



# SMARTFUTURE

## COMMUTING ALTERNATIVES FOR SHA EMPLOYEES



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## **EXECUTIVE SUMMARY**

### **Problem:**

We hear day in and day out about rising oil prices, threats to the safety of the environment, and traffic accidents caused by congestion. We are told to reduce our emissions and erase our carbon footprint through recycling, turning the lights off and using our cars less. Baltimore as a city has stepped up to these efforts and almost 20% of workers take alternate means of transit to work. Efforts are being made across the nation to reduce the human impact on the environment, but what about here at the State Highway Administration? There are signs around the building encouraging employees to turn lights off and there are recycling bins around every turn, which are all important. But, after conducting a survey of all SHA employees at the Baltimore headquarters, we were shocked to find that a mere 12% of employees use an alternate means of transit to get to work. This number is low and indicates a deeper problem at the SHA. SHA has no incentives for taking public transit and does not advertise the current programs in place. This means that employees don't know about the alternate options they have for transit and thus, do not use them. Rather, SHA is introducing close to 170,000 lbs of carbon dioxide into the atmosphere every week.

### **Our Groups Mission:**

To create a program that would effectively and efficiently reduce the number of SHA employees who drive to work.

### **Solution: SmartFuture**

SmartFuture is an umbrella program that will roll several policies into one uniform effort. These policies will change how employees get to work, and will include options for (1) subsidized public transportation, (2) a ridesharing service, (3) telecommuting and/or teleconferencing, (4) a compressed workweek, and (5) parking reorganization. In addition to these immediate policies, promotional events will be held between departments for participation. Contests such as a bike to work day will encourage employees to take action. Rewards such as gift cards, bonuses, or awards ceremonies will be handed out to those that use smart options to commute. Additionally, SmartFuture will include provisions to increase the publicity of current SHA programs designed to reduce the number of solo drivers.

This program will work because it will utilize in place infrastructure and build upon existing programs. This means the costs for this program will be relatively low, while the benefits will be high. There are intangible benefits that may have greater implications. Other sectors of the government and private companies may be able to use the SHA model in their own management structure. In addition, this program may lead to greater acceptance of alternative transportation and work schedules – changes which may become standard in the future.

## INTRODUCTION OF PROBLEM

When the six of us sat down to discuss this policy paper, we all jumped to the same problem: the environment is in trouble. While an important problem, it was too broad to attack in a short policy paper written over just a few weeks. In talking to fellow coworkers, we stumbled upon another problem: the majority of people we talked to drove to work. All six of us take another form of commuting, mostly public transit, to work most days of the week, so why couldn't these SHA employees do the same? Why did it feel like no employees at the SHA used other means of transit? To test our theory that use of transit and other means of commuting were low at the SHA, we conducted a survey. With the help of the Office of Real Estate's IT team we sent a survey to all SHA employees at the Baltimore headquarters asking them a few simple questions: Do you drive to work? If yes, how far? Do you carpool? Why don't you take public transit? And if no, how far away do you live? How do you get to work? Do you carpool? Of the 1000 employees working at the SHA headquarters, we got a response rate of over 25%. We compiled the data from this survey and found that only 12.3% of SHA employees do not drive to work. We investigated what percentage of Baltimoreans take public transit and found that, according to the National Cooperative Transportation Research Program, 19% do, more than at the SHA<sup>1</sup>. Thus, we came across our problem: SHA employees do not take advantage of alternate means of commuting to the Baltimore headquarters office. SHA is located in an area that is clearly accessible via public transit, bike, and foot, yet the majority of employees still drive to work, even from distances of under 5 miles.

As a large agency, the lack of public transit use produces a myriad of effects. The roads become congested as more people drive into Baltimore and more greenhouse gasses are released into the atmosphere. With over 1000 SHA employees commuting into Baltimore every day, that's about 870 cars that are being driven by SHA employees. That's 870 cars crowding the highways and roads that are all SHA employees. That means that every week, SHA alone produces approximately 167,000 pounds of carbon dioxide<sup>2</sup>.

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<sup>1</sup> National Cooperative Highway Research Program

<sup>2</sup>Equation #1

That is more than .007% of Baltimore's carbon emissions. This may not sound like a lot, but this is a significant amount for a single office of an agency to produce and effects more than just the SHA or even Baltimore. The lack of use of public transit and alternate methods is a problem within SHA that spreads to the Baltimore community and environment.

The League of Conservation Voters just gave Maryland an A- for Maryland's efforts to improve the health of the environment<sup>3</sup>. This is certainly a commendable achievement, but within the SHA, there is little sign of that work. We have no doubts that other state agencies are making efforts to reduce their impact on the environment. Some of that can be seen here at the SHA with recycling bins and reminders to turn the lights off when employees leave. But, this effort is not shown in terms of transportation. SHA employees simply do not use alternate means of transportation as much as other agencies do and as much as they arguably should. While Maryland residents have made efforts to reduce emissions and improve the environment, the same effort cannot be seen at the SHA. This means that while Maryland might be improving as a whole, as shown by the grade given by the LCV, the SHA, a leader in transportation, had little to do with those improvements. It should be the duty of the SHA to be an example to other organizations and to the state as a whole to keep improving the environment and to make real progress in Maryland.

## CAUSES

What makes public transit and other alternate means of commuting unattractive to SHA employees? Of the 87% of employees who drive to work, 43% said the reason they do not take public transit is that "public transit is inconvenient". From personal conversations with employees, we have learned that the buses getting into Baltimore often take longer than driving would and for those that can't ride for free, are often more expensive. Buses do not arrive on time and some employees mentioned that bus drivers

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<sup>3</sup> Maryland League of Conservation Voters.

will simply skip stops they don't like along their route. This leaves hundreds of workers without a reliable way of getting to work. Another employee described being on a bus that broke down on the highway and waiting upwards of two hours for the next bus with room to come along. For commuters who have jobs and often other obligations after work, waiting two hours for a new bus on the side of the highway is simply unacceptable. The appeal to take public transit is low when it is clear that taking the bus does not ensure that one will get to work on time. In this day in age, when punctuality is valued above most other traits and the workforce is more competitive than ever, workers simply cannot afford to be half an hour late to work because of bus problems.

But what about other forms of commuting? In the survey we conducted, 0% of employees bike to work. Biking would be an easy option, especially for those living within 10 miles of the headquarters. Baltimore is relatively flat city, so biking is made even easier. But, SHA employees don't seem to ride their bikes. One reason is that Baltimore as a city has not had extensive exposure to bikes, which means that drivers don't know how to drive with bikers. Efforts have been made by the city to make drivers more aware of bikers, which have increased riders across Baltimore, but clearly not within SHA. Employees, should they choose to ride their bikes, have no secure place to store their bikes. Biking is not encouraged by SHA as a whole. For many employees biking might not even be considered an option.

For those that find public transit too inconvenient and do not want to ride a bike, the other options out there are still not being taken advantage of. Of the employees who drive, only 8% carpool. Baltimore and the surrounding areas are not so vast that carpooling is impossible, so what makes it unappealing? One reason is that there is no organized system within SHA to help employees with carpooling. Vanpool groups in Illinois and Washington State have proven to be very effective in both saving money and encouraging employees to commute together. There is no such program at SHA that would make it easy for employees to travel together.

A general theme across these various causes for the problem here at the SHA is ease and convenience. Driving is just easier for many employees and since parking is free at the SHA, there is little incentive not to drive. Driving is simply easier for SHA employees, which is why there is such an attraction to driving. But, this is clearly not a global problem, as people all over the US and world regularly use public transit. One root of the problem within the SHA is the lack of encouragement to use alternate methods and the lack of training on how to use alternate transit. Alternate means of transit are not encouraged at SHA—parking is free, there is no bike program, and not all SHA badges get employees free transit. The main reason why SHA employees use public transit at levels below those of Baltimore and of the US as a whole is because SHA employees are not made aware of the options available to them.

#### **CURRENT SHA PROGRAMS TO REDUCE EMISSIONS**

The SHA currently uses four methods to reduce driver emissions from its employees:

- **Free Public Transit-** All MDOT employees are entitled to free transportation on MDOT-operated transit.
  - Positives
    - Often encouraged as an alternative to get to work, the light rail, subway, and bus system are readily available to those living in the immediate area to get to work. By making this service free, MDOT further increases the appeal of public transit.
  - Negatives
    - For those not in the immediate area, this solution's impact is minimal. The free transit benefit does not apply to commuter buses or the MARC train service.
    - Mass transit is notorious for being unreliable and does not offer service to all locations.
    - SHA Badges to not get all employees onto public transit for free and often bus drivers don't accept the SHA badge.
- **Telecommuting-** Rather than working in their central office, employees are given the ability to work either at home or a satellite work station.
  - Positives
    - Reduces congestion and emissions by removing the commute either partially or all together.
  - Negatives

- When an employee is not present in the office, communication with coworkers can break down.
  - Not all employees qualify for the program.
- **Compressed Workweek-** Employees work four 10-hour days during the workweek in lieu of the typical five 8-hour days.
  - Positives
    - Similar to telecommuting, a compressed workweek allows an employee to travel to the office less than they would normally in a five-day week.
    - Unlike telecommuting, the employee is physically present in the office for the 40 hours they work.
    - Similar programs have been implemented in Utah as well as in Howard County, Maryland.
  - Negatives
    - With the majority of employees present for five days, having a coworker present for only four days can still pose an inconvenience.
    - Again, not all employees qualify for this work schedule.
- **Ridesharing-** The new term for carpooling.
  - Positives
    - SHA maintains almost 100 park-and-rides throughout the state, all are free.
    - Reduces gas consumption by all members of the carpool when taking turns driving.
    - Less congestion in the parking lot, and special spaces available close to the building for those who do carpool.
  - Negatives
    - There is currently no way to easily find coworkers who live near you other than by personal knowledge and asking in person.
    - Many of the park-and-ride facilities are filled at or near capacity.

A common element of all of these alternatives is that they are not advertised to employees. For this reason, many of these initiatives have failed to catch on, in addition to the inconvenience some of the choices offer. For commuters with outside commitments such as children or medical appointments, the idea of carpooling or using public transportation is not always a realistic option. It is essential that any program, alone or in collaboration with other programs, requires a significant portion of participants or it will not be successful. Therefore, if MDOT and SHA are serious about reducing the number of employees who drive to work alone on a daily basis, it

must campaign for a multitude of programs to attract the greatest amount of people possible.



“Commuting alternatives leading to a brighter future”

Increasing the use of alternate means of commuting to reduce the emissions SHA produces is the key to the SmartFuture program. SmartFuture is an umbrella program, which includes alternatives, incentives, and implication. This program will help the employees of SHA headquarters to understand that they as individuals can make a difference. The employees have to start by changing their daily habits in order to make a better, smarter future. This program encourages commuting by alternatives such as public transportation, carpooling, and cycling. For those who do not have commuting alternatives, the program encourages options such as telecommuting, compressed workweeks, and flex time.

SmartFuture would start with recruiting employees into the program. Those who are interested in changing their daily commute and reducing their emissions will have the option of joining the program. The employees will be given a test, asking “Do you have a commuting alternative to driving?” Than a specific transportation alternative will be compiled for each person in a database called the Alternative Finder. This can range from finding the fastest bus route to finding others in that employee’s area to carpool with. The second part of SmartFuture is the encouragement phase. The group of employees will be broken up into two: those that have commuting alternatives and those that don’t. The employees that do have other means of transportation will be encouraged to use these forms of transportation through incentive programs. Not all employees, for whatever reason, can use alternate means of transit, but this program offers them other options. The employees that do not have the means to use other forms of transportation will be encouraged to use compressed workweeks, telecommuting and flex time. A small fee

every month will be charged for the parking areas around the building and in the lot under the Jones Falls Expressway. This will help to offset the costs of the program.

The program is broken up into a number of phases:

**Recruitment Phase:**

- Sending out e-mails about Smart Future and the benefits to the employees
- Flyers advertising program and how to get involved.
- Information meetings (projections, individual benefit)
- Posting the SmartFuture motto around the building

**Screening Phase:**

- Only those employees who are dedicated to changing their commuting habits will be allowed to participate in this program.
- No preference will be given to those employees who can use alternate means of transit as this program aims to help all employees.

**Alternative Finder:**

- Design of a website set up to find carpool options for employees
- MTA, METRO, light rail schedules and a trip planner to work out fastest routes

**Incentives:**

For people who can take other forms of transportation:

- Reward employees with points that can be accumulated and exchanged for a gift card for taking public transit or carpooling.
- Having competitions between departments and giving rewards for achieving certain criteria.
- Bike to Work Day, with designated indoor bike areas
- Carpool cars do not pay a fee to park
- Subsidizing MARC train tickets
- Vanpools (SHA)

For people who cant take other forms of transportation:

- Forgivable loans: employees are given \$5,000 to buy a vehicle that gets 40 miles per gallon. Employees do not have to pay back any of the money if they stay with SHA for 5 years, a certain amount is forgiven each year.

- Helping employees buy renewable energy credits to offset their emissions.

**Implementing:**

- Use the Department of the Environment to head the program, and set up the program in order to reduce those emissions. This person would also keep track of transportation and who is taking alternatives.
- Nominating an employee as the coordinator for SmartFuture, and to form a working group. This working group would be comprised of employees that are interested in alternative forms of transportation.
- Using the Human Resources Department to organize and implement the program.
- Purchasing bike storage lockers for employee use
- Have half-yearly seminars on how to reduce one's environmental impact led by environmentalist expert.
- Charging for parking will not only bring in revenue but will further encourage employees to use alternate forms of transit.

An important component of this program is to use the programs that already exist at SHA and make them accessible to employees. Many employees have never heard of the programs mentioned earlier in this paper. Many of the goals of SmartFuture can be met by increasing visibility of the existing programs at SHA. The framework for the solutions exist but have not been put to use. With SmartFuture, those solutions will be put to use.

An additional aspect of the program is the publicity. A goal of SmartFuture is to have an impact not only on SHA, but also on the surrounding community. If SmartFuture can impact Baltimore as a whole and influence commuting choices in the community, then it will be successful. But, this can only happen if the program and its results are heavily advertised to the public. With the right publicity, SmartFuture can make the SHA an example for Baltimore and other cities to follow.

**PROJECTIONS**

The first year of the program would be a pilot program with at least 200 people participating. After the first year if it is at least 30% successful then it should be expanded into its own department, and should be pushed to every SHA district, with at least 1,000 people participating. If that is at least 50% successful within two years, it should expand into all of the MDOT departments and given a department in MDOT headquarters.

There would also be some concrete projections and benefits from this program. As mentioned earlier, the SHA currently produces close to 170,000 pounds of carbon dioxide a week. That is significant for a single agency. We calculated, based on the same figures used in the equation, what the effect of this program would be. To be conservative, we estimated that approximately 200 employees would participate in the first phase. If those 200 employees drove to work only three days a week and used an alternate means of transit the other two days, the SHA would reduce its carbon dioxide emissions by 15,200 pounds in a single week. If those 200 employees were to stop driving all together, the SHA would reduce its carbon dioxide by an impressive 38,000 pounds in a week<sup>4</sup>. This is equivalent to planting over 100 trees a week in Baltimore<sup>5</sup>. This means that in a year, the SHA could make a very positive impact on the Baltimore community. With this kind of success, we have no doubts that SmartFuture will be used as a model for other state and government agencies. Eventually, we want SmartFuture to be a model for the state of Maryland and perhaps even beyond Maryland. We project that this program will be incredibly successful and thus be able to make the impact we are imagining.

## **SIMILAR PROGRAMS**

There are programs like this one across the world and nationally that have been proven effective. A Tale of Two Cities: Workplace Travel Plan programs in Melbourne and Perth by the 30<sup>th</sup> Australasian Transport Research Forum Used a program called Travel Smart. This program was also a recruiting process that focused on the biggest return possible. The program outlines and compares these two cities in Australia. The data is

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<sup>4</sup> Equation #2

<sup>5</sup> American Forests

good and proves that the program has worked. Melbourne had 166 employees recruited into the program and 40% of that completed the program. They ended up reducing solo commute by 10%. At Perth 31 employees, where recruited into the program 97% of them completed the program. They also ended up reducing solo commute by 10%.<sup>6</sup>

The Texas Commission on Environmental Quality is also encouraging solo commuting. The campaign is called the Texas Clean Air Challenge. So far, three state agencies have come on board with this challenge. The challenge promotes that voluntary use of vanpools, car pools, public transit, biking, teleworking, walking, and flexible work schedules. Commissioner Jerry Patterson of the General Land Office stated: "This is a small step, but a simple, common-sense solution that I encourage others to consider."

Of the 3,000 employees at the TCEQ headquarters and regional offices, about 10 percent participate in at least one commuting option. The TCEQ's car pools and vanpools remove more than 100 vehicles from Central Texas roadways each day. Last year, teleworking employees accounted for 200,000 fewer miles traveled or 80 tons of emissions. Employees who worked a compressed schedule (usually a 10-hour, four-day workweek) eliminated 300 vehicles from local roadways each week<sup>7</sup>

## **COST**

Cost concerns are of course, a major consideration. What will it cost to implement SmartFuture? Recruitment, alternative finder, incentives, and implementation will all carry some expenses. We have calculated the different elements of our proposal and we believe that a one-year pilot program can be implemented at the SHA headquarters for \$25,000. We arrived at this number by calculating the following expenses.

<b>Expenditures</b>	
Web pages for promotion and carpool finder	\$7,000
20 bike lockers	\$26,000
4 forgivable car loans	\$20,000

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<sup>6</sup> Wake, D; *A Tale of Two Cities: Workplace Travel Plan programs in Melbourne and Perth*. (2002)

<sup>7</sup> Texas Commission on Environmental Quality (2007)

2 training seminars per year	\$2000
Rewards and gifts	\$2,000
Promotion (materials)	\$1,000
Other Cost	\$5,000

**Revenue**

Parking lot fee (\$75.00 per year)	\$37,500
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**Total Cost = \$25,500<sup>8</sup>**

This cost is less than one year’s salary for many SHA entry-level employees. SmartFuture is inexpensive and practical, in large part, because many of the programs are already in place. Free public transit, telecommuting, compressed workweek options, and ridesharing are already implemented here at SHA. Through additional, incentives, advertising, and initiatives, our policy will increase the use of commuting alternatives here at SHA and create a culture in which all employees are more conscious of their carbon footprint.

A point to stress is that while there are some costs to this program, minimal as they may be, the outcome is worth the costs. Clearly this program will make a positive impact on the environment—the reduction in carbon emissions is obvious. That is one main goal of this program, but another is to make an impact on the practices of MDOT and of Baltimore. Should this program be successful in the way we imagine it being, the positive impact on MDOT and Baltimore will more than make up for the costs of this pilot program. Over time, more than just SHA will change and the entire state of Maryland will benefit.

**HANDLING PROBLEMS THAT MAY ARISE**

Implementing a new policy is bound to raise questions and concerns. Office communication, personal limitations to alternative transportation, attitudes toward the policy, and costs concerns are all issues that may arise when considering our policy. SmartFuture addresses these issues. We believe our policy will actually improve office

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<sup>8</sup> Equation 3

efficiency while striving to meet the transportation needs of all its workers. Additionally, many of the alternatives presented in our package already exist here at SHA, reducing the start-up expense. One of the advantages of SmartFuture is its realization that good alternatives already exist here at SHA; they simply need a promotional boost to make them more effective. This structural head start to our program makes it inexpensive and practical.

Altering work schedules through telecommuting and a four day work week raises concerns about inter-office communication and efficiency, as scheduling adjustments may create a shake-up of schedules. Although this scenario could potentially hurt inter-office communication, we believe this concern is easily remedied through email communication and the systemization of material exchange.

In the office, there are basically two types of communication – exchange of information and the exchange of hard copy data and materials. Information exchange can easily be accomplished through email. Studies show that email is the most efficient and preferred method of communicating in the workplace.<sup>9</sup> Exchange of hard data and material will occur at designated drop-off / pick-up locations. The systemization of material transfer could improve overall efficiency, as material exchange often consists of tracking people down numerous times during the day to get what is needed. With a system in place, no such time will be wasted.

Equal access to commuting options is another legitimate concern. In since people have different lifestyles and needs, not every alternative will be available to every employee. For example, some parents may not be able to carpool because they have to coordinate rides for their children. SmartFuture’s holistic approach of promotion, educating employees on their options, and expansion of the transportation opportunities aims to provide every employee with at least one alternative commuting option. With SmartFuture’s implementation, employees not participating will be easy to identify and

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<sup>9</sup> BizReport

poll, enabling the program to further develop ways to offer alternative options to every worker.

One final question any new policy raises is how it will be received by the employees. Addressing this question is crucial because employee attitude is important for creating a work culture in which employees are happy and productive. SmartFuture's addition of a parking space fee is bound to upset some employees at first. However, with proper promotion, and an increase of the alternative transportation methods available to each employee, we feel that employees will appreciate their new options enough to accept the new fee.

## **CONCLUSION**

The belief that government can guide its citizens through challenging issues is an ideal, to which, every government agency should aspire. Pollution from carbon emissions is one of the most challenging issues of our time. Unfortunately, solutions such as heavy rail are often not economically viable. This is especially true in our current economy.

SmartFuture's practical approach rises to the challenge of this complicated problem. Our innovative policies offer the SHA an opportunity to thrive as leaders in responsible transportation during a time of economic and environmental uncertainty. Moreover, as SHA employees striving to improve our transportation network, it is incumbent upon us to minimize the negative impact of transportation on the environment by setting an example of responsible commuting. In this way, we are leading the people we serve in both policy and practice.

## BIBLIOGRAPHY

- 1) Maryland League of Conservation Voters:  
[http://www.mdclc.org/index.php?option=com\\_content&task=view&id=799&Itemid=90](http://www.mdclc.org/index.php?option=com_content&task=view&id=799&Itemid=90)
- 2) National Cooperative Highway Research Program, Transportation Research Board, David Friedman, National Research Council (U.S.). Transportation Research Board, Delma Bratvold, American Association of State Highway and Transportation Officials, National Research Council (U.S.), Stephen Lockwood. Published 2005. [Transportation Research Board](#)
- 3) American Forests: <http://www.americanforests.org/resources/ccc/>
- 4) (2007). *Commute Solutions: State agencies want the solo commuter to consider alternatives*. Retrieved July 28, 2008, from Texas Commission on Environmental Quality Web Site: [www.tceq.state.tx.us](http://www.tceq.state.tx.us)
- 5) Wake, D; Meiklejohn, D (2002). *A Tale of Two Cities: Workplace Travel Plan programs in Melbourne and Perth*. Retrieved July 10, 2008, from TravelSmart a better way to go Australia Web Site: [www.travelsmart.gov.au/](http://www.travelsmart.gov.au/)
- 6) BizReport:  
[http://www.bizreport.com/2007/09/email\\_overtakes\\_telephone\\_in\\_workplace.html](http://www.bizreport.com/2007/09/email_overtakes_telephone_in_workplace.html)

$$\text{Equation \#1: } \frac{870 \text{ cars}}{\text{day}} \times \frac{34 \text{ miles driven}}{\text{day}} \times \frac{\text{gallon}}{17 \text{ miles}} \times \frac{5 \text{ days}}{\text{week}} \times \frac{19 \text{ lbs of carbon}}{\text{gallon}} = 168,300$$

\* Numbers derived from survey and from the Environmental Protection Agency:  
<http://www.epa.gov/oms/climate/420f05001.htm>

Equation #2:

200 cars driving only three days per week:

$$\frac{200 \text{ cars}}{\text{day}} \times \frac{34 \text{ miles driven}}{\text{day}} \times \frac{\text{gallon}}{17 \text{ miles}} \times \frac{3 \text{ days}}{\text{week}} \times \frac{19 \text{ lbs of carbon}}{\text{gallon}} = 122800 +$$

122800 = 150100 which saves 15200 pounds a week.

$$\frac{670 \text{ cars}}{\text{day}} \times \frac{34 \text{ miles driven}}{\text{day}} \times \frac{\text{gallon}}{17 \text{ miles}} \times \frac{5 \text{ days}}{\text{week}} \times \frac{19 \text{ lbs of carbon}}{\text{gallon}} = 127300 \text{ this}$$

saves 38000 pounds per week

200 cars stop driving

Equation #3:

$$\text{For web pricing: } \frac{\$200^*}{\text{webpage}} \times 10 = \$2000 + \frac{\$20^*}{\text{hour labor}} \times 250 = \$5000$$

\* Information found at <http://webpages4u.net/rate.htm>

$$\text{For bike lockers: } \frac{\$1300^*}{\text{locker}} \times 20 = \$26000$$

\* Information found at <http://www.parkabike.com/productDetails.aspx?SeriesID=12>