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TAXI!: The Greening of New York City's Yellow Cabs

The Big Apple, Gotham, the City That Never Sleeps. Whatever you call it, New York City exemplifies greatness and leadership. It is the most densely populated big city in the U.S., with over 8 million people living in about 300 square miles (U.S. Census Bureau, 2000). Home to Wall Street, the United Nations, and a variety of cultural movements from the Harlem Renaissance to hip hop, the city is one of the world's leading cultural, financial, and political centers. Therefore, it may not be a surprise that the mayor of New York City, Michael Bloomberg, wants it to become one of the world leaders in the fight against global warming.

To reach this goal, Bloomberg recently developed PlaNYC, a strategy to reduce the city's carbon emissions below 2005 levels by 30 percent by 2030. The plan is rather ambitious, as the population is expected to grow to over 9 million people in that time. Furthermore, the 30 percent is a deceiving amount, because under a "business as usual" scenario, emissions should increase above 2005 levels by 27 percent by 2030 (see Figure 1) (Bloomberg, 2007). The goals of PlaNYC are still attainable, however, as there are plenty of opportunities for improvement. Most of the long-term work will be in improving the poor energy efficiency of the buildings, which are currently responsible for about 79 percent of the city's 58.3 million metric tons of annual CO_2e emissions (Bloomberg, 2007). In the short term, however, the mayor will be focusing on other, more accessible goals, such as improving the transportation sector.

New York City's transportation sector is world-renowned due to the fame of the taxi, an icon of the city that rivals the Statue of Liberty and the Empire State Building. The image of the yellow cab appears everywhere from movies to postcards, and more than anything, represents New York City's aggressive, fast-paced attitude. Aside from its symbolic value, the taxi is a vital component in the functioning of the city. Taxis were responsible for transporting over 241 million passengers in 2005, averaging 470,000 trips per day, and generating $1.82 billion in fare revenue (Schaller, 2006). Particularly in Manhattan, the most densely populated area of the city, taxis play an important role in travel. After the subway, taxis are the second-largest means of transportation in Manhattan (Schaller, 2000). A large majority of all taxi riders are Manhattan residents (see Figure 2), partly due to the fact that 77 percent of Manhattan households do not own a car (Schaller, 1993 and U.S. Census Bureau, 2000). However, this causality likely works both ways: that 77 percent would probably be much smaller if there were no taxis on which

residents could rely for transportation needs (the national average is only 8% of households without a vehicle; Bureau of Transportation Statistics, 2001). Thus, taxis serve as a major form of public transportation, reducing the need for privately-owned vehicles.

While taxis currently serve an important role in New York, they are not the ideal form of urban transportation. The main reason is that taxis are, of course, automobiles, and automobiles are a highly unsustainable form of transportation for cities. In a 1992 report, Ernst Joos, Zürich's transit authority deputy director, points out the vicious circle created by automobile use: streets are built for cars, too many cars lead to congestion, requiring more roads, which leads to more cars, and so on (Joos, 1992). Automobiles are also dependent on fossil fuels, making them a major source of greenhouse gases, as transportation accounts for one-third of U.S. CO_2 emissions (Beatley, 2000). When designing a green city, it is best to avoid encouraging automobile use.

Actually, if you must choose between the two, taxis are probably better for cities than privately-owned vehicles because they serve as a sort of car share. Residents who only occasionally need access to car transportation can rely on taxis and do not need to own a car. Without the convenience of a personal car and with the high taxi fares (relative to the subway and buses), people are less likely to be tempted to travel by car for more trivial trips. Therefore, rather than every household owning a car, taxi services allow for a much smaller number of total vehicles and a more efficient level of overall automobile usage. On average, only 55 percent of people traveling in New York City use automobiles (Bloomberg, 2007), which is small relative to the national average of 87 percent (Bureau of Transportation Statistics, 2001). However, the fossil fuel-powered vehicles, which transport that 55 percent, account for a disproportionate 78 percent of New York's transportation emissions (see Figure 3), and 18 percent of overall CO_2e (Bloomberg, 2007). While these statistics show that New York City, with its taxi service, is ahead of the rest of the country in terms of public transportation, they also demonstrate room for further improvements.

As Mayor Bloomberg looks to decrease emissions attributable to the transportation sector, his easiest target is the taxi service, which is not under the direct control of New York City government, but can still be regulated through the Taxi and Limousine Commission (TLC). Currently, New York's 13,180 medallion taxis are each estimated to drive more than 100,000 miles per year (Bloomberg, 2007). Nearly all of them are Ford Crown Victorias (see Figure 4),

which are strong enough to survive the city's infamously bad streets and roomy enough to be comfortable for passengers (Schaller, 2006). Unfortunately, the Crown Vic is estimated to get between 10 and 15 miles per gallon (mpg) during city driving, causing New York City taxis to be responsible for emitting 580,000 metric tons of CO_2e in 2006 (Bloomberg, 2007), a carbon footprint of about 500,000 acres of pine forests (Tirpak & Tirpak, 2007). Although about 375 hybrid taxis have been introduced over the last two years, progress has not been coming quick enough.

On May 22, 2007, Earth Day, Mayor Bloomberg announced a new set of regulations for the TLC, mandating that after October 2008, all new vehicles must achieve a minimum of 25 mpg in the city. After October 2009, that level increases to 30 mpg. In addition, the mayor announced that 1,000 of the city's cabs must be hybrids by October 2008. That number grows every year until October 2012, when all of New York City's yellow taxis must be hybrids (Office of the Mayor, 2007). In just five years, the nation's most polluting taxi fleet will be transformed into one of the cleanest. Although San Francisco, which is planning to have all hybrid or compressed natural gas taxicabs by 2010, will beat New York by two years, New York's plan will have a greater impact, because its taxi fleet is 10 times larger than San Francisco's (All Hail the Green Cabs, 2007). Bloomberg's plan is expected to reduce taxi emissions by more than 215,000 tons annually, saving 22 million gallons of gasoline in just the first year, and providing the same clean air benefits as removing 32,000 privately-owned vehicles (Office of the Mayor, 2007). The New York City taxi fleet's carbon footprint will be cut in half in just five years.

Regulations such as this, while certainly improving efficiency, will always raise questions about equity. Who will this hurt? What about the current owners of the taxis? Possibly the best part about the new TLC regulations is that they will have little impact on the cab owners and drivers, who are already required to replace their vehicles every three to five years, depending on use (Rivera & Hammer, 2007). Although the hybrid models are typically between $2,000 and $3,000 more expensive than the Crown Victoria, individual operators are expected to save up to $10,000 in fuel costs every year (Office of the Mayor, 2007). Liaquat Janjma, a taxi driver who recently switched from the Crown Vic to a Toyota Highlander Hybrid, noticed an immediate impact as he saved $20 to $50 per shift (Rivera & Hammer, 2007). With

such positive impacts, both environmentally for the city and financially for the taxi operators, the plan seems to be a guaranteed success.

Hybrid cabs, however, are not free of flaws. Aside from its terrible gas mileage, the Ford Crown Victoria has its advantages; there are reasons, of course, that nearly all taxi owners chose that particular model. The Crown Vic is spacious and has proven dependability and safety on the streets of New York City. It remains to be seen whether hybrid cabs will be able to match that performance. As noted by Mr. Janjma, "The only bad thing [about hybrids] is that repairs can be very, very expensive." The chairman of the TLC, Matthew Daus, counters by saying that even with high repair costs, "When you add it all up, with the gas savings, it's going to mean more money in the drivers' pockets" (Rivera & Hammer, 2007). Also, while the Crown Vic is spacious, it only has two extra inches of legroom when compared to the Ford Escape Hybrid (All Hail the Green Cabs, 2007). The flaws of hybrid cabs then may be negligible, but over the next few years, it will be interesting to see how well they tolerate the abuse that New York City taxis must endure.

Mayor Bloomberg's plan to reduce New York City's emissions by 30% by 2030 is off to a good start. While other cities, such as San Francisco and Boston, have also introduced hybrid taxis, officials believe that New York's plan is "the most extensive of any major city" (Rivera & Hammer, 2007). Conversion to an all-hybrid taxi fleet will eliminate only a small fraction of the city's annual 58 million metric tons of greenhouse gas emissions, but this is in turn only a small fraction of the mayor's PlaNYC strategy. In addition to the yellow cabs, the TLC regulates nearly 40,000 other for-hire vehicles (FHVs) that are used frequently in the boroughs outside of Manhattan (Gambetta & Hamill, 2005). Extending the hybrid plan to include all FHVs would obviously have a more significant effect on total emissions. Some speculate that the city's police force cruisers, another fleet of cars dominated by the Ford Crown Victoria, might soon be added to the plan as well (Gordon, 2007). Also on the agenda are more efficient heating and cooling systems in buildings, cleaner power plants, and a congestion tax to reduce inner-city traffic (All Hail the Green Cabs, 2007). Hybrid taxis may only be the beginning, but they send a powerful signal to the rest of the world that New York City is committed to the goal of becoming a world leader in the fight against global warming.

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Figures

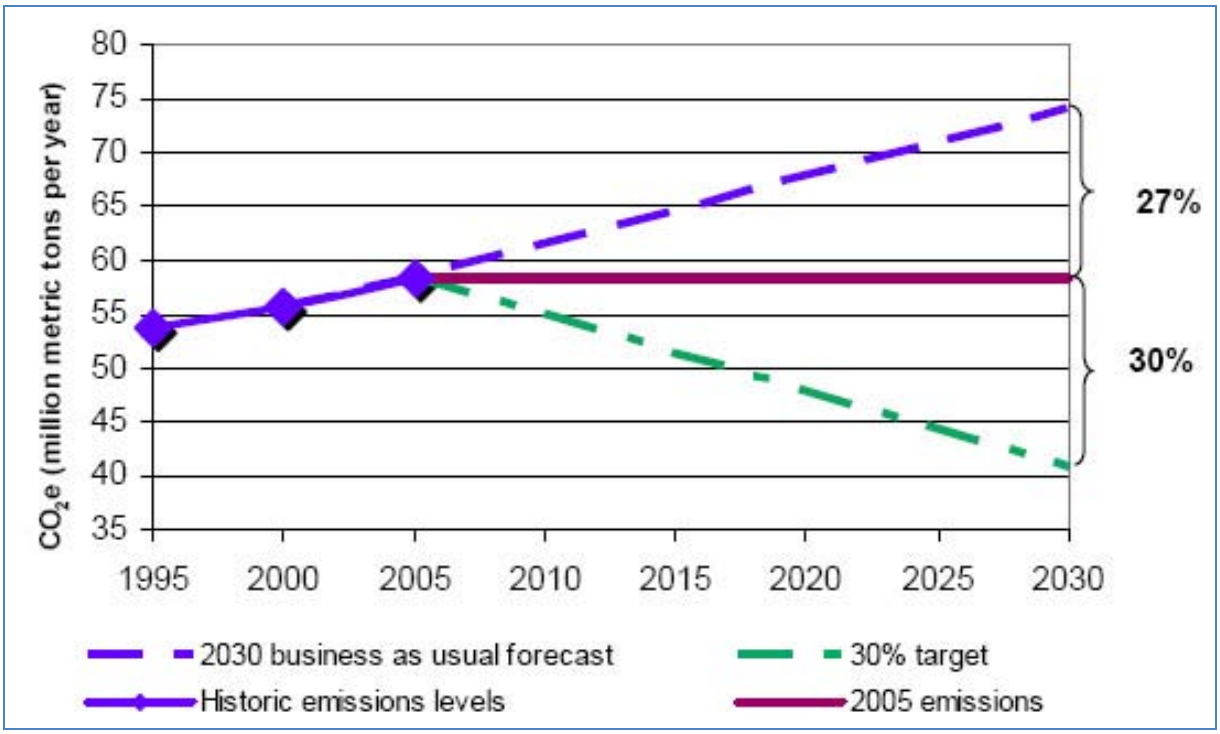

Figure 1: New York citywide CO_2e emissions forecast and target (Bloomberg, 2007).

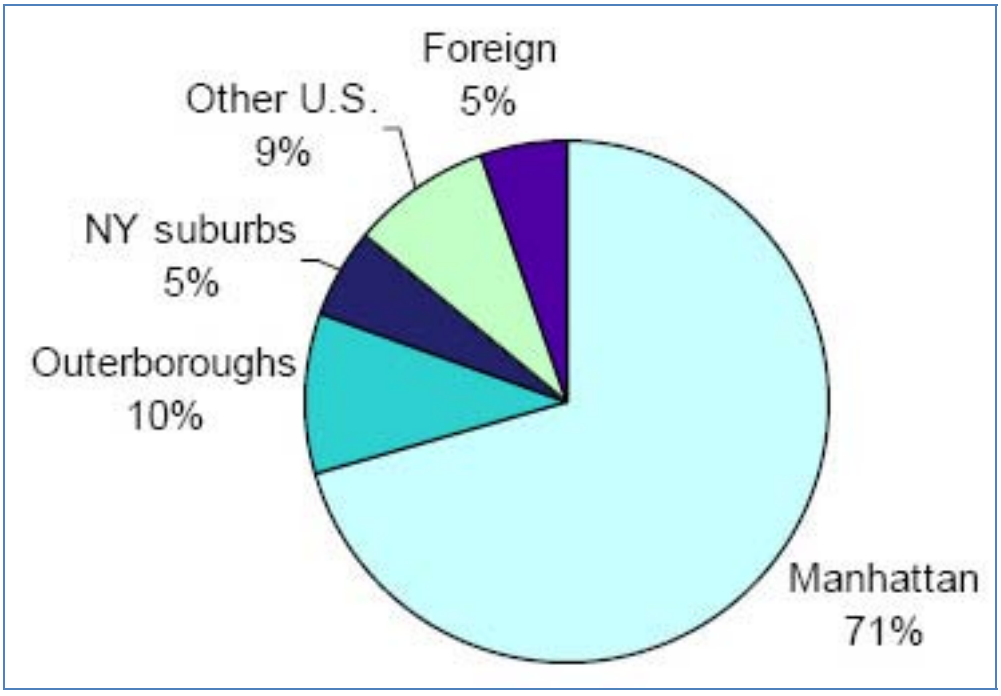

Figure 2: Place of residence of taxi riders in 1993 (Schaller, 1993).

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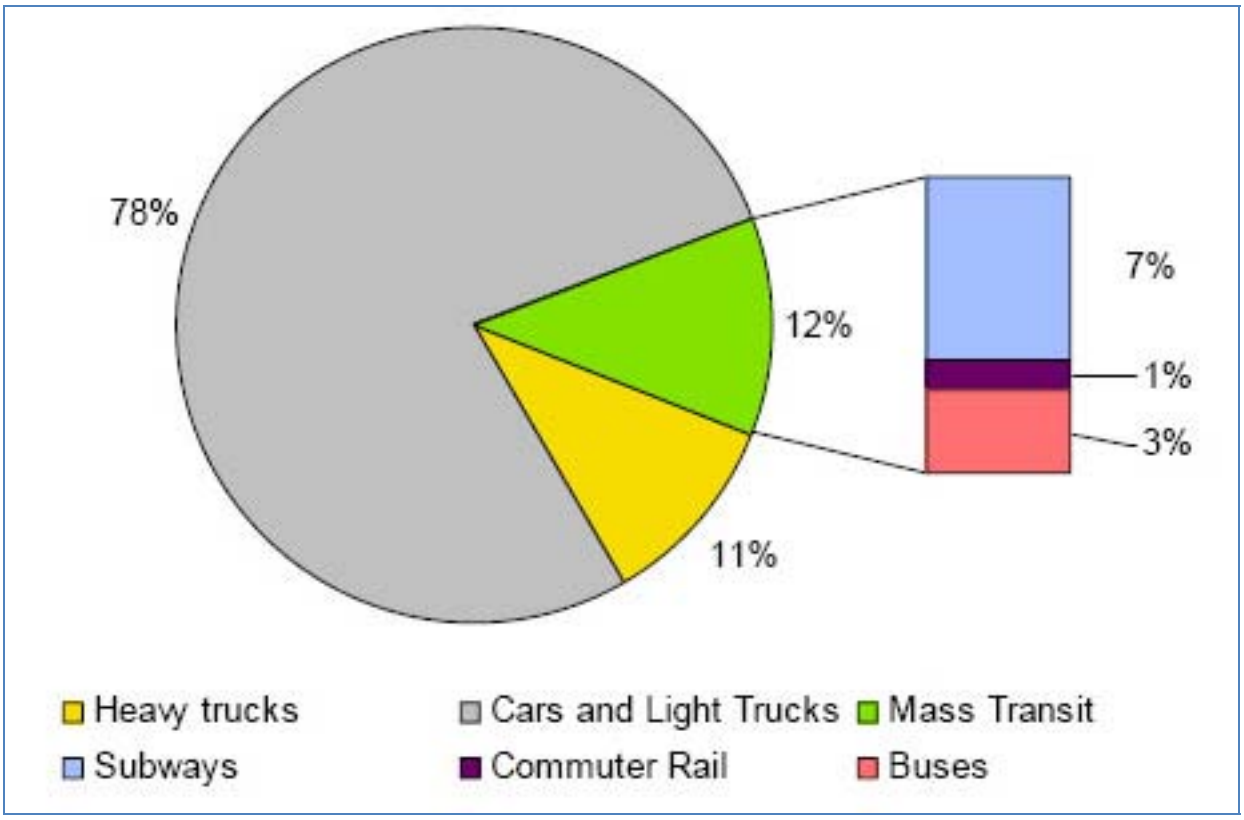

Figure 3: New York City CO_2e emissions from transportation in 2005 (Bloomberg, 2007).

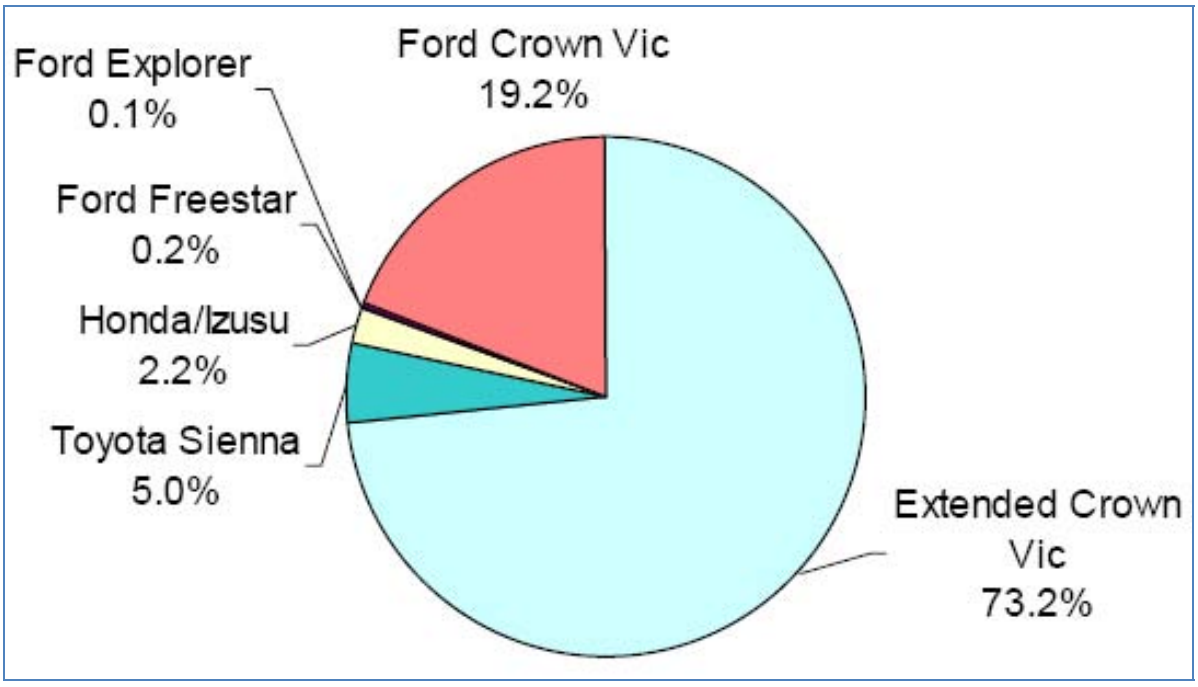

Figure 4: New York City taxi vehicles – make and model as of April, 2005 (Schaller, 2006).