

**Issue:** As the recreational marijuana market legalizes, industrial indoor marijuana manufacturing facilities are likely to proliferate. Like any other industry, these facilities will have an environmental impact. Based on current industry practices, indoor marijuana production is assumed to have a high energy use intensity, in addition to a high use of chemical fertilizers and some utilization of pesticides and fungicides.

**Background:** In 2014 Oregon voters legalized, for recreational use, the production and sale of marijuana (Measure 91). The Oregon Liquor Control Commission is charged with establishing a statewide regulatory framework, including licensing of production facilities. Local governments are allowed to set time, use and manner restrictions on licensed marijuana facilities and can prohibit the establishment of licensed recreational marijuana producers, processors, wholesalers and/or retailers. The legalization of the recreational marijuana industry has prompted concerns over the environmental impacts of indoor grown marijuana, in particular the amount of energy that this industry will consume. Other concerns include wastewater impacts due to the use of chemical fertilizers, pesticides and fungicides.

**Impact:** Indoor marijuana production uses a lot of energy. PGE estimates that the average indoor marijuana production facility uses 18 times more energy than an average single family home. The [Northwest Power Conservation Council](#) estimates that a conventional grow operation is anticipated to add between 80-163 average megawatts<sup>1</sup> of new demand to the Northwest's power system. In the Portland metropolitan region, indoor marijuana production is expected to have a small, but not insignificant, impact on overall electricity demand. This increased demand is likely to also increase greenhouse gas emissions since two-thirds of our region's energy mix comes from fossil fuels.

Marijuana producers do have options for reducing their energy footprint. Switching to energy-efficient lights could reduce power consumption by half. Lighting is about 80 percent of the energy cost of indoor marijuana cultivation. Other improvements in heating, ventilation and air conditioning systems could also reduce electricity use for that equipment by 10 percent.

Other environmental impacts are also associated with marijuana production. Waste water from a production facility may have elevated concentrations of fertilizers, pesticides and fungicides. Water use may also be a factor. Water needs of a production facility might be difficult to meet, especially as many parts of the state continue to experience drought conditions. Figure 1 illustrates the types of waste products that will be associated with marijuana production.

Legalization might ultimately decrease the environmental impacts of marijuana production, as growers gain more access to advice and incentive programs. Even so, the scale of environmental impacts merits explicit attention and the development of a new regulatory framework provides an opportunity for policy design.

Over one-third of all consumption based carbon emissions come from the things we buy. Here is a comparison of the carbon footprint for several consumer products.

[Marijuana](#): 1 gram (indoor) = 10 lbs of CO2  
[Beer](#): six pack = 7 lbs of CO2  
[Beef](#): 1 lb = 50.5 lbs of CO2

<sup>1</sup> An average megawatt is the amount of electricity produced by the continuous production of one megawatt over a period of one year. The term, sometimes also called average annual megawatt, defines power production in megawatt increments over time

**Potential Avenues for Policy:** The state will need to take the lead on setting environmental regulations for the marijuana industry. Local jurisdictions are prohibited from regulating marijuana cultivation, or any seed or product thereof, under state law (ORS 633.738). Local jurisdictions are allowed to set specific policy for entire classes of facilities building or industry through land use laws, however. For example a local jurisdiction could set a mandate that all indoor agricultural producers offset greenhouse gas emissions associated with energy use by purchasing green power.



Local sustainability programs and energy incentive programs may be able to provide support to indoor growers for adopting environmental best practices.

Local jurisdictions could also provide advice and guidance to producers on best practices. For example, existing solid waste sustainability programs could offer industry specific advice on saving water, reducing effluent and minimizing energy use. In addition, as the state begins to license production facilities, metro area facilities will become eligible for energy incentives through the Energy Trust of Oregon. Incentives and expert advice may prove critical in helping the industry to move toward lower cost and more sustainable business practices.

Ultimately, consumer demand for more sustainable products and economic pressures on the producers to minimize costs may have the largest impact on decreasing the environmental footprint of this industry. Efforts to encourage this transition through policy, training or incentives, however, will be an important factor in determining the speed at which the industry adopts best practices.

Figure 1: Indoor Marijuana Producer Resource Flow Map

