



# Essential Generator Buyers Guide

North America - 60Hz Edition



## Buying an Industrial or Commercial Generator

Choosing and installing an industrial or commercial generator is a significant investment that demands careful planning. Beyond understanding your power needs, navigating environmental factors, relevant regulations, and diverse local ordinances is crucial for a successful, compliant, and reliable installation. This comprehensive guide from Generator Source is designed to equip businesses with the knowledge needed to make informed decisions, ensuring seamless power continuity and regulatory adherence.

### Understanding Your Power Needs

The foundation of a successful generator purchase is an accurate assessment of your power requirements. This step carries important considerations for optimal performance.

#### ELEVATION & ALTITUDE

**General Guideline:** As a rule of thumb, diesel and liquid propane generators typically experience a 2-3% power derating for every 1,000 feet above sea level. Natural gas generators, which are more sensitive to air density, can see a derating of approximately 4% for every 1,000 feet.

**The First Step = Load Assessment:** Load Assessment: Before selecting a generator, a detailed load assessment is paramount. This involves calculating the total power (kW) and apparent power (kVA) your critical systems and equipment will draw during an outage. Factors like peak demand, inrush current (for motors), and harmonic distortion (for sensitive electronics) must be considered.

**Sizing for Conditions = Elevation Derating:** High altitude significantly impacts generator performance. At higher elevations, the air density is lower, meaning less oxygen is available for combustion and less dense air for cooling. This results in a reduction of the generator's rated power output, known as "derating".

**Impact on Sizing:** This means you'll need to purchase a larger generator than a similar facility at sea level to achieve the same usable power output. Generator Source's experts account for these derating factors to ensure your generator is correctly sized for your specific elevation.



# Types of Generators for Industrial & Commercial

## Standby Power Generators

Designed for emergency backup during utility outages. They operate for limited hours per year. Most commercial and industrial applications fall into this category.

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## Prime Power Generators

Built for continuous operation as a primary power source, often in remote locations or where grid power is unavailable/unreliable. They are designed for heavier use cycles.

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## Continuous Power Generators

Similar to prime power, but designed for 100% load continuously. Understanding the expected runtime and load profile is key to selecting the appropriate generator rating.

Unsure about your power needs or sizing a generator? Contact our expert team at Generator Source for a free load assessment consultation!

Email Sales

[SALES@GENERATORSOURCE.COM](mailto:SALES@GENERATORSOURCE.COM)

Call Sales

844-443-7885



# Fueling Your Generator: Important Considerations



## Diesel Generators

**Pros:** High power density, excellent reliability, and quick startup. Diesel remains a popular choice for critical standby applications.

**Cons:** Requires on-site fuel storage (tanks), which is subject to stringent regulations. Emissions from diesel generators are also a major regulatory consideration, especially for larger units.

**Context:** Diesel fuel delivery services are widely available.



## Natural Gas Generators

**Pros:** Offers a continuous fuel supply (if connected to a utility line), eliminates the need for large on-site fuel storage tanks, and generally produces cleaner emissions, making permitting potentially simpler.

**Cons:** Reliance on the natural gas utility infrastructure (vulnerable to gas line disruptions), and requires sufficient gas pressure and volume for larger units. More significant derating at altitude.

**Context:** Natural gas infrastructure is often well-developed in urban and many suburban areas, making it a viable option for many businesses.



## Propane Generators

**Pros:** Clean-burning, easily stored in tanks (though less energy-dense than diesel).

**Cons:** Requires significant on-site tank storage for industrial applications due to lower energy density, and can be less economical for very large or extended run times.

**Context:** More common for smaller commercial or residential backup, but can be an option for industrial sites with limited run time requirements or remote locations without natural gas access.

## Fuel Storage Regulations

Relevant authorities regulate petroleum storage tanks, including aboveground storage tanks (ASTs) and underground storage tanks (USTs), often enforcing codes like NFPA. Local fire departments and environmental agencies will also have specific requirements for fuel tank placement, secondary containment, and spill prevention.

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# Navigating Regulations & Permitting

Permitting for industrial generators is a multi-layered process involving state, regional, and local authorities. Compliance is non-negotiable.

## Environmental Protection Agencies

**Air Quality Permits:** Most industrial generators require an Air Pollutant Emission Notice (APEN) or a full air permit from relevant environmental divisions. This is particularly true for diesel engines and natural gas engines.

**Operating Permits:** Very large industrial sources or those with significant emissions may fall under operating permit requirements, which are more complex.

**Hazardous Waste:** Environmental agencies also regulate hazardous waste generation, relevant for disposal of used oil, filters, and other materials from generator maintenance.

## Local Authorities Having Jurisdiction (AHJs)

**Building Permits:** Your city or county building department will require permits for the generator's installation (electrical, mechanical, structural). For example, a Generator Installation Permit may be explicitly required for all stationary generators.

**Zoning & Setbacks:** Local zoning laws dictate where a generator can be placed on your property (e.g., minimum distances from property lines, buildings, or public ways).

**Fire Department Approval:** Local fire departments have specific guidelines for generator location, fire ratings for indoor generator rooms (e.g., 2-hour fire rating), and fuel storage.

## NFPA Standards

**NFPA 110 (Standard for Emergency and Standby Power Systems):** This crucial standard is widely adopted and enforced. It outlines requirements for generator sizing, installation, maintenance, testing (including monthly load exercising and tri-annual load bank testing), fuel storage, and documentation for critical applications (Level 1 and Level 2 systems).

**NFPA 70 (National Electrical Code - NEC):** Governs the electrical wiring and connections for generator systems, ensuring safety and proper integration with your facility's electrical system.



# Installation & Site Considerations

**Diverse topography and climate present unique challenges and requirements for generator installation.**

## Elevation Impact on Installation

As discussed, altitude affects performance. It also influences cooling system design and requires careful consideration of radiator sizing.

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## Climate & Weather Resilience

- **Cold Starts:** Generators need to be equipped with block heaters and battery chargers to ensure reliable starting in cold winter temperatures.
  - **Extreme Heat:** Proper ventilation and cooling system design are essential to prevent overheating during hot summers, especially in enclosed spaces.
  - **Snow & Wind:** Enclosures must be robust to withstand heavy snowfall and high winds, protecting the unit from elements and ensuring optimal operation.
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## Noise Ordinances

Industrial generators, especially larger ones, can be noisy. Municipalities have specific noise ordinances that must be met.

- **Examples:** Regulations may specify limits like 55 dBA (day) and 50 dBA (night) for residential areas, or 65 dBA (day) / 60 dBA (night) for commercial property lines.
  - **Mitigation:** High-quality, sound-attenuated enclosures are almost always necessary. Strategic placement, acoustic barriers, and specialized mufflers may also be required.
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## Site Preparation

- **Foundation:** A robust, level concrete pad is essential to support the significant weight of industrial generators and minimize vibration.
- **Ventilation & Exhaust:** Proper air intake for cooling and efficient routing of hot exhaust gases away from the building are critical for performance and safety. This often involves large ducting or specialized stacks.
- **Accessibility:** Ensure sufficient clear space around the generator for routine maintenance, repairs, and fuel delivery. Local regulations may mandate specific clearance distances.



# Choosing the Right Generator: New vs. Used

## Benefits of New Industrial Generators

- **Latest Technology:** Includes advanced control systems and superior fuel efficiency.
- **Full Manufacturer Warranty:** Provides peace of mind and long-term support.
- **Emissions Compliance:** New diesel units typically meet current emissions standards, which is crucial for permitting.

## Benefits of Used Industrial Generators

- **Significant Cost Savings:** A more budget-friendly option without sacrificing reliability.
- **Faster Availability:** Often quicker to acquire and install than new, custom-ordered units.
- **Sustainability:** A greener choice by extending the lifespan of existing equipment.
- **Why Buy Used from Generator Source:** We specialize in high-quality used generators. Our rigorous inspection and refurbishment process ensures every unit meets strict performance standards. We thoroughly test, service, and, if necessary, repair units to deliver dependable power.

**Generator Source offers both new and meticulously inspected used industrial generators, providing flexible options for your business.**



# Ongoing Maintenance & Support

**Proper maintenance is not just good practice; it's often a regulatory requirement and essential for generator longevity and reliability.**

## Preventative Maintenance

Regular servicing extends the lifespan of your generator, optimizes fuel efficiency, and, most importantly, ensures it starts and performs reliably when an outage occurs. Many NFPA 110 requirements revolve around documented maintenance and testing.

## Generator Service

We offer comprehensive preventative maintenance plans tailored to industrial generators. Our certified technicians understand the unique demands of altitude and climate. Routine fluid and filter changes, electrical system checks, cooling system analysis, fuel system conditioning (critical for stored diesel), battery maintenance, and transfer switch testing are included.

## Load Bank testing

Performing regular load bank tests is vital, especially for diesel generators that often run at light loads during exercising. Load testing at significant capacity (NFPA 110 mandates at least 30% load monthly, or a tri-annual full load test) helps prevent "wet stacking" and verifies the generator can handle its rated output when truly needed. Generator Source provides expert load bank testing services.



## Generator Service

**Protect your investment and ensure continuous uptime with expert local service. Learn more about Generator Source's comprehensive generator maintenance plans.**

With over 50 years of expertise, Generator Source delivers reliable equipment, expert services, and 24/7 support to keep your property powered and protected.

**Contact us today!**



**844-443-7885**





**GENERATOR  
SOURCE**  
SALES · RENTALS · SERVICE

## 20kW - 4,000kW GENERATOR SOLUTIONS



### Our Roots & Local Expertise

Located in a central region, we intimately understand unique environmental conditions, business landscapes, and specific regulatory requirements. Our team lives and works here, giving us a unique insight into your needs.



### Extensive Inventory

We maintain one of the largest inventories of new and used industrial and commercial generators, ensuring you have access to the right unit for your specific application and budget.



### Full-Service Provider

From initial consultation and sizing, to sales, complex installations, comprehensive maintenance, and readily available parts, Generator Source is your single point of contact for all generator needs.



### Certified Technicians

Our team comprises factory-trained and certified technicians, ensuring professional, compliant, and reliable service for your generator.



### Proven Track Record

With decades of experience serving businesses, we have a reputation for quality, reliability, and exceptional customer support.



**Immediate Availability**



**Quality Assurance  
Guarantee**



**Rapid Response Time**

**CONTACT US**

