

Utilities Used in Production

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Sales Tax Fact Sheet 129

Fact Sheet

Utility exemption

Electricity, gas or steam used or consumed in agricultural or industrial production is exempt from sales and use tax. This exemption also applies to water consumed as part of the production process.

Utilities used directly in providing the following taxable services are exempt. Request the fact sheet listed for more information.

- animal boarding (Fact Sheet 122)
- car washing and towing (Fact Sheet 113)
- detective and security (Fact Sheet 114)
- lawn care (Fact Sheet 121)
- laundry and dry cleaning (Fact Sheet 120)
- massage (Fact Sheet 162), and
- pet grooming (Fact Sheet 122)

This exemption does not apply to space heating, lighting or water used or consumed in nonproduction areas, such as office or administrative areas.

Restaurants: The exemption does not apply to restaurants or other eating establishments selling prepared food or drink to be eaten on the premises or sold to go. However, restaurants that also produce frozen food, food that requires further preparation, or other grocery-type food products, may claim exemption on utilities used to produce these products for resale.

For more information about which activities are included in the production process, see Fact Sheets 100, Agricultural Production, and 145, Industrial Production, or the fact sheets shown by each service listed above.

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, most situations are more complex and require an energy study to determine the exemption percentage.

Details on how to figure your exemption percentage are included in this fact sheet. You may do the energy study yourself or hire an outside firm to figure the percentage for you. In either case, you must document how the percentage was determined.

The energy study should be reevaluated 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.

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 Form ST3, Certificate of Exemption. Do not send the ST3 to our office.

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, in turn, files an amended return with the Department of Revenue. Your supplier needs the following documentation (usually in writing) to substantiate the amount of exemption allowable:

- the type of utility that is exempt—electricity, gas, steam or water
- a completed exemption certificate
- 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** and you are registered to collect sales tax or pay use tax, you may apply for the refund directly to the Department of Revenue. Complete Form ST-11PUR, Purchaser Sales Tax Refund Claim. Include a detailed explanation or energy study of how the refund was determined along with the other information requested on the form. Only two purchaser claims may be filed in a calendar year.

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Can a landlord apply for a refund?

A landlord may file a claim for a utility exemption on behalf of a tenant if *all* of the following conditions are met:

- The tenant's area must be separately metered from other business or residential areas operating in the same facility.
- The terms of the lease or rental agreement must require the tenant to reimburse the landlord for the cost of the utility in question and pay this amount in addition to the lease or rent payment.
- The tenant must be using the utility in a qualifying manner and must determine the actual exempt percentage.
- The landlord *must pass through* the entire utility cost to the tenant, without markup or reduction.
- The landlord must give the refund to the tenant.

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 help illustrate the difference between production and nonproduction equipment.

Example 1: If 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: If a meat-packing plant uses a freezer to flash freeze the 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.

Example 3: Utilities consumed in operating a dehumidifier are exempt if the production process requires lower humidity to keep metal parts being produced for sale from rusting. The utilities are taxable when the purpose of the dehumidifier is to keep the windows from fogging up.

Ventilation systems. Separate ventilation systems required for specific production purposes 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.

This exemption does not automatically apply to ventilation standards set up by OSHA or for employee safety. Those standards were designed for human comfort and do not necessarily impact the product being produced. However, if, for example, the production process requires ventilation to keep spray particles from settling on the product and affecting the quality of the finish, it would be necessary for the production.

Equipment that may not qualify

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

adding machine	heat pump
air conditioner	humidifier
alarm system	incinerator
baseboard heater	lights, general
battery charger	microwave
calculator	neon sign
change machine	night lights
clock	personal heaters
coffee maker	phone system
computer, main-frame or personal	radio/stereo
cooler	refrigerator
copier/duplicator	sandwich machine
dehumidifier	security lights
desk lamp	soup machine
dispenser	space heater
display sign	spot light
elevator	television
emergency lights	time clock
exit light	typewriter
fan	VCR
fax machine	vending machine
furnace	water cooler

References

M.S. 297A.68, Subd 2, Materials consumed in production
M.S. 297A.68, Subd. 3, Materials used in providing certain taxable services
Rule 8130.5500, agricultural and industrial production

Other fact sheets that you may need:

Agricultural Production, #100
Industrial Production, #145
Local Sales and Use Taxes, #164

Electricity

Use one of the following three methods to calculate electrical consumption—actual consumption method, meter reading method or meter disk method. If you use another method, you must show that the results are accurate.

Note: If electricity is used for space heating or cooling, you must use the actual consumption method.

Electricity—Actual Consumption Method (use this method if space heating or cooling is used)

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. Also, note if there are heating and/or cooling units used in the facility.

For each item you have identified, determine the usage rating for one of the following: amps and volts, horsepower (HP), BTU, tons or watts. The usage rating is frequently shown on the machine nameplate. If the nameplate is not accessible, use a voltmeter to measure volts and amps. An industry standard or average energy use value for *production* equipment is not acceptable. The beginning of a sample worksheet is shown. A complete sample worksheet used to calculate kWh per month is provided on page 6.

Item and usage rating	Qty	
Lights—Watts		
Hot/cold vend—Watts		
Candy/cigarette—Watts		
Space heating—Watts		
Electric motor		
Power factor		
Cycles		
3-phase power		
HP		
Refrig/heat—BTU		
Freezer—BTU		
Air cond (each)		
KW per ton	___ ton	

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

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

Step 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.

Step 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:

- amps x volts x 1.732 = watts
- watts / 1000 = 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.

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Wattage for common lights and lamps

Standard wattage for lamps commonly used

Lamp designation	Length	Watts per lamp	2 lamps per fixture: total watts
Rapid start (2 prongs each side)	48"	40	80
Slimline (1 prong on each side)	96"	75	150
Recessed end – high output (end of lamp)	96"	112	224
Recessed end – extra or very high output (end of lamp)	96"	215	430

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

Step 2—To determine kW, multiply across except where indicated to divide.

Item and usage rating	Qty	Amps	Volts	HP	BTU	Factor	Watts	/1000	kW
Lights—Watts							=	/1000	=
Hot/cold vend—Watts							500	/1000	=
Candy/cigarette—Watts							60	/1000	=
Space heating—Watts								/1000	=
Electric motor									
Power factor							=	/1000	=
Cycles							=	/1000	=
3-phase power						1.732	=	/1000	=
HP						.746			=
Refrig/heat—BTU						/3414.4			=
Freezer—BTU						/3414.4			=
Air cond (each)									
KW per ton	___ ton					1.5145			=

Electricity—Actual Consumption Method *(continued)*

Step 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).

		Multiply across except where indicated to divide.							
		Step 2	Step 3			Step 4		Step 5	
Item and usage rating	Qty	kW	Heat/cool factor	U factor	Seasonal factor	Power factor	Load factor	Cycles /month	kWh/month
Lights—Watts		=					1		=
Hot/cold vend—Watts		=	.25	1.25			1		=
Candy/cigarette—Watts		=					1		=
Space heating—Watts		=	.50	1.25	6/12		1		=
Electric motor									
Power factor		=				(.1-1)	.50		=
Cycles		=					1		=
3-phase power		=					.50		=
HP		=					.50		=
Refrig/heat—BTU		=	.25	1.25			1		=
Freezer—BTU		=	.50	1.25			1		=
Air cond (each)									
KW per ton	__ to >	=	.25	1.25	4/12		1		=

Add the amounts in the kWh/month column. This is your total average monthly kWh usage (step 6) .

- Load factor** is the average time the motor is at full rating during use. The load factor cannot be greater than 1.

Step 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 x 5 x 52) / 12 = 195]. If the lamp is on for 24 hours, 7 days a week, the cycle is 728 [(24 x 7 x 52) / 12 = 728].

Step 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:

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

$$4.5435 \text{ kW} \times .25 \text{ (cooling factor)} \times 1.25 \text{ (U factor)} \times 4/12$$

$$\text{ (seasonal factor)} \times 1 \text{ (load factor)} \times 728 \text{ (cycles)} =$$

$$345 \text{ kWh}$$

Step 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.

Step 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 Reading 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 periods measure 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.

Step 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 face of the meter.
- After 60 minutes has passed, record the kWh usage shown on the face of the meter.
- Subtract the beginning number from the ending number to determine the amount of electrical consumption.

Step 2—High point of electrical consumption. Measure the electricity consumed with normal production equipment in use, using the same process described in step 1.

Step 3—Taxable percentage. Divide step 1 by step 2 to determine the taxable percentage.

Step 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 or 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 instead 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 period you will measure. The lengths measured must be **exactly** the same since the periods are so short.

Step 1—Measure the electrical consumption with only lighting and nonproduction equipment in use by counting the number of disk revolutions for the period.

Step 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.

Step 3—Divide step 1 by step 2. The result is your taxable percentage.

Step 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.

Step 1—Measure the electrical consumption with only lighting and nonproduction equipment in use:

- count the number of disk revolutions for the selected period, and
- divide the number of disk revolutions by the time period in seconds.

Step 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.

Step 3—Divide step 1 by step 2. The result is your taxable percentage.

Step 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 and/or steam usage are identical to the three electrical methods previously discussed. In addition, for natural gas, the summer vs. winter method is available.

Summer vs. 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.

This method may be used if:

- the only fixtures using natural gas are part of the production process and part of the space heating system, and
- your business activity remains constant throughout the year.

Step 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.

Step 2—Determine the average monthly consumption for the entire year.

Step 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.

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

Step 1—Determine the number of full-time employees (or equivalent). Part-time employees who work five hours or less a day are considered to be 1/2 of a full-time employee.

Step 2—Determine the average number of days worked per month by the employees.

Step 3—Multiply step 1 by step 2.

Step 4—Multiply step 3 by 20 gallons. **Note:** Since a large part of the 20 gallons is used by toilets, the use of low-flush toilets may reduce this number.

Step 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.

Step 6—Add step 4 and step 5. The result is the total nonproduction usage.

Step 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

Step 8—Divide step 6 by step 7. The result is the taxable percentage.

Step 9—Subtract step 8 from the number 1.0 (*not step 1*). The result is the exempt percentage.

Below is a sample worksheet to use when calculating your exemption percentage for electricity using the actual consumption method (see pages 3 and 4 for details).

Item and usage rating	Qty	Step 2										Step 3			Step 4	Step 5
		Amps	Volts	HP	BTU	Factor	Watts	/1000	kW	Heat/cool factor	U factor	Seasonal Power factor	Load factor	Cycles /month	kWh/month	
Lights—Watts							=	/1000	=				1			
Hot/cold vend—Watts							500	/1000	=	.25		1.25		1		
Candy/cigarette—Watts							60	/1000	=					1		
Space heating—Watts								/1000	=	.50	6/12	1.25		1		
Electric motor Power factor							=	/1000	=				(.1-1)	.50		
Cycles							=	/1000	=					1		
3-phase power							1.732	/1000	=					.50		
HP							.746		=					.50		
Refrig/heat—BTU							/3414.4		=	.25		1.25		1		
Freezer—BTU							/3414.4		=	.50		1.25		1		
Air cond (each) KW per ton	___ ton						1.5145		=	.25	4/12	1.25		1		

Step 6 — Add the amounts in the kWh/month column. This is your total average monthly kWh usage