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WHITE PAPER:
USE THE TOTAL COST OF RENTING (TCR) METHODOLOGY TO COMPARE TRUE COSTS OF TEMPORARY HEATERS

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OVERVIEW:

Comparing rental costs of temporary heaters is prudent. Costs vary between different types of heaters (natural gas, propane, steam, hot water, oil heaters). But rental cost is just one of several costs that should be considered in a true cost comparison.

Often, estimators focus on differences in rental costs but don't consider other costs that occur during the rental. These can be significant and outweigh the minor differences in heater rental costs, themselves. In fact, rental costs may represent only 10% of the total cost of temporary heaters—and cost differences between rentals are only a fraction of this amount!

A complete cost comparison will help to anticipate all costs associated with a heating system and preserve the profitability of a project. This is called the Total Cost of Renting (TCR). In addition to rental costs, TCR includes the costs of installing, operating, and servicing heaters. TCR varies with each type of heater. It shows the true cost of "low-cost" heater rentals and is a more accurate way to make informed comparisons.

BY FAILING TO PREPARE, YOU ARE PREPARING TO FAIL

Before reviewing the elements of TCR, we need to cover a critical step: planning and preparation.

There's more to choosing a temporary heater than estimating BTUs. It's not as simple as ordering the unit(s) recommended by an online calculator, either. Methods like these don't account for the uniqueness of a project and changes that occur during construction.

Proper planning will help optimize heat distribution, minimize rental and operational costs, and improve reliability. Heating specialists, with construction experience, can design the ideal system, anticipate potential issues, and provide the most cost-effective heating solution over the life of a project.

Planning will consider several factors, such as:

- Airflow
- Positive pressurization
- Cubic feet per minute (CFM)
- Setup, ductwork
- Building size and layout
- Enclosure type
- Heating unit placement

To understand the nuances of a construction project, a heating specialist should also walk the site. Potential problems usually don't reveal themselves on paper. Stairwells, elevator shafts, windows, walls and even equipment placement or temporary structures can affect heat distribution. Walkthroughs with a specialist, at the planning stage and throughout the project, will improve heating efficiency and keep costs to a minimum.

Construction projects are dynamic. The schedule *will* change. The project *will* change. It's important to anticipate issues and plan to make accommodations to maintain proper heating.

INSTALLATION COSTS

After rental-unit costs are collected, the next step in determining TCR is to estimate installation costs. This may represent 5% of the total rental cost.

When the heating units arrive, contractors bear the cost of unloading them. This involves time, labor, and heavy equipment, like cranes or lifts.

Depending on the heater, setup will require plumbers, propane suppliers, steam-pipe fitters, sheet metal workers and/or electricians to bring the units online. Different types of heaters will require different types of tradesmen. All of them are the contractor's responsibility. To minimize the number of surprises, anticipate the costs of professionals required to set up heating units.

Some types of heaters will incur additional equipment costs. For example, vapor-withdrawal propane heaters will likely require vaporizers to generate enough heat. Natural gas heaters may need gas boosters and piping sized to code. Ancillary equipment can be a surprise cost. And if multiple units are installed, it can be a bigger surprise—space required, labor and equipment costs are all multiplied by the number of heating units on-site.

Complying with safety codes can also produce some surprises. For example, jersey barriers may be needed to protect propane tanks and piping. If using natural gas, there are regulations about the size of piping and connection method needed. A natural gas heater may need to be protected from the rest of the site, too. Be sure to check with the local municipality on safety codes to avoid unforeseen costs. Every state, every city is different. Generally, contractors will need to contact a plumbing inspector if using natural gas and a fire department if using propane. All units should have an electrical inspection, to prevent costly downtime. Also, keep in mind that state projects often have state inspectors.

OPERATIONAL COSTS

Cost estimation in the operations phase focuses primarily on fuel consumption. This can represent 80% to 85% of the TCR. Different heating units (natural gas, propane, oil) require different fuels, which have different costs. The units also consume fuel at different rates. For example, liquid-withdrawal propane heaters are more fuel-efficient than their vapor-withdrawal counterparts. So, ask heater vendors to provide the fuel consumption of their units at a set discharge temperature at different ambient temperature scenarios, such as 0° F, 20° F, and 40° F. Heater performance and fuel consumption varies in cold weather. If units were sized correctly in the planning phase, adding the fuel consumption of each heater will give a good estimate of operational expenses.

Remember, some types of heaters also require ancillary equipment. A natural gas booster, propane vaporizer and other equipment require additional fuel or electricity to operate. The energy costs to run this equipment needs to be included in operational expenses.

To calculate electricity costs, start by determining the kilowatt hours (kWh) required.

kWh = ((1.73205) X (Motor Voltage) X (Amps) X (Power Factor of .82)) / 1000

This will estimate kWh for a single heating unit. To determine the electricity cost, multiply the kWh by the utility rate and by the anticipated hours of operation. Of course, if multiple units are used, electricity costs need to be multiplied by the number of units being used.

SERVICE & SUPPORT COSTS

Surprise costs can be frustrating. Surprise service costs can be especially frustrating given the impact that heater downtime can have on a project. So, be sure to review the level of support included in a heater rental before placing an order. If service is not included, an estimated frequency and cost will need to be added to TCR calculations.

Likewise, additional equipment can mean additional service. If a heating system uses ancillary equipment, such as a vaporizer, budget for service calls on this equipment, too.

Some vendors prefer to swap-out heaters if there is a problem with a unit. While the vendor may cover the cost of replacing a faulty heater, the contractor will be responsible for costs of installing the replacement equipment. In addition, there are potential costs associated with heater downtime—damaged materials, required re-work, project delays—while the contractor waits for a replacement heater to arrive and get re-installed. Some vendors will include service in the rental. In this case, technicians with an arsenal of replacement parts will make repairs on-site and minimize downtime. Some vendors will even perform preventative maintenance to catch problems *before* they occur.

IT'S BETTER TO HAVE AND NOT NEED, THAN TO NEED AND NOT HAVE

Given that the cost to rent and install heating units may represent only 10% to 15% of the TCR, contractors often view heater rentals as an insurance policy against harsh winter weather. The thinking is that, if the contractor experiences a mild winter, then the operation costs and support costs will be minimal. So, the contractor only incurs the heater rental and setup costs.

On the other hand, if a contractor decides to wait until they actually experience cold temperatures there could be complications. Heaters may be hard to find. Heaters may also be more expensive than if they were ordered beforehand. If heaters can be found, it will take time to order, deliver and install them.

To keep projects on-time and on-budget, contractors will order temporary heaters anticipating the worst, but hoping for the best.

SUMMARY:

The Total Cost of Renting (TCR) is a comprehensive cost-comparison methodology that is helpful when shopping for temporary heating units. TCR includes rental, installation, operation and support costs. It provides visibility to all costs associated with a temporary heating system—not just heater rental costs. TCR helps contractors anticipate costs that will vary with each type of heater over the life of a construction project. It reveals the true cost of "low-cost" and is the most accurate way to make informed comparisons between heaters.

Temporary Heater Total Cost of Renting (TCR) Worksheet

	Heater 1	Heater 2	Heater 3
Heater Brand, Model			
Fuel Type			
Rental Costs			
Temporary Heater			
Ancillary Equipment			
Installation Phase			
Plumber			
Propane Supplier			
Electrician			
Pipe-fitter			
Sheet Metal Worker			
Safety Requirements			
Operation Phase:			
Heater Fuel			
Ancillary Equipment Fuel			
Heater Electricity			
Ancillary Equipment Electricity			
Service & Support			
Temporary Heater			
Ancillary Equipment			
Preventative Maintenance			
Total Unit Cost			
Number of Units			
Total Cost of Renting (TCR)			

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