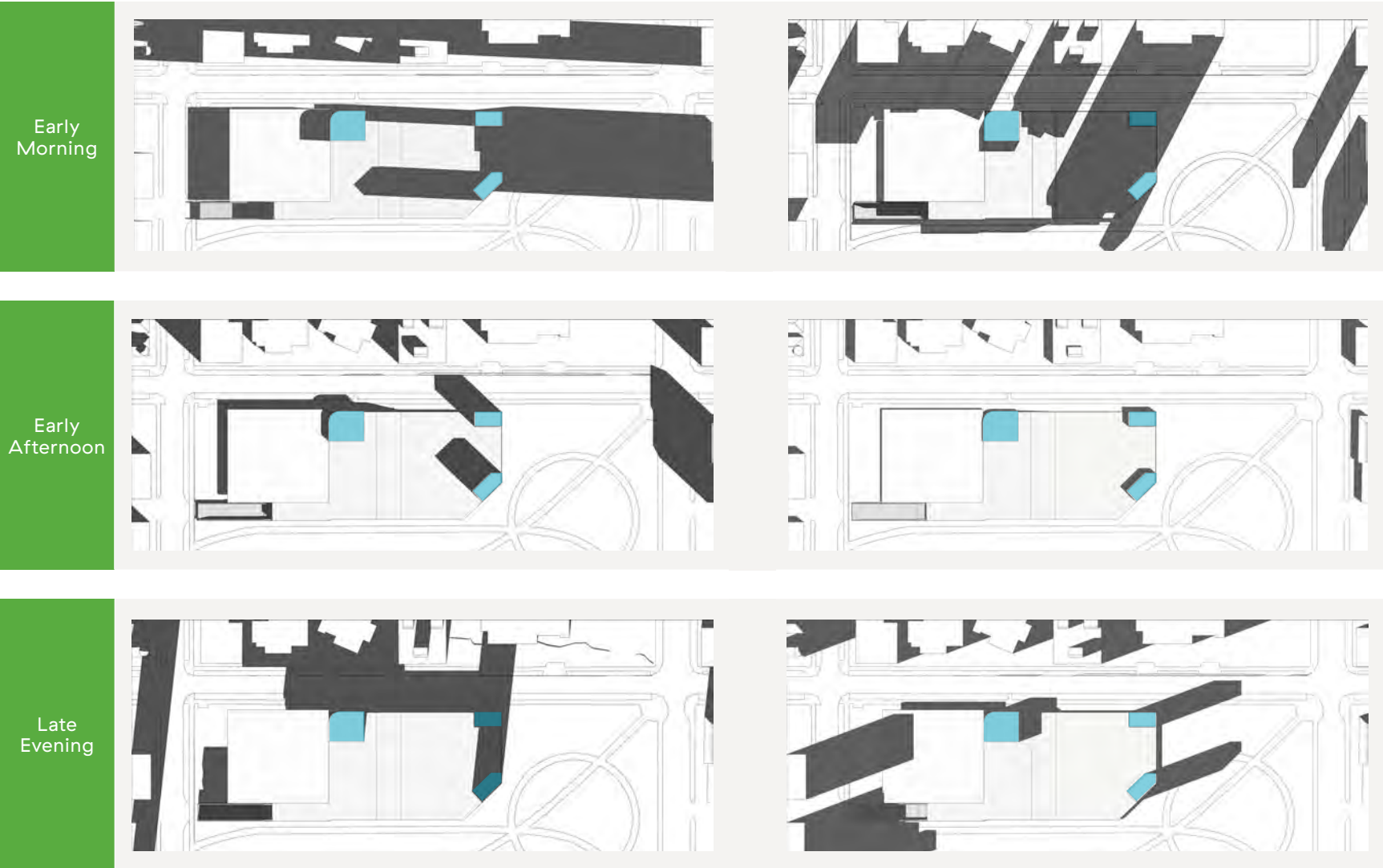
Putting heat to work

Working closely with the Vancouver School Board, we're exploring whether heat from our substation equipment could be repurposed, via a heat exchange, to heat the new school at the Lord Roberts Annex property. This would be similar to existing 'district energy' projects, and we think it's a smart way to support energy efficiency and reduce school heating costs.

Shadow studies

Winter Solstice

Summer Solstice

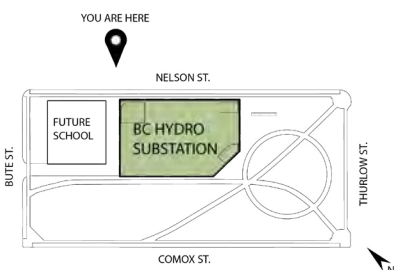


These diagrams show the shadows expected from the substation air vents as currently designed. There may be additional shadows from the new school, other structures, and trees in the area.

Street entrance



Looking south at street entrance and air vents



Our street entrance will be located on Nelson Street, close to the Bute Street intersection. This will be an entrance for visitors arriving at the substation on foot, and an emergency exit.

The view in April 2025



Looking south at current conditions

What won't change about the street entrance?	What's still to be decided?
<ul style="list-style-type: none">LocationSize	<ul style="list-style-type: none">MaterialsArtwork

Your opportunity to help shape visible elements

In Vancouver, we’re fortunate to be surrounded by art that honours First Nations and reflects community diversity, and we recognize that the West End is home to many talented artists.

As we advance plans for the West End Substation, we have an opportunity to integrate your preferences into the design of the substation air vents and street entrance, so that they are meaningful for your community.

At this time, it’s possible for us to explore themes, materials, styles, and colours.

Ideas for your consideration



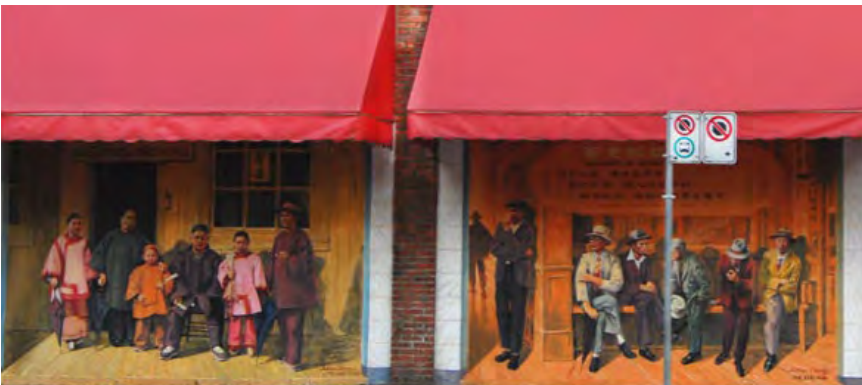
We’re sharing a selection of images of artwork and architecture to spark your ideas:



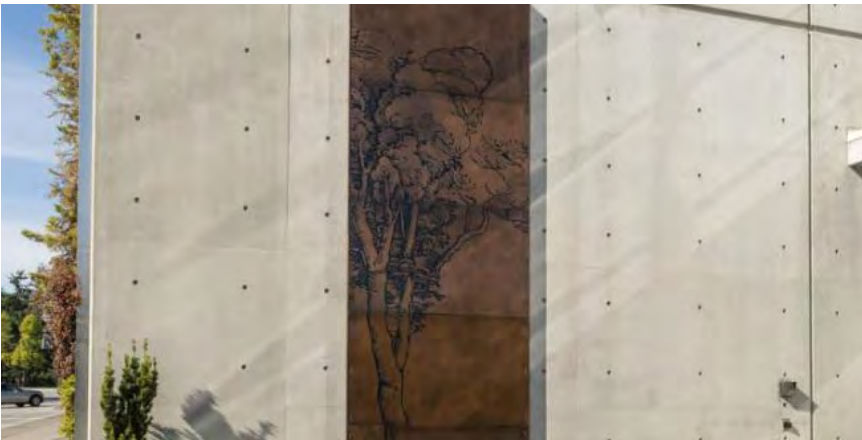
- Which of these images do you like the most and why?
- Are there materials you prefer?
- Is there a particular theme or story you think the artwork should focus on?

If you’re looking for more inspiration, take a look at the City of Vancouver’s public art registry: vancouver.ca/publicart.

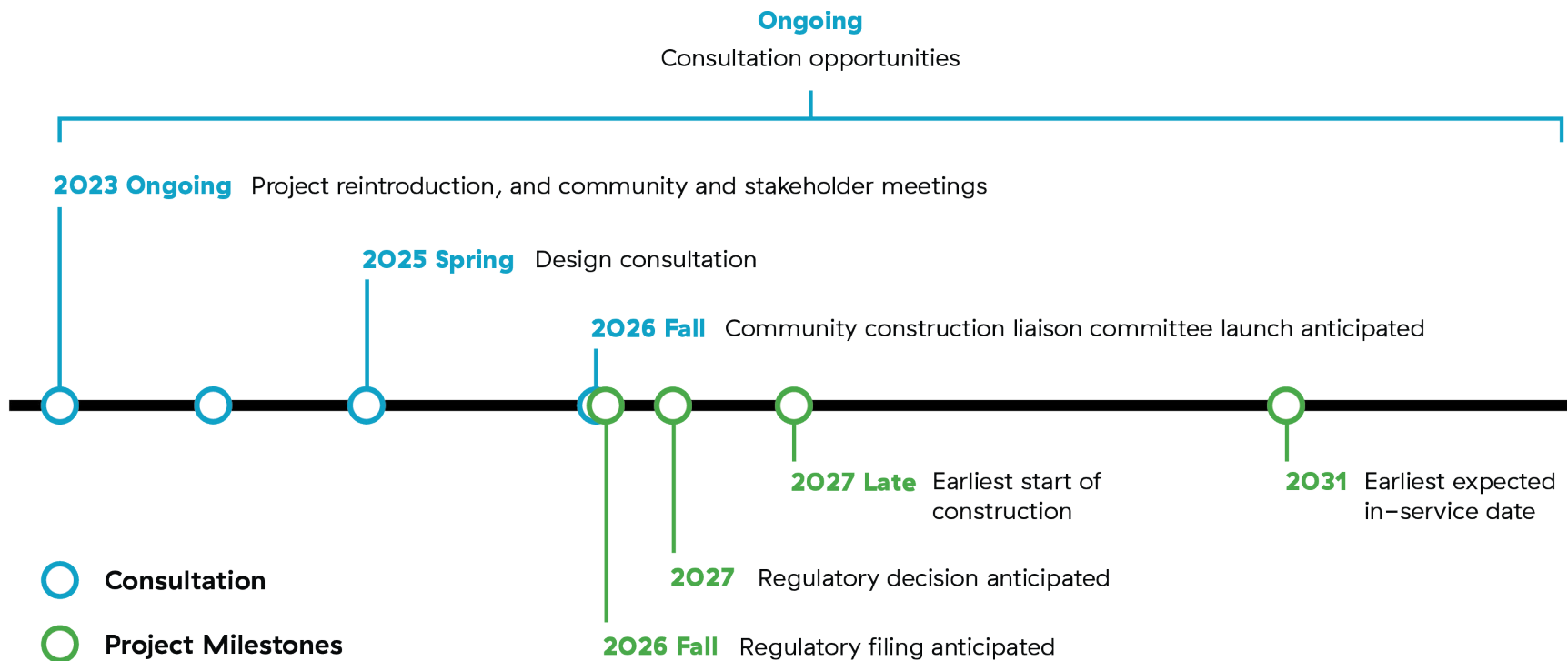


Light	Germaine Koh, GroundWater SeaLevel, North Vancouver, 2014	These blue and green lights shift over time, reflecting climactic conditions in the immediate area. They represent soil moisture and the movement of the nearby ocean to, “Remind us of, and return us to, the pace of natural processes,” and connect us to these important processes.	
Mural – painting	Debra Sparrow, Chief Janice George, Angela George, Blanketing the City IV: Cathedral Square, Vancouver, 2021	The Blanketing the City mural series celebrates First Nations’ cultures by showcasing Coast Salish weaving. These seven murals feature a collaboration between artist Debra Sparrow (xʷməθkʷəy̓əm) and master weavers Chief Janice George (Sḵwxwú7mesh) and Angela George (səlilwətaɬ).	
Panels – layered facade louvers	Foster + Partners and Heatherwick Studio, Fosun Foundation Art Center, Shanghai, China, 2017	The exterior design of this arts center features a curtain-like facade made up of bronze tubes. These are arranged in three layers, creating semi-transparent screens that can move as the building’s uses change. This facade was inspired by traditional Chinese theaters.	

Relief – concrete	Susan Point, Story of Life, North Vancouver, 2014	Susan Point is a xʷməθkʷəyəm (Musqueam) First Nations artist and she makes use of traditional motifs in a personal style. This concrete relief mural includes butterflies frogs, flora, fauna, and two figures, which the artist says are, “Welcoming all peoples to this land.”	
Panels – metal forms	Aedas Architects, Holland Park School, UK, 2012	This British school’s façade includes curved copper, brass and bronze panels. These panels have been designed to shade the interior of the building and to integrate it with its surroundings in a heavily-wooded conservation area.	
Mural – paint	Shu Ren Cheng, Snapshots of History, Vancouver, 2010	These murals are painted on buildings in Vancouver’s Chinatown and depict snapshots of real families. They are based on early photographs, and designed to draw attention to – and celebrate – the contribution of Chinese cultural heritage in Vancouver.	

Panels – glass, hand-painted collage	Devon Knowles, Walking Spectrum, Vancouver, 2021	This glass-panel artwork features a photographed collage split into 14 hand-painted designs. Inspired by a walk within a 2-minute radius of the site. It captures the city’s colors, textures, and shapes, to represent the urban landscape.	
Panels and light	Marianne Nicolson, Rise and Fall, Burnaby 2021	Marianne Nicolson is an artist activist of the Musgamakw Dzawada’enuxw. These blue-green glass panels are sandblasted with patterns representing signatories to the 2016 Paris Climate Agreement. The impression changes from daylight to nighttime illumination.	
Panel – inscribed copper	Jacqueline Metz and Nancy Chew, Tree of Knowledge, Surrey, 2004	This copper panel, inscribed with a historical woodcut image, is installed outside Semiahoo Library, Surrey. The branches represent the accumulation and growth of knowledge through time.	

Timeline



BC Utilities Commission

In British Columbia, utilities are independently regulated by the BC Utilities Commission (BCUC). When BC Hydro plans to build or enhance its system, it often has to submit its plans to the BCUC for review. The BCUC will consider whether the project is needed and if it's in the public interest. There are opportunities to participate in this review process.

In our timeline above, we've estimated that the BCUC's review of our project will take about one year, but it may take more or less time, and this would impact our schedule.

We'll keep you informed about our timeline, and you can learn more about the BCUC on its website: bcuc.com.

Questions about school design? Or the park refresh?

At BC Hydro, we're responsible for developing the West End Substation.

If you have questions or suggestions about other work in this area, please contact:

- The Vancouver School Board with questions about schools: projects@vsb.bc.ca.
- The Vancouver Park Board with questions about the park: **via 311**.

Our commitment to your community

We understand that this new substation will be a permanent part of your community, and that construction work is disruptive. That's why we're making efforts to get to know you, to learn about your interests and concerns, and to work together to identify how we can try and mitigate construction impacts. We also understand that interests can change over time, so we're committed to working with you throughout our project.

Since our last consultation, we've stayed connected by:

- Sponsoring and attending the West End Farmers Market,
- Attending Lord Roberts FunFest,
- Volunteering to support school streets and at a community clean-up, and
- Meeting with local groups and stakeholders one-on-one.

In the following pages, we've included an update on the key topics we've been asked about.



Our team at the West End Farmers Market

Community Construction Liaison Committee

About a year before we expect to start construction, we'll launch a 'Community Construction Liaison Committee'.

We'll meet with this group regularly to share information about our work, and to ask for feedback and input from the community.

We'll be looking for members who are well-connected in the West End to give a voice to your community.

Do you know someone we should ask to join us? Or groups that should be represented? Let us know in the online survey.

What we’ve heard from the community to date

During our 2017 and 2018 consultations, and as we’ve met you at community events, you’ve asked about the impacts of our project. These are some of the topics we’re asked about most often.

Construction	
General impacts	<ul style="list-style-type: none">○ We’re committed to addressing or mitigating construction impacts as far as practical, and we have an excellent history of this, demonstrated most recently in Vancouver with our Mount Pleasant Substation project in False Creek.○ As examples, we’re planning to mitigate noise impacts by implementing noise barriers and we’ll follow best practices to mitigate dust such as spraying water.
Traffic	<ul style="list-style-type: none">○ We’ve heard your concerns about traffic and parking, and we’ll develop a traffic management plan in consultation with your community and share it with you for input.○ Our plan will detail the type and number of vehicles we expect to service the site, as well as the how often and long we expect them to be on site.○ We’ll also require off-site parking for our workers and contractors as an additional measure to reduce traffic congestion during construction.
Duration	<ul style="list-style-type: none">○ We expect our construction will last up to five years – three years to excavate and build the substation back up to ground level with a roof, and two years to install the mechanical and electrical equipment.○ We understand there’s been a lot of construction around the West End and, to limit the impacts on the community, we’re working with the Vancouver School Board to explore if portions of the school construction could start before our substation construction finishes to help reduce the overall construction duration.

Lord Roberts Annex	
Students	<ul style="list-style-type: none">○ The Vancouver School Board expects to open the new Coal Harbour School in late 2025, funded by BC Hydro’s property acquisition funds, and has surveyed current Lord Roberts Annex families to ask whether they would prefer to attend Coal Harbour or Lord Roberts.
Memorial playground	<ul style="list-style-type: none">○ We’ve committed to removing the memorial playground equipment, storing it and reinstalling it at a new location.○ We’ve spoken with the Lord Roberts Annex Parent Advisory Committee (PAC) about their preferences, and we’re continuing to work with them and the Vancouver School Board to understand the best uses for this equipment.
New school at the property	<ul style="list-style-type: none">○ We understand that building a new school at the Lord Roberts Annex site is a priority in the Vancouver School Board’s capital plan.

Nelson Park	
Trees	<ul style="list-style-type: none">○ In response to Vancouver Park Board engagement, we agreed to realign our power line routing in Nelson Park to avoid ‘high-priority trees’ – those that have unique value.○ We’ve surveyed the trees in Nelson Park and know we will need to remove 9 trees total, with an additional 12 trees that will be monitored and/or relocated in consultation with the Park Board.○ Trees removed will be replaced at a 1:1 ratio within Vancouver by the Vancouver Park Board, funded by BC Hydro.
Community gardens	<ul style="list-style-type: none">○ Garden plots adjacent to the Lord Roberts Annex fence must be relocated before we start construction.○ We’ve met with the Nelson Park Community Gardeners and the Vancouver Park Board to discuss where the Park Board might have space for temporary gardens and how we can support gardeners who have to relocate.○ In February 2025 we attended the Nelson Park Community Gardeners AGM to reiterate our commitment to providing this support.
Playground	<ul style="list-style-type: none">○ In response to Vancouver Park Board engagement, we agreed to realign our power line routing in Nelson Park, and as a result, our construction will require the temporary removal of the park play equipment.○ Our power line construction will take place over winter, when the park is less used, and is expected to take up to three months.○ We’re working with the Park Board to explore if there are opportunities for alternative locations for the play equipment.
Dog park	<ul style="list-style-type: none">○ You and your canine friends will be able to continue using the dog park safely throughout our construction. We’re not working in the dog park and don’t anticipate any reason to ask for it to be closed.○ Human and dog visitors’ safety and comfort during construction is an important consideration for us.

West End Farmers Market	
General information	<ul style="list-style-type: none">○ The West End Farmers Market will continue on Comox Street throughout our construction.○ We’ve committed to completing our power line work through Nelson Park in winter, in part, to avoid impacting the market.○ We meet regularly with market leadership to share updates on our project and have committed to supporting alternative parking for market vendors throughout our construction period.○ We’re proud to have been a sponsor of the West End Farmers Market since 2023 and to have met many of the farmers and attendees.

Electric and magnetic fields

When we speak with communities about projects, it’s common for us to be asked about electric and magnetic fields or ‘EMF’. These invisible fields are present everywhere that electricity flows, including power lines, household appliances, and even around the wiring in your walls. People are mostly interested in magnetic fields as they are not easily shielded like electric fields, which is why we focus on magnetic fields.

Over 40 years, health agencies, including the World Health Organization and Health Canada, have reviewed numerous scientific studies and have concluded that there are no confirmed health consequences from low-level electric fields and magnetic fields, like those near power lines.

These health agencies have endorsed maximum magnetic field exposure guidelines created by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), which include large safety factors. These guidelines are:

- 2,000 milligauss (mG) for residential exposure, and
- 10,000 mG for occupational exposure, for people like power line technicians.

Our commitment to you

To help alleviate public concerns about EMF, we’ve committed to:

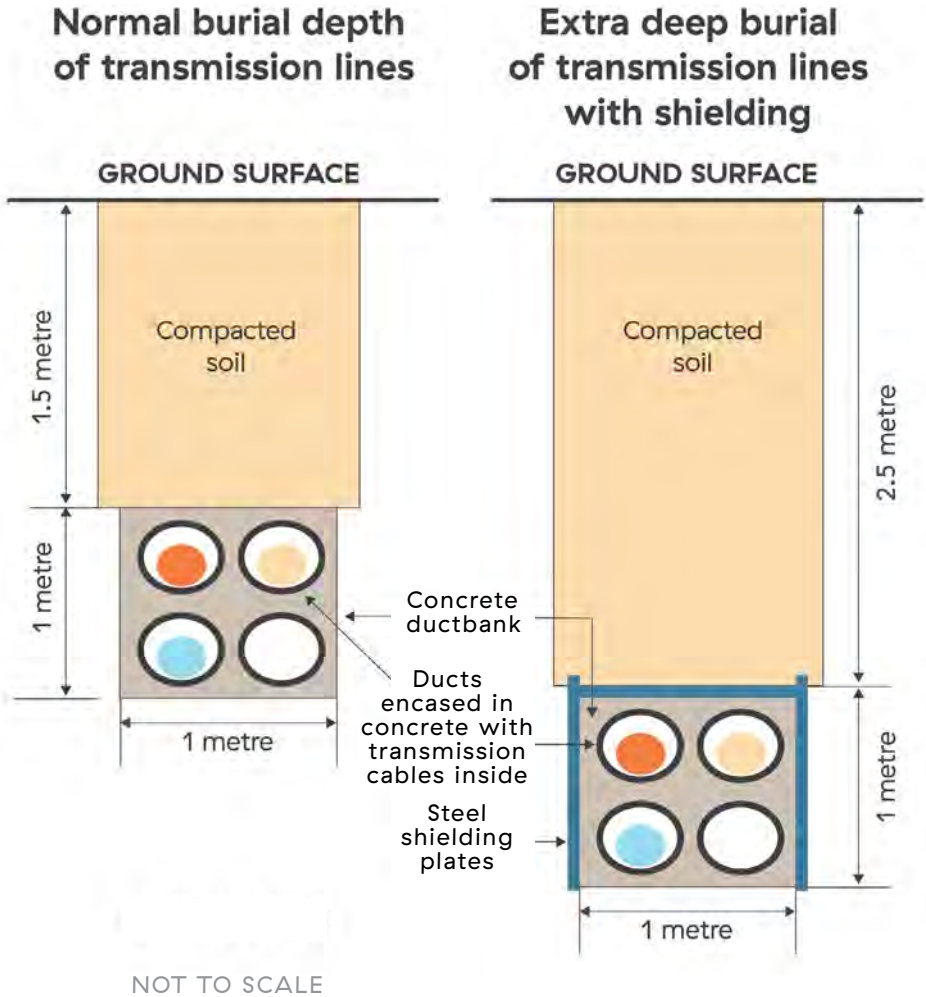
- Burying transmission cables deeper underground and implementing magnetic field shielding within the boundaries of Nelson Park and Vancouver School Board property.
- Commissioning an independent study of current EMF levels at the existing Lord Roberts Annex property and Nelson Park, and reporting this publicly.
- Confirming the EMF levels expected at and around the proposed substation, based on final design, and report this publicly.
- Commissioning an independent study to verify EMF levels once the substation is in-service and continuing to monitor EMF levels and reporting them publicly on an ongoing basis.

During our previous consultations, we explained that the main source of EMF from our project will be the transmission lines leading into the substation, and that the strength of magnetic fields decreases rapidly with distance from the source.

Since 2018, the shortest distance between a transmission line and a classroom has reduced to 45 meters. At this distance, the magnetic field experienced from the transmission line will remain at less than 1 mG, far below the 2,000 mG conservative limit endorsed by health authorities.

Levels of EMF right above the transmission lines, in Nelson Park and the school playing field, will also be very low. At peak times, magnetic fields will be only 5% of the health agency endorsed conservative exposure limit, and won’t pose any significant risk to the public.

Want to know more?
Find more information on our website:
bchydro.com/EMF





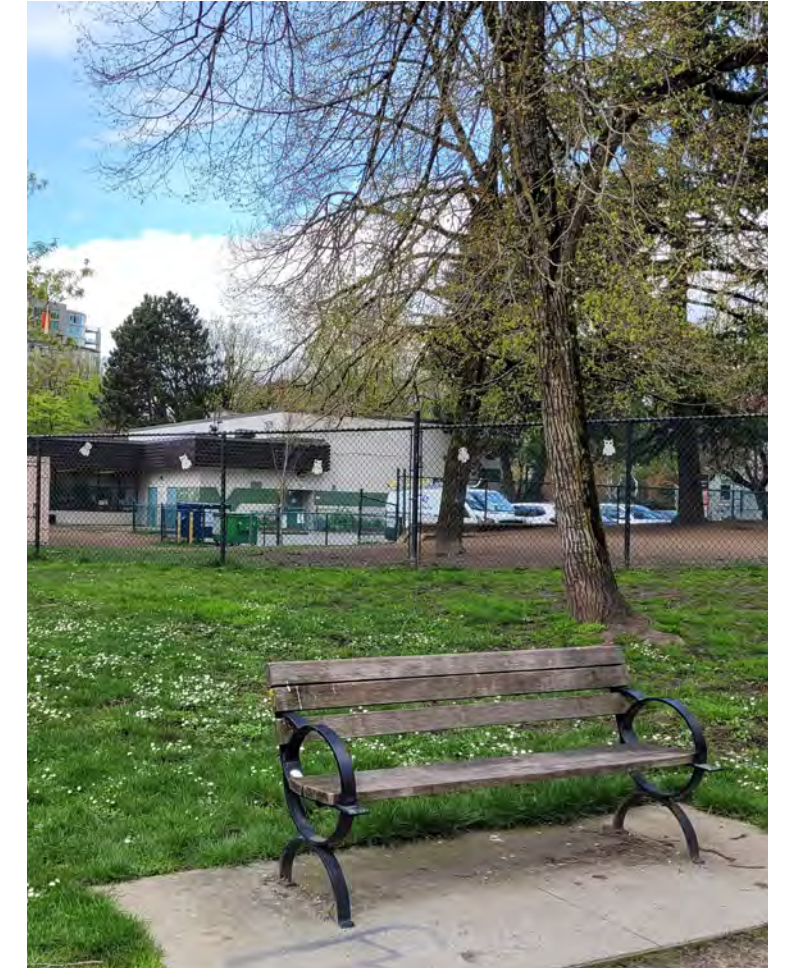
Substation safety

At BC Hydro, our highest priority is the safety of the public and our employees.

We operate more than 300 substations safely throughout the province and we have experience operating an underground substation: our Cathedral Square Substation, on Dunsmuir Street in downtown Vancouver, has operated safely for more than 40 years.

As we design and plan for construction of the West End Substation, safety continues to be our top priority. We're working with experts to ensure that the West End Substation will be:

- **Designed to rigorous safety standards:** these are industry standards that exceed the latest building code requirements.
- **Built to post-disaster standards:** the substation is being designed to remain operational after a major earthquake, the type that happens once in every 2,475 years. The site is situated on bedrock, providing an ideal foundation to withstand significant seismic activity.
- **Powered with the safest modern technologies:** we've selected synthetic ester transformers to eliminate the use of mineral oil inside the substation. Synthetic ester is known for its resistance to ignition and self-extinguishing properties.
- **Equipped with comprehensive fire safety measures:** including technologies that can prevent, detect and suppress fire events. This includes monitoring equipment that can detect and respond to condition that might lead to equipment failure, before the failure occurs.
- **Regularly inspected and maintained:** to ensure it continues to operate safely through its lifetime.



Share your input

To find out more about our plans:

- Read this discussion guide
- Join us a public event and talk with our project team
- Visit our webpage: bchydro.com/westendsub
- Email us at: westendsub@bchydro.com

Share your input via our survey at bchydro.com/westendsub between April 28 and May 20, 2025.

