ELECTRICAL PLANNING REPORT

Opal Project # EPR-05

Section 1 - Strata and Provider Details

Date and Property Details

Date EPR Created: 22 September 2026

Building Address: 14 E Royal Ave, New Westminster, BC

Building Common name: Victoria Hill

Strata #: BCS 1676

EPR Provider Contract and Qualifications

Opal Engineering Inc.

20280 94B Ave, Langley, BC V1M 1Y8

Blake Shine P.Eng, Electrical Engineer

Relationship between Opal Engineering and Strata Corporation: None

Section 2 – Executive Summary

Introduction

Opal Engineering have been engaged by Aquacoast Engineering to review and provide an Electrical Planning Report.

The purpose of the Electrical Planning Report (EPR) is to provide the strata corporation with an overview of the existing electrical capacity and anticipated future electrical demands. The EPR helps the strata corporation understand the limits of the current electrical infrastructure, how electrical demand is distributed, and how to avoid exceeding the available capacity.

Summary

The electrical peak demand information was provided by New Westminster Electric Utility via Aquacoast Engineering on 13th of April, 2026 to Opal Engineering during the data collection stage.

Each strata lot in the strata plan is supplied with electricity independently of the others. Electricity is billed separately for each residential unit, as well as separately to the strata for common areas.

While there is significant spare capacity for additional electrical load to be added to the existing electrical service, there is insufficient capacity for all parking stalls to have a Level 2 EV charger. There is, however, sufficient capacity for heat pumps to be installed in each residential unit.

Refer to Section 3 for detailed analysis including current spare capacity and how many EV chargers/heat pumps can be installed with the current electrical capacity.

Section 3 - Existing Electrical System Details

Description of Electrical System

The electrical service is provided by New Westminster Electric Utility to the property via a customer owned 750kVA (kilovolt-ampere) unit substation. The main board on the unit substation is 3000A (amps) 120/208V (volts) three phase (3ph). The unit substation nameplate notes 50A 12,470V.

The service enters the main electrical room in the parkade where it is distributed to meter centers and then to each residential unit.

Electrical load can be added provided the capacity limits of the distribution panels, individual residential units, meter centres and the main electrical service are not exceeded.

Current Capacity, Peak Demand and Spare Capacity

Below is a summary of the capacity of electrical service:

Existing Electrical Service Rating (A, % Rated)	3000A, 80%
System Operating Volage (V, Phase)	120/208V, 3ph
Current Capacity of Service (kW - kilowatts)	750
Current Peak Demand (kW)	187.6
Current Spare Capacity on Service (kW)	562.4
Current Capacity for additional 40A EV Chargers (Qty)	67
Current Capacity for additional 40A Heat Pumps (Qty)	127

Twelve months of peak demand information was provided by New Westminster Electric Utility on the 13th of April, 2026. A safety factor of 25% has been applied as per TSBC and Electrical Planning Report guidelines.

As per above, there is sufficient capacity on the buildings electrical service to provide heat pumps in all residential units. Further calculations would be necessary to ensure individual residential unit capacity, meter centre capacity and distribution panel capacity is not exceeded.

There is not sufficient capacity to provide EV Chargers in all parking stalls, unless an energy management system is utilized. Refer to Section 5 – Recommendation for more information.

Assumptions for Adding New Loads

As per the table above, there is capacity for the quantity of EV chargers/Heat Pumps noted. For these quantities, the following is assumed:

- A typical 40A EV charger will require 8.3kW.
- A typical heat pump will require 4.4kW for residential units.

Selecting an EV charger/heat pump with lower power requirements would allow for a larger quantity to be connected.

Existing Major Electrical Loads

Type	**Connected to Electrical Distribution (common-house/residential-unit)**
Heating	Electric baseboard heaters, connected to residential units.
Cooling	Permanent cooling has been installed in 12 residential units via heat pumps.
Domestic Hot Water	Electric hot water tanks in each residential unit.
Lighting systems	Mix of fluorescent, incandescent and LED, connected to residential unit and house distribution.
Laundry	Electric washers/dryers, connected to residential units.
Elevators	2 Elevators, connected to house distribution.
Major Pumps	“Victoria Hill” pump, connected to house distribution.
EV charging	6 EV chargers (Level 1) currently installed, connected to house distribution.

Section 4 – Additional Electrical Loads

Anticipated Future Electrical Demands

As noted by the strata representative, there are currently no anticipated future electrical demands.

Systems Currently Powered by an Energy Source other than Electricity

The buildings corridor fresh air is currently powered by a gas fired rooftop unit (RTU). The energy output of the RTU based on the model number provided is 550,000 BTU/hr. The magnitude of electrical capacity required to convert the RTU to electric is estimated to be 161.2kW, based on industry standard 3413BTU/kW conversion. There is sufficient capacity at the main service for this conversion.

Most residential units currently have gas ranges. Electric ranges are typically 6kW. The magnitude of electrical capacity required to convert all residential units to electric ranges (assuming ~70 residential units currently have gas ranges) is estimated to be 420kW. There is sufficient capacity at the main service for this conversion.

Section 5 – Recommendations

Electrical Demand Reduction Strategies

To increase spare capacity for additional/larger heat pumps or EV chargers, the total connected load can be reduced.

Options include:

- **Reducing actual peak demand through energy efficiency measures**, such as:
    - Upgrading all lighting to LED. LED lighting uses much less power than traditional lighting.
    - Improving building envelope performance. Peak demand is reduced by lowering how hard heating and cooling systems must work during extreme conditions.
    - Replacing appliances with high-efficiency models (laundry, dishwasher, ranges, etc.). When operating at maximum or near-maximum output, high-efficiency appliances draw significantly less power than older models. During peak periods, this directly lowers the building's maximum electrical load.

Energy Management System (EMS) Options

Energy Management Systems (EMS) can be used to increase the number of EV chargers or heat pumps that the electrical infrastructure can support without requiring upgrades to New Westminster Electric Utility services.

EMS systems can be used to allocate spare capacity dynamically, allowing more EV chargers or heat pumps to be installed without exceeding service limitations.

An EMS continuously monitors the real-time electrical demand on a service and automatically allocates spare capacity to EV chargers or other controllable loads. When the total building load approaches the service limit, the EMS temporarily reduces or pauses EV charging to prevent overloading the electrical service.

There are two primary EMS options suitable for this development:

<u>1. Unit-Level EMS (Individual Unit Control)</u>

This type of EMS is installed within each unit's electrical panel to manage EV charger/heat pump load.

A unit-level EMS:

- Allows owners to install Level 2 (40A) EV chargers without exceeding the unit's service
- Prevents simultaneous operation of multiple high-load appliances
- Maximizes use of the unit's available spare capacity

This is typically the simplest solution because each unit has its own independent New Westminster Electric Utility meter and service.

However, due to excessive distances from some units to the parkade this method likely cost prohibitive.

2. Common-Area EMS (House Panel-Controlled Smart Chargers)

If EV chargers are installed in a shared parking area or at visitor stalls, an EMS may be installed at the house (common) panel.
This approach allows:

- Multiple EV chargers to operate on a limited-capacity feeder
- Smart allocation of available power across all active chargers
- Pay-per-use billing through a 3rd-party networked charger system.

Funds are remitted back to the strata corporation automatically via the charging network provider.

EMS Considerations

- An EMS does not increase the total service size; it allocates spare capacity more efficiently.
- An EMS allows more EV chargers to be installed than would otherwise be possible with the existing electrical capacity.
- Specific EMS sizing, layout, load-control strategy, and equipment selection would be determined as part of a formal EV Ready Plan.

Recommendations for Electrical Upgrades

As noted, the most cost-effective approach to increase spare capacity is to reduce connected load.

A New Westminster Electric Utility service upgrade is likely cost-prohibitive because it would require a new unit substation, trenching, new feeders, and new distribution equipment.

Section 6 - Disclaimers

1. Scope and Purpose Limitation

This report has been prepared exclusively for the purpose of electrical planning and load analysis. It is not intended for construction, tendering, or as-built verification unless explicitly stated otherwise.

2. Preliminary / Design-Stage Information Disclaimer

The information, calculations, and assumptions presented in this report are based on the design information available at the time of preparation. Should additional electrical load be added to the building, the values and recommendations within this report may require revision as mechanical and electrical requirements change.

3. Reliance on Third-Party Information

Portions of this report rely on data provided by architects, electrical engineers, electrical equipment suppliers, utilities, and other external parties. The accuracy of the report depends on the accuracy of these inputs, and no responsibility is assumed for errors or omissions in information supplied by others.

4. Future Load Growth and Technology Change Limitations

Load forecasts and capacity assessments are based on current technology, equipment efficiency, and anticipated usage patterns. Future changes in building use, ownership, tenancy, technology adoption (e.g., EV charging expansion), or municipal requirements may require re-evaluation of the electrical infrastructure.

5. Energy Management and Load Management Limitations

Where electrical load management or energy management systems are used to satisfy service capacity requirements, the effectiveness of these systems depends on proper installation, commissioning, configuration, and long-term operation by the building owner.

6. No Warranty of Utility Capacity or Approval

Recommendations regarding New Westminster Electric Utility service size or configuration are subject to New Westminster Electric Utility's independent engineering assessment and approval. This report does not guarantee the availability of utility capacity or the acceptance of proposed service arrangements.

7. Code and Bylaw Applicability Disclaimer

This report interprets the applicable EPR requirements at the time of writing. Codes and bylaws may be revised; therefore, the design team and owner are responsible for ensuring compliance with any updated regulations.

8. Non-Liability for Construction or Operation

This report does not replace sealed electrical drawings, shop drawings, manufacturer data sheets, or installation standards. The authors are not responsible for construction practices, installation errors, equipment selection deviations, maintenance, or operational performance.

9. Professional Responsibility Limitation

This report has been prepared by a professional engineer for the exclusive use of the client and project referenced. No third party may rely on this report without written consent. Liability is limited to the scope of services defined in the engineering agreement.

10. Requirement for Future Review

Prior to adding electrical load to the existing electrical service, a detailed review and update of this report may be required to confirm that the installed electrical system matches the assumptions and design conditions outlined herein.

Yours truly,
OPAL Engineering Inc.
EGBC Permit to Practice# 10003336



Blake Shine, P.Eng.
Electrical Engineer

Marsh

Certificate of Insurance

No.: **OPAL-2025-2** Dated: **April 08, 2025**

This document supersedes any certificate previously issued under this number

This is to certify that the Policy(ies) of insurance listed below ("Policy" or "Policies") have been issued to the Named Insured identified below for the policy period(s) indicated. This certificate is issued as a matter of information only and confers no rights upon the Certificate Holder named below other than those provided by the Policy(ies).

Notwithstanding any requirement, term, or condition of any contract or any other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the Policy(ies) is subject to all the terms, conditions, and exclusions of such Policy(ies). This certificate does not amend, extend, or alter the coverage afforded by the Policy(ies). Limits shown are intended to address contractual obligations of the Named Insured.

Limits may have been reduced since Policy effective date(s) as a result of a claim or claims.

Certificate Holder:	**Named Insured and Address:**
To Whom It May Concern	**Opal Engineering Inc.** **20280 94B Avenue** **Langley, BC V1M 1Y8**

Evidence of Insurance

Type(s) of Insurance	Insurer(s)	Policy Number(s)	Effective/ Expiry Dates	Sums Insured Or Limits of Liability	
COMMERCIAL GENERAL LIABILITY • Bodily Injury and Property Damage • Products & Completed Operations • Personal Injury • Non-Owned Automobile • Cross Liability • Tenants Legal Liability	Lloyd's Underwriters	19654970	Apr 08, 2025 to Apr 08, 2027	Each Occurrence Aggregate Non - Owned Auto	CDN 2,000,000 CDN 2,000,000 CDN 1,000,000
PROFESSIONAL LIABILITY • Claims Made Format	Lloyd's Underwriters	18602301	Apr 08, 2025 to Apr 08, 2027	Each Claim Aggregate	CDN 2,000,000 CDN 2,000,000

Notice of cancellation:
The insurer(s) affording coverage under the policies described herein will not notify the certificate holder named herein of the cancellation of such coverage.

Marsh Canada Limited
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Marsh Canada Limited

By: _____
Madison Britz