



BC Hydro – seed
Community Consultation: Interests and Ideas
January 20 – February 28, 2017

Appendix 4: Meeting Notes

March 2017

Prepared by
Kirk & Co. Consulting Ltd.

**BC Hydro – seed
Small Group Roundtable Discussion – West End 1**

JANUARY 31, 2017

TIME: 6:00 PM TO 8:00 PM

LOCATION: LORD ROBERTS
ELEMENTARY

ATTENDEES/AFFILIATION (29)	<p>Margaret Kawano – Resident Vancouver-False Creek, DPAC Chair Nathan Wilkes – Acting Chair, Vancouver DPAC Amirali Javidan Bastiana Krabbendam Brent Granby Carrie Bercic Clarice McGuire Craig Wilson Curtis Collier Dean Malone – Haro Park Centre Heidi Blomkvist Heidi McDonnell – Mole Hill Society Hernan H. Bello Jessie W. Gresley-Jones Kathryn Gibbons – West End Families in Action</p>	<p>Larrissa Rutquist – Lord Roberts Annex PAC Lydia Nagai Mardel Greenough Mark Watson Mike Maslenki Moira Simpson Morgane Oger – NDP Candidate, Vancouver - False Creek Nicole Paul Nigel Elliott Patti Bacchus Phyllis Lavelle Sarah Gordon – Northbridge Financial Corporation Sean Smith Tessa Diaczun</p>
BC HYDRO PROJECT TEAM	<p>Andrew Leonard Greg Alexis Judy Dobrowolski Tony Lee Frankie Vaide Johnson Lee Lyle Thompson (Stantec) Karen McCaig (Health and Safety Consultant)</p>	
VANCOUVER SCHOOL BOARD	<p>Dianne Turner, Official Trustee Guy Bonnefoy Kelly Isford-Saxon Carla Shore</p>	
VANCOUVER PARK BOARD	<p>Michael Wiebe, Chair Margo Harper</p>	
FACILITATOR	<p>Judy Kirk, Kirk & Co. Consulting Ltd.</p>	
MEETING RECORDER	<p>Melanie Belanger-Finn, Kirk & Co. Consulting Ltd.</p>	
KEY THEMES		
<ul style="list-style-type: none"> Participants expressed concerns about electric and magnetic fields (EMF), in particular for children attending daycare or elementary school adjacent to an underground substation. 		
<ul style="list-style-type: none"> Participants expressed concerns about construction impacts, including air quality, noise, vibration, property impacts and timelines. 		
<ul style="list-style-type: none"> Participants expressed concerns about decision-making process and timing, particularly with respect to the Vancouver Park Board and Vancouver School Board. Further, participants wondered 		

about the role of Vancouver School Board in terms of approval, public consultation, and school design and capacity, if the proposal were to proceed.

Project Overview

- Kirk & Co. welcomed participants and provided an overview of the format of the meeting.
- BC Hydro provided an overview of the seed initiative and walked PAC members through the discussion guide.

West End

- One participant commented that they had never experienced a power outage in the West End.

BC Hydro representatives confirmed that Vancouver is the most reliable area in Canada for electricity supply.

- One participant asked about potential construction impacts and timelines for the West End site.

BC Hydro representatives explained that the construction process would take five years total; beginning with excavation, the substation structure would be constructed in three years, and the final two years would consist of construction inside the structure and construction of the school.

- One participant asked about the length of closure for construction at Nelson Park.

BC Hydro representatives commented that Nelson Park would not be closed except for during installation of the transmission cables, which would be completed within a matter of weeks.

- One participant asked if the new Coal Harbour school would serve as space for Lord Roberts Annex students or if it would have capacity to also accommodate Coal Harbour students at opening.

The Vancouver School Board representatives explained that Coal Harbour would have capacity for 320 students and capacity would not be filled by the approximately 140 students currently attending Lord Roberts Annex. The proposed new Lord Roberts Annex would have capacity for 510 students.

- One participant expressed concern about Nelson Park view corridor impacts resulting from the proposed location of the new Lord Roberts Annex.

BC Hydro representatives stated that the community would be consulted throughout all project phases if seed goes ahead.

- One participant asked about how the proposed seed locations were selected, and why they couldn't be located in alternate locations such as the Georgia Viaducts or the St. Paul's Hospital site.

BC Hydro representatives noted that existing substations are at capacity, too small and not seismically secure. Substations would need to be operational during construction and must be located close to the load. The Murrin substation site does not meet current safety and design standard, the Downtown core has bedrock which ensures the best standard for safety. Further, there are issues with timing between when the existing St. Paul's Hospital would be ready for redevelopment and the need for a new West End substation.

- One participant asked about the timing of the consultation and when there would be an elected School Board Trustee representing school-aged children.

BC Hydro representatives noted that the timelines are required to allow for planning towards new substations in the West End in 2025 and Yaletown in 2041. If the seed idea does not go ahead, BC Hydro would return to the traditional approach.

- One participant suggested that the Dal Grauer substation site become a high school upon decommissioning in 2030.

- One participant stated that the West End Community Plan was an innovative planning process in Vancouver and asked why BC Hydro was not involved, the participant and asked when BC Hydro approached the Vancouver School Board and Vancouver Park Board about seed.

BC Hydro representatives noted that they have been looking for land in downtown Vancouver for four years and that BC Hydro planners were aware of the West End Community Plan, because density related initiatives must involve BC Hydro.

- One participant noted that lease payments to the Vancouver School Board could go towards school programming, asking if the lease would be paid upfront or periodically.

BC Hydro representatives noted that it would be an upfront lease payment for 99 years, likely renewed in the future.

- One participant asked about impacts from substation worker traffic during operations.

BC Hydro explained that having two entrances to the substation would minimize worker traffic, and that only electricians with regular size trucks would visit the site a couple times a week.

- Participants asked about future school and classroom design, and possible vertical expansion due to limited space in Nelson Park.

The Vancouver School Board representatives stated that they would go through the normal design process. The Vancouver School Board would consult with parents and the community on design. Childcare would be in partnership with the City of Vancouver.

- One participant asked if BC Hydro had looked at buying land and building high rise apartments above the substation.

BC Hydro representatives noted the challenges with this approach, including that 40,000 square feet is the minimum space needed for a substation, that the site has to be central to the electricity load that it would serve, and that it needs to be in place to transfer the electricity load from the existing substation.

- One participant asked if the site is currently zoned for a school and whether BC Hydro would have to apply for rezoning to build a substation.

BC Hydro representatives noted that the West End site would not have to be rezoned for the proposed substation.

Safety and EMF

- Participants discussed and voiced concern regarding EMF, asking about research conducted and the difference between intermittent and prolonged exposure.

BC Hydro representatives provided an explanation of EMF, noting that BC Hydro consults peer-reviewed studies by independent entities. BC Hydro tracks EMF exposure around substations and ensures that they follow guidelines. The World Health Organization's review of thousands of studies has led them to indicate that there are no confirmed health effects of EMF exposure below 2,000 mG. Stantec is conducting local assessments on safety and health and the results will be available in mid-February. BC Hydro representatives also noted that near the walls of a substation, the exposure

to EMF is negligible. Exposure when standing next to a transmission line is similar to watching television or using a microwave.

- One participant asked what would happen in the future if EMF exposure is no longer safe or recommended.

BC Hydro representatives noted that they update their EMF knowledge every two years to adapt or revise their business plans to ensure public safety.

- One participant expressed concern regarding substation safety during an earthquake.

BC Hydro representatives stated that the substation will be built to withstand large seismic events.

- One participant asked about fire safety regarding the substation.

BC Hydro representatives stated that the underground design would improve safety and that it would be a state of the art substation with the latest equipment.

Additional Comments

- One participant asked if seed has to go through a review by the BC Utilities Commission (BCUC).

BC Hydro representatives noted that they must go through a regulatory review by the BCUC.

- One participant asked if seed would be a Vancouver School Board or BC Hydro decision.

BC Hydro representatives noted that the decision-making process includes three entities: BC Hydro, the Vancouver School Board and the Vancouver Park Board.

- One participant requested that the Vancouver School Board indicate how people can voice their opinion directly to the School Board, since the consultation is led by BC Hydro.

The Vancouver School Board representatives noted that they have met with stakeholders to start the process and will continue to as they go forward. The Vancouver School Board representatives encouraged community members to attend the upcoming sessions, and to provide feedback, but indicated that they are not running a parallel consultation.

- The participant said that they want to hear from the Vancouver School Board on the topic.

The Vancouver School Board representatives stated that the School Board Committee Meeting will take place on March 9, 2017.

- The participant asked if there is a Vancouver Park Board meeting for residents.

The Vancouver Park Board representatives indicated that they want feedback from the public. Information about their meetings is on the Vancouver Park Board website. seed will be on the agenda at the end of March and an additional staff resource will be part of the process. They want to ensure that Vancouver Park Board considerations are represented in the consultation.

- One participant asked if there is precedent to this form of public/private partnership in BC, commenting that education is usually a provincial responsibility.

BC Hydro noted that there is no precedent, but clarified that seed is not a public/private partnership as we are all shareholders of BC Hydro.

- One participant asked if the substation limits vegetation planted above.

BC Hydro representatives noted that they have done an inventory of the trees on the property and researched what type of cover to maximize future vegetation and trees.

- One participant asked if the Yaletown and West End proposals are separate or mutually exclusive.

BC Hydro representatives noted that they are connected, along with the refurbishment of Cathedral Square.

- One participant commented that they would like to be informed and consulted on where the transmission cables would go at Mole Hill, voicing concern about their daycare, properties and the laneway and noted that they would hold a forum on seed on March 9th, 2017 at 7pm at St. Andrew's Wesley United Church.

- One participant announced that there would be a Vancouver District Parent Advisory Council meeting on February 23rd, 2017 at 7pm regarding seed. Feedback from that meeting would be provided to the Vancouver School Board.

BC Hydro – seed**Small Group Roundtable Discussion – Yaletown 1**

FEBRUARY 2, 2017

TIME: 6:00 PM TO 8:00 PM

LOCATION: ELSIE ROY ELEMENTARY

ATTENDEES/AFFILIATION (9)	Alan Albert – Resident and Founding Director, Community Association of New Yaletown Allan Wong Alexis Tennent Amanda Hillis – Parent Advocacy Network and DPAC Gordon Price – Simon Fraser University Jon Stovell – Urban Development Institute Kelsey Pfeiffer Marcus Johns Morgane Oger – NDP Candidate, Vancouver - False Creek
BC HYDRO PROJECT TEAM	Andrew Leonard Greg Alexis Judy Dobrowolski Tony Lee Lyle Thompson (Stantec) Mona Shum (Aura Health & Safety)
VANCOUVER SCHOOL BOARD	David Nelson Jim Meschino Carla Shore
VANCOUVER PARK BOARD	Alexandre Man-Bourdon Kristen Falconer (Lanarc Consultants)
FACILITATOR	Judy Kirk, Kirk & Co. Consulting Ltd.
MEETING RECORDER	Annie Sokoloff, Kirk & Co. Consulting Ltd.
KEY THEMES	
<ul style="list-style-type: none"> Participants expressed concerns regarding EMF impacts from the proposed underground substation and associated underground power lines. 	
<ul style="list-style-type: none"> Participants enquired about impacts to Emery Barnes Park, including what mitigation measures are being implemented to reduce the construction time and maintain useable green space during construction, noting recent and current impacts to the park from development. 	
<ul style="list-style-type: none"> Participants expressed a need for more schools and daycares in the downtown core to address current and future demand. In particular, participants requested information about the proposed Coal Harbour and Lord Roberts Annex school capacities and whether these two new schools would be enough to meet future demand. 	
Project Overview	
<ul style="list-style-type: none"> Kirk & Co. welcomed participants and provided an overview of the format of the meeting. BC Hydro provided an overview of the seed initiative and walked participants through the discussion guide. 	
Yaletown	
<ul style="list-style-type: none"> Participants asked why BC Hydro chose Emery Barnes Park, whether BC Hydro considered alternate locations for the Yaletown substation, including underneath commercial buildings or condominium developments, and also suggested the proposed new park at Richards Street and Smithe Street as a potential location for the substation. 	

BC Hydro representatives noted that they have surveyed a variety of property locations in downtown Vancouver and determined that Emery Barnes park best met their location, footprint and technical requirements.

- Participants expressed concerns regarding Emery Barnes Park's complex history, including cumulative impacts from past developments and park uses not related to BC Hydro operations.

- One participant asked how many levels the proposed Yaletown substation will be, and if BC Hydro could increase the number of levels to decrease the width of the footprint required.

BC Hydro representatives commented that the proposed substation will be three levels, similar to Cathedral Square substation and that due to technical and engineering requirements, the number of levels cannot be increased.

- One participant asked about the project timeline, and why the proposed West End substation will be constructed before the proposed Yaletown substation.

BC Hydro representatives commented that the West End location is closer to Dal Grauer, and when built, will meet load and capacity needs for approximately 20 years.

- Participants expressed concerns about the negative impacts to Emery Barnes Park and asked BC Hydro to consider how the park could be improved so that parents feel comfortable bringing their children there.

- Participants asked if there were any electrical systems or generators in the substation that could create noise.

BC Hydro representatives commented that back-up station power and generator systems are installed, but are only activated in the event of an emergency power outage.

- Participants enquired about construction impacts to Emery Barnes Park, including what mitigation measures would be implemented to reduce the construction time and maintain useable green space during construction.

BC Hydro representatives stated that they would accelerate construction to mitigate the construction impacts to the park, noting a construction period of approximately 2.5 years plus 6 months for refreshing the park. During construction, the portion of the park adjacent to Richards Street would remain open.

West End

- Participants discussed whether the substation vents could be used to heat the proposed new school, and whether that could have safety effects.

BC Hydro representatives noted that they've looked into using the circulated air from the substation to heat the proposed school, and that it would have no negative health or safety effects, and could reduce the school's operational costs.

- One participant asked about playground space for the proposed new school in the West End.

The Vancouver School Board noted that they envision building a taller school, in order to use the remaining space for outdoor uses. Future planning would be undertaken by the Vancouver School Board and Ministry of Education to determine exactly how the land above and adjacent to the substation could be used.

Safety and EMF

- Participants asked about long-term and intermittent health effects of EMF exposure, and discussed various studies that have reported out inconclusive results.

The Aura Health & Safety representative and BC Hydro representatives discussed the World Health Organization EMF exposure standards, and noted that BC Hydro Power Line Technicians are exposed to significantly larger amounts of EMF and a recent study found that there were no long-term effects in that sample size.

- One participant asked whether BC Hydro will obtain Coastal Health's sign off regarding the health and safety impacts to students and staff.

BC Hydro representatives noted that Coastal Health will be receiving a copy of all the reports and assessments, and will provide their independent assessment of the impacts.

- One participant suggested that BC Hydro locate their power lines further underground to reduce at-ground EMF measurements.

- Participants asked about the safety record of Cathedral Square substation, and asked what happens in the event of an emergency.

BC Hydro representatives referenced two events that have occurred; in 2007, one of the transformers at Cathedral Square substation faulted and caused localized power outages, but did not cause environmental or safety impacts; in 2009, there was a fire outside of Cathedral Square (unrelated to BC Hydro operations), which caused some of the underground cables to catch fire, but had no impact to the public.

- One participant asked about the potential noise, air quality and electric and magnetic fields (EMF) impacts related to the proposed underground substation, and asked what type of air or exhaust is expelled from the substation vents.

BC Hydro representatives noted that Stantec is in the process of completing a comprehensive independent assessment of construction impacts, air quality and various other standards. The report will be available to the public on February 13, 2017. BC Hydro noted that the vents take in fresh air and expel circulated air.

Additional Comments

- Participants expressed concerns about the current saturation of downtown schools, and noted the need for more schools and daycares in the downtown core to address current and future demand.

- One participant asked who will make the final decision to go ahead with the project.

BC Hydro representatives noted that they will meet with the Vancouver School Board and the Vancouver Park Board at the end of March 2017, at which time all parties will independently decide whether seed will move into further planning, community consultation, and development.

- One participant asked about the projected 75 percent increase in demand for electricity in Vancouver, and what statistical measures were used to develop that number.

BC Hydro representatives noted that their planners look 30-40 years ahead, and analyze various factors including demand, growth projections, ultimate capacity, uptake on electric vehicles, economy predictions for electricity use, and more.

- One participant asked what will happen to the Dal Grauer and Murrin substations once the new underground substations are active, and if BC Hydro could use that property in the future for an underground substation.

BC Hydro representatives noted that both substations will be decommissioned once the new substations are active, and that future use of these properties has not yet been determined.

- Participants asked about the proposed Coal Harbour and Roberts Annex's capacity and whether these two new schools would be enough to meet future demand.

The Vancouver School Board representatives noted that the proposed seed initiative would significantly increase school capacity, from approximately 140 students at Roberts Annex to 510 students at the proposed new West End school, and approximately 320 students at the new Coal Harbour school.

- Participants provided suggestions for locations of new schools and daycares in downtown Vancouver.

- Participants asked about the lease agreement and whether the payment would be upfront or periodical.

BC Hydro representatives commented that they're looking to lease the property with an upfront payment, and that details regarding the lease and agreement are preliminary.

- One participant noted that the proposed project does not benefit the Vancouver School Board because it's usually the Province's responsibility to fund schools.

- A participant asked about the proposed lease agreement between BC Hydro, the Vancouver School Board and the Vancouver Park Board.

BC Hydro representatives commented that the proposed agreement would be a 99-year lease from the Vancouver School Board and Vancouver Park Board, and those funds would be used for community benefits.

- One participant asked about international examples of underground substations.

BC Hydro representatives commented that there are numerous international examples of underground substations, such as in London, Hong Kong, Sydney and Tokyo.

**BC Hydro – seed
PAC Meeting – Lord Roberts Elementary**

FEBRUARY 8, 2017

TIME: 6:30 PM TO 7:30 PM

LOCATION: LORD ROBERTS
ELEMENTARY

PAC ATTENDEES (18)	Sarah Honeyman, PAC Chair Henry Peters, Principal Abigail Kinch Adrian Neer Bozana Sabo Sipos Cathy Comber Chris Fretwell Chris Hyndman Hadas Shapira	Jennifer Douglas Kristen Haywood-Farmer Meri Kate Marcum Mistin Wilkinson Sandy Galpin Rochelle Pauls Robert Sabo Sipos Wim Arits Yvonne Kwok
BC HYDRO PROJECT TEAM	Andrew Leonard Judy Dobrowolski Tony Lee Frankie Vaide Johnson Lee Mona Shum (Aura Health & Safety)	
VANCOUVER SCHOOL BOARD	David Nelson Carla Shore	
FACILITATOR	Chris Chok, Kirk & Co. Consulting Ltd.	
MEETING RECORDER	Melanie Belanger-Finn, Kirk & Co. Consulting Ltd.	
KEY THEMES		
<ul style="list-style-type: none"> Participants expressed concerns about construction impacts in the West End, including to pedestrian and vehicle traffic, and park closures. 		
<ul style="list-style-type: none"> Participants expressed concerns regarding secondary school capacity in the West End to accommodate future demand resulting from the new elementary schools proposed as part of this idea. 		
<ul style="list-style-type: none"> Participants sought confirmation about the safety of children attending a school in close proximity to a substation related to EMF and substation operations. 		
Project Overview		
<ul style="list-style-type: none"> The PAC Chair welcomed the parents to the meeting and thanked BC Hydro for attending. Kirk & Co. noted that the focus of the meeting would be on the elements of the seed idea related to the West End, and safety and EMF. BC Hydro representatives provided an overview of the seed initiative and walked participants through the discussion guide. 		
West End		
<ul style="list-style-type: none"> One participant expressed concerns that the community benefits for the West End did not seem sufficient because the provincial government should have already funded and built the Coal Harbour School. They suggested investing in additional capacity, and arts and cultural programming at King George Secondary. 		

BC Hydro representatives noted that they have to answer to their ratepayers and go through a review by the BCUC if the project proceeds. Underground substations are more expensive to build than above ground substations.

- One participant asked how much influence BC Hydro has on the school design and managing school capacities downtown.

The Vancouver School Board representatives noted that Coal Harbour would be a multi-use site with a 320-seat elementary school, childcare and social housing. The City of Vancouver would manage the childcare and housing. The new Lord Roberts Annex would be a 510-seat school, replacing the current 140-seat school. Based on those two new schools, there would be 690 elementary school seats added downtown. Two schools are currently undergoing seismic review, and can add childcare to their facilities as well.

- One participant asked how the Vancouver School Board would manage which West End Students will have to go to Coal Harbour, since Lord Roberts is already taking overflow from Elsie Roy.

The Vancouver School Board representatives noted that Crosstown at Seymour Elementary will be opening in September that can take some Elsie Roy Students. Further, they have to make sure that each school year starts with full kindergarten classes in September.

- One participant asked if there would be an independent assessment, not paid for by BC Hydro, to evaluate the impact of the project.

BC Hydro representatives noted that there is an assessment being conducted by Stantec that measures the potential impacts of the two sites, how to mitigate impacts and what the benefits are. BC Hydro is paying for these assessments to be completed. They measure a baseline, construction impacts and the impacts once the substation and schools are operational. The report will be made available next week.

- One participant asked if the school catchment boundaries would be redrawn, and would students in Coal Harbour leave the main schools and go there when it opens.

The Vancouver School Board representatives noted that Coal Harbour does not currently have a catchment. The Coal Harbour School and the new Lord Roberts Annex would be kindergarten to 7th grade schools, so they would require their own catchment areas. The West End and Coal Harbour areas would go from one catchment to three.

- One participant asked about construction impacts, particularly for vehicle and pedestrian traffic on Nelson Street.

BC Hydro representatives noted that they did not have to close any streets when they built the new Mount Pleasant Substation. However, that substation is half underground and half above. The one next to Nelson Park would be entirely underground, requiring a bigger hole. In terms of traffic studies, they would need to keep at least one lane on Nelson Street open. They would have a traffic management plan for people to comment on during continued public consultation.

- One participant asked how the Vancouver School Board plans to increase high school seats at King George to go with the increased elementary school seats.

The Vancouver School Board representatives noted that a larger King George High School is needed. They are interested in re-visioning the community centre. As for the students going to high school, there are typically fewer students entering high school in the West End than elementary school, as parents move from starter homes downtown away from the area as children become older.

- One participant asked how many people would work at the substation.

BC Hydro representatives noted that electricians would come a few times a week. The substation is operated remotely in Langley, with a backup facility in Vernon.

- One participant asked why this site and not somewhere else downtown.

BC Hydro representatives noted that they have been looking at many sites over the years considering key factors. Three substations are needed downtown, and they can't all be within a block. Substations should not be located by the water, because the substations need to be central to the load they would feed. Dal Grauer is at capacity, but a new substation cannot be built on the same site, because the substation still need to be in use while a new one is being built.

- One participant suggested building a high school at the Dal Grauer site once it is out of commission.

BC Hydro representatives noted that the new substation in the West End would be operational by 2025 or 2026. It takes a few years before an old station is completely decommissioned, so in 2030 it could be available, but there are no current plans for Dal Grauer.

- One participant asked if once BC Hydro builds the substation, if it's another organization's responsibility to build the school.

BC Hydro representatives noted that they need the Coal Harbour School built to transfer the students from Lord Roberts Annex, and BC Hydro would be responsible for the demolition of the Annex. Further, BC Hydro and the Vancouver School Board have to share their designs to ensure that they are compatible, since BC Hydro would be building the underground parking and the foundation for the new school along with the substation.

- One participant asked if BC Hydro could build the substation and leave a field, so that the Vancouver School Board can do anything they want.

BC Hydro noted that the Vancouver School Board ultimately can do whatever they see fit with the lease payments.

- One participant asked why BC Hydro was looking at this location and not under busy streets downtown or St. Paul's Hospital that will be demolished.

BC Hydro representatives noted that they have been looking at land downtown for years. 40,000 square feet is needed for the substation, about half a city block, and typical streets have other utilities underground. Further, there are timing conflicts with St. Paul's Hospital.

- One participation asked about Emery Barnes Park in Yaletown and whether that playground would be accessible during construction and also asked whether the public would be able to access play spaces and greenspace in Nelson Park during construction.

BC Hydro representatives noted that they won't be touching Nelson Park, except for putting the transmission cables into the station, and that process would take just weeks. Emery Barnes is challenging because the substation would be going under an existing park. BC Hydro would try to keep the water feature and other sections of the park open to the public.

Safety and EMF

- The Aura Health & Safety representative introduced herself and went through some frequently asked questions about EMF.
- One participant asked if the fact that a substation is underground minimizes EMF exposure.

The Aura Health & Safety representative noted that the substation is not a source of EMF, but the transmission lines are. The deeper the cables, the less the exposure, as you increase the distance from the power lines, but the earth does not block magnetic fields.

- One participant asked for another example of a substation near a school.

BC Hydro representatives noted that there are three substations north of the Fraser River that are close to schools. One in Richmond is right across the street from a school. In the plans for Lord Roberts Annex, the cables are 80 to 90 metres away from the school. There is an example in London, England of an above ground substation 27 metres away from a school.

- One participant asked what are the health effects if you go above the 2,000 milligauss (mG) exposure to EMF.

The Aura Health & Safety representative noted that there is no effect at that level of exposure. BC Hydro employees can have up to 10,000 mG in occupational exposure without any health risks. The first known physiological effects happen at over 100,000 mG and these include flickering lights in one's peripheral vision or nerve or muscle simulation. Some electricians inside the substations are subjected to 2,000 mG throughout the day.

- One participant asked what comes out of the exhaust vents.

BC Hydro representatives noted that it is simply warm air that has circulated through the substation, and mentioned that in a Yaletown meeting someone asked if that air could be recycled to heat the school which could be an interesting possibility.

- One parent asked if the structure with the air intake would be the only thing near the school.

BC Hydro representatives noted that the air intake structure would also serve as an entrance for equipment that is too large to go through the underground.

- One participant asked about earthquake safety.

BC Hydro representatives noted that the substation is 120 feet underground which makes it safer. Further, BC Hydro representatives noted that substations have a higher standard for safety than other buildings, because they must be operational following an emergency.

- One participant asked if BC Hydro will pay for adjustments if it turns out that the EMF exposure around the substation is over the 2,000 mG limit.

BC Hydro representatives noted that they would take measurements once the substation is built to ensure that levels in the surrounding area are under the limit. BC Hydro expects it to be below 100 mG.

- One participant asked if underground substations are a new concept, and if there is a precedent to measure EMF exposure.

BC Hydro representatives noted that Cathedral Square substation, built in 1984, was the first in North America. In 2007, an underground substation was built in Anaheim, California. Toronto is commissioning their new underground substation by the CN Tower. The Toronto underground substation has a heritage building on top and use the same load and 230 KV cables as they would in Nelson Park.

- One participant asked about safety in case of a fire.

BC Hydro representatives noted that they are proposing to use a new technology popular in Europe and Asia. They would use gas-insulated transformers, meaning there would be no oil or risk of fire in the substation.

Additional Comments

- One participant expressed concerns about the short timelines of seed, stating that the decision timeline seems rushed.

- One participant asked why Vancouver School Board land and not Vancouver Park Board land.

BC Hydro noted that there are mature trees in the park that they want to avoid disturbing. Further the concept of seed stems from the fact that downtown Vancouver is short of schools and childcare, and is proposing to provide those benefits.

- One participant asked if Cathedral Square is BC Hydro or City of Vancouver land?

BC Hydro representatives noted that Cathedral Square Park is City of Vancouver land, and BC Hydro has a 99-year lease. BC Hydro would get a volumetric lease for 99-years for the land at Lord Roberts Annex.

- One participant asked what a volumetric lease is.

BC Hydro representatives explained that it is determined by defining an area underground by volume, with the lease amount paid on that volume.

- One participant asked whether BC Hydro approached the Vancouver School Board or if the Vancouver School Board approached BC Hydro.

BC Hydro representatives noted that they approached the Vancouver School Board, Vancouver Park Board and the City of Vancouver.

- One participant asked how long until BC Hydro makes the lease payment to the Vancouver School Board, given that the agreement must happen in March for the initiative to proceed.

BC Hydro representatives noted that if the agreement is reached at end of March, the lease payment would be made upfront, and the Vancouver School Board would have that sum of money to build the two schools.

BC Hydro – seed**PAC Meeting – Lord Roberts Annex**

FEBRUARY 9, 2017

TIME: 6:00 PM TO 7:00 PM

LOCATION: LORD ROBERTS ANNEX

PAC ATTENDEES (14)	Alison Coelho Ashley Mallon Ernst Schneider Justin Kim John Anderson Kathy Landaren Kirsten Chursinoff	Larissa Rutquist Neil Foster Patricia Sauer Ryan Munro Ross Kelly Tara Hill Virginia Carlton
BC HYDRO PROJECT TEAM	Andrew Leonard Greg Alexis Tony Lee Frankie Vaide Johnson Lee Lyle Thompson (Stantec) Mona Shum (Aura Health & Safety)	
VANCOUVER SCHOOL BOARD	David Nelson Ellen Roberts Jenny Scott (Context Research)	
FACILITATOR	Nancy Spooner, Kirk & Co. Consulting Ltd.	
MEETING RECORDER	Emily Margitan, Kirk & Co. Consulting Ltd.	
KEY THEMES		
<ul style="list-style-type: none"> Participants voiced concern about health impacts from the proposed West End substation, in particular EMF effects and the location of a substation in close proximity to an elementary school. Some participants requested that BC Hydro consider alternative locations for the West End substation. 		
<ul style="list-style-type: none"> Participants discussed the design and construction of the proposed West End substation and new elementary school, voicing concerns regarding potential aesthetic, environmental and safety impacts for Nelson Park and the surrounding area. 		
<ul style="list-style-type: none"> Participants expressed the need for more schools and daycares in the downtown core to address current and future demand and asked questions about school design, capacity and construction timelines. 		
Project Overview		
<ul style="list-style-type: none"> Kirk & Co. welcomed participants and provided an overview of the format of the meeting. BC Hydro provided an overview of the seed initiative and walked PAC members through the discussion guide. 		
West End		
<ul style="list-style-type: none"> Participants discussed the design of the proposed West End substation, asking questions about the entrance structure and other above-ground facilities. <p><i>BC Hydro representatives noted that everything would be underground apart from the emergency exit, vents and entrance to the substation. They noted that there would be a shared entrance for underground parking and substation entry but that this round structure would act as a larger</i></p>		

entrance for substation equipment to be brought down an elevator once or twice a year. BC Hydro representatives noted that this structure could potentially be integrated into the school.

- One participant asked why the proposed substation appears to be under Lord Roberts Annex instead of under Nelson Park.

BC Hydro representatives stated that there are many mature trees in Nelson Park and that the Vancouver Park Board was not in favour of moving or removing them. BC Hydro recognized that the school was a good property to share, which is what seed is about. BC Hydro would pay for the space underground which would translate into two new schools.

- One participant asked if the new West End school would replace Lord Roberts Elementary.

Vancouver School Board representatives noted that if seed goes ahead, there would be kindergarten to grade seven schools in Coal Harbour, Lord Roberts and at the current Lord Roberts Annex site. This would address the increase in population and school aged children in the West End neighbourhood.

- One participant asked whether the traffic management plan been conducted to accommodate student drop off and substation service personnel.

BC Hydro representatives noted that the Stantec report will reference the traffic management plan. Parking would be underground and there could be a drop-off area underground so that Nelson Street and Bute Street are not impacted. The substation would be operated remotely from the control centre in Langley. Electricians would come approximately two to three times a week in a regular truck for service.

- Participants discussed the Dal Grauer substation, asking whether it could be upgraded, voicing concerns regarding noise and disruption during operations.

BC Hydro representatives commented that the Dal Grauer substation dates to 1947 and is currently at capacity. Due to the small size of the site, there is no way to rebuild as they would need to keep the current substation running during construction. BC Hydro representatives stated that Dal Grauer is very old compared to substations such as the one in Mount Pleasant. If built, the underground substations would be designed so that people wouldn't even know it's there. BC Hydro representatives provided examples of substations similar to what they are proposing in Toronto and London, stating that decibel levels of vents are almost zero.

- One participant asked about community involvement during the design of the substation and integration into the community, asking why the timeline for the West End substation is ahead of Yaletown. The participant also asked if Nelson Park would remain open during construction, voicing concern about large community impacts from seed.

BC Hydro representatives commented that there would be more opportunities for public input. BC Hydro would provide more detailed conceptual designs and would conduct public consultation for years during the planning and design phases, including consultation on traffic management. BC Hydro representatives also referenced examples of several substations which have been well integrated into their respective communities.

BC Hydro representatives responded that yes, Nelson Park would remain open during construction. The only impact would be during installation of cables. Substation construction would take up to five years while building the cables would only take a maximum of two to three months. BC Hydro would try to time construction for winter months when the park is less used.

BC Hydro representatives commented that they recognize the community impacts from seed but that downtown needs two new substations, whether they are above or below ground. While Nelson Park/Lord Roberts Annex is the best site for this substation, seed is still just an idea and comments and other ideas are encouraged.

- One participant asked how seed would impact the long-awaited playground that has been planned for Lord Roberts Annex.

BC Hydro representatives noted that they met with the committee twice to discuss the plan for the playground. BC Hydro will discuss logistics options such as building the playground and then storing it during construction of the substation.

- One participant asked where the children would go if the Coal Harbour school is not ready on time for the construction of the substation.

BC Hydro representatives commented that they would ensure that the Coal Harbour school is ready on time by implementing mitigation measures such as initial occupancy while construction of the Coal Harbour school is still underway. BC Hydro representatives guaranteed that substation construction would not be started until the children had somewhere to attend school.

Safety and EMF

- Participants voiced concern regarding electric and magnetic fields (EMF), asking for additional information on studies and long-term effects on children, including whether EMF exposure is cumulative.

The Aura Health & Safety representative provided an overview about EMF, noting that international agencies indicate that there is no confirmed risk to the public from the EMF levels children would be exposed to. Noting that as the substation would not be located underneath the school, EMF levels would not change from current levels at the school. BC Hydro representatives noted that the closest high voltage cable would be about 80 to 90 metres away with an exponential drop in EMF at this distance.

- One participant commented that even if studies show that EMF exposure is considered safe, they still would prefer for their children to not be exposed to EMF, asking why BC Hydro can't locate a different site for the substation such as the St. Paul's Hospital site.

BC Hydro noted that they did look at the St. Paul's Hospital site but that the timing of when the substation is needed does not work with the timelines for St. Paul's redevelopment. The substation also requires a half city block, which is difficult to find.

Regarding EMF, BC Hydro would not build substations if they weren't safe as BC Hydro takes safety very seriously. The existing Mainwaring Substation is 80 metres from Sir Sanford Fleming Elementary, compared to this proposed substation which would be up to 90 metres away.

- One participant asked whether the substation and power lines would be safe during an earthquake and also asked BC Hydro's representative about his initial concerns with seed.

The BC Hydro representative noted that substations are built to very high post-disaster standards and would be one of the safest places to be during an earthquake. The transmission lines would also be reinforced to be serviceable during an earthquake. The BC Hydro representative noted that their initial concerns were about how the community would perceive the concept of building a substation near a park and school but stressed that BC Hydro is certain seed is safe.

- One participant referenced fires at substations in Chilliwack in 2012 and in Richmond in 2015, asking what would happen if the proposed substation caught on fire.

BC Hydro representatives noted that most current substations that are above ground include very large oil-filled transformers. There would be no oil in these new substations, and therefore almost no risk of fire.

- One participant asked for clarification on the technology used in Japan and if there have been any disasters.

BC Hydro representatives noted that a higher technology transformer has been used in Japan due to space constraints. A typical transformer would cost about \$2-3 million and most substations would need three. This new technology would cost approximately \$8-10 million for each transformer but there would be no fire risk. BC Hydro has met with the supplier, Toshiba, and was assured that there has never been an incident with these types of transformers.

Additional Comments

- One participant asked if the West End and Yaletown seed substations are standalone projects.

BC Hydro representatives noted that seed is an all or nothing idea. BC Hydro has to plan 30-40 years ahead so that there will be three underground substations to serve the downtown core for decades to come.

- One participant asked if there is a Plan B to seed.

BC Hydro representatives replied that if seed were not to move forward, they would include reverting back to the current approach of purchasing properties to develop an above ground substation. seed is about putting the money back into the community instead of towards a private property owner.

- One participant asked if there are plans for future high school expansion.

The Vancouver School Board representatives commented that they are very aware that King George Secondary needs to be upgraded seismically and expanded, but that current discussions with BC Hydro have just been regarding the financial exchange to allow the Vancouver School Board to build two elementary schools in the West End.

- One participant asked what type of school facilities have been projected and how the Vancouver School Board and Vancouver Park Board would involve the community during the process of developing these facilities. They also asked how the Vancouver School Board knows the amount of money they have to work with for designing these school facilities.

Vancouver School Board representatives stated that design and construction of the substation would be under BC Hydro but the school and grounds design would be the responsibility of the Vancouver School Board. The Vancouver School Board has extensive experience with building and renovating schools and would follow their process, which includes community consultation.

The Vancouver School Board representative noted that they are not part of financial negotiations but that the proposed school would be built in a similar range to other Vancouver School Board schools. Cost estimates would be using Ministry of Education design standards to ensure that the school would be consistent with the quality of other schools.

- The participant asked if the Vancouver School Board would negotiate the space for a daycare.

The Vancouver School Board representatives stated that they would be willing to make the space available to the City of Vancouver if they wish to fund daycare but that no funds out of the lease agreement with BC Hydro would go towards a daycare facility.

- One participant asked whether there would be daycare spaces in the Coal Harbour school.

BC Hydro representatives responded that the plan for the school in Coal Harbour would be an elementary school for 320 students, a floor of daycare with 69 spaces and four stories of non-market housing.

- One participant asked who can reject the seed project.

BC Hydro representatives noted that the Vancouver School Board could say no to seed, as can the Vancouver Park Board and BC Hydro. All three parties must agree for this to go ahead.

**BC Hydro – seed
Small Group Roundtable Discussion – West End 2**

FEBRUARY 15, 2017

TIME: 6:00 PM TO 8:00PM

LOCATION: LORD ROBERTS
ELEMENTARY

ATTENDEES/AFFILIATION (29)	Adrian Neer Alex Dow – Georgia Straight and DPAC Alvin Quiring Anthony Kupferschmidt – West End Seniors’ Network Ceone Veldman Helen Ritts Jeremy Hobbs – Pearson Canada Lindsay Sutton Lori Kittelberg Maggie Rader – The West End Journal Marie-Odile Marceau Monroe Dunbar – Hollyburn Properties	Morgane Oger – NDP Candidate, Vancouver – False Creek Peter Hawker Peter O’Callaghan Rochelle Pauls Ronald Winquist Stephen Regan, West End BIA Shaun Kalley – DPAC Stuart Lefebvre Tara Hill Tom Pearce Tom Wiebe Vanessa Marshall
BC HYDRO PROJECT TEAM	Andrew Leonard Greg Alexis Judy Dobrowolski David Chan Frankie Vaide Johnson Lee Chris Jennings (Stantec) Lyle Thompson (Stantec) Mona Shum (Aura Health & Safety)	
VANCOUVER SCHOOL BOARD	Diane Turner, Official Trustee David Nelson	
VANCOUVER PARK BOARD	Dave Hutch	
FACILITATOR	Judy Kirk, Kirk & Co. Consulting Ltd.	
MEETING RECORDER	Melanie Belanger-Finn, Kirk & Co. Consulting Ltd.	
KEY THEMES		
<ul style="list-style-type: none"> Participants sought confirmation that the Vancouver School Board would be allocating the funds from BC Hydro to new schools in the West End and not to other priorities or operating budgets. Participants expressed concerns about EMF, in particular for children attending school adjacent to an underground substation and residents living near Nelson Park. Participants requested additional amenities in the West End, including play spaces for children, the farmer’s market and StrongStart spaces. 		
Project Overview		
<ul style="list-style-type: none"> Kirk & Co. welcomed the participants to the meeting and explained that the supplementary material summarizes the Stantec technical report. BC Hydro provided an overview of the seed initiative and walked participants through the discussion guide. 		

West End

- Participants discussed the location of the transmission lines, including whether they would be routed under any buildings and the depth under city streets.

BC Hydro representatives noted that the four high voltage transmission lines would be placed as far away from the new school as possible, and the transformers would be 100 to 120 feet underground. Once the transmission lines leave Nelson Park, they connect under the city street similar to other utilities. Further, the transmission cables would be 2 to 2.5 metres below city street surface, as they are located at a depth of 1 to 1.5 metres and also encased in concrete measuring 1 metre.

- One participant asked what the above ground structure represents in the artist's rendering of the West End site.

BC Hydro representatives commented that above ground vents would emit circulated air out of the substation, and that there is also an entrance to the substation which would allow for substation entry and equipment to be brought in or out of the substation.

- Participant asked why BC Hydro is not building the substation in alternate locations, including St. Paul's Hospital, David Lam Park, Pacific Central Station, Nelson Park, Murrin Substation and Dal Grauer Substation.

BC Hydro representatives noted that the St. Paul's Hospital was considered, but the timing of the projects does not line up. David Lam and Pacific Central Station are not in the right location to service downtown Vancouver. Nelson Park has mature trees and Dal Grauer has to remain operational during construction. Building underneath Vancouver School Board land provides funding for new downtown schools.

- One participant asked why the West End substation would be built before Yaletown and if the West End was prioritized because there is currently no elected School Board.

BC Hydro representatives stated that power would need to be offloaded to a new station. The West End location is a priority as the Dal Grauer substation needs to be decommissioned first.

- One participant asked why the proposed Yaletown substation is projected to take three years to build compared to five years for the proposed West End substation, asking if Nelson Park would be usable during this time.

BC Hydro representatives noted that Yaletown substation would be going under a park and they want the park open as soon as possible. The proposed West End substation would be on Vancouver School Board property and construction of the substation, including the new school, would take five years from start to finish. The goal is to have Nelson Park remain intact during construction.

- One participant asked how the lease is being negotiated as the cost of building a new school has not yet been established and also asked how the school capacity would be determined.

The Vancouver School Board representatives stated that they have built many schools in recent years, including Crosstown Elementary. The cost of building a new school is known. The current Lord Roberts Annex has a capacity of 140 and the new school would have 510 seats and the new school in Coal Harbour is planned for 320 seats.

- One participant noted that it is typically the responsibility of the Province to fund school construction, and asked if the Vancouver School Board would own the school building and if the Vancouver School Board would be provided additional funds for the school.

BC Hydro representatives answered that BC Hydro would provide an upfront payment to the Vancouver School Board for the 99-year volumetric lease. The Vancouver School Board noted that the Ministry of Education would pay for half of the school, and the School District pays the other half. The Vancouver School Board would own the new school.

- One participant expressed concern about the current plans for a new playground at Lord Roberts Annex School.

BC Hydro representatives noted that they have met with the playground committee and the donor, and that current plans for the new playground will proceed. If seed goes ahead; BC Hydro would store the playground equipment during construction. Once the new school is built BC Hydro would rebuild the playground at the new school, maintaining the design that the landscape architect has already commenced.

- One participant asked if seed would affect current planning for the Vancouver School Board and what the expected capacity shifts are in the West End.

The Vancouver School Board representatives commented that they project to 2030 and have been planning for increasing density the West End. Some students already in their schools would likely stay, and new registrants would probably attend school where there is capacity.

- One participant asked about the guarantee that funds from seed would be put towards community amenities and the new West End school, instead of being allocated to other areas of Vancouver.

The Vancouver School Board representatives noted that the money would be held in trust to grow. It is a line item in the budget, which is published on an annual basis and that the new West End school is included in the long-range facilities plan.

- One participant asked if there would be consultation by the City of Vancouver and the Vancouver School Board on school design and the community amenities that could be included, for example daycare and StrongStart spaces.

The Vancouver School Board representatives noted that they would encourage the City of Vancouver to contribute to childcare for the new Lord Roberts Annex. The design of the new school would be similar to other new public schools. StrongStart is funded by the Ministry of Education and has been capped for expansion in every district.

- One participant asked where the students would go to high school.

The Vancouver School Board representatives noted that King George High School should be increased in capacity, which is in the capital plan currently underway at the district.

- One participant asked if the Coal Harbour School would be built regardless of whether seed goes ahead.

The Vancouver School Board representatives noted that Coal Harbour would be built regardless of whether seed goes ahead.

- One participant noted that parking at Lord Roberts Annex would be challenging with 510 students.

- One participant asked if Stantec took the farmer's market and playground at Nelson Park into consideration for the impact studies. They also suggested that BC Hydro invest their savings from the seed approach back into the community with amenities such as upgrading King George High School, Nelson Park and parking upgrades, and StrongStart spaces in the West End.

The Kirk & Co. representative noted that the participant should add those suggestions to their feedback form for submission.

- One participant asked if the play space would increase at the Annex and if the students would have access to Nelson Park.

The Vancouver School Board representatives noted that by placing the playground to the side and the parking underground, there would be some additional play space. Currently, there is no shared user agreement for Lord Roberts Annex and Nelson Park. It can be explored with the Park Board, but there are some incompatible adjacent uses with the fenced off-leash dog park.

- One participant asked if there were plans to update the playground in Nelson Park.

The Vancouver Park Board representative commented that the play space in Nelson Park will be renewed as it is part of a city playground improvement program.

- One participant asked if there would be more construction work required once the proposed West End substation is built.

BC Hydro representatives noted that they would put in duct banks and a third transformer in ahead of time to not disturb Nelson Park again for at least 40 years.

Safety and EMF

- One participant expressed concern that Health Canada's website states that more studies are required to better understand the health effects of EMF.

The representative from Aura Health & Safety and BC Hydro representatives noted that organizations such as Health Canada and the World Health Organization acknowledge that there are more studies required, but the current consensus is that there are no known health risks from EMF.

- One participant asked what the EMF reading would be directly above the transmission line.

BC Hydro representatives stated that the reading is about 100 mG directly above the transmission line.

- One participant expressed concerns about earthquake safety and impacts to the water table.

BC Hydro representatives noted that the substation would be built at a higher standard for safety, the substation would be built into bedrock and would be seismically sound. There would be no anticipated interference with water table.

- One participant asked if the transmission cables are safe for residents living in nearby apartments.

BC Hydro representatives noted that the right of way width is determined so that they are at a safe distance from buildings and houses.

Additional Comments

- One participant asked what the forecast of demand for electricity is for residential and commercial use in Vancouver.

BC Hydro representatives noted that a 75 percent increase is expected. While they do not have the breakdown of residential vs. commercial, that information could be provided.

- One participant asked for the percentage cost difference between seed and the traditional approach.

BC Hydro representatives stated that leasing the land for seed costs less than purchasing land, but underground substations cost more to build. Seed is five percent cheaper than the traditional route

- One participant asked if there are any other public utilities being distributed in a similar way to seed around the world.

BC Hydro representatives commented that Hong Kong; Sidney, Australia and Tokyo, Japan have underground substations. London has a substation with a housing development and a school across the street.

- One participant asked what BC Hydro will do with the savings from leasing the land and the money made from selling the Murrin and Dal Grauer substations.

BC Hydro representatives noted that the lease would be a 99-year lease with an option to renew for another 99 years. Noting challenges with the Murrin and Dal Grauer properties as the Murrin substation site is contaminated and not seismically sound, and Dal Grauer is a heritage building.

- One participant asked about the value of the lease.

BC Hydro representatives said that they are in negotiation, therefore the dollar amount is currently unknown.

- One participant asked what measures would be put in place for when the proposed new substations need to be decommissioned to ensure minimal disruption to the school property, noting that the Dal Grauer and Murrin substations that need to be decommissioned are 70- years-old, and that seed would be a 99-year lease.

BC Hydro representatives stated that the life of a substation is about 80 to 100 years. Once there is a triangle of underground substations downtown, BC Hydro could maintain them to a longer expectancy.

- One participant asked what would happen if seed does not go ahead.

BC Hydro representatives stated that seed requires a decision from BC Hydro, the Vancouver School Board and the Vancouver Park Board by the end of March. If seed is rejected then BC Hydro will consider the traditional approach, an above ground substation.

- One participant asked why BC Hydro did not wait for the School Board to be elected before proposing seed.

BC Hydro representatives explained that planning for substations takes time and needs to start now to accommodate increasing electricity demand.

BC Hydro seed**Small Group Roundtable Discussion – Yaletown 2**

FEBRUARY 16, 2017

TIME: 6:00 PM TO 8:00PM

LOCATION: ELSIE ROY ELEMENTARY

ATTENDEES/AFFILIATION (3)	Alex Chisholm – Community Programming, Gathering Place Community Centre Alex Dow – DPAC Janet Fraser – VSB Parent and Former Trustee
BC HYDRO PROJECT TEAM	Andrew Leonard Greg Alexis Judy Dobrowolski David Chan Laurel Stevens Johnson Lee Mona Shum (Aura Health & Safety)
VANCOUVER SCHOOL BOARD	David Nelson Hilary Farson (Context Research) Marie-Odile Marceau (McFarland Marceau Architects Ltd.)
VANCOUVER PARK BOARD	Alex Dobrov David Reid (Lanarc Consultants) Kristen Falconer (Lanarc Consultants)
FACILITATOR	Judy Kirk, Kirk & Co. Consulting
MEETING RECORDER	Emily Margitan, Kirk & Co. Consulting Ltd.
KEY THEMES	
<ul style="list-style-type: none"> Participants discussed the development and construction processes for the substations and enquired about opportunities for heat recovery, electricity demand forecasting, financial comparatives and timelines for approval processes and amenities. Participants discussed the design of the proposed substations, in particular at Emery Barnes Park, and asked questions about how the Yaletown substation may impact park design. Participants also enquired about future consultation opportunities on park design and the role of the Vancouver Park Board in the park design process. Participants voiced concern regarding EMF, including how current and future measurements would be conducted to ensure public health and safety. 	
Project Overview	
<ul style="list-style-type: none"> Kirk & Co. provided an overview of the meeting format and asked participants introduced themselves, noting the addition of the supplemental materials available at the meeting and also the Stantec report available online. BC Hydro provided an overview of the seed initiative and walked participants through the discussion guide. 	
Yaletown	
<ul style="list-style-type: none"> One participant asked about above ground structures at the sites and asked why they couldn't be placed underground. <p><i>BC Hydro representatives noted that there would be an above ground entrance structure for substation workers to access the below ground equipment and for equipment to be brought out of</i></p>	

the substation. Since the site is flat, there needs to be certain clearance to allow for every structure to be below ground. The goal is to blend infrastructure in as much as possible.

- One participant noted that they are particularly interested in the layout of Emery Barnes as the Gathering Place Community Centre organizes various events in the park throughout the year, asking how different Emery Barnes will look after the substation construction is complete.

BC Hydro representatives noted that the plans for Emery Barnes Park are very conceptual at this point. BC Hydro is gathering feedback on the design and layout of the new park such as where the above ground entrance structures and vents should be placed and how they could be integrated into the park. Vancouver Park Board representatives noted that there would be a public engagement process regarding the design of Emery Barnes Park.

- One participant asked about the timing of public engagement on the park design, noting that it should be planned well in advance.

Vancouver Park Board representatives noted that there is a good opportunity to gather input while the substation is undergoing design so that the park construction can start immediately once the substation is built. BC Hydro representatives noted that there would definitely be consultation on the design of the substation.

- One participant asked about potential noise from the substation vents as it can impact acoustic events that the Gathering Place organizes. They also noted that regardless of the substation design at Emery Barnes, there are some layout aspects of the park that could be greatly improved.

BC Hydro representatives noted that the transformers would generate noise but they are located 100 feet below ground. The vents would create some noise, but as shown at Cathedral Square, the noise is not very noticeable and technology has improved since then. BC Hydro representatives noted that BC Hydro would consult on community considerations on aspects such as noise and design. The facilitator noted that future consultation on park design would be through the Vancouver Park Board and that any consultation on design of the proposed substation would be through BC Hydro.

- One participant asked where the transmission lines would enter Emery Barnes Park and how they enter the downtown core.

BC Hydro representatives noted that in Yaletown there is currently a 230 kV line running down Richards Street from the Mount Pleasant substation. They explained the proposed new transmission lines that would be necessary for the proposed Yaletown substation.

- One participant asked how realistic it is to find a temporary park within a few blocks of Emery Barnes Park.

BC Hydro representatives noted that it is an idea at this point but hard to know for sure twenty years from now. The concept is that BC Hydro will work with the City of Vancouver and Vancouver Park Board to mitigate impacts during construction as much as possible.

- One participant asked about potential drainage issues in the park resulting from a concrete substation below.

BC Hydro representatives noted that BC Hydro will work with the Vancouver Park Board on design of the park and that with two to three metres of soil/grass cover, most trees could be planted in the park.

West End

- Participants discussed heat recovery from the substations, including the volume of heat and whether the substation could heat the school at the West End site, also asking how heat could be used in the summer season.

BC Hydro representatives commented that there would be opportunities for heat recovery, definitely at the West End site to heat and cool the proposed new school, resulting in lower operating costs. BC Hydro will look at different ideas for use of the heat as there are many options for distribution of the substation heat.

- One participant asked about the proposed school in Coal Harbour and whether there is potential for it to be located elsewhere such as in Olympic Village.

The Vancouver School Board representatives noted that the school in Coal Harbour would accommodate Lord Roberts Annex students during construction and that a commitment has been made to go ahead with these schools but that there is definitely still need for a school in Olympic Village as well.

- One participant asked whether there would be daycare integrated into the new school at Coal Harbour and about the timeline for building the school at Coal Harbour. They also asked whether the timeline of building the school could be influenced by other partners.

The Vancouver School Board representatives noted that they are proposing the Coal Harbour site to include a childcare space and non-market housing which would be the responsibility of the City of Vancouver. The Vancouver School Board would be interested in working with the City of Vancouver to include these facilities should the City provide funding for them. BC Hydro representatives noted that the 140 students at Lord Roberts Annex would have to have an alternate school to attend prior to the start of construction on the West End substation; this would likely be the school in Coal Harbour.

- One participant asked about the seismic status of Lord Roberts Annex and whether it would be replaced if seed did not go ahead.

The Vancouver School Board representatives commented that it is a “medium”, noting that the scale has low, medium and three levels of high risk. They commented that the school would not need to be replaced through the seismic program if seed did not proceed.

Safety and EMF

- BC Hydro representatives provided an overview of the supplemental materials, Stantec’s involvement in the seed initiative and a summary of potential impacts and mitigation measures at the proposed Yaletown and the West End project sites.
- The Aura Health & Safety representative introduced herself and provided overview of electric and magnetic fields (EMF). She referenced studies by the WHO and Health Canada which indicate that there is no confirmed health risk from EMF exposure below 2,000 mG, there is also no difference between intermittent and long term EMF exposure and that EMF levels in public facilities are much below the 2,000 mG limit. The highest EMF levels are found above transmission power lines, but still well below 2,000 mG.
- One participant asked about who conducts EMF measurements, and consequently voiced concern that BC Hydro measured EMF for their data. They asked if the full EMF level dataset would be made available.

The Aura Health & Safety representative noted that BC Hydro conducted the measurements in the seed maps. She looked through BC Hydro's methodology and stated that they followed standard measurement protocols. BC Hydro representatives provided an overview of the measurement procedure and noted that EMF measuring tools are available for public rental. BC Hydro representatives stated that the full dataset would be in the Stantec report which would be made available by end of day on Friday, February 17.

- One participant asked if there would be EMF testing conducted once the proposed substations are built to verify that EMF levels are within the safe range.

BC Hydro representatives noted that seed is still a concept, but that they know EMF levels will be very similar to those measured at Cathedral Square. If seed goes ahead, there would be an EMF profile developed to accurately predict EMF levels based on the developed detailed design, this would also be part of a future public consultation process. If seed goes ahead, actual measurements would be taken once the project is built. BC Hydro representatives noted that current baseline measurements at each park have been recorded.

Additional Comments

- One participant asked for confirmation on when the Murrin and Dal Grauer substations would be decommissioned.

BC Hydro representatives noted that Murrin would close in 2032 and that Dal Grauer would be decommissioned in 2030.

- One participant asked about the potential early park improvements in 2020 in Emery Barnes and how this would be funded and whether there would be consultation on the park improvements.

BC Hydro representatives stated that this is just an idea at this point but that there are improvements that could be made to Emery Barnes Park, which would be up to the Vancouver Park Board on how they use the funding that comes out of the lease to BC Hydro. Vancouver Park Board representatives noted that if any improvements are made to Emery Barnes Park, there would be public consultation.

- One participant asked about what would happen with the land where Murrin and Dal Grauer are situated and whether BC Hydro would continue to use the properties for utilities.

BC Hydro representatives noted that the use of these sites is undetermined but that both substations have constraints. Murrin is a larger site but contaminated and not in great zone for seismic stability. Dal Grauer is constricted by surrounding condos and the Scotiabank Theatre but the façade is heritage. BC Hydro has not determined yet what to do with the sites but Murrin would likely not be needed for future BC Hydro facilities, Dal Grauer could possibly be used but it is too soon to say.

- One participant asked about electricity demand forecasting and whether the increase in electricity use downtown is due to more density or more usage per household.

BC Hydro representatives noted that electricity use will increase slightly in households resulting from reduced use of non-renewable energy, this is also combined with additional population density downtown. While predicting demand years ahead is difficult, demand predictions are updated annually as they fluctuate based on different factors.

- One participant asked about the various benefits resulting from the seed initiative and whether one of the benefits for BC Hydro is obtaining saleable land and what the financial result of this would be.

BC Hydro representatives noted that the seed concept is about buying into a 99-year volumetric lease at market value. Vancouver School Board representatives commented that there are underground rights and compensation for the land, similar to the underground SkyTrain lines. The Vancouver Park Board and Vancouver School Board would be the landowners for seed.

- One participant asked about the decommissioning of the underground transformers at the proposed Yaletown and West End substation sites, asking about the life expectancy of the transformers and replacement process for the future.

BC Hydro representatives noted that all equipment could be removed from the substation through the entrance structure except for the transformers. There would be a hatch in the roof of the substation where they could be lifted out or lowered in. Emery Barnes would have two transformers but there would be space for a third transformer in the future (about every 30 years). The park design would be configured to ensure minimal disruption during these future procedures.

- One participant asked about the Vancouver School Board's timeline for seed and whether the decision about seed would come out of the committee meeting where consultation results will be presented. They asked whether the recommendation that comes out of the VSB committee meeting would go straight to the board or if there is an interim period for consultation with Vancouver School Board stakeholders.

The Vancouver School Board representatives noted that there was an original private Committee II meeting on January 20, 2017 and there will be a report back to Committee II on March 8, 2017 and a Board meeting on March 27, 2017.

- One participant noted that seed will not be the first underground substation as Cathedral Square is underground, but that media has referenced that seed is tight on timelines. Since going underground is not a new concept, they asked why seed would be tight on timelines. They also asked how the financial investment for seed and benefits for the community compare to purchasing a lot from a developer and whether these financial comparisons will be made public.

BC Hydro representatives noted that they have tried to source properties downtown for above ground substations but it was difficult to find a suitable property so BC Hydro started to look at building another below ground substation. They stated that the idea of seed is that BC Hydro will pay a premium to build underground, renting the space makes it affordable and translates into benefits such as two new schools and money for the Vancouver Park Board to develop a new park or put towards other recreational facilities. At this point, the sum of money between seed versus a traditional above ground substation development is very equal. The financial comparisons will be made available when BC Hydro goes for approval by the BC Utilities Commission (BCUC).