

# Space heaters – there’s a better solution!



Space heaters use a significant amount of energy, and can have a large negative impact when used widely and frequently in Wesleyan University offices. In comparison to the average lightbulb in your office, which uses 10-60 watts, a typical individual space heater uses 1,500 watts. **Each standard space heater contributes to over 500 pounds of carbon emissions each year and costs about \$75-168 per year in electricity bills.** Assuming your office has 6 space heaters, your office could be generating 1.5 tons of carbon emissions annually.

Wanting to stay warm is completely understandable. Ideally, we would not need space heaters and could eliminate them from office spaces, but many offices do not have the ability to easily regulate space temperature for the maximum comfort of all occupants. Consider warming your body, rather than your whole space. We suggest bringing a sweater, scarf, and/or fingerless gloves to add layers as needed for personal comfort. Drinking a hot beverage does wonders warming you from the inside out. You can also request a desktop thermometer from Physical Plant; if your space is outside of the recommended temperature range for summer or winter, Physical Plant can adjust your temperature controls.

If you are still uncomfortably cold after making personal adjustments, consider purchasing electric foot warmers instead of using a space heater. Foot warmers are heated mats that go under a desk to warm feet and legs and increasing personal comfort. **Foot warmers use as much as 96% less energy than space heaters and therefore reduce costs and carbon emissions, making them a more sustainable alternative.** Here’s an example: [bit.ly/heatingmat](http://bit.ly/heatingmat). If you do use a foot warmer, be sure to only use as needed and turn it off when not you are not in the room.

Assumptions:

- Range of hours: 5 hours per day
- Range of days: 120 days per year (average number of work days is 240)
- Electricity cost: \$0.084 – \$0.186 per kilowatt hour (per Jeff Murphy 10/25/2019)
- Electricity carbon footprint: 0.29 kg of carbon/kWh = 0.64 lbs carbon/kWh
- Comparison: burning 1 gallon of gasoline = 19.6 lbs.



	<b>Space Heater</b> (1500 Watt average)	<b>Cozy Toes Foot Warmer</b> (55 Watt tested)
<b>Energy used per day (kWh)</b>	1.5 kW x 5 hours = 7.5 kWh	.055 kW x 5 hours = .275 kWh
<b>Energy used per year (kWh)</b>	7.5 kWh/day x 120 days/year = <b>900 kWh/year</b>	.275 kWh/day x 120 days/year = <b>33 kWh/year</b>
<b>Annual cost (central campus/microgrid, \$0.084/kWh)</b>	900 kWh/year @ \$0.084/kWh = \$75.60/year	33 kWh/year @ \$0.084/kWh = \$2.77/year
<b>Annual cost (independent buildings, \$0.186/kWh)</b>	900 kWh/year @ \$0.186/kWh = \$167.40/year	33 kWh/year @ \$0.186/kWh = \$6.14/year
<b>Percent energy savings using a heating mat</b>		<b>96%</b>
<b>Total cost range per year</b>	<b>\$76-167</b>	<b>\$3-6</b>
<b>Carbon Emissions per year (MTCO<sub>2</sub>)</b>	900 kWh/year x 0.64 lbs = 576 lbs. carbon/year = <b>0.26 MTCO<sub>2</sub></b>	33 kWh/year x 0.64 lbs = 21.12 lbs. carbon/year = <b>0.01 MTCO<sub>2</sub></b>
<b>Gasoline equivalent (gallons)</b>	<b>29.39 gallons</b>	<b>1.07 gallons</b>

This document has been adapted for Wesleyan University with permission from Washington University in St. Louis, Sustainability Office, Sarah Greenberg, Office Associate, October 2016.

Sources: [eia.gov/environment/emissions/co2\\_vol\\_mass.php](http://eia.gov/environment/emissions/co2_vol_mass.php), [eia.gov/tools/faqs/faq.cfm?id=667&t=2](http://eia.gov/tools/faqs/faq.cfm?id=667&t=2), and [ed.fnal.gov/nstep/f98/projects/nrel\\_energy\\_2/measurement.html](http://ed.fnal.gov/nstep/f98/projects/nrel_energy_2/measurement.html)