



GENERATOR INSTALLATION

Portable, automatic standby and emergency-power systems for New Brunswick

GoRight Training Module - Expanded Contractor Edition 2.0 | August 2026

PURPOSE

A standalone GoRight learning and field-control system for electricians and apprentices who survey, design, install, inspect, commission and maintain generator systems in New Brunswick. It separates legal requirements, engineering decisions, manufacturer conditions and customer operating duties.

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How to Use This Module

Read the system from source to load. Do not start with a generator catalogue. Define the required loads, operating objective, transfer method, neutral arrangement, fuel system, site limits, inspection path and maintenance duty before selecting equipment.

SAFETY BOUNDARY

This module does not authorize energized work, utility-side work, gas fitting, fuel-system work or engineering beyond the worker’s licence and competence. Establish an electrically safe work condition whenever feasible. Approved plans, current legislation, the adopted Code, equipment instructions and the authority having jurisdiction govern the actual installation.

Learning outcomes

- + Differentiate portable optional standby, automatic standby and code-required emergency power systems.
- + Select a transfer architecture that prevents backfeed and matches the service and load objective.
- + Complete generator, feeder, OCPD, motor-starting and voltage-drop calculations.
- + Resolve switched-neutral, grounding and bonding decisions without creating parallel neutral paths.
- + Coordinate New Brunswick permits, inspections, utility interfaces, gas/fuel work and building/fire requirements.
- + Commission the generator and transfer equipment using recorded acceptance tests.
- + Prepare maintenance, operating and customer-handover records.

Part	Subject
1	Conformity and system classification
2	Survey, architecture and load design
3	Transfer, neutral, grounding and bonding
4	Electrical and site installation
5	Commissioning, maintenance and troubleshooting
6	Worked problems, apprentice assessment and field forms

1. New Brunswick Conformity Foundation

New Brunswick Regulation 84-165 defines the adopted electrical Code as C22.1-24, Canadian Electrical Code, Part I, 26th Edition, including errata and provincial modifications. The Electrical Installation and Inspection Act and Regulation 84-165 govern licensing, permits and inspection administration.

Authority layer	Generator project meaning
NB Electrical Installation and Inspection Act	Provincial inspection, enforcement and corrective-order authority.
NB Regulation 84-165	Adopted Code, provincial amendments, installation type, contractor authority, wiring permits and inspections.
CEC 2024, Part I	Technical rules for services, conductors, protection, transfer equipment, grounding/bonding, emergency power and wiring methods.
CSA C282:24	Design, installation, operation, maintenance and testing framework for emergency electrical power supply to buildings when applicable.
NB building/fire framework	Determines when emergency power is required and the loads, duration, separation, fire-safety and operational features expected.
NB OHS Regulation 91-191	Lockout, electrical safety and worker-protection duties.
Approved equipment instructions	Mandatory conditions for ratings, location, exhaust, ventilation, wiring, clearances, fuel, start/stop and testing.

CURRENT BASELINE

The project file must record the regulation, adopted Code edition, applicable bulletins, approved drawings and manufacturer documents used on the installation date. A training module cannot freeze a future legal requirement.

1. Permit, Inspection and Utility Workflow

Regulation 84-165 generally requires the electrical contractor to obtain the applicable wiring or special wiring permit before starting regulated work, subject only to the regulation’s limited exceptions. The permit identification is posted and remains until required inspections are complete.

Gate	Required project control
Scope classification	Record service voltage, phase, ampacity, generator kW/kVA, transfer equipment, connected loads and any specialized system.
Permit application	Use the current NB wiring-permit process. Identify a new or existing generator transfer switch and fossil-fuel generation rating where requested.
Plan review	Provide the review/registration number when the installation reaches the current NB thresholds or when directed by Technical Inspection Services.
Utility interface	Coordinate any meter, service, disconnect, seal, parallel-operation or utility-owned equipment work with the serving utility.
Inspection hold points	Do not conceal or energize regulated work contrary to the permit/inspection conditions.
Closeout	Resolve deficiencies, retain test records, update directories and deliver operating instructions.

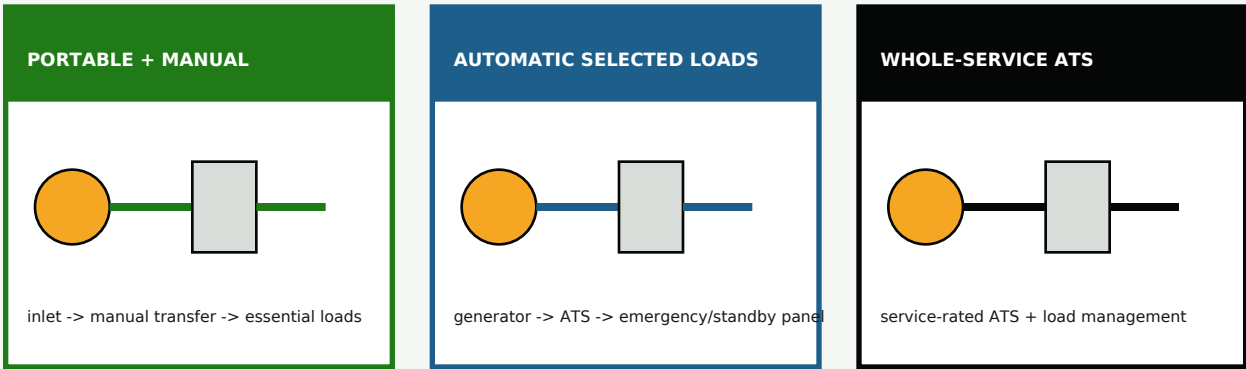
SURECONNECT / GENERLINK

NB Power states that SureConnect is no longer available for new installations and continues support for existing customers. Do not promise a new utility meter-mounted device. Existing utility-owned equipment is serviced through NB Power.

1. Classify the Generator System Before Design

System	Purpose	Typical transfer	Critical distinction
Portable optional standby	Customer-selected outage loads.	Manual transfer panel, listed interlock/transfer equipment, or existing approved meter-mounted system.	No cord-to-receptacle backfeed. Portable location and CO controls are operating requirements.
Automatic optional standby	Convenience, resilience or business continuity.	Automatic transfer switch; selected-load or whole-service arrangement.	A large ATS does not prove the generator can carry the full connected load.
Legally required standby	Loads required by building/fire or other law.	Engineered transfer/distribution arrangement.	Required performance, separation, supervision and maintenance may exceed optional-system practice.
Emergency power supply	Life-safety loads and functions identified by the building/fire design.	Dedicated emergency distribution and transfer equipment.	CEC Section 46, CSA C282 and the building/fire design must be coordinated.
Parallel generation	Generator can operate electrically in parallel with utility.	Synchronizing, protection, controls and utility-approved interconnection.	Not the same as open-transition standby; requires utility/engineering approval.

THREE COMMON SYSTEM ARCHITECTURES



Architecture follows the required load, transfer sequence, service arrangement, fuel system and operating objective.

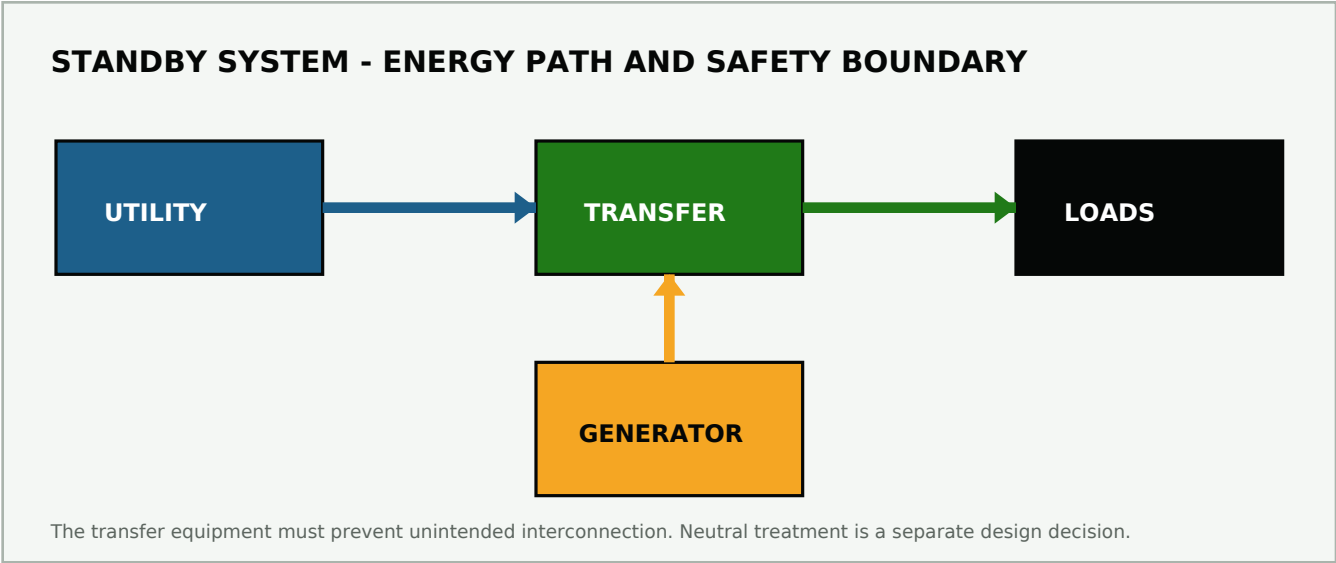
1. Code and Standards Navigation

Reference area	Design task
CEC Section 2	Approved equipment, markings, instructions, environmental suitability, accessibility and working space.
CEC Section 4	Conductor ampacity, temperature basis, neutral loading and application.
CEC Section 6	Service equipment and service-rated transfer arrangements.
CEC Section 8	Loading, demand and voltage-drop design.
CEC Section 10	Grounding and bonding, fault-current path and grounding-electrode decisions.
CEC Section 12	Wiring methods, raceways, cables, support, boxes and mechanical protection.
CEC Section 14	Overcurrent protection, control, disconnecting means and coordination.
CEC Section 26	Distribution equipment, panelboards and equipment installation.
CEC Section 28	Motor-related loads and controls encountered in pumps, fans and driven equipment.
CEC Section 46	Emergency power supply, unit equipment and exit-sign interfaces.
CEC Section 84	Parallel/interconnected power production where the generator can parallel the supply authority.
CSA C282:24	Emergency electrical power supply for buildings where the occupancy/design requires it.

REFERENCE DISCIPLINE

Section numbers are navigation aids, not reproduced Code text. Verify the complete rule chain, NB amendments, approved one-line, equipment certification and installation instructions.

2. Architecture: Begin With the Loads



Define four boundaries before equipment selection

- + Normal source: utility voltage, phase, service rating, service grounding and available fault current.
- + Alternate source: generator voltage, kW/kVA, power factor, output breaker, neutral configuration, fault-current data and starting capability.
- + Transfer boundary: poles switched, service rating, open/closed transition, bypass/isolation, withstand/closing rating and control power.
- + Load boundary: emergency, legally required, optional, nonessential and load-managed groups.

Question	Evidence
What must operate together?	Owner priority list, building/fire design, process needs and measured/nameplate load data.
How long must it operate?	Fuel autonomy requirement, code-required duration where applicable and outage objective.
What is the worst start?	Motor/transformer inrush, elevator/fire-pump requirements where applicable and sequence controls.
What may be shed?	Approved load-management priority, contactor/control arrangement and customer instructions.

2. Field Survey and Existing-System Verification

Survey item	Record before design
Service	Voltage, phase, ampacity, disconnect location, meter arrangement, main bonding point, conductor sizes and panel ratings.
Load profile	Utility interval data where available, clamp readings, calculated demand, critical loads and seasonal peaks.
Generator	Nameplate kW/kVA, PF, voltage, phase, frequency, OCPD, neutral bond, receptacles/terminals, listing and manual.
Transfer equipment	Ampere/voltage rating, poles, service suitability, transition type, WCR/SCCR, disconnects, controls and enclosure.
Site	Property limits, openings, air intakes, snow, flood, drainage, combustibles, exhaust path, noise, access and vehicle impact.
Fuel	Fuel type, supply pressure, connected demand, tank/regulator, vapourization in cold weather, permits and licensed trade.
Distribution	Essential-load panel, feeder routes, conductor/raceway method, surge protection, branch circuits and directories.
Communications	Remote annunciation, monitoring, fire alarm/BAS interfaces, battery charger, heater and network connections.

SURVEY STOP

If the service arrangement, neutral/bonding topology, equipment approval or transfer function cannot be verified, do not quote a final installation configuration. Price investigation or pre-evaluation first.

2. Generator Sizing: kW, kVA and Starting Duty

Generator size is not the sum of breaker handles. Use the intended coincident load, load characteristics, permissible voltage/frequency dip, ambient/altitude derating, motor-starting sequence and manufacturer performance data.

Quantity	Formula / use
Single-phase current	$I = VA / V$; for a 120/240 V generator use the manufacturer's rated output and conductor arrangement.
Three-phase current	$I = VA / (\text{sqrt}(3) \times V)$.
Power factor	$kVA = kW / PF$. Low-PF loads require more generator current for the same real power.
Starting duty	Use manufacturer starting kVA, locked-rotor/inrush data or tested profile; do not rely on one universal multiplier.
Step loading	Verify the largest load block the generator can accept without unacceptable voltage/frequency response.
Derating	Apply the generator manufacturer's temperature, altitude, fuel and duty-rating corrections.

NB POWER PRACTICAL NOTE

NB Power advises that some motors can require several times their running wattage during starting. Use nameplate and manufacturer data for final design; customer appliance estimates are only a screening tool.

2. Worked Problem 1 - 7.2 kW Portable System

Scenario: A 120/240 V portable generator is rated 7.2 kW continuous and 9.0 kW surge. It supplies an approved 30 A transfer arrangement and selected loads.

Load	Running W	Starting addition W
Refrigerator	700	2100
Freezer	500	1000
Sump pump	900	1800
Furnace blower	600	1200
Lighting/communications	600	0

Step 1 - running load: $700 + 500 + 900 + 600 + 600 = 3,300 \text{ W}$.

Step 2 - worst start: if the sump starts while all loads run, $3,300 + 1,800 = 5,100 \text{ W}$. If the refrigerator starts, $5,400 \text{ W}$. Both are below $9,000 \text{ W}$ surge.

Step 3 - transfer/interface limit: $30 \text{ A} \times 240 \text{ V} = 7,200 \text{ VA}$. The 30 A system boundary still limits sustained output even if the engine has a higher short surge rating.

Step 4 - operating plan: keep high-demand resistance loads excluded; label the selected circuits; instruct the owner to sequence large motors if poor starting occurs.

PLAIN LANGUAGE

The generator is not “big enough” because the running watts fit. It is acceptable only if the worst expected start, transfer equipment, conductors, OCPD and operating sequence all work together.

2. Worked Problem 2 - 24 kW Residential Standby

Scenario: 24 kW, 120/240 V, single-phase generator; 200 A dwelling service; service-rated automatic transfer switch; load management proposed.

Generator rated current: $I = 24,000 / 240 = 100 \text{ A}$ at unity power factor, before any manufacturer derating.

Design check	Result
ATS ampere rating	A 200 A ATS can carry the normal service load; it does not increase generator capacity above 100 A.
Connected load	The dwelling can have more than 24 kW connected. The generator-mode load must be limited by selected circuits, sequencing or listed load management.
Large loads	Electric heat, range, dryer, water heater, EVSE, hot tub and central cooling require explicit include/shed decisions.
Motor start	Verify compressor/pump starting against generator step-load and voltage-dip performance.
Feeder/OCPD	Select from generator nameplate, output breaker, CEC ampacity/temperature/correction rules and equipment terminals.

DESIGN RESULT

Whole-service transfer is an architecture, not a promise that every load may run. The operating envelope must be engineered, controlled, tested and explained to the customer.

2. Worked Problem 3 - 75 kVA, 600 V, 3-Phase

Scenario: 75 kVA, 600 V, three-phase generator serving selected commercial standby loads at 0.8 rated PF.

Full-load current: $I = 75,000 / (\sqrt{3} \times 600) = 72.2$ A. Rated real power at 0.8 PF = 75 kVA $\times$ 0.8 = 60 kW.

Check	Engineering evidence
Load categories	Separate emergency, legally required and optional loads on the one-line and panel schedules.
Starting sequence	Model largest motor/transformer inrush and planned transfer steps; verify voltage/frequency recovery.
Protection	Use generator decrement/fault-current data, OCPD curves and a coordination study where required.
Transfer equipment	Confirm voltage, poles, transition type, continuous rating, WCR/SCCR and maintenance bypass needs.
Grounding/neutral	Document system grounding point, switched neutral and bonding conductor arrangement.
Plan review	Confirm current NB plan-review/registration requirements before construction.

2. Load Management and Selective Coordination

Method	Strength	Failure to control
Essential-load panel	Physically limits customer choice to selected circuits.	Poor circuit selection can omit needed loads or combine hidden large loads.
Managed contactors/modules	Automatically sheds lower-priority equipment.	Control failure, wrong priority or undocumented bypass can overload generator.
Sequenced ATS outputs	Introduces load blocks after stabilization.	Timing that ignores motor recovery can stack starting events.
Building automation	Coordinates process priorities and alarms.	Control-power loss, communications failure or software change can defeat strategy.
Operator procedure	Low cost for portable systems.	Depends on training, clear labelling and disciplined operation.

Protection on generator power

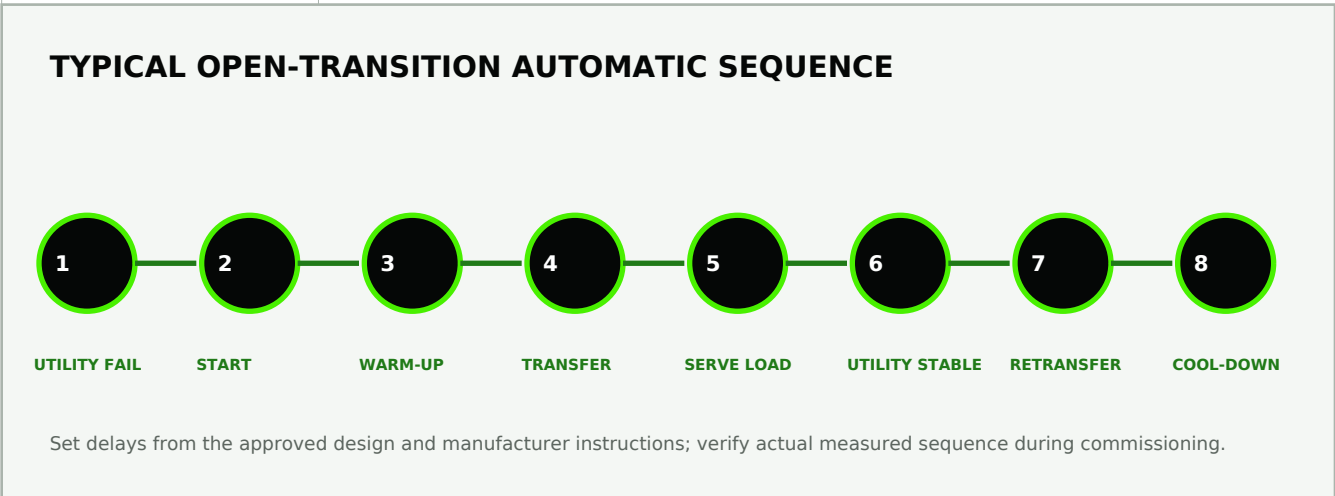
Generator fault current is often much lower and decays differently from utility fault current. A breaker that clears quickly on utility power may operate more slowly on generator power. For larger or required systems, obtain the generator manufacturer's subtransient reactance/decrement curve and verify protection, selective coordination and arc-energy implications under both sources.

3. Transfer Equipment: The Backfeed Barrier

The transfer equipment must positively prevent the normal and alternate sources from unintentionally energizing each other. A cord with two male ends, a breaker arrangement without approved interlocking, or instructions that rely only on memory is not acceptable.

Transfer feature	Verify
Open transition	Normal source opens before alternate closes; no utility parallel.
Service-rated arrangement	Suitable as service equipment where used at the service; correct main bonding/disconnect arrangement.
Poles switched	Ungrounded conductors and neutral switching match the design.
WCR / SCCR	Equipment withstand/closing rating is adequate for available fault current and specified upstream protection.
Manual operation	Safe, accessible, labelled operating sequence and mechanical indication.
Automatic controls	Voltage/frequency sensing, start signal, delays, transfer/retransfer and fail-safe behaviour.
Maintenance isolation	Bypass/isolation where operational continuity and safe maintenance require it.

TYPICAL OPEN-TRANSITION AUTOMATIC SEQUENCE



3. Neutral Switching, Grounding and Bonding

NEUTRAL-SWITCHING DECISION - VERIFY, DO NOT ASSUME

NEUTRAL NOT SWITCHED	NEUTRAL SWITCHED
Trace neutral continuity	Trace neutral continuity
Locate every N-G bond	Locate every N-G bond
Match generator instructions	Match generator instructions
Test in both source positions	Test in both source positions

A wrong bond can create parallel neutral current; a missing bond can defeat the intended fault-current path.

Decision method

- + Draw the neutral and bonding conductors on the one-line in both utility and generator modes.
- + Identify whether the transfer switch opens the neutral and whether the generator neutral is bonded to its frame.
- + Determine whether the alternate source is treated as a separately derived system for the selected architecture.
- + Locate the intended system bonding point and eliminate unintended parallel neutral-to-ground paths.
- + Size bonding and grounding conductors using the adopted Code and the actual system/OCPD.
- + Verify continuity and objectionable current in both source positions before handover.

PORTABLE GENERATOR WARNING

Do not casually remove or add a generator neutral-frame bond. The correct arrangement depends on the generator listing/instructions, transfer equipment and intended use. A modification can invalidate approval and create shock or fault-clearing hazards.

4. Conductors, OCPD and Voltage Drop

Design chain	Required evidence
Load current	Generator kW/kVA, voltage, phase, PF and continuous-duty assumptions.
Conductor ampacity	CEC Table basis, conductor material/insulation, raceway/cable method, ambient and conductor-count corrections.
Termination temperature	Equipment marking and Rule-family limitation applied to final ampacity.
OCPD	Generator output protection, feeder conductor protection and equipment-specific requirements coordinated.
Neutral	Nonlinear and line-to-neutral load profile considered; neutral not automatically reduced.
Bonding	Low-impedance fault path sized and terminated for the actual architecture.
Voltage drop	Route length, conductor impedance, running current and motor-start performance documented.

Worked voltage-drop screen

Assume a 240 V single-phase feeder carries 80 A over 30 m one-way. For an exercise conductor resistance of 0.253 ohm/km at the design temperature: $V_{drop} = 2 \times 0.030 \text{ km} \times 80 \text{ A} \times 0.253 \text{ ohm/km} = 1.21 \text{ V}$, or 0.50%. Add reactance where material and raceway data make it significant, and evaluate motor-start voltage separately.

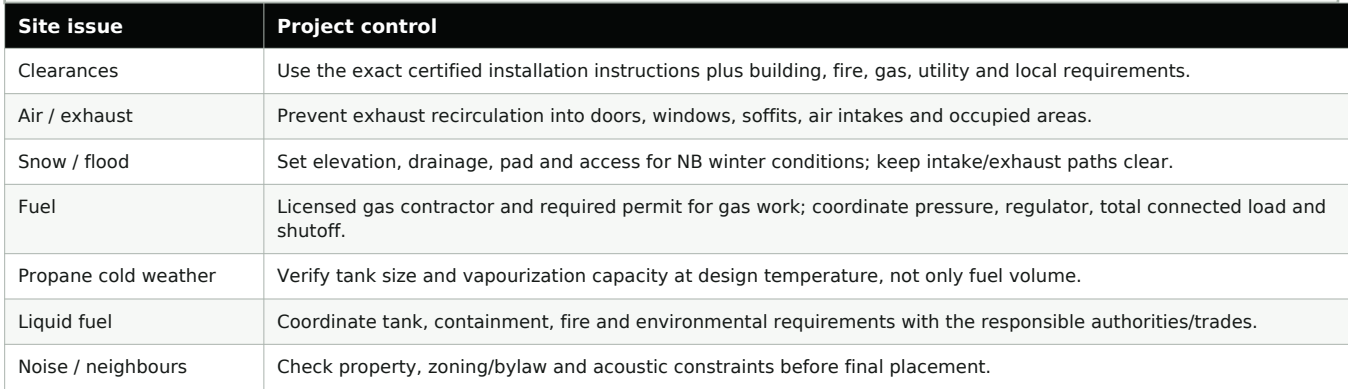
4. Portable Generator Inlet and Manual Transfer

Component	Installation acceptance
Generator inlet	Approved, male-inlet configuration, correct rating/configuration, weather suitability and accessible location.
Cord set	Approved outdoor cord, compatible locking devices, correct ampacity, no damage and strain relief.
Transfer equipment	Approved manual transfer/interlock arrangement that prevents source overlap.
Essential-load panel	Circuit selection, AFCI/GFCI continuity where required, directory and balanced 120 V loads.
Neutral/bonding	Verified against generator and transfer architecture; no guessed modification.
Outdoor operation	Customer instructions require dry, ventilated placement away from openings and never inside a house, garage or enclosure.
CO protection	Battery-operated CO alarm and building alarm requirements addressed; owner trained on symptoms and emergency action.

PORTABLE LOCATION

NB Power advises operating portable generators at least 3 m (10 ft) from the building and never indoors or in a garage. Exhaust direction, openings, wind, snow and manufacturer instructions still require judgment.

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4. Controls, Accessories and Interfaces

Interface	Verify during design and commissioning
Start circuit	Two-wire/communication start compatibility, wiring class, routing and failure indication.
Battery charger	Normal-source supply, OCPD, receptacle/circuit identification and charger operation.
Block/coolant heater	Load, branch circuit, thermostat, GFCI requirements as applicable and low-temperature operation.
Remote annunciation	Common alarm, low fuel, fail-to-start, overcrank, low oil pressure, high temperature and source status as specified.
Fire alarm/BAS	Approved interface, supervision, cause-and-effect matrix and testing with responsible parties.
Load-shed modules	Priority, fail position, manual override, feedback and restoration sequence.
Surge protection	Normal and alternate-source paths, grounding/bonding and equipment instructions.

CONTROL-POWER QUESTION

Ask what happens when the source that powers a charger, heater, controller or contactor is unavailable. Control accessories are part of the reliability design, not decoration.

4. Optional Standby vs. Code-Required Emergency Power

Design dimension	Optional standby	Required emergency / legally required system
Load selection	Owner/business continuity priorities.	Loads and performance defined by building/fire or other legal design.
Transfer time	Owner/design objective.	Specified by governing design and applicable standards.
Distribution	May share selected-load panel architecture.	May require dedicated separation, transfer and identification.
Fuel autonomy	Outage objective and manufacturer limits.	Required duration and fuel provisions from applicable design/standard.
Supervision	As selected.	Alarms, annunciation and monitoring as required.
Testing	Manufacturer and owner program.	Documented testing and maintenance program, including CSA C282 where applicable.

DO NOT DOWNGRADE THE CLASSIFICATION

If a generator supplies emergency lighting, fire alarm, fire pump, smoke-control, elevator or another life-safety function, obtain the approved building/fire/electrical design. Do not treat it as an ordinary residential standby installation.

4. Construction Workflow and Inspection Hold Points

Stage	GoRight field control
1. Preconstruction	Approved one-line/site plan, equipment submittals, permit, utility/fuel coordination and safety plan.
2. Civil/site	Pad, drainage, impact protection, clearances, trench/raceway route and fuel separation verified before equipment setting.
3. Equipment setting	Generator/ATS/disconnects level, secured, accessible, labelled and protected from environment/traffic.
4. Rough wiring	Conductors, raceways, control wiring, bonding and penetrations left visible for required inspection.
5. Terminations	Correct lugs/conductors, preparation, phase identification and calibrated torque to manufacturer value.
6. Pre-energization	Insulation/continuity/polarity/grounding checks; settings and neutral arrangement independently verified.
7. Commissioning	Simulated failure, transfer, loading, retransfer, alarms and shutdowns tested and recorded.
8. Closeout	Deficiencies corrected, inspection complete, labels/directories updated and owner trained.

HOLD POINT

Do not conceal a raceway, trench, bonding conductor or connection that the permit/inspector must see. Photographing concealed work is useful evidence but does not replace a required inspection.

5. Commissioning Test Plan

Test	Record / acceptance evidence
Visual/mechanical	Equipment IDs, ratings, mounting, clearances, guards, labels, fasteners, torque records and cleanliness.
Electrical pre-check	Continuity, insulation where appropriate, phase sequence, polarity, grounding/bonding and neutral topology.
No-load run	Voltage, frequency, oil pressure, temperature, leaks, vibration, noise, charger/heater and alarms.
Transfer sequence	Utility fail sensing, start, warm-up, break-before-make, generator connection, utility return, retransfer and cooldown.
Load test	Voltage/frequency at steps, current by phase, neutral current, kW/kVA/PF, temperature and recovery.
Load management	Each shed stage, priority, restoration, fail mode and manual override.
Protection/alarms	Emergency stop, overcrank/fail-to-start simulation where safe, common alarm and remote annunciation.
Final operation	Normal source restored, controls in AUTO, breakers/disconnects normal, fuel adequate, documents delivered.

COMMISSIONING STANDARD

“It started” is not commissioning. Acceptance proves the complete source-transfer-load sequence and records actual performance under representative load.

5. Commissioning Record - Measured Values

Project / permit / date

Generator make, model, serial, kW/kVA, voltage, phase

ATS make, model, serial, rating, poles, transition

Test point	L1-N	L2-N	L1-L2 / phase-phase	Hz	A / kW / PF
Utility normal					
Generator no load					
Generator 25%					
Generator 50%					
Generator 75%					
Generator intended peak					

- ☐ Neutral and bonding arrangement verified in both source positions.
- ☐ Phase sequence verified at source and loads.
- ☐ Transfer and retransfer delays recorded.
- ☐ Load-shed stages and restoration verified.
- ☐ Alarms, emergency stop and remote indications verified.
- ☐ Controls returned to AUTO; owner operating test completed.

Electrician / licence / signature

5. Maintenance and Reliability Program

Interval trigger	Typical inspection / task
Before storm season / owner check	Area clear, no stored combustibles, exhaust/intake clear, fuel available, no alarms, charger/heater operating.
Scheduled exercise	Observe start, voltage/frequency, leaks, smoke, vibration, transfer strategy and cooldown; record hours.
Periodic service	Oil/filter/coolant/air filter/belts/hoses/battery/fuel system per manufacturer and duty.
ATS maintenance	De-energized inspection, mechanism, contacts, controls, terminations and functional test by qualified personnel.
Load test	Representative building load or load bank as required by owner, design, manufacturer and CSA C282 where applicable.
After outage	Run-hour/service review, fuel replenishment, alarms, leaks, transfer history and customer concerns.
After modification	Recalculate loads and retest sequence whenever HVAC, EVSE, electric heat, service or controls change.

LOGBOOK VALUE

A maintenance record converts “the generator should work” into traceable evidence: date, technician, hours, readings, load, defects, corrections and next due action.

5. Troubleshooting by System State

Symptom	Likely investigation path	Safe first action
No crank	Battery, charger, E-stop, controller power, start signal, fuses and interlocks.	Maintain source isolation and follow manufacturer diagnostics.
Cranks, no start	Fuel supply/pressure, shutoff, air, ignition, low-temperature condition and controller code.	Stop repeated cranking; address fuel work through licensed trade.
Starts, no transfer	ATS sensing, control power, permissives, voltage/frequency and mechanical position.	Keep loads safe; verify both sources before operating transfer.
Transfer then trip	Overload, short circuit, motor starting, settings, conductor fault or load-management failure.	Do not repeatedly reset; isolate and measure the failing load block.
Low voltage/frequency	Overload, engine speed/governor, fuel, excitation/AVR, PF or phase imbalance.	Shed load; protect sensitive equipment; follow manufacturer limits.
Nuisance GFCI / objectionable current	Neutral bond/topology error, shared neutral, leakage, wet equipment or transfer pole mismatch.	De-energize and trace current paths; do not bypass protection.
CO alarm / exhaust concern	Unsafe location, wind/recirculation, blocked exhaust or building opening.	Shut down, evacuate, call emergency services if needed; correct placement.

6. Worked Problem 4 - Generator Fault-Current Screen

Scenario: 75 kVA, 600 V, 3-phase generator with subtransient reactance $X''_d = 0.12$ per unit. This is a screening exercise, not a protection study.

Full-load current: $75,000 / (\text{sqrt}(3) \times 600) = 72.2 \text{ A}$.

Initial symmetrical current estimate: $I'' = 72.2 / 0.12 = 602 \text{ A}$ at the generator terminals, before feeder impedance and machine decrement.

Interpretation	Design consequence
Generator source	Initial fault current may be only several multiples of rated current and decays with time.
Utility source	Available fault current may be much higher; equipment interrupting/SCCR/WCR must be suitable for that source too.
Protection	Evaluate breaker/fuse operation under both sources using manufacturer curves and generator decrement data.
Arc-energy/coordination	A lower fault current can mean a longer clearing time; obtain a proper study where the project requires it.

PLAIN LANGUAGE

Lower fault current is not automatically safer. If the protective device takes longer to clear, incident energy and equipment damage can remain serious.

6. Estimating and Proposal Scope Control

Include	Clarify in quotation
Design/pre-evaluation	Site survey, load study, one-line, equipment selection and engineering/plan review if required.
Electrical equipment	Generator, ATS, essential panel, disconnects, OCPD, inlet, raceways, conductors, controls, bonding and labels.
Civil/site	Pad, excavation, trench, sleeves, bollards, drainage, snow/flood provisions and restoration.
Fuel	Gas contractor, permit, piping, regulator, tank/supply upgrade and pressure test.
Utility/service	Outage, meter/service work, utility coordination, service upgrade and surge protection.
Inspection	Wiring permit, attendance, deficiency correction allowance and closeout.
Commissioning	Factory start-up where required, electrician tests, load bank, fuel, operator training and records.
Maintenance	Warranty registration, exercise settings, first service, annual agreement and emergency support.

EXCLUSION CONTROL

State whether the price includes fuel work, trenching, concrete, utility charges, engineering, load bank, after-hours outage, service upgrade, restoration and correction of concealed deficiencies.

6. Apprentice Worked Exercises

No.	Exercise
1	A 12 kW, 120/240 V single-phase generator: calculate rated current.
2	A 45 kVA, 600 V, 3-phase generator: calculate rated current and kW at 0.8 PF.
3	Explain why a 200 A ATS with a 24 kW generator does not permit 200 A of generator load.
4	List the evidence needed before deciding whether the generator neutral should be switched.
5	A 4,100 W running load has a 2,600 W starting addition. Is a 6.5 kW continuous / 8.0 kW surge generator acceptable at the wattage screen? What else must be checked?
6	Why might a breaker clear more slowly on generator power than utility power?
7	Identify six site-placement checks for a permanent NB standby generator.
8	Write the complete automatic-transfer sequence from utility failure to generator shutdown.
9	Separate the responsibilities of the electrical contractor and licensed gas contractor.
10	List eight commissioning records that prove the complete system works.

6. Exercise Answers and Teaching Notes

No.	Answer
1	$12,000 / 240 = 50$ A, subject to nameplate, PF/duty and manufacturer rating.
2	$45,000 / (1.732 \times 600) = 43.3$ A; $45 \text{ kVA} \times 0.8 = 36$ kW.
3	ATS current rating is its carrying capability. Generator output is $24,000 / 240 = 100$ A before derating; loads must be selected/managed.
4	Generator neutral bond, transfer-switch poles, neutral continuity in both modes, intended separately derived status, service bond location, equipment instructions and Code design.
5	$4,100 + 2,600 = 6,700$ W, below 8,000 W surge and below 6,500 W after start. Also check duration, volts/amps per leg, PF, other starts, transfer/inlet/OCPD, derating and manufacturer response.
6	Generator fault current is limited by machine impedance and decays; the protective device may not reach its instantaneous region.
7	Openings/air intakes, manufacturer clearances, exhaust, snow/flood/drainage, combustibles, fuel, access, noise/property limits and impact protection.
8	Sense failure -> start delay -> crank/start -> warm-up -> open normal -> close alternate -> serve load -> utility stable delay -> open alternate -> close normal -> cooldown -> stop.
9	Electrical contractor designs/install electrical source, transfer, wiring, bonding, controls and tests; licensed gas contractor handles permitted gas piping, pressure/regulation and fuel commissioning. Both coordinate.
10	Ratings, torque, insulation/continuity, voltage/frequency, phase current, transfer times, load steps, alarms, load shed, grounding/neutral verification, leaks, signatures and owner test.

6. GoRight Generator Pre-Evaluation Form

Customer / site / contact

Serving utility / account

Service voltage / phase / ampacity

Generator purpose and required loads

Proposed generator kW/kVA / fuel

Proposed transfer equipment / poles / transition

Existing neutral and bonding arrangement

Site constraints / openings / snow / flood / noise

Fuel contractor / permit coordination

Electrical permit / plan review / inspector notes

6. Installation and Closeout Checklist

- ☐ Scope classification, current references, permit and plan review confirmed.
- ☐ Approved one-line, site plan, submittals and equipment instructions on site.
- ☐ Utility, gas/fuel, building/fire and civil responsibilities coordinated.
- ☐ Generator/ATS ratings, transfer poles, transition and WCR/SCCR verified.
- ☐ Load calculation, motor starting, derating and load-management plan documented.
- ☐ Neutral, grounding and bonding arrangement drawn and independently checked.
- ☐ Site clearances, exhaust, openings, snow/flood, access and impact protection accepted.
- ☐ Conductors, OCPD, terminations, torque and labels inspected.
- ☐ Transfer sequence, load test, alarms, shutdowns and load shed commissioned.
- ☐ Deficiencies closed; inspection complete; controls returned to AUTO.
- ☐ Owner trained on operation, portable placement/CO safety and emergency shutdown.
- ☐ Manuals, warranty, maintenance schedule, test record and as-built one-line delivered.

Electrician / licence / date

Inspector / approval reference

Customer handover acknowledgement

7. Rule-Level Code Navigation

Use this as a navigation map, not as a substitute for the adopted Code. Confirm the complete rule, appendices, tables, New Brunswick modifications, inspection direction and equipment instructions that apply on the permit date.

Navigation point	Design question to answer	Evidence in project file
CEC Rule 14-012	Can every component withstand the available fault current at its line terminals?	Utility fault data, calculations and equipment interrupting/SCCR/WCR markings.
CEC Rule 14-612	Does transfer equipment prevent inadvertent interconnection of normal and alternate sources?	Approved one-line, transfer-switch construction and functional transfer test.
CEC Rule 10-214	Does the generator configuration require a system grounding connection, and where is the single intended bond?	Neutral/bonding one-line, equipment instructions and continuity test record.
CEC Rule 46-100	Is the emergency source capacity sufficient for the loads required to operate?	Emergency-load schedule, starting study and operating sequence.
CEC Rule 46-102	Are operating instructions available and is the required periodic test program established?	Posted instructions, owner log and monthly-test assignment where applicable.
CEC Rule 46-108	Are emergency conductors and equipment arranged with the required wiring method and separation?	Routing plan, site photographs and inspection record.
CEC Rule 46-202	Is the selected emergency source type and automatic starting arrangement acceptable, including CSA C282 where invoked?	System classification, generator submittal and C282 design basis.
CEC Rules 46-204 to 46-210	Are fire protection, automatic transfer, selective operation, coordination and signals addressed?	Cause-and-effect matrix, selective-coordination study and alarm test.
CEC Section 84	Will the source ever operate in parallel with the utility?	Interconnection approval and protection study, or documented open-transition non-parallel design.

FIELD RULE

A rule number is not a design. For every cited rule, write the question it controls, the value or configuration selected, the evidence used and the person who verified it.

7. Approval, Marking and Product Standards

The electrical installation and the installed products are separate conformity questions. A correct circuit does not make unapproved equipment acceptable, and an approved product does not correct a misapplied installation.

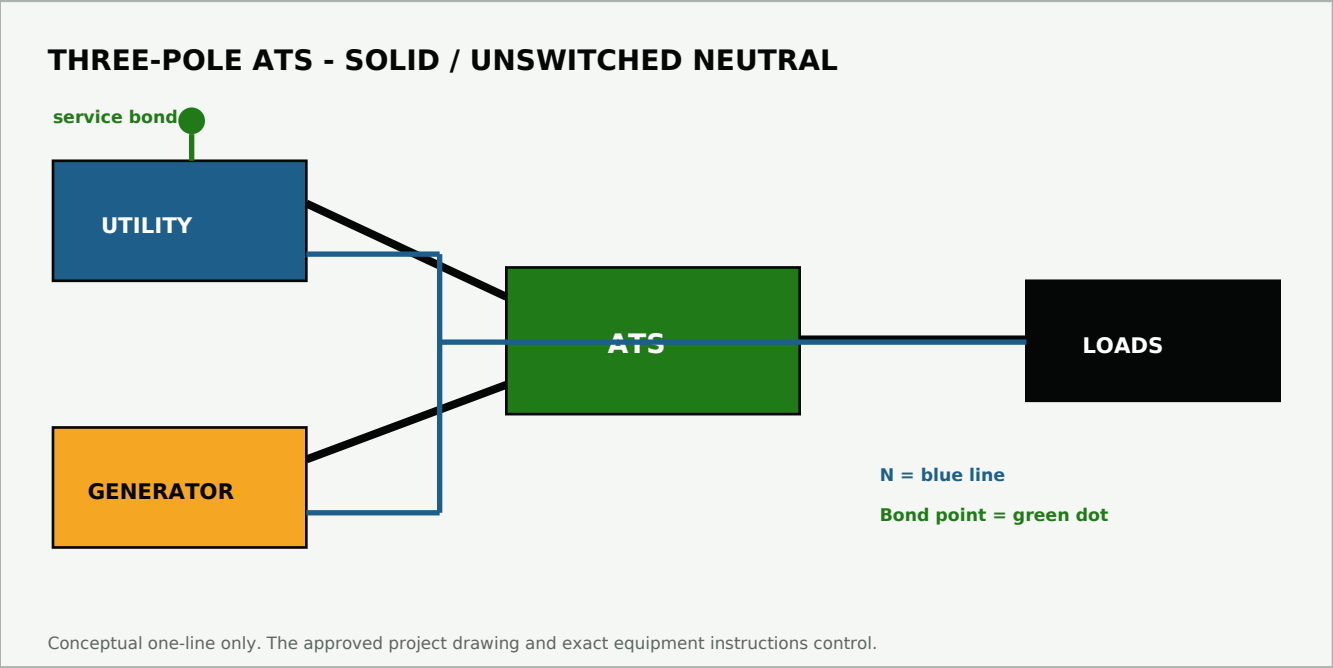
Item	Relevant conformity path	Field verification
Generator	CSA C22.2 No. 100:14 (R2024), Motors and generators, or another certification basis accepted in Canada.	Certification mark, model, voltage, phase, frequency, kW/kVA, current, duty, neutral/bond marking and instructions.
Transfer switch	CSA C22.2 No. 178.1:22, Transfer switches, for applicable automatic, manual, closed-transition or hybrid equipment.	Poles, neutral switching, voltage/current, transition type, short-circuit/WCR, control voltage and approved combinations.
Packaged emergency system	CSA C282:24 when the building/fire design or applicable requirement invokes it.	Classification, start/transfer performance, fuel supply, room/site, ventilation, alarms, testing and records.
Custom panel or modified equipment	Approval acceptable under New Brunswick requirements; modification can invalidate the original certification.	Nameplate, evidence of approval, approved drawings and any required field-evaluation label/report.

PRE-EVALUATION CONTROL

Before ordering or modifying equipment, compare the proposed assembly with its certification scope. Record deviations, resolve them with the manufacturer/certification body/AHJ, and avoid discovering a nonconformity after installation.

8. Neutral and Bonding Architecture: Solid Neutral ATS

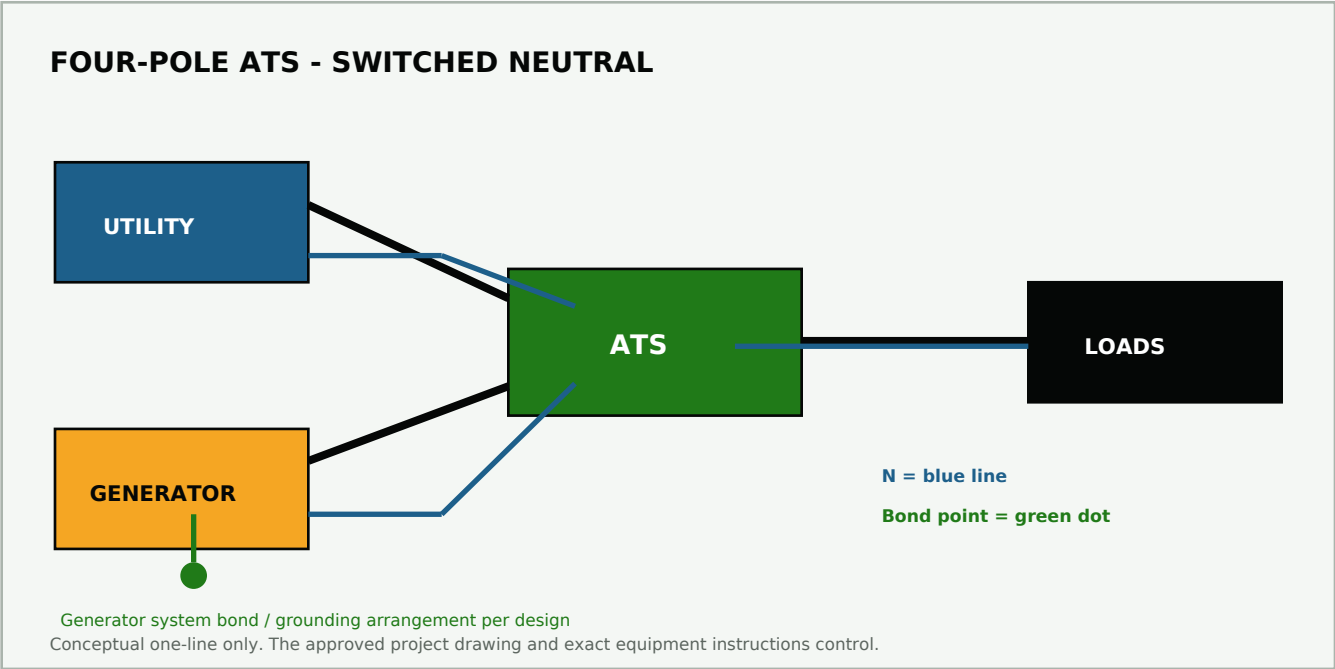
In a three-pole transfer arrangement, the phase conductors transfer while the neutral remains solid. The generator is normally treated as not separately derived because its neutral remains connected to the service neutral. The intended system bond remains at the service; an additional generator neutral-to-frame bond can create objectionable parallel current paths.



Verify	Acceptance evidence
Generator neutral-to-frame relation	Manufacturer configuration and measured continuity agree with the approved non-separately-derived design.
Neutral path	Continuous through both source states; sized and terminated for the calculated load and harmonics where applicable.
Equipment bonding	Generator frame, raceways, transfer equipment and load equipment connected by the required bonding path.
Service bond	Single intended connection remains at the service bonding point; no downstream duplicate bond.

8. Neutral and Bonding Architecture: Switched Neutral ATS

In a four-pole transfer arrangement, the neutral transfers with the phase conductors. Generator mode can therefore constitute a separately derived system. The generator-system grounding/bonding arrangement must be designed as a complete system and coordinated with the switch, service, electrode system and equipment instructions.



Risk	Control
No generator system bond	Fault current may not have an effective return path to operate the protective device.
More than one neutral-to-bond point	Normal load current can divide onto metal bonding paths.
Wrong transfer pole count	The assumed system classification no longer matches the actual neutral continuity.
Neutral opens before intended sequence	Transient overvoltage or unstable line-to-neutral loads can result.

TEST, DO NOT ASSUME

With all sources isolated and following approved procedures, verify neutral continuity, generator neutral-frame relation, bond location and equipment-bonding path. Record readings and test points.

8. Neutral/Bonding Decision Record

Question	Three-pole / solid neutral	Four-pole / switched neutral
Is the neutral transferred?	No	Yes
Typical source classification	Not separately derived	Separately derived in generator mode
Typical intended system bond	Service only	Generator/source arrangement per approved design
Generator factory bond	Often must be removed or configured for the approved design	Often retained/configured as the source bond—verify instructions
Most important field test	No generator neutral-frame bond plus effective equipment bond	Correct source bond plus complete transferred-neutral sequence

ATS make / model / poles

Generator make / model

Neutral switched? evidence

Generator neutral-frame reading

Service neutral-bond location

Electrode connection / conductor

Equipment-bond path result

Verifier / date / permit

9. Representative New Brunswick Installation Case

Training case—not a claimed GoRight customer installation. A detached dwelling in the Saint John Region has a 120/240 V, 1-phase, 200 A service. The owner requests automatic standby for heat, water, refrigeration, lighting, communications and selected receptacles. EV charging, range, dryer and hot tub must be blocked in generator mode.

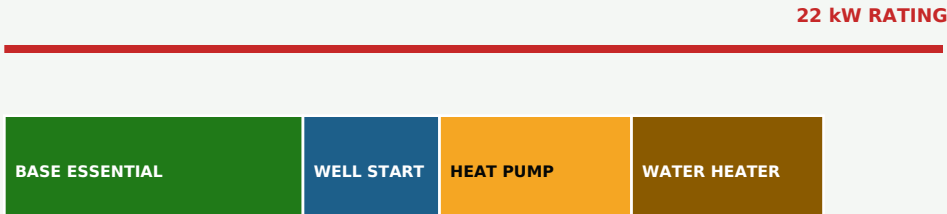
Design input	Representative value
Generator	22 kW, 120/240 V, 1-phase standby unit; manufacturer fuel rating verified for local design conditions.
Transfer	200 A service-rated automatic transfer equipment; solid neutral concept subject to approved equipment and final design.
Site	Outdoor unit on engineered pad; openings, exhaust, snow, drainage, service access, noise and gas routing reviewed.
Load management	EVSE, hot tub, electric range and dryer inhibited; water heater and heat-pump compressor staged.
Permit path	NB wiring permit identifies generator transfer switch and fossil-fuel generation kW; gas work separately coordinated.

Operating load schedule

Load	Running kW	Start / step kW	Control
Base lighting, refrigerator, controls, receptacles	3.2	0.8	Always available
Well pump	1.4	3.2	Start priority 1
Heat pump	3.8	4.5	Start priority 2; low-temperature strategy confirmed
Water heater	4.5	4.5	Staged / shed first
EVSE, spa, range, dryer	0 in generator mode	0	Hard interlock or listed load management

9. Case Calculation: Capacity and Load Envelope

22 kW STANDBY GENERATOR - LOAD ENVELOPE



Load management prevents EVSE, hot tub, range and dryer from entering generator mode.

Step	Worked result
Rated output current	22,000 W / 240 V = 91.7 A. Confirm nameplate current, duty and permitted loading—not only this arithmetic.
Steady-state envelope	3.2 + 1.4 + 3.8 + 4.5 = 12.9 kW before diversity and control logic.
Largest start event	Base 3.2 kW + well start 3.2 kW = 6.4 kW equivalent real-power snapshot; actual motor-start suitability requires locked-rotor/current, PF, generator decrement and voltage-dip data.
Worst permitted step	Base + heat-pump start + water heater = 12.2 kW; acceptable only if manufacturer transient performance and voltage/frequency response meet the design.
Phase balance	List each 120 V branch by leg and balance recurring loads. A 22 kW total rating does not cure a badly overloaded leg.
Fuel/temperature derating	Use the exact generator performance table for the selected fuel, ambient temperature and elevation. Increase size or reduce permitted loads when derated output is lower.

ENGINEERING LIMIT

Motor starting is a transient kVA/current problem. Do not approve it from running watts alone. Obtain locked-rotor or starting-current data and the generator manufacturer’s step-load capability.

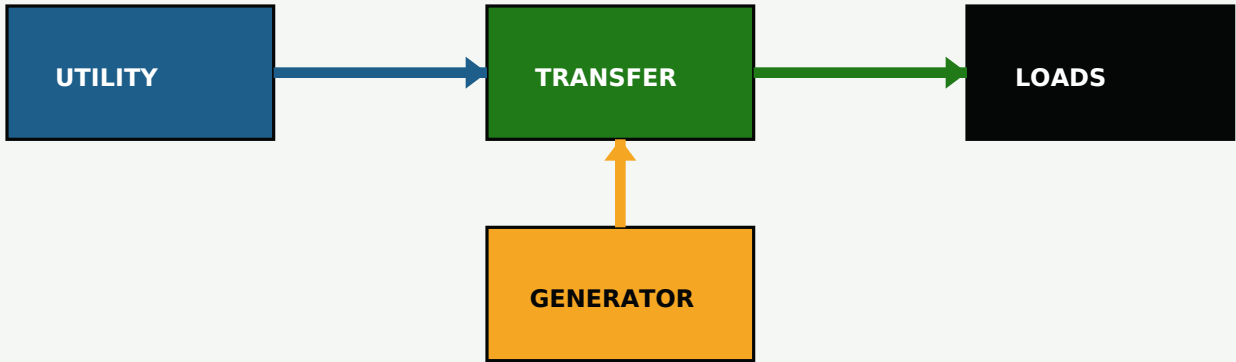
9. Case Calculation: Conductor Compliance Chain

This example demonstrates the sequence of checks. It is not a universal conductor schedule. Final selection must use the adopted Code tables and conditions for the actual installation.

Check	Representative case result
1. Design current	$22,000 / 240 = 91.7 \text{ A}$; verify nameplate output current and generator breaker.
2. OCPD	Representative 100 A generator output breaker, only if permitted by the equipment listing and design.
3. Terminal temperature	Assume equipment marked for 75 degrees C conductors and terminations; verify both ends.
4. Base ampacity	Under the stated 75 degrees C, copper, three-current-carrying-conductor assumptions, No. 3 AWG Cu is a representative 100 A table selection. Verify current CEC Table 2 and all notes.
5. Correction/derating	Apply actual ambient, bundling, raceway fill, rooftop/exterior exposure and other correction factors. If corrected ampacity is below required current/OCPD, increase conductor size.
6. Neutral	Size from calculated unbalanced/nonlinear load and transfer architecture; do not reduce by habit.
7. Bonding conductor	Select from the adopted bonding rules/table based on the governing overcurrent protection and installation.
8. Voltage drop	Calculate one-way length, conductor impedance, current and system voltage; check operating and motor-start performance.
9. Short circuit	Verify conductor protection and every device rating against available utility and generator-source fault conditions.

9. Case One-Line and Commissioning Record

STANDBY SYSTEM - ENERGY PATH AND SAFETY BOUNDARY



The transfer equipment must prevent unintended interconnection. Neutral treatment is a separate design decision.

Acceptance item	Representative evidence to record
Normal source	L1-L2, L1-N and L2-N voltage; phase/neutral condition; utility available indication.
Generator no-load	Voltage, frequency, oil pressure/temperature if available, battery/charger and alarm state.
Transfer sequence	Utility-fail delay, crank/start, warm-up, transfer, retransfer delay, cooldown and return to AUTO.
Load steps	Voltage/frequency before and after each staged load; L1/L2 current and neutral current; abnormal noise or exhaust.
Load management	Each prohibited load remains off; staged loads enter and shed in the intended order.
Protection and alarms	Emergency stop, overspeed/low-oil/charger or applicable alarms tested by approved method; no defeat of safety devices.

Normal V L-L / L-N

Generator V / Hz no-load

L1 / L2 / N current at peak

Transfer / retransfer / cooldown times

Load-shed devices proven

Final AUTO status / technician / date

10. Commercial and Code-Required Systems

Optional standby, legally required standby and emergency systems can share a building but not necessarily the same performance, wiring, separation, transfer or maintenance rules. Start with the building/fire design and an approved one-line.

System branch	Design focus	Typical evidence
Emergency / life safety	Prescribed loads, source reliability, automatic operation, transfer time, fire protection, separation and signals.	C282 design basis where applicable, fire/building requirements, emergency load schedule and acceptance test.
Legally required standby	Loads required for safe building operation but distinct from optional convenience loads.	Approved classification, transfer sequence, selective coordination and monitoring.
Optional standby	Business continuity or convenience loads; must not impair required systems.	Load-shed priority, capacity study and separate ATS/distribution where needed.
Parallel / closed transition	Utility interaction, synchronization, protection and operating agreement.	Utility approval, protection study, witnessed tests and Section 84 compliance.

MULTIPLE ATS ARCHITECTURE

A 600 V commercial plant may use separate transfer switches and distribution for life-safety, legally required and optional loads. Assign source capacity and transfer priority so an optional motor cannot collapse the emergency bus.

10. Commissioning Acceptance Matrix

Use approved design values and manufacturer tolerances as the pass/fail limits. The values below are measurements to capture—not universal acceptance bands.

Test state	Measure	Pass/fail basis
Pre-start	Torque records, insulation/continuity where appropriate, neutral/bonding, phase sequence, fuel/leak status, battery.	Approved drawings, installation instructions and test procedure.
No load	L-L/L-N voltage, frequency, charging, oil/temperature, alarms and abnormal vibration/noise.	Generator manufacturer limits.
Transfer	Source sensing, delays, break-before-make/interlock, neutral switching where applicable.	ATS approved sequence and project cause/effect.
25/50/75/100% or approved load steps	Each phase current, neutral current, voltage, frequency, kW/kVA/PF if available, exhaust/fuel response.	Design load profile and manufacturer transient/steady-state limits.
Motor start	Minimum voltage, frequency dip, recovery time, contactor stability and successful acceleration.	Equipment ride-through and generator step-load criteria.
Retransfer/cooldown	Utility stable delay, open/close sequence, cooldown, stop and return to AUTO.	Approved operating sequence.

10. Troubleshooting by Evidence

Symptom	Likely branches	Safe diagnostic evidence
Cranks but will not start	Fuel isolation/pressure, air, ignition, shutdown input, low battery speed.	Controller event log, battery voltage during crank, approved fuel checks by qualified trade.
Starts but does not transfer	Normal-source sensing, warm-up delay, ATS control power, permissive/interlock, generator acceptable-voltage signal.	Source voltages at approved test points, controller state and transfer command.
Transfers then trips	Overload, short circuit, incorrect OCPD, motor inrush, phase imbalance, load shed failure.	Breaker trip indication, phase currents, event log, staged-load reproduction.
Low voltage/frequency	Overload, fuel delivery, governor/AVR issue, excessive voltage drop, poor connection.	kW/kVA/PF, fuel data, frequency, voltage at source and load, thermal/torque inspection when de-energized.
Neutral current on bonding path	Duplicate neutral-frame bond, wrong switched-neutral assumption, wiring error.	De-energized continuity map and current measurement by approved safe method.
Nuisance retransfer	Unstable utility sensing, delay settings, loose sensing circuit, control power issue.	Recorded source voltage/event history and programmed thresholds.

STOP CONDITION

Do not repeatedly reset a trip or defeat an alarm. Preserve the event, establish a safe condition, identify the protective function that operated and correct the cause before return to service.

11. Field Photography: Commercial Standby Unit



Figure 11-1 - Outdoor commercial standby generator

Training reference showing a packaged commercial generator. A project review must still address approved clearances, openings, exhaust, combustion air, snow, drainage, fuel, access, noise, impact protection and electrical routing. This is not represented as a GoRight installation or a New Brunswick site.

Photo: Dwight Burdette, Wikimedia Commons, CC BY 3.0.

11. Field Photography: Transfer Equipment



Figure 11-2 - Large automatic transfer-switch assembly

Training reference for identifying power poles, mechanism, controls and service access. Never infer voltage, current, neutral switching, transition mode or short-circuit rating from appearance; verify the nameplate and approved documentation.

Photo: Robert Harker, Wikimedia Commons, CC BY-SA 3.0.

11. Field Photography: Installation Work Area



Figure 11-3 - Backup-generator junction-panel installation

Training reference emphasizing supported raceways, enclosures, work space and coordinated routing. Inspect conductor protection, bonding, environmental rating, penetrations, labels and termination suitability for the actual site.

Photo: Oscar Reed / U.S. Fish and Wildlife Service, Wikimedia Commons, public domain.

11. Field Photography: Controls and Alarms



Figure 11-4 - Diesel generator control panel

Training reference for controller-state, metering and alarm awareness. Commissioning must capture programmed setpoints, event logs, local/remote mode and the final return to AUTO; controls vary by manufacturer.

Photo: U.S. Navy, Wikimedia Commons, public domain.

11. Carbon-Monoxide Hazard Demonstration

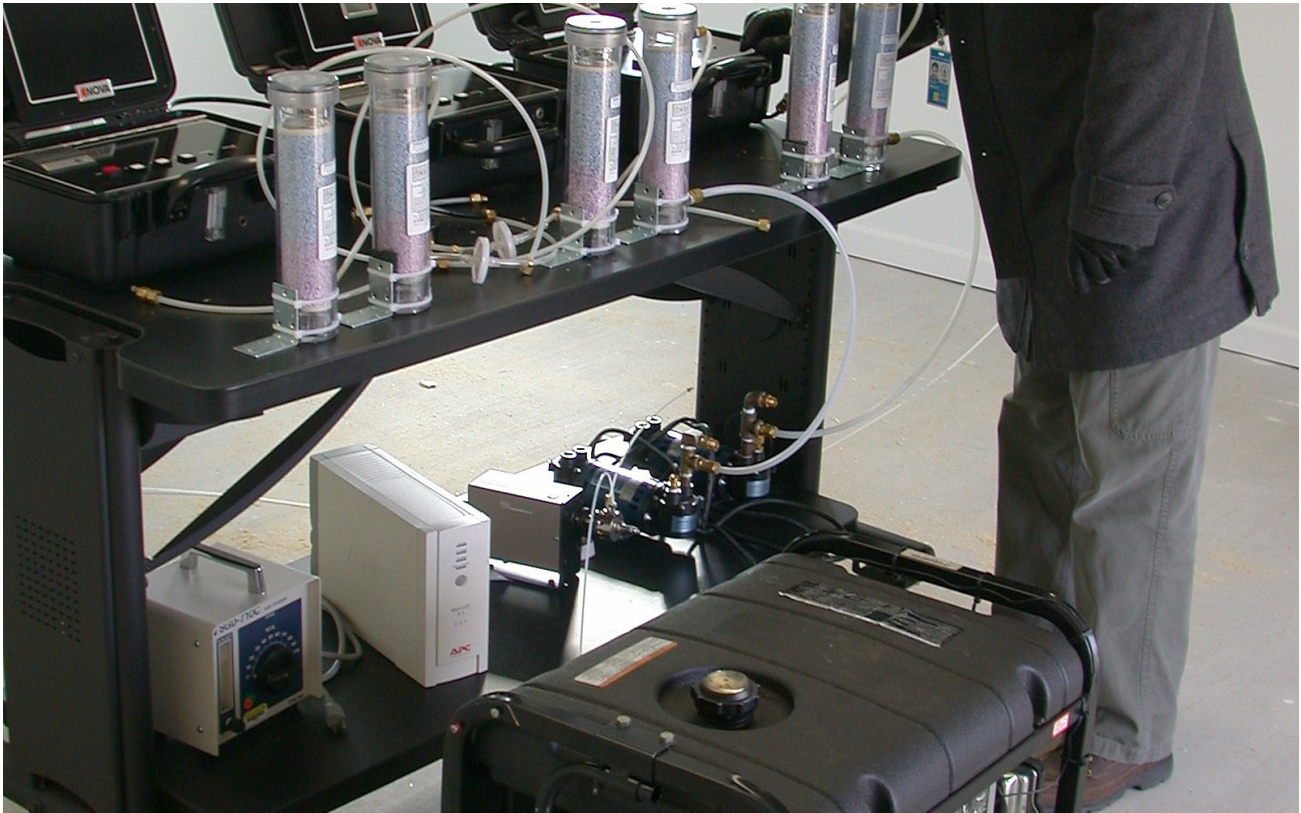


Figure 11-5 - Research demonstration of an unsafe garage condition

This photograph documents carbon-monoxide research involving portable generators near a garage. It is included only to show the hazard. Never operate a portable generator in a garage, attached space or near openings. Follow NB Power safety guidance and the generator manufacturer's outdoor placement instructions.

Photo: National Institute of Standards and Technology, Wikimedia Commons, public domain.

NOT AN INSTALLATION EXAMPLE

The image above is a hazard-research setup, not an acceptable operating configuration. Carbon monoxide can enter a building even when a garage door is open.

12. One-Page Generator Field Reference

Before work	Before energization	Before handover
Classify optional / required / emergency system. Confirm permit, plan review and utility/fuel interfaces. Record current Code/AHJ/manufacture basis. Approve one-line, load schedule and site plan. Verify equipment approval and ratings.	Match conductors, OCPD, terminals and correction factors. Verify transfer interlock and pole count. Map neutral, system bond and equipment-bond paths. Torque, label and inspect. Confirm safe fuel/exhaust/site condition.	Test no-load, transfer, steps, alarms, shed, retransfer and cooldown. Record V, Hz, L1/L2/N current and timing. Return controls to AUTO. Train owner and deliver manuals/as-built/test log. Close deficiencies and inspection.

Essential stop-work triggers

- + Unknown source isolation or possible utility backfeed.
- + Neutral/bonding configuration cannot be proven from drawings, markings and testing.
- + Unapproved or modified equipment lacks acceptable evidence of approval.
- + Generator, ATS, conductor, OCPD or fault-current ratings are incompatible.
- + Unsafe exhaust, carbon-monoxide, fuel, opening, snow/flood or access condition.
- + Required emergency-system classification or building/fire design is unresolved.

GORIGHT FIELD PRINCIPLE

No assumption is a test result. No nameplate is a system design. No successful start is a completed commissioning.

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11-3	commons.wikimedia.org/wiki/File:Backup_generator_junction_panel_installation_at_Prime_Hook_NWR,_Delaware_(15952484876).jpg	Oscar Reed / U.S. Fish and Wildlife Service; public domain.
11-4	commons.wikimedia.org/wiki/File:SSN774_diesel_engine_040821-N-2653P-003.jpg	U.S. Navy; public domain.
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Governing References and Revision Basis

This GoRight document is a standalone New Brunswick training module. The following governing and official references establish the conformity framework; project-specific requirements and authority direction take precedence.

Reference	Application
New Brunswick Electrical Installation and Inspection Act	Provincial legal authority for electrical installations and inspection.
New Brunswick Regulation 84-165	Adopted CEC edition, NB amendments, licences, permits and inspection administration.
C22.1-24, Canadian Electrical Code, Part I, 26th Edition	Technical installation baseline including applicable errata and NB modifications.
CSA C22.2 No. 178.1:22, Transfer switches	Product standard for applicable automatic, manual, closed-transition and hybrid transfer switches.
CSA C22.2 No. 100:14 (R2024), Motors and generators	Product standard for applicable motors and generators.
CSA C282:24, Emergency electrical power supply for buildings	Emergency power design, installation, operation, maintenance and testing where applicable.
New Brunswick Regulation 91-191	Occupational health and safety, lockout and electrical safe-work duties.
NB building and fire requirements	Determination and performance of emergency/legally required systems.
NB Regulation 84-176	Propane, natural and medical gas licensing/permit coordination for gas work.
GNB Technical Inspection Services bulletins and directions	Current provincial interpretations, equipment/transfer guidance and inspection administration.
NB Power generator and generator-safety guidance	Transfer-switch/backfeed, portable-generator and carbon-monoxide safety guidance.
NB Power wiring-permit application and service standards	Permit data, transfer-switch declaration, plan-review navigation and utility interface.
Approved equipment markings and manufacturer instructions	Ratings, installation, neutral configuration, site, fuel, controls, commissioning and maintenance.

DOCUMENT CONTROL

Expanded Contractor Edition 2.0 - August 2026. Review after any change to NB legislation, adopted CEC, inspection bulletins, utility standards, product standards, CSA C282, building/fire requirements or equipment instructions.

GoRight Electric Inc.

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Right work. Right price. Right on time.