

Utilities Used in Production

Sales Tax Fact Sheet 129

What's New in 2017

We added information on different methods to calculate exempt utility percentages.

Utility exemptions

Agricultural and Industrial Production

Electricity, gas, steam or water used or consumed in agricultural or industrial production is exempt from sales and use tax if:

- it is necessary to produce a particular product; and
- it is in excess of the average climate control or lighting for the production area.

This exemption does not apply to utilities used for space heating and lighting of the production area, or for any nonproduction areas such as office or administrative areas. Water used or consumed in nonproduction areas is also taxable.

For more information, see:

- Fact Sheet 145, *Industrial Production*
- Agricultural and Farming Industry Guide

Qualified Data Centers

Electricity used to operate a qualified data center is exempt after the project is certified by DEED. Other utilities purchased to operate the data center do not qualify for this exemption. Follow the instructions below to claim the exemption or request a refund.

Restaurants and Bars

The exemption does not apply to restaurants or other eating establishments selling prepared food or drink to be served on the premises or sold to go.

How to claim the exemption

To claim the exemption from sales tax on utilities used or consumed in production or in providing taxable services, you must give your supplier a completed Form ST3, *Certificate of Exemption*.

How to figure the exemption

If you have a separate utility meter for production equipment, your exemption percentage on that meter is 100 percent. However, in most situations a predominant use/energy study is required if taxable and nontaxable uses are made through a single meter.

When claiming an exemption it is up to the purchaser to prove that a sale or purchase qualifies for exemption. A third party utility usage study is good supporting evidence to prove how they arrived at the exemption.

The study must be reasonable and must have documentation to support that the study accurately reflects the

utilities consumed. Examples of documentation include:

- list of taxable and exempt machines
- how much energy each machine consumes
- how many hours each machine operates a day

The energy study must identify taxable and nontaxable:

- kilowatt/hour of electrical consumption at each electric meter
- cubic foot consumption of gas at each natural gas meter

- the volume of water transmitted at each water meter

The energy study is also subject to review in the event that you are audited.

If you make changes to your equipment, business activities, or square footage being used by the utility meter, you must review the energy study.

You should reevaluate the energy study every few years, or more often if changes occur.

The Department of Revenue does not provide the names of and does not endorse any utility engineering or consulting firm who does energy analysis work. These firms are private contractors with no connection to the State of Minnesota.

Production equipment

To be considered production equipment, it must be:

- used to produce items that are ultimately sold at retail or used in providing qualifying taxable services, and
- used within the production process or in providing a qualifying taxable service.

The following examples illustrate the difference between production and nonproduction equipment.

Example 1: A contractor makes ducts and sells them without installation or over the counter. A retail sale of a product occurs so the process of making the ducts qualifies as industrial production and the utilities are exempt. If the contractor makes and installs the ducts into real property, the utilities consumed in making the ducts are taxable because there is no retail sale of tangible personal property.

Example 2: A meatpacking plant uses a freezer to flash freeze meat. The utilities are exempt because the physical change on the product is part of the production process. However, if the freezer is used to preserve the finished product, the utilities consumed in operating the freezer are taxable.

Ventilation systems

Separate ventilation systems required for specific production purposes may qualify for this exemption. If there is only one ventilation system in use, you must document how the exemption percentage was determined and why this ventilation is necessary for production.

Ventilation systems for OSHA or employee safety do not automatically qualify for this exemption. While required, the systems do not necessarily affect the product being produced. However, if the production process requires ventilation to keep spray particles from settling on the product and affecting the quality of the finish, it qualifies for the exemption.

Equipment that may not qualify

The following is a list of equipment that generally does not qualify as production equipment. However, in specific circumstances some items may qualify as production equipment. Each piece of equipment needs to be considered on a case-by-case basis.

list is not all inclusive

air conditioner	heat pump/furnace
alarm system	humidifier
baseboard heater	incinerator
battery charger	lights
calculator	microwave
clock	neon sign
coffee maker	personal heaters
computers	phone/fax system
cooler	radio/stereo
copier/duplicator	refrigerator
dehumidifier	security lights
desk lamp	space heater
display sign	television
elevator	time clock
emergency/exit lights	vending machines
fans	water cooler

How to get a refund

If you paid sales tax on utilities in error, you may request a refund within three and one-half years of when the tax was due.

If the sales tax refund is **\$500 or less**, request the refund from your supplier. The supplier then files an amended return with the Department of Revenue. Your supplier needs the following documentation:

- the type of utility that is exempt—electricity, gas, steam, or water
- a completed Form ST3, Certificate of Exemption
- schedules used to determine the exemption percentage, if an energy study was needed
- the time period of the claimed refund

If the refund is **more than \$500**, you may apply for the refund directly to the Department of Revenue. To request the refund, Complete Form ST-11, Sales and Use Tax Refund Request.

Include a detailed explanation of how the refund was determined including

- Utility study or explanation of how you determined the claimed percentage
- Description of equipment powered by the utility
- Documentation describing how the equipment is used in production or in providing taxable services
- If you are a qualified JOBZ business, documentation of your Business Subsidy Agreement with the local government

Legal References

Minnesota Statutes 297A.68:

subd. 2, Materials consumed in production

subd. 3, Materials used in providing certain taxable services

Minnesota Rule 8130.5500, Agricultural and industrial production

Other Fact Sheets

114, *Detective and Security Services*

120, *Laundry and Cleaning Services*

145, *Industrial Production*

164, *Local Sales and Use Taxes*

Industry Guides

Agricultural and Farming

Electricity

Use one of the three following methods to calculate electrical consumption:

- actual consumption method (you must use this method if electricity is used for space heating and cooling)
- water reading method
- meter disk method

Note: If you use another method, you must show that the results are accurate.

Actual Consumption Method

The actual consumption method analyzes the utility consumption over a one-year period and is more precise than other methods. To use this method, you must first:

- Decide if you will study nonproduction or production equipment.
- Prepare a list of the type of equipment and quantity of each item you chose to study.
- Make a list of any heating or cooling units used in the facility.

For each item you have identified, determine the usage rating. The usage rating is frequently shown on the machine nameplate. If the nameplate is not accessible, use a voltammeter to measure volts and amps. An industry standard or average energy use value for production equipment is not acceptable. Record one of the following for the usage rating:

- Amps and volts
- Horsepower (HP)
- BTU
- Tons
- Watts

If the study is done on nonproduction equipment, include a list of the production equipment used in the manufacturing process.

Follow the steps below to determine your exemption percentage for electricity.

1. Average monthly electrical usage

To determine the average electrical usage consumed in one month for the entire business, divide the total electrical usage in kilowatt-hours (kWh) for an entire 12-month period by 12.

2. Kilowatts (kW)

Use the formulas below to convert the usage rating for each item to kW:

- Amps x volts = watts
- Watts/1000 = kW
- HP x .746 = kW
- BTU / 3414.4 = kW
- Tons x 1.5145 = kW

Three-phase motors

Three-phase or “clean” power is primarily used by computer or heavy industrial users. If the item is a three-phase motor, use the formula below to determine the correct kW:

$$\text{Amps} \times \text{volts} \times 1.732 = \text{watts}$$

$$\text{Watts} / 1000 = \text{kW}$$

Wattage information

The wattage for hot or cold vending machines is 500 watts. The wattage for candy or cigarette machines is 60 watts. Information on wattage for common fluorescent, mercury vapor, metal halide, and high-pressure sodium lamps is shown below.

Wattage for common lights and lamps

Lamp design		Length		Watts per lamp	
Rapid start (2 prongs each side)		48"		40	
Slimline (1 prong on each side)		96"		75	
Recessed end – high output (end of lamp)		96"		112	
Recessed end – extra heavy or high output (end of lamp)		96"		215	
Mercury vapor lights		Metal halide lamps		High-pressure sodium lamps	
Lamp watts	Average total watts	Lamp watts	Average total watts	Lamp watts	Average total watts
175	200	175	215	35	46
250	285	250	295	50	62
400	454	400	455	70	88
1000	1075	1000	1070	100	130
		1500	1610	150	188
				200	240
				250	300
				310	365
				400	465
				1000	1100

3. Adjustment factor

Determine the adjustment factor for each item, using the following guidelines:

- If the item is a heating or cooling unit, apply:
A heating or cooling factor of .25, or if the heating or cooling needed is more extreme, use .50. For example, use .25 for hot or cold vending machines, refrigerators, or coolers, and use .50 for freezers.
- A U factor of 1.25 if a heating or cooling factor was used.
- A seasonal factor of 4/12 for cooling and 6/12 for heating.
- Power factor (more than zero, but not greater than 1) is determined by the phase relationship between current and voltage. A power factor meter is put on the line by the utility provider (usually in larger production shops).
- Load factor is the average time the motor is at full rating during use. The load factor cannot be greater than 1.

4. Cycles per month

For nonproduction equipment, the cycle is the time the machine is turned on. Even if the machine is not in use for the majority of the time, it is still drawing power if it is turned on. For production equipment, the cycle is the time the machine is actually producing the product.

Determine the cycles per month for each item using the formula below:

$$\text{Hours per day} \times \text{days per week} \times 52 \text{ weeks} / 12 \text{ months}$$

For example, if a lamp is on for 9 hours a day, 5 days a week, the cycle per month would be 195 $[(9 \times 5 \times 52) / 12 = 195]$. If the lamp is on for 24 hours, 7 days a week, the cycle is 728 $[(24 \times 7 \times 52) / 12 = 728]$.

5. Average kWh usage

To determine the average monthly kilowatt-hours (kWh) for each item, multiply kW (step 2) by the adjustment factors (step 3), then multiply by the cycles per month (step 4). Round to the nearest full kWh.

For example, a pop machine is:

$$1 \text{ (machine)} \times 500 \text{ (watts)} / 1000 = .5 \text{ kW}$$

$$.5 \text{ kW} \times .25 \text{ (cooling factor)} \times 1.25 \text{ (U factor)} \times 1 \text{ (load factor)} \times 728 \text{ cycles} = 114 \text{ kWh}$$

An air conditioner rated three tons is:

$$1 \text{ (unit)} \times 3 \text{ (tons)} \times 1.5145 \text{ (kW per ton)} = 4.5435 \text{ kW}$$

$$4.545 \text{ kW} \times .25 \text{ (cooling factor)} \times 1.25 \text{ (U factor)} \times 4/12 \text{ (seasonal factor)} \times 1 \text{ (load factor)} \times 728 \text{ (cycles)} = 345 \text{ kWh}$$

6. Average monthly kWh usage

Add all of the monthly kWh amounts (step 5 of all items). The result is the total average monthly kWh usage.

7. Exemption percentage

Divide step 6 by step 1. If you are studying:

- Production equipment, the result is your exemption percentage
- Nonproduction equipment, subtract the result from the number 1.0 (not step 1) to determine your exemption percentage.

Electricity – Meter Read Method

This method measures the electricity consumed in two 60 – minute periods to establish the relationship of the taxable electrical consumption to the total. The period measures the number of kilowatt hours (kWh) used at the low point (with no production equipment in use) and at the high point (with normal production equipment in use) of electrical consumption.

1. Low point of electrical consumption

Use the process below to measure the electricity consumed with no production equipment in use:

- Record the set of numbers that measures the kWh usage shown on the meter.
- After 60 minutes has passed, record the kWh usage shown on the meter.
- Subtract the beginning number from the ending number to determine the amount of electrical consumption.

2. High point of electrical consumption

Measure the electricity consumed with normal production equipment in use, using the same process described in step 1.

3. Taxable percentage

Divide step 1 by step 2 to determine the taxable percentage.

4. Exemption percentage

Subtract step 3 from the number 1.0 (not step 1). The result is the exempt percentage.

Electricity – Meter Disk Method

This method measures the electricity consumed in two periods of at least five minutes each to establish the relationship of the taxable electrical consumption to the total. It is not necessary to have all production equipment turned on to calculate average points of production, as the relationship may be destroyed.

You may use the same or different lengths of time for each count. However, it is easier to compute the exempt percentage if the periods are exactly the same. Instructions are provided for both.

You will measure the electrical consumption for each period by counting the number of revolutions of the meter disk (the revolving disk on most electric meters). Some electronic meters may use a flashing LED to indicate the rate of energy consumption. In this case, substitute the LED count for the number of disk revolutions.

Same period lengths measured

Before you begin, determine the length of the period you will measure. The lengths measured must be exactly the same since the periods are so short.

1. Measure the electrical consumption with only lighting and nonproduction equipment in use by counting the number of disk revolutions for the period.
2. Measure the electrical consumption with normal production equipment in use (in addition to the lighting and nonproduction equipment) by counting the number of disk revolutions for the period.
3. Divide step 1 by step 2. The result is your taxable percentage.
4. Subtract step 3 from the number 1.0 (not step 1). The result is your exempt percentage.

Different period lengths measured

Before you begin, determine the length of period you will measure.

1. Measure the electrical consumption with only lighting and nonproduction equipment in use:
 - Count the number of disk revolutions for the selected period
 - Divide the number of disk revolutions by the time period in seconds
2. Measure the electrical consumption with normal production equipment in use (in addition to the lighting and nonproduction equipment) using the same process described in step 1.
3. Divide step 1 by step 2. The result is your taxable percentage.
4. Subtract step 3 from the number 1.0 (not step 1). The result is your exempt percentage.

Natural gas or steam

The methods for determining the exempt percentages for gas or steam usage are identical to the three electrical methods previously discussed. For natural gas, the summer versus winter method is available.

Summer versus Winter Method

This method uses billing statements to compare the natural gas usage for the summer months (when no space heating is usually needed) with the yearly usage. You can only use this method if:

- The only fixtures using natural gas are part of the production process and part of the space heating system
 - Your business activity remains constant throughout the year.
1. Determine the average monthly consumption for the summer months of June, July, and August. If the bills are not for calendar months, select three bills that most accurately reflect summer usage.
 2. Determine the average monthly consumption for the entire year.
 3. Divide step 1 by step 2. The result is your exempt percentage.

Water

This exemption applies only to manufacturers who consume water in their production process. Water used for machinery or building cleaning does not usually qualify. However, water used to clean food-processing equipment is exempt.

This exemption is determined by comparing average nonproduction (mostly employee) usage to the total usage unless the exact amount of non-recycled water used in production can be determined.

1. Determine the number of full-time employees (or equivalent). Part-time employees who work five hours or less a day are considered half of a full-time employee.
2. Determine the average number of days worked per month by the employees.
3. Multiply step 1 by step 2.
4. Multiply step 3 by 20 gallons. **Note:** Since a large part of the 20 gallons is used by toilets, use of low-flush toilets may reduce this number.
5. Estimate the number of gallons used in a month for other nonproduction purposes. This would include water used to clean the building or equipment.
6. Add step 4 and step 5. The result is the total nonproduction usage.
7. Determine the total water usage for the month. Use the formula below if you need to convert cubic feet (which some bills may show) to gallons: cubic feet x 7.48 = gallons
8. Divide step 6 by step 7. The result is the taxable percentage.
9. Subtract step 8 from the number 1.0 (not step 1). The result is the exempt percentage.