SII – Sustainability Innovation Inventory

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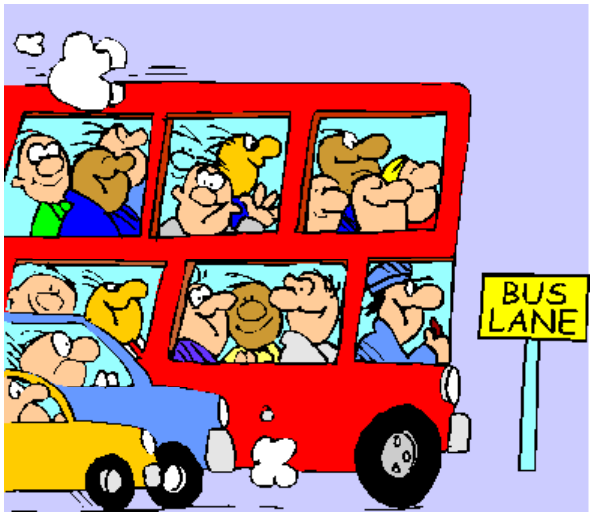
Google Employee Shuttle



(Image from: http://intlxpatr.files.wordpress.com/2007/10/bus_cartoon.gif)

Executive Summary

Google employees who work at the company's Mountain View, California, corporate campus have a special commuting option: a free company shuttle service that covers 230 miles of roads around the San Francisco area. The biodiesel-fueled Google shuttle buses make 142 trips each day to transport 1200 employees from and to 40 pick-up locations each business day. Onboard, employees have access to free WiFi during their commute, and the shuttles even allow bikes and dogs in designated sections.

The Google shuttle system is managed adaptively. A team of transportation specialists employed by Google frequently revises the bus routes based on regional traffic data and changing employee demographics. Because Google tracks and records real-time information about its bus fleet, employees can get updates on bus delays and schedules via their computers or cell-phones.

This service has become a major selling point for Google recruiting, and many employees have even moved to new neighborhoods explicitly to be closer to the bus service. Additionally, the shuttle service has helped Google qualify for designation under the U.S. Center for Urban Transportation Research "Best Workplaces for Commuters" program.

How Can a Company Promote Sustainability through Employee Transportation?

Google shuttles are environmentally friendly and help with local traffic management. Approximately one-quarter of the Google Mountain View campus workforce currently uses the shuttle service on a regular basis, meaning that hundreds of cars per day have been removed from rush hour traffic (Helft, 2007). The 32 shuttle buses that replace all of these single commuter cars run on biodiesel and use the HOV (high occupancy vehicle) lanes, which improve the buses total travel time and fuel efficiency. Moreover, the shuttle service reduces demand for on-site employee parking at Google (Helft, 2007).

The Google employee shuttle service should be commended not just for its own contributions to sustainable transportation and work, but also for starting a movement. Other large tech companies in the San Francisco area, including Yahoo!, eBay, and Apple, have also started shuttle programs in response to Google's success. Additionally, Microsoft has imported the idea up to the Seattle metropolitan area. Microsoft estimates that its 14 buses, which transport about 1000 workers to and from Redmond, WA, daily, contribute the following environmental savings:

- 800 fewer vehicle trips on Seattle highways per day
- 32,200 vehicle-miles traveled per day
- 3,800 tons of CO_2 emissions eliminated per year (*Environmental Defense Fund*, 2008)

Employee shuttles also improve social sustainability criteria for many workforces. In the Bay Area, for example, surveyed residents have rated traffic as their number one concern for the past ten years straight (Helft, 2007). Christine Maley-Grubl, executive director of the Peninsula Traffic Congestion Relief Alliance, explains that "more than 70% of [the 3.3 million people commuting daily in the San Francisco area] drive to work alone," resulting in over 155,000 hours of commuters' time lost to traffic each day (*Environmental Defense Fund*, 2008).

By providing convenient and efficient transportation for employees, with amenities like WiFi, companies can reduce the strain of commuting felt by many workers in large urban areas. Freed from the demands of the road, workers using company transportation can get a jump-start on work on their commute or just relax and enjoy some personal time during busy days. One Google employee writes that the shuttle provides "a nice buffer between work and home" where he can catch up on daily activities that don't fit well into the work/life divide, such as managing email or keeping up with technical news and blogs (Linden, 2007). Others have calculated that personal savings from not driving every day could be as much as several thousand dollars a year in gas and car maintenance (Queru, 2007). Daily interaction with employees on different projects also serves as a casual networking and information source, where fellow shuttle riders can catch up on interesting company projects, local events, and other opportunities (Linden, 2007).

Current Technology

Google uses a fleet of 32 biodiesel buses run by the company Bauer's Limousine, a company with an active commitment to using alternative fuels and reducing the environmental impact of vehicles. The buses, which are not marked as Google shuttles, are capable of holding up to 37 passengers, and are equipped with leather seats, wireless Internet, and conference tables (Helft, 2007; EESI, 2007; Mengisen, 2007).

Figure 1: A Google Employee Shuttle on the Road. *These shuttles, which seat up to 37 passengers, bring 1200 employees to Google each day from all over the Bay Area. (Image from Google employee Avinash Kaushik: http://www.kaushik.net/avinash/2008/02/10-insights-from-11-months-of-working-at-google.html)*

The Google shuttle routes include 40 stops that span from Concord – 54 miles northeast of the Google campus in Mountain View - to Santa Cruz – 38 miles to the south (see Figure 2). The buses run from 5:05 a.m. to 10:40 a.m. in the morning and 3:40 p.m. to 10:05 p.m. in the evening. During times of peak demand, shuttles arrive every 15 minutes. The buses are equipped to transport employees' bikes, and pet dogs are allowed to ride the bus to work with their owners.

Google's transportation team monitors shuttle activity in real time and can send riders notices of delays via the Internet or their mobile phones (Helft, 2007).

Figure 2: Google Employee Shuttle Map and Statistics. *The Google employee shuttle routes, which cover a large section of the Bay Area, are frequently updated based on employee residential information (Image from The New York Times, 2007).*

Technology and Experience Roadmap

The success of Google's employee shuttle brings up some interesting questions about the future of mass transit, life/work coordination, and how sustainability projects should be designed.

Google's 20-percent Time

The Google employee shuttle initiative holds an important lesson for policy-makers: listen to people's ideas. It should come as no surprise that employees really love the Google shuttle service, because it was an employee who came up with the service in the first place… on company time (*MarvQuin*, 2007). Part of Google's business model is that employees are "free to work on what they're really passionate about" 20% of the time they're at work (Google). Google's 20-percent time benefit has been the birthplace of a number of widely used applications, including Gmail, Google News, and Orkut (Michaels, 2008). Google's 20-percent time program recognizes that giving employees time

and resources to work on projects they care about unsurprisingly produces good products, both for the business and the community.

More broadly, the success of the Google employee shuttle speaks to the power of bottom-up design. Many sustainability efforts are slow to catch on because, while they may be good ideas in theory, they require individual sacrifice rather than providing an attractive solution to an inefficient system. For example, the number of single-commuter cars on highways during rush hour congestion around San Francisco, which has a well-developed multimodal public transit system, says something about what sacrifices people are and are not willing to make. The creativity of an employee using local knowledge about what kind of mass transit would be attractive enough to give up the freedom of an individual car, however, resulted in a solution that succeeded in reducing traffic and improving the commute of over a thousand employees.

"Google, the Mass Transit Operator?"

Helft's *New York Times* article on the Google employee shuttle compares Google to a municipal transportation system on par with services like the BART (Bay Area Rapid Transit) public train network. With more companies following Google's lead in cities around the country, these corporate transit systems raise interesting questions for municipalities, including:

- How will corporate transit systems affect route management and ridership for public transit systems?
- How can corporate and public transit systems coordinate effectively to increase mobility in urban areas and discourage single-driver cars from entering congested urban areas?
- How should neighboring companies coordinate with each other to reduce redundancy?
- How can metropolitan transportation authorities help initiate and support a dialogue of all complex transit systems, both public and corporate, in a given area?

Demand Responsive Transit

In mass transit terms, The Google employee shuttle service is a form of "demand responsive transit" (DRT), which is defined as "an advanced, user-oriented form of public transport characterised by flexible routing and scheduling of small/medium vehicles…operating in shared-ride mode between pick-up and drop-off locations according to passengers needs" (managenergy.net). However, unlike most DRT services, such as Drin Bus in Genoa, which have many pick-up *and* drop-off points, the Google employee shuttle collects passengers from many pick-up points to bring them to one end-point (and vice versa at the end of the day). This model of shared transit brings up interesting questions about the multipurpose design of most public transportation as well as the responsibilities of private transportation systems. For example, should there be more DRT public services with multiple pickup points in residential areas and a designated end point in business areas? Also, should Google's transit service take into account employee's personal needs by having pick-up/drop-off locations convenient to running errands on the way to or from work? Could companies and/or municipalities share transit system costs and reduce traffic congestion by coordinating with local retailers, banks, or other commercial services?

Modern Company Towns

One of the more interesting side effects of the Google employee shuttle can be seen in the housing market. The shuttle has been so popular that employees have started moving to new neighborhoods to better take advantage of the shuttle services. For example, Miguel Helft reported in a 2007 *New York Times* article that the number of Google employees living within walking distance of the shuttle's Pacific Heights stop grew from 15 to 60 in 2 years (from 2005 to 2007). Helft also interviewed an employee who waited until there was a shuttle stop near his house to apply to work at Google. Moreover, shuttle service is not the only new corporate trend affecting housing choices; for example, the company Facebook gives employees who live within a mile of the company campus in Palo Alto a $600/month subsidy (Helft, 2007).

As transportation and housing subsidy programs have started to change the distribution of employees' residential choices, they have also had the side benefit of making employees each other's neighbors. This not only brings back a sense of community reminiscent of times before long car commutes to work were the norm; from a more purely functional perspective, it also means that traditional car-sharing schemes – for example, carpooling or "slugging," which is the term for un-planned pickups of commuters from bus stops who are going to the same company – suddenly become time effective. Shifts in employee residential patterns could also create interesting telecommuting options, where coworkers living in the same neighborhood could work together at local coffee shops or each other's houses instead of going into the office every day. (See, for example, the Minneapolis ROWE initiative to reduce traffic congestion through telecommuting.)

Works Cited and Sources for Additional Information:

Farivar, Cyrus. "Apple Launches Employee Shuttle This Week." *MacUser.* 25 October 2007. Accessed on 23 July 2008. http://www.macuser.com/apple/apple_launches_employee_shuttl.php

Google Employee Benefits: http://www.google.com/support/jobs/bin/static.py?page=about.html&about=eng

"Google – Silicon Valley's Latest Transit Operator?" *Clean Motion: A Publication of the Environmental and Energy Study Institute*. April 2007. Accessed on 23 July 2008. http://www.eesi.org/publications/Newsletters/CleanMotion/CM_April07.htm#News

Helft, Miguel. "Google's Buses Help Its Workers Beat the Rush." *The New York Times.* 10 March 2007. Accessed on 23 July 2008. http://www.nytimes.com/2007/03/10/technology/10google.html?_r=1&oref=slogin

"How to Treat Your Employees by Google." *MarvQuin.* 20 October 2007. Accessed on 23 July 2008. http://www.marvquin.com/blog/how-treat-your-employees-google

Linden, Greg. "Google Perks Pay for Themselves." *Geeking with Greg: Exploring the Future of Personalized Information.* 10 March 2007. Accessed on 23 July 2008. http://glinden.blogspot.com/2007/03/google-perks-pay-for-themselves.html

Mengisen, Annika. "Green for Good." *TheStreet.com.* 20 April 2007. Accessed on 23 July 2008. http://www.thestreet.com/print/story/10351169.html

Michaels, Philip. "Twenty Percent Solution Works Wonders at Google." *itbusiness.ca.* 20 May 2008. Accessed on 23 July 2008. http://www.itbusiness.ca/it/client/en/home/News.asp?id=48442

"Provide Company-Run Transit for Employees." *Environmental Defense Fund Innovations Review.* 19 May 2008. Accessed on 23 July 2008. http://www.edf.org/page.cfm?tagid=1376

Queru, Jean-Baptiste. "Google Bus." JBQ's Blog. 12 November 2007. Accessed on 23 July 2008. http://jbq.livejournal.com/143094.html

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