



Paper or plastic?

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[Circumstances](#) have brought me back to the grocery store bags issue. I freely admit that I originally assumed that paper bags must be more efficient than plastic ones, and that I was wrong. A Google search on [paper vs. plastic](#) brings up many websites, but [a study](#) by Franklin and Associates (albeit in 1990) summarized by the [Institute for Lifecycle Environmental Assessment](#), seems to be what most people cite.

Here are some of their conclusions. Note that in making their comparisons, Franklin and Associates examine the amount of energy needed to produce the bag, and the pollutants resulting from the bag throughout its lifespan. Also, a single plastic bag carries about 2x the amount of goods that go into a paper bag. However, stores typically use improper bagging techniques with plastic bags ([update](#): I take this to mean that they double-bag and possibly don't put as many items in the bag as they could), so to be as realistic as possible, all of the evaluations below compare 2 plastic bags to 1 paper bag. You'll see that even using the 2-to-1 plastic-to-paper ratio, plastic comes out as less energy intensive.

- According to the EPA in 2002, Americans currently recycle 0.6% of plastic bags and 19.4% of paper bags.
 - A single paper bag uses the energy equivalent of 550 kJ of wood as feedstock. It also uses 500 kJ of petroleum and 350 kJ of coal for process energy. The total amount of energy used by a single paper bag is 1,680 kJ.
 - Two plastic bags use 990 kJ of natural gas, 240 kJ of petroleum, and 160 kJ of coal. The energy used for two plastic bags is 1,470 kJ. Two plastic bags use 87% the amount of energy used by one paper.
 - All of these calculations take into account current recycling rates, and paper bags need a recycling rate of at least 50% to be more energy efficient than twice the number of plastics.
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- Plastic bags, having less mass than paper, produce less solid waste. At current recycling rates two plastic bags produces 14 g of solid waste while one paper creates 50 g.
 - Atmospheric waste and waterborne pollutants are also higher for paper bags.

Well, OK. If it were the case that paper and plastic were truly equal in every other respect, then it would seem clear that plastic is the better option. But the study (at least as [summarized by ILEA](#)) does not discuss two important points: Paper bags biodegrade, and trees are a renewable resource (though a slow one) whereas the amount of petroleum and natural gas in the world is finite. Not being an economist, I don't know how to factor these issues into the equations, but I wonder if they'd make a difference.

Still, there's only one real solution to the answer: Use cloth bags instead of either paper *or* plastic! (And for those of you who drive cars, you could leave about 4 of them in your car so that you have them when you find yourself at the grocery store.)

(And for kicks, check out this [discussion on Gothamist](#) about how New Yorkers view the abuse of plastic bags.)

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