

Tips for Setting Up and Maintaining Power Generation Jobs

Proper planning and assessment are crucial for a power generation setup to ensure reliability, efficiency, and safety. The following are key considerations for both emergency response and long-term site management.

Plan Your Energy Needs

Think ahead about your energy requirements.

- Ensure critical facilities have backup power contingencies in case the primary system fails.
- Assess your risk: consider how an outage would affect operations and how long they can pause before serious impact.
- Determine if full power is needed or if only essential systems should be maintained during an outage.
- Balance cost and need: larger generators cost more and may be unnecessary for short-term outages.
- Identify your scenario:
 1. Power was available but is now lost.
 2. Power will be unavailable due to a scheduled outage.
 3. Power is unavailable at a temporary site and must be provided.

Power Requirements

- Determine total electrical load.
- Identify standby, prime, or continuous operation.
- Understand load types (motors, lighting, electronics).
- Confirm soft-start systems for motor loads.
- Verify available fuel sources (diesel, gas, natural gas, LPG).
- Note any site restrictions or future load additions.
- Ensure permits and regulatory compliance.

Site Assessment

- Confirm ground prep and levelling.
- Provide weather protection for disconnects and panels.
- Ensure sufficient space, ventilation, and noise control.
- Plan electrical access, cable routing, grounding, and bonding.



Responding to an Emergency Power Outage

Before calling for a generator, take a moment to verify the following:

- **Electrician** - Do you have an electrician to connect and permit the generator per safety regulations?
- **Placement** - Identify the generator's connection point and suitable onsite location, avoiding windows, air intakes, and balconies to prevent exhaust from entering the building.
- **Power Information** - Have a recent hydro bill ready to check peak usage or confirm your main switch's amperage and voltage.
- **Cable Routing** - Estimate the distance from the generator to the connection point, noting if cables cross doorways, walkways, or driveways.
- **Setup Responsibility** - Determine who will be responsible for safely and efficiently setting up the temporary power.



For BESS (Battery Energy Storage Systems)

BESS units are ideal for light average loads with large, intermittent spikes that would otherwise need oversized generators.

To size correctly, consider:

- Average and peak power draw (amps/voltage/kVA).
- Duration and frequency of peak loads.

Use this data to choose fuel-efficient or cost-effective options that best suit the site conditions.

Generator Sizing Chart (kW to Amps)

(Assumes 0.8 Power Factor for 3-phase)

Formulas Used

Single-phase: Amps = (kW × 1000) ÷ Voltage

Three-phase: Amps = (kW × 1000) ÷ (3 × Voltage × 0.8) (where 3 1.732 and PF = 0.8)

| kW | kVA | Amps @ 120V (1Ø) | Amps @ 240V (1Ø) | Amps @ 208V (3Ø) | Amps @ 480V (3Ø) | Amps @ 600V (3Ø) |
|-----|-----|------------------|------------------|------------------|------------------|------------------|
| 10 | 13 | 83 | 42 | 35 | 15 | 12 |
| 20 | 25 | 167 | 83 | 69 | 30 | 24 |
| 30 | 38 | 250 | 125 | 104 | 45 | 36 |
| 40 | 50 | 333 | 167 | 139 | 60 | 48 |
| 50 | 63 | 417 | 208 | 174 | 75 | 60 |
| 60 | 75 | 500 | 250 | 208 | 90 | 72 |
| 70 | 88 | 583 | 292 | 243 | 105 | 84 |
| 80 | 100 | 667 | 333 | 278 | 120 | 96 |
| 90 | 113 | 750 | 375 | 312 | 135 | 108 |
| 100 | 125 | 833 | 417 | 347 | 150 | 120 |
| 110 | 138 | 917 | 458 | 382 | 165 | 132 |
| 120 | 150 | 1000 | 500 | 416 | 180 | 144 |
| 130 | 163 | 1083 | 542 | 451 | 196 | 156 |
| 140 | 175 | 1167 | 583 | 486 | 211 | 168 |
| 150 | 188 | 1250 | 625 | 521 | 226 | 180 |
| 160 | 200 | 1333 | 667 | 555 | 241 | 193 |
| 170 | 213 | 1417 | 708 | 590 | 256 | 205 |
| 180 | 225 | 1500 | 750 | 625 | 271 | 217 |
| 190 | 238 | 1583 | 792 | 659 | 286 | 229 |
| 200 | 250 | 1667 | 833 | 694 | 301 | 241 |
| 210 | 263 | 1750 | 875 | 729 | 316 | 253 |
| 220 | 275 | 1833 | 917 | 763 | 331 | 265 |
| 230 | 288 | 1917 | 958 | 798 | 346 | 277 |
| 240 | 300 | 2000 | 1000 | 833 | 361 | 289 |

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(Assumes 0.8 Power Factor for 3-phase)

| kW | kVA | Amps @ 120V (1Ø) | Amps @ 240V (1Ø) | Amps @ 208V (3Ø) | Amps @ 480V (3Ø) | Amps @ 600V (3Ø) |
|-----|-----|------------------|------------------|------------------|------------------|------------------|
| 250 | 313 | 2083 | 1042 | 867 | 376 | 301 |
| 260 | 325 | 2167 | 1083 | 902 | 391 | 313 |
| 270 | 338 | 2250 | 1125 | 937 | 406 | 325 |
| 280 | 350 | 2333 | 1167 | 972 | 421 | 337 |
| 290 | 363 | 2417 | 1208 | 1006 | 436 | 349 |
| 300 | 375 | 2500 | 1250 | 1041 | 451 | 361 |
| 310 | 388 | 2583 | 1292 | 1076 | 466 | 373 |
| 320 | 400 | 2667 | 1333 | 1110 | 481 | 385 |
| 330 | 413 | 2750 | 1375 | 1145 | 496 | 397 |
| 340 | 425 | 2833 | 1417 | 1180 | 511 | 409 |
| 350 | 438 | 2917 | 1458 | 1214 | 526 | 421 |
| 360 | 450 | 3000 | 1500 | 1249 | 541 | 433 |
| 370 | 463 | 3083 | 1542 | 1284 | 556 | 445 |
| 380 | 475 | 3167 | 1583 | 1319 | 571 | 457 |
| 390 | 488 | 3250 | 1625 | 1353 | 586 | 469 |
| 400 | 500 | 3333 | 1667 | 1388 | 601 | 481 |
| 410 | 513 | 3417 | 1708 | 1423 | 617 | 493 |
| 420 | 525 | 3500 | 1750 | 1457 | 632 | 505 |
| 430 | 538 | 3583 | 1792 | 1492 | 647 | 517 |
| 440 | 550 | 3667 | 1833 | 1527 | 662 | 529 |
| 450 | 563 | 3750 | 1875 | 1561 | 677 | 541 |
| 460 | 575 | 3833 | 1917 | 1596 | 692 | 553 |
| 470 | 588 | 3917 | 1958 | 1631 | 707 | 565 |
| 480 | 600 | 4000 | 2000 | 1666 | 722 | 577 |
| 490 | 613 | 4083 | 2042 | 1700 | 737 | 589 |
| 500 | 625 | 4167 | 2083 | 1735 | 752 | 601 |