



# Pipes & Wires

Servicing and Infrastructure  
Recommendations for  
Gentle Density Housing

**Small Housing acknowledges that we conduct our work on the traditional territories of Indigenous peoples who have called these lands home and have been their stewards since time immemorial.**

# Small Housing Core Pillars



**Advocacy**



**Research**



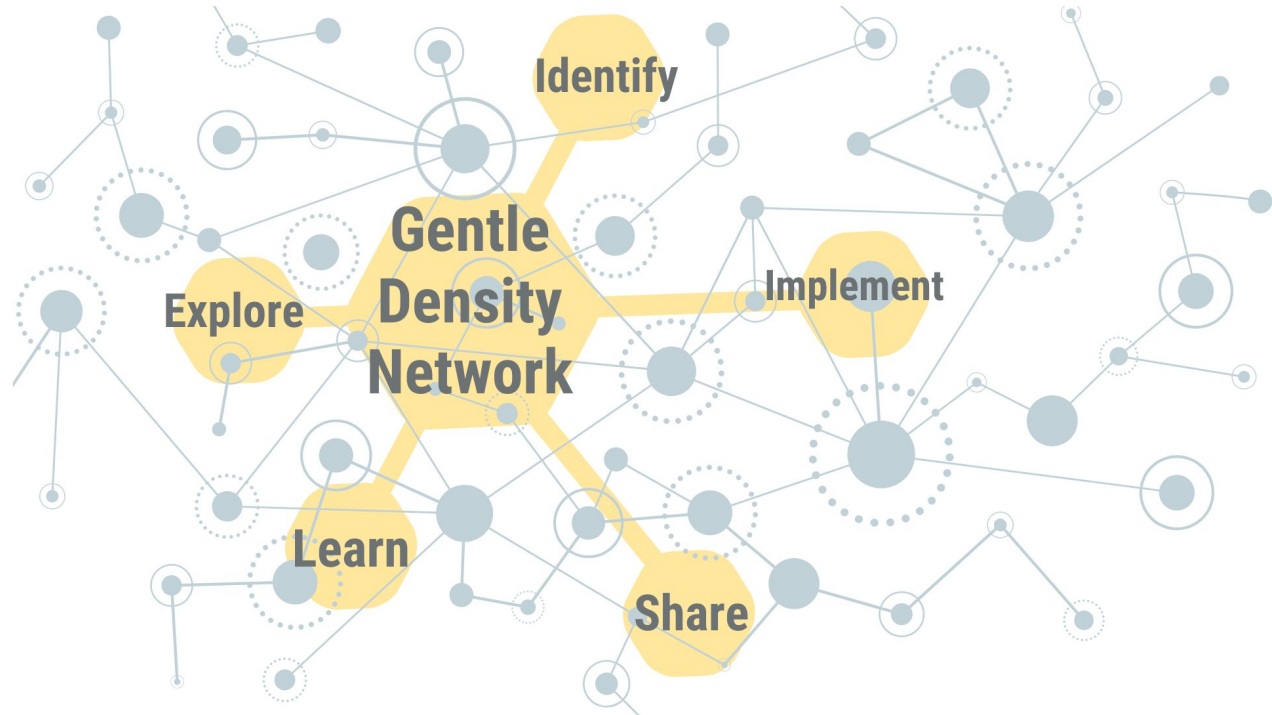
**Capacity Building**



**Market Development**

# Gentle Density Network

# What is the GDN?



# Announcements

## Resources

Medium - Guide for Middle Housing in New Zealand [www.mediumdensity.nz](http://www.mediumdensity.nz)

CMHC Housing Accelerator Fund - deadline August 18

## Upcoming Events

Webinar #7: “The Parking Break” save the date - September 13, 11am

# About Today's Session

# Agenda

- Poll - Tell us about yourself
- Servicing & Infrastructure Roundtable work and guide recap
- BC Hydro Presentation
- Breakout room discussions
- Q&A
- Poll - Future Deep Dive topics



# Learning Objectives

- To understand the range of tools that local governments can use to tackle needs triggered by gentle density homes
- To learn about recommendations proposed to the Province and local governments to better address small-scale infill
- To hear from BC Hydro on a deep dive into all things electrical: connection upgrades, transformer requirements, and system capacity
- To hear from planners and engineers on your top issues that you want amplified and/or solved

# Housekeeping

- Chat functionalities
- Technical difficulties
- Quick poll
- Feedback poll at end (future topics)
- Post-Session: PIBC CPL credits; email followup

# Poll - About our audience

- Community Size
- Region
- What infrastructure capacity concerns does your municipality have with regard to pending GD upzoning legislation?

# Pipes & Wires

**Servicing & Infrastructure Solutions for Gentle  
Density Housing**



**GENTLE  
DENSITY  
NETWORK**

# **Pipes & Wires**

## **Servicing & Infrastructure Recommendations for Gentle Density Housing**



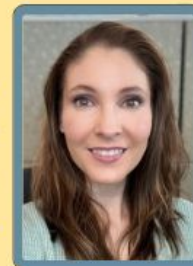
**Paul Simon, MSc, RPP, MCIP**

Lead Planning and  
Development Services  
City of Revelstoke



**Jacqueline Spray**

Lead Customer  
Engagement and Sales  
BC Hydro



**Katherine Middleton, P.Eng.**

Specialist Engineer  
Distribution Standards  
BC Hydro



**Ashish (Ash) Rajora**

Lead Lower Mainland  
Distribution & Design Team  
BC Hydro

**[smallhousing.ca](http://smallhousing.ca)**

# Gaps in development finance tools

- For Province/MFA :
  - increase per capita borrowing limit without elector consent for infrastructure-related projects for infill housing
- For local governments:
  - consider levies or cost-sharing for upgrades that benefit multiple properties (drainage, fire hydrants)
- For Province:
  - develop financial tools that allow contributions to be applied at a neighbourhood level on priority upgrades rather than immediate frontage of the infill development site.

# Local government capacity

- For Province:
  - develop a toolkit for plans and processes that integrate land use, infrastructure assessment, and financial planning
  - provide LGs with additional financial support to integrate land use plans with infrastructure master plans.
- For local governments:
  - identify high likelihood to redevelop areas in the community and prioritize infrastructure upgrades in those areas (while balancing burden on smaller sites that do not have same financial capacity to pay for upgrades)

# Senior government funding

- For Province:
  - Explore funding at a more significant scale (>\$100,000) that is more efficient to manage
  - create grant funding that links infrastructure related funding to number of housing units approved by a local government
- For local governments:
  - Provide specific feedback through UBCM on making grant applications more streamlined



# Sewer system capacity

- For local governments:
  - update sewer system capacity modelling
- For Province:
  - expand the powers of local government to initiate sewer systems expansions through their Liquid Waste Management Plans
  - create additional funding for sewer infrastructure upgrades and expansions, specifically for housing purposes.

# Water and fire protection

- For Province:
  - Review existing processes and current fire flow requirements for infill housing and establish recommended practices to protect life safety and ensure adequate fire protection.
  - Consider providing guidance to the BCBC to clarify regulations for small scale Part 9 Buildings, regarding water supply for fire protection, ability to require sprinklering and other alternate solutions.
- For local governments:
  - consider alternate solutions for areas with low fireflow, such as sprinklering, fire separation, and onsite cisterns.

# Stormwater

- For the Province:
  - Provide funding for the completion of Integrated Stormwater Management Plans and projects that mitigate risk associated with infill development.
- For local governments:
  - Consider establishing standards for different stormwater management conditions (i.e. hillsides vs lower risk areas).
  - Review stormwater management requirements in Subdivision Servicing Bylaws and Development Permit Guidelines for single family and gentle density from an equity and impact perspective (level playing field for multi-unit).

# Electrification

- For the Province and local governments:
  - explore options to 1) place pad-mounted transformers on public land to serve infill development and 2) serve multiple units from a pad-mounted transformer placed on private land.
- For BC Hydro:
  - explore updates to the existing “Pioneer” program to support cost-sharing for hydro upgrades completed by developers.
- For local governments:
  - establish parking ratios and regulations that consider the need for EV charging, to ensure infill sites have parking and charge space available to meet future needs.



# BC Hydro Housing Connections

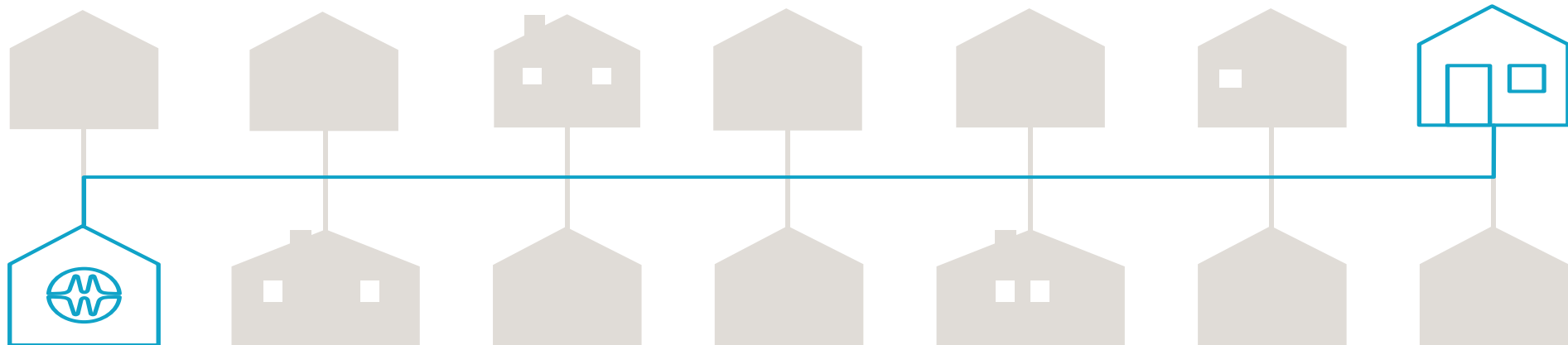
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KATHERINE MIDDLETON, ASHISH RAJORA, AND JACQUELINE SPRAY

# Distribution Overview

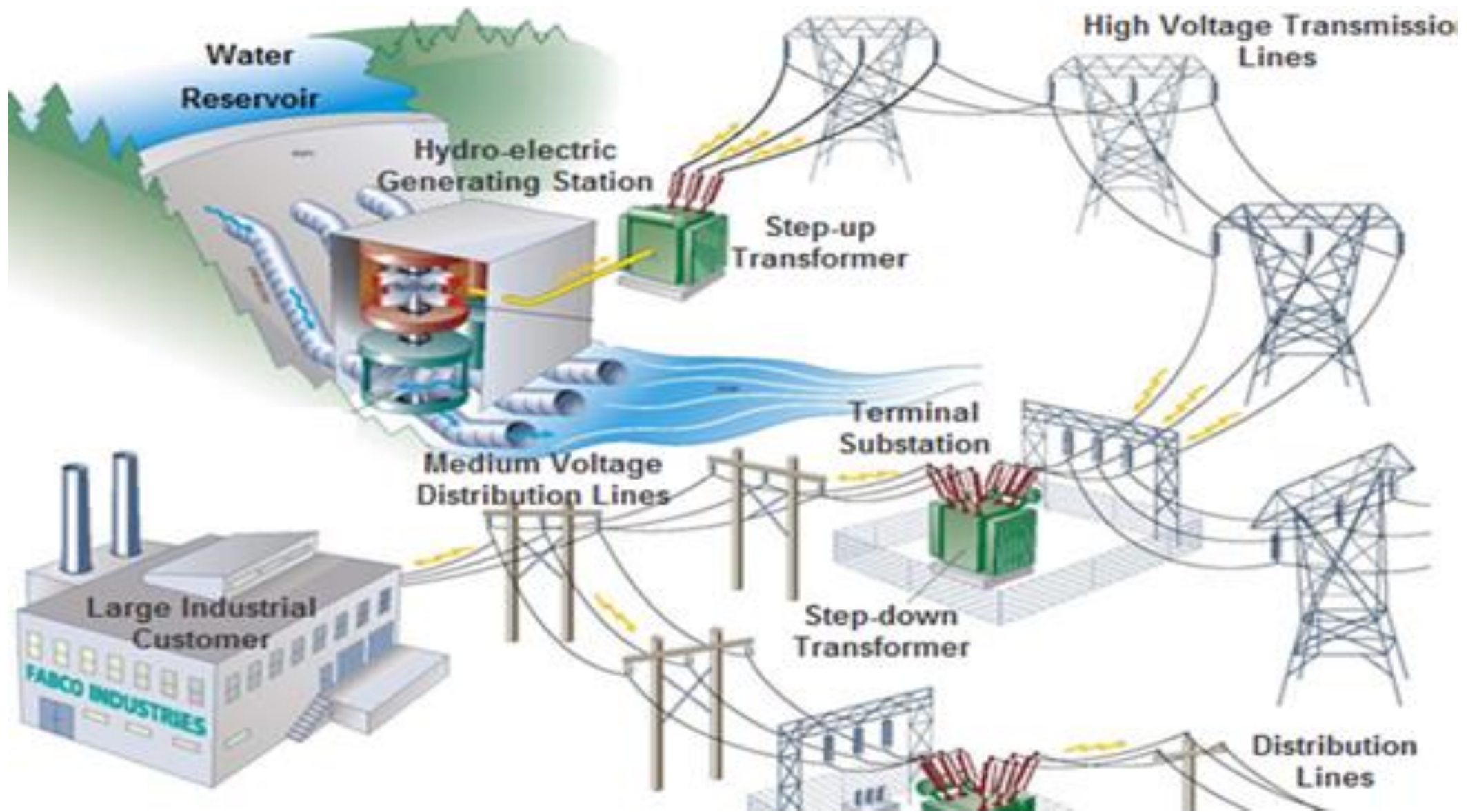
- What infrastructure will we need room for to support gentle density and why (distribution 101)
- Careful consideration required for local government policy development related to infrastructure (e.g. not allowing overhead transformers and/or services may act as a barrier to gentle densification, as costs to connect could increase significantly)
- Benefits to allowing space on public land for transformer and other infrastructure installations

# Distribution 101

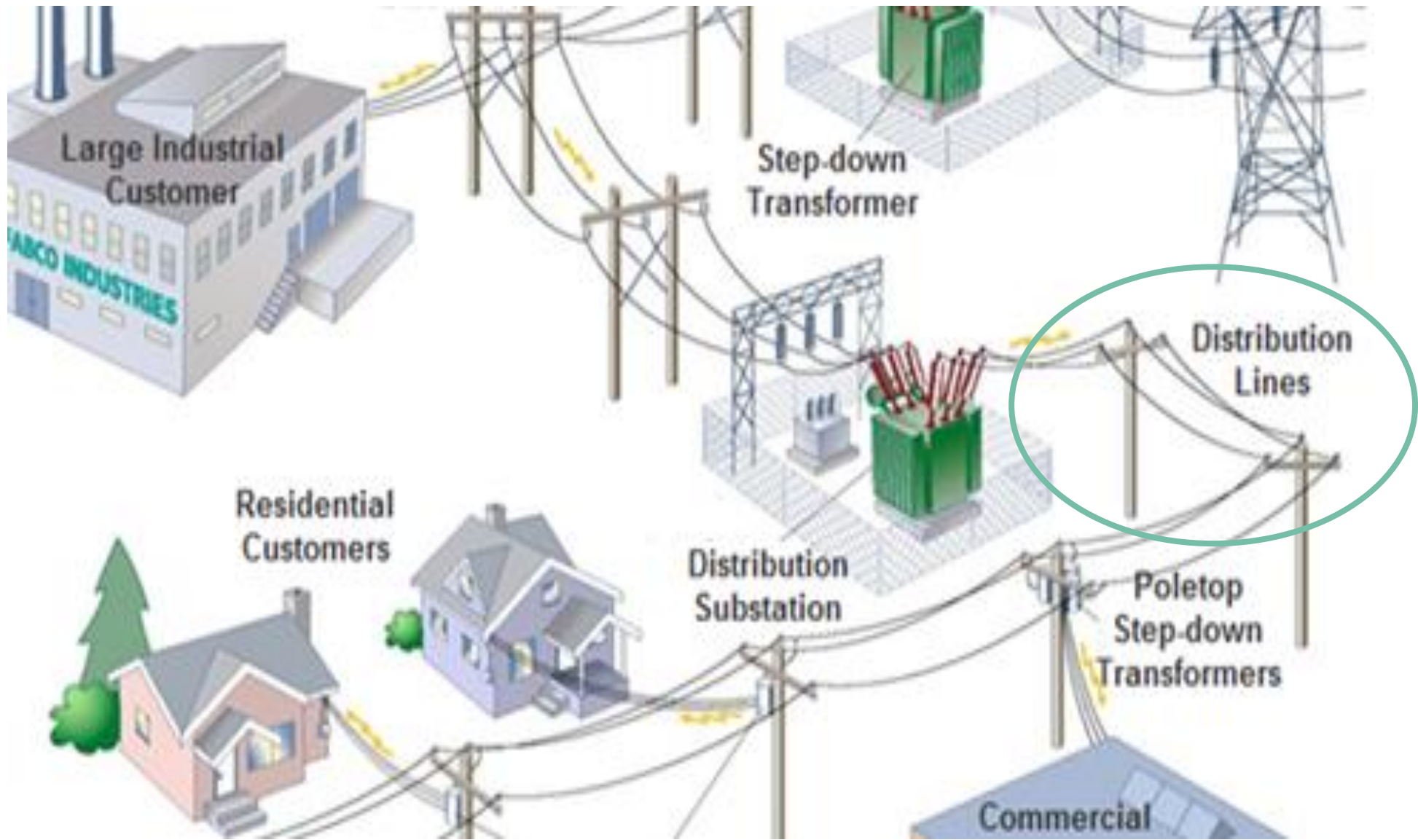


AUGUST 2023, KATHERINE MIDDLETON

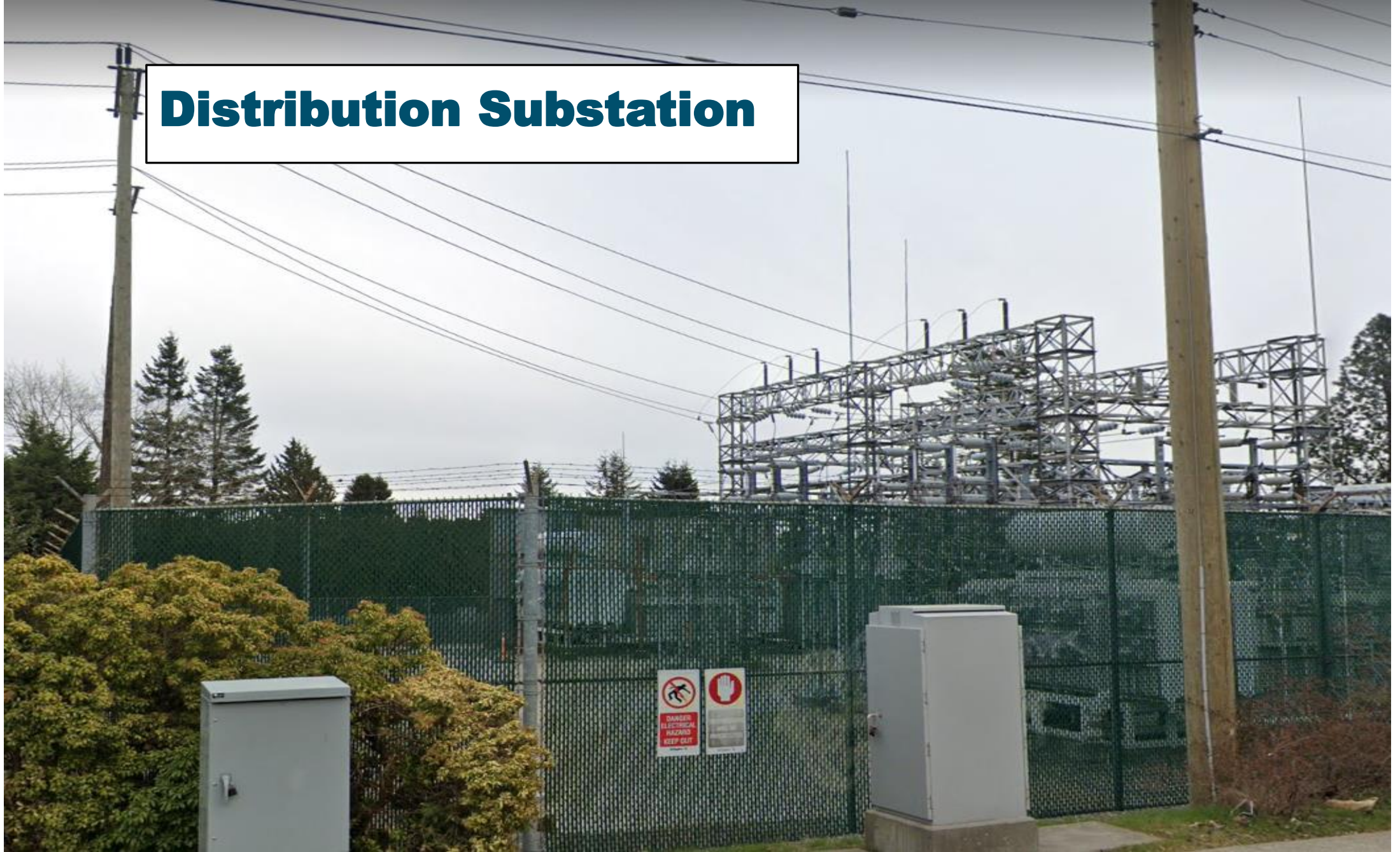






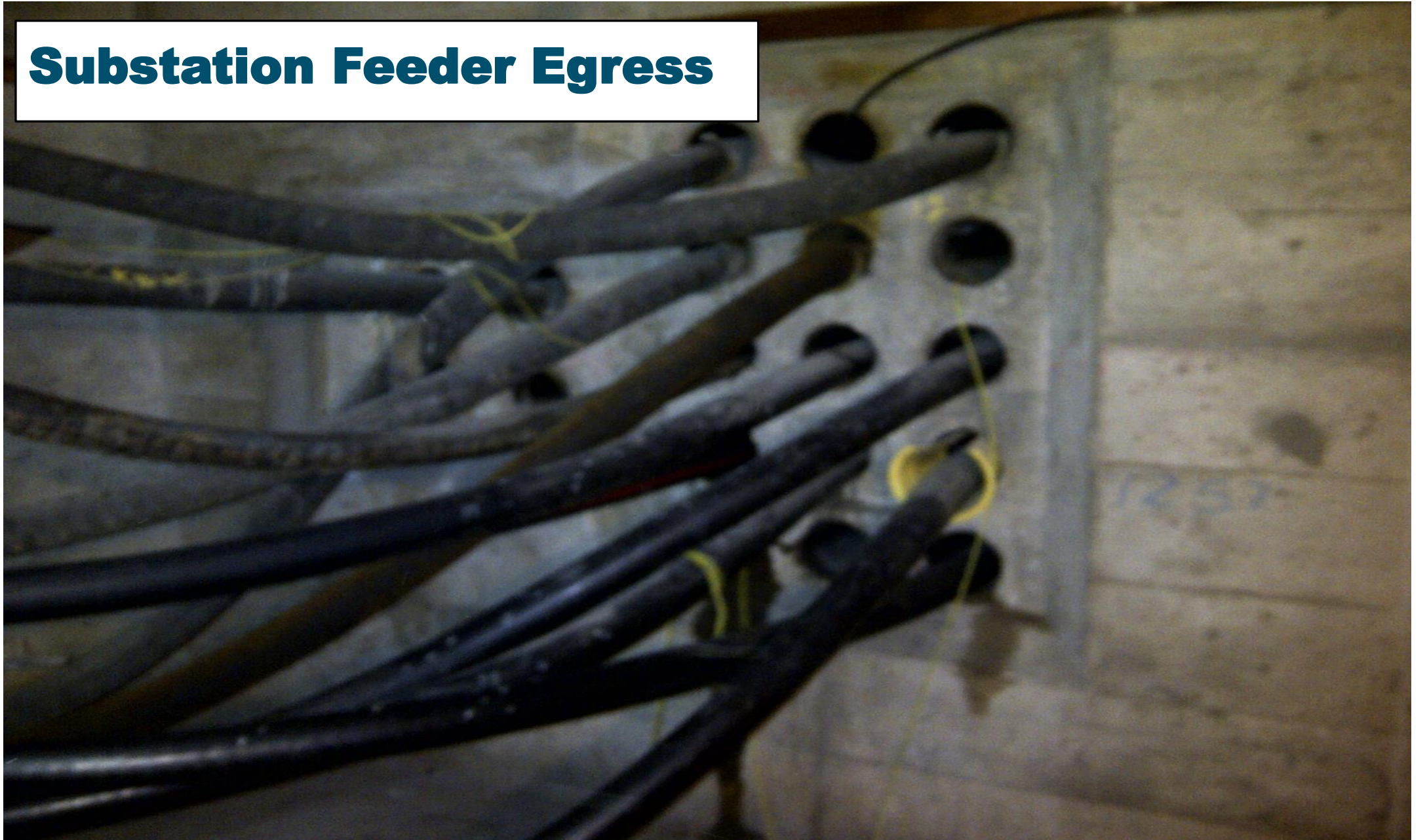


# Distribution Substation





# Substation Feeder Egress



# Distribution Duct Bank

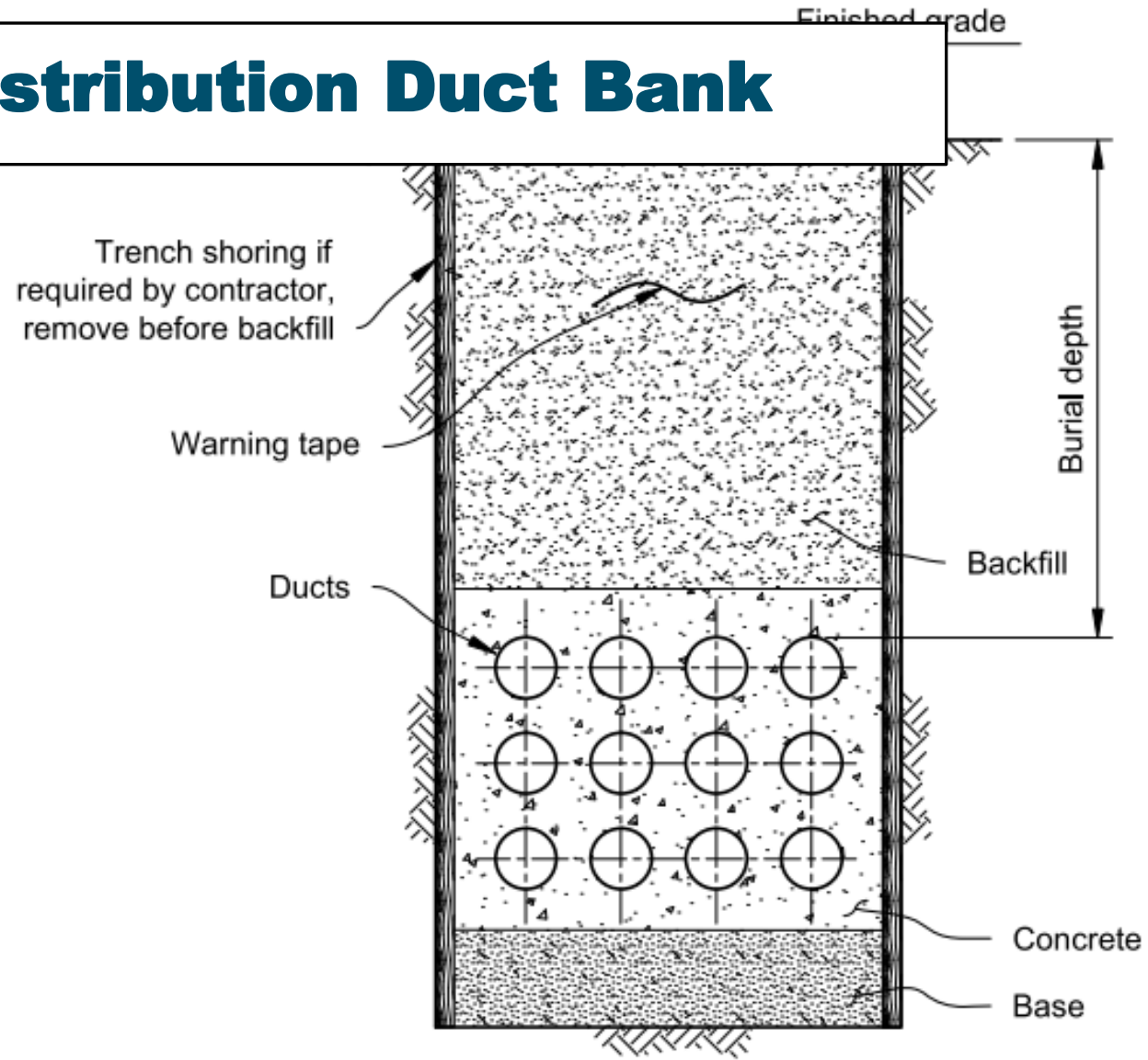


Figure 1 – Warning tape placement

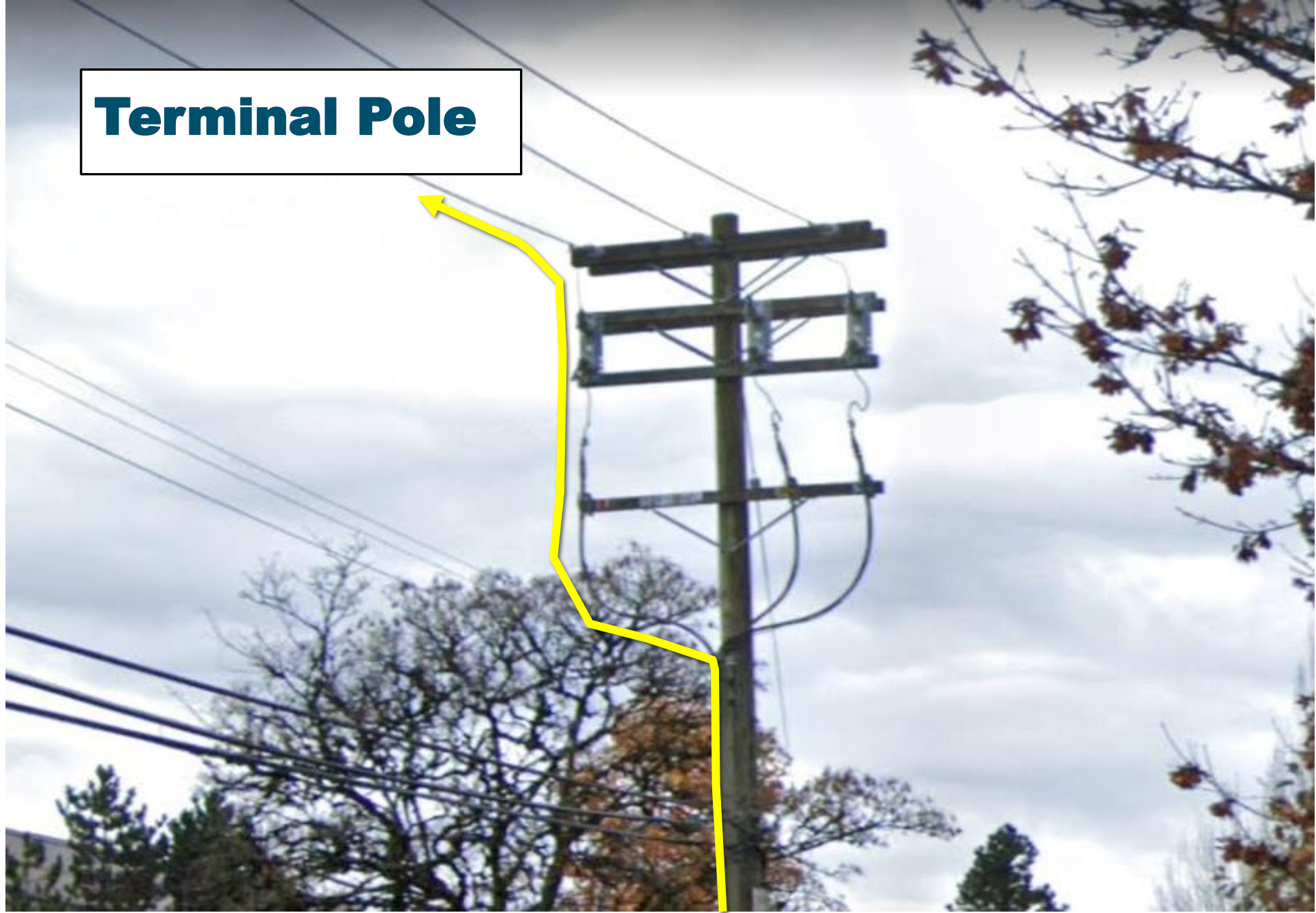


# Distribution Vault





**Terminal Pole**



# Pole Line

Crossarm

Primary - 25,000 V

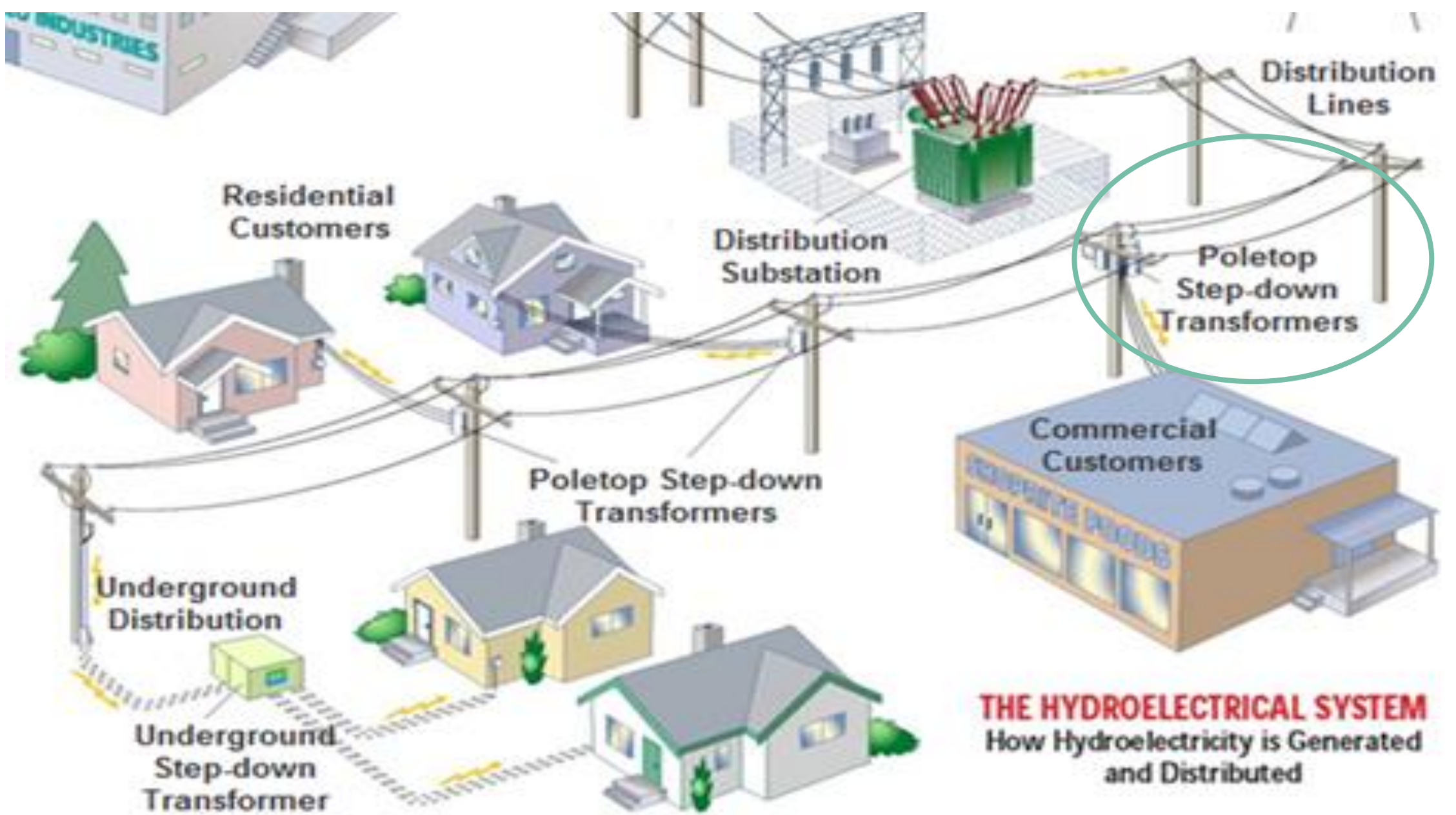
Secondary - 120 V

Telecommunications

Pole







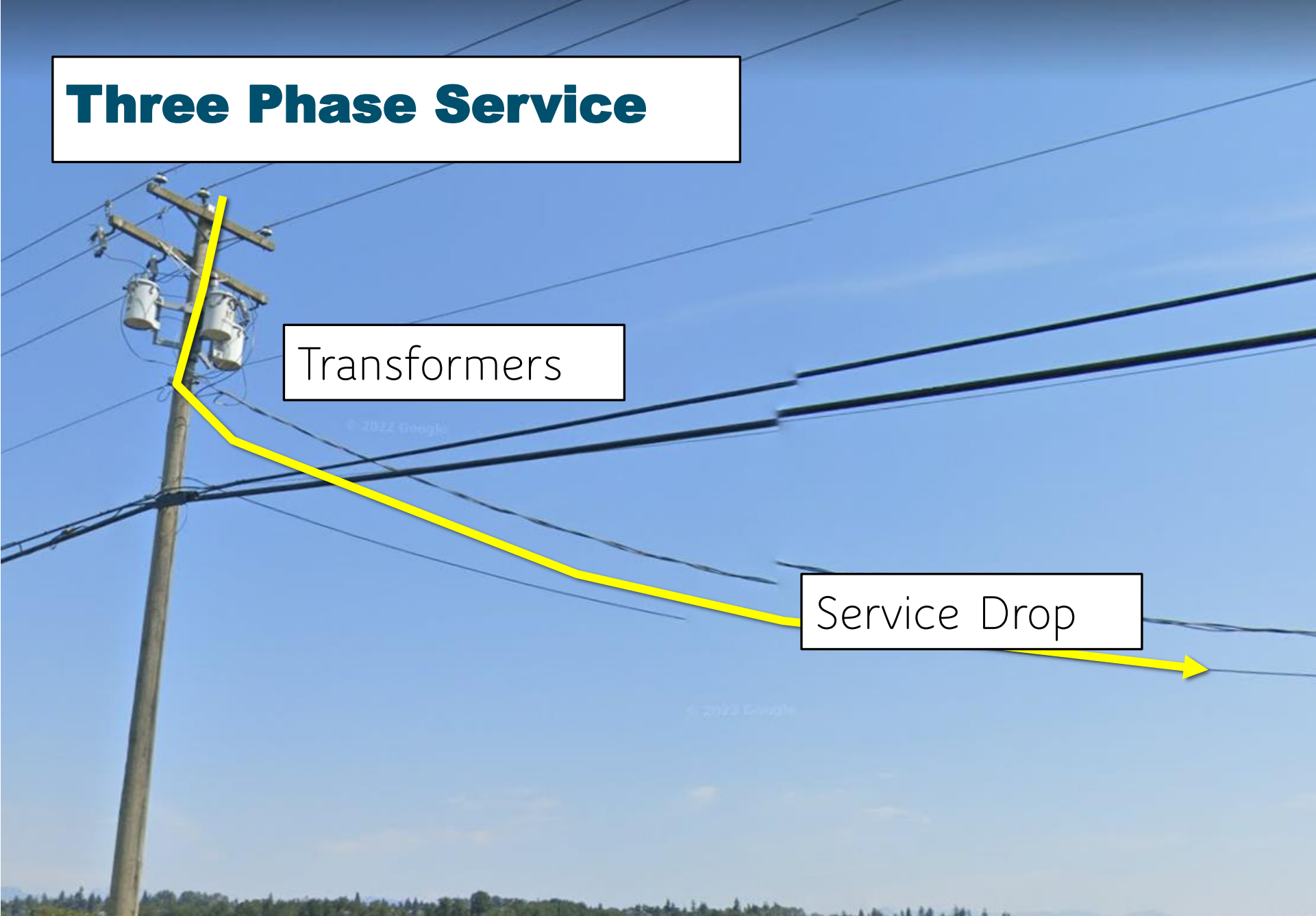
**THE HYDROELECTRICAL SYSTEM**  
How Hydroelectricity is Generated and Distributed



# Three Phase Service

Transformers

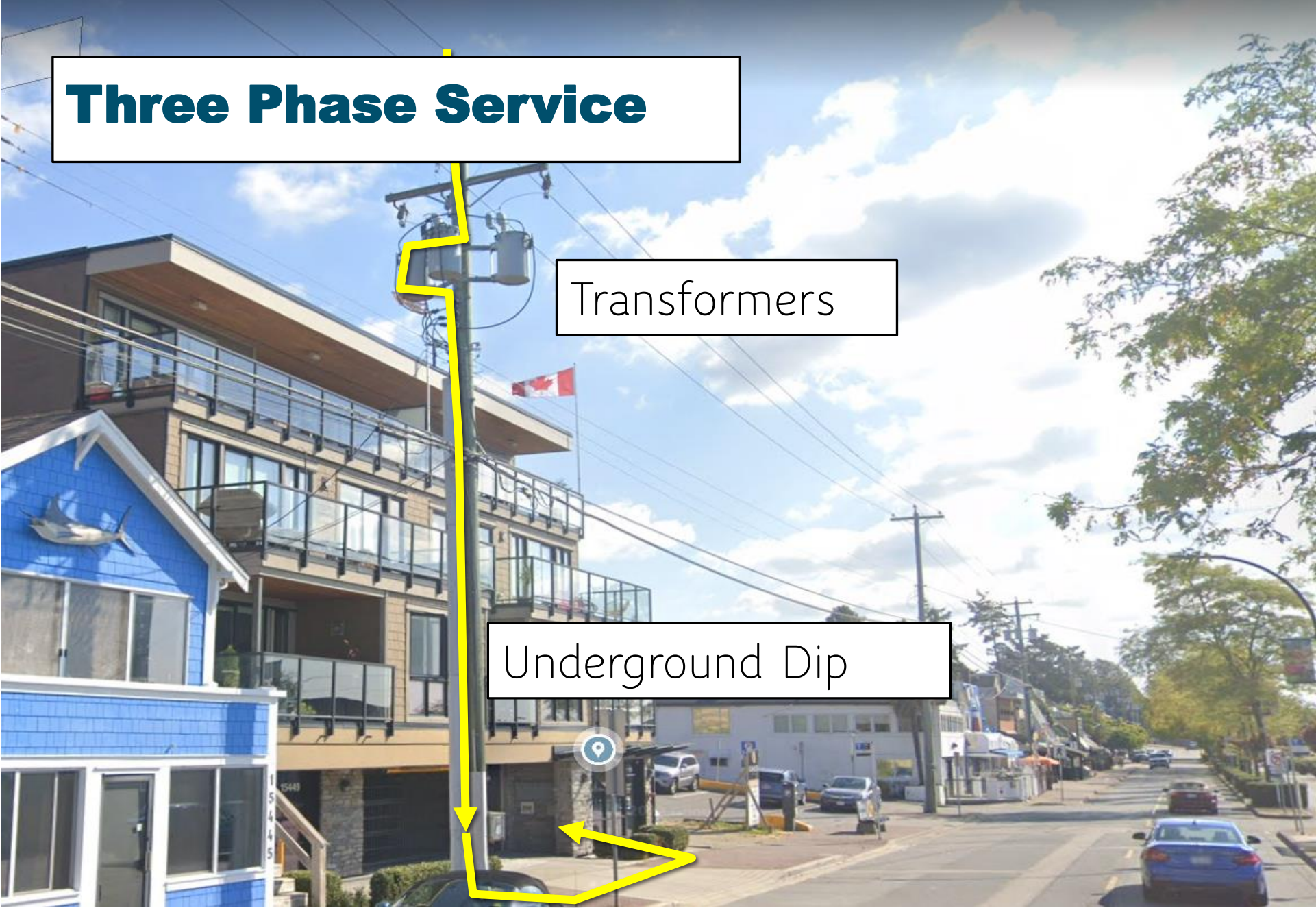
Service Drop



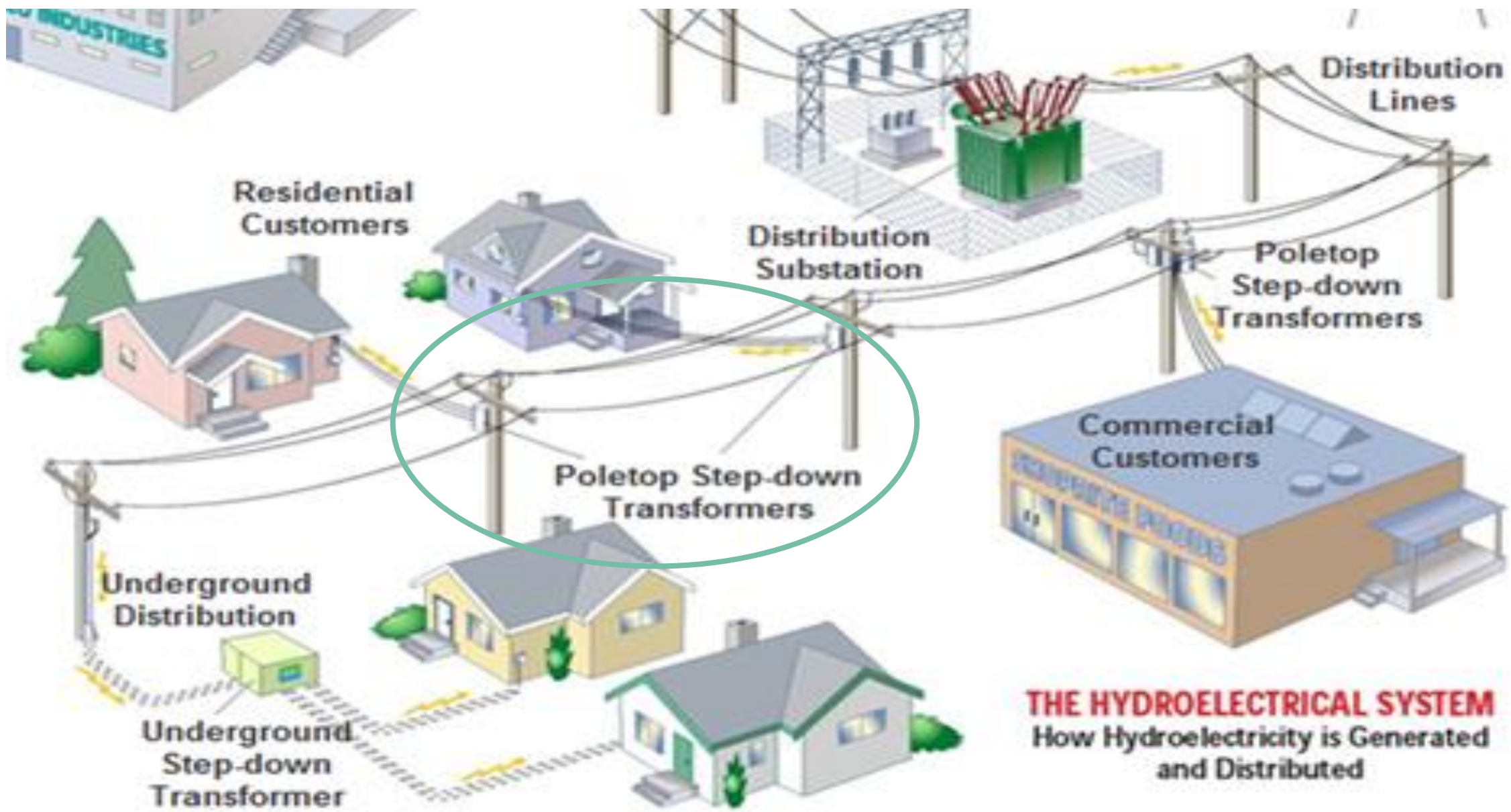
# Three Phase Service

Transformers

Underground Dip

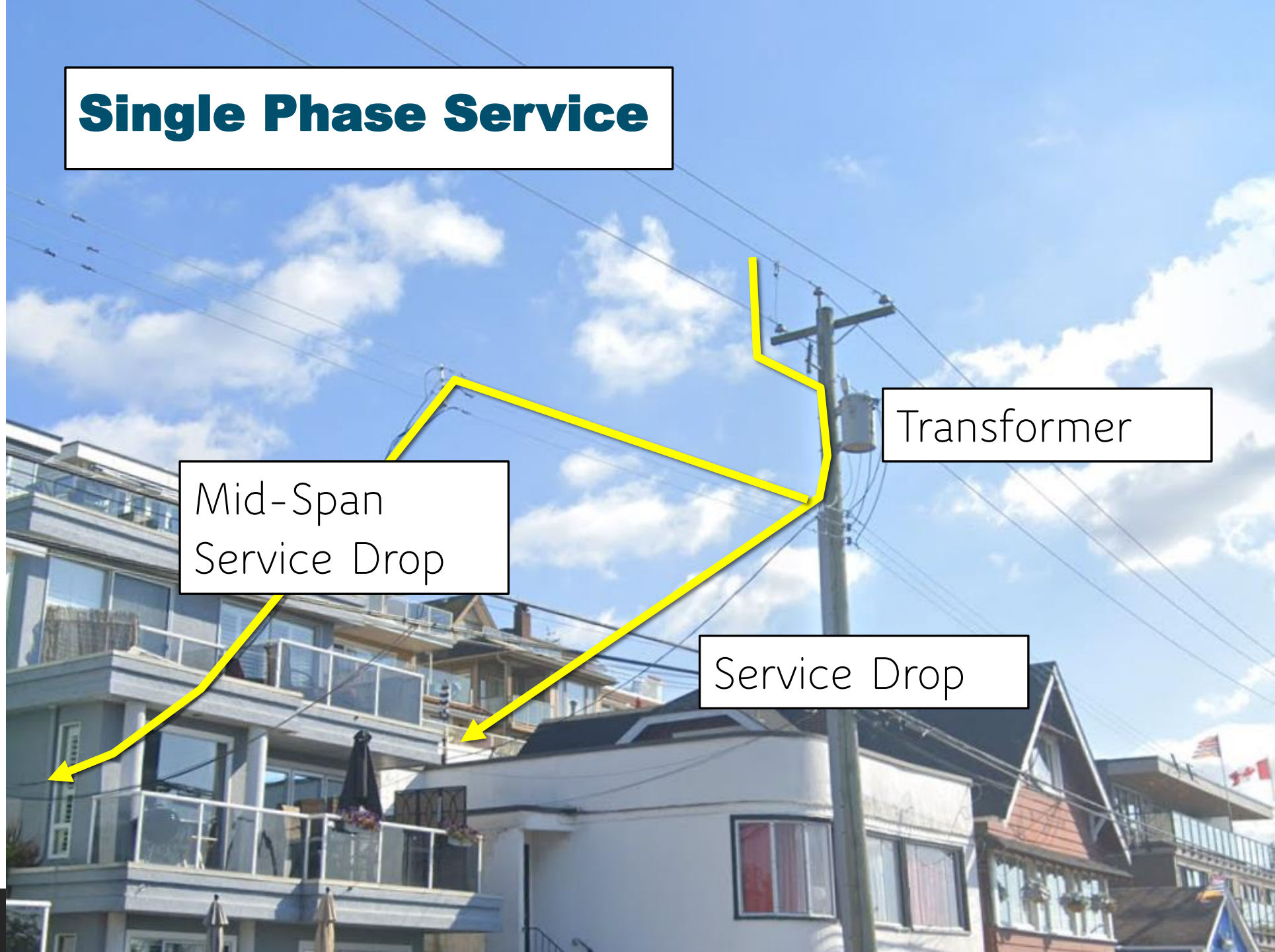






**THE HYDROELECTRICAL SYSTEM**  
How Hydroelectricity is Generated and Distributed

# Single Phase Service

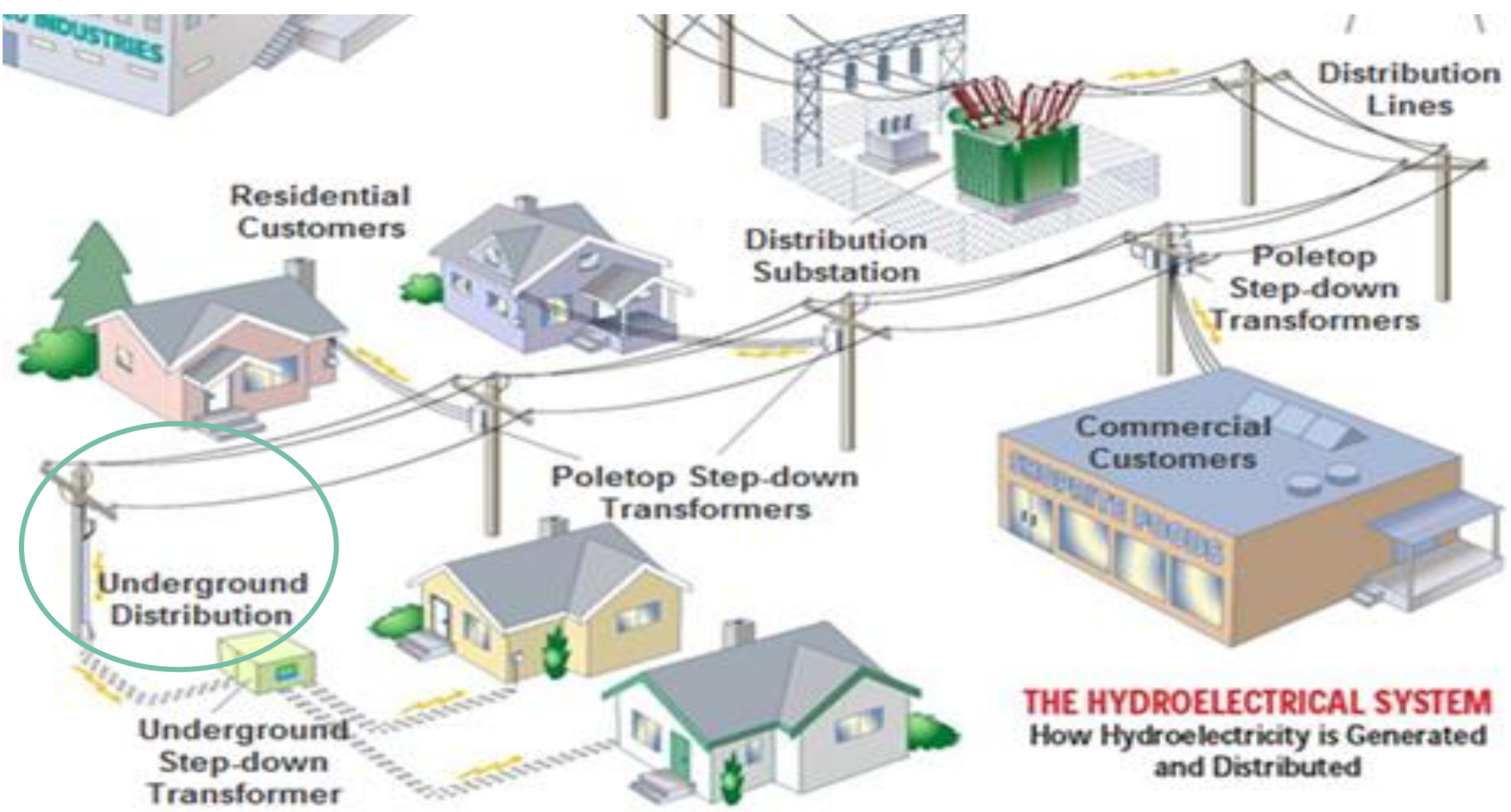


Transformer

Mid-Span  
Service Drop

Service Drop





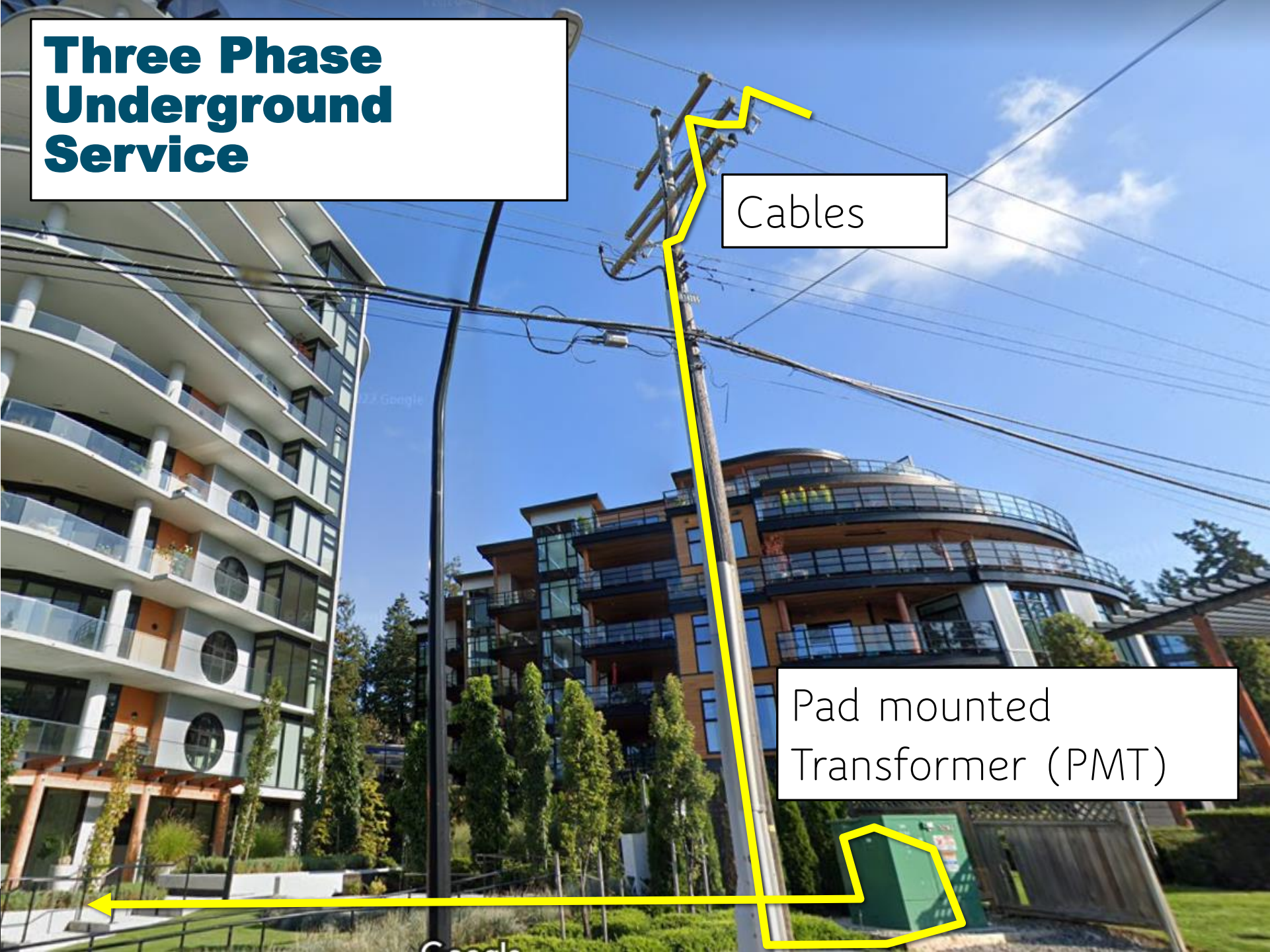
**THE HYDROELECTRICAL SYSTEM**  
How Hydroelectricity is Generated and Distributed



# Three Phase Underground Service

Cables

Pad mounted  
Transformer (PMT)





# Single Phase Underground Service

Meter base

Low profile  
transformer (LPT)

# Easier grid connections

Behind the scenes, programs are underway to improve our speed of service and cost certainty for customers. Improvements in:

- Planning
- People & Processes
- Policy
- Customer & Local Government support





# Planning - Addressing Capacity Constrained Areas

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- Recently increased our distribution capital budget by \$100 million in 2023-24.
- Updating planning criteria to advance the construction of new feeders.
  - 35 new feeders in the past 5 years and 18 new feeders under construction.
- Advancing major underground egress corridors projects.
  - ~130 km of new major underground distribution under construction.
- Implementing feeder level Demand Side Management.
- Advancing voltage conversion work to 25 kV in 12 kV areas.

# People & Processes - Connections Improvements

- Increasing responsiveness to our customers on project information
- Reducing timelines for customer connections
- Increasing the number of connections delivered per year
- Improving the customer experience for the end-to-end connection process

# People & Processes - Improvements we're making

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- Added 50 new positions to our customer connections group
- Introducing a simplified process for less complex projects
- Improving our intake process to make information gathering more efficient
- Creating specialized teams to focus on specific types of connections
- Implementing scheduled communications with customers
- Providing better guidance to customers on [bchydro.com](https://bchydro.com)

# BC Hydro's Extension Policy

- Contained in Section 8 of BC Hydro's Electric Tariff, the extension policy details how costs of infrastructure required to connect new customer are allocated between BC Hydro and our customer.
- Any changes require review and approval from the BC Utilities Commission (BCUC) and the last material review was completed in 2008. Since 2008, we have heard about the following issues from our customers:
  - Cost Predictability: Customers applying to connect to BC Hydro want more predictability of the costs associated with their connection
  - Free Riders: The first customer requesting service often bears the majority of the infrastructure costs and does not have meaningful opportunity to recover those costs from subsequent customers whose connections benefit from the infrastructure paid for by the first developer

# Policy - Distribution Extension Updates

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Work is underway to revise our existing distribution extension policy. Steps include:

- May – Public workshop detailing issues and potential options. Presentation materials can be found:  
<https://www.bchydro.com/toolbar/about/strategies-plans-regulatory/workshops-feedback.html>
- Now – Refining options based on customer feedback
- Fall – Second public workshop with updated proposal
- **Schedule TBD** – Submit an application to the BCUC submission

# Local Government Collaboration

- Local governments have committed to ambitious plans and targets to increase housing supply as well as to address climate change.
- BC Hydro and Local Governments need to work together to:
  - Streamline and standardize permitting and technical review/ approval processes
  - Develop a forum to work with multiple Local Governments
  - Align priorities
- Collaborative Planning Pilot underway with City of Victoria/ District of Saanich

**Thank you**

## Breakout Rooms & Hosts



### Electric Avenue (Electrification)

- Jacqueline Spray, Ash Rajora, Katherine Middleton



### Show Me The Money (Senior Government Funding)

- Joshua Craig



### What's Going On / Underground (Local Government & Capacity)

- Dean Mousseau



### Wider on the Storm(pipes)? (Stormwater)

- Tamara White



### Putting out Fire (Water & Fire Protection)

- Carl Isaak



### Who Does #2 Work For? (Sewer System Capacity)

- Paul Simon



### You Never Give Me Your Money (Gaps in Development Finance Tools)\*

- Nancy Henderson



# Questions/Comments/Answers

- Small Housing, BC Hydro, Urban Systems and MUNI staff available to respond to questions

# Future 'Deep Dive' topics - tbd

- Fire flow and water upgrades - learning from Edmonton, Kelowna, and London (UK) how to assess the real need to upgrade water services
- Financial tools - what does upzoning mean for contributions that have typically been secured through rezoning?
- Financial viability - how much land lift is there really with houseplexes, and are costs different for offsite vs. onsite construction?

# Next Steps

- Follow up email: presentations to all participants
- Servicing & Infrastructure Guide released & distributed