

TECH TIP

TENT HEATERS

How to pick the right size tent heater.

You have the tent, you have the tables, you have the chairs and the catering people are on board. Now you look at the forecast and see that the weather is going to be on the cool side. You decide that a heated tent is needed for the guests to be comfortable. What do you need to do to properly heat the tent?

- Determine how much heat (in BTU's) is needed for your tent and size the heater(s) accordingly.
- Identify the fuel source and the quantity of fuel / fuel tanks needed.
- Place the heaters near the tent and get inside the tent.
- Research and comply with any local codes as they relate to heat sources for your tent.



To determine the amount of heat needed for your tented event, follow this simple formula:

BTU's of heat needed/hour = Cubic volume of tent x Temperature rise required x .25 (insulation factor of a tent)

Example:

- A tent size of 40' x 80' x 15' (average ceiling height) = 48,000 cubic feet
- The forecast is 40° for the low and you want to maintain 70° inside the tent = 30° temperature rise
- 48,000 x 30 x .25 = 360,000 BTU/hour

What happens if you are using one large unit and something fails? Disaster! Ideally, you would use two heaters. Using two heaters gives you a chance to get back up and running so that no one may even notice. And, two sources also help to distribute the heat more evenly within the tent. For this example, we recommend using two (2) 175,000 BTU/hour heaters (which closely approximates the calculated heat needed).

Another method, instead of calculating the BTU's needed for your tent, is to contact a Rainier Tent representative and request your own Heater Sizing Guide. We would be happy to send one to you!

The next thing is to determine what is the fuel source available to you - propane, or natural gas? Most box style tent heaters can be operated on either. Some cities require a permit for propane, which is by far the most common fuel used for temporary events. Does this apply to you? Make sure to check with your local fire marshal.



How much propane is needed for an event?

This is easily calculated; A gallon of propane can produce 91,600 BTU/hour.

Gallons of propane/hour = BTU's of heat needed per hour ÷ 91,600

Using the same example as above, where 360,000 BTU/hour is needed to heat the tent:

360,000 ÷ 91,600 = 3.9 gallons per hour (GPH)

We know that the heaters should cycle on and off, but why not figure worst case scenario? If the heaters run non-stop for the entire event, and the event is five hours, you will need

3.9 gallons/hour x 5 hours = 19.5 gallons TOTAL

TECH TIP

TENT HEATERS

When using propane, how do you know if you have a large enough tank? An undersized tank is the number one service issue when using propane heaters. Most people think that a 100-pound cylinder is enough, but often times it is not. The amount of propane vapor available for the heater varies depending on the outside temperature and how much propane is in the tank. For example, at 40°, a single 100-pound cylinder can only produce 214,000 BTU/hour when full and 125,000 BTU/hour when half full. (*Our Heater Sizing Guide also shows the rates of evaporation for 100-pound tanks.*) Connecting multiple tanks with a two- or three-bottle manifold will resolve the issue.

How many propane tanks are needed?

There are about 25 gallons of propane in a 100-pound cylinder, but remember you may not have enough vapor to keep the heater running at full fire as temperatures drop or more often, as tanks start to empty. The safe way to determine how many tanks you need is this simple formula:

Tanks needed (rounded up) = BTU/hour per heater ÷ BTU/hour in tank at 50%

Continuing with the example:

180,000 BTU/hour needed per heater ÷ 125,000 BTU/hour = 1.44 or 2 tanks per heater.

By using this formula, you will never run into an issue. Will there be extra propane left over? Yes. But will the customer be happy? YES! It is insurance if the event runs long or if the tanks weren't as full as you thought. Using this formula, you can just about guarantee a successfully heated tent.

The final consideration for a heated tent is placement of the heaters and availability of electrical power. Most of the time the heater can be set behind the tent, where there is no traffic, and ducted under the tent wall with a heater diffuser. Sometimes local codes require the heater be set away from the tent, in which case the warm air is ducted to the tent and under the tent wall with a duct diffuser. Also, be aware of the terrain as most heaters should sit as level as possible. Finally, the propane tanks must be secured so there is no way for them to tip or get knocked over.

Most tent heaters will also require a dedicated and **grounded** 15 amp service. You should confirm prior to the event that there is an accessible power outlet or if the generator you're using has enough circuits.

By following these simple guidelines, event guests will be warm and happy!



RAINIER TENT

www.RainierTent.com | 844.731.8096

Rev. 09/2021