Journal of Environmental and Resource Economics at Colby

Volume 2
Issue 1 *Spring 2015*

Article 10

2015

Cost Benefit Analysis of Café Standards compared to the Alternative Fuel/Carbon Tax

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Cover Page Footnote

I am grateful to Sahan Dissanayake, professor at Colby College, for his guidance through this research, the Environmental Protection Agency for providing much of the needed data to perform this analysis and my peers who helped me review and edit my research

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1. *Introduction*

The goal of this study is to perform a cost-benefit analysis on the new Café Standards and the alternative fuel tax. The Café Standards stand for Corporate Average Fuel Efficiency and were put in place by congress in 1975, following the oil embargo in 1973. The goal of the Café Standards were to improve the mile per gallon efficiency of American made cars in the hopes of reducing gas consumption drastically. Furthermore, this would reduce greenhouse gas emissions, specifically co2, and improve the environment greatly. Originally the Café Standards required changes to cars that improved their fuel efficiency greatly; however, those standards have not changed up until recently. On August 28th 2012, President Obama announced, "groundbreaking standards that will increase fuel economy to the equivalent of 54.5 mpg for cars and light-duty trucks by Model Year 2025" (Whitehouse.gov). This number would essentially double the current 27-mpg standard that is currently in place. Now, this is not to say that, by 2025, every car must average 54.5 mpg or greater, but rather all the cars manufactured by each company must average this number. Ultimately, the Café Standards are in place to improve fuel efficiency of the cars in the United States, which should lead to reduced greenhouse gas emissions, reduced dependency on foreign oil, incentives to switch to alternative fuel sources and potentially savings for the consumers (Whitehouse.gov).

On the other hand, there are several opponents to the Café Standard and several supporters of a fuel/carbon tax. The supporters of this tax claim that the tax will solve all of the environmental issues associated with the Café Standards immediately and will in fact have a greater benefit for all parties involved. Many supporters of the gas tax use Europe as a perfect example of a place that essentially already has this tax in place. According to Tim Worstall of Forbes, "A quick look around the world will show that the fuel efficiency in Europe is much higher than it is in the US. It isn't just that Europeans live in smaller countries and drive less: less fuel is used for each mile driven as well. And yes, gas is much higher in price in Europe than it is in the US. Where I am today, around $1.70 or so a litre, or roughly $6 a US gallon" (Forbes.com). Worstall goes on to say, "decades of higher gas prices have led to manufacturers producing more efficient engines and to consumers preferentially purchasing small engined cars. Gas taxes work, we know that very well indeed" (Forbes.com). The main point Worstall attempts to make is that a higher gasoline price (caused by a fuel tax) will reduce greenhouse gas emissions just as much as the Café Standards, will cost less than imposing the

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Café Standards and will impose a natural transition of consumer choice toward more fuel efficient vehicles.

The purpose of this research is to perform a cost benefit analysis of the Café Standards and the alternative Fuel Tax. Both of these methods have similar goals; however, the ways these policies achieve their goals vary greatly. By performing a cost benefit analysis on both these techniques we can determine which policy is more cost effective, better for the environment and which policy is more realistic.

2. *Literature Review*

To better understand the benefits and the costs associated with the Café Standards and Fuel Tax several pieces of literature were analyzed.

The Office of the Press Secretary at the Whitehouse, announced through their article *Obama Administration Finalizes Historic 54.5 MPG Fuel Efficiency Standards,* the new policy of 54.5-mpg efficiency for cars by 2025. However, this article did more than simply announce the new policy, but it provided several reasons and projected outcomes of the new Café Standards. According to the article, "the Café Standards will save American families more than $1.7 trillion dollars in fuel costs, resulting in an average fuel savings of more than $8,000 by 2025 over the lifetime of the vehicle" (Whitehouse.gov). Furthermore, the article does not give precise details on the numbers, but rather claims that the increased mpg restriction will result in drastic decreases to greenhouse gas emissions of about 6 billion metric tons (Whitehouse.gov). Furthermore, the article talks about incentives the program offers to switch to new alternative fuels. Essentially, car manufactures that sell electric, natural gas or any alternative fuel vehicles will be given credits that effectively allow them to achieve a lower mpg efficiency for their vehicles by 2025 (Whitehouse.gov). The hope of this credit-based program is to increase incentives to switch to alternative fuels and increase the amount of electric and hybrid vehicles on the streets. Given that the Whitehouse released this article, it is obvious that the article would only focus on the benefits of the program as supposed to some of the potential pitfalls and costs associated with this policy. While my research does not necessarily look at these incentives, my research does focus on the negative factors of the Café Standards, along with the benefits.

In an article by Tim Worstall, *A Gas Tax Is Much, Much, More Efficient Than The CAFE Standards So Why Have We The CAFE Standards?,* the author attempts to prove why the fuel tax is a better alternative to the Café Standards.

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He bases most of his analysis off of research performed by Valerie Karplus at the MIT Joint Program on the Science and Policy of Global Change. Based on Karplus's research, Worstall argues that a fuel tax will be anywhere from 6-14 times cheaper than the Café Standards. The main point of his argument is that "If we do need to ration something (here, it's gas consumption that we're trying to ration) then it's well known that the most efficient form of rationing is through price. It might not be the most equitable method, this is very true, but it is the most efficient method" (Forbes.com). Essentially, Worstall argues that the Café Standards would undoubtedly increase the mile per gallon efficiency of vehicles on the road; however, this would only encourage increased driving, based on the price elasticity of demand on gasoline. In other words, the cheaper a mile costs per gallon will essentially lead to the driver spending more time driving on the road, as supposed to a fuel tax, which would incentivize consumers to "buy fuel efficient vehicles, adopt biofuels if they are cost-effective, and sharply curtail travel in both new and used vehicles" (Forbes.com). The Forbes article continues to support it's research by looking at Europe as a prime example of this process. In Europe, gas costs around $6.00 per gallon, which is almost double the cost in the United States. This has been the case in Europe for several years and as a result, consumers are incentivized to purchase more fuel-efficient vehicles, as well as decrease their driving greatly. Furthermore, a fuel tax would see results on new and used cars immediately as supposed to the Café Standards, in which results would not be apparent until 2025 or later. As a whole this research is extremely similar to the research in this paper; however, my research will provide realistic benefits and costs on the Café Standards along with a more in depth cost benefit analysis of the Gas Tax based off the price elasticity of demand on gasoline.

Nicolas Loris and Derrick Morgan wrote an article, *Cap-and-Trade for Cars Means Higher Prices and Less Choice for Car Buyers* for The Heritage Foundation, in which they compare the fuel efficiency standards imposed by Barrack Obama and compare them with a fuel tax alternative. The driving force behind this article is the fact that, "according to a poll by the American Energy Alliance, fuel economy is already the top consideration when consumers consider buying a new car. If consumers value saving money on gasoline, they will simply choose to purchase more fuel-efficient cars, and automakers will meet that demand without a federal mandate. Artificially raising the price of vehicles by an average of several thousand dollars hurts buyers" (Heritage). Therefore, the article goes on to say that the Café Standards are completely unnecessary and will only hurt buyers and producers because of the increased price of cars due to the government

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restrictions. Furthermore, consumer choice and safety will be greatly reduced according to this article. The stringent Café Standards will cause manufactures to produce lighter, more fuel efficient vehicles and less "gas-guzzlers", which will in turn decrease overall car safety and limit consumer's choice (Heritage). Loris and Morgan conclude the article by arguing that the market will naturally meet all the goals of the Café Standards on its own, without interference of the government, through a fuel tax. Essentially, the fuel tax will on its own will cause consumers to purchase more fuel efficient vehicles and decrease driving overall and this will not have an effect on consumer choice or pricing of cars. This literature is also very similar to my research; however, my research will delve deeper into the benefits and costs of the Café Standards as supposed to just focusing on the positives of a fuel tax.

3. *Methods*

In order to properly determine which of these two strategies will achieve the best outcomes, we must perform an intensive cost-benefit analysis on both of the policies.

Café Standards

A) **Benefits**- Determine the amount of miles per gallon savings each type of car will achieve through this policy along with the environmental benefits achieved through greenhouse gas reduction.

1) Savings at Gas Pumps

Arguably the most cost-beneficial part of the Café Standards is the amount consumers will save at the gas pumps while driving more fuel-efficient vehicles. The Obama administration previously estimated that people would save an average of $8,ooo dollars at the gas pump per vehicle based on the 54.5-mpg average put in place in 2025. However, this assumes that a car will last that persons entire lifetime and assumes that gas prices would remain relatively high (around $3.71 in 2012) (UsaToday.com). As of present day (2015), gas prices have already dipped to $2.94 on average (Time.com). Therefore, for this research we will assume the average of the two and determine the savings people will achieve with a $3.32 average of cost of gasoline per gallon. Furthermore, according to usatoday.com, roughly 210 million people in the United States drive a licensed car under the current 27-

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mile per gallon average. Compared with the Huffington Post's data that says Americans spend about $2,000 dollars per year on gasoline, we can determine that Americans purchase 611.62 gallons per year. $2000 per year on gasoline/$3.32 cost per gallon=611.62 gallons per year purchased. Based on this number we can determine how many miles each driver spends on the road by multiplying 611.62 gallons with the 27-mpg average. 611.32x27=16,505.64 miles driven per year for each driver. The next step is determining how much it would cost to reach the miles driven per year with the new 54.5-mpg average. In order to get this number we can divide 16,505.64 by 54.5 mpg. 16,505.64/54.5=302.85 gallons per year purchased. Next we can multiply our gallons per year result with the cost of a mile per gallons. 302.85 gallons per year x $3.32 per gallon= $1,005.46 spent on gallons of gasoline per year. So based on these results we can determine that drivers who purchase cars that meet the 54.5-mpg average will save $994.54 per year in gas savings ($2000-$1,005.46). Then multiplying the amount each driver will save by the total amount of drivers we could determine the total savings per year throughout the United States.

$994.54 saved per driver x 210,000,000 drivers= $208,853,400,000 saved by every driver combined each year

This savings number will vary based on what type of car one purchases because not every car will meet the 54.5-mpg average. Several cars will average a mpg efficiency that is well under the 54.5-mpg average and this will decrease savings greatly, while some cars will achieve higher than the average and their savings will increase. Nonetheless, it is clear that the increased mpg averages in 2025 will cause great savings, in terms of how much money people spend at the gas pumps each year.

2) Environmental Benefit of Café Standards

The second benefit gained from the Café Standards is the amount of reduction achieved through the cutback in greenhouse gases. While burning gasoline produces several greenhouse gases, the most prevalent is carbon dioxide and my research will focus on co2. According to the Environmental Protection Agency, a vehicle produces 8,887 grams of CO_2 emissions per gallon of gasoline consumed (EPA.gov). Therefore using our data achieved from part 1 of the methods section we can achieve an estimate of how much co2 is

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emitted yearly by each vehicle. If we assume that each vehicle consumes 611.32 gallons of gasoline per year on average, we can multiply this number by the amount of co2 emitted per gallon.

611.32 gallons per year x 8,887 grams of co2 per gallon = 5,432,800.84 grams of co2 emitted each year per vehicle.

However, under the new 54.5-mpg average for 2025, drivers would only need to consume 302.85 gallons per year. Therefore we can achieve a new co2 emissions level based on the new policy.

302.85 gallons per year x 8887 grams of co2 per gallon = 2,691,427.95 grams of co2 emitted each year per vehicle

Based on the new 54.5-mpg average, drivers will emit 2,741,372.89 grams of co2 less per vehicle. (5,432,800.84-2,691,427.95=2,7741,372.89). According to these results, co2 emissions would be reduced immensely under this policy.

B) **Costs**- There are several costs associated with the Café Standards; however, some numbers are not quantifiable based on this research.

1) Increased Cost of New Vehicles

According to the Heritage Foundation, "Combined with the more stringent rules for 2011–2016, the new standards will increase the average cost of a new car by $3,000 by 2025 by the government's own account (Heritage). According to usatoday.com, in 2012 roughly 210 million people drive a licensed vehicle in the United States. However, clearly not all of these 210 million people will purchase a car each year. According to the NY Daily News, 15.6 million people purchased a new car in 2013 (NYdailynews.com). Assuming these numbers remain relatively consistent until 2025, Americans would lose 46.6 billion dollars a year to new car purchases (15.6 million cars purchased per year x $3,000= 46.6 billion). Assuming that all 210 million drivers eventually purchase a new car that meets the 54.5-mpg average, consumers would lose 630 billion dollars to new car purchases (210 million cars purchased x $3,000= 630 billion). The increased cost of new cars, due to stricter mpg restrictions, is the main, quantifiable cost associated with the Café Standards.

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2) Increased Demand for Gasoline due to Increased Mile per Gallon Averages for Vehicles

Another potentially huge drawback associated with the Café Standards is what effect the increased mpg-average will have on consumption of gasoline. In other words, the Obama administration assumes that by increasing the mpg-average drastically for all vehicles, the supply-demand market of gasoline will remain virtually unaffected. They assume that the increase of miles per gallon for vehicles will only cause the demand to drive more by 10%. However, this number appears to be drastically underestimated. Based on traditional supply-demand models, if we decrease the cost of gasoline (which is essentially what an increased mpg achieves) than the demand for gasoline should increase accordingly.

When determining drivers savings from the Café Standards, the Obama administration assumes that doubling the mpg averages would result in drivers purchasing only 10 percent more gasoline. This is also known as a rebound effect. Based on our results from the benefit section we can get a quantifiable number on how much this would decrease savings. Assuming drivers purchased 611.62 gallons per year at the 27 mpg average, we can determine that drivers would purchase 61.16 more gallons per year in 2025, based on the Obama's administration's prediction of a 10% increase in demand for gasoline. At the 2025-mpg average, drivers purchase 302.85 gallons per year. However, factoring into account the 10% effect of increased demand on gasoline, we can assume drivers would consume 364.01 gallons per year (302.85 gallons per year+61.16 increased consumption of gasoline=364.01 gallons per year). Based on these numbers we can multiply the cost of gas per gallon by the adjusted gallons consumed per year

$3.32 per gallon x 364.01 adjusted gallons per year= $1,208 spent on gas per year

Then, subtracting this number from our original $2,000 current average, we can determine a more realistic number for savings per year from gasoline

$2,000 dollars spent on gas per year in 2012- $1,208 spent on gas in 2025= $792 saved per year on gasoline. In the benefits section we determined that people saved 994.54 dollars per year from the increased mpg average in 2025. However, we did not take into account the fact that the increased

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mpg average would increase gasoline consumption. Based on this 10% effect on increased gasoline demand we save about $200 dollars per vehicle less per year.

Furthermore, it is impossible to determine if this 10% effect on increased gasoline demand is an accurate number. Several opponents of the Café Standards argue that the number could be drastically higher than 10%. If we perform the same analysis with a 50% effect on increased demand we will get a much different result. Below is the same analysis with a 30% effect of increased demand on gasoline.

30% x 611.62 gallons consumed per year= 183.49 gallons of increased consumption on gas. So, factoring into account this 30% effect we can see that in 2025 drivers will consume 486.34 gallons of gas per year (302.85+183.49= 486.34 adjusted gallons consumed each year). $3.32 per gallon x 486.34 adjusted gallons per year= $1,614.65 spent on gasoline per year.
$2,000 spent on gas per year in 2012-$1,614.65 spent on gasoline in 2025= $385.35 saved per year on gasoline

Clearly, how big of an effect increasing the mpg average has on increased gasoline consumption will determine people's realistic savings per year. If the numbers are as the Obama administration states, than people will have reduced savings of about $200 per year and if the numbers are closer to the analysis performed above, savings will decrease by about $600. Furthermore, these results also remain true for a decrease in the actual amount of greenhouse gas emissions reduced.

3) Miscellaneous Costs Associated With Café Standards

While the following results are not quantifiable in my research, it is important to include these costs associated with the Café Standards

A) Reduced Consumer Choice

Increasing the mpg averages will cause car manufactures to produce less variety in the cars they produce. In other words, there will still be a choice for the consumer; however, due to the restrictions from the Café Standards, producers will be forced to make more cars capable of meeting these standards and greatly decrease the production of cars that cannot come close to these requirements.

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B) Reduced Passenger Safety

Once again, car manufacturers will have to change the production process of building vehicles to adjust for meeting the Café Standards requirements. In order to achieve this outcome, producers will have to lower the average weight of cars by a decent amount. The Nation Highway Traffic Safety Administration estimates that for every 100 pounds a car's weight is reduced, fatality rates will increase by .9%-2.21% (NHTSA). While it is hard to quantify exactly the amount cars will be reduced, it is clear that reducing the weight of a car will cause fatalities to increase.

Alternative Fuel/Carbon Tax

A) Benefits- The benefits, as well as the costs are much simpler to determine because it is a straightforward tax and does not have as many unexpected outcomes. The benefits consist of a combination of the environmental impact the tax will have on reduced co2 emissions, as well as the profit acquired from the tax itself

1) **Determine How Big a Tax Would Need to be in Order to Control the Amount of CO2 Emissions**

The main environmental benefit of having a straightforward tax on gas consumption is the government can determine how big of a tax we would need to decrease the greenhouse gas emissions. However, it is tough to determine exactly how big of a tax we would need to reduce CO2 emissions. In order to do this we must review the price elasticity of gasoline over recent years. This will give us a realistic reaction the market would have on a tax like this.

In this scenario we compare the total number of gallons of gas consumed in 2013 with the total number consumed in 2014. Gasoline was priced at $3.34/gallon in 2014 versus 3.5 in 2013 (EIA). According to the EIA, 134 billion gallons of gasoline were purchased in 2013, while in 2014 137 billion gallons of gasoline were purchased. So we can say that a 15-cent tax caused a reduction of about 3 billion gallons of gasoline consumed. Furthermore, based on our data from the Café Standards discussed earlier, we can assume that in 2012 we purchased 128 billion gallons of gasoline. We get this number by multiplying our average number of gallons of gas

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consumed by each person by the amount of people driving a car. (611.62 gallons consumed in 2012 by each driver x 210,000,000 licensed drivers in 2012= 128,440,200,000 gallons consumed in U.S. in 2012. Furthermore, according to usatoday.com, gas per gallon costs $3.71 in 2012. Comparing our 2012 results with the 2013 results we can see that a .21-cent tax on gasoline would cause a decrease of about 5.50 billion gallons of gasoline consumed per year.

2012: Cost per gallon=$3.71: Gallons of gasoline purchased=128.50 billion
2013: Cost per gallon=$3.50: Gallons of gasoline purchased=134.00 billion
2014: Cost per Gallon=$3.35: Gallons of gasoline purchased=137.00 billion

Using these numbers we can determine how much of an effect a 1-cent tax would have on reducing gasoline consumption.

From 2012-2013: .21 cent reduction in gasoline per gallon: 5.5 billion unit increase in total gasoline consumption. 5.5 billion/21=261,904,761.905. This number is the equivalent to how much a 1 cent tax would reduce total gas consumption. So we can say that a 1-cent tax would decrease total gas consumption by about 262 million gallons per year.

From 2013-2014: .15-cent reduction in gasoline per gallon: 3 billion-unit increase in total gas consumption. 3 billion/15= 200,000,000. So from 2013-2014 we can say that a 1-cent tax would decrease total gas consumption by about 200 million gallons per year. Ideally, the 1-cent tax would be exactly the same from 2012-2013 and 2013-2014; however, there are several other unaccounted factors so for the sake of this research we will take the average.

261,904,761.90+200,000,000.00= 461,904,761.90/2= 230,952,380.90

This number will give us a 1-cent gas tax average.

2) **How much will a 1-cent tax reduce CO2 emissions**
As mentioned earlier, the EPA estimates that 8,887 grams of co2 are emitted per gallon (EPA.Gov). Therefore by multiplying the amount of co2 emitted per gallon by how much a 1-cent tax reduces total gas consumption we can see how much a 1-cent tax would decrease greenhouse gases.

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8,887 grams per gallon x 230,952,380.90 gallons saved from 1-cent tax= 2,052,473,809,060 grams of co2 reduced for a 1-cent tax on gasoline.

Furthermore, if we divide the amount of grams of co2 reduced by the number of drivers on the road we can get an outcome of how much co2 is reduced per driver. 2,052,473,809,060/210,000,000= 9,773.68 co2 reduction per vehicle for a 1-cent tax. According to our analysis of Café Standards, we determined that the café standards would reduce co2 emissions by about 2.5 million grams per vehicle. So, in order to achieve this number, a gas tax of $2.55 per gallon would have to be issued. However, our benefit analysis of the Café Standards reduction in co2 emissions did not include the effect discussed earlier of the increased demand for gasoline. In other words, the increased mpg gallon average in 2025, realistically would not decrease co2 emissions by 2.5 million per vehicle, but rather a number much less depending on the effect of increased demand on gasoline. A more realistic number would be in the range of 1-1.5 million reductions in co2 emissions per vehicle. This would only require a gas tax of around $1.00-$1.60. So in reality a tax of about 1-1.6 dollars per gallon would result in the same environmental reduction in co2 emissions as the Café Standards. Furthermore, the increased cost of gasoline would cause a reduction in total gasoline consumed, which would therefore require an even lower tax to achieve the level of co2 reduction achieved in the Café Standards.

3) **How much Profit Government Would Receive From Taxes**

Depending on how big the tax is we can determine how much revenue the government would receive from this tax. Given that a 1-cent tax would decrease gasoline consumption by 230,952,380.90 gallons per year, we can say that a 1-dollar tax would decrease overall gas consumption by about 23 billion gallons. Therefore, if the U.S. consumes about 133 billion gallons of gasoline on average from 2012-2014, we can say that the gas tax would reduce this number by 23 billion per year. So the government would receive 110 billion dollars in revenue from a 1-dollar tax on gasoline. Obviously this number can vary based on how big the tax is.

B) Costs

1) **Determine How Much it Will Cost Consumers to Pay For This Tax**

The cost to the consumer is the exact same as how much revenue the government will receive. Based on a 1-dollar tax, consumers will need to

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spend an extra 110 billion dollars on gasoline per year. This may seem like an extremely large number; however, we can see how much this will cost per driver by dividing the total number by the amount of drivers. 110,000,000,000/210,000,000=$523.81 per person.

4. Results

While it is clear that we get definitive results for each policy, determining the exact outcome of each is very hard.

Café Standards

Holding all else fixed, we can see a clear outcome of how much consumers save from the increased mile per gallon averages. On average, consumers will save $994.65 dollars per year from the increased mpg averages in 2025. Because every person will not have a car that achieves these standards, not everyone will achieve 994.65 dollars in savings; however, some may receive even more in savings. However, this approach does not account for the increased demand effect on gasoline following increased mile per gallon averages. This effect only complicates the results and is near impossible to accurately predict until the program is in full effect in 2025. Depending on how big of an effect there is on increased demand will determine how much consumers will actually save from the increase in mpg averages. Furthermore, the same applies for how much co2 will actually be reduced. Without accounting for increased demand, about 2.7 million less grams of co2 will be emitted per vehicle. However, taking into account the effect of increased demand could decrease this number greatly.

Alternative Fuel Tax

This research allowed us to put a number on how much a 1-cent tax would decrease gas consumption, as well as how much less co2 would be emitted. It can be determined that a 1-cent tax would cause about a 231 million gallon decrease in the amount of gasoline purchased each year. Based on this result, we can determine that this would cause a 9,773-gram reduction in the amount of co2 emitted per vehicle for a 1-cent tax. Furthermore, we can determine that it would take about a 1-1.6 dollar tax to achieve the same environmental reduction of co2 we saw in the Café Standards. The reason there is not a

precise number is because we can once again not account for how much demand for gasoline would be increased due to raising the average mpg.

5. Conclusion

While this research provided immense cost-benefit analysis of the Café Standards and the Gas/Carbon Tax, it still remains unclear which policy is definitively better. The Café Standards offer a policy that forces car manufactures to increase the average mpg of cars to 54.5 by 2025. At first glance this policy appears to be perfect; however, after some analysis it becomes clear that there are several setbacks associated with it. Clearly consumers will save a large amount due to the increased mpg average of cars, but it is unclear how much this will increase demand for gasoline. If consumers increase demand immensely for gasoline after these new averages are in place than savings from the increased mpg will drop drastically. Additionally, the cost of purchasing a car will increase by about $3,000 per car. Furthermore, this same effect will change how much co2 emissions area actually reduced. Also, car safety and consumer choice will be reduced by this policy. On the other hand, the gas tax could potentially achieve the same environmental results as the Café Standards. The carbon tax would incentivize the market to naturally purchase less gasoline and drive less, while the Café Standards do not incentivize this. On the other hand there will be no direct savings from increased mpg averages achieved from the Café Standards. Essentially the tax has no direct economic benefits for consumers, except that it incentivizes them to drive less and consume less gas. However, the environmental reduction of co2 emissions can be achieved through both policies.

Another issue associated with the decision of what policy to choose is the fact that the Café Standards will not see true results until 2025, while the Gas Tax can see results immediately. As a whole, the Café Standards appear to have several more risks than the Gas Tax, but at the same time there could be a huge benefit from the Café Standards. The Gas Tax appears to have less potential benefit to the consumers, but may be less risky than the Café Standards.

In the end, the Gas Tax appears to be the safer option compared to the Café Standards. The Gas Tax allows for consumers to control the market and avoids government interference. By increasing the cost of gasoline, the tax would incentivize consumers to naturally switch to more fuel-efficient vehicles without changing their preferences toward gasoline demand. Furthermore,

the same reduction in co2 emissions can be achieved through this policy with much less risk to account for.

6. References

Ackerman, Frank. *A Review of Consumer Benefits from Corporate Average Fuel Economy (CAFE) Standards* (n.d.): n. pag. Web.

"U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." *How Much Gasoline Does the United States Consume?* N.p., n.d. Web. 18 May 2015.

Worstall, Tim. "A Gas Tax Is Much, Much, More Efficient Than The CAFE Standards So Why Have We The CAFE Standards?" *Forbes*. Forbes Magazine, n.d. Web. 18 May 2015.

"Calculations and References." *EPA*. Environmental Protection Agency, n.d. Web. 18 May 2015.

Austin, David. "Clearing the Air: The Costs and Consequences of Higher CAFE Standards and Increased Gasoline Taxes." *Clearing the Air: The Costs and Consequences of Higher CAFE Standards and Increased Gasoline Taxes*. N.p., n.d. Web. 18 May 2015.

Handley, Meg. "54.5 MPG For All Cars by 2025 With New CAFE Standards? Not Exactly." *US News*. U.S.News & World Report, n.d. Web. 18 May 2015.

"Regulations and Standards." *EPA*. Environmental Protection Agency, n.d. Web. 18 May 2015.

"CAFE - Fuel Economy." *Fuel Economy*. N.p., n.d. Web. 18 May 2015.

Loris, Nicolas. "Cap-and-Trade for Cars Means Higher Prices and Less Choice for Car Buyers." *The Heritage Foundation*. N.p., n.d. Web. 18 May 2015.