Vehicle Emissions Testing in Knox County

An effective measure to reduce air pollution in the Knoxville area

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**Executive Summary**

Implementation of vehicle emissions regulation and required testing in Knox County would aid the county in reduction of pollution, and would serve to improve the notoriously poor air quality in the region. The system would be modeled on the policies already in place in six other counties in Tennessee, as well as those which have been successful in other parts of the nation. This project aims to make Knox County a safer and healthier place to live and work.

**The Problem:**

Knox County consistently ranks among locations with the worst air quality in Tennessee, with ozone levels that receive a grade of D from the American Lung Association[1], and particle pollution that continues to fail to meet national standards.[2] The city of Knoxville usually ranks among the most challenging cities in the nation to live with asthma.[3] The issue of poor air quality in Knox County is compounded by the topography of the region; any amount of emissions has an increased effect on the levels of ozone and particulate matters as the county is surrounded by two chains of mountains.

Concerted efforts have been made in the past few decades to reduce pollution, including increased regulation of emissions caused by local power generation facilities and the lowering of the speed limit to 55 mph on interstates and state routes by the Knoxville Regional Transportation Planning Organization in 2006. However, the county continues to lag behind national standards. With the failure of past efforts, it is now time to approach the emissions problem from another angle. Drivers in Knoxville alone drove over 2.9 billion miles in 2012. These miles are primarily fueled by gasoline and diesel which account for just under 44% of the community’s greenhouse gas emissions. [4]
Our Solution:

Vehicle emissions testing and regulation programs have been successful in reducing emissions in other counties across the state. The emissions testing program would require all vehicles running on gasoline or diesel fuel and newer than 1975 to be tested before registration for a fee of nine dollars. Failing vehicles must be repaired and then tested again; there will be no fee for a second test within 90 days. All registered vehicles should thereafter be required to repeat testing once yearly with renewing registration in order to ensure that they continue to meet standards.

**Problem Statement:**

Knox County has long been known for its record of poor air quality. After a three-year streak of failing national 8-hour ozone standards, the county was declared be minimally passing ozone regulations in 2015, but continues to fail particulate matter tests which it has not met since 2005. [1] Knox County’s air quality problems are made more difficult to address by the topography of the area, which tends to worsen the accumulation of ozone and smog, making it particularly important to monitor and mitigate emissions in this region.[2]

Over the past decade, fairly impactful efforts have been made to reduce air pollution caused by local power plants and new businesses, but Knox County still lags behind regulatory standards. [2] We propose the implementation of a vehicle inspection program in order to prevent excessive vehicle emissions in Knox County. This program will be modelled after the emission testing requirements already in place in six Tennessee counties[3], and those that have been more successful in other regions. An examination of data from several counties in Illinois has found that vehicle emissions testing policies are correlated with a statistically significant improvement in air quality.[4] Required vehicle inspections have also been fairly well received in some areas. A study by the Georgia Clean Air Force found that a majority of respondents in Atlanta thought that vehicle testing was worthwhile.[5] While the public opinion would obviously be different in a different region, these results provide hope that a policy of this nature could receive support from those affected by it.

Evaluation of Alternative Solutions:

In an effort to reduce vehicle emissions in the Knoxville area, the Knoxville Regional Transportation Planning Organization lowered speed limits on interstates and state roads to 55 mph in 2006. Since that time, the air quality in the area has increased, but the region is still designated as nonattainment in particulate matter levels, and is a “maintenance area” for the ozone standard.[1] In fact, much of the improvement in air quality over the past decade could be attributed to increased regulation of emissions from power generation facilities.

While fuel efficiency tends to increase with decreased average speed, the ability of reduced speed limit policies to positively impact the air quality of a region has not been consistently demonstrated. One study found that areas in Barcelona in which the speed limit of highways was reduced to 80km/h (about 50 mph) actually saw an increase in levels of nitrous oxides and particulate matter.[2] Reducing speed limits in order to reduce emissions also brings up the issue of enforcement. Most people who have driven along I-40 in the absence of major traffic congestion could tell you that the average speed is well above 55 mph.

One fairly intuitive way to affect vehicle emissions through public policy is through an increase in taxes on gasoline. The state-level taxes on gas in Tennessee are well below the national average.[3] An increase in gas taxes would naturally lead to an increase in gas prices, which would disincentivise consumption of gas while providing the state government with increased revenue. However, an increase in taxes on gasoline would likely meet heavy resistance in the political climate of Tennessee, especially as there are only eight counties in Tennessee which are currently in noncompliance with EPA standards. As the severity of the poor air quality in the Knox County area is a local issue, it calls for a local solution.

Policy Proposal

Why Do We Need This?

There are currently six counties in the state of Tennessee that require emission testing and they are situated around or in Chattanooga and Nashville. However, there is no emissions testing required for residents in Knox County. Emissions testing is simple and cheap. Essentially it ensures that a car’s engine is as efficient as possible and is not emitting more harmful gasses to the environment than is standard. The problem is that 44% of Knoxville’s carbon emissions are a result of vehicle transportation.[1] During rush hour, I-40 can be backed up for miles which consequently leads to higher carbon emissions levels. In 2005 Knoxville ranked ninth per capita in carbon emissions out of the 100 largest metropolitan areas. Also, Knoxville consistently ranks in the top ten for amount of poor air quality days in the United States. [2] The Environmental Protection Agency estimates that vehicle source emissions come from the worst 10 percent of vehicles on the road. The EPA also predicts that by eliminating these cars and implementing vehicle emissions testing and maintenance, a city can reduce levels of air pollution by 30 percent. [3] This would more than meet the goal of Knoxville’s Sustainability plan to reduce greenhouse gas emissions by 20% by the year 2020.

Why Hasn’t This Already Been Done

With all this being said there is an overshadowing reason why this has not already been implemented. The reason: no one has decided to shed light on the issue of vehicle emissions addition to poor air quality. On the other hand, the city is highly progressive and sustainability coordinator, Curtis Martin is doing everything in his power to try and create a more sustainable future for Knoxville city. Another problem that is impeding our progress is consumer’s attitude and overall demeanor towards vehicle emissions testing. Many people that I spoke with and asked for their opinions on the matter were originally against testing, solely off the basis that it cost them time and money. However, after
offering higher speed limits in exchange for vehicle emission testing their opinion on the matter changed and they were in favor.

**Raise That Speed Limit**

In order to incentivize the citizens of Knox County to support emissions testing there must be something of value that has enough weight to change their opinion. Have you ever noticed that I-40’s speed limit through Knox County is a mere 55 mph? Pretty low for an interstate? The only reason why this speed limit is 55mph is because the EPA deems that this limit reduces air pollution as compared to higher speed limits. However, a speed limit increase of 10 mph on I-40 would drastically be offset by the reduction in carbon emissions as a result of vehicle testing. Individuals we asked about supporting required emissions testing were initially reticent, but when offered the incentive of higher speed limits they came out in favor of the regulation.
Benefits from Emissions Testing
- Reduction in Carbon Emissions
- Higher Air Quality for Knox County
- More Efficient Vehicles = Less Time at the Pump

How Will This All Work?

The main component of our policy is required vehicle emissions testing. However, there are many small things that go into this policy that must be done effectively in order for this policy to be effective. The first involves the DMV publicly sharing that all registered vehicles must complete a vehicle emissions test within a year of their next tag renewal. Currently, there are private companies that provide emissions testing in Knox County for $36. For individuals who pass there will be no more required action besides an annual checkup. However, for individuals’ vehicles that do not pass they can either re-test their car within 60 days or enroll in a government sponsored program that allocates money to low-income qualifying citizens that can’t afford re-pairs on their cars. When the policy is enacted the speed limit on I-40 will be increased from 55 mph to 65 mph. In order to determine the effectiveness of this policy we must measure the amount of annual carbon emissions (ceteris paribus) each year after the policy is implemented for five years. We must also look at economic activity to ensure that the decrease in real income has not affected GDP growth.

**Action Plan:**

**Possible Issues:**

We expect pushback from the county for three main reasons. First, the speed limit, which was lowered to 55 miles per hour for pollution control. This is a possible argument for why our proposed policy would be unnecessary, however, enforcement of the 55 mph speed has not been seen since its enactment. Furthermore, even if enforcement was ensured, it is still impossible to see to it that everyone follows the speed limit. Our policy would be a more effective means of reducing air pollution in Knoxville because it would require drivers have their vehicles tested with registration.

Second, there is concern that this policy will target lower-income individuals who are more likely to be driving older vehicles that don’t meet standards. Our commitment is to providing citizens of Knoxville with a healthier place to live, and we understand that putting undue burden on lower-income families is counter-productive. That is why within our policy a program is included specifically for these families. The program will be funded by tax revenue, and will allow lower-income families to receive up to $1500 for vehicle repairs. Individuals needing this assistance will have to provide proof they cannot pay for repairs themselves.

A third issue is that many lower income individuals will also be affected by the increase in taxes on gas because this will increase the cost of gas for the end consumer. In Tennessee, the state gas tax is much lower than many states and has not been changed since 1989. This has caused a lot of controversy over the past few years because lawmakers want to increase the tax to provide more funding for road repairs. Since this is already in the works, it will be hard to divert their attention to increasing taxes to supplement repairs for low income individuals.
Timeline:

Drivers will have a year warning from the time they get their new tag (beginning August 2016) to bring their vehicle up to code before having their first test the following year (beginning August 2017). When testing begins, vehicles will have to provide documentation that they have passed or that repairs have been made. Vehicles that fail will have 60 days to provide proof that the problem has been resolved.

Cost:

This policy will be of very little cost to the county because we are requiring people to have their vehicles tested at an auto repair shop and provide documentation that their vehicle passed or has been repaired. The only cost will come from the program funding lower-income families, which will be funded by an increase in the gas tax. This will lower emissions by making sure all vehicles meet code and discourage drivers from driving as much.

Stakeholders and Beneficiaries:

We are contacting other areas in Tennessee to determine exact costs, successes, and failures that have happened while this policy has been in place. Our direct beneficiaries will be the people in the area; because of increased air quality they will benefit from a decrease in health problems.