

DELTA STAR
INCORPORATED



Mobile Transformers & Substations

LETTER FROM THE PRESIDENT



For more than 100 years, Delta Star has been manufacturing electrical power products of all sizes for utilities, industrials, and municipalities throughout North America, with over 40 years of manufacturing experience of mobile transformers and mobile substations in North America.

At Delta Star, quality begins with our engineers and craftsmen, who have decades of experience designing and building the most complex power transformers in use today. Delta Star has more than 800 Mobile Transformers and Substations in the field—and along with our dedication to quality, use components of the highest quality, and highest engineering standards, we enjoy the greatest amount of repeat business!

Recently, a United States Energy Study confirmed that Delta Star is a dominant manufacturer of mobile substations in the United States. Market supremacy of these complex products is a testament to the extraordinary innovation that is built into every transformer. Delta Star is working to meet the energy needs of the future!

We want to provide our customers with quality products and services. We take great pride in our customer service and have increased production capacity from coast-to-coast to meet our high demand. Every customer is appointed a personal representative who follows their order from contract to completion and is provided with unique direct-access to our vast engineering, mechanical, manufacturing, and field service personnel.

Since its founding in 1908, Delta Star has been an industry leader in providing superior, innovative client solutions that meet the energy needs of the future, through a culture of best-in-class customer service. We consider it a privilege to have built power transformers and mobile substations for many of the world's leading utilities and are committed to total customer satisfaction through teamwork, individual job excellence and continual improvement.

We look forward to providing you with a superior product, exceptional service and innovative power solutions.

Jason Greene

President & Chief Executive Officer



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Field Service

FieldServiceRFQ@DeltaStar.com

Parts

Parts@DeltaStar.com

FIND A REPRESENTATIVE



LEARN MORE

www.DeltaStar.com

CRITICAL INFRASTRUCTURE

Whether it's a natural disaster, premature failure, power outage or simply scheduled maintenance, a Delta Star Mobile Transformer Substation (MTS) has all the components of a full substation. Mobile and Ready To Go with deployment capabilities ranging in a timeframe from 6-24 hours gives you flexibility and power. A Delta Star MTS is ideal for resolving a pressing emergency with a customer-focused mindset.



The United States electric power grid and its suppliers are considered an essential business. Delta Star has a responsibility to support the function of critical infrastructure for public health and safety.

PRODUCTS

- Mobile Transformer
- Mobile Substation
- Portable Transformer
- Unitized Substation (Skid Mounted)
- Auxiliary Trailers

PRODUCT APPLICATIONS

- Emergency Service
- Routine Maintenance
- Temporary Power Supply
- Substation Capacity Increase
- Power for Seasonal Load

SUBSTATION SOLUTIONS

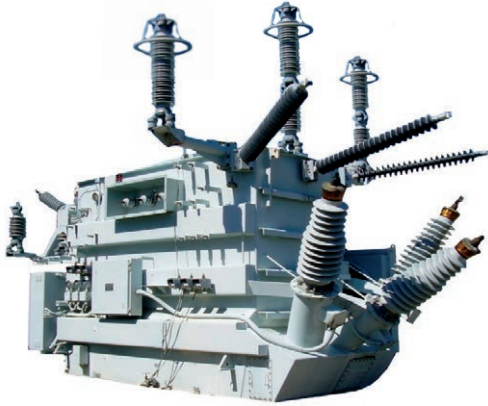
Delta Star is the premier manufacturer of mobile transformers and mobile substations in the United States and designs over 75% of the mobiles used by investor-owned utilities, electric cooperatives and municipals in the North American Market. With more than 100 years in the power industry and over 40 years manufacturing mobile transformers, Delta Star has the engineering expertise to deliver this complexly critical product to fit any power substation application in the world.



We pride ourselves in providing our customers with quality auxiliary trailers including circuit switchers, breakers, breakers with a switch, transrupters with a switch, cable reel, and security fence trailers.



TYPES OF MOBILE UNITS



PORTABLE TRANSFORMER



AUXILIARY TRAILER



UNITIZED SUBSTATION (SKID MOUNTED)



MOBILE SUBSTATION



MOBILE TRANSFORMER

From trailer-mounted components to fully integrated solutions, Delta Star delivers the quality, reliability, and efficiency you expect from an industry leader. Our substations and auxiliary trailers are engineered to meet your unique needs and specifications, built for rapid deployment and easy installation. Our packaged solutions are designed for a variety of applications and improve the performance of your utility.

ENGINEERED TO ORDER



TRAILER-MOUNTED SUBSTATIONS

Mobile, self-contained substations equipped with a range of customizable components and rated for up to 230 kV.



BREAKER TRAILER

Highly configurable, easy-to-install breaker trailers engineered for HV and LV systems.



SWITCHGEAR TRAILER

Custom-designed, mobile distribution to sub-transmission trailers capable of supporting multiple manufacturers.

PACKAGED SOLUTIONS



SECURITY FENCE TRAILER

Secure your most important assets from outside threats.



CABLE REEL TRAILER

Choose from multiple setup, enclosure and power options.

TRAILER FEATURES

- Custom-engineered for each job
- **Kingpin Trailers** feature air ride suspension, hydraulic leveling, a grounding system and more with optional remote rear axle steering
- **Hitch-Type Trailers** use strong, lightweight materials for easy pulling with a conventional pickup
- Designed to comply with DOT Regulations

RESTORING POWER: THE MOBILE TRANSFORMER SOLUTION



W A S H I N G T O N

In the heart of the nation's capital, a Potomac Electric Power Company (PEPCO) substation in Washington, D.C., experienced an equipment failure. Within seconds, power went out.

The equipment failure caused confusion and chaos as neighborhoods, businesses, college campuses, hospitals, and a public transit hub were impacted. Power coming back online required a not-so-simple solution. PEPCO needed a Mobile Transformer Substation (MTS). Fortunately, PEPCO's leadership team had been adequately trained to promptly respond in such circumstances.

A phone call was made to Delta Star who, at the time, had a 60 MVA mobile at their Lynchburg facility preparing to ship to a different customer. It was a perfect fit for PEPCO. Turning the power back on was becoming more realistic. Contracts were drafted and reviewed, engineering specifications confirmed, chain of command issued approvals, and transportation was arranged. All three parties displayed a commitment and determination to restoring power.

Less than 26-hours after the initial contact was made between the three companies, the Delta Star mobile departed for D.C. with a police escort. The mobile arrived in less than four hours, where Delta Star Field Service technicians began installation immediately.



A Delta Star Mobile can bridge the gap left after a potentially hazardous event, keeping the grid operational, safe and secure from various unknowns. As the premier provider of mobile solutions, Delta Star delivers proven solutions to the industry's most severe challenges. Superior, innovative client solutions that meet the energy needs of the future.

Delta Star has industry-leading experience in the repair and redesign of all types of transformers, servicing any manufacturer on voltage classes up to 230 kV. Our engineering and manufacturing team can remanufacture, repair, and retrofit your aging equipment to ensure it is fitted with the industry's most recent materials and technologies.



FIND A LOCAL REPRESENTATIVE

Learn more about Delta Star's extensive product list, services, and industry leading experience in mobile remanufacturing by contacting a local representative.

ADVANTAGES

- Extended mobile transformer life
- Equipment adapted to meet new grid requirements
- Reduced investment cost
- Fast turnaround
- State-of-the-art materials and standards



SCOPE & CAPABILITIES

Delta Star is the only North American transformer manufacturer with the breadth of products to meet all your power needs. Below is a partial list of our capabilities. Many factors influence the criteria such as: Impedance, Sound Level, Loss Evaluation, Temperature Rise, Basic Impulse Level (BIL), Limiting Dimensions, and State Highway Road Limits. Delta Star's unitized substations offer a simple solution for customers. Pre-assembled and fully tested at our manufacturing plants, unitized substations arrive at their destination prepared for installation.

MOBILE SUBSTATIONS

Type	MVA (Top Rating)	HV kV	LV kV
Mobile Substations	<100	25 - 230	2.4 - 69
Portable Substations	100	15 - 230	2.4 - 69
Mobile Circuit Protection	---		---

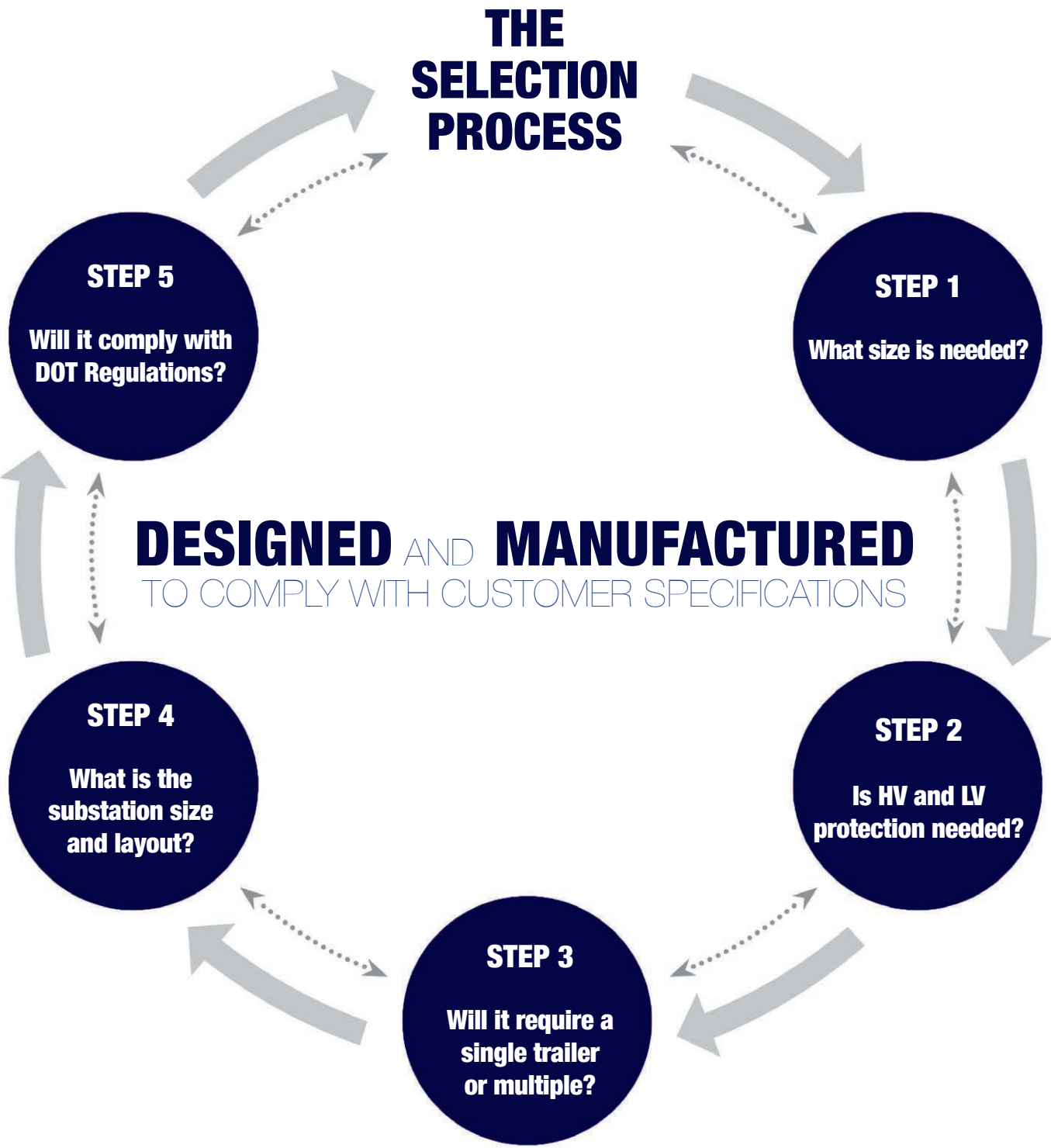
UNITIZED SUBSTATIONS (SKID MOUNTED)

Type	MVA (Top Rating)	HV kV	LV kV
Unitized Substations	2 - 100	15 - 230	2.4 - 69

POWER TRANSFORMERS

Type	MVA (Top Rating)	HV kV*	LV kV
Power Transformer w/o LTC	200	15 - 315	4 - 115
Power Transformer w/ LTC	170	15 - 315	4 - 115
Auto Transformer & TV w/o LTC	300	34.5 - 315	34.5 - 161
Auto Transformer & TV w/ LTC	250	34.5 - 315	34.5 - 161
Voltage Regulators	7	15 - 115	+/- 10-15% Regulation
Grounding Transformers	----	15 - 115	Custom Z% or I-fault
Generator Step-Up	Same as Type 1 & 2		
Unit Auxiliaries	60	15 - 34.5	2.4 - 25

*Delta Star can manufacture up to 345 kV at 1050BIL



DELTA STAR MOBILE DESIGN

Delta Star makes mobile power easy. Whether it's your first mobile or 100th, Delta Star can help you build it specified to your needs. Our design teams can develop a full, complex design after just a few basic questions. A Delta Star mobile is designed in such a way that transportation is easy and installation times short. They are pre-assembled at our manufacturing plants and exhaustively tested before leaving the factory.

SPECIFICATIONS

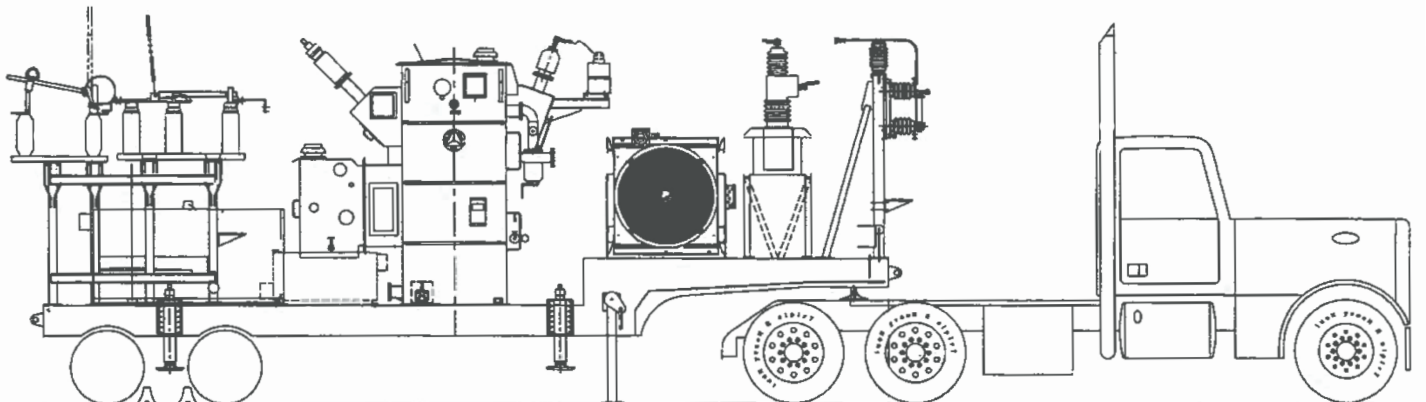
- Voltage
- MVA
- Length
- Impedance
- Oil System
- Tap Changer Requirements

EQUIPMENT SPECIFICATION

- Single Line Diagram
- HV and LV Protection Devices
- Catalog Numbers for Equipment
- DC Requirement
- Preferred Number of Trailers
- Available Tractor(s)
- Training

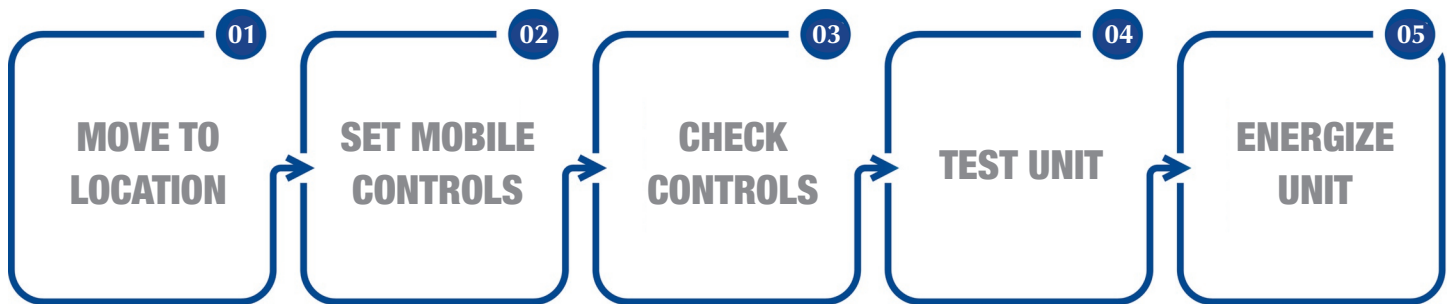
ADVANTAGES

- Mobile units arrive fully assembled to the customer site
- May be equipped with high voltage and low voltage protection
- Self-contained - auxiliary power supply (internal or external)
- May be used inside or outside of the substation if properly equipped
- Light, compact design



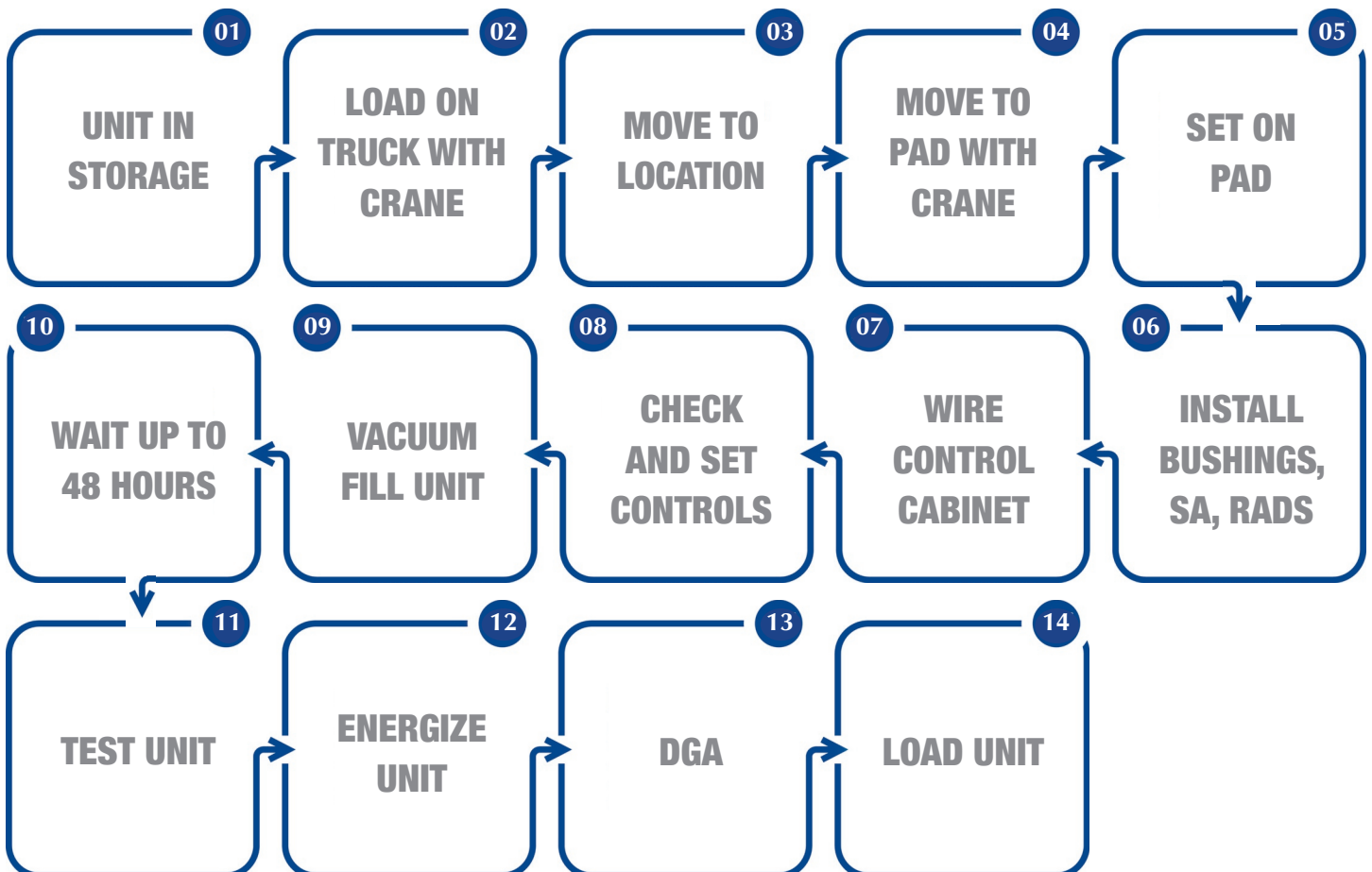
HOURS VS. WEEKS

Mobile Substation (6-24 Hours)



VS.

Power Transformer (2-3 Weeks)



MOBILE SUBSTATIONS



(10 MVA, 13.8 kV - 4.16 kV, LTC)
2019 | 42' | 90,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: WEST



(60 MVA, 69 kV - 13.8 kV, LTC)
2019 | 84' | 179,000 lbs.
HV SF6 Breaker
Customer Region: ATLANTIC

MOBILE SUBSTATIONS



(25 MVA, 138 kV - 13.2 kV, LTC)
2019 | 70'-5" | 158,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: WEST



(28 MVA, 115 kV - 24.94 kV)
2019 | 62'-5" | 125,000 lbs.
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(20 MVA, 34.5 kV - 13.2 kV, LTC)
2019 | 40' | 98,000 lbs.
Customer Region: WEST



(33 MVA, 115 kV - 14.4 kV, LTC)
2019 | 82' | 180,000 lbs.
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(25 MVA, 138 kV - 13.09 kV, LTC)
2019 | 60' | 221,900 lbs.
Customer Region: MIDWEST



(25 MVA, 117 kV - 34.5 kV, LTC)
2019 | 69'-10 1/4" | 175,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(5 MVA, 138 kV - 25 kV, LTC)
2019 | 56' | 175,000 lbs.
Customer Region: WEST



(10 MVA, 69 kV - 13.09 kV, LTC)
2019 | 46' | 95,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(25 MVA, 138 kV - 26.4 kV, LTC)

2019 | 65'-5" | 132,000 lbs.

LV Vacuum Breaker

Customer Region: WEST



(15 MVA, 115 kV - 13.09 kV, LTC)

2018 | 62'-6" | 127,000 lbs.

LV Vacuum Breaker and HV Circuit Switcher

Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(4 MVA, 34.5 kV - 34.5 kV, LTC)
2018 | 40' | 125,820 lbs.
Customer Region: MIDWEST



(15 MVA, 115 kV - 13.09 kV, LTC)
2018 | 62'-6" | 127,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(6 MVA, 34.5 kV - 13.2 kV, LTC)
2018 | 33' | 77,000 lbs.
LV Vacuum Breaker and HV Recloser
Customer Region: MIDWEST



(20 MVA, 69 kV - 13.09 kV, LTC)
2018 | 48' | 112,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(30 MVA, 138 kV - 37.74 kV, LTC)

2018 | 60' | 130,000 lbs.

Customer Region: WEST



(30 MVA, 161 kV - 13.8 kV, LTC)

2018 | 58' | 153,000 lbs.

LV Vacuum Breaker and HV Circuit Switcher

Customer Region: MIDWEST

MOBILE SUBSTATIONS



(35 MVA, 138 kV - 22.86 kV, LTC)
2018 | 65' | 180,000 lbs.
Customer Region: WEST



(50 MVA, 138 kV - 26.4 kV, LTC)
2018 | 72' | 179,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(50 MVA, 138 kV - 26.4 kV, LTC)
2018 | 72' | 179,000 lbs.

Customer Region: WEST



(30 MVA, 69 kV - 26.4 kV, LTC)
2018 | 44' | 127,000 lbs.

LV Vacuum Breaker and HV Circuit Switcher

Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(20 MVA, 69 kV - 13.09 kV, LTC)
2018 | 46' | 112,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: WEST



(30 MVA, 138 kV - 37.74 kV, LTC)
2018 | 50' | 130,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(10 MVA, 13.8 kV - 4.16 kV, LTC)
2018 | 47' | 107,000 lbs.
Customer Region: ATLANTIC



(15 MVA, 138 kV - 13.8 kV, LTC)
2018 | 64'-5" | 136,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(30 MVA, 138 kV - 37.74 kV, LTC)
2018 | 50' | 130,000 lbs.
Customer Region: MIDWEST



(30 MVA, 138 kV - 37.74 kV, LTC)
2018 | 50' | 130,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(25 MVA, 138 kV - 26.2 kV, LTC)
2018 | 64'-5" | 147,000 lbs.
Customer Region: MIDWEST



(10 MVA, 69 kV - 1,309 kV, LTC)
2018 | 48' | 112,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(35 MVA, 115 kV - 13.09 kV, LTC)
2018 | 52'-7" | 161,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: SOUTHEAST



(7 MVA, 69 kV - 12.47 kV)
2018 | 36' | 85,000 lbs.
HV Circuit Switcher
Customer Region: WESTERN CANADA

MOBILE SUBSTATIONS



(10.5 MVA, 69 kV - 13.09 kV, LTC)

2018 | 47' | 120,000 lbs.

Customer Region: MIDWEST



(10 MVA, 69 kV - 12.47 kV, LTC)

2018 | 49' | 97,000 lbs.

Customer Region: MIDWEST

MOBILE SUBSTATIONS



(40 MVA, 230 kV - 23 kV)
2018 | 70'-5" | 150,000 lbs.
LV Vacuum Breaker
Customer Region: SOUTHEAST



(25 MVA, 138 kV - 13.09 kV, LTC)
2018 | 71'-5" | 141,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(15 MVA, 69 kV - 13.09 kV, LTC)
2018 | 54' | 138,000 lbs.
Customer Region: SOUTHEAST



(30 MVA, 138 kV - 36.2 kV)
2018 | 54' | 141,000 lbs.
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(30 MVA, 115 kV - 24.94 kV, LTC)
2017 | 46' | 127,000 lbs.
Customer Region: SOUTHEAST



(27 MVA, 120 kV - 13.2 kV, LTC)
2017 | 54' | 140,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(14 MVA, 46 kV - 13.2 kV)
2017 | 44' | 83,000 lbs,
Customer Region: MIDWEST



(25 MVA, 69 kV - 26.18 kV, LTC)
2017 | 42' | 112,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(25 MVA, 69 kV - 26.4 kV, LTC)
2017 | 66'-5" | 162,000 lbs.
Customer Region: MIDWEST



(25 MVA, 69 kV - 26.4 kV, LTC)
2017 | 54' | 124,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(25 MVA, 115 kV - 24.94 kV, LTC)
2017 | 70'-5" | 171,000 lbs.
Customer Region: WEST



(20 MVA, 67 kV - 26.4 kV, LTC)
2017 | 46' | 120,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(50 MVA, 138 kV - 69 kV)
2017 | 56' | 129,000 lbs.
Customer Region: WEST



(15 MVA, 134 kV - 12.47 kV, LTC)
2017 | 62' | 119,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(15 MVA, 69 kV - 13.2 kV, LTC)
2017 | 46' | 120,000 lbs.
LV Vacuum Breaker and HV Circuit Switcher
Customer Region: MIDWEST



(30 MVA, 115 kV - 25 kV, LTC)
2017 | 78'-5" | 190,000 lbs.
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(25 MVA, 69 kV - 26.4 kV, LTC)
2017 | 40' | 112,000 lbs.
Customer Region: MIDWEST



(30 MVA, 67 kV - 12.47 kV)
2017 | 48' | 115,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(20 MVA, 46 kV - 13.09 kV, LTC)
2017 | 50' | 128,000 lbs.
Customer Region: MIDWEST



(14 MVA, 45 kV - 13.09 kV, LTC)
2017 | 54' | 123,400 lbs.
Customer Region: SOUTHEAST

MOBILE SUBSTATIONS



(50 MVA, 141 kV - 37.5 kV, LTC)
2017 | 59' | 164,000 lbs.
Customer Region: WEST



(40 MVA, 115 kV - 69 kV, LTC)
2017 | 65' | 134,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(35 MVA, 115 kV - 13.09 kV, LTC)
2017 | 82'-7" | 151,000 lbs.
Customer Region: SOUTHEAST



(34 MVA, 120 kV - 13.2 kV, LTC)
2016 | 71'-5" | 138,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(4 MVA, 34.5 kV - 34.5 kV, LTC)
2016 | 42' | 112,000 lbs.
Customer Region: ATLANTIC



(25 MVA, 115 kV - 12.47 kV, LTC)
2016 | 52' | 142,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(10.5 MVA, 69 kV - 12.47 kV, LTC)
2016 | 56'-5" | 122,000 lbs.
Customer Region: MIDWEST



(10 MVA, 69 kV - 13.09 kV, LTC)
2015 | 32' | 89,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(20 MVA, 69 kV - 4.37 kV, LTC)
2015 | 46' | 120,000 lbs.
Customer Region: ATLANTIC



(20 MVA, 115 kV - 26.4 kV, LTC)
2015 | 54' | 112,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(15 MVA, 69 kV - 24.94 kV)
2015 | 44' | 91,000 lbs.
Customer Region: MIDWEST



(20 MVA, 115.5 kV - 24.94 kV)
2015 | 50' | 118,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(50 MVA, 141 kV - 37.5 kV, LTC)
2015 | 59' | 176,000 lbs.
Customer Region: WEST



(37 MVA, 33.5 kV - 13.2 kV, LTC)
2015 | 50' | 128,000 lbs.
Customer Region: ATLANTIC

MOBILE SUBSTATIONS



(40 MVA, 132 kV - 34.5 kV)
2015 | 44' | 133,000 lbs.
Customer Region: MIDWEST



(20 MVA, 138 kV - 36.2 kV, LTC)
2015 | 72'-2" | 163,000 lbs.
Customer Region: MIDWEST

MOBILE SUBSTATIONS



(30 MVA, 138 kV - 26.18 kV, LTC)
2015 | 68'-5" | 168,000 lbs.

Customer Region: WEST



(2 MVA, 14.4 kV - 14.4 kV, LTC)
2015 | 36' | 96,000 lbs.

Customer Region: MIDWEST

MOBILE SUBSTATIONS



(30 MVA, 138 kV - 26.18 kV, LTC)
2015 | 68'-5" | 168,000 lbs.
Customer Region: WEST



(20 MVA, 69 kV - 4.37 kV, LTC)
2015 | 46' | 120,000 lbs.
Customer Region: ATLANTIC

MOBILE SUBSTATIONS



(20 MVA, 69 kV - 4.37 kV, LTC)
2015 | 46' | 120,000 lbs.
Customer Region: ATLANTIC



(15 MVA, 138 kV - 25.2 kV, LTC)
2015 | 60' | 150,000 lbs.
Customer Region: EASTERN CANADA

MOBILE SUBSTATIONS



(20 MVA, 69 kV - 4.37 kV, LTC)
2015 | 46' | 120,000 lbs.
Customer Region: ATLANTIC



(15 MVA, 138 kV - 25.2 kV, LTC)
2015 | 60' | 150,000 lbs.
Customer Region: EASTERN CANADA

MOBILE SUBSTATIONS



(40 MVA, 115 kV - 13.2 kV, LTC)
2014 | 50' | 128,000 lbs.
Customer Region: ATLANTIC



(30 MVA, 138 kV - 12.47 kV, LTC)
2014 | 64'-5" | 154,000 lbs.
Customer Region: WEST

MOBILE SUBSTATIONS



(20 MVA, 115.5 kV - 34.5 kV)
2014 | 43'-2" | 123,000 lbs.
Customer Region: WEST



(50 MVA, 115 kV - 34.5 kV)
2014 | 48' | 130,000 lbs.
Customer Region: ATLANTIC

MOBILE SUBSTATIONS



(30 MVA, 69 kV - 26.4 kV)
2014 | 42' | 113,000 lbs.
Customer Region: SOUTHEAST



(28 MVA, 138 kV - 26.4 kV, LTC)
2014 | 68'-5" | 174,000 lbs.
Customer Region: WEST

TRAILER MOUNTED SUBSTATIONS



Mobile Circuit Switcher Trailer
Customer Region: SOUTHWEST



Truck Switcher Trailer
Customer Region: ATLANTIC

TRAILER MOUNTED SUBSTATIONS



Mobile Circuit Switcher Trailer
Customer Region: **SOUTHWEST**



Mobile Circuit Switcher Trailer
Customer Region: **SOUTHWEST**

TRAILER MOUNTED SUBSTATIONS



Mobile Circuit Switcher Trailer
Customer Region: SOUTHWEST



Mobile Circuit Switcher Trailer
Customer Region: ATLANTIC

TRAILER MOUNTED SUBSTATIONS



Mobile Cable Reel Trailer
Customer Region: **SOUTHEAST**



Mobile Circuit Switcher Trailer
Customer Region: **SOUTHEAST**

