Installing an Electric Vehicle Charging Station in your Strata…

Understanding Electrical Requirements

houle electric

The Industry Leader Through Customer Choice

Service Division

www.houle.ca

Agenda

- Houle Electric
- Introduction
- Safety & Regulations
- How To Get Started
- What To Plan
- What To Do Next
- What To Purchase
- Q & A

Introduction

- Basic Types of EV Chargers:
  - Level 1…….15A 120V
  - Level 2……..32A to 80A Max 208/240V
  - DC Fast Charge
  - Tesla Wall Connector
  - Houle Is A Qualified Tesla Installer

Introduction

- Level 1
  - 120V 12.5A
  - You Can Use A Typical 15A Wall Socket
  - Charging Time……3 To 8 Km Per Hour Of Charge Time Depending On Vehicle.
  - Relative Ease Of Installation.
  - Charger Is Portable And Can Be Plugged In Almost Anywhere.

Introduction

- Level 2
  - Typically 208/240V
  - 32A To 80A Maximum
  - 32A Charging Time……16 – 20 Km Per Hour Of Charge Time Depending On Vehicle
  - 80A Charging Time……64 – 77 Km Per Hour Of Charge Time.
  - Typically Hard Wired, But Can Come As A Plug In Model.

Introduction

- DC Fast Charge
  - Some Refer To It As Level 3.
  - Typically Gas Pump Sized.
  - Can Be Found On Highways, Shopping Malls Etc.
  - Can Charge An Electric Vehicle To 80% Of It's Capacity In 30 Minutes
  - Hard Wired.

Introduction

- Tesla
  - 15A Up To 100A
  - Charging Times Per Hour Of Charge Time 8 To 11K For 15A, 72 to 84 For 100A.
  - Typically Hard Wired But Does Have Plug In Models.
  - Something To Note:
    - A Tesla Vehicle Comes With Adapters For Use With A Standard Charger But Vehicles Other Than A Tesla Can Not Use A Tesla Wall Connector.
    - Sun Country Now Has A Model Out That Tesla Vehicles Can Use.

Safety

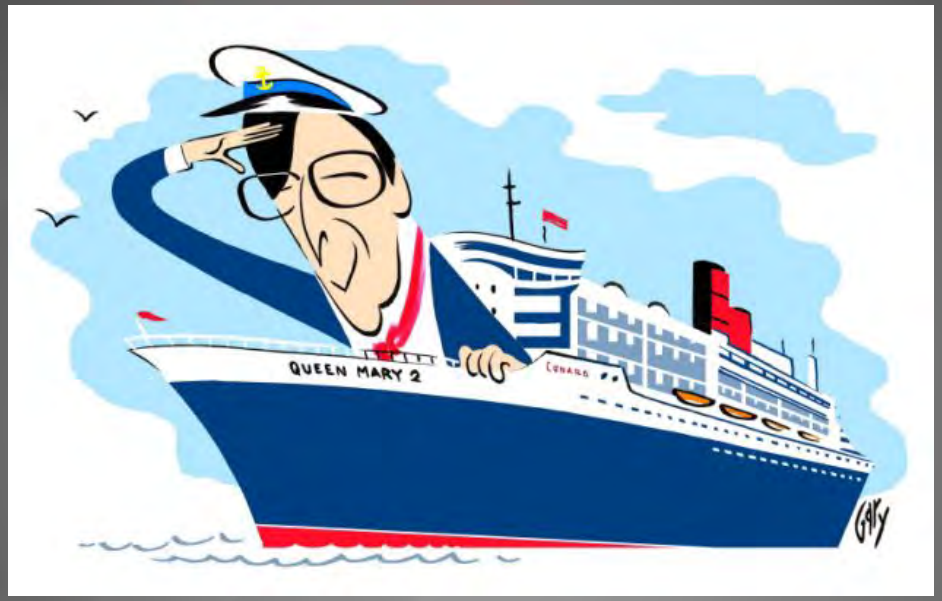
- With Safety In Mind
  - Always Use A Qualified Electrician.
  - Provide A Location Where The Charging Cord Will Not Be A Tripping Hazard Or Use A Cord Management System.
  - Always Keep Equipment In Good Operating Condition.
  - Use The Right Equipment For The Right Job

Regulations

- The Canadian Electrical Code Requires That All EV Chargers Be Included In A Building Load Calculation At 100%.
  - This May Require Your Electrician To Provide A Load Calculation To The Safety Authority For final Approval.
  - This Will Limit The Total Number Of EV Chargers That Can Be Installed In Your Building.

How To Get Started

- Do Your Contractor A Huge Favor
- Check, Make Sure Everyone On The Board Is On Board.



How To Get Started

- Check To See If You Have Any Electrical Plans Onsite.

How To Get Started

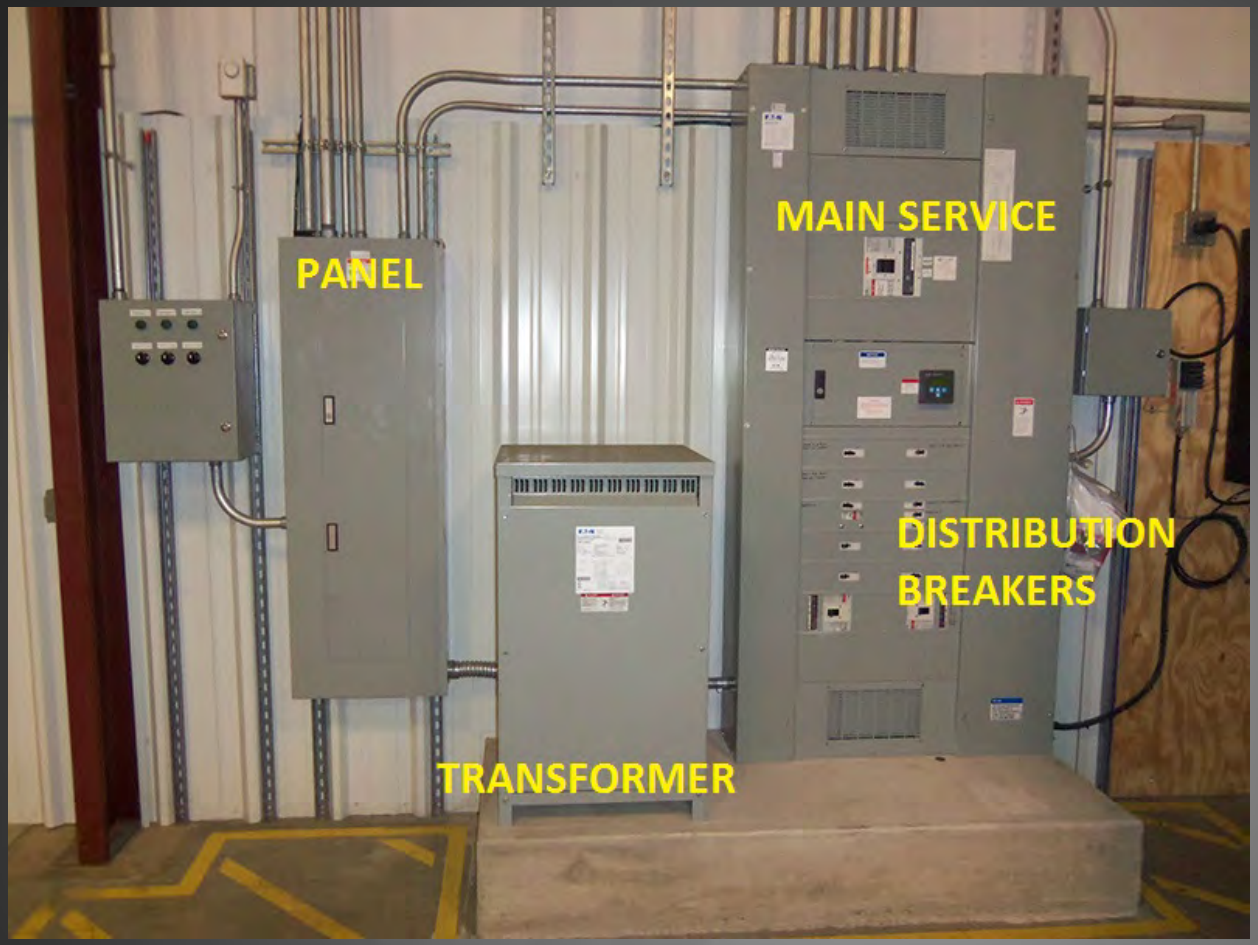
- Plans Often Contain Information That Can Be Used For Load Calculations
- Plans Can Often Be Found At Your Local Building Department.
- An Engineer Can Be Hired To Provide Load Calculations.
- A Good Electrical Company May Also Be Able To Help You With This

Start To Plan

- After A Load Calculation.
  - Is The Main Service Large Enough For The Extra Load?
  - Is There A Sub Panel Large Enough For The Extra Load?
  - Changing A Panel Is Costly But Not Prohibitive
  - Increasing The Capacity Of An Existing Electrical Service Generally Not Feasible Due To The Prohibitive Cost.

Start To Plan

- Typical Main Service And Panel



Start To Plan

Work With Your Strata Owners.

- Determine How Many EV Chargers You Would Like To Have Installed.
- Determine Your Preferred Parking Spot Locations – Confer With Your Local Bylaws.
- Decide Who Will Be Paying For Consumption And What Does That Look Like.
- Apply For Your MURB Grant.
- Choose The Best Electrical Company In Your Area.

Start To Plan

- Determine How Many EV Chargers.
  - 1 to 5 Units Probably Not A Problem For The Average Service Size.
  - The Average Condo Building May Have At Least 200A Of Spare Capacity.
  - Increasing The Capacity Of An Existing Electrical Service Generally Not Feasible Due To The Prohibitive Cost Involved.

Start To Plan

- Determine Parking Spot Locations.
  - Best To Group Multiple Units Together.
  - Best To Provide EV Charging Spaces That Are Closest To The Electrical Room.
  - Best To Choose A Place Where The EV Charge Can Be Mounted Against A Wall or Column.
  - Pedestal Units Installed Away From The Wall May Require Civil Work.
  - The Least Coring The Better!!!!

Budgeting

- What are Typically the Biggest Expenses When Installing the first Charging Station?
  - Panel Upgrades & Electrical Engineering.
  - Coring And Scanning.
  - Long Runs Of Conduit To Stalls.
  - Stalls In Multiple Locations.
  - Installing Pedestals With Civil Work.
  - EV Charging Equipment.
  - Increasing The Capacity Of An Existing Electrical Service Generally Not Feasible Due To The Prohibitive Cost Involved.

Funding

- Apply For Your MURB Grant
  - Submit Your Application here:

pluginbc.ca/charging-program/murb/

Usage Charges

- Simplest…..Flat Rate.
  - Decide How Much You Will Charge Each EV Charger User Per Month.
  - Challenge, Not Everyone's Consumption Would Be Equal IE: Tesla Vs Leaf, Local Driving Vs Long Distance Driving.
  - Remind Your Members That They Are Not Just Paying For Electricity But Also For Infrastructure
  - NOTE: To Qualify For The MURB Rebate You Will Have to Add A Revenue Meter Or The Equipment Must Be Able To Collect Data.

Usage Charges

- Install A Revenue Grade Meter

Metering

- Install A Revenue Grade Meter
  - To Charge Directly For Consumption This Meter Would Have To Be Associated With A BC Hydro Account.
  - Hydro Power Can Only Be Sold By A Utility
  - BC Hydro Would Have To Approve Additional Meter Or Meters For The Building.
  - Same As Flat Rate The Resulting Monthly Bill Could Then Be Divided Up Amongst The Users.

Metering

- The Number Of Meters Would Most Likely Be Limited.
- Finding A Location For The Meter Can Be Tricky, Most Electrical Rooms Are Quite Full.
- BC Hydro Meters Have A Monthly Rental Charge.
- NOTE: Using An Empty Space In A Existing Meter Stack Is Possible.

Options

- Install A Power Monitoring Device.

Options

- Install A Power Monitoring Device.
  - Relative Low Cost And Simple Installation.
  - Can Be Wireless But Would Require Internet Connection. Can Be Cloud Based.
  - Can Monitor Consumption But Does Not Track User ID. Some Suppliers Include Free Monitoring
  - Administration Would Be Required.
  - Direct Charge For Power Consumption Would Be Based On Time Used. For Example So Much Per Hour, So Much Per Day, So Much Per Month Etc.

Options

- Install A Kiosk

Options

- Install A Kiosk
  - Initial Higher Cost To Purchase.
  - Would Require Internet Connection And Is Cloud Based.
  - Can Monitor Consumption And Track User Using A Smart Phone, Credit Card, RFID Fob Etc.
  - Administration Would Be Included With A Fee.
  - Billing Would Be Automated.
  - Charges Would Be Based On Usage Of Space Or Time, And Again Not On Power Used.

Options

- Pedestal Vs Wall Mount.

Options

- Pedestal Vs Wall Mount
  - Can Be Used With Any Type Of EV Charger.
  - Required When Charger Can Not Be Located On A Wall Or Column.
  - One Pedestal Can Be Equipped With Two Chargers.
  - Would Most Likely Require Civil Work Which Can Be Expensive.

Options

- Optional Equipment
- Cord Management
- Longer Cords
- Holsters
- Key Locks, Digital Locks

Options

- Load Sharing
  - Some Manufactures Have Equipment Designed To Load Share. This Means That If You Don't Have Capacity For Multiply EV Chargers. These Chargers Will Share The Load Over Multiple Vehicles.
  - Signage.

Final Thoughts

- Should I Invest Money Into An EV Charger That I May Not Use Personally!
  - DEFINITELY YES!

Final Thoughts

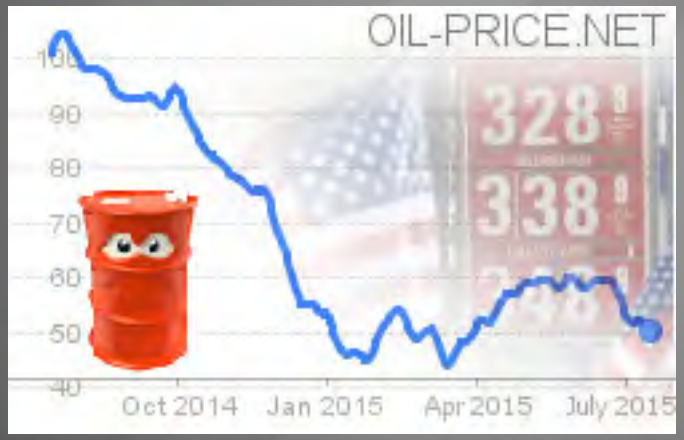
- Should I Invest Money Into An EV Charger That I May Not Use Personally!
  - ONE – YOU INCREASE YOUR PROPERTY VALUE

Final Thoughts

- Should I Invest Money Into An EV Charger That I May Not Use Personally!
  - Two – Do Something Good For The Environment

Final Thoughts

- Should I Invest Money Into An EV Charger That I May Not Use!
- Three – Less Dependency On Fossil Fuel Your Fuel Costs Will Go Down.



About Houle Electric

- Started in 1944
- 800+ employees today
- Multi-disciplined company
- Multiple branches throughout BC
- Award winning quality workmanship
- Safety a #1 priority

Our Market Focus

The Industrial Sector

Government Projects

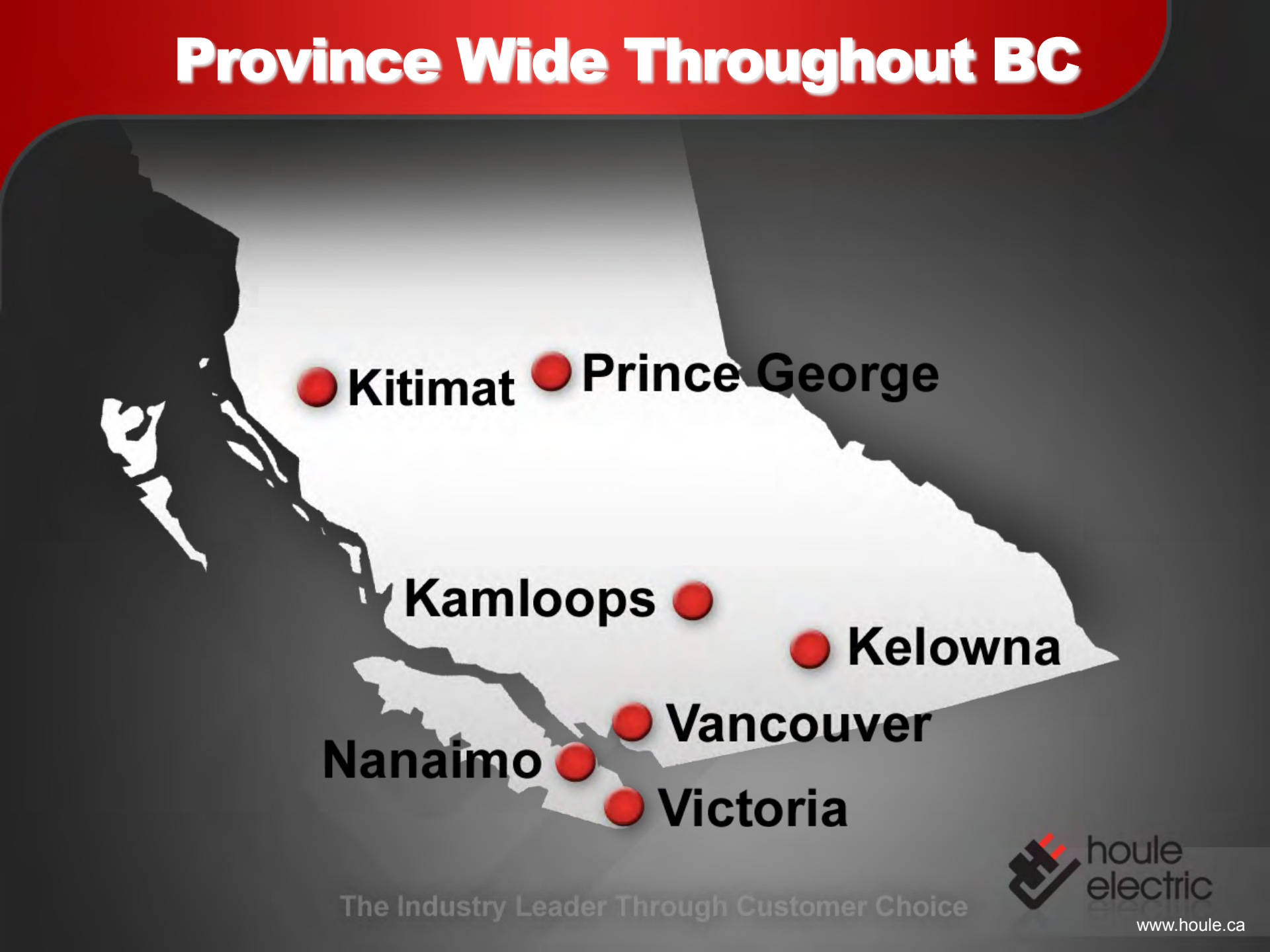
P3's

Institutions

Commercial Businesses

Residential

Province Wide Throughout BC



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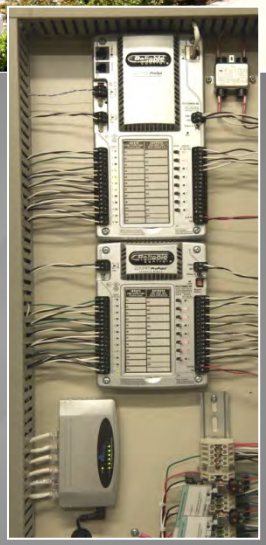
Award Winning Projects

Dockside Green
VRCA Silver Award

- *Highest scoring LEED Platinum building in the world*
- *Houle Electric contributed to over half of the LEED points*



A Multi-Disciplined Company

Electrical Construction

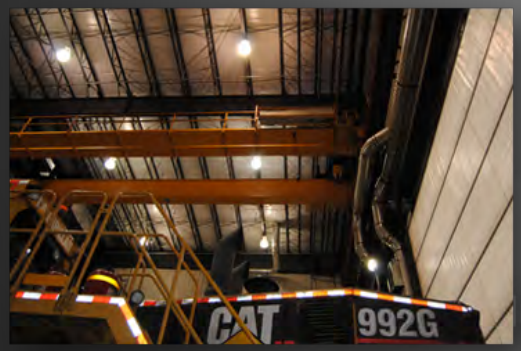
Security Systems

Data Networks

DDC Building Controls

Power Quality

24 Hr Emergency Service



Industrial Construction

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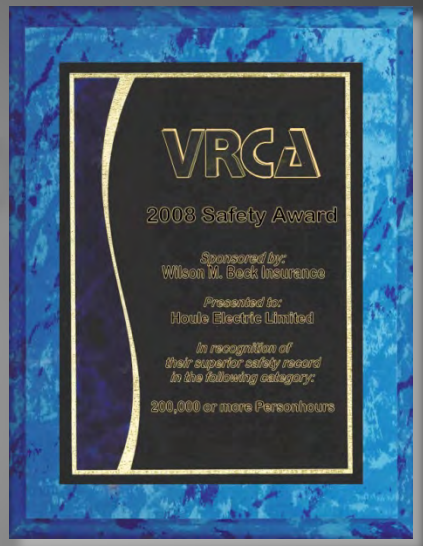
Safety Is Our #1 Priority

- Houle Occupational Health & Safety Program (*BCCSA Audit standards)*
- BCCSA COR Program Certificate
- VRCA Safety Award Winner

  Ten Time Winner

  Large Contractor Category

- 100+ Field Safety Representatives



Electrical Services

Complete Electrical Services including:

- ✓ 24 hr Emergency Service
- ✓ System changes & upgrades
- ✓ Testing & troubleshooting
- ✓ Construction contracting & renovations
- ✓ BC Hydro Powersmart Alliance Member & fully managed lighting upgrades
- ✓ Preventive maintenance, repairs & inspections

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Power Quality – Why Now?

- Ageing systems built for different uses.
- Greater sensitivity of devices & equipment to power quality variations.
- The interconnection of sensitive loads in extensive networks & automated processes.
- An increase in loads that use power electronics in some type of power conversion process.

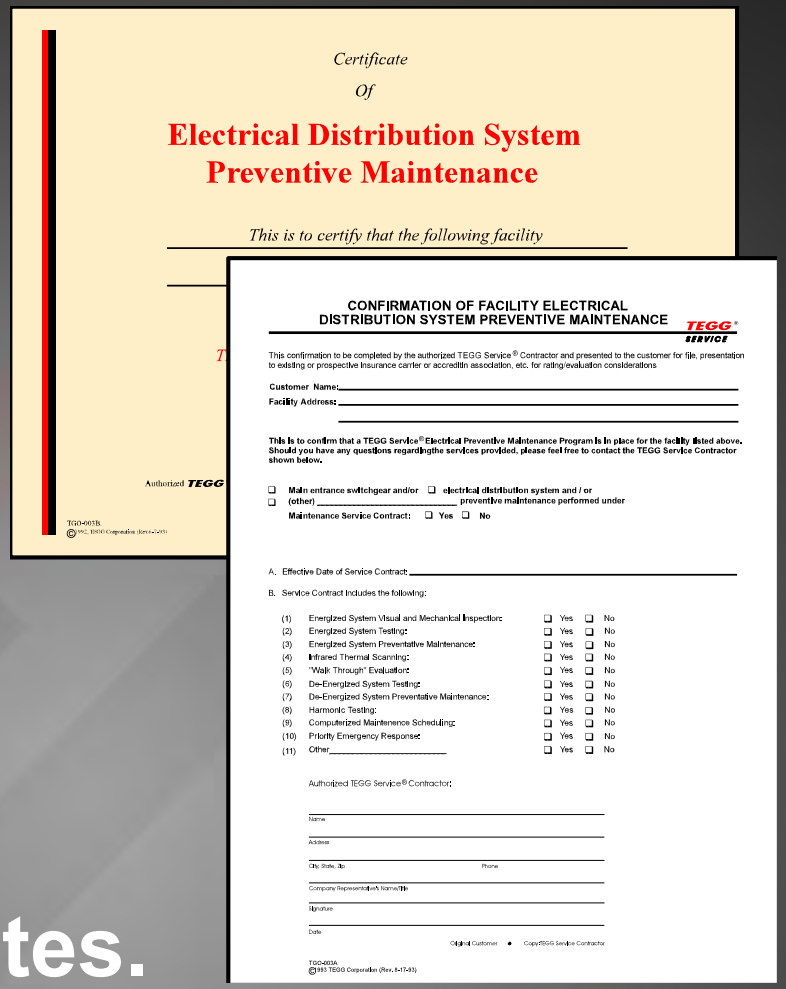
Source: BC Hydro

Benefits of Preventive Maintenance

- ✓ Reducing power outages & business interruptions
- ✓ Reducing risks to life safety
- ✓ Protecting & extending equipment life
- ✓ Reducing arc flash & fire hazards
- ✓ Maximizing energy savings
- ✓ Simplifying electrical asset management

Insurance & Certifications

- Many Insurance Companies and Certifying Entities require proactive electrical preventive maintenance.
- We will provide you with the necessary compliance certificates.



Certificate
Of

Electrical Distribution System Preventive Maintenance

This is to certify that the following facility

CONFIRMATION OF FACILITY ELECTRICAL DISTRIBUTION SYSTEM PREVENTIVE MAINTENANCE

TEGG® SERVICE

This confirmation to be completed by the authorized TEGG Service® Contractor and presented to the customer for file, presentation to existing or prospective insurance carrier or accreditin association, etc. for rating/evaluation considerations

Customer Name:

Facility Address:

This is to confirm that a TEGG Service® Electrical Preventive Maintenance Program is in place for the facility listed above. Should you have any questions regardingthe services provided, please feel free to contact the TEGG Service Contractor shown below.

❑ Main entrance switchgear and/or ❑ electrical distribution system and / or
❑ (other) _____ preventive maintenance performed under
Maintenance Service Contract: ❑ Yes ❑ No

A. Effective Date of Service Contract: _____

B. Service Contract Includes the following:

(1)	Energized System Visual and Mechanical Inspection:	❑ Yes	❑ No
(2)	Energized System Testing:	❑ Yes	❑ No
(3)	Energized System Preventative Maintenance:	❑ Yes	❑ No
(4)	Infrared Thermal Scanning:	❑ Yes	❑ No
(5)	"Walk Through" Evaluation:	❑ Yes	❑ No
(6)	De-Energized System Testing:	❑ Yes	❑ No
(7)	De-Energized System Preventative Maintenance:	❑ Yes	❑ No
(8)	Harmonic Testing:	❑ Yes	❑ No
(9)	Computerized Maintenance Scheduling:	❑ Yes	❑ No
(10)	Priority Emergency Response:	❑ Yes	❑ No
(11)	Other_____	❑ Yes	❑ No

Authorized TEGG Service® Contractor:

Name

Address

City, State, Zip Phone

Company Representative's Name/Title

Signature

Date

Original Customer • Copy:TEGG Service Contractor

TGC-003A
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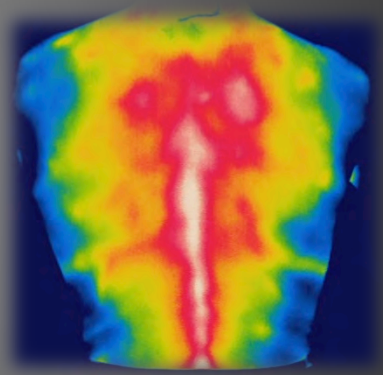
Tools & Custom Solutions

- Infrared thermography
- Ultrasonic Testing
- Voltage & Current Diagnostics (Fluke 43B)
- High Voltage Maintenance
- Arc Flash Analysis
- Power metering & data logging
- Asset Management & Labeling
- Reporting & Documentation



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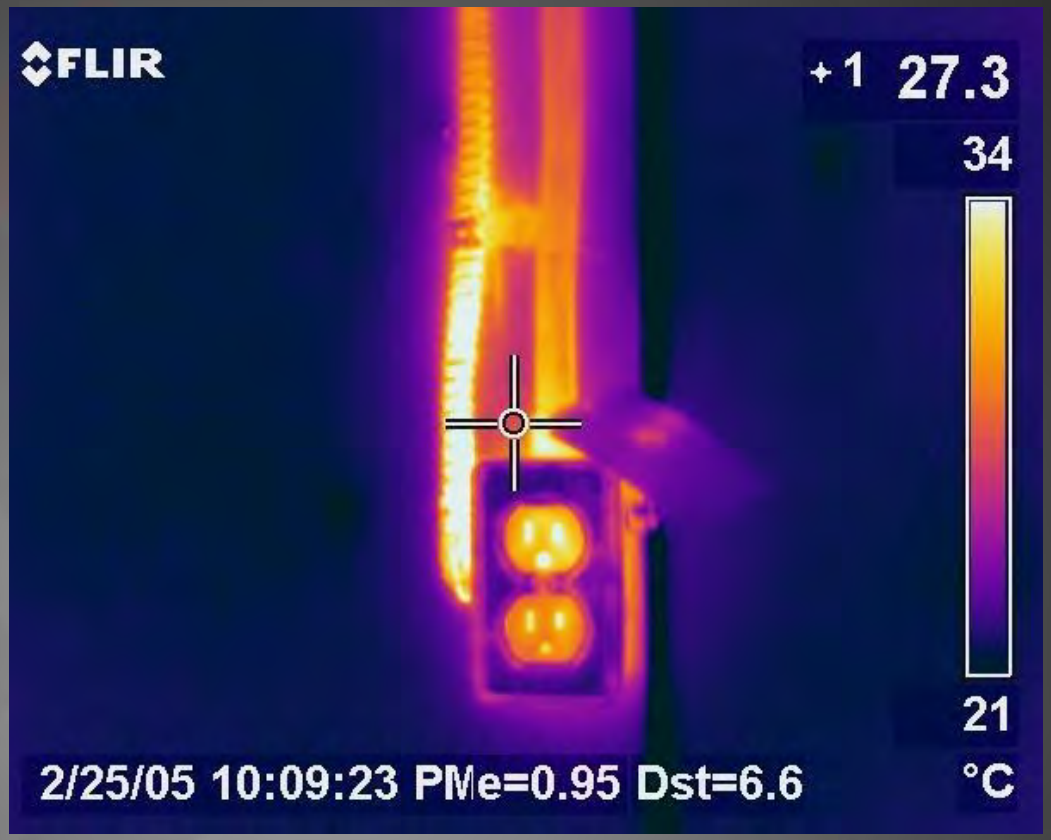
What The Eye Can't See

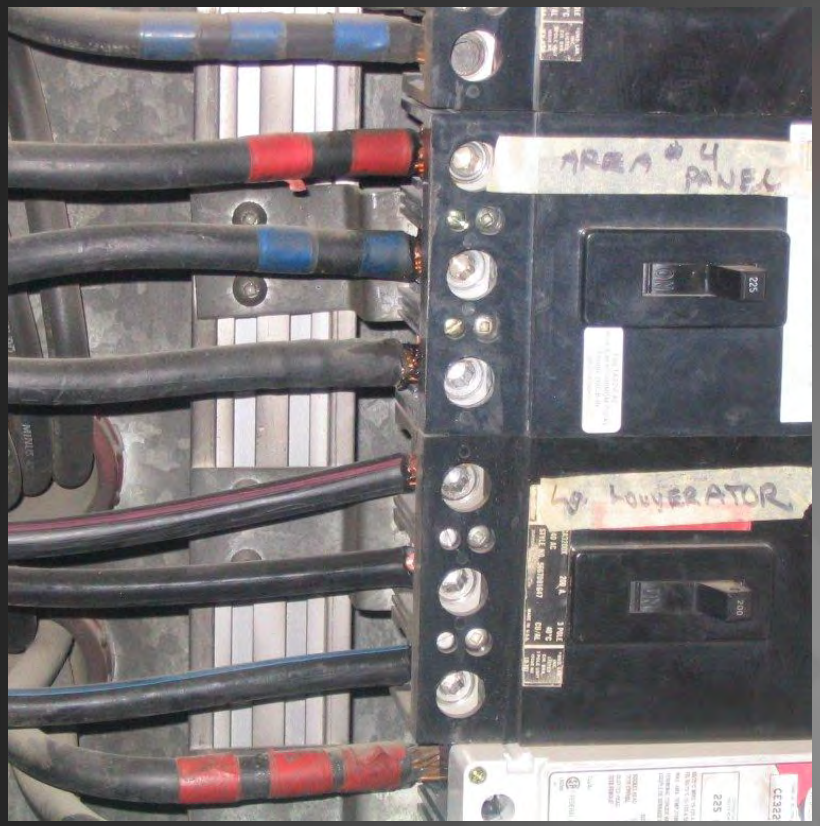
Hot Spot???

Thermal Imaging



What The Eye Can't See

Hot Spot???



Thermal Imaging

Working With An Electrician

- Premium Inspection Package
- Advanced Tools & Techniques
- Minimal Notice Required
- Preferred Rates/Flat Rates

Contact Info

Houle Electric Victoria: 250-544-0099

With any questions
or for additional information, please contact:

Residential Projects

Paul Ryan (pryan@houle.ca)

Service Manager

Kevin Sumpton (ksumpton@houle.ca)