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Is public transit really more efficient?

By Cecil Adams | email article | [SHARE](#) [Facebook](#) [Twitter](#) [Google+](#)

Are electric trains and other forms of mass transit an energy loser compared to cars? What with energy transmission costs and poor ridership (especially in California), we supposedly waste energy on subways and buses. I know it's not going to be a popular concept, and it may be best to ignore it, and hopefully encourage more utilization of mass transit rather than discourage it. -Dano

Not following you, Dano. You're saying we should encourage transit use even if it wastes energy because transit is inherently cool? However, confusing claims on this subject are widespread. Consider the following:

- "Current public transportation usage reduces U.S. gasoline consumption by 1.4 billion gallons each year. . . . Total national fuel savings from public transportation would double to 2.8 billion gallons per year or more if improved coordination between land use plans and public transportation could replace even more car travel." "Public Transportation and Petroleum Savings in the U.S.," report prepared for the American Public Transportation Association, 2007

- "Even if we could get more people to ride transit, transit uses as much energy, and emits nearly as much greenhouse gases, as cars; and the trends suggest that cars will be more environmentally friendly than any transit system in the country by 2025." -Randal O'Toole, Cato Institute

Appears we've got a diversity of opinion. Time for us to step in.

Let's compare the average energy efficiency of different methods of transportation, expressed in British thermal units (BTUs) per passenger mile. These numbers were compiled or computed from government sources by my assistant Una, a professional engineer:

- Motorcycle-2,200, single rider.
- Heavy rail (includes subway and commuter rail but excludes light rail/streetcar)-2,600.
- Commercial aircraft-3,100.
- Bus-4,300.
- Auto-5,500 with single occupant, 3,500 with average passenger load.

A few observations:

1. Energy-efficiency-wise, motorcycles rule. However, I'm not seeing them as a practical commuting option.
2. Trains are efficient, but not that efficient. Rail travel is a modest 30 percent more efficient than autos.
3. If the proposed 35 MPG fuel efficiency standard becomes reality, auto energy consumption with an average load will drop to 2,300 BTUs per passenger mile. On the other hand, increasing ridership due to rising gas prices will make transit more efficient too - New York MTA rail is already down to 2,000 BTUs.
4. Buses are more efficient than a passengerless car, but that's about it. Lest you think the number is skewed by lightly traveled suburban systems, Chicago CTA buses (one million riders per workday) consume 4,300 BTUs per passenger mile, the national average.

Transit currently offers no energy advantage over cars except in the handful of cities with heavy rail - and not all of those. Estimates of auto efficiency vary depending on how many passengers you assume they're carrying, so I won't say transit is an energy loser. Transit vs. cars is pretty much a wash.

So what's the basis for the claim in the 2007 APTA study that transit use saves gasoline? The key word is gasoline- or more broadly, petroleum. Rail transit commonly runs on electricity; little electricity is generated using oil.

Is this a silly distinction? No, and it's here that we get to the heart of the matter. The real issue isn't energy efficiency or foreign oil dependence. The fundamental problem is that petroleum is sure to be scarcer in coming decades and alternative energy sources will have to be developed. Many of the obvious ones (wind, solar, nuclear) are best suited to producing electricity. Will we all be scooting around town in high-tech golf carts in 20 years?



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Maybe. But don't count on cruising at 80 miles per hour in your battery-powered SUV.

The pro-transit argument boils down to this: transit promotes densely built-up cities, which will work from a transportation standpoint. (If all else fails, you can walk or ride your bike.) Car buffs say most people prefer suburban living-we'll figure something out.

I wouldn't be so sure, but I'm not that worried about it. My inner Ayn Rand figures the market will decide.

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