Testimony of Deputy Commissioner
Robert Avaltroni
New York City Department of Environmental Protection
(DEP)
before the Council of the City of New York
Committee on Environmental Protection
concerning Intros 631-A, 40-A and 881-A in relation to engine idling
250 Broadway

January 26, 2009

Good afternoon, Chairman Gennaro and Members of the Committee. I am Robert Avaltroni, Deputy Commissioner of the Bureau of Environmental Compliance at the New York City Department of Environmental Protection. With me are Geraldine Kelpin, Director, Air/Noise Policy and Permitting of the New York City Department of Environmental Protection and Kizzy M. Charles-Guzman, Policy Advisor on Air Quality in the Mayor's Office of Long-Term Planning and Sustainability.

On behalf of Acting Commissioner Steven Lawitts thank you for the opportunity to testify on three bills that address aspects of reducing motor-vehicle idling in New York City. Mayor Bloomberg's *PlaNYC 2030* outlines initiatives on many fronts to improve air quality, and a number of them focus on reducing unlawful motor vehicle idling. The Administration welcomes the Council's partnership in addressing this quality of life issue.

In my testimony I will comment on Intro. 631-A, which would restrict motor-vehicle idling to one minute adjacent to a school; Intro. 40-A, which proposes to grant enforcement power to the Departments of Parks and Recreation (Parks) and Sanitation (Sanitation); and Intro. 881-A, which would require hand-held parking ticket devices utilized by Traffic Enforcement Agents (TEAs) to be capable of issuing notices of violation for idling.

New York City's prohibition on idling exists in Section 24-163 of Title 24, Chapter One of the Administrative Code and in the Rules of the City of New York. Section 24-163 provides that with certain exceptions, no vehicle in the City is allowed to idle more than three minutes while parked, stopped or standing. DEP enforcement personnel, NYPD officers and some Traffic Enforcement Agents (TEAs) are authorized to issue notices of violation (NOVs) returnable to the Environmental Control Board (ECB). In 2003 and 2004 personnel of the Departments of Parks and Sanitation respectively were delegated by DEP to enforce 24-163, and they, too, can write NOVs. NOVs written pursuant to 24-163 are adjudicated before ECB, which is now under the Office of Administrative Trials and Hearings (OATH). Penalties on a finding of guilt range from $220 to $1,000.

Intro. 631-A

Intro. 631-A of 2008 would prohibit motor-vehicle idling for more than one minute adjacent to a school. School buses are included in this restriction but with three exceptions: for mechanical work, maintenance of appropriate temperature and emergency evacuations necessitating operation of a wheelchair lift. The bill also directs ECB and the Department of Finance (Finance) to submit annual reports to the Council on violations of the idling law and the total amount of penalties imposed. Finally, the bill would require that instruction on idling laws be included in the licensing of taxi, van and other drivers.

Prohibiting more than one minute of idling adjacent to a school is an improvement over existing law and the Administration supports the passage of this bill. However, as I testified previously and as reflected in the language of the amended bill, the precise meaning of the term 'adjacent' will be defined by DEP rule. It is important for both vehicle operators and enforcement personnel to be able to understand where on the street the one-minute restriction applies, and the DEP rule will need to provide that clarity.

Intro. 40-A

Intro. 40-A of 2006 grants issuing authority for idling violations to Parks and Sanitation and extends the scope of an existing, if little-used, citizen complaint provision to include trucks as well as buses. As I mentioned at a previous hearing, DEP has delegated that authority in 2003 and 2004 respectively to Parks and Sanitation. DEP's experience with improving enforcement by delegation is very positive because it usually occurs in the context of collaborative, targeted enforcement efforts. However, if the Council passes this bill and it is signed into law, DEP and its sister agencies will continue their successful collaboration in the targeted enforcement of the anti-idling laws and DEP supports the legislation.

DEP staff recollects the citizen complaint provision having been used only a few times. I think it is important to note that the function of this provision has been successfully superseded by 311. Regardless of whether complaints are reported via this provision or 311, DEP enforcement staff experiences difficulty in enforcing with regard to trucks. Whereas buses tend to lay over and idle at the same locations day after day, trucks do not. That said, DEP does not oppose the modification of the citizen complaint provision in Intro. 40-A.

Intro 881-A

Intro. 881-A would require implementation of technology to allow Traffic Enforcement Agents (TEAs) to issue summonses with their handheld parking ticket devices. The devices are not capable of issuing NOVs returnable to ECB, so the summonses would instead be issued pursuant to Section 4-08(p) of the City's Traffic Rules, which prohibits engine idling in much the same manner as Administrative Code Section 24-163.

Thanks to the urging of the Council, Finance has already published the proposed rule that will allow TEAs to write summonses for violation of the idling provision contained within the Traffic Rules. A public hearing is scheduled for February 7, 2009. Approximately 100 TEAs would continue to be able to issue notices of violation returnable to the

Environmental Control Board for violation of Section 24-163, but this change will make all 2,300 TEAs available to write summonses for violations of this Traffic Rule, returnable to Finance. We expect that by April, the traffic violation will be enforceable.

Therefore, the worthy goal of Intro. 881-A has already been accomplished by rule using existing authority. The Corporation Counsel recommends that we avoid creating even the impression that authorizing legislation would be needed for this agency rule change. For these reasons, the Administration does not support passage of this legislation.

If the Council still wishes to pass this legislation, the Administration suggests the following language, which improves the accuracy of the provision: "Parking ticket devices. Parking ticket devices used by the department to enforce laws, rules and regulations relating to parking violations shall be capable of issuing summonses for violations of the engine idling restrictions of section 4-08 of the rules of the city of New York, consistent with the rules of the department of finance."

Thank you for the opportunity to testify. I will be glad to answer any questions.

Testimony by Dean McCann,
Executive Director of Production and Operations
New York City Mayor's Office of Film, Theatre & Broadcasting
at a Hearing of the Committee on Environmental Protection
1/26/09

As the first film commission in the country, the NYC Mayor's Office of Film, Theatre & Broadcasting's mission is to market New York City as a prime location; facilitate location production; provide premiere customer service; and liaise with business decision makers to grow the media industry in New York.

New York City's entertainment industry employs 100,000 New Yorkers, supports 4,000 ancillary businesses and contributes $5 billion to the City's economy annually. Last year the Mayor's Office of Film, Theatre and Broadcasting assisted 27,251 shoot days on public property.

The agency issues one-stop permits for entertainment production on public property, provides police assistance and traffic coordination, promotes New York City as the ultimate location for entertainment production and supports initiatives designed to enhance the City's competitive position as a global center for entertainment production. The permit is issued on an expedited basis to an industry that works on extremely compressed timeframes, and in an environment where ever-increasing competition for entertainment jobs and revenue grows from neighboring regions such as Connecticut, Massachusetts, Pennsylvania and New Jersey, to name a few.

The MOFTB permit represents a snapshot of activity occurring at a specific date and time, on a specific location, which may include the coordination from other city agencies and services such as the buildings, fire and police departments. While our agency issues permits for the general on-site activity, it relies on these sister agencies to regulate activities that are specific to their jurisdiction.

The MOFTB is supportive of efforts to 'green' the entertainment industry, including the use of fuels that will reduce the emission of harmful pollutants. Last year, we launched a section on our website entitled "NYC Green Screen" which encourages film and television productions to recycle and employ best practices when working on location.

While we are in agreement with the overall goals of Introduction 684, we are recommending changes to this bill.

First, Int. 684-A seems to unfairly target the film and television production industry with steeper fines and harsher restrictions than similar events also permitted by New York City, including such the street activities identified in Intro. 899. It is MOFTB's understanding that the generators used in film and television production are the same generators used by street fairs, block parties and construction sites. The proposed penalty for violation in Int. 684-A is $5,000 vs. a penalty of $500 for violation in Int. 899, which recommends ULSD fuel and best available technology in generators used for street fairs and other events for which a street activity is permitted. There should be no bias against film/television projects and we suggest equal fines for violation.

Additionally, Int. 684-A requires the use of ULSD and best available retrofit technology to reduce at least 85% of particulate matter. This implies the use of such retrofits as Diesel Particulate Filters (DPFs) which can cost upwards of $6,000. Though situations could arise where a generator cannot be retrofitted with this type of technology, our rules allow for the occasional exception while still demanding the cleanest technology possible. Int. 899 leaves the determination of best available technology to the DEP Commissioner. This could possibly include the use of Diesel Oxidation Catalysts (DOCs) and Selective Catalytic Reduction Technology (SCR), reducing a lesser percentage of particulate matter and with costs starting near $1,000. For the sake of regulatory consistency of generators and in keeping with all of the other bills that have been passed by the Council regarding the use of ULSD, MOFTB recommends that the determination of best available technology for retrofits, rests with DEP.

Int. 684-A proposes a 2 year phase-in period for rental companies and production companies. MOFTB suggests a phase-in period of at least 5 years for compliance

- In addition, at the current levels of film production, film and TV shows are drawing equipment from neighboring states such as Connecticut, which may not have the same green fuel requirements as New York City.

- MOFTB has concerns that a shortage of available equipment with the retrofit technology and/or the required fuel would negatively impact levels of film and television production in NYC.

    - NY State and City tax incentives were created in 2005 to increase film and television production in New York. The success of this program has created thousands of jobs and benefited the economy of NYC. An MPAA memo in opposition to Int. 684-A concludes with "These limitations, along with steep fines associated with non-compliance could lead to a measurable drop in production levels in NYC."

    - NYC is a competitive location for Film & Television production. In this economic environment, the concern is that a requirement for costly retrofitting would threaten NYC's standing as an affordable, easy place to work. An imposed regulation that increases the cost of filming in NYC could lessen the allure of the tax credit.

- MOFTB recommends a waiver provision if compliance with Int. 684-A results in a shortage of generators with best available technology retrofits and/or the required fuel.

- DEP stated in their testimony regarding Intro. 899: "...effective enforcement depends on a shared database of permits. The significant technological progress of the Office of Citywide Events Coordination and Management has made in making data regarding permits accessible should greatly facilitate this aspect of enforcement." MOFTB works with OCECM to coordinate permit activity. MOFTB recommends all requirements for generators be consistent across comparable industries.

TESTIMONY OF
ASSISTANT COMMISIONER
JAMES BASILE

FIRE DEPARTMENT OF NEW YORK

BEFORE THE CITY COUNCIL
COMMITTEE ON ENVIRONMENTAL PROTECTION

January 26, 2009

Introduction

Good morning Chairman Gennaro and Council Members. My name is James Basile, and I am the Assistant Commissioner for FDNY Fleet and Technical Services. With me is FDNY Chief of Emergency Medical Service (EMS), John Peruggia. Thank you for the opportunity to speak with you today regarding the Council bill requiring idle reduction technology in ambulances.

FDNY EMS

Since New York City EMS merged into the FDNY in 1996, we have significantly improved response times to medical emergencies, cut response times to cardiac emergencies almost in half, and nearly doubled the number of defibrillator-equipped units on the street. The most significant accomplishment has been the dramatic decrease in response times to medical emergencies -- from 8 minutes 46 seconds in 1996, to 6 minutes 38 seconds for EMS responses to the most serious, life-threatening emergencies in 2008.

We are also responding to more calls since the merger. In 2008, more than 1.2 million calls for emergency medical assistance were answered in New York City. Of these, 449,245 were calls for incidents considered to be life-threatening.

At the time of the merger, we had 637 eight-hour ambulance tours daily. We now have 959, a 50 percent increase. Since the merger we have also increased the FDNY ambulance fleet. At the time of the merger, we had 504 FDNY eight-hour ambulance tours daily. We now have 611, a 21 percent increase. We also continue to augment our fleet of Hazardous Tactical (HazTac) ambulances, ambulances staffed with HazMat-

trained personnel. The Department has now trained and deployed personnel for 35 HazTac ambulances. We had 10 just a few years ago.

I provide these statistics to point out the progress we have made and the increases we have seen in our EMS fleet, our tours and our responses. This progress parallels, but is no less significant than, the progress we have made in procuring and maintaining an increasingly environmentally friendly fleet of ambulances. As you know, the FDNY is committed to the health and safety of New Yorkers. This includes doing our part to improve the air they breathe.

The U.S. Environmental Protection Agency (EPA) has regulated on-road diesel emissions through the Clean Air Act since 1970. The EPA standards for on- and off-road engines set maximum allowable levels of emissions for new engines and diesel fuel. In December 2000, the EPA set forth strict emissions standards for diesel vehicles with model years 2007 and later, and diesel fuel regulations that limited the sulfur content in on-highway diesel fuel to 15 ppm, down from the previous 500 ppm. The FDNY is on schedule to comply with all of the prevailing emission requirements by acquiring vehicles that meet the EPA's 2010 diesel engine emissions standards to replace any existing vehicles that are retired from our fleet. In addition, by 2010, we plan to use technology in which the chemical urea is injected into the diesel engine exhaust to reduce the amount of nitrous-oxide emissions. This urea system, known as selective catalytic reduction, will work in conjunction with a soot-capturing diesel-particulate filter. The injection of urea converts the nitrous-oxide gases into inert, non-polluting ammonia. The remaining gaseous vapor is exhausted out the tail pipe. In short, our new ambulances will run cleaner than vehicles that incorporate the idle reduction technology required by the bill.

We do have some other, more general, concerns about the bill.

First, if we were to accommodate idle reduction technology, such as an Auxiliary Power Unit (APU), on our ambulances we would need to acquire ambulances that are longer and wider, and have larger chassis than our current fleet. Our current models have no room to accommodate APUs. If the bill were enacted, we would be required to convert to a fleet of larger vehicles – including re-design of the fleet, negotiations with a vendor and actual procurement -- setting our five-year replacement cycle back years. We have 157 ambulances being built this year, all of which have diesel-particulate filters installed and thus burn cleanly.

The bill provides that "Each ambulance acquired by the city or by any 911 participating ambulance service providers after the enactment of this law shall be equipped with verified idle reduction technology including, but not limited to an auxiliary power unit." And, that "This local law shall take effect one hundred and twenty days after it is enacted." That is an unrealistic and misguided timeframe and it also ignores the steps we have taken and are continuing to take to make our fleet greener.

Moreover, the need for larger ambulances will naturally affect our facilities, training and response times. We would have to retrofit our current ambulance stations to fit the larger vehicles. Larger ambulances could also mean longer response times. Our crews do their best to get to medical emergencies in a dense urban environment as fast as they possibly can. Wider, larger ambulances would make an already tough job much harder. We would also have to conduct driver training to familiarize our personnel with the larger vehicles.

Maintenance needs would also increase. According to industry standards, APUs must be checked every 100 hours. That means an increase in off-service time for the entire fleet of ambulances. My understanding is that the two New York City hospitals currently using the APUs are experiencing problems with having their ambulances off line so frequently.

All of these factors obviously impact cost, which we believe would be increased significantly. But that is not our main concern. We have been cognizant of both the government-mandated emission requirements and the latest state-of-the-art technology that makes our vehicles run cleaner than ever before. In fact, though emergency vehicles are exempt from Local Law 77 of 2003 – which requires the use of ultra-low sulfur diesel fuel and best available technology – we comply with the law's provisions. In sum, we are taking meaningful steps to bring our fleet into compliance with all prevailing standards of green emission technology.

I follow closely the emerging technology for fleet operations. I see that diesel-hybrid vehicles will likely become more prevalent in the upcoming decade. Europe is introducing these vehicles more and more, and I would argue our goal should be to move in that direction as well.

Conclusion

FDNY EMS is recognized not only as one of the best pre-hospital emergency care systems, but also the busiest, in the country. We respond to more than 3,200 medical emergencies daily. We remain committed to providing the best possible training, facilities and equipment so that all New Yorkers receive high-quality pre-hospital

emergency care. And, we believe that we are doing so using the most environmentally friendly technology available.

I would be happy to answer your questions at this time.

AMERICAN LUNG ASSOCIATION®
IN NEW YORK

New York City Council

Committee on Environmental Protection

Monday, January 29, 2009

Good morning. Thank you Chairman Genarro for the opportunity to speak before you today. My name is Michael Seilback, and I am Vice President, Public Policy & Communications for the American Lung Association in New York. The items on today's agenda are all important environmental public health measures aimed at reducing exposure to air pollution. I will begin by discussing the problem, and then briefly discussing each of the pieces of legislation.

Everyday thousands of drivers needlessly *idle* their trucks and cars for minutes, or even hours. Idling wastes money by burning millions of gallons of fuel each year, and risks public health by releasing thousands of tons of pollution into the air.

What exactly are we breathing?

Ozone (smog) and particle pollution (soot). Each year, the Lung Association releases its annual State of the Air Report, a county by county report card for ozone and particle pollution. This year, the NYC metropolitan area was ranked 8th worst in the nation for ozone and consistenetly receives failing grades for particle pollution. In fact, on just this past Friday, an Air Quality warning was announced due to increased levels of particle pollution.

Exposure to ozone has been compared to getting a severe sunburn on the tissue of your lungs, while exposure to particle pollution has been compared to having your lungs rubbed with sandpaper. High levels of exposure to these pollutants is not just an environmental issue, it is a public health issue.

Last I did want to mention our support for Intro 684, the use of ultra low sulfur diesel and best available retrofit technology on generators is a common sense expansion of similar requirements that have been enacted in on-road and off-road heavy duty diesel engines.

The American Lung Association in New York applauds the Environmental Protection Committee for holding this important hearing. We would urge you to pass this suite of bills as soon as possible and send them to the full Council for immediate passage, the health of New Yorkers shouldn't be made to wait any longer.

Hello fellow New Yorkers and Members of the City Council. You do not know me, but I am Eugene Varnedoe, of PS122, Queens. Today, this Monday, the 26th of January we are here to determine whether schoolzones will suffer anymore than they already have in one specific and preventable way. We are here to determine whether asthma patients, children, and adults alike should be forced to deal with the exhaust of idling buses and cars, idling exhaust which unnecessarily and dangerously pollutes the air around their schools. Councilmembers, we are here to pass a law. There is no more time to waste. Every breath of air children take of the toxic fumes emitted by buses idling in school zones can damage their lungs, make them dizzy, even nauseous, can even lead to asthma, and for those with asthma, to even worse effects. I want to thank all the Council Members supporting Iniatives ~~40-A~~, 631-A, ~~684-A~~, and 881-A described on the council's website. I support these initiatives. Please let me tell you why I support them and why you all should support them, too. Last year, many of us gathered here in front of City Hall to observe the first Idle Free New York Day. My class and I were here then because we thought something was wrong, because we thought that something needed change. We knew that the idling buses and cars outside our schools were damaging our lungs, polluting the air, and hurting the environment. That idling needed to stop then, it needs to stop now. Last year, as a result of our Project Citizen, we had proposed our own 1 Minute schoolzone idling law. Now, to be here again on the day that law has the chance to go into effect, I am honored. I am honored as a New Yorker, we are all honored. Not only will you the Council be helping the environment by making this anti-idling initiative into law, you will also be helping schools, kids, and bus drivers. We all can only hope it won't stop there. School zones aren't the only places that are suffering. People on the streets right there might be suffering now. I hope to see, we all hope to see the day when all of New York goes "Idle Free". So, vote yes, and know that you will be helping not only school zones, but the people that go there, the future of the city. Thank you.

TESTIMONY BEFORE THE NEW YORK CITY COUNCIL'S ENVIRONMENT PROTECTION COMMITTEE REGARDING INT. 684-A JANUARY 26TH, 2009

Good morning Chair Gennaro and the members of the committee. My name is Matthew Miller and I am the President & CEO of the Association of Independent Commercial Producers. On behalf of the AICP, I would like to express our concerns regarding Int. 684-A. This legislation will require film, television and commercial productions in New York City to use ultra low sulfur diesel fuel and the best available technology in generators on location shoots permitted by the City.

The AICP is the exclusive representative in the United States of companies that specialize in producing commercials for advertisers and agencies. The AICP counts among its membership commercial production companies as well as firms that provide production support, such as equipment rental companies. The AICP estimates there are over 111 companies that produce commercials and rent studio equipment, including generators, in New York City on a regular basis and the majority of these companies are small to mid-size businesses.

AICP members fully support efforts to protect our environment and implement measures to provide for cleaner air and efficient use of resources. We believe that our members will have little trouble complying with the use of ultra low sulfur diesel fuel. It is important to note that Int. 684 mandates the use of ultra low diesel fuel, with no mention of permitting the use of no-sulfur fuels. Biodiesel fuel is currently being used by a number of AICP members and language should be added that permits the use of no-sulfur alternative fuels.

Although our members have made efforts to use clean energy and implement other environmental measures, and therefore support certain concepts reflected by this legislation, the AICP has serious concerns in regards to implementation of Int. 684.

Int. 684-A, defines best available retrofit technology using standards established by either the United States Environmental Protection Agency (EPA) or the California Air Resources Board (CARB). It concerns us that New York City is using the standards of another State which will be modified without the input of New York City's interests. The AICP believes best available technology as established in this legislation will not work in its current form.

Our members in California continue to face shortages of generators that are compliant with CARB. Although the bill features a two-year phase-in for rental and production companies, the AICP believes this is too short a timeframe for companies to fund and establish a fleet of compliant generators for use. In addition, it is unclear that when standards are updated, how long previously compliant equipment can continue to be used without penalty.

The fine structure established by Int. 684 is disproportionably high, especially in view of the risk that many production firms will be faced with a shortage of compliant generators. Production companies will face the choice of having to move productions outside of New York City to avoid having to pay a large fine because compliant equipment is just not available.

It seems that the film, television and commercial production industry is being singled out for these onerous requirements regarding generators used on location shoots. There are certainly many different business sectors that use outdoor generators throughout the City on a daily basis. The production industry has a long, positive working relationship with the City of New York and we hope to continue to prosper and grow here. AICP members are too facing severe economic challenges at this time and a measure like Int. 684 when enacted could delay productions for an indefinite time and be a job killer for production and rental companies. Due to many factors New York City has some of the highest production costs in the world and a measure like this will further discourage commercial production in New York City.

Thank you and the AICP looks forward to continuing to work with the City Council on this legislation and future issues of concern.

HUNTER COLLEGE
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425 East 25th Street, New York, NY 10010

Environmental and Occupational Health Sciences
(212) 481-7569

January 25, 2009

Committee on Environmental Protection
The City Council of New York, New York

RE: Intro 631: Idling vehicles

Dear Council Member James F. Gennaro and members of the Environmental Protection Committee:

I am here today to express my opinion and strong support on the proposed amendment to the administrative code of the city of New York referred to as "Intro 631" for limiting motor vehicle idling adjacent to NYC schools.

As background, I am a tenured Associate Professor and director of the Environmental and Occupational Health Sciences program at Hunter College of the City University of New York and have over 30 years experience. Our program has been teaching and training professionals in the identification, evaluation and control of environmental and industrial health hazards since 1978 and has graduated over 600 students. Our alumni, conduct environmental health assessments and workplace surveys throughout the US and abroad. On a personal note, I am born and raised in New York having lived in Washington Heights, Astoria, Flushing and now at Tudor City in the Borough of Manhattan.

The importance and obligation of the council in protecting the citizens of New York City is historic and indisputable. Numerous initiatives generated by this body have made NYC one of the safest and healthiest places to live; be it crime, disease eradication or cleaner streets. When problems affecting the citizens of New York are discovered, the Council and its members act and act quickly. In this context, I applaud the passing of the first "motor vehicle idling law" and urge you to accept these modest amendments to future improve the health of NYC's children and the environment.

Over the years, several faculty at Hunter College have worked with The Asthma Free School Zone staff to document air pollutants adjacent to NYC's public schools (see AFSZ testimony). This work has, in part, brought us to this amendment. The specific points I wish to express are that the proposed amendments will:

1. reduce particulate emissions emanating from motor vehicles
2. ultimately improve childhood related respiratory disease
3. save a valuable and non-renewable fuel; namely petroleum
4. reduce NYC's contribution to greenhouse gases
5. send a strong message to all operators of motor vehicles to behave in an environmentally responsible manner

My only concern with these amendments and the existing regulation is the apparent lack of advertising and enforcement. When I ask my graduate students about the existing law, 3 minute limit on idling, I get the response "I didn't know that". These are adult graduate students studying public health. I ask that you consider "getting the word" and more rigorous enforcement.

In summary, I respectfully ask that this proposed amendment be endorsed by the full committee and the NYC Council and enacted into law.

Sincerely:

Jack Caravanos, DrPH, CIH
Associate Professor of Environmental Health and
Track Coordinator; EOHS MS / MPH degree programs

Comments on Intro 40 and Intro 631 – Legislation Limiting Vehicle Idling

By

Franklin E. Mirer, PhD, CIH
Professor, Environmental and Occupational Health Sciences
Hunter College Urban Public Health Program
City University of New York
425 E. 25th Street
New York, NY 10010

These comments intend to inform the City Council about the potential for respiratory, cardiac and cancer health effects arising from emissions from idling vehicles and vehicles generally. My opinion is that feasible reductions in particulate emissions should be implemented.

I am Franklin E. Mirer, Professor, Environmental and Occupational Health Sciences at Hunter College. I am also Principal Investigator of the Asthma Free School Zone's project on contribution of idling to exposure to children at school dismissal.

Very strong and extensive evidence that increases in particulate air pollution in the range of current exposures is associated with increased illness from respiratory, cardiac diagnosis and cancer. This evidence was so strong that in 2006, EPA reduced its short term ambient air quality limit for fine particles to 54% of the previous value. Despite this, the EPA's Clean Air Act Science Advisory Committee (CASAC) protested that the long term exposure limits did not protect the population. The CASAC is now chaired by Jonathan Samet of the Bloomberg School of Public Health at John's Hopkins University. The role of particles in cardiac effects is recognized by the American Heart Association.

This literature consists more than a dozen studies in many cities with many endpoints ranging from mortality to hospital admissions.

Numerous other studies implicate proximity to traffic in respiratory effects among children.

The International Agency for Research on Cancer, the most authoritative scientific review group, has classified Diesel Particulate Matter (DPM) as "probably carcinogenic to humans," based on laboratory studies and observations of increased lung cancer among truck drivers and railroad personnel This conclusion is echoed by EPA and the US National Toxicology program, although no exposure limit or air quality standard has been set. Exhaust from gasoline engines is classified as "possibly carcinogenic to humans," based on laboratory studies; there are few studies which address this effect in people. There is little data on emissions from compressed natural gas engines.

The studies supporting the reduction in the EPA limit for fine particulate matter are based on ambient air quality measurements, which are typically

collected from rooftops. In New York City, the monitoring stations are mostly on the roofs of public school buildings. While we expect that traffic at street level generates some of the particulate up above, there is little data on the fluctuations of particulate exposure with traffic density or idling vehicles.

However, it is generally accepted that the smallest particles, nanoparticles, are emitted from tailpipes (and other combustion sources.) These nanoparticles don't weigh much, but are very numerous and capable of penetrating the respiratory system and get into the circulation. Penetration into the systemic circulation is suspected to be the mechanism for cardiac effects of particle pollution. The nanoparticles quickly fuse together into larger but still small ultrafine and fine particles which are measured by weight. Proximity to the source in space and time significantly changes the composition of the particle cloud. Measurement of these exposures is complex because of the contrary trends of particle number and particle weight. Diesel particulate matter can be measured directly and separately with a dedicated instrument.

Franklin E. Mirer, PhD, CIH
Professor, Environmental and Occupational Health Sciences
Hunter College Urban Public Health Program
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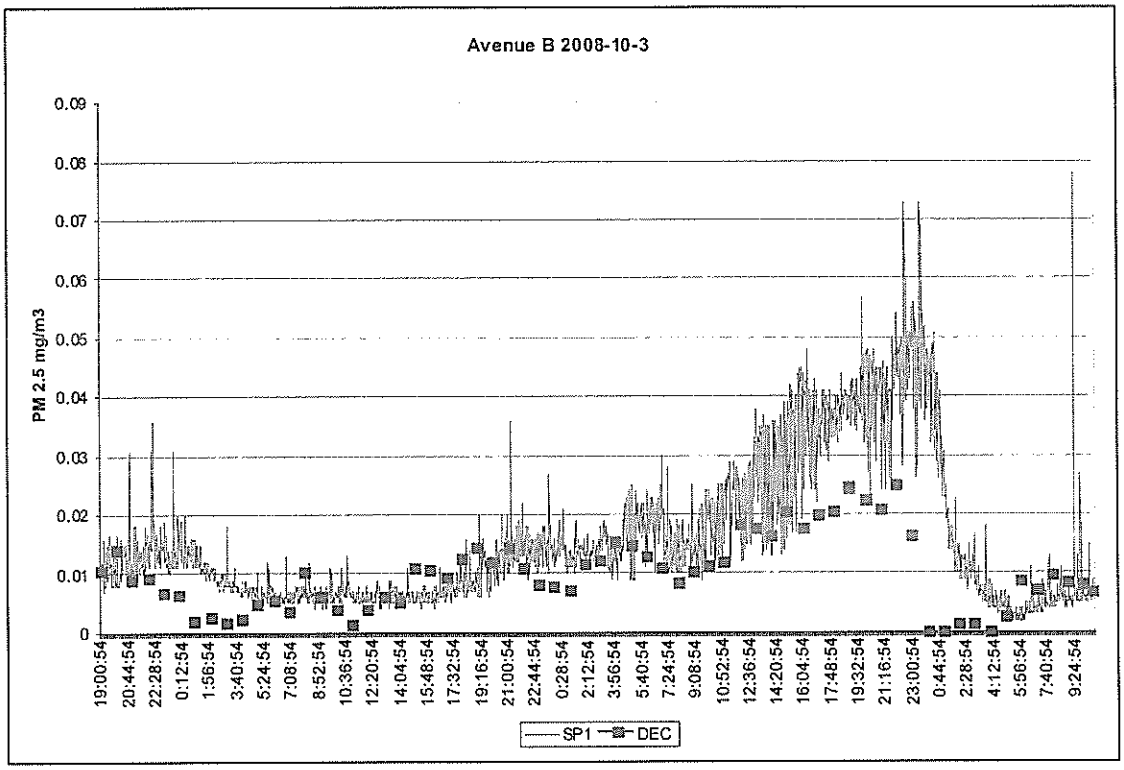

Comparison of $PM_{2.5}$ measured with direct reading instrument at street level on a one minute time scale (SP1), and the hourly $PM_{2.5}$ measured by the Department of Environmental Conservation at Division Street (DEC, red squares). There remain some issues in the normalization of the direct reading instrument. Initial data appear to show higher exposures at street level than found at rooftop.

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ENVIRONMENTAL DEFENSE FUND

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Testimony on Int. 684-A On The Use of Ultra Low Sulfur Diesel Fuel And Best Available Retrofit Technology For Generators Used In The Production of Films, Television Programs and Advertisements in New York City (Title 24, Section 24-163.8)

* * *

Prepared by Isabelle B. Silverman,
Attorney

January 26, 2009
City Council Hearing Of The Environmental Protection Committee

Good morning. My name is Neil Giacobbi and I am filling in for Isabelle Silverman who can not be here today. Thank you for the opportunity to testify today. I am testifying on behalf of Environmental Defense Fund, a non-profit, non-governmental and non-partisan environmental organization with more than 400,000 members nationwide. Since 1967, our organization has linked science, economics, and law in tackling environmental problems.

Introduction

Environmental Defense Fund (EDF) is strongly supportive of Int. 684-A as this bill is moving us in the right direction of reducing harmful diesel pollution right where people breathe, walk and play. We do not know exactly how many film, TV and advertising shooting (in short "film shoots") days in New York City use diesel generators, but numbers we have received from the City Council show that there are several film shoots happening in NYC every day. So we do know how popular New York City is for film shoots; and we do also know that film shoots using diesel generators bring noise and pollution to a neighborhood for the duration of the film shoot. As explained below, EDF is urging the City Council to pass this bill, with some minor changes, because the bill will cut 85% of dangerous diesel pollution at a cost-effective price. In other words, if a generator was rented for the duration of the film shoot, which depending on the size of

the generator could cost around $1,900 for one week,[1] those costs might increase by roughly $50-80. We believe that this slight rental fee increase will not deter production companies from doing film shoots in New York City.

City Council Has Already Passed Successful Diesel Retrofit Laws

As you know, City Council passed similar diesel retrofit laws in 2003 and 2005 for off-road and on-road vehicles respectively. The off-road construction equipment law was passed first to bring cleaner air to the already overburdened community of lower Manhattan during the rebuilding of Ground Zero.

Later in 2005, five on-road laws were modeled after the off-road law to increase air quality benefits all over the City. EDF was involved in drafting these laws and their implementing regulations. EDF has been working closely with some of the agencies that have been in charge of implementing these diesel laws since 2004.

Why We Need To Reduce Diesel Pollution Today

The newer the diesel generator, the cleaner the emissions are. However, we cannot afford to wait for natural turn over to get to the cleaner diesel generators because diesel equipment can stay in use for decades. New York City is not meeting federal health-based fine particle ($PM_{2.5}$) standards so the City needs to take advantage of every opportunity that presents itself to reduce harmful $PM_{2.5}$ emissions to maximize health and clean air benefits as soon as possible.

EPA studies have shown that every dollar invested in diesel retrofits yields several dollars in health benefits. We all know that diesel emissions and especially $PM_{2.5}$ emissions have been linked to a slew of health problems such as lung cancer, cardiopulmonary disease and stroke. In children, $PM_{2.5}$ has been associated with asthma attacks, asthma onset and impaired brain and lung development.

Since 1996 when EPA last updated the NAAQS for particulate air pollution, more than 2,000 peer-reviewed scientific studies have been published. These studies:

- Validate earlier epidemiologic studies linking both acute and chronic fine particle pollution with serious morbidity and mortality,
- Expand the list of health effects associated with PM, and
- Identify health effects at lower exposure levels than previously reported.

Just yesterday, a study was released showing that reductions in air pollution, such as particulate matter pollution, contributed to increased life expectancy.[2] Particulate

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[1] These numbers were provided by Council Member Gerson's staff. According to their research, weekly rental fees for a 80 kilowatt generators could be around $715 and $1200 for the delivery and pick up fee. The most expensive filter retrofit device that could be installed on a generator is an active filter (active DPF) that most likely costs around $15,000 depending on the size of the generator. Yearly maintenance costs are around $500. So the total costs of the filter plus maintenance would range around $20,000 and the filter lasts about 10 years. So the costs for the filter could be recovered in increased rental fees over a 10-year period.

pollution is a mixture of soot, smoke and tiny particles formed in the atmosphere, and it is associated with heart attacks, irregular heartbeat, asthma attacks, reduced lung function and bronchitis. These impacts result in tens of thousands of premature deaths from heart and lung disease annually, as well as hospital admissions, emergency room visits, absences from school or work, and restricted activities related to asthma attacks.

Because only diesel particulate filters trap $PM_{2.5}$ emissions, we are applauding the City Council for requiring the installations of 85% effective retrofit technology in its bill.

Why It Is Important To Require An 85% Reduction of PM Emissions On All Generators

The most commonly used diesel retrofit technologies are diesel oxidation catalysts (DOCs) and diesel particulate filters (DPFs). Both reduce particulate matter (PM), hydrocarbons and carbon monoxide but not nitrogen oxides (NOx).

However, the big difference between a DOC and a DPF is the PM reduction and of course the costs. DPFs reduce over 85% of PM emissions while DOCs reduce about 25% of PM emissions. DPFs trap PM emissions while DOCs facilitate a chemical reaction that reduces the size of the soot particles but the soot particles, including the fine particles (PM2.5) of the PM emissions can still escape into the air. Only DPFs have the ability to eliminate soot particles by trapping them. As discussed above, $PM_{2.5}$ is particularly harmful to our health and should therefore be trapped in a DPF for maximum health protection. This is why EDF always advocates for the installation of DPFs whenever possible so over 85% of particulate matter emissions can be captured in the filter.

Again, EDF applauds the Council Members for requiring an 85% particulate matter reduction for all diesel generators over 50 hp, as stated in Section b.(2). Because previously mentioned diesel retrofit laws passed by City Council have helped develop new markets for new retrofit technologies over the last 5 years, we are now in a position to reduce 85% of particulate matter emissions on all diesel generators over 50 hp.

We have the so-called "active" DPF retrofit technologies at hand that do not depend on the exhaust reaching a certain exhaust gas temperature for a so-called "passive" DPF to work.[3] Active and passive DPFs have successfully been installed on various sites in Manhattan. For example, DPFs have been installed at the lower Manhattan redevelopment site, the Croton Water Filtration plant, Columbia University expansion

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[2] New England Journal of Medicine, January 21, 2009, C. Arden Pope III of Brigham Young University, lead author of the study stating that the reduction in pollution accounted for about 15% of the nearly three-year increase in life expectancy.

[3] Passive DPFs are less expensive than active DPFs. Passive DPFs can be used when the exhaust gas temperature of the diesel vehicle reaches a certain level so that the heat from the exhaust gas temperature can burn off (regenerate) the soot trapped in the filter. If the exhaust gas temperature of a certain vehicle is too low, only an active DPF can work. An active DPF uses either electricity (by plugging in over night) or a little bit of fuel to burn off the soot trapped in the filter.

site and some school buses. The affected communities and the construction workers have responded enthusiastically to the air quality improvements.

Therefore, due to these successful applications of diesel retrofit technologies, we no longer need to install less effective diesel oxidation catalysts (DOCs) that only reduce diesel particulate matter by 25% and we no longer need to provide for this less effective retrofit option in the law.

Filter Retrofits Are Very Cost-Effective

DPF retrofits are very cost effective compared with the clean air benefits they bring to NYC communities. Passive and active DPFs cost between $7,000 and $15,000 depending on the generator. Because these DPFs last for about 10 years, the costs can be recovered with slightly increased rental fees over a 10-year period. Rental companies charge different prices for different size generators but if the costs of a DPF are spread out over the lifespan of the filter, rental fees will only slightly increase. We estimate about a 2-4% increase of the generator rental fee. Compared with the overall budget for the film shoot, those 2-4% increase on the generator rental fee are most likely insignificant but the pollution reduction will be significant to the people living and walking near the film shoot site.

Recommended Changes

EDF is recommending official "clean air retrofit" stickers for all the retrofitted generators. A sticker could read "This generator has been retrofitted with a device reducing over 85% of soot pollution". Such stickers could be verified and distributed by the NYC Department of Environmental Protection to monitor compliance. We also recommend a sticker right next to the fuel intake warning that the retrofitted generator can only be fueled with ultra low sulfur diesel fuel with no more than 15 parts per million sulfur content.

As to Section d., it might not be necessary to require that generator rental companies retrofit <u>all</u> of their generators to comply with this law. Although that would increase clean air benefits, it might be sufficient for a company to have a number generators retrofitted for when they are being used in NYC film shoots. It is unclear to us when this 2 year period would start.

No Implementing Rules Are Necessary

We are recommending that the reference to "promulgation of rules" in Section 3. be removed because implementing rules should not the necessary for this diesel bill. Now that we have tested DPFs and they work, it is no longer necessary to have the commissioner publish a list (i.e. implementing rules) as to the best available technology for reducing the emission of pollutants to be used for each type of diesel-powered generator.

Thank you for the opportunity to testify.

For questions, please feel free to contact me at 212-616-1337 or isilverman@edf.org

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ENVIRONMENTAL DEFENSE FUND

finding the ways that work

Testimony to the New York City Council To the Environmental Protection Committee

Regarding

Idling Bills Hearing About Int. 40-A, Int. 631-A, ~~684-A,~~ and Int. No. 881-A

Drafted by Isabelle Silverman,
Attorney at Environmental Defense Fund,
and presented on January 26, 2009

Introduction

Thank you for the opportunity to testify today. Environmental Defense Fund (EDF) applauds City Council for taking the idling problem in New York City seriously which is demonstrated by the five different bills that have been introduced. I already testified in November at the City Council Oversight Hearing on this topic. However, something very tragic has happened which we believe should lead to a more drastic change in the NYC anti-idling bills.

Last Thursday, three innocent children were crushed against a wall by a van because NYC law allows drivers to leave their vehicles with the engine on. Because the transmission was set in reverse by mistake in combination with the engine on, the van was able to get out of control. The result is two dead children and one child seriously injured. This is unacceptable. We can witness it all too often, drivers leaving their vehicles with the engine running. Sometimes they even leave their children in the vehicle or a dog and they can also can push the transmission into reverse by mistake. Last November on Long Island exactly that happened when a dog pushed the transmission into drive mode and the car crashed into a coffee shop. Luckily, there nobody was hurt.

EDF is strongly urging City Council to make <u>additional</u> changes to the current anti-idling law to put an end to unsafe and unhealthy idling practices in New York City. Now is the perfect time to do that in reaction to this tragic accident and the fact that the New York City idling law has been on the books since 1971 and has practically been unenforced and has unobserved by far too many NYC drivers. We are aware that some constituents might be unhappy when they get a ticket but those unhappy feelings are far outweighed by the

safety of pedestrians who can get hurt by vehicles out of control and who are breathing in the unhealthy emissions.

This is why EDF is urging City Council to rethink their approach on idling and is suggesting the following additional changes to the anti-idling law in the administrative code Section 24-163. NYC drivers must get the general safety message that when a vehicle is pulled over (i.e. removed from driving on a street), the engine shall be turned off without delay unless somebody is actively loading or unloading the vehicle. The law can keep the other exceptions such as keeping the engine on when a lift is being operated or for refrigeration purposes if there are food products on the vehicle. In this case, the transmission must be set into parking mode. EDF is also recommending to exempt NYPD from the anti-idling law as long as NYPD officers are sitting in the vehicle and need the engine on for temperature control or to recharge equipment. However, City Council should urge NYPD to nevertheless inform their officers that the engines should be turned off whenever possible.

Because the law has been hardly enforced over the last 23 years, we believe City Council members should seriously consider the enforceability of a 3-minute rule: NYPD officers and NYPD traffic enforcement agents (if they finally get the authority to issue idling tickets) will most likely continue to avoid giving idling tickets because the 3-minute observation period is a big obstacle to increased enforcement. If City Council were to adopt and communicate to the public a "pull-over, turn off your engine" rule, the law could still provide for a 1-minute observation period for enforcement agent before a ticket can be issued. However, if the driver leaves the vehicle with the engine running, enforcement agents should be allowed to give a ticket immediately and the fine should be double. Such a change in the law could be communicated to the public with a press conference together with Mayor Bloomberg and we believe that the news would spread fast that engine idling is no longer acceptable practice. Remember, we are doing this for the safety of the pedestrians and for the health of all New Yorkers.

An EDF report that will be released this spring, shows that idling behavior is extremely common in NYC's streets and all these idling emissions ad up. Also, the pollution created by unnecessary idling and especially by diesel vehicles pose a health threat to New Yorkers right where we push the strollers, play and walk on the sidewalks.

Comments Regarding The Different Bills

In our last testimony we recommended that idling ticket authority be given to NYPD's *traffic* enforcement agents as well as general police agents. Thank you for including this suggestion in Int. 881-A.

We are also pleased with a 1-minute idling law around schools but as stated above, just make it 1-minute for the entire city. It will make enforcement easier and will cause less confusion with the public. As stated above, you have a very good reason to change the law to 1 minute, especially now that such a tragic accident could have possibly been avoided.

EDF is in favor of additional anti-idling signage around schools and other areas with sensitive population (e.g. hospitals) and in areas with high concentration of idling vehicles (e.g. around Port Authority) and 42nd Street.

As to allowing idling for longer periods of time if temperatures are below or above a certain temperature. This seems unpractical because then enforcement agents would need to carry around a thermometer. The law could simply have a provision that if temperatures were below freezing, the respondent can petition the Environmental Control Board to dismiss the ticket. This way, it is up to the respondent and the ECB to act, not the Traffic Enforcement Agent. We believe that to increase enforcement, the law must be simple and straight forward otherwise we will have business as usual as we had for the last 28 years. We trust that City Council wants to see its laws enforced as much as possible.

As to anti-idling reduction technology for ambulances, EDF applauds the effort to reduce engine idling from ambulances because ambulances typically idle 24 hours a day and spew out harmful diesel pollution when idling. We are recommending a pilot program for ambulances to test auxiliary power units or possibly additional batteries that could help refrigerate medicine when the engine is off. EDF would be happy to work with the City on such a pilot project and help with expertise on the topic.

EDF Report Result Summary

Over the last seven months, EDF has observed and recorded actual idling behavior in NYC. Our consultants performing in-field idling observations certainly did not have to walk far to find idling vehicles. On average, they were able to find 2-3 idling vehicles on each block. When observing bus idling near Port Authority one consultant even started feeling dizzy.

We recorded idling times for 14 different vehicle types (e.g. car service, personal auto, small truck, large truck, coach bus, etc.) We recorded 486 occurrences of vehicles idling during 120 hours of idling observations. We then entered the observation results into a NYC-specific model, which was based on EPA's MOBILE6.2 emissions model, to determine idling emissions and fuel wasted. The results are summarized in a report that EDF is planning on releasing this spring. Here are a few results from the report.

Our report estimates that every year unnecessary curbside idling wastes $53 million[1] in fuel which includes gasoline and diesel. We acknowledge that this model was computed when gas prices were high over the last six months. But nevertheless, idling is still comparable to the City's estimated $60 million[2] in fuel savings if every yellow cab was a hybrid vehicle. Therefore, unnecessary curbside idling is significant and should be taken seriously. Of

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[1] Estimate from Environmental Defense Fund (EDF) report *Idling Gets You Nowhere* and based on an average fuel price of $3.94/gallon for gasoline and $4.56/gallon diesel.

[2] According to the Taxi Limousine Commission (TLC) this number was based on a gasoline price of November 2007 when gasoline was around $3.15 a gallon.

course, wasted fuel translates into emissions. Our report estimates that every year, idling cars and diesel vehicles produce 130,000 tons in carbon dioxide which contributes to global warming.

Our report further estimates that every year, New York City's idling vehicles waste 7.5 million gallons in gasoline and 5 million gallons of diesel. Gasoline and diesel vehicles both release nitrogen oxides which are a precursor to ozone formation. In addition, diesel vehicles release particulate matter, including fine particulate matter ($PM_{2.5}$) which is particularly harmful to our health. New York City is not meeting federal health-based standards for ozone and fine particulate matter ($PM_{2.5}$). Reducing unnecessary idling is a low hanging fruit that will improve air quality right where New Yorkers breathe. Even if idling emissions are not a large percentage of the overall mobile source emissions in New York City, it is the exposure that is worrisome because the emissions occur right where we walk, play and live.

Diesel emissions are harmful to our health and particularly to the health of our children. Studies have shown a wide range of health effects from vehicle pollutants. The most commonly studied illnesses have been asthma and lung disease (especially in children), and heart disease. Traffic emissions, and especially diesel soot, are widely implicated in triggering asthma attacks and impairing lung function. Some studies have found associations between traffic-related exposures and stroke; cancers, including childhood leukemia; lower IQ levels in children;[1] and adverse reproductive outcomes, such as stunted fetal development, low birth weight and premature birth.[2]

Poor air quality is a significant problem for the millions who live and work in New York City. The American Lung Association ranked New York the eighth-worst city for smog pollution in their *State of the Air* 2008 report.[3] Smog and other pollutants are linked to health problems like asthma—a disease that afflicts New Yorkers twice as often as most Americans.[4] The cars and trucks that clog city streets are a major source of this harmful pollution. Though regional sources like power plants and major industrial facilities also play a role, recent science has shown that air quality near major roads is often much worse than across the region as a whole. These roadside "hot spots" create an added health risk for the millions of New Yorkers who live and work near busy roadways.[5] Idling cars and trucks are an unnecessary source of roadside pollution.

Idling Emission Matter: Pollution In Numbers

We are estimating that the annual emissions from unnecessary NYC idling are as follows:

- 130,000 tons of carbon dioxide.
- 940 tons of smog-forming NOx.
- 2,200 tons of smog-forming VOCs.
- 24 tons of soot (PM)
- 6,400 tons of carbon monoxide.

Finally, idling vehicles, and especially diesel vehicles contribute to noise pollution.

To put these pollution numbers into perspective, here are a few comparisons:

- 40,000 cars could drive from Midtown to JFK Airport with the gasoline wasted daily by NYC idlers.[3]

- To absorb the annual carbon pollution spewed out by New York City curbside idlers, we would need to plant trees on an area the size of Manhattan.[4]

- Every year, unnecessary idling in New York City causes as much diesel pollution as 2 million trucks driving from Grand Central Station to JFK Airport.[5]

- Every year, unnecessary idling in New York City causes as much NOx pollution as 9 million large trucks driving from Hunts Point in the Bronx to Staten Island.[6]

Idling Is Expensive: NYC Idlers Waste $53 Million Annually

Often people still think that turning the engine on and off is bad for the engine. This is no longer true for today's cars and trucks. In fact, studies shows that idling for 10 seconds wastes more fuel than restarting the engine.[7] Attached to this testimony is a letter from Ford Motor Company advising drivers not to idle or warm up their engines. It states that studies have showed that an automobile could be turned off and restarted every 2 seconds for a minute and still return better fuel economy than when left idling.

Engine idling is not only bad for air quality but also ads up financially. For example, if somebody were to idle a car engine for 10 minutes a day that would waste about $56 a year.[8] If a truck idles for one hour a day, that would waste at least $675 a year, depending on the size of the truck.[9] But after adding up all the vehicles in New York City we estimate that $53 million are wasted each year with idling. This money could have been spent in other places to help bolster our economy, but instead it is wasted.

Because some drivers might not particularly care about the money they are wasting with idling, it is important to increase ticketing drastically. Once people are aware that they

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[3] Environmental Defense Fund's report *Idling Gets You Nowhere* estimates that over 20,500 gallons of gasoline are wasted daily by unnecessary curbside idling. The distance between JFK airport and Grand Central Station is 17.4 miles.

[4] Environmental Defense Fund's report *Idling Gets You Nowhere* estimates that unnecessary curbside idling produces 130,000 tons of carbon dioxide annually.

[5] From Environmental Defense Fund's report *Idling Gets You Nowhere*. This calculations estimates that a truck gets about 7 miles/gallon and the distance between Grand Central Station and JFK airport is 17.4 miles.

[6] From Environmental Defense Fund's report *Idling Gets You Nowhere*. EDF's report estimates that every year, 940 tons of smog-forming NOx is released by unnecessary curbside idling.

[7] Emissions Research and Measurement Division, Environment Canada, 2000.

[8] Calculation based on ¼ gallon of gasoline used per hour of idling and $3.70/gallon.

[9] Calculation based on ½ gallon of diesel used per hour of idling and $4/gallon.

could receive an idling ticket, they will be much more likely to a) be aware of the 3-minute idling law, and b) turn off their engines because $220-$2,000 tickets certainly will ad up.

I have personally asked drivers to turn off their engines for over 13 years now. A vast majority is unaware of the 3-minute law. When I inform them about the possibility of getting a ticket, they respond that they have never heard of idling tickets showing that it is hardly a concern to them. Occasionally, responsible drivers turn off their engines because they realize that they are wasting fuel and polluting.

Sometimes, drivers idle their engines for temperature control but this is not always the case. Often I see drivers idle their engines with the window open or when no one is in the vehicle.

Increase Awareness And Create Revenues: Outreach Campaign and Increased Enforcement

EDF is working with the Mayor's office of Sustainability and Long-term Planning on a public outreach campaign to increase awareness of the dangers and costs of idling. We hope to reach as many people as possible. Again, drastically increased enforcement would help spread the word much faster. Every driver knows that double-parking is illegal. It must become second nature with idling as well. For example, in Switzerland, where I am from, idling is a socially unacceptable practice and pedestrians will walk up to an idling vehicle to request that the engine is shut off. We hope that the same will happen in New York City eventually.

We are urging the City Council to add to the bills that idling ticket authority be given to NYPD *traffic* agents in particular. Our research shows that traffic agents currently do not have the authority or capability to give idling tickets. Traffic agents are ideally suited to give idling tickets. Because drivers idling their engines are often in the car which can lead to confrontational situations, traffic agents could be paired up. The City Council might even be able to legislate that a certain number of traffic agents are solely in charge of handing out idling tickets and be deployed mainly to idling hot spots as determined by the NYPD and DEP Commissioner.

Our estimates show that because idling behavior is so prevalent in the city, each traffic agent could raise over $2 million in ticket revenues every year. This is even a conservative estimate because this calculation is based on a ticket fine of $220. The law provides for tickets between $220 and $2,000. Even if a certain number of traffic agents are designated to hand out mostly idling tickets, *all traffic* agents should get the authority to give idling tickets. The bills could further state that the idling tickets must be issued to the drivers personally.

Conclusion

In conclusion, we are urging the City Council for the sake of our safety and health to go even further and change the law to a "pull-over, turn off your engine law" with a 1-minute observation period for enforcement agents before a ticket can be issued and a zero observation period when the driver has left the idling vehicle. Because we have seen the disastrous result an unattended idling vehicle can have, these fines should be twice the regular idling fines when the driver is in the vehicle. Idling must become an unacceptable practice in NYC. Thank you.

For questions or further information, please contact Isabelle Silverman, at 212-616-1337 or isilverman@edf.org .

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[1] S. Franco Suglia, et al., "Association of Black Carbon with Cognition among Children in a Prospective Birth Cohort Study" *American Journal of Epidemiology*, 2007, Vol. 167(3), 280-286.

[2] Craig A. Hansen, Adrian G. Barnett, and Gary Pritchard, "The Effect of Ambient Air Pollution during Early Pregnancy on Fetal Ultrasonic Measurements during Mid-Pregnancy," *Environmental Health Perspectives*, 2008, Vol. 116(3), 362-369.

[3] American Lung Association, *State of the Air*, 2008.

[4] New York State Department of Health. Data from 2004. http://www.health.state.ny.us/statistics/sparcs/, last viewed March 25, 2007.

[5] Environmental Defense Fund, *All Choked Up: Heavy Traffic, Dirty Air and the Risk to New Yorkers*, 2008.

WE ACT

BEFORE THE NEW YORK CITY COUNCIL
ENVIRONMENTAL PROTECTION COMMITTEE

REGARDING ANTI-IDLING AND USE OF ULTRA-LOW SULFUR FUEL AND BEST AVAILABLE RETROFIT TECHNOLOGY LEGISLATION

TESTIMONY OF ANHTHU HOANG FOR WE ACT
January 26, 2009

My name is Anhthu Hoang, and I am General Counsel of WE ACT for Environmental Justice. On behalf of WE ACT, I thank the City Council, Chairman Gennaro, and the members of the Committee for spearheading this effort to advance New York City's role as a world leader in environmental stewardship and sustainability planning. I am here to express WE ACT's strong support for the suite of legislation regarding idling restrictions and requiring the use of ultra-low sulfur diesel and Best Available Retrofit Technology, groundbreaking legislation that will reduce New Yorkers' exposure to toxic air pollution and promote achievement of the City's air quality goal.

WE ACT has worked for over 20 years to improve environmental protection and health for communities of color. Advocacy for greater government action to curtail air pollution has been a keystone in our efforts. As you know, diesel production and combustion generate some of the most toxic substances known; many of these cause respiratory and cardiovascular disease as well as cancer and other ailments. Our efforts over the years, we have yielded major victories in cleaning up the operation of diesel-related application such city buses, school buses, and bus depots. Despite these improvements, environmental justice communities all over New York City, and especially Northern Manhattan, still bear the greatest pollution burden, suffering the highest rates of respiratory disease, cancer, cardiovascular ailments and other associated health problems such as depression.

Some of our communities' health problems arise from the same general diesel fuel use issues that plague our City. Some, however, are the direct result of diesel engine operators and servicers who flagrantly idle their engines in violation of both State and City laws. Still more use their oldest – and worst equipment and vehicles, those with the dirtiest emissions – in our neighborhoods, reserving better materials for neighborhoods that they believe would more likely to have lawmakers' ears when they complain.

WE ACT believes that with the passage of the suite of legislation currently before the Council, we will begin to make inroads against these problems. First, the anti-idling provisions in Int. No. 631-A and Int. 40-A would go a long way toward limiting such activities, and thus their associated particulate and toxic pollution, in our neighborhoods. Int. 631-A continues to limit all idling and would lower the limit for those vehicles doing so near school zones to one minute. This action would accomplish a great deal in protecting our youngest and most vulnerable residents – our school children.

WE ACT

Int. No. 40-A would expand the ranks of individuals who are authorized to issue anti-idling tickets and notices of violation. Importantly, in addition to adding City personnel to the list or authorized persons, the bill would allow citizens to serve complaints directly to the City against violators of the idling laws. WE ACT's Resident Oversight Councils, organized to hold bus operators accountable to City anti-idling requirements, have for years documented excessive idling by a variety of operators. However, we have always had to rely on government enforcement agents to prosecute the complaints. Too often, other political priorities took precedence over our health. Here, we hope that the City would publicize this authority broadly and offer trainings for community leaders on the form and procedure to be followed in order to initiate the relevant complaints. Similarly, we hope that the City will be able to offer "smoke watcher" certification courses to City residents so that they, too, may act against those who would violate emissions standards. Finally, we urge City leaders to work with advocacy organizations like ours help these leaders in turn train their constituency so that together we could create a cadre of well-informed and empowered residents who would be empowered to act on their own behalf to limit some causes of pollution in their communities.

Second, we strongly support the Council's expanding the clean fuel and emission control requirements. Int. No. 684-A will require the use of ultra-low sulfur diesel (ULSD) and best available retrofit technology to be used for all generators used in the production films, television programs, and video advertisements in New York City. This bill would contribute tremendously to the reduction of diesel pollution generated in our neighborhoods. Film and video production is a source of revenue for the City, and we support their promotion, but many production companies run diesel generators for a multitude of purposes and for long hours as they film. We applaud the requirement for use of ULSD and best technology retrofit, and we would suggest the Council go even further to facilitate and eventually mandate all production companies filming in NYC to connect into the existing electrical grid and run as much of their equipment and vehicle through plug-in sources rather than diesel generators.

We also support the Auxiliary Power Unit (APU) in ambulances bill mandating installation of APU's for ambulances, whether operated by the City or 911 participating service providers. APU's would allow ambulances to continue to operate vital equipment and heating and cooling systems without having to idle their diesel engines. We recommend for the Council to require the same APUs for Fire Department and other emergency vehicles. Although emergency vehicles provide a valuable and necessary service in our City, many of them, especially those in EJ communities are aged and badly maintained. They generate a tremendous amount of particulate matter and diesel fumes as they travel through our streets and as they idle. Our residents have observed vehicles idling for no particular purpose, perhaps on only to run their heating and cooling systems and not necessarily loading or unloading passengers. The bill under consideration would go a help reduce their impact as these vehicles operate in our neighborhoods. Ultimately, we would like to see government and private operators find a way of retiring these old diesel vehicles, replacing them with electric/hybrid or alternative fuel vehicles or vehicles that can draw power from our existing electricity grid to run their lifesaving equipment while they are loading and unloading patients.

Finally, we applaud the Council's consideration of Int. No. 881-A, allowing traffic enforcement agents (TEA's) to issue notices of violation to vehicle operators who violate the City's idling law. Through smart and innovative use of existing technologies and equipment, Int. No. 881-A will facilitate the enforcement of idling laws and contribute to improving our air quality.

We urge the Council to vote yes on this important suite of legislation and maintain strengthen the City's commitment to improving air quality for all its citizens and promoting sustainability in getting to our goals.

George Pakenham
161 West 74th Street
NY NY 10023
917 972 0060

January 26th, 2009

My testimony on engine idling issue before NYC City Council.

Thank you for allowing me to testify before City Council once again. And before I begin, I am delighted to inform you that have kept up my intervention activity, *though I'm lenient in this cold spell*, and have 88 interventions since we last met. This would have produced $19,360 dollars for the City of NY if I had been issuing tickets. And I'll note I was away from NYC over Christmas for **ten days.**

Having read the letter from Gary Altman dated January 14th, I can only commend the actions of city council. You pinpointed many of the issues surrounding engine idling and have taken great steps toward solving this problem. I endorse your work entirely with two exceptions. Let me explain.

On January 7th, Isabelle Silverman and I met with the Taxi and Limo Commission. We explained our efforts. We received a full endorsement form Deputy Commission, Andrew Salkin on the no idling efforts. ...but with a caveat. Andrew strongly urged us to work to have a **ZERO** minute law, not a 3 minute law or 1 minute law around schools. Believe me Isabelle and I were pleasantly surprised.

Andrew argued that the 3 minute law would waste traffic agent's time in that they must wait 3 minutes as they observer the violation. And in court, Idlers might argue they idled 2 minutes and they were being picked on. Furthermore, there might be a need to have traffic agents have a stop watch or some device to monitor the three minute rule.

And logically speaking, what is the need for three minutes. It should be automatic. **Pull up and shut off.** That could even be an advertising tag line. Sweet and simple!!

But key here is that limo represents 11% of my data populous and thus, extrapolated, it represents 11% of all idlers in NYC. That is the most significant single category. And now it's the Taxi and Limo commission which wants to lead the way in having a **ZERO** minute rule. This is truly noble leadership.

I have even designed a quick and inexpensive test which could monitor limo drivers. I have that test parameters stapled to this testimony. I would be happy to work with Mr. Salkin to implement this test or a similar test and provide the test results to the City Council.

And secondly, it has always struck me as odd that EMS vehicles can't be housed in Fire Stations. They are under the direction of fire departments and it makes no common sense why they are relegated to the parking in the street, running their engines. Is not keeping them at Fire Houses a better solution?

In closing, I feel we are rapidly approaching the day when City Council will pass all these pending bills and Mayor Bloomberg will sign them. Thank you for your enormous efforts.

George Pakenham

TLC Test

1. In this test, the TLC is the laboratory for transportation issues within the city
2. TLC determines two test limo companies for testing the concept of a **NO** engine idle policy while waiting at a curb. Each test company shall choose 25 limo drivers to participate in the test.
3. Beta Test One of 25 shall be given a financial incentive to participate. One tank of gas paid for by the TLC at the end of the test. Beta Two shall do it as participants under the watchful eye of the TLC and be promised recognition by Commission Daus for their participation. Both groups are given **mock electronic** devices which they believe will monitor the activity.
4. Both groups to be given a box chart and pen on a clip board. The chart says
   A. Day with time slots
   B. locations
   C. did idle
   D. did not idle at all
5. At the end of 30 days, the data is tabulated. Drivers sign an affidavit that the information is accurate.
6. Presumably the test will reveal either that a financial reward is a valuable in having them obey the law or not. The drivers can fill out a questionnaire as to the hardship, if any, associated with the test.
7. The test results can be quickly tabulated and presented either to City Council or the mayor directly....if we are far enough along on the path to having him approve enforcement of the law.

Harriet Picker
572 Grand Street
New York, NY 10003

To the esteemed members of the City Council:

My name is Harriet Picker. I have lived in New York City for over thirty years. I have suffered from severe asthma for most of those years.

Asthma is a condition that seriously affects the lifestyle of those who suffer from it. Throughout my school years, I was constantly seeking medical treatment, missing class and visiting the hospital. One year I missed over 100 days out of 180 due to asthma related issues.

I now have two young children and each of them is already showing signs of asthma. You may be aware that asthma rates in New York City schoolchildren have dramatically increased over the past decade or so. The asthma rate is estimated to be 7-12%.

This will translate into great harm to the future of our city. We are already seeing increased emergency room visits, increased absence from school, and educations suffering due to asthma. It is in the best interest of anybody who cares about the future of our city to do everything in our power to reduce the irritants that cause and exacerbate asthma.

Auto exhaust is a significant contributor to air pollution and asthma. Idling adds irritants to the air in a concentrated manner, and is completely preventable. Idling near schools sends pollution directly to the lungs of our young students. Many of our schools are already situated close to high traffic areas. For example, the school where my older son attends, PS 110, is located directly under the Williamsburg Bridge on one side and about 200 feet from the FDR drive on another side. Thousands of cars drive within a few hundred feet of this school each school day. Each of these cars adds harmful pollutants to the air. Each of these cars contributes to the asthma rates in our city schools. But each of these cars drives by and takes its exhaust away with it.

An idling car sits in front of school and spews auto exhaust into the school for as long as it sits there. In fifteen minutes, one idling car can add as much pollution to the school air as several hundred cars driving by. This is totally preventable by simply turning off the car.

Our children deserve cleaner air and this simple step will dramatically improve the quality of the air and the quality of our students lives.

Thank you very much for your time.

ASTHMA FREE SCHOOL ZONE

Cecilia Galarraga, Program Associate

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Real World Foundation
131 Avenue B, 1st Floor
New York, NY 10009

Good morning. My name is Cecilia Galarraga and I work with the Asthma Free School Zone. However, today I am presenting this testimony on behalf of the children on the *Health Patrol at PS 28* in the Mt. Hope neighborhood of the Bronx. They recognize the effect that vehicle pollution has on their lives and on the lives of their peers. Since they were unable to make it to today's hearing, I'd like to read their statements in support of **Intro 631**.

Marc Vazquez, grade 3
Please tell everyone, Stop waiting with the engine on because kids pass by and they will get asthma. If cars are near to the playground then kids will get asthma quickly. When I have asthma my heart beats a lot and I don't know why.

Maria O., grade 3
Air needs to be clean because people can get sick. I want to protect my sister because she's sick from asthma. And I want to protect all people who have asthma.

Stephan Phillips, grade 3
If you leave a lot of dirty air and people have asthma they will have problems breathing the air around them. If you have asthma and there is dirty air around you it could be that you cough when you run a lot and your body feels strange.

Jalen Natera, grade 4
Adults should stop leaving their engines on and smoking outside the school. It can get inside kids' lungs.

Jarlyn Alvarez, grade 4
I think the air should be clean outside because a lot of people are sick with asthma, and the pollution is affecting the earth.

Brianna Peterkin and Delicia Holly, grade 4
The air should be clean outside the school because it's wintertime and people are getting sick, and if the air is not clean it will cause more sickness. Many kids go to the hospital and lose learning time.

Gissell Vargas
I think the air should be clean because a lot of kids that have asthma can get really sicker.

Lemuel Ovalles, grade 5
We kids breathe the air that people pollute and it's bad for our lungs.

Andrew Estrella, grade 5
Pollution is bad for our bodies. If your kids get asthma because of the pollution … you won't like it!

Kenneth Addae, grade 5
I think people shouldn't idle for more than 1 minute. They shouldn't do that because it will be harder for people with asthma to breathe. My godbrother has a cousin that has asthma. She doesn't have very good breathing.

On behalf of the *Health Patrol at PS 28*, thank you very much for your time, and we hope that you will support **Intro 631** and support increased protection for the children of New York.

January 26, 2009

TESTIMONY OF THOMAS J. HILLGARDNER (Intro 881-2008)
Executive Director, New York City Parking Justice League

My name is Thomas J. Hillgardner and I am the Executive Director of the New York City Parking Justice League, a former owner of a motor vehicle, and a regular user of New York City air. The Parking Justice League advocates for the interests of motor vehicle owners who operate their vehicles in New York City to fairness and due process in the enforcement and adjudication of parking violations.

Without a doubt, engine idling is frequently unnecessary and causes unnecessary pollution. The present initiatives recognize this and rightly looks to address the health problems created by unnecessary engine idling. Accordingly, we support almost all of the proposed legislation – that is all except for Intro. 881-2008 which would require that handheld devices used by traffic enforcement agents (TEAs) to issue Notice of Parking Violation (NOPVs) be equipped to permit TEAs to enforce violations of Section 24-163 of the Administrative Code of the City of New York (ACCNY).

Firstly, the Parking Violation Bureau (PVB) is without jurisdiction to adjudicate violations of ACCNY § 24-163 as engine idling in a legal parking space is not a parking violation and where Sections 235-237 of the Vehicle and Traffic Law (VTL) restricts the jurisdiction of the PVB to the hearing and determination of parking violations. The handheld devices only issue NOPVs returnable before the PVB. The proper place for a violation of ACCNY § 24-163 to be heard and determined is the Environmental Control Board (ECB) - not the PVB. Although we object to any enlargement of the PVB's jurisdiction at the present time, the proper approach would be that used last year to expand the jurisdiction of the PVB to hear and determine "blocking the box" offenses, *i.e.* by defining that offense as a parking violation under state law. Similar legislation is required here. The briefing paper dated November 25, 2008 on Intros 40 and 631 conceded that engine idling "arguably" is not a parking violation. Thus, the City Council knowingly will be passing legislation that violates state law and the due process rights of motorists if it passes this legislation.

Secondly, we oppose any legislation ever proposed expanding the powers of TEAs to issue NOPVs and the jurisdiction of the PVB so long as the City continues to turn a blind eye to the blatantly illegal conspiracy that exists between the Police Department and the Finance Department concerning the proper issuance of NOPVs. Presently, the Police Department trains its TEAs that they may always issue the NOPV to the owner of the vehicle by conspicuously affixing the NOPV to the vehicle even when the operator is present. This ignores the requirement of VTL § 238(1) requiring the issuer of a NOPV to ascertain the identity of the operator, if present, of the vehicle allegedly committing the parking violation. Because the City only cares to proceed against the relatively deep-pocketed owner as opposed to the operator who has no vehicle that may be towed to enforce payment, TEAs are trained to dispense with ascertaining the identity of the operator. This is some of the best evidence that the whole parking enforcement system is married to the revenues it generates and it doesn't really care one iota about deterring parking violations where it systematically ignores the persons

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actually committing the violation and declines to bring them before the bar of justice. But what makes this a conspiracy is the coordination between the Police Department and the Finance Department wherein the Finance Department trains all PVB Administrative Law Judges (ALJs) to sustain NOPVs against all challenges to service notwithstanding the VTL service requirements. ALJs are trained to find "unpersuasive" all claims that the operator was present and the TEA neither requested the operator's identification nor served the NOPV on the operator personally. *See,* 62A *McKinney's* Veh. & Tr. L. § 238(1) (Supp. 2008). In *Sheng v. City of New York,* (USDC/EDNY Dkt. No. 05-CV-1118 (RRM)(VVP)), a federal civil rights action challenging many aspects of the parking enforcement and adjudication system, Corporation Counsel has taken the absurd position that VTL § 238(1) does not require it to serve the NOPV on the operator, if present. *Cf.* VTL § 238(1). Rather, they argue that the TEA has a choice and may serve it on the owner in the first instance by conspicuous affixation. But the plain language of the statute makes it abundantly clear that the City is dead wrong when it makes this argument. But more importantly, the City is making criminals out of every TEA it trains to issue NOPVs in this way where the oath contained on every NOPV spewed out by these devices and that is signed by each TEA states:

> I affirm under the penalty of perjury (PL § 210.45) that I personally observed the offense charged above. If the operator was present, I indicated the operator's name or indicated "ID Refused" and personally served this Notice upon him/her. If the operator was not present or refused to accept personal service of the Notice, I affixed this Notice to the vehicle.

By training TEAs that they may serve the owner by conspicuous affixation and dispense with requesting the operator's identification even when the operator is present, the Police Department trains their TEAs to lie whenever the operator is present and the TEA does not seek to obtain the operator's identification. The new block the box legislation has caused an enormous upswing in illegal service and TEA perjury. Because this present legislation would drastically increase the number of encounters between TEAs and vehicle operators, it would also increase the number of times TEAs lie about the presence of the operator and inflict liability on the owner without ascertaining the identity of the operator as required by state law. If the City played fair with motorists and obeyed the VTL's requirements for proper service of a NOPV, we would have no objection to this proposal, provided that you sought the necessary legislation from the state. But until that time, we will oppose all expansions of PVB jurisdiction. It does not do well with the fair administration of justice with the jurisdiction it already possesses.

Finally, we urge the City Council to investigate the conspiracy that exists between the Police and Finance Departments that dispenses with the due process rights of motorists to proper service of a NOPV in order to assist the City in collecting as much revenue as possible on the backs of the owners of motor vehicles who operate their vehicles in the City of New York.

Respectfully submitted,

Thomas J. Hillgardner, Esq.

New York City Parking Justice League
82-63 170 Street, Jamaica, New York 11432
(718) 657-0606

January 26, 2009

Testimony of Ellen Peterson-Lewis, Public Member of CB#2 Environment, Public Health &Safety Committee. Email ADLEPL@aol.com RE: Proposed Intro 40-A– A Local Law to amend the administrative code of the city of NY, In relation to enforcement of the restrictions regarding engin idling.

School Bus Background

1. There are approximately 6,200 yellow school buses in NYC
2. They are privately owned and contracted by the Board of Education
3. Local Law requires that half of the buses must be modernized with pollution control devices by September 1, 2006 and the rest by 2007.
4. The Board of Education included a bus age provision in their four-year contract extension for the 52 private operators that run the school buses in 2005
5. The contract states that no more than 25 percent of the buses in the contractors fleet can predate 1990.
6. The requirements change every year, so that by 2009 any bus built before 1990 will have to be retired.
7. If the same rate is applied in future contracts, the last pre 1996 bus will be retired in 2015

Comment

1. Who checks to see if the 52 companies are complying with the Board of Education contract?
2. Pollution control devices do not work on older buses. Pre 1996
3. It is unclear how many pre 1996 buses that each company has and that are currently servicing schools.
4. It is also unclear about private school buses.

School Bus Idling Comments:

1.Diesel exhaust containing fine particulate matter, as well as well as carbons and other toxic substances from idling school buses accumulate in and around a bus thus compromising the health of children waiting to board a bus or disembark from a bus.

2. When idling in front of a school the diesel exhaust can pollute the air inside the school building through open doors, windows and intake vents thus compromising the health of the students, teachers and staff.

3. Diesel fine particulate matter is suspended in the air for at least 24 hours.

4. With low sulfur fuel there is still a problem with diesel particulate matter unless there is a diesel particulate exhaust filter.

5 The agreement with NY State Attorney Generals concerning an agreement for 75% of bus companies to eliminate unnecessary idling within on block of a school does not solve the problem of diesel fine particulate matter not being introduced into residential buildings, stores and the usually busy pedestrian sidewalks where most schools are located.Also ,what about the other 25 % of bus companies that were not included in the agreement?

Summation:

Idling school buses and pre 1996 buses are an immediate health threat to children & youths who have asthma, allergies, and those who have comprised immune systems. There is also an immediate health threat to teachers, staff,bus drivers and aids as well as to pedestrian, seniors and residents who are one block from schools or are adjacent to schools

Before the Council of
The City of New York

Committee on Environmental Protection

Hearing

Proposed Int. No. 631-A To Amend the NYC Administrative Code to restrict motor vehicle idling.

January, 26 2009

Testimony of the American Bus Association

Introduction

Members of the Committee, my name is Clyde Hart and I serve as Vice President of Government Affairs for the American Bus Association. On behalf of the association, I want to thank you for the opportunity to testify before you on the issue of restricting motor vehicle idling in New York City.

The American Bus Association is the trade association for the over-the-road motorcoach industry in North America. The ABA is made up of 3400 member organizations engaged in the tour and travel industry in North America. Our membership includes the State of New York; most of the boroughs in and around the communities surrounding New York City; the Empire State Building; the Schubert Theater and NYC & Company. In addition, ABA has over 800 bus operators who provide all manners of transportation services to the traveling public. In the New York City area, our membership list includes Academy Bus Tours, which provides commuter services to NYC; Greyhound Bus Lines and Peter Pan Bus Lines, which provide intercity service; as well as bus tour companies such as Coach USA (Grey Line) and New York-based companies like Campus Coach and Hampton Jitney.

The intercity bus industry is the largest transportation network in the United States. We provide 750 million passengers trips each year. This number exceeds even the airline industry and Amtrak. In fact, the intercity bus industry transports more people in two weeks than Amtrak does in a year. The importance of the industry to the national, state and local economies is not limited to transportation. The economic "reach" of the industry can be gauged by the hotels, tourist destinations, and restaurants that are ABA members. Indeed, a study by the George Washington University (a copy of which is attached to my testimony) demonstrated that each motorcoach load of tourists in New York City spends an average of $4,563 on meals, attractions, fuel and fees in one day. If the same busload stays overnight, the average amount spent jumps to $11,264.

We all recognize that New York City is a prime tourist destination. While ABA members and the motorcoach industry look on New York City as a customer, salesperson and ally in providing tour, travel and transportation to the public, we are not sure that the City knows the value the motorcoach industry brings to the City.

First, the motorcoach industry delivers many people to New York City - the commuters who come to the Port Authority Bus Terminal; the visitors who take the bus from the local airports; and the students, senior citizens groups and special charters who come into the City by motorcoach. There are millions of visitors who use motorcoaches every day while in the five boroughs of New York. Indeed, ABA believes that during peak periods, there are a thousand commuter buses and a thousand charter and tour buses each day in New York City. Despite the large number of residents and guests who use motorcoach services, New York City has a reputation of being less than "friendly" to motorcoach operators.

The Committee Hearing

The regulation under consideration (Proposed Int. No. 631-A) will amend Section 24-163 of the New York City Administrative Code to further restrict idling of vehicles in school zones that are not owned, leased or contracted for by schools for the transportation of pupils, teachers and other persons acting in a supervisory capacity to or from school or school activities. At present regulations prevent buses from idling for over three minutes and prohibits any idling while parking, standing, or stopping at any terminal point, whether or not enclosed, along an established route if the ambient temperature is in excess of forty degrees Fahrenheit.

The ABA Position

First of all, the ABA respectfully submits that the present regulation (Section 24-163) is unworkable and is a detriment to tourism in the City. Moreover, the idling regulations do not and cannot reduce air pollution or congestion in the City.

Simply stated, there is no way for a fully loaded motorcoach to safely load or unload passengers and their baggage within the three minutes allowed by the regulation. Any motorcoach will just require more time. In addition, the amount of time required will increase with the age and the passengers' lack of mobility. Furthermore, it is ABA's experience that younger school aged children will require more, rather than less time to embark or disembark from a bus. Finally, if the passengers are disabled even more time will be required to see to their needs.

Moreover, the idling regulation is untenable from a health and safety perspective. Given the traffic congestion in New York City, particularly midtown Manhattan, it can be extremely difficult, if not impossible, for a motorcoach driver to find a place to park and load or unload his passengers safely. Thus, the driver must either double park and then load or unload or drive around the area until the driver can find parking. The former can

expose passengers, pedestrians and other vehicles to danger as the bus is loaded or unloaded; the latter certainly increases air pollution and congestion on the streets of the city.

Another defect in the idling regulation is the prohibition of any idling whenever the ambient temperature is in excess of forty degrees Fahrenheit. The motorcoach is designed to provide air conditioning (as well as heat) to the passengers only when the motor is running. Thus, without idling, there is no cool air for the passengers in the summer or heat in the winter. Even more significantly, the motorcoach engine provides power for the brakes to operate. A motorcoach requires more than three minutes to provide air conditioning and heat. Indeed, depending on the severity of the weather, it can take up to thirty minutes before the vehicle can provide some modicum of comfort to the passengers. As to the time needed to ensure sufficient power to the brakes, it is clear that any driver who engages the engine after just three minutes cannot be sure that the brakes will function correctly in an emergency situation.

What is missing from the current regulation is any indication that the health and safety needs of the passengers were taken into account when the regulation was adopted. ABA members have a certain expertise in these matters. 40% of our passenger base is made up of the elderly and up to 40% of our base are students, two groups that are most sensitive to temperature fluctuations.

While the focus of my testimony is the idling regulations, I would be remiss if I did not take a few seconds to point out another related issue that certainly exacerbates the problems of congestion and air pollution. New York City's lack of bus parking hinders the motorcoach industry and, when combined with the idling regulation, really defeats what ABA perceives is the purpose of the idling regulation. It is a fact that the use of a motorcoach can take as many cars off the road as there are passengers in the bus. This is a wonderful result for those of us who want less pollution in the air and less congestion in the streets. But, the lack of bus parking requires motorcoach drivers and their passengers to wander the streets of the city in a search for places to safely embark or disembark the passengers, their personal belongings and luggage. This search only increases the emissions put out by the motorcoach, a result that does nothing for safety, congestion or the city's air quality.

Conclusion

ABA, like New York City, supports tourism, mobility and environmental stewardship. ABA wishes to work with the city and with the City Council to find ways to increase bus parking and to decrease idling by buses. Restrictive idling regulations do not help the city in its quest for cleaner air, safer streets and less congestion. New York City should modify its regulations to allow motorcoach operators latitude to idle a bus to ensure the safety, health and comfort of its passengers and work with the ABA and its members to find other ways to improve the air, relieve congestion and provide a safe, healthy and enjoyable environment for all who work, live and visit the city of New York.

ABA thanks you for this opportunity and wants to ensure you of our continuing efforts to find adequate bus parking and to enact fair idling regulations.

AMERICAN BUS ASSOCIATION

Representing the motorcoach, tour and travel industry

6/14/2006

Dear Colleague:

It is my pleasure to share with you "Commercial Bus Emissions Characterization & Idle Reduction: Idle & Urban Cycle Test Results." Prepared by the American Bus Association, with financial support from the U.S. Federal Highway Administration and in consultation with the Department of Energy and the Environmental Protection Agency, this report summarizes the results of emissions and fuel use testing conducted on commercial buses while idling and also while driving in simulated low-speed urban traffic ("urban cycle").

Motorcoach operators currently face a patchwork of varying idling ordinances across the nation and limited parking opportunities. When faced with no real alternative, operators sometimes choose to circulate in traffic, for operational and comfort reasons affecting both the passengers and the driver. The impact of that decision is measured in this report. Motorcoaches reduce congestion by taking cars off the road and are an energy efficient means of travel. Measured as a whole, the net annual emissions of motorcoaches and transit buses combined produce significantly less pollutants (nitrogen oxides and particulate matter) when compared with gasoline cars and light trucks. And upcoming EPA mandated diesel engine emission standards, which the industry is working with engine manufacturers to implement insure that emissions standards for new engines will reduce bus emissions even further.

It is often necessary for motorcoaches to idle in order to maintain cabin temperature and to operate the vehicle systems that will provide "safe and adequate service, equipment and facilities" (such as wheelchair lifts, air brakes, etc.) as is required under Section 14101 (a) of 49 USC. However, in recent years idling by buses has come under scrutiny because of its potential negative effect on urban air quality creating a conflict between safe operations and pollutant reduction initiatives. Further, it's important to understand that motorcoach operators do not benefit from idling their vehicles considering not only the associated environmental impact but also the cost of fuel and wear on the engine. This report provides helpful information for planners and policymakers that recognize the environmental and congestion-mitigating benefits of motorcoach transportation but, at the same time, must find ways to reduce vehicle emissions and improve air quality. This report demonstrates the need for planners to be thinking in terms of facilitating

motorcoach travel by providing places for these vehicles to park rather than imposing policies that discourage motorcoach travel.

Our industry understands the environmental implications of motorcoach idling and we want to work towards solutions. It's the industry's intention to continue the dialog with state and local decision makers to find those solutions.
The sponsors of this report have produced this document as a first step which will be followed by a deeper look into the issue through meetings with federal, state and local officials and industry in the months ahead. Any input or questions are welcome and can be directed to the American Bus Association at 1-800-283-2877.

Sincerely,

Peter J. Pantuso

Peter J. Pantuso
President and CEO

Commercial Bus
Emissions Characterization & Idle Reduction

Idle & Urban Cycle Test Results

June 14, 2006

Prepared for the:

American Bus Association

U.S. Department of Energy

U.S. Environmental Protection Agency

U.S. Federal Highway Administration

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Acknowledgements

This report was prepared by M.J. Bradley and Associates, Inc. for the U.S. Federal Highway Administration (FHWA), the Environmental Protection Agency, the Department of Energy, and the American Bus Association (ABA). All coach bus emissions data cited in this report was collected by the Aberdeen Test Center at the Aberdeen Proving Ground, Maryland in February 2006. Data was collected using EPA's Real-Time On-road Vehicle Emissions Reporter (ROVER), a portable emissions monitoring system that installs on the test vehicle.

The authors would like to acknowledge the Federal Highway Administration, the Environmental Protection Agency, the Department of Energy and the American Bus Association for their contributions to this report as well as FHWA and ABA for their financial support, which made this testing possible.

Executive Summary

This report summarizes the results of emissions testing conducted on six motor coaches with engines between model years 1997 and 2004. Each bus was tested while idling and also while driving in simulated low-speed urban traffic. For both idle and urban driving each bus was also tested with and without the air conditioning system on[1].

The intent of this test program was to evaluate the potential effects of idle restriction polices on coach buses, particularly when coaches are forced to circulate in urban traffic to maintain appropriate cabin temperatures if restricted from idling and unable to park. While it would be preferred for motorcoaches to park when waiting for passengers to return from an excursion, a lack of dedicated motorcoach parking and driver facilities often forces motorcoach drivers to keep the vehicle running in order to maintain cabin temperature comfort.

The major findings of this testing include:

Emissions

- All of the tested buses emitted significantly more NO_x when driving in simulated urban traffic than when idling with the bus stationary. For older coaches NO_x doubled – increasing by 200 grams/hour (g/hr) on average when driving compared to idling. For newer coaches the increase in NO_x emissions from urban driving compared to stationary idling was 40%.
- If a coach bus is forced to circulate in traffic to maintain appropriate cabin temperatures, rather than idling while stationary, it will emit up to 22 pounds of excess NO_x emissions annually for only one hour per day of circulating. For older coaches, NO_x emissions from one hour of circulating are equivalent to NO_x emissions from two hours of stationary idling.
- NO_x emissions generally increased when the air conditioning was on compared to when it was not on. In this test program the increase was less during urban driving than while idling, but the relatively low ambient temperatures during the testing mean that the results are probably not fully reflective of actual summer results in many parts of the country.
- For both idling and urban driving, as well as with and without air conditioning, the two newest buses (2004 engines) produced significantly less NO_x than the four older buses. This is consistent with more stringent EPA emissions standards for the engines in these buses compared to the engines in the older buses.

Fuel Use

- All of the tested buses used significantly more fuel when driving in simulated urban

[1] Testing was conducted on an out-door track during times of relatively cool ambient temperature. For that reason the results with air conditioning on are not fully reflective of true summer conditions in most parts of the country. Increases in fuel use and emissions with air conditioning as compared to without air conditioning should be considered minimum values, and are illustrative only.

traffic than when idling with the bus stationary. For all buses fuel use at least doubled when driving compared to idling – increasing by 1 gallon per hour or more.

- If a coach bus is forced to circulate in traffic to maintain appropriate cabin temperatures, rather than idling while stationary, it will use up to 375 gallons more fuel in a year for only one hour per day of circulating.
- For all buses fuel use increased when the air conditioning was on compared to when it was not on, both when idling and when driving. In this test program the increase was less during urban driving than while idling, but the relatively low ambient temperatures during the testing mean that the results are probably not fully reflective of actual summer results in many parts of the country.
- For both idling and urban driving, as well as with and without air conditioning, the two newest buses (2004 engines) generally used less fuel than the four older buses. These buses were equipped with engines from a different manufacturer. It is not clear whether the difference in fuel use between older and newer coaches seen in this test program applies generally, or is a function of the specific engines tested.

		Older Coaches		New Coaches	
		NO_x	Fuel Use	NO_x	Fuel Use
		g/hr	gal/hr	g/hr	gal/hr
Idling	No AC	238	0.95	116	0.64
	AC on[1]	360	1.32	160	1.00
Urban Cycle	No AC	444	2.47	156	1.59
	AC on[1]	415	2.57	194	1.79

Table 1 Average Results – NO_x Emissions and Fuel Use

Background – Coach Bus Operations

The motor coach industry is relatively small – it is estimated that in 2005 there were approximately 38,000 motor coaches operating in the US and Canada[2]. By comparison the total number of Class 8 trucks operating on US highways in 2002 was over 2 million[3]. The US Department of Energy (USDOE) estimates that in 2002 intercity buses accounted for approximately 0.2% of highway vehicle-miles traveled and 0.1% of transportation energy use, compared to 4.9% of highway miles traveled for combination trucks, and 17% of transportation energy use for all medium/heavy trucks[4].

Coach buses are a very energy efficient means of travel. USDOE estimates that in 2000

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[2] American Bus Association

[3] U.S. Census Bureau, *2002 Economic Census, Vehicle Inventory and Use Survey*, December 2004.

[4] U.S. Department of Energy, *Transportation Energy Data Book, Edition 24*, December 2004, Tables 2.4 and 3.5

the average energy use for intercity buses was 932 btu per passenger mile – compared to 3,611 btu per passenger mile for private automobiles and 4,515 btu per passenger mile for transit buses[5].

Coach buses are universally powered by diesel engines. All diesels, in buses as well as in highway trucks and nonroad equipment, contribute to the inventory of criteria pollutants all over the country, particularly nitrogen oxides (NO_X) and particulate matter (PM). EPA's 2002 National Emissions Inventory indicates that gasoline cars and light trucks produced over 44,000 tons of PM and almost 3.8 million tons of NO_X in that year, while heavy-duty diesel trucks produced over 87,000 tons of PM and 3.7 million tons of NO_X. By contrast heavy-duty diesel buses (including coaches and transit buses) produced only 7,400 tons of PM and 130,000 tons of NO_X.[6]

Current and future emissions standards for new diesel engines will dramatically reduce these emissions from the diesel fleet, including buses, in the near future. Allowable NO_X and PM levels from new buses sold in 1998 were 63% and 83% less, respectively, than the levels from buses sold ten years earlier[7]. New rules that will go into full effect in the 2010 model year will reduce allowable NO_X and PM by a further 90% or more[8]. The US Environmental Protection Agency estimates that based on normal fleet turnover total NO_X and PM emissions from onroad trucks and buses will fall by 77% and 84%, respectively, through 2020 -despite a 40% increase in vehicle miles traveled between now and then[9].

In recent years idling by buses and other urban vehicles has come under scrutiny because of its potential negative effect on urban air quality. Many cities have imposed blanket restrictions on idling of buses and trucks. There is no comprehensive data on idling behavior of coach buses. More is known, however, about idling by sleeper cab-equipped combination trucks. Operators of these trucks often rest in the sleeper cab for 8-10 hours per day, either at a truck stop or at a rest area along the highway. Often they keep the truck's main engine idling to provide heat/air conditioning and electrical power to the sleeper cab. Section 14101 (a) of title 49 of the United States code of law requires that motor carriers of passengers licensed to operate in interstate commerce must provide "safe and adequate service, equipment, and facilities." To meet this service standard, it is often necessary for a motorcoach to idle in order to pump up the motorcoach air pressure systems to ensure brake performance as required by 49 CFR 393.52; utilize Americans with Disabilities Act mandated wheelchair lifts; and operate the heating or air conditioning system to warm up or cool down the interior of the motorcoach.

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[5] Ibid, Table 2.12

[6] U.S. Environmental Protection Agency, *Final 2002 National Emissions Inventory*; from EPA Technology Transfer Network website, February 23, 2006. < http://www.epa.gov/ttn/chief/net/2002inventory.html>

[7] U.S. Environmental Protection Agency, *Emission Standards Reference Guide for Heavy Duty and Nonroad Engines*, EPA420-F-97-014, September, 1997

[8] U.S. Environmental Protection Agency, *Control of Air Pollution for New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements; Final Rule*, Federal Register, 66(12):5002. January 18, 2001

[9] U.S. Environmental Protection Agency, *Regulatory Impact Analysis Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*, EPA420-R-00-026, December, 2000

The combination of large numbers of trucks with daily long duration idling means that idling of trucks results in significantly more emissions and fuel use than idling of coach buses. The US Department of Energy estimates that idling heavy-duty trucks consume up to 840 million gallons of diesel fuel annually[10] in the US. This is 60% more fuel than was used by the entire motor coach industry in 2004[11].

Test Program

Test Buses

This study focused on the exhaust emissions from commercial buses used primarily for scheduled intercity, charter, tour/sightseeing, and private/contract commuter services. Vehicles in this 'motor coach' fleet are designed for long-distance travel, and are characterized by "integral construction with an elevated passenger deck located over a baggage compartment"[12].

GROUP	Engine Year	USEPA Emission Standards (g/bhp-hr)		% of Fleet
		PM	NO_X	
1	Pre 1990	0.6	6.0	0 - 5%
2	1991 – 1993	0.25	5.0	10 – 15%
3a	1994 – 1997	0.1	5.0	50 – 65%
3b	1998 – 2002	0.1	4.0	
4	2003 +	0.1	2.5	20 – 30%

Table 2 Current Motor coach Fleet

Vehicles in the US motor coach fleet are fairly uniform in terms of vehicle size and configuration, as well as engine type and size. The latest census of motor coach operators indicates that 60% of motor coaches are 40-feet long, 10% are 45-feet long, and 30% are between 35-feet and 40-feet.[13]

In terms of this study, the most important difference between different motor coaches is the engines' year of manufacture, since EPA emissions standards for diesel engines have changed dramatically in the last 20 years. Table 2 organizes the current motor coach fleet into five groups based on EPA emissions standards for NO_X and PM. Also shown is an estimate of the percentage of the current motor coach fleet that falls into each group[14].

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[10] U.S. Department of Energy, Energy Efficiency & Renewable Energy, *Idle Reduction Technologies for Heavy Duty Trucks, Technology Introduction Plan,* May 13, 2004

[11] American Bus Association

[12] American Bus Association

[13] American Bus Association, United Motor Coach Association, METRO Magazine

[14] Good data on the fleet composition is not available. These estimates are based on a fleet turn-over model created with input from the American Bus Association. Major assumptions include average age at replacement of 6-10 years for large fleets (25+ buses) and 10-15 years for small fleets (<25 buses). Large

Six buses were tested in this program, including two each from groups 3a, 3b, and 4 as noted in Table 1. Buses from groups 1 and 2 were not tested because they make up such a small percentage of the current fleet and many are likely to be retired within the next five years.

Details of the tested buses are shown in Table 3.

Number	Group	Motor coach		Engine		
		Make	Model	Year	Make	Model
1	3b	MCI	102-EL3	1999	DDC	S60
2	3a	MCI	102-DL3	1997	DDC	S60
3	3b	MCI	G4500	2001	DDC	S60
4	4	VanHool	Lier 1200	2004	CAT	C13
5	4	VanHool	C2045	2004	CAT	C13
6	3a	MCI	102-DL3	1997	DDC	S60

Table 3 Tested Buses

Test Plan

This project evaluated exhaust emissions of carbon dioxide (CO_2), carbon monoxide (CO), nitrogen oxides (NO_X) and hydrocarbons (HC) from coach buses while idling, as well as while operating over a slow speed stop-and-go test cycle designed to mimic a bus circulating in urban traffic. Coach fuel use was also measured. For both idling and the urban drive cycle, emissions and fuel use were also evaluated in simulated cold weather (no air conditioning) and warm weather (air conditioning on) conditions. On a coach bus air conditioning for the passenger cabin can add significant load to the engine, and is expected to affect both fuel use and emissions.

Since the testing took place in January in relatively cool weather it was not possible to test with the air conditioning system fully loaded as it would be when ambient temperatures are high. For idling tests, air conditioning was simulated by turning on the coach's "high idle" feature (boosting idle engine speed from 600- 700 rpm to 900-1000 rpm). This is consistent with the operating policies of most coach operators, and provides a reasonable minimum approximation of conditions in which the air conditioning compressor is periodically cycled on and off, as it would be when idling during the

---

fleets tend to replace old buses with new, while small fleets tend to purchase used buses from the larger fleets. Small fleets operate approximately 37% of motor coaches.

summer. During the urban driving tests the coach's cabin air conditioing system was turned on. Given the relatively low ambient temperatures it is likely that this simulation significantly under-estimated the true effect of air conditioning while circulating in traffic during summer conditions in many parts of the country.

For each test condition (idle no air conditioning; idle with air conditioning; urban cycle no air conditioning; urban cycle with air conditioning) data was collected from three 1,200-second (20 minute) repeat runs for each bus. Both the idle testing and urban cycle testing were conducted with the bus engine at normal operating temperature; no cold-start testing was conducted.

An example of the urban drive cycle used for this test program is shown in Figure 1. For this test, stops were laid out along a straight track every 0.1-mile. The bus operator accelerated away from a stop until he reached 20 miles per hour and maintained that speed until braking into the next stop, where he dwelled for 20 seconds before repeating for the remainder of the course. This test cycle proved to be very repeatable in practice. The average speed over the urban drive cycle varied between 5.9 and 7.1 mph for all runs for all buses. Percentage of idle during the urban cycle varied between 38.4% and 47.0% for all runs. For all buses the coefficient of variance[15] of average speed between the three repeat runs was less than 5.5%.

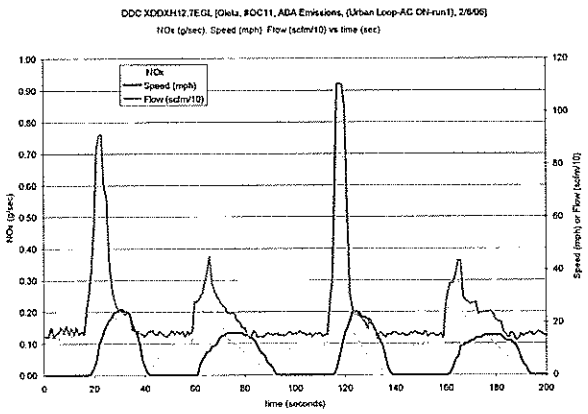


Figure 1 Urban drive cycle (typical)

For all buses and all test conditions CO_2 and NO_X emissions, and fuel use, were generally consistent from run to run, with a coefficient of variance of less than 10%. Both 1997 buses had a slightly higher variance in CO_2 emissions and fuel use from run to run during idle testing. Five of the buses had higher variance in NO_X emissions from run to run during one of four test conditions but not the others.

CO emissions were slightly more variable from run to run, and HC emissions were significantly more variable from all buses. The coefficient of variance of HC emissions from run to run was higher than 10% for virtually all buses in all test conditions and as high as 160% in some cases. Despite this variability, CO and HC emissions were generally low from all buses in all test conditions, as expected from diesel vehicles.

Data tables for all buses and all runs are included at Appendix A. For more details on the test program see DTC Test record No: SL-52-05, U.S. Army Aberdeen Test Center.

[15] Coefficient of variance = standard deviation / average

Emissions Test Results

The results of this test program for NO_X emissions are discussed below. All values shown for each bus are averages of the three repeat runs collected.

All of the tested buses had much higher NO_X emissions (g/hr) when driving on the urban drive cycle than when idling.

The use of the air conditioning system increased NO_X emissions for all of the tested buses when idling, and for half of the tested buses driving on the urban drive cycle, as compared to NO_X emissions without the air conditioning system on.

For each of the conditions tested (idle no AC, idle AC on, urban cycle no AC, urban cycle AC on) NO_X emissions were much lower for the two newest buses (2004 engines) than for the four older buses. This is consistent with more stringent EPA emissions standards for these engines than for the engines in the older buses.

Idle Emissions

NO_X emission rates for each tested bus while idling are shown in Figure 2, in the form of grams of emissions per hour of idling (g/hr).

As shown, NO_X emissions while idling on low idle without the air conditioning system on varied between 111 g/hr and 329 g/hr from the tested buses. The bus with the 1999 engine had the highest NO_X emissions, while the other three older buses emitted similar levels of NO_X. The two newest buses (2004 engines) emitted approximately 50% less NO_X than the older buses.

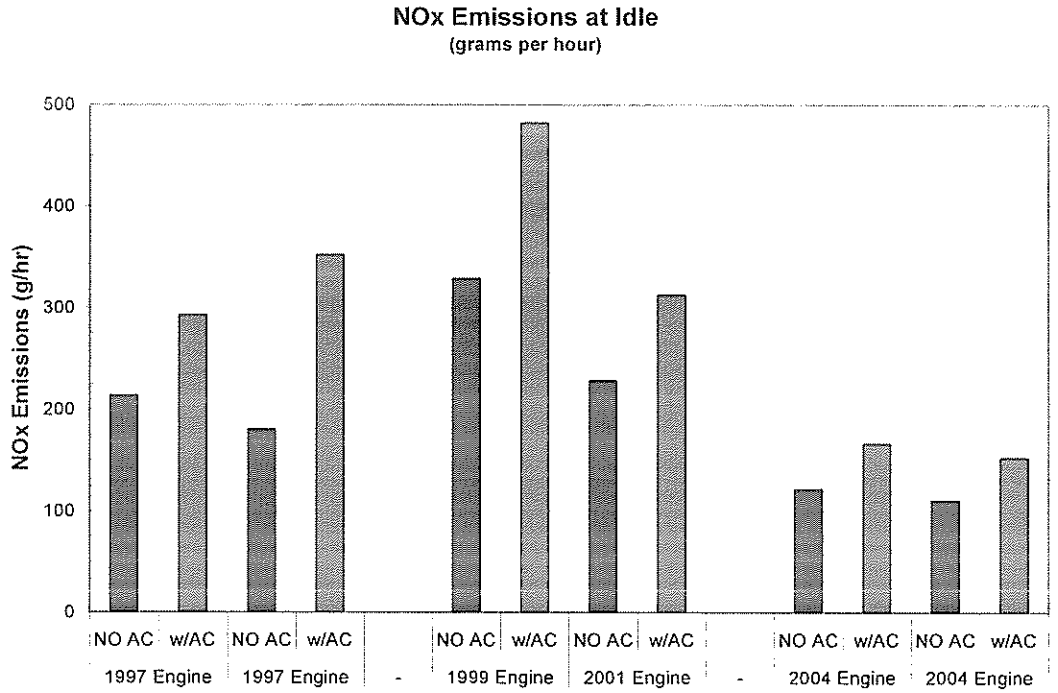


Figure 2

NO_X emissions while idling on high idle to simulate the air conditioning system being on varied between 152 g/hr and 482 g/hr from the tested buses. The bus with the 1999 engine had the highest NO_X emissions on high idle while the other three older buses emitted similar levels of NO_X on high idle. The two newest buses produced approximately 50% less NO_X on high idle than the older buses.

In all cases NO_X emissions increased with the engine on high idle compared to low idle. For most buses NO_X emissions increased by 36-46% on high idle; for one of the oldest buses NO_X emissions increased by 95%.

Urban Drive Cycle Emissions

NO_X emission rates for each tested bus while driving on the urban drive cycle are shown in Figure 3, in the form of grams of emissions per hour of driving (g/hr).

As shown, NO_X emissions while driving on the urban cycle without the air conditioning system on varied between 143 g/hr and 525 g/hr from the tested buses. The bus with the 1999 engine had the highest NO_X emissions; one bus with a 1997 engine had NO_X emissions similar to the bus with the 2001 engine, while NO_X emissions from the other 1997 engine bus were a bit lower.

The two newest buses emitted approximately 60% less NO_X on the urban cycle without air conditioning than the older buses did.

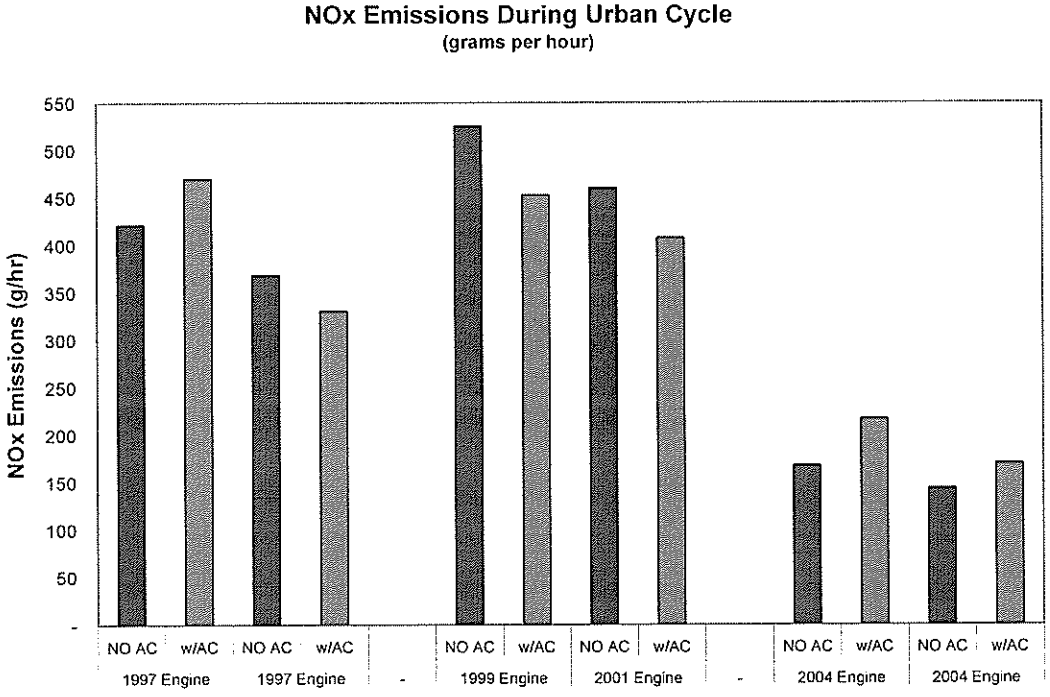


Figure 3

NO_X emissions while driving on the urban cycle with the air conditioning system on varied between 169 g/hr and 470 g/hr from the tested buses. Three of the four older buses emitted similar levels of NO_X on the urban cycle with the AC on, while the fourth (1997 engine) emitted less.

The two newest buses produced approximately 50% less NO_X on the urban cycle with the air conditioning system on than the older buses did.

For three of the six buses NO_X emissions were higher while driving on the urban drive cycle with the air conditioning system on than they were when driving on the urban drive cycle with the air conditioning system off. For the other three buses NO_X emissions were slightly lower with the AC system on. Given the low ambient temperatures during data collection, the actual level of NO_X emissions that would be experienced during the summer in many parts of the country while driving in urban traffic with the air conditioning system on are likely to be higher than those recorded in this test program.

Fuel Use Test Results

The results of this test program for coach fuel use are discussed below. All values shown for each bus are averages of the three repeat runs collected.

All of the tested buses had much higher fuel use (gal/hr) when driving on the urban drive cycle than when idling.

The use of the air conditioning system increased fuel use for all of the tested buses both when idling and when driving on the urban drive cycle, as compared to fuel use without the air conditioning system on. For all buses the increase in fuel use with AC on was much higher when idling than when driving on the urban drive cycle.

For each of the conditions tested (idle no AC, idle AC on, urban cycle no AC, urban cycle AC on) fuel use was lower for the two newest buses (2004 engines) than for three of the four older buses. These buses were equipped with engines from a different manufacturer. It is not clear whether the difference in fuel use between older and newer coaches seen in this test program applies generally, or is a function of the specific engines tested.

Idle Fuel Use

Fuel use rates for each tested bus while idling are shown in Figure 4, in the form of gallons of fuel used per hour of idling (gal/hr).

As shown, fuel use while idling on low idle without the air conditioning system on varied between 0.62 gal/hr and 1.28 gal/hr from the tested buses. The bus with the 1999 engine used the most fuel; one of the buses with a 1997 engine and the two buses with 2004 engines used only about half as much fuel, while fuel use by the other two buses (1997 engine and 2001 engine) fell between these extremes.

For all buses fuel use increased when operated on high idle with the air conditioning system on as compared to low idle without the AC system on. For the four older buses fuel use increased by 30-40%, while the increase was 50-60% for the two newest buses. Despite the larger percentage increase, fuel use on high idle was still lower for the two newest buses than for three out of four of the older buses.

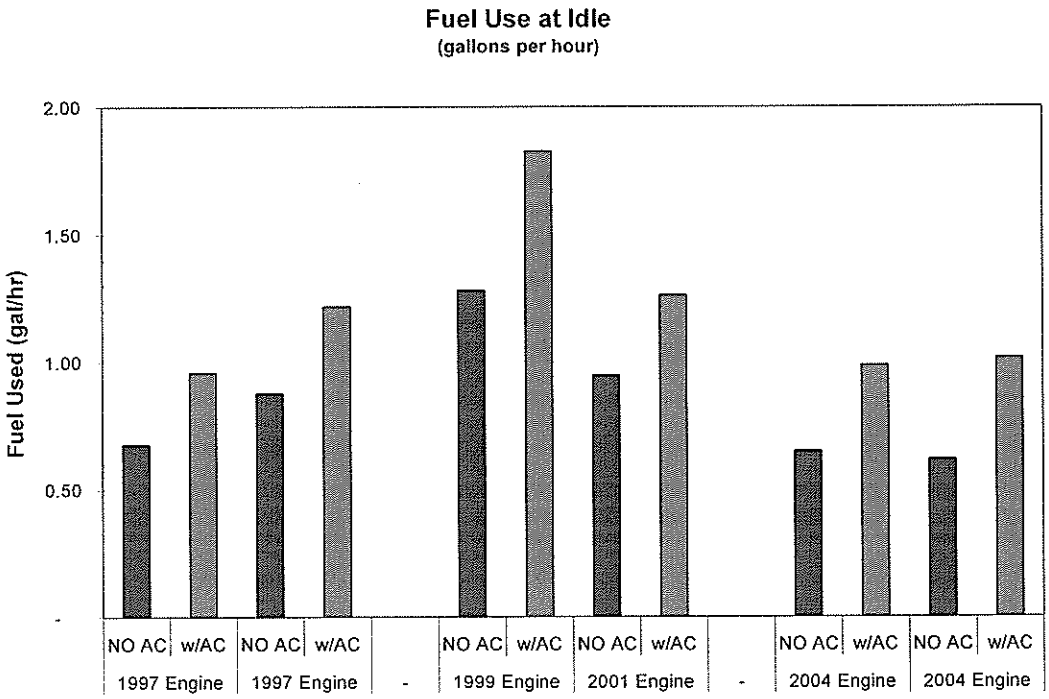


Figure 4

Urban Drive Cycle Fuel Use

Fuel use rates for each tested bus while driving on the urban drive cycle are shown in Figure 5, in the form of gallons of fuel used per hour of driving (gal/hr).

As shown, fuel use while driving on the urban drive cycle without the air conditioning system on varied between 1.57 gal/hr and 3.79 gal/hr from the tested buses. The bus with the 1999 engine used almost twice as much fuel as the other three older buses. The two newest buses (2004 engines) used about 20% less fuel than these three older buses.

For all buses fuel use increased slightly when driven on the urban drive cycle with the air conditioning system on compared to driving without the AC system on. This likely indicates that the air conditioning system did put additional load on the engine during these runs. However, the increase in fuel use was less than 10% for the older buses and less than 15% for the newer buses – less than a third of the increase in fuel use seen from simulated air conditioning use on idling buses.

Given the low ambient temperatures during data collection, the actual fuel use that would be experienced during the summer in many parts of the country while driving in urban traffic with the air conditioning system on are likely to be higher than those recorded in this test program.

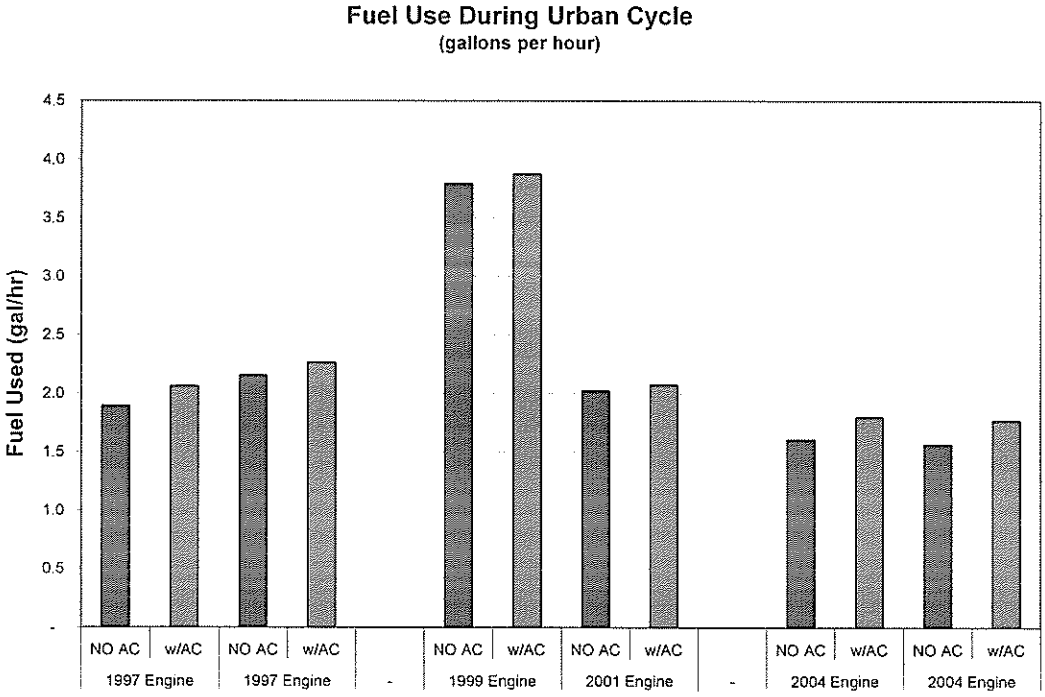


Figure 5

Idling vs Urban Driving

This section directly discusses the difference in NO_x emissions and fuel use from buses driven on the urban drive cycle compared to the same bus idling while stationary.

For all tested buses both fuel use and NO_x emissions increased significantly while driving on the urban drive cycle compared to stationary idling, though the increase was less for the two newest buses than for the four older buses.

Emissions

NO_x emissions from each bus while idling on low idle without the air conditioning system on and while operated on the urban drive cycle without the air conditioning system on is shown in Figures 6.

As shown, for all buses NO_X emissions increased significantly in urban driving compared to stationary idling, but less so for the newer buses than for the older buses. For three of the four older buses NO_X emissions doubled, while they increased by 60% for the fourth. For the two newest buses NO_X emissions increased by 30-40% in urban driving compared to idling.

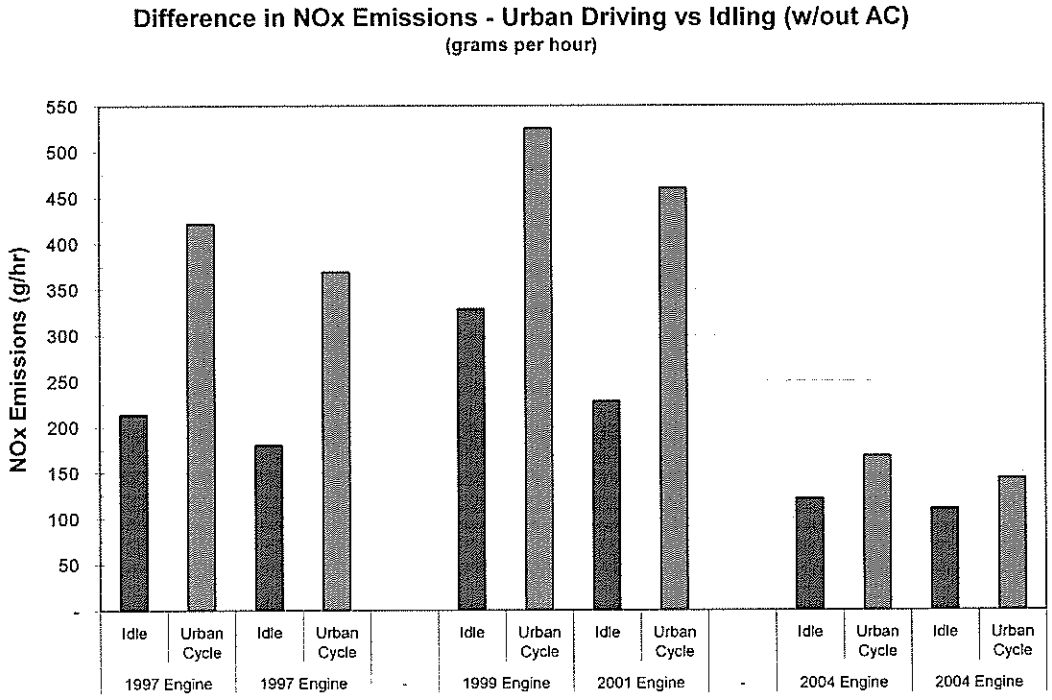


Figure 6

Fuel Use

Fuel use from each bus while idling on low idle without the air conditioning system on and while operated on the urban drive cycle without the air conditioning system on are shown in Figures 7.

As shown, for all buses fuel use at least doubled in urban driving compared to stationary idling – increasing by 1 gallon per hour or more for all buses. For the bus with the 1999 engine fuel use increased by 2.5 gal/hr in urban driving compared to stationary idling.

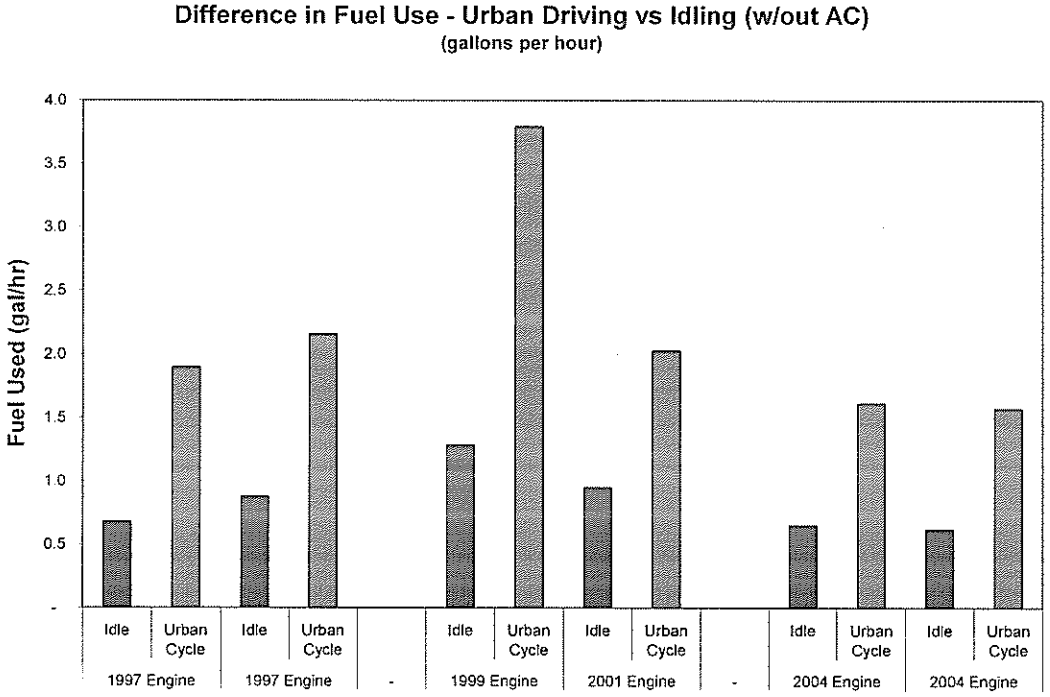


Figure 7

Policy Implications – Circulating vs Stationary Idling

In an attempt to reduce vehicle emissions and improve air quality, approximately 26 states and cities have enacted laws that restrict idling of diesel vehicles[16]. Typically, these laws set a maximum allowable idling period, anywhere from two to 15 minutes; operators of vehicles found parked and idling longer than the limit can be fined.

Generally these laws do not provide an exemption for coach buses to idle in order to maintain cabin air temperature for the operator and passengers as mandated by law. Yet many coach operators (particularly charter operators) must wait several hours or more with their bus for passengers to return from a visit to a tourist destination, etc. During that time most have no real alternative to sitting on their bus, since most cities do not provide secure parking areas and appropriate locations for bus operators to wait.

Since it can take as many as 30 minutes to bring the interior temperature of a motorcoach down to a comfortable temperature for the driver and passengers, some operators are faced with the choice of 1) disobeying the idling restriction and risking a fine, 2) sitting for extended periods on the coach in either very hot or very cold conditions, or 3) driving

[16] American Transportation Research Institute, *Compendium of Idling Regulations*, updated September 2004 < http//atri-online.org/research/results/idling_chart.pdf>

their coach around the city in traffic. For operators who choose to circulate in traffic these idle restriction laws are in fact producing the opposite effect of what they were intended to do.

As shown in this study circulating in traffic, as opposed to stationary idling, results in excess NO_X emissions of 200 g/hr on average for older coaches and 40 g/hr on average for new coaches without the air conditioning system on. Only one hour per day of circulating rather than idling to maintain an appropriate cabin temperature can result in over 22 lbs of excess NO_X emissions annually from an older coach and over 3 lbs of excess NO_X emissions annually from a newer coach. The impact is likely to be even higher in the summer[17]. For older coaches, every hour of circulating creates as much NO_x emissions as two hours of stationary idling.

Circulating in traffic rather than idling also wastes fuel. Older coaches use on average 1.5 gal/hr more fuel and newer coaches use on average 0.96 gal/hr more fuel when circulating than when idling without the air conditioning system on. Only one hour per day of circulating rather than idling to maintain an appropriate cabin temperature can increase annual fuel use by 375 gallons for an older coach and 250 gallons for a new coach. The impact is likely to be even higher in the summer[17].

[17] Assuming 50 weeks per year and 5 days per week. This calculation did not assume air conditioning use in the summer because the urban cycle air conditioning data was less certain than the idle data with air conditioning.

APPENDIX A – TEST RESULTS

IDLE TEST, no AC		Time	CO2	CO	NOx	HC	Fuel
		s	g/s	g/s	g/s	g/s	gal/s
Bus 1	Test 1	1200.2	3.68	0.0113	0.0921	0.0091	0.00036
	Test 2	1200.3	3.60	0.0112	0.0942	0.0096	0.00036
	Test 3	1200.6	3.52	0.0109	0.0879	0.0072	0.00035
	AVG	**1200.4**	**3.60**	**0.0111**	**0.0914**	**0.0086**	**0.00036**
	STDEV	0.2	0.08	0.0002	0.0032	0.0012	0.00001
	COV	***0.0%***	***2.2%***	***2.0%***	***3.5%***	***14.2%***	***2.3%***
Bus 2	Test 1	1192.4	1.74	0.0061	0.0550	0.0034	0.00017
	Test 2	1191.4	1.84	0.0063	0.0553	0.0043	0.00018
	Test 3	1194.6	2.13	0.0064	0.0680	0.0051	0.00021
	AVG	**1192.8**	**1.90**	**0.0063**	**0.0594**	**0.0043**	**0.00019**
	STDEV	1.658	0.203	0.0001	0.0074	0.0008	0.00002
	COV	***0.1%***	***10.7%***	***1.9%***	***12.5%***	***19.7%***	***10.8%***
Bus 3	Test 1	1200.6	2.84	0.0144	0.0603	0.0022	0.00028
	Test 2	1200.9	2.57	0.0074	0.0640	0.0025	0.00025
	Test 3	1201.0	2.57	0.0073	0.0661	0.0027	0.00025
	AVG	**1200.8**	**2.66**	**0.0097**	**0.0635**	**0.0025**	**0.00026**
	STDEV	0.2	0.15	0.0041	0.0029	0.0003	0.00002
	COV	***0.0%***	***5.8%***	***41.8%***	***4.6%***	***11.6%***	***6.4%***
Bus 4	Test 1	1201.0	1.87	0.0075	0.0366	0.0001	0.00018
	Test 2	1200.0	1.71	0.0074	0.0324	0.0017	0.00017
	Test 3	1196.9	1.74	0.0075	0.0326	0.0015	0.00019
	AVG	**1199.3**	**1.77**	**0.0075**	**0.0338**	**0.0011**	**0.00018**
	STDEV	2.1	0.08	0.0000	0.0024	0.0008	0.00001
	COV	***0.2%***	***4.8%***	***0.6%***	***7.0%***	***78.6%***	***6.0%***
Bus 5	Test 1	1200.2	1.80	0.0076	0.0320	0.0006	0.00018
	Test 2	1200.4	1.76	0.0075	0.0312	0.0013	0.00017
	Test 3	1187.4	1.67	0.0072	0.0293	0.0015	0.00017
	AVG	**1196.0**	**1.74**	**0.0075**	**0.0308**	**0.0011**	**0.00017**
	STDEV	7.4	0.07	0.0002	0.0014	0.0005	0.00001
	COV	***0.6%***	***3.8%***	***2.9%***	***4.4%***	***40.5%***	***3.6%***
Bus 6	Test 1	1200.2	2.34	0.0074	0.0472	0.0028	0.00023
	Test 2	1197.5	2.23	0.0074	0.0452	0.0033	0.00022
	Test 3	1199.0	2.85	0.0077	0.0580	0.0043	0.00028
	AVG	**1198.9**	**2.47**	**0.0075**	**0.0501**	**0.0035**	**0.00024**
	STDEV	1.3	0.33	0.0002	0.0069	0.0008	0.00003
	COV	***0.1%***	***13.5%***	***2.1%***	***13.7%***	***22.8%***	***13.3%***

APPENDIX A – TEST RESULTS

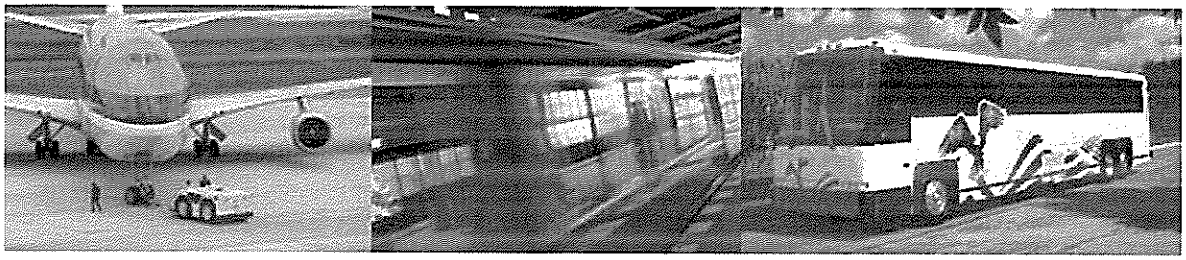
IDLE TEST, w/ AC		Time	CO2	CO	NOx	HC	Fuel
		s	g/s	g/s	g/s	g/s	gal/s
Bus 1	Test 1	1200.8	5.18	0.0207	0.1324	0.0095	0.00051
	Test 2	1194.0	5.23	0.0174	0.1342	0.0087	0.00052
	Test 3	1194.1	4.99	0.0210	0.1354	0.0091	0.00049
	AVG	**1196.3**	**5.13**	**0.0197**	**0.1340**	**0.0091**	**0.00051**
	STDEV	3.9	0.12	0.0020	0.0015	0.0004	0.00001
	COV	***0.3%***	***2.4%***	***10.2%***	***1.1%***	***4.9%***	***2.4%***
Bus 2	Test 1	1192.8	2.63	0.0082	0.0773	0.0060	0.00026
	Test 2	1200.1	2.71	0.0081	0.0835	0.0034	0.00027
	Test 3	1192.9	2.76	0.0081	0.0835	0.0043	0.00027
	AVG	**1195.2**	**2.70**	**0.0081**	**0.0814**	**0.0046**	**0.00027**
	STDEV	4.2	0.06	0.0000	0.0036	0.0013	0.00001
	COV	***0.4%***	***2.3%***	***0.1%***	***4.4%***	***28.8%***	***2.0%***
Bus 3	Test 1	1192.2	3.54	0.0305	0.0873	0.0041	0.00035
	Test 2	1200.1	3.52	0.0220	0.0868	0.0034	0.00035
	Test 3	1196.5	3.55	0.0220	0.0869	0.0037	0.00035
	AVG	**1196.3**	**3.54**	**0.0248**	**0.0870**	**0.0037**	**0.00035**
	STDEV	4.0	0.02	0.0049	0.0003	0.0004	0.00000
	COV	***0.3%***	***0.6%***	***19.8%***	***0.3%***	***10.6%***	***0.7%***
Bus 4	Test 1	1196.5	3.08	0.0099	0.0532	0.0002	0.00030
	Test 2	1197.3	2.66	0.0098	0.0428	0.0027	0.00026
	Test 3	1195.5	2.61	0.0098	0.0430	0.0022	0.00026
	AVG	**1196.5**	**2.79**	**0.0098**	**0.0463**	**0.0017**	**0.00027**
	STDEV	0.9	0.26	0.0000	0.0060	0.0013	0.00002
	COV	***0.1%***	***9.3%***	***0.4%***	***12.9%***	***78.9%***	***9.1%***
Bus 5	Test 1	1200.7	3.04	0.0099	0.0462	0.0011	0.00030
	Test 2	1200.9	2.78	0.0096	0.0400	0.0016	0.00027
	Test 3	1200.8	2.84	0.0096	0.0412	0.0019	0.00028
	AVG	**1200.8**	**2.89**	**0.0097**	**0.0425**	**0.0015**	**0.00028**
	STDEV	0.1	0.14	0.0002	0.0033	0.0004	0.00001
	COV	***0.0%***	***4.7%***	***1.9%***	***7.7%***	***25.6%***	***5.0%***
Bus 6	Test 1	1196.1	3.43	0.0165	0.1015	0.0032	0.00034
	Test 2	1200.2	3.49	0.0095	0.1013	0.0034	0.00034
	Test 3	1200.1	3.35	0.0183	0.0909	0.0029	0.00033
	AVG	**1198.8**	**3.42**	**0.0148**	**0.0979**	**0.0032**	**0.00034**
	STDEV	2.4	0.07	0.0046	0.0060	0.0003	0.00001
	COV	***0.2%***	***2.0%***	***31.3%***	***6.1%***	***8.9%***	***1.8%***

APPENDIX A – TEST RESULTS

		Test Cycle				Emissions				Fuel Use	
URBAN CYCLE, no AC		Time s	Distance mi	Avg Speed mph	% Idle Time	CO2 g/s	CO g/s	NOx g/s	HC g/s	Fuel gal/s	Fuel mpg
Bus 1	Test 1	1200.5	2.44	7.0	45.5	10.92	0.0173	0.1207	0.0114	0.00108	1.89
	Test 2	1200.5	2.40	6.9	46.1	10.65	0.0162	0.1185	0.0092	0.00105	1.91
	Test 3	1200.5	2.54	7.3	44.5	10.64	0.0157	0.1987	0.0133	0.00103	2.02
	AVG	**1200.5**	**2.46**	**7.1**	**45.4**	**10.74**	**0.0164**	**0.1460**	**0.0113**	**0.00105**	**1.94**
	STDEV	0.0	0.07	0.2	0.8	0.16	0.0008	0.0457	0.0020	0.00002	0.07
	COV	*0.0%*	*2.9%*	*2.9%*	*1.8%*	*1.5%*	*5.0%*	*31.3%*	*18.1%*	*2.3%*	*3.6%*
Bus 2	Test 1	1200.5	2.33	6.3	40.9	5.67	0.0133	0.1247	0.0096	0.00056	3.47
	Test 2	1200.9	2.31	6.3	39.5	5.31	0.0123	0.1155	0.0081	0.00052	3.67
	Test 3	1200.1	2.38	6.5	39.2	5.16	0.0115	0.1113	0.0044	0.00051	3.90
	AVG	**1200.5**	**2.34**	**6.4**	**39.9**	**5.38**	**0.0124**	**0.1172**	**0.0074**	**0.00053**	**3.68**
	STDEV	0.4	0.04	0.1	0.9	0.26	0.0009	0.0069	0.0027	0.00003	0.22
	COV	*0.0%*	*1.5%*	*2.0%*	*2.3%*	*4.9%*	*7.5%*	*5.8%*	*36.5%*	*5.0%*	*5.8%*
Bus 3	Test 1	1200.3	2.22	6.5	40.2	6.25	0.0126	0.1351	0.0040	0.00061	3.01
	Test 2	1200.2	2.23	6.5	39.9	5.92	0.0121	0.1260	0.0035	0.00057	3.34
	Test 3	1200.3	2.28	6.6	39.0	5.78	0.0114	0.1226	0.0031	0.00051	3.90
	AVG	**1200.3**	**2.24**	**6.5**	**39.7**	**5.98**	**0.0120**	**0.1279**	**0.0035**	**0.00056**	**3.42**
	STDEV	0.1	0.03	0.1	0.6	0.24	0.0006	0.0065	0.0005	0.00005	0.45
	COV	*0.0%*	*1.4%*	*0.9%*	*1.6%*	*4.0%*	*5.0%*	*5.1%*	*12.9%*	*8.8%*	*13.2%*
Bus 4	Test 1	1200.5	2.22	6.3	42.6	4.59	0.0193	0.0479	0.0015	0.00045	4.10
	Test 2	1200.6	2.27	6.4	42.5	4.50	0.0194	0.0465	0.0026	0.00044	4.26
	Test 3	1200.5	2.18	6.5	42.7	4.57	0.0169	0.0458	0.0000	0.00045	4.04
	AVG	**1200.5**	**2.22**	**6.4**	**42.6**	**4.55**	**0.0185**	**0.0467**	**0.0014**	**0.00045**	**4.13**
	STDEV	0.1	0.05	0.1	0.1	0.05	0.0014	0.0011	0.0013	0.00001	0.11
	COV	*0.0%*	*2.0%*	*1.6%*	*0.2%*	*1.0%*	*7.5%*	*2.3%*	*95.5%*	*1.6%*	*2.8%*
Bus 5	Test 1	1200.4	2.26	6.4	41.8	4.60	0.0172	0.0441	0.0035	0.00045	4.15
	Test 2	1200.1	2.30	6.1	43.4	4.33	0.0118	0.0394	0.0014	0.00042	4.22
	Test 3	1200.9	2.30	6.5	41.0	4.37	0.0110	0.0364	0.0005	0.00043	4.45
	AVG	**1200.5**	**2.29**	**6.3**	**42.1**	**4.43**	**0.0133**	**0.0400**	**0.0018**	**0.00044**	**4.27**
	STDEV	0.4	0.02	0.2	1.2	0.15	0.0034	0.0039	0.0015	0.00002	0.16
	COV	*0.0%*	*1.0%*	*3.3%*	*2.9%*	*3.3%*	*25.3%*	*9.7%*	*85.6%*	*3.6%*	*3.7%*
Bus 6	Test 1	1200.7	2.10	6.0	45.8	6.29	0.0090	0.1486	0.0045	0.00062	2.83
	Test 2	1200.9	2.09	5.9	46.4	5.65	0.0102	0.0737	0.0054	0.00056	3.13
	Test 3	1200.4	2.19	6.2	46.7	6.34	0.0107	0.0854	0.0053	0.00062	2.92
	AVG	**1200.7**	**2.13**	**6.0**	**46.3**	**6.09**	**0.0100**	**0.1026**	**0.0051**	**0.00060**	**2.96**
	STDEV	0.3	0.06	0.2	0.4	0.38	0.0009	0.0403	0.0005	0.00004	0.15
	COV	*0.0%*	*2.6%*	*2.6%*	*1.0%*	*6.3%*	*8.9%*	*39.3%*	*9.7%*	*6.0%*	*5.2%*

APPENDIX A – TEST RESULTS

URBAN CYCLE, w/ AC		Test Cycle				Emissions				Fuel Use	
		Time s	Distance mi	Avg Speed mph	% Idle Time	CO2 g/s	CO g/s	NOx g/s	HC g/s	Fuel gal/s	Fuel mpg
Bus 1	Test 1	1200.0	2.42	6.9	46.2	11.04	0.0160	0.1209	0.0055	0.00108	1.86
	Test 2	1200.8	2.51	7.2	44.5	11.30	0.0166	0.1208	0.0078	0.00111	1.88
	Test 3	1200.7	2.45	7.1	44.5	10.59	0.0157	0.1357	0.0078	0.00104	1.94
	AVG	**1200.5**	**2.46**	**7.1**	**45.1**	**10.98**	**0.0161**	**0.1258**	**0.0070**	**0.00108**	**1.89**
	STDEV	0.4	0.05	0.1	1.0	0.36	0.0005	0.0086	0.0013	0.00004	0.04
	COV	*0.0%*	*1.9%*	*1.8%*	*2.1%*	*3.3%*	*2.8%*	*6.8%*	*18.9%*	*3.3%*	*2.2%*
Bus 2	Test 1	1200.9	2.41	6.5	40.7	6.10	0.0118	0.1402	0.0048	0.00060	3.34
	Test 2	1200.0	2.39	6.5	38.8	5.68	0.0107	0.1265	0.0032	0.00056	3.56
	Test 3	1200.9	2.41	6.6	37.4	5.72	0.0120	0.1251	0.0048	0.00056	3.56
	AVG	**1200.6**	**2.40**	**6.5**	**39.0**	**5.83**	**0.0115**	**0.1306**	**0.0043**	**0.00057**	**3.49**
	STDEV	0.5	0.01	0.0	1.7	0.23	0.0007	0.0083	0.0009	0.00002	0.13
	COV	*0.0%*	*0.5%*	*0.5%*	*4.3%*	*4.0%*	*6.1%*	*6.4%*	*21.6%*	*4.0%*	*3.6%*
Bus 3	Test 1	1201.0	2.20	6.4	40.1	6.09	0.0106	0.1167	0.0030	0.00060	3.07
	Test 2	1200.5	2.23	6.5	39.5	5.78	0.0104	0.1118	0.0027	0.00057	3.27
	Test 3	1200.3	2.31	6.8	38.4	5.71	0.0108	0.1115	0.0083	0.00056	3.42
	AVG	**1200.6**	**2.25**	**6.6**	**39.3**	**5.86**	**0.0106**	**0.1133**	**0.0046**	**0.00058**	**3.25**
	STDEV	0.4	0.06	0.2	0.9	0.20	0.0002	0.0029	0.0032	0.00002	0.18
	COV	*0.0%*	*2.5%*	*2.8%*	*2.3%*	*3.5%*	*1.9%*	*2.6%*	*68.4%*	*3.7%*	*5.4%*
Bus 4	Test 1	1200.6	2.21	6.3	42.5	5.41	0.0235	0.0616	0.0002	0.00053	3.54
	Test 2	1200.9	2.46	6.5	42.4	5.31	0.0139	0.0602	0.0002	0.00052	3.93
	Test 3	1200.3	2.32	7.0	40.2	5.48	0.0178	0.0593	0.0087	0.00045	3.57
	AVG	**1200.6**	**2.33**	**6.6**	**41.7**	**5.40**	**0.0184**	**0.0604**	**0.0030**	**0.00050**	**3.68**
	STDEV	0.3	0.13	0.4	1.3	0.09	0.0048	0.0012	0.0049	0.00004	0.22
	COV	*0.0%*	*5.4%*	*5.4%*	*3.1%*	*1.6%*	*26.2%*	*1.9%*	*162.3%*	*8.8%*	*5.9%*
Bus 5	Test 1	1200.6	2.21	6.3	42.5	5.13	0.0086	0.0484	0.0007	0.00050	3.66
	Test 2	1200.0	2.31	6.6	38.8	5.10	0.0092	0.0479	0.0002	0.00050	3.84
	Test 3	1200.4	2.31	6.6	40.1	4.92	0.0096	0.0453	0.0032	0.00048	3.98
	AVG	**1200.3**	**2.28**	**6.5**	**40.5**	**5.05**	**0.0091**	**0.0472**	**0.0014**	**0.00049**	**3.83**
	STDEV	0.3	0.06	0.2	1.9	0.11	0.0005	0.0017	0.0016	0.00001	0.16
	COV	*0.0%*	*2.5%*	*2.6%*	*4.6%*	*2.2%*	*5.5%*	*3.5%*	*118.8%*	*2.3%*	*4.2%*
Bus 6	Test 1	1200.5	2.11	6.0	46.4	6.44	0.0112	0.0894	0.0035	0.00063	2.81
	Test 2	1200.8	2.13	6.0	46.1	6.42	0.0110	0.0954	0.0045	0.00063	2.81
	Test 3	1200.8	2.21	6.3	45.0	6.38	0.0109	0.0908	0.0044	0.00063	2.93
	AVG	**1200.7**	**2.15**	**6.1**	**45.8**	**6.41**	**0.0110**	**0.0919**	**0.0041**	**0.00063**	**2.85**
	STDEV	0.2	0.05	0.2	0.7	0.03	0.0002	0.0031	0.0006	0.00000	0.07
	COV	*0.0%*	*2.5%*	*2.9%*	*1.6%*	*0.5%*	*1.4%*	*3.4%*	*13.9%*	*0.2%*	*2.4%*



Updated Comparison of Energy Use & CO_2 Emissions From Different Transportation Modes

October 2008

Submitted to:

American Bus Association Foundation

American Bus Association Foundation
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Table of Contents

Introduction

This analysis is intended to evaluate the environmental performance of Highway Motorcoach operations, by comparing the energy use and carbon dioxide (CO_2) emissions of motorcoaches with the energy use and CO_2 emissions of other common transportation vehicles/modes.

Including motorcoaches, a total of twelve transportation modes are included in the analysis, as follows:

- **Highway Motorcoach** - According to the American Bus Association vehicles in the motorcoach fleet are designed for long-distance travel, and are characterized by "integral construction with an elevated passenger deck located over a baggage compartment". For this analysis the motorcoach mode includes motorcoach buses used for private charters, tours/sightseeing, scheduled inter-city service, and airport and commuter service between a central city and adjacent suburbs/airports.
- **Private Automobile** - for this analysis the private automobile mode includes all use of a personally-owned car or light truck for commuting and other travel.
- **Heavy Urban Rail** – A transit mode that uses self-propelled electric-powered passenger cars operating on an exclusive rail right-of-way, either below or above-ground, to provide scheduled service within an urban area. Typically the system is designed to accommodate very high passenger volumes, and trains are operated in multi-car sets. The electricity to power the vehicles is drawn either from overhead wires or from a power rail.
- **Light Rail** – A transit mode that uses self-propelled electric-powered passenger cars operating on an exclusive or shared above-ground rail right-of-way to provide scheduled service within an urban area. Typically the system is designed to accommodate lower passenger volumes than heavy rail, and passenger cars are operated singly or in two-car sets. The electricity to power the vehicles is drawn from overhead wires.
- **Commuter Rail** - A transit mode that uses electric or diesel-powered locomotives pulling passenger cars, and operating on an exclusive rail right-of-way, for local short-distance travel between a central city and adjacent suburbs.
- **Intercity Rail** - A transit mode that uses electric or diesel-powered locomotives pulling passenger cars, and operating on an exclusive rail right-of-way, for long-distance travel between cities.
- **Domestic Air Travel** – Scheduled plane service operating between U.S. cities. For this analysis international air travel is not included.
- **Urban Transit Bus** – A transit mode that includes the use of primarily diesel-powered, rubber-tired vehicles for fixed route scheduled service within an urban area, and usually operated in mixed traffic on city streets. The buses used for this mode are typically between 20 and 40 feet in length.
- **Electric Trolley Bus** - A transit mode that uses electric-powered rubber-tired vehicles for fixed route scheduled service within an urban area, and usually operated

in mixed traffic on city streets. Electricity to power the vehicles is drawn from overhead wires installed along the route.

- **Ferry Boat** - A transit mode that uses marine vessels to carry passengers and/or vehicles over a body of water. Intercity ferryboat service is excluded, except for that portion of such service that is operated by or under contract with a public transit agency for predominantly commuter services.
- **Van Pool** - A transit mode that uses vans, small buses and other vehicles, operating as a ride-sharing arrangement, to provide transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area. For this analysis only vanpools operated by a public entity are included.
- **Demand Response** – Shared-use transit service operating in response to calls from passengers to a transit operator, who schedules a vehicle to pick up the passengers to transport them to their destinations. This analysis only includes demand response service operated by public transit agencies, primarily to provide "para-transit" service to individuals with disabilities that preclude them from using fixed-route transit bus service. For this analysis the demand response mode does not encompass private taxis or private shared-ride van services.

This report is an update to a similar report issued in May 2007. This report uses updated 2006 and 2007 data not available for the previous report, but the results are similar to those reported in 2007.

For all modes both energy use and CO_2 emissions are expressed in terms of units per passenger mile operated. The metrics used for energy intensity are passenger miles per diesel-equivalent gallon[1] (pass-mi/DEG) and btu[2] per passenger mile (btu/pass-mi). The metrics used for CO_2 emissions are grams of CO_2 per passenger mile (g/pass-mi).

Carbon dioxide is a greenhouse gas that has been linked to global warming. The most significant source of U.S. CO_2 emissions is the burning of fossil fuels such as coal, gasoline, diesel fuel and natural gas for electricity production, space heating, industrial processes, and transportation. The transportation sector is a significant contributor to total man-made CO_2 emissions.

All of the data used for this analysis is publicly available. As discussed below the major sources of data include the Federal Transit Administration's National Transit Database[3];

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[1] This analysis compares modes that use different types of fuel, including diesel fuel, gasoline, and electricity. Energy use for all modes has been expressed in terms of a "diesel equivalent gallon" based on energy content. In this analysis one diesel equivalent gallon is defined as 138,000 btu, the energy content of a gallon of "typical" highway diesel fuel. One gallon of typical highway gasoline contains 114,000 btu, or 0.826 diesel equivalent gallons. One kilowatt hour of electricity is equal to 3,412 btu, so there are 40.45 kwh of electricity in one diesel equivalent gallon.

[2] A British Thermal Unit (btu) is a measure of energy. One btu is equivalent to 0.000293 kwh.

[3] See Appendix A for the mode definitions used for the National Transit Database (NTD). The modes included in this analysis for which data is included in the NTD are: Commuter Rail,

the Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics; and a Coach Industry Census conducted by Nathan Associates for the American Bus Association (ABA). For most modes the data is from calendar year 2006, the most recent year available. The Coach Industry Census covered calendar year 2007.

Demand Response, Electric Trolley Bus, Ferry Boat, Heavy Urban Rail, Light Rail, Urban Transit Bus, and Van Pool.

1 Results of Analysis

Average energy use and CO_2 emissions by mode are shown in Table 1.1. Selected data from Table 1.1 is also summarized in Figures 1.1 – 1.3.

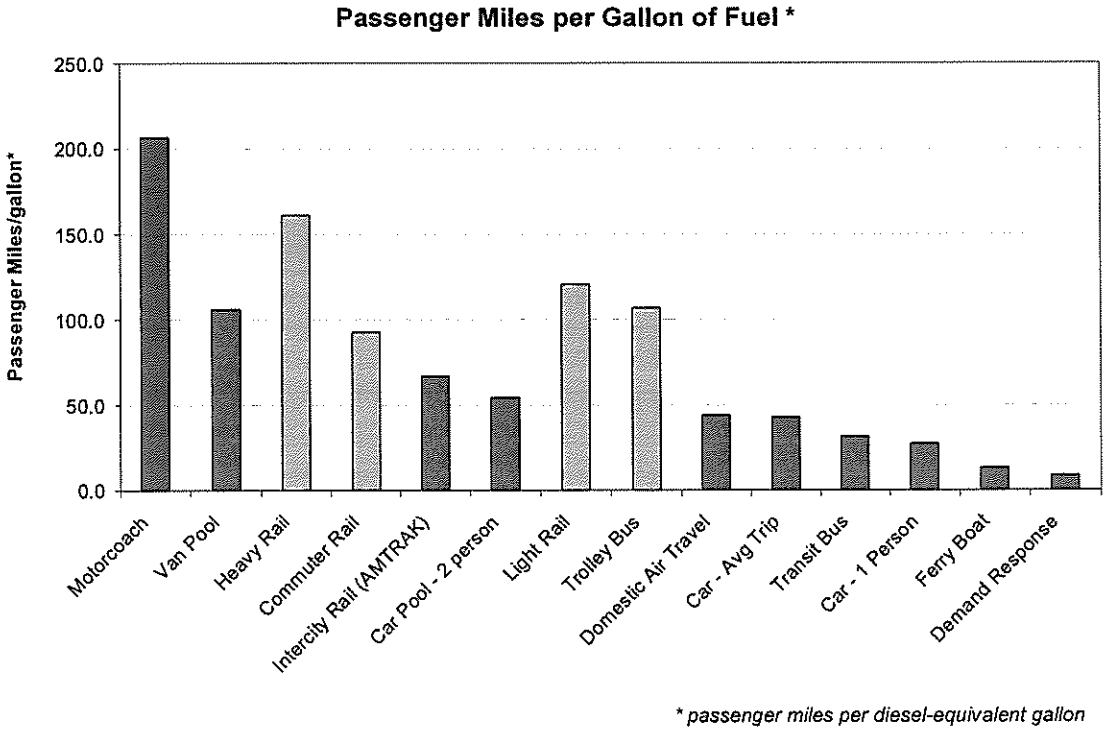
MODE	Pass-mi/Gal**			Btu/pass-mi			CO2 g/pass-mi		
	low	AVG	high	low	AVG	high	low	AVG	high
Motorcoach	173.2	**206.6**	232.7	593	**668**	797	44	**50**	59
Van Pool	60.3	**106.1**	203.8	677	**1,300**	2,289	50	**97**	170
Heavy Rail	52.0	**160.8**	210.9	654	**858**	2,653	115	**151**	467
Commuter Rail	60.6	**92.4**	263.6	524	**1,493**	2,278	92	**164**	242
Intercity Rail (AMTRAK)	55.8	**67.0**	128.1	1,077	**2,061**	2,471	190	**186**	184
Car Pool - 2 person	36.3	**54.3**	111.4	1,239	**2,540**	3,800	92	**189**	283
Light Rail	4.0	**120.6**	198.9	694	**1,144**	34,375	122	**201**	2,559
Trolley Bus	55.1	**106.6**	125.2	1,103	**1,294**	2,505	194	**228**	441
Domestic Air Travel		**44.0**			**3,138**			**234**	
Car - Avg Trip	28.7	**42.9**	88.0	1,569	**3,215**	4,810	117	**239**	358
Transit Bus	4.4	**31.4**	124.1	1,112	**4,391**	31,296	83	**308**	2,330
Car - 1 Person	18.2	**27.2**	55.7	2,478	**5,080**	7,600	184	**378**	566
Ferry Boat	1.9	**12.9**	30.9	4,463	**10,690**	71,889	332	**796**	5,352
Demand Response	1.1	**8.8**	46.3	2,858	**15,727**	127,179	213	**1,145**	9,463

**Passenger miles per Diesel Equivalent gallon

Table 1.1 Energy Use and CO_2 Emissions, by Mode

In Table 1.1 the high and low figures for motorcoaches are based on averages for different industry segments (charter/tour/sight-seeing versus commuter/airport/intercity fixed route service). For the other public modes the high and low figures are based on the range of results from individual transit agencies in the NTD database. For private autos the averages are based on US fleet average fuel economy (22.4 MPG) while the high figures are based on the use of a "typical" sport utility vehicle (15 MPG) and the low figures are based on use of a hybrid car (46 MPG).

As shown, motorcoaches on average used 668 btu/pass-mi and produced 50 g/pass-mi of carbon dioxide. On average, motorcoaches use the least amount of energy and produce the lowest carbon dioxide emissions per passenger mile of any of the transportation modes analyzed.



** passenger miles per diesel-equivalent gallon*

Figure 1.1 Passenger-Miles per Gallon of Fuel, by Mode

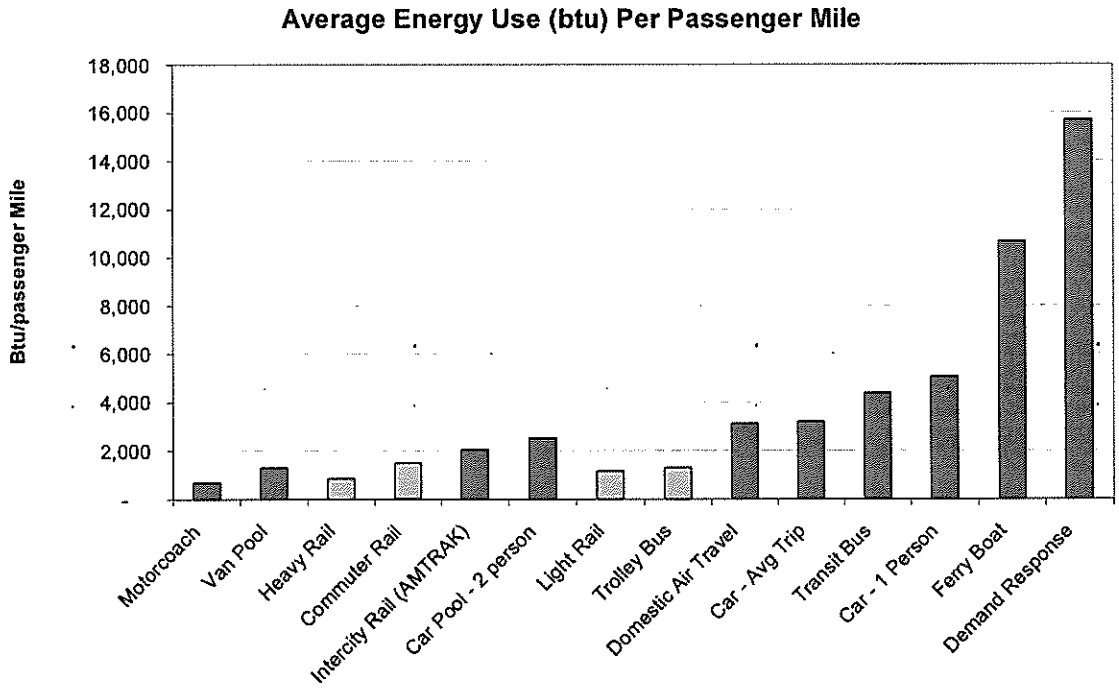


Figure 1.2 Energy Use (btu) per Passenger-Mile, by Mode

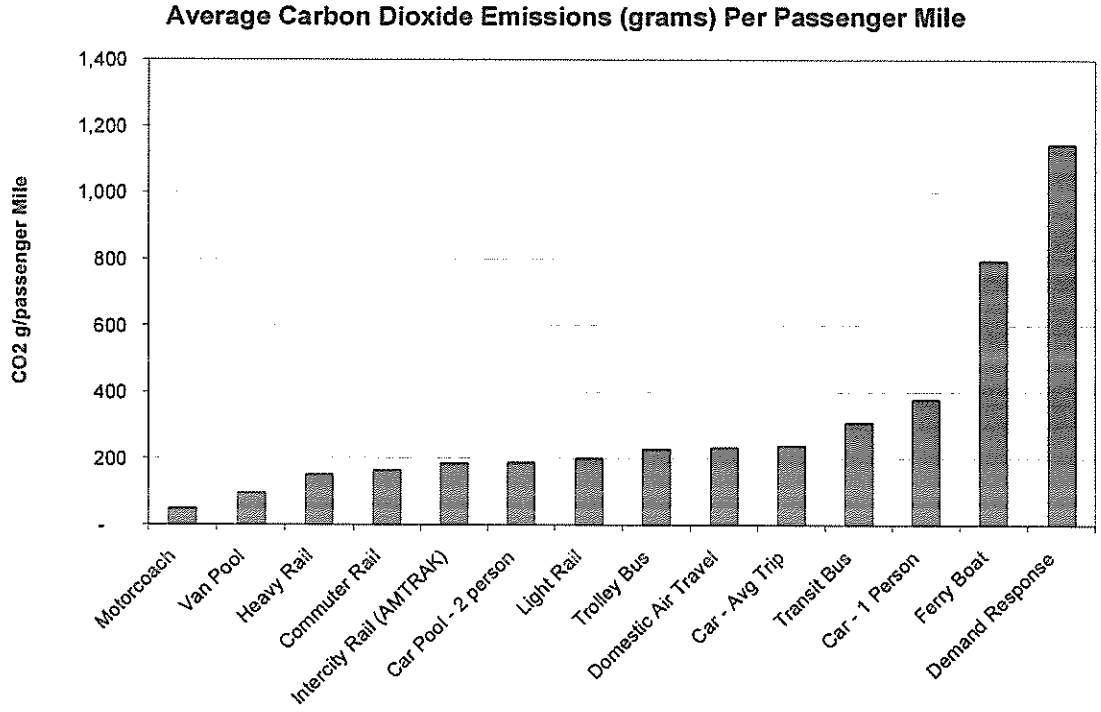


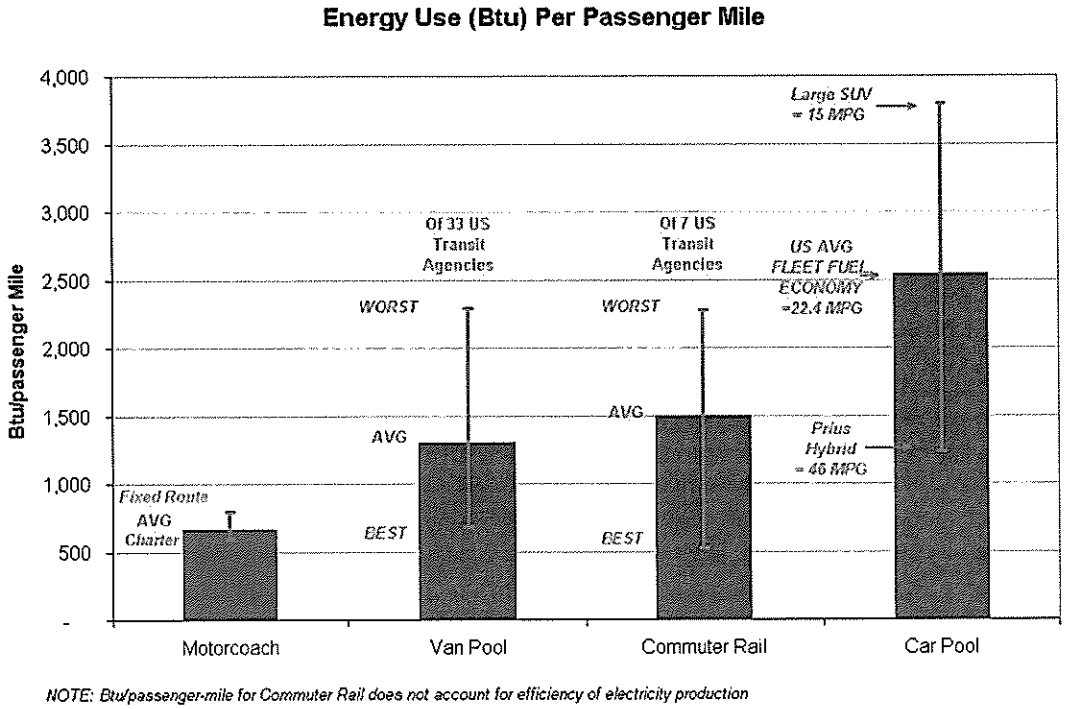
Figure 1.3 CO_2 Emissions (g) per Passenger-Mile, by Mode

The most energy- and carbon dioxide-intensive mode is Demand Response at an average of 15,727 btu/pass-mi and 1,145 g CO_2/pass-mi. Van Pools on average produce almost twice as much carbon dioxide per passenger mile as motorcoaches, commuter rail produces more than three times as much, two-person car pools produce almost four times as much, and single commuters produce more than seven times as much.

Note that the calculation of passenger miles per gallon of fuel and btu/pass-mi for electric modes (heavy rail, light rail, trolley bus) is based on kilowatt hours of delivered electricity and therefore does not account for the total fuel energy used to generate the electricity. Comparison of these metrics for electric modes to gasoline and diesel modes is therefore somewhat misleading. The metric CO_2/pass-mi does account for all carbon dioxide produced by electricity generation and therefore provides a more relevant comparison between electric and diesel/gasoline modes.

Figures 1.4 and 1.5 show the range of energy use and CO_2 emissions from selected modes. As shown, while some modes have favorable energy use and carbon dioxide emissions on average, there can be significant variation from location to location. For example, of thirty-three agencies in the NTD database that operate van pools the worst performer produced over three times as much CO_2 per passenger mile as the best performer, primarily based on lower average passenger loads.

Likewise, actual emissions per passenger mile from shared rides and car pools are highly dependent on the vehicle used, with lower emissions from cars that have better average fuel economy.



NOTE: Btu/passenger-mile for Commuter Rail does not account for efficiency of electricity production

Figure 1.4 Range of Energy Use (btu) per Passenger-Mile, Selected Modes

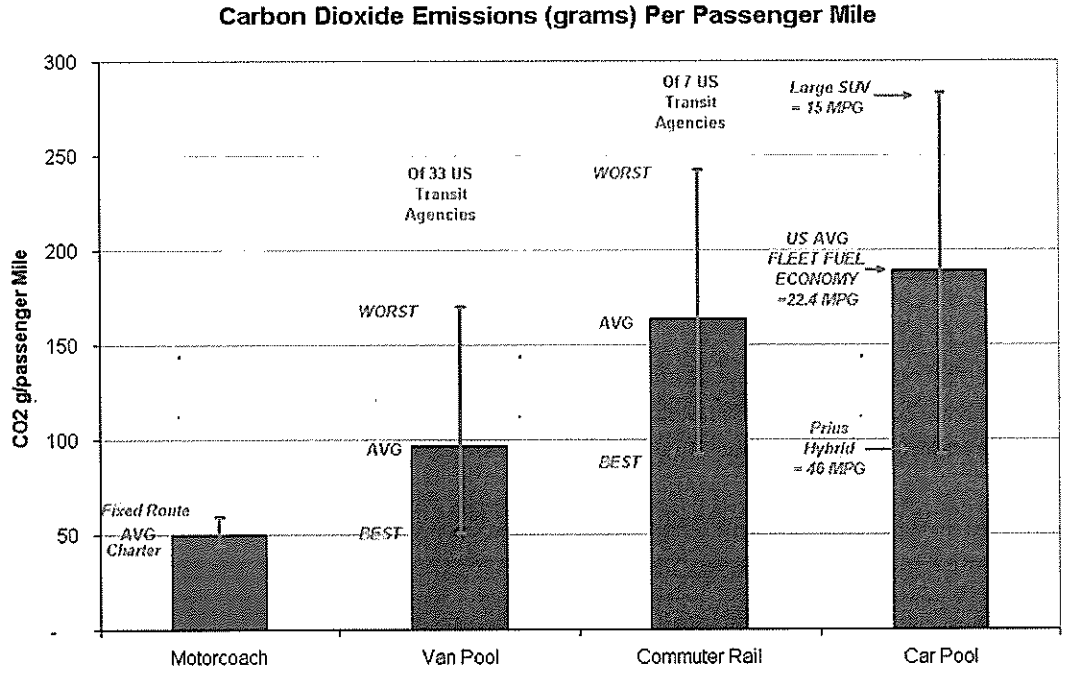


Figure 1.5 Range of CO_2 Emissions (g) per Passenger-Mile, Selected Modes

2 Data Sources

For the commuter rail, demand response, electric trolley bus, ferry boat, heavy rail, light rail, urban transit bus, and van pool modes all energy use and operating data used in the analysis was taken from the 2006 National Transit Database, Tables 17 and 19. This database lists financial and operating data from virtually all transit agencies that receive federal operating and capital assistance. Each table contains rows of data specific to a group of vehicles operated in a single mode by a different U.S. transit agency.

Table 2.1 Data Used for Transit Modes

MODE	# of Agencies	# of Vehicles	Total (x000,000) DEG*	Pass-Mi
Van Pool	33	5,293	4.3	456
Heavy Rail	14	8,913	91.3	14,681
Commuter Rail	7	4,689	98.5	9,103
Light Rail	27	1,211	15.0	1,806
Trolley Bus	4	416	1.5	164
Transit Bus	364	42,546	556.3	17,483
Ferry Boat	7	58	24.3	314
Demand Response	245	5,665	24.3	214

* Miles per Diesel Equivalent gallon (based on energy content)

The following fields from Table 17 were used: ID, Mode, Vehicles Operated in Maximum Service (VOMS), Type of Service (TOS), and Sources of Energy (diesel, gasoline, LPG, LNG, CNG, kerosene, biodiesel, electricity, battery). For all liquid and gaseous sources of energy the table listing is total annual gallons of fuel used by that group of vehicles (for CNG it is diesel equivalent gallons of fuel) and for electric modes it is total annual kilowatt hours. The following fields from Table 19 were used: ID, Mode, VOMS, Annual Vehicle Revenue Miles, Annual Vehicle Revenue Hours, Unlinked Passenger Trips, and Annual Passenger Miles.

ID, Mode, and VOMS were used to match data from each table for the same agency and vehicles. A number of individual rows of data were excluded because required data from one or more fields was missing. The excluded data represented less than one percent of all data in the database. Table 2.1 shows the number of separate agencies and vehicles included in the analyzed data set by mode.

For all other modes other than motorcoach, industry total data was taken from the U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics*, which were downloaded from the web on September 16, 2008. Data was used from the following tables: Domestic Air Travel, Table 4-21 (2006 data); Personal Autos, Table 4-22 (2006 data); Intercity Rail (AMTRAK) Tables 4-26 (passenger miles and fuel, 2005 data) and 4-18 (train miles, 2005 data). For each mode the following data was used from the appropriate table(s): Total Annual Vehicle Miles, Total Fuel Consumed (gallons for diesel and gasoline, and kwh for electricity), and Total Annual Passenger Miles.

In order to evaluate the difference between AMTRAK North East Corridor operations and operations in all other AMTRAK corridors additional data was taken from the *AMTRAK Monthly Performance Report for November 2006*, February 2, 2007, page A-1.3, including: Revenue and Revenue per Passenger Mile for each type of operation. Passenger miles for each type of operation were calculated by dividing total revenue by revenue per passenger mile. This analysis showed that year-to-date as of November 2006 29% of all passenger miles were on the Northeast corridor. This percentage was applied to the 2001 BTS passenger mile data to calculate approximate passenger miles on the North East Corridor. The analysis also assumed that all electricity used by AMTRAK in 2001 was for North East Corridor operations, and all diesel fuel used was for operations in other corridors.

Service Type	Total Motorcoach Mileage	Total Motorcoach Fuel Consumption	Miles per Gallon	Passenger Miles	Avg Passenger Load
Charter, Tour, Sightseeing	1,011,000,000	178,000,000	5.68	41,416,000,000	41.0
Fixed Route	787,000,000	139,000,000	5.66	24,080,000,000	30.6
Industry Total	**1,798,000,000**	**317,000,000**	**5.67**	**65,496,000,000**	**36.4**

Fixed Route = airport shuttle, commuter, intercity, special operations

Table 2.2 Motorcoach Industry Data Used (2007)

The BTS data for passenger cars was used to calculate current fleet average fuel economy (22.4 miles per gasoline gallon, or 27.2 miles per diesel equivalent gallon). In order to evaluate the range of energy use per passenger mile from different vehicles additional data on new EPA combined city/highway fuel economy ratings was taken from www.fueleconomy.gov for the Toyota Prius hybrid car and Jeep Grand Cherokee 4WD and GMC Yukon 1500 4WD sport utility vehicles. This data shows that EPA estimates a Toyota Prius will get 46 mpg in combined city/highway driving (55.7 miles per DEG) and that both the and Jeep Grand Cherokee and GMC Yukon will get 15 mpg in combined city/highway driving (18.2 miles per DEG). These numbers were used to calculate minimum and maximum fuel use and CO_2 emissions per mile and per passenger mile from private autos.

Data on motorcoach miles operated and fuel consumed was taken from the *Draft Motorcoach Industry Census 2007, Third Benchmarking Study of the Motorcoach Industry in the United States and Canada,* September 2008, which was conducted by Nathan Associates for the American Bus Association. The data on coach industry mileage, fuel use, average load factor, and passenger miles used in the analysis is shown Table 2.2.

3 Calculation Methodology

The first step in the analysis was to convert Total Annual Fuel used by each mode to units of Diesel Equivalent Gallons (DEG), using Equation 1 for liquid fuels and Equation 2 for electricity[4]:

Annual DEG = Fuel Energy Content (btu/gal) ÷ Diesel Energy Content (btu/gal) x Annual Fuel (gal)

Equation 1

Annual DEG = Annual Energy (kwh) x 3,412 btu/kwh ÷ Diesel Energy Content (btu/gal)

Equation 2

The energy content of the relevant fuels is shown in Table 3.1

The energy intensity metrics presented in the analysis were calculated using Equations 3 and 4:

Passenger Miles per DEG (Pass-mi/DEG) = Annual Passenger Miles ÷ Annual DEG

Equation 3

Btu per Passenger Mile (btu/pass-mi) = Annual DEG x 138,000 btu/DEG ÷ Annual Passenger Miles

Equation 4

For all liquid and gaseous fuels carbon dioxide emissions per gallon of fuel burned were calculated using Equation 5 and total carbon dioxide emissions for each mode were calculated using Equation 6. The fuel properties used in Equation 5 are shown in Table 3.1. Carbon dioxide emissions per passenger mile were calculated using Equation 7.

CO_2 (g/gal) = 44 ($CO2_{mw}$) ÷ 12 (C_{mw}) x 453.6 g/lb x Fuel Density (lb/gal) x Fuel Wt % Carbon

Equation 5

Total CO_2 (g) = Sum (CO_2 (g/gal) x Annual Gallons)$_{All\ fuels}$ + Electricity (kwh) x 600.6 g CO_2/kwh[5]

Equation 6

CO_2 per Passenger Mile (g/pass-mi) = Total CO_2 (g) ÷ Annual Passenger Miles

Equation 7

[4] Note that CNG fuel usage in the NTD database was already expressed in units of DEG

[5] This is the US industry average for electricity production in 2007, per Report # DOE/EIA-0383(2007). Depending the mix of fuels for electricity production regional values could be lower or higher.

Table 3.1 Fuel Properties Used in the Analysis

Fuel	Energy (btu/gal)	Density (lb/gal)	Weight % Carbon	CO_2 g/gal
Diesel	138,000	7.1	87%	10,274
Gasoline	114,000	6.0	85%	8,482
LPG	91,330	4.4	82%	6,042
LNG	73,500	3.2	75%	4,017
CNG (DEG)	138,000	6.0	75%	7,517
Kerosene	135,000	6.9	86%	9,935
B20 Biodiesel	135,613	7.0	84%	9,748

APPENDIX A

National Transit Database Mode Definitions

Buses (Urban Transit Bus)
Vehicle Type: Rubber-tired passenger vehicles powered by diesel, gasoline, battery or alternative fuel engines contained within the vehicle. Vehicles in this category do not include articulated, double-decked, or school buses.

Commuter Rail
A transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas (UZAs), or between urbanized areas and outlying areas.
Such rail service, using either locomotive hauled or self-propelled railroad passenger cars, is generally characterized by:

- Multi-trip tickets
- Specific station to station fares
- Railroad employment practices, and
- Usually only one or two stations in the central business district.

It does not include:

- Heavy rail (HR) rapid transit, or
- Light rail (LR) / streetcar transit service.

Intercity rail service is excluded, except for that portion of such service that is operated by or under contract with a public transit agency for predominantly commuter services. Predominantly commuter a service means that for any given trip segment (i.e., distance between any two stations), more than 50 percent of the average daily ridership travels on the train at least three times a week. Only the predominantly commuter service portion of an intercity route is eligible for inclusion when determining commuter rail (CR) route miles.

Demand Response
Shared use transit service operating in response to calls from passengers or their agents to the transit operator, who schedules a vehicle to pick up the passengers to transport them to their destinations.

Ferryboat
A transit mode comprised of vessels carrying passengers and / or vehicles over a body of water that are generally steam or diesel powered.
Intercity ferryboat (FB) service is excluded, except for that portion of such service that is operated by or under contract with a public transit agency for predominantly commuter services. Predominantly commuter a service means that for any given trip segment (i.e., distance between any two piers), more than 50 percent of the average daily ridership travels on the ferryboat on the same day. Only the predominantly commuter service portion of an intercity route is eligible for inclusion when determining ferryboat (FB) route miles.

APPENDIX A

Ferryboats
Vehicle Type: Vessels for carrying passengers and / or vehicles over a body of water. The vessels are generally steam or diesel powered conventional ferry vessels. They may also be hovercraft, hydrofoil and other high speed vessels.

Heavy Rail (Heavy Urban Rail)
A transit mode that is an electric railway with the capacity for a heavy volume of traffic. It is characterized by:

- High speed and rapid acceleration passenger rail cars operating singly or in multi-car trains on fixed rails
- Separate rights-of-way (ROW) from which all other vehicular and foot traffic are excluded
- Sophisticated signaling, and
- High platform loading.

Heavy Rail Passenger Cars
Vehicle Type: Rail cars with:

- Motive capability
- Driven by electric power taken from overhead lines or third rails
- Configured for passenger traffic

Usually operated on exclusive right-of-way (ROW).

Light Rail
A transit mode that typically is an electric railway with a light volume traffic capacity compared to heavy rail (HR). It is characterized by:

- Passenger rail cars operating singly (or in short, usually two car, trains) on fixed rails in shared or exclusive right-of-way
- Low or high platform loading, and
- Vehicle power drawn from an overhead electric line via a trolley or a pantograph.

Light Rail Vehicles
Vehicle Type: Rail cars with:

- Motive capability
- Usually driven by electric power taken from overhead lines
- Configured for passenger traffic

Usually operating on exclusive rights-of-way (ROW).

Trolleybus (Electric Trolley Bus)
A transit mode comprised of electric rubber-tired passenger vehicles, manually steered and operating singly on city streets. Vehicles are propelled by a motor drawing current through overhead wires via trolleys, from a central power source not onboard the vehicle.

Trolleybuses
Vehicle Type: Rubber-tired, electrically powered passenger vehicles operated on city streets drawing power from overhead lines with trolleys.

APPENDIX A

Vanpool
A transit mode comprised of vans, small buses and other vehicles operating as a ride sharing arrangement, providing transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area. The vehicles shall have a minimum seating capacity of seven persons, including the driver. For inclusion in the NTD, it is considered mass transit service if it:

- Is operated by a public entity, or
- Is one in which a public entity owns, purchases, or leases the vehicle(s).

Vanpool(s) (VP) must also be in compliance with mass transit rules including Americans with Disabilities Act (ADA) provisions, and be open to the public and that availability must be made known. Other forms of public participation to encourage ridesharing arrangements, such as:

- The provision of parking spaces
- Use of high occupancy vehicle (HOV) lanes
- Coordination or clearing house service, do not qualify as public vanpools.

Vanpool Service
Transit service operating as a ride sharing arrangement, providing transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area. The vehicles shall have a minimum seating capacity of seven persons, including the driver. Vanpool(s) must also be open to the public and that availability must be made known. Does not include ridesharing coordination.

Bus Tours and Bus Passengers: Impact on Local Economies

American Bus Association

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Bus Tours and Bus Passengers: Impact on Local Economies

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Executive Summary

INTRODUCTION

Destination marketers and travel industry suppliers have long known that a significant share of their visitors either arrive by motorcoach or join a group for sightseeing or transportation at some point in their visit. Now, with the publication of this report on a series of surveys performed by a research team from The George Washington University (GWU), tourism stakeholders can better quantify the nature and economic impact of those visitors on the places they visit. The GWU team conducted five separate surveys to profile the nature and scope of bus tour expenditures among five distinct groups:

- Motorcoach operators
- Local businesses that serve travelers
- Overnight tour passengers
- Single-day charter passengers
- Passengers in scheduled intercity bus terminals

The primary objectives of the study were to:

- Identify bus tour characteristics including frequency, duration, type of accommodations, local attractions, tour size, and average price of package.
- Create three distinct formulas based on the data collected that cities can use to determine the economic impact of bus tours in their specific area.
- Determine the impact of bus tours on local businesses in the areas studied.
- Estimate the economic impact of bus passengers on regular scheduled bus service.

METHODOLOGY

All work for the study was done in the field in New York City, Washington, D.C., and Lancaster, Pa., three tourism destinations with unique attractions and characteristics. The study, commissioned by the American Bus Association, was implemented between January 2001 and July 2001.

Data for this study was collected from nine major bus companies primarily located in the North East, over 900 bus tour passengers on day and over night tours in Washington, D.C., Lancaster, Pa. and New York, N.Y., 394 bus passengers on regular scheduled bus service from either Washington, D.C. or New York City and 28 local businesses. Surveys were mailed to the bus companies with follow-up phone interviews. Trained data collectors met bus tours at specific points in their itineraries and distributed surveys to individual bus tour passengers. These same data collectors

were assigned to bus terminals to collect data from regular service passengers. Local businesses were mailed surveys and also interviewed in person. [1]

SURVEY RESULTS

Survey One: Bus Company Profile

Bus companies–that is, operators of motorcoach charters or tours–were asked to provide information on tour itineraries, passenger loads, and costs in each of the destinations studied. The average total hours spent by bus tours were reported to be 20.4 hours in Washington, 14.1 hours in Lancaster, and 14.6 hours in New York. The average total number of nights spent in each destination was reported to be 1.3 in Washington, 0.7 in Lancaster, and 1.0 in New York. The average number of day passengers per bus was 39.1 for Washington, 45.7 for Lancaster, and 45.0 for New York. The average number of overnight passengers was 45.4 for Washington, 38.1 for Lancaster, and 38.4 for New York.

For overnight tours, the bus companies tended to stay in three and four star accommodations with Best Western, Choice Hotels, Hampton Inn, Holiday Inn, and Travelodge being cited most frequently. For meals, most of the bus companies reported using full-service restaurants that were unique to the area versus chain establishments.

The average amount spent per bus on accommodations, meals, attractions, fuel and additional fees in each of the destinations was $4,780.31 in Washington, $4302.01 in Lancaster, and $7,107.47 in New York. The average price of tours ranged from $58.80 for a Washington, day tour to $900.00 for a 3-day trip to New York City. Of this price, approximately 63.9% remained in Washington, 62.1% remained in Lancaster, and 47.1% remained in New York.

Survey Two: Local Business Survey

Local restaurants, retailers, hotels, and attractions were surveyed in each of the three destinations to determine the importance of bus tours to their individual businesses. The estimated share of total business generated from bus tours per quarter ranged from a low of 18.3 percent January through March to a high of 40% April through June. The estimated amount spent per bus passenger at each of these establishments was $15 at restaurants, $35 at retail locations, $268.12 at hotels and $35 at attractions. Ninety percent of the businesses rated the importance of bus tours to their business as "Very Important" or "Somewhat Important."

Survey Three: Day Trip Passenger Survey

Day trip bus passengers were asked to complete a survey regarding their expenditures and demographics. The average price paid for a day-trip bus tour was $74.34. Sixty-

[1] All data was analyzed using StatView, a statistical software package.

two percent reported that lunch was included and 21% reported that dinner was included. Passengers spent an additional $22.69 on meals, retail, transportation and tourist attractions. More females (62%) than males (38%) completed the survey. The majority of passengers fell between 45-74 years in age, 58% were married, 47% were retired, 16% were students, 42% completed college, and 37% made less than $50,000 per year. Ninety-two percent (92%) of the passengers said that they would like to return to the destination and 98% would recommend the destination to their friends and family.

Survey Four: Overnight Passenger Survey

Passengers on overnight bus tours (tours including one or more overnight stays) were asked to complete a survey regarding their expenditures and demographics. The average price paid for an overnight bus tour was $448.71 with the average length of stay being 3.1 nights. Most of the tours included some meals in the package price with the average including 2.3 breakfasts, 2.4 lunches, and 2.1 dinners. Passengers spent an additional $75.84 on meals, retail, transportation and tourist attractions. More females (61%) than males (39%) completed the survey. Approximately half of the respondents were 17 years old or under representing school groups, 56% were single (never married) and 47% had an income level of $50,000 or less. Ninety-five percent (95%) of the passengers said that they would like to return to the destination and 99% would recommend the destination to their friends and family.

Survey Five: Bus Terminal Survey

Passengers traveling independently on regularly scheduled buses were asked to complete a survey regarding their expenditures, travel behaviors, and demographics. The majority of passengers (51%) were traveling between Washington, DC and New York City with the other passengers traveling to various destinations across the United States but primarily on the East Coast. The main reason for traveling by bus was cost (63%), followed by ease of travel (21%). The main reason for selecting a particular bus company was also cited as cost. Twenty-eight percent (28%) said that they travel by bus "very often" or "fairly often" with 15% reporting this to be their first time traveling by scheduled bus service. The average amount spent on a bus ticket was $67.14. The amount spent in the travel destination was $91.71. Of the 43.4% that reported staying in paid accommodations (not staying with family or friend), the average amount spent on accommodations was $46.47. The largest percent of passengers were between 18-24 years old (45%) followed by 20% in the 25-34 year old category. More males (58%) than females (42%) responded to the bus terminal survey. Thirty-six percent were students and 33% had finished college. Fifty-four percent (54%) had an income level of $50,000 or less.

ANALYSIS

Based on the figures reported by bus companies and tour passengers, there is little doubt that the economic impact of bus travel is significant, and that charter and tour bus passengers experience a high level of satisfaction with both individual tour components and the destinations visited. The local businesses studied proved well aware of the economic importance of bus visits to their own business, in terms of both the revenues taken in from bus groups and their relative share of overall business.

By applying the survey data to a mathematical formula that takes into account these new findings (average package price, the percent that remains in the local area, the number of passengers per bus, and the additional amount spent per passenger), the total economic impact of a bus visit can be estimated for each of the three destinations studied. In addition, though every destination has its own unique mix of attractions and hospitality offerings, the new data yielded by these formulas offers a starting point for other destinations to estimate their own local stake in the motorcoach tourism market.

To use the formulas, local data will still be required. Specifically, local businesses that serve travelers must be surveyed to determine how many overall bus visits they receive on either a weekly, monthly, quarterly or other relevant seasonal basis. Because obtaining specific revenue data traditionally has been the biggest barrier to bus impact data collection in the past, destination marketing organizations may find their data collection burden substantially eased by the formulas in this report.

Next, it will be necessary to determine the average trip duration to the local destination. Annual bus visit data from local lodging businesses can be compared to annual bus visit data from the destination's major local attraction(s) to roughly determine the overall percentage of local bus visits that remain overnight. An inquiry should be made to local lodging businesses as to what rough percentage of motorcoach groups stay for more than one night, as this figure varies most from place to place based on the nature and number of nearby attractions that support it as a motorcoach tour "hub." A general U.S. and Canadian finding has been that 72 percent of bus visits are day trips and 28 percent of bus visits are by groups staying one night or more.[2]

Motorcoach operators can utilize this data to support their efforts for enhanced bus amenities such as access and parking and more informed oversight at the local level. In addition, destinations can use this data to help shape their own marketing efforts and determine the appropriate level of attention and investment to dedicate to bus tour operators and the group travel segment. To aid in this analysis and planning, the full report offers a formula for calculating the overall economic impact of bus tours on the three surveyed destinations. Destinations interested in applying this formula to their own situation should consider which of the three studied sites most closely matches their own and use or adapt the data provided for that destination. To use the model

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[2] Breakout of day trips versus overnights is based on an October 1996 survey of 33 million U.S. and Canadian motorcoach travelers by Longwoods International, sponsored by the American Bus Association.

below, choose a "destination type" and combine the products of the three corresponding columns to estimate annual economic impact.

Destination Type:	Multiply the number of **day-trip** buses by this number	Multiply the number of **one-night bus tours** per year by this number	Multiply the number of **two-night bus tours** per year by this number
Historical/ Cultural Destination, like Washington D.C., with a number of popular monuments, museums, and places of historical interest, use these per-bus value figures:	$2,536	$7,685	$12,199
Rural/ Ethnic Destination like Lancaster, Pa., in a more rural setting, with outlet shopping, local food and flavor, and an emphasis on cultural heritage and ethnic tourism, use these per-bus value figures:	$2,415	$5,094	$9,021
Major Cosmopolitan Destination like New York City, in or close to a major city, dense with restaurants and lots of entertainment and shopping, use these per-bus value figures	$4,563	$11,264	$16,080

CONCLUSION

No two travel destinations are the same. The characteristics of local geography, regional populations, attractions, weather, accessibility, history and cultural relevance make it difficult to precisely assign dollar values and estimate impacts to the diverse motorcoach tourism that may be experienced in various locales. Still, the survey findings demonstrate that motorcoach tour groups comprise a dynamic and powerful economic force that should be considered when formulating public policy, transportation and overall city planning. Destination marketers can now engage in more informed planning and budgeting in order to both attract motorcoach tour groups, and serve them successfully, so that tour operators will be encouraged to return, ultimately as partners in their success.

Bus Tours and Bus Passengers: Impact on Local Economies

INTRODUCTION

The American Bus Association commissioned the George Washington University to conduct a study to determine the economic impact of bus tours on first and second tier cities, specifically New York City, Washington, D.C. and Lancaster, PA. These cities were selected for their unique tourism characteristics and sampling convenience. The objectives of this study were to:

1. Create three distinct formulas based on the data collected that cities can use to determine the economic impact of bus tours in their specific area.
2. Estimate the economic impact of bus tours in the three cities studied.
3. Determine the impact of bus tours on local businesses in the areas studied.
4. Identify bus tour characteristics including frequency, duration, type of accommodations, local attractions, tour size and average price of package.
5. Estimate the economic impact of bus passengers on regular scheduled bus routes from Washington, D.C. and New York City.

To achieve these objectives, five different surveys were created and disseminated:

- Bus company survey
- Local business survey
- Overnight passenger survey
- Day passenger survey
- Bus terminal surveys

Findings from these surveys are included in this report.

SURVEY FINDINGS

Survey One: Bus Company Survey

The "Bus Company Survey" (see appendix A) collected data on tour characteristics and bus company expenditures in local areas. A list of bus companies conducting day trip and overnight business in each of the three study areas was received from the ABA. The companies conducting the most tours in each area were selected to participate in the study. A total of 20 bus companies were mailed the survey at the end of January 2001. Follow-up phone calls and e-mails were made every two weeks in an attempt to increase the response rate. Nine companies ultimately responded for a 45% response rate.

The sample included three companies that took day and night trips to all three cities, two companies that took just day trips to all three cities, one company that took just night trips to all three cities, one company that took just night trips to Washington and just day trips to Lancaster and New York, one company that took just day trips to Washington and Lancaster and just night trips to New York and one company that took just night trips to Washington and New York and both day and night trips to Lancaster.

On average, the companies reported taking 69.3 day trips to Washington, 33.0 to Lancaster and 14.6 to New York. The average overnight trips reported by these companies were 25.4 to Washington, 18.9 to Lancaster and 8.3 to New York.

The bus companies reported traveling an average of 458 miles to Washington, 327 miles to Lancaster and 433 miles to New York.

The average number of nights spent in each destination was 1.3 for Washington, 0.7 for Lancaster and 1.0 for New York.

The average total hours spent in each destination were reported to be 20.4 hours in Washington, 14.1 hours in Lancaster and 14.6 hours in New York.

The average number of day passengers per bus was 39.1 for Washington, 45.7 for Lancaster and 45.0 for New York. The average number of overnight passengers was 45.4 for Washington, 38.1 for Lancaster and 38.4 for New York.

As far as the **type of hotels** used in each of the destinations:

- **Washington:** four companies (44%) reported using four star hotels, three (33%) reported using three star hotels, one (11%) company reported using less than three star hotels and one company did not answer this question.
- **Lancaster:** three companies (43%) reported using four star hotels, three (43%) reported using three star hotels and one (14%) reported using less than three star hotels.
- **New York:** three companies (43%) reported using four star hotels, three (43%) reported using three star hotels and one (14%) reported using less than three star hotels.

The **hotels most commonly visited** by the bus companies:

- **Washington:** Best Western, Holiday Inn, Days Inn, Econolodge, Hampton Inn, Comfort Inn, Howard Johnson, Quality Inn, Ramada Inn, Choice Hotels, Fairfield Inn and Travelodge.
- **Lancaster:** Best Western, Choice Hotels, Comfort Inn, Holiday Inn, Hampton Inn, Travelodge, Milford Plaza and Your Place Country Inn.
- **New York:** Best Western, Choice Hotels, Days Inn, Hampton Inn, Quality Inn, Ramada Inn, Holiday Inn, Travelodge and La Quinta Inn.

The **restaurants most commonly visited** by the bus companies:

- **Washington:** Old Country Buffet, Phillips Seafood, Filomena, Hogate's, Union Station, Hard Rock Café, Pier 7, Tony & Joe's and Odyssey Cruise. Of restaurants listed for Washington, one was fast food while the rest were full-service restaurants.
- **Lancaster:** Amish Experience, Hershey Farms, Miller's Smorgasbord, Strasberg Inn, Willow Valley, Plain and Fancy, Bird in the Hand, Cracker Barrel, Good & Plenty, Stoltzfus Restaurant and Your Place Country Inn. Of restaurants listed for Lancaster, all were full-service restaurants.
- **New York:** Crust-On Own, Lisa's Catering, Tavern on the Green, Carmine's, Ernie's, Marriott Marquis, Tutto Bene, World Yacht Lunch, Bradigano, Hard Rock Café and Sparks. Of restaurants listed for New York, all were full-service restaurants.

The **attractions most commonly** visited by bus companies:

- **Washington:** Ford's Theater, The Smithsonian, Step-on-Guide, Washington Monument, Arlington Cemetery, Lincoln Memorial, the White House, the Air and Space Museum, Capitol Hill, the Holocaust Museum, the Kennedy Center, the Vietnam War Memorial and Odyssey Cruise
- **Lancaster:** the American Music Theater, Millennium Theater, Rainbow Theater, Dutch Apple Dinner Theater, Amish Country, Dutch Country, Rockvale Mall, Outlet Center, Sturgis Pretzel, Kitchen Kettle Village, Strasberg Railroad and Moravian Church Tour.
- **New York:** Broadway, the Theater District, NASDAQ, Ellis Island, Yankee Stadium, Empire State Building, Museum of Natural History, Radio City Music Hall, United Nations and World Yacht Cruise.

The **shopping areas most commonly** visited by bus companies:

- **Washington:** Union Station, Georgetown and the Old Post Office Pavillion
- **Lancaster**: Outlet Centers, Rackvale Square, Tangiers Mall and Kitchen Kettle Village.
- **New York:** Grand Central Station, South Street Seaport, 5th Avenue and Macy's.

The **average amount spent per bus (by bus companies) on hotel accommodations:**

- **Washington:** $2,547.14
- **Lancaster:** $2,089.17
- **New York:** $3,655.83

The **average meal spending per bus (by bus companies):**

- **Washington:** $1,059.50
- **Lancaster:** $898.13
- **New York:** $1,437.14

The **average spent on attractions per bus (by bus companies):**

- **Washington:** $1,000.00
- **Lancaster:** $1,170.71
- **New York:** $1,891.00

The **average spending on fuel per bus (by the bus companies)**:

- **Washington:** $98.67
- **Lancaster:** $69.00
- **New York:** $91.00

And for **additional fees**, the bus companies reported spending an average of $75.00 in Washington, $75.00 in Lancaster and $32.50 in New York.

	Washington	Lancaster	New York
Accommodations	$2,547.14	$2,089.17	$3,655.83
Meals	$1,059.50	$898.13	$1,437.14
Attractions	$1,000.00	$1,170.71	$1,891.00
Fuel	$98.67	$69.00	$91.00
Fees	$75.00	$75.00	$32.50

Table 1. Amounts spent, listed by city

In terms of the **total bus tour package price** (see table 2 below), the average price reported for a day trip was $58.80 to Washington, $64.17 to Lancaster and $81.38 to New York. The average price for a one-night trip was $179.00 to Washington, $171.00 to Lancaster and $316.00 to New York. The average price for a two-night trip was $334.60 to Washington, $337.00 to Lancaster and $579.00 to New York. The only company reporting to have a three-night trip to New York reported $900.00.

	Washington	Lancaster	New York
Day Trip	$58.80	$64.17	$81.38
One Night Trip	$179.00	$171.00	$316.00
Two Night Trip	$334.60	$337.00	$579.00
Three Night Trip	N/A	N/A	$900.00

Table 2. Amount spent on specified number of days, listed by city

When asked what percentage of the total tour package price per person remains in the local area, the bus companies reported that 63.9% remained in Washington, 62.1% remained in Lancaster and 47.1% remained in New York.

Survey Two: Local Business Survey Findings

Local businesses were surveyed in each of the three destinations to determine the importance of bus tours to their individual business. Of the 50 local businesses asked to participate, 33 responded. In Washington, the responses were from eight hotels, three restaurants and two retailers. In Lancaster, the responses were from two attractions, two hotels, four restaurants and two retailers. In New York, the responses were from six hotels, two restaurants and one retailer. This constitutes a 66 percent response rate. The businesses that responded were restaurants, hotels, retailers and attractions. From those that responded from each of the three tourism destinations, the following data was collected.

On average, the **percent of business** (see tables 3-6 below) attributed to bus tour passengers per quarter in Washington was 20.5% for January to March and 33% for April to June, 21.3% for July to September and 18.8% for October to December. In Lancaster, the business attributed to bus passengers per quarter was 15.6% for January to March, 49.8% from April to June, 49.7% for July to September and 49.8% for October to December. In New York, the business attributed to bus passengers per quarter was 18.1% for January to March, 17.5% for April to June, 11.9% for July to September and 19.1% for October to December. The total average of all three destinations combined was 18.3% for January to March, 40.0% for April to June, 27.7% for July to September and 28.9% for October to December.

The businesses were asked **how many buses** frequented their place of business per quarter. On average, the number of buses stopping at businesses in Washington was 55.6 from January to March, 144.5 from April to June, 106.3 from July to September and 57.9 from October to December. In Lancaster the average was 94.9 from January to March, 694.8 from April to June, 737.4 from July to September and 753.7 from October to December. In New York the average number of stops per quarter were 70.3 from January to March, 151.4 from April to June, 69.6 from July to September and 70.8 from October to December. The total average of all stops in all three destinations was 71.6 from January to March, 323.3 from April to June, 298.7 from July to September and 285.2 from October to December.

	Jan – Mar	April - June	July - Sept	Oct - Dec
% business	18.3	40.0	27.7	28.9
# of stops	71.6	323.3	298.7	285.2

Table 3. Quarterly percentages of business attributed to bus tours for Washington, Lancaster, and New York combined and number of buses stopping at businesses

	Jan – Mar	April - June	July - Sept	Oct - Dec
% business	20.5	33.0	21.3	18.8
# of stops	55.6	144.5	106.3	57.9

Table 4. Quarterly percentages of business attributed to bus tours and numbers of buses stopping at businesses for Washington

	Jan - Mar	April – June	July - Sept	Oct - Dec
% business	15.6	49.8	49.7	49.8
# of stops	94.9	694.8	737.4	753.7

Table 5. Quarterly percentages of business attributed to bus tours for Lancaster

	Jan - Mar	April – June	July - Sept	Oct – Dec
% business	18.1	17.5	11.9	19.1
# of stops	70.3	151.4	69.6	70.8

Table 6. Quarterly percentages of business attributed to bus tours for New York

The average amount that each passenger spent at their place of business reported for all three destinations was $192.34. This average was $167.46 in Washington, $53.28 in Lancaster and $310.50 in New York. When broken down into the different types of businesses, the resulting averages for Washington were $225.38 for hotels, $13.00 for restaurants and $32.50 for retailers. In Lancaster, the averages were $30.00 for attractions, $170.00 for hotels, $15.90 for restaurants and $40 for retailers. In New York, the averages were $409.00 for hotels, $15.00 for restaurants and $45 for retailers.

When asked to rate the **importance of bus tours to their business** (see table 7 below), 21 companies (64%) reported that they were very important, seven (21%) considered them somewhat important, four (12%) remained neutral and one (3%) reported that buses were not very important to their business. From the businesses in Washington, seven considered buses very important to business, five considered buses somewhat important and one was neutral. In Lancaster, all of the businesses reported that buses were very important to their business except one that was neutral. In New York, four businesses considered buses very important, two reported somewhat important, two remained neutral and one said that buses are not very important to their business.

	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important At All
Washington	7	5	1	0	0
Lancaster	10	0	1	0	0
New York	4	2	2	1	0
Total	21	7	4	1	0

Table 7. Importance of bus tours as reported by local businesses, by city

The final question on the survey asked the business to report **the dollar figure that each bus contributes to their business**. The average from all three destinations was $6,381.25. The average was $6,525.90 in Washington, $2,232.22 in Lancaster and $10,850.00 in New York. When broken down into the different types of businesses, the resulting averages for Washington were $8,768.75 for hotels and $545.00 for restaurants. One food court with 22 vendors reported that the bus business contributed $2 million dollars worth of business and was very important. In Lancaster the averages were $1,200.00 for attractions, $7,250.00 for hotels and $638.00 for restaurants. In New York the averages were $14,250.00 for hotels and $650.00 for restaurants.

Tour Passenger Survey Findings

Surveys were collected from bus tour passengers on both day and overnight tours. These surveys were designed to determine the amount spent by each passenger in the local area. Demographic information was also gathered to learn more about the people traveling to each destination. A total of 900 surveys were collected from all three cities. The breakdown is shown in table 8 below.

	Washington	Lancaster	New York	Total
Day Surveys	56	200	142	398
Overnight Surveys	244	100	158	502

Table 8. Total number of surveys collected, listed by city

Survey Three: Day Passengers

In the "Day Passenger Survey," passengers were asked **which meals were included** in their tour package price (see table 9 below). In the combined destinations, 247 (62%) reported that lunch was included and 83 (21%) reported that dinner was included. In the individual destinations, 14 (25%) passengers reported receiving lunch in Washington, in Lancaster 186 (93%) passengers received lunch and 18 (9%) passengers received dinner, in New York 46 (32%) passengers received lunch and 65 (46%) passengers received dinner. No snacks were reported as included for any of the three destinations.

	Washington	Lancaster	New York	Total
Breakfast	0	0	0	0
Lunch	14	186	46	247
Dinner	0	18	65	83
Snacks	0	0	0	0

Table 9. Total number of meals included, listed by city

Passengers were also asked the **additional amount spent on each meal** (see table 10 below). The total average amount spent in the three destinations combined was $0.91 on breakfast, $4.73 on lunch, $2.04 on dinner and $1.60 on snacks. When broken down into destinations, those visiting Washington reported spending an additional $1.09 on lunch, $6.07 on dinner and $0.80 on snacks, Lancaster passengers spent $0.10 on breakfast, $0.27 on lunch and $2.01 on snacks and New York passengers spent $2.42 on breakfast, $11.43 on lunch, $1.98 on dinner and $1.33 on snacks. This comes to a total average spending of $7.96 for Washington, $4.23 for Lancaster and $17.16 for New York.

	Washington	Lancaster	New York	All Destinations
Breakfast	$0.00	$0.10	$2.42	$0.91
Lunch	$1.09	$0.27	$11.43	$4.73
Dinner	$6.07	$0.00	$1.98	$2.04
Snacks	$0.80	$2.01	$1.33	$1.60
Total	$7.96	$4.23	$17.16	$9.28

Table 10. Additional amounts spent by passengers on meals, listed by city

Questions were also asked about other spending in the local areas such as groceries and necessities bought at retail outlets, gifts and souvenirs, sports equipment rental and antiques and crafts (see table 11 below). The averages spent on these categories for all three destinations were $0.34 in retail outlets, $9.64 on gifts/souvenirs, $0.73 on sport rental and $1.05 on antiques/crafts. The averages for Washington were $0.00 in retail outlets, $16.00 on gifts/souvenirs, $1.43 on sport rental and $0.00 on antiques/crafts. The averages for Lancaster were $0.00 in retail outlets, $7.08 on gifts/souvenirs, $0.05 on sport rental and $1.59 on antiques/crafts. The averages for New York were $0.97 in retail outlets, $11.72 on gifts/souvenirs, $1.40 on sport rental and $ 0.70 on antiques/crafts.

	Washington	Lancaster	New York	All Destinations
Retail Outlets	$0.00	$0.00	$0.97	$0.34
Gifts/Souvenirs	$16.00	$7.08	$11.72	$9.64
Sport Rental	$1.43	$0.05	$1.40	$0.73
Antiques/Crafts	$0.00	$1.59	$0.70	$1.05
Total	$17.43	$8.72	$14.79	$11.76

Table 11. Additional amounts spent on meals, listed by city

Spending on transportation while in the destination was reported (see table 12 below). For all day passengers an average of $0.07 was spent on taxis and $0.11 was spent on metro buses. No additional spending on transportation was reported for Washington. In Lancaster, the averages were $0.04 on taxis and $0.01 on buses. The averages for New York were $0.14 on taxis and $0.28 on buses.

	Washington	Lancaster	New York	Total
Taxi	$0.00	$0.04	$0.14	$0.07
Metro	$0.64	$0.01	$0.28	$0.11
Total	$0.64	$0.05	$0.42	$0.18

Table 12. Amount spent on additional transportation, by city

Additional **spending on tourist attractions** was reported (see table 13 below). The combined averages were $0.10 for sightseeing, $0.01 for attractions and $1.14 for theatre. In both Washington and Lancaster no additional tourist spending was reported. The averages for New York were $0.27 for sightseeing and $3.10 for theatre.

	Washington	Lancaster	New York	All Destinations
Sightseeing	$0.00	$0.00	$0.27	$0.10
Attractions	$0.00	$0.00	$0.01	$0.00
Theatre	$0.00	$0.00	$3.10	$1.14
Sports Activity	$0.00	$0.00	$0.00	$0.00
Tips (Total)	$1.25	$0.00	$2.89	$1.21
Total	$1.25	$0.00	$6.27	$2.45

Table 13. Amount spent at additional attractions, by city

The **amount spent on tips** was also gathered (see table 14 below). The averages from all three destinations were $1.17 in restaurants and $0.04 for taxis. In Washington the average was $1.25 in restaurants. In Lancaster no additional tips were reported. In New York the averages were $2.78 in restaurants and $0.11 for taxis.

	Washington	Lancaster	New York
Tips in Restaurants	$1.25	$0.00	$2.78
Tips in Taxis	$0.00	$0.00	$0.11

Table 14. Average passenger amounts spent on tips, by city

Passengers were asked to report the **price of their tour package** (see table 15 below). The average price for all three destinations was reported to be $74.34. The individual averages were $52.38 for Washington, $54.02 for Lancaster and $111.63 for New York.

	Washington	Lancaster	New York
Price averages	$52.38	$54.02	$111.63

Table 15. Average passenger tour package prices, by city

	Washington	Lancaster	New York	Total
Would Return	56 (100%)	177 (87%)	131 (92%)	364 (95%)
Would Not Return	0 (0%)	23 (13%)	11 (8%)	34 (5%)

Table 16. Visitors choosing to return to destination, by city

Passengers were asked if they would **recommend the destination that they visited to their friends and families** (see table 17 below). Of those who visited Washington, all 56 said that they would recommend the city. Of those who visited Lancaster, two passengers reported that they would not recommend Lancaster while 298 said that they would. Ninety-nine percent would recommend Lancaster. Of those who visited New York, 136 reported that they would recommend New York, while six reported that they would not. This is a 96% recommendation rate. Overall 390 said that they would recommend the destination that they visited while eight would not. This is a 98% recommendation rate.

	Washington	Lancaster	New York	Total
Would Recommend	56 (100%)	298 (99%)	136 (96%)	390 (98%)
Would Not Recommend	0 (0%)	2 (1%)	6 (4%)	8 (2%)

Table 17. Visitors who would recommend the destination, by city

Day Passenger Demographic Information

Gender

(See table 18 below.) Of all day passengers, 245 (62%) were female and 153 (48%) were male. Of those traveling to Washington, 31 (55%) were female and 25 (45%) were male. Of those traveling to Lancaster, 124 (62%) were female and 67 (38%) were male. Of those traveling to New York, 90 (63%) were female and 52 (47%) were male.

	Male	Female
Washington	25 (45%)	31 (55%)
Lancaster	124 (62%)	67 (38%)
New York	90 (63%)	52 (47%)
Total	153 (38%)	245 (62%)

Table 18. Visitor gender by city

Age

(See table 19 below.) Of all day passengers, 30 were under 14, 13 were between 14 and 17, 23 were between 18 and 24, 15 were between 25 and 34, 42 were between 35 and 44, 62 were between 45 and 54, 61 were between 55 and 64, 112 were between 65 and 74 and 40 were older than 74 years old. Of the day travelers to Washington, 28 were under 14 years old, three were between ages 14 to 17, 12 were between 18 and 24, four were between 25 and 34, six were between 35 to 44 and three were between 45 to 54. Of those traveling to Lancaster, two were under 14, seven were between 14 and 17, five were between 18 and 24, three were between 25 and 34, 13 were between 35 and 44, 31 were between 45 and 54, 31 were between 55 and 64, 82 were between 65 and 74 and 26 were older than 74. Of those traveling to New York, three were between 14 and 17, six were between 18 and 24, eight were between 25 and 34, 23 were between 35 and 44, 28 were between 45 and 54, 30 were between 55 and 64 and 30 were older than 74.

	Washington	Lancaster	New York	Total
Under 14	28 (50%)	2 (1%)	0 (0%)	30 (8%)
14 to 17	3 (5%)	7 (4%)	3 (2%)	13 (3%)
18 to 24	12 (22%)	5 (3%)	6 (4%)	23 (6%)
25 to 34	4 (7%)	3 (2%)	8 (6%)	15 (4%)
35 to 44	6 (11%)	13 (6%)	23 (16%)	42 (11%)
45 to 54	3 (5%)	31 (15%)	28 (20%)	62 (16%)
55 to 64	0 (0%)	31 (15%)	30 (21%)	61 (15%)
65 to 74	0 (0%)	82 (41%)	30 (21%)	112 (28%)
75 or older	0 (0%)	26 (13%)	14 (10%)	40 (9%)

Table 19. Visitor age by city

Marital Status

(See table 20 below.) Of the combined destinations, 80 (20%) were single, 230 (58%) were married and 88 (22%) were divorced, separated, or widowed. Of those visiting Washington, 44 (79%) were single, 12 (21%) were married and none were divorced. Of those traveling to Lancaster, 17 (9%) were single, 118 (59%) were married and 65 (32%) were divorced. Of the passengers to New York, 19 (13%) were single, 100 (71%) were married and 23 (16%) were divorced, separated, or widowed.

	Washington	Lancaster	New York	Total
Single	44 (79%)	17 (9%)	19 (13%)	80 (20%)
Married	12 (21%)	118 (59%)	100 (71%)	230 (58%)
Divorced/ separated/ widowed	0 (0%)	65 (32%)	23 (16%)	88 (22%)

Table 20. Visitor marital status by city

Employment

(See table 21 below.) Of the combined destinations, 2 (0.5%) were executives, 120 (30%) were professionals, 18 (5%) were labor/service workers, 189 (47%) were retired, 65 (16%) were students and 4 (1%) reported having no job. Of the day passengers that visited Washington, 12 (21%) were professionals, 42 (75%) were students and 2 (4%) reported no job. Of those visiting Lancaster, 48 (24%) were professionals, 7 (4%) were labor/service workers, 128 (64%) were retired, 15 (7%) were students and 2 (1%) reported no job. Of those in New York, 2 (1%) were executives, 60 (42%) were professionals, 11 (8%) were labor/service worker, 61 (43%) were retired and 8 (6%) were students.

	Washington	Lancaster	New York	Total
Executive	0 (0%)	0 (0%)	2 (1%)	2 (0.5%)
Professional	12 (21%)	48 (24%)	60 (42%)	120 (30%)
Labor/Service Worker	0 (0%)	7 (4%)	11 (8%)	18 (5%)
Retired	0 (0%)	128 (64%)	61 (43%)	189 (47%)
Student	42 (75%)	15 (7%)	8 (6%)	65 (16%)
None	2 (4%)	2 (1%)	0 (0%)	4 (1%)

Table 21. Visitor work status by city

Highest Educational Level

(See table 22 below.) Of all three destinations combined, 38 (10%) reported grade school, 27 (7%) reported some high school, 153 (38%) reported high school, 11 (3%) reported technical school, 60 (32%) reported college or university and 40 (10%) reported master or Ph.D. Of those visiting Washington, 28 (50%) reported grade school, 3 (5%) reported some high school, 15 (27%) reported high school, 4 (7%) reported college or university and 6 (11%) reported master or Ph.D. Of those passengers in Lancaster, 10 (5%) reported grade school, 17 (9%) reported some high school, 82 (41%) reported high school, 7 (3%) reported technical school, 65 (32%) reported college or university and 19 (10%) reported master or Ph.D. Of those who traveled to New York, 7 (10%) reported some high school, 56 (39%) reported high school, 4 (3%) reported technical school, 60 (42%) reported college or university and 15 (11%) reported master or Ph.D.

	Washington	Lancaster	New York	Total
Grade School	28 (50%)	10 (5%)	0 (0%)	38 (10%)
Some High School	3 (5%)	17 (9%)	7 (10%)	27 (7%)
High School	15 (27%)	82 (41%)	56 (39%)	153 (38%)
Technical School	0 (0%)	7 (3%)	4 (3%)	11 (3%)
College or University	4 (7%)	65 (32%)	60 (42%)	129 (32%)
Master or Ph.D.	6 (11%)	19 (10%)	15 (11%)	40 (10%)

Table 22. Visitor education level by city

Income Level

(See table 23 below.) Of the combined destinations, 146 (37%) reported less than $50,000, 47 (12%) reported between $50,000 and $74,000, 25 (6%) reported between $75,000 and $99,999, 18 (4%) reported between $100,000 and $124,999, 1 (0.3%) reported more than $150,000 and 162 (41%) did not know or refused. Of those visiting Washington, 8 (15%) reported less than $50,000, 3 (5%) reported between $50,000 and $74,000, 3 (5%) reported between $75,000 and $99,999, 3 (5%) reported between $100,000 and $124,999 and 39 (70%) did not know or refused. Of those that traveled to Lancaster, 99 (49%) reported less than $50,000, 22 (11%) reported between $50,000 and $74,000, 6 (3%) reported between $75,000 and $99,999, 9 (5%) reported between $100,000 and $124,999 and 64 (32%) did not know or refused. Of those in New York, 39 (27%) reported less than $50,000, 22 (15%) reported between $50,000 and $74,000, 15 (11%) reported between $75,000 and $99,999, 6 (4%) reported between $100,000 and $124,999, one (1%) reported more than $150,000 and 59 (42%) did not know or refused.

	Washington	Lancaster	New York	Total
Less than $50,000	8 (15%)	99 (49%)	39 (27%)	146 (37%)
Between $50,000 and $74,999	3 (5 %)	22 (11%)	22 (15%)	47 (12%)
Between $75, 000 and $99,999	3 (5%)	6 (3%)	15 (11%)	25 (6%)
Between $100,000 and $124,999	3 (5%)	9 (5%)	6 (4%)	18 (4%)
Between $125,000 and $149,999	0 (0%)	0 (0%)	0 (0%)	0 (0%)
More than $150,000	0 (0%)	0 (0%)	1 (1%)	1 (0.3%)
Don't Know/Refused	39 (70%)	64 (32%)	59 (42%)	162 (41%)

Table 23. Visitor income by city

When asked how many people contributed to their household income, the averages were 1.36 from Washington, 1.32 from Lancaster and 1.45 from New York. The average from all three combined was 1.37.

Survey Four: Overnight Passenger Survey

Visitors staying in their destination overnight completed a separate survey that contained the same basic questions as those asked of day passengers, but solocited additional information regarding hotel spending.

The average number of nights that all overnight passengers stayed in their destination was 3.1. The averages for the individual destinations were 3.6 for Washington, 2.0 for Lancaster and 3.0 for New York.

Passengers were asked **which meals were included in their tour package price** (see table 24 below). The number of people responding that received a meal indicates that they received at lest one of that type of meal during their stay. In the combined destinations 378 (75%) reported that breakfast was included, 360 (72%) reported that lunch was included and 435 (86%) reported that dinner was included. In Washington, 221 (91%) passengers reported receiving breakfast, 196 (80%) received lunch and 220 (90%) received dinner. In Lancaster 100 (100%) received breakfast, 100 (100%) passengers received lunch and 100 (100%) passengers received dinner. In New York 57 (36%) received breakfast, 64 (40%) passengers received lunch and 114 (72%) passengers received dinner. No snacks were reported as included for any of the three destinations.

	Washington	Lancaster	New York	Total
Breakfast	221 (91%)	100 (100%)	57 (36%)	378 (75%)
Lunch	196 (80%)	100 (100%)	64 (40%)	360 (72%)
Dinner	220 (90%)	100 (100%)	114 (72%)	435 (86%)
Snacks	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Table 24. Passengers w/ meals included in their tour package price, by city

The **average number of meals included in the three destinations combined** (see table 25 below) was 2.3 breakfasts, 2.4 lunches and 2.1 dinners. In Washington the average was 3.0 breakfasts, 2.8 lunches and 2.7 lunches. The average in Lancaster was 1.0 breakfast, 2.0 lunches and 1.8 dinners. In New York the average was 2.0 breakfasts, 1.8 lunches and 1.0 dinner.

	Washington	Lancaster	New York	Total
Breakfast	3.0	1.0	2.0	2.3
Lunch	2.8	2.0	1.8	2.4
Dinner	2.7	1.8	1.0	2.1
Snacks	0.0	0.0	0.0	0.0

Table 25. Average number of included meals, by city

Of all passengers taking overnight trips 125 (25%) did not receive breakfast, 143 (28%) did not receive lunch, 69 (14%) did not receive dinner and 503 (100%) did not receive snacks. Of those visiting Washington 23 (9%) did not receive breakfast, 48 (20%) did not receive lunch, 24 (10%) did not receive dinner and 244 (100%) did not receive snacks. Of those visiting Lancaster at least one breakfast, lunch and dinner were included but no snacks were included in their package. Of those traveling to New York 102 (64%) did not receive breakfast, 95 (60%) did not receive lunch, 45 (28%) did not receive dinner and 158 (100%) did not receive snacks.

Information on **additional meal spending was also gathered** (see table 26 below). The averages for all three destinations combined were $3.39 for breakfast, $5.93 for lunch, $12.26 for dinner and $3.74 for snacks. The averages for Washington were $1.16 for breakfast, $8.62 for lunch, $8.10 for dinner and $3.79 for snacks. The averages for Lancaster were $0.22 for breakfast, $0.00 for lunch, $0.00 for dinner and $2.27 for snacks. The averages for New York were $8.91 for breakfast, $12.53 for lunch, $26.51 for dinner and $4.59 for snacks.

	Washington	Lancaster	New York	Total
Breakfast	$1.16	$0.22	$8.91	$3.39
Lunch	$8.62	$0.00	$12.53	$5.93
Dinner	$8.10	$0.00	$26.51	$12.26
Snacks	$3.79	$2.27	$4.59	$3.74
Total	$21.67	$2.49	$52.54	$25.32

Table 26. Additional amounts spent by passengers on meals, by city

Questions were also asked about **other spending in the local areas such as groceries and necessities bought at retail outlets, gifts and souvenirs, sports equipment rental and antiques and crafts** (see table 27 below). The averages spent on these categories for all three destinations were $2.71 in retail outlets, $27.87 on gifts/souvenirs, $1.04 on antiques/crafts and $5.09 on other shopping. The averages for Washington were $0.23 in retail outlets, $28.06 on gifts/souvenirs and $0.16 on antiques/crafts. The averages for Lancaster were $0.20 in retail outlets, $19.96 on gifts/souvenirs and $4.85 on antiques/crafts. The averages for New York were $2.71 in retail outlets, $27.87 on gifts/souvenirs, $1.04 on antiques/crafts and $5.09 on other shopping.

	Washington	Lancaster	New York	All Destinations
Retail Outlets	$0.23	$0.20	$8.08	$2.71
Gifts/Souvenirs	$28.06	$19.96	$32.69	$27.87
Antiques/Crafts	$0.16	$4.85	$0.00	$1.04
Other Shopping	$0.00	$0.00	$16.10	$5.09
Total	$28.45	$25.01	$56.87	$36.71

Table 27. Amount spent on gifts, by city

Spending on transportation while in the destination was reported (see table 28 below). Of all overnight passengers an average of $0.34 was spent on taxis and $0.34 was spent on the metro. In Washington an average of $0.64 was reported spent on the metro. In Lancaster no additional transportation was reported. The averages for New York were $1.05 on taxis and $0.10 on the metro.

	Washington	Lancaster	New York	Total
Taxi	$0.00	$0.00	$1.05	$0.34
Metro	$0.64	$0.00	$0.10	$0.34
Total	$0.64	$0.00	$1.15	$0.68

Table 28. Amount spent on transportation, by city

Additional **spending on tourist attractions** was reported (see table 29 below). The combined averages were $1.53 for sightseeing, $0.86 for attractions, $0.04 for sports activities and $5.65 for theatre. In Washington the only additional average spending for tourist activities was $0.92 for theatre. There was no reported additional spending in Lancaster on tourist activities. The averages for New York were $4.83 for sightseeing, $2.72 for attractions, $0.13 for sports activities and $16.35 for theatre.

	Washington	Lancaster	New York	All Destinations
Sightseeing	$0.00	$0.00	$4.83	$1.53
Attractions	$0.00	$0.00	$2.72	$0.86
Theatre	$0.92	$0.00	$16.35	$5.64
Sports Activity	$0.00	$0.00	$0.13	$0.04
Tips (total)	$3.21	$0.00	$11.46	$5.06
Total	$4.13	$0.00	$35.49	$13.13

Table 29. Additional amounts spent by passengers on tourist attractions, by city

The **amount spent on tips was also gathered** (see table 30 below). The averages from all three destinations were $0.18 in hotels, $4.52 in restaurants, $0.13 for taxis and $0.23 on local guides. In Washington the average was $3.21 in restaurants. In New York the average was $0.59 for hotels, $9.27 for restaurants, $0.42 for taxi, $0.72 for guides and $0.46 on other tips. There were no additional tips reported for Lancaster.

	Washington	Lancaster	New York
Tips in Restaurants	$3.21	$0.00	$9.27
Tips in hotels	$0.00	$0.00	$0.59
Tips in taxis	$0.00	$0.00	$0.42
Tips for guides	$0.00	$0.00	$0.72
Other tips	$0.00	$0.00	$0.46

Table 30. Average passenger amounts spent on tips, by city

Passengers were asked **to report the price of their tour package** (see table 31 below). The average price for all three destinations was reported to be $448.71. The individual averages were $524.59 for Washington, $162.94 for Lancaster and $503.21 for New York.

	Washington	Lancaster	New York
Price averages	$524.59	$162.94	$503.21

Table 31. Average passenger tour package prices, by city

Occupancy numbers were also reported (see table 32). The package prices were based on nine single occupancies, 450 double occupancies, 17 triple occupancies and 27 quadruple occupancies. In Washington, there were three single occupancies, 237 double occupancies and four triple occupancies. In Lancaster, there were two single occupancies and 98 doubles. In New York, there were four single occupancies, 115 doubles, 13 triples and 27 quadruple occupancies.

	Washington	Lancaster	New York
Single occupancy	3	2	4
Double occupancy	237	98	115
Triple occupancy	0	0	13
Quadruple occupancy	4	0	27

Table 32. Room occupancy numbers, by city

When asked **if the passengers would like to return to the destination they had visited** (see table 33 below), overall 476 passengers said that they would like to return while 27 said that they would not like to return. This is a 95% return rate. Of the passengers that traveled to Washington, 242 said that they would return while two said that they would not. This is a 99% return rate. Of the passengers visiting Lancaster, 83 reported that they would like to return, while 17 would not. This is an 83% return rate. Of the passengers visiting New York, 151 said that they would return while eight said that they would not return. This is a 95% return rate.

	Washington	Lancaster	New York	Total
Would Return	242 (99%)	83 (83%)	151 (95%)	476 (95%)
Would Not Return	2 (1%)	17 (17%)	8 (5%)	27 (5%)

Table 33. Visitors who would return to destinations, by city

Passengers were asked **if they would recommend the destination that they visited to their friends and families** (see table 34 below). Of those who visited Washington, all 244 said that they would recommend the city. Of those who visited Lancaster, four passengers reported that they would not recommend Lancaster while 96 said that they would. This is a 96% recommendation rate for Lancaster. Of those who visited New York, 156 reported that they would recommend New York while three reported that they would not. This is a 98% recommendation rate. Overall 496 said that they would recommend the destination that they visited while seven would not. This is a 99% recommendation rate.

	Washington	Lancaster	New York	Total
Would Recommend	244 (100%)	96 (96%)	156 (98%)	496 (99%)
Would Not Recommend	0 (0%)	4 (4%)	3 (2%)	7 (1%)

Table 34. Visitors who would recommend destinations, by city

Overnight Passenger Demographic Information

Gender

(See table 35 below.) Of all the overnight passengers combined, 305 (61%) were females and 198 (39%) were males. Of those traveling to Washington, 156 (64%) were females and 88 (36%) were males. Of those traveling to Lancaster, 50 (50%) were females and 50 (50%) were males. Of those traveling to New York, 99 (62%) were females and 60 (38%) were males.

	Male	Female
Washington	88 (36%)	156(64%)
Lancaster	50 (50%)	50 (50%)
New York	60 (38%)	99 (62%)
Total	198 (39%)	305 (61%)

Table 35. Visitors, by gender and city

Age

(See table 36 below.) Of all the overnight passengers combined, 138 were under 14, 117 were between 14 and 17, 18 were between 18 and 24, 19 were between 25 and 34, 48 were between 35 and 44, 69 were between 45 and 54, 52 were between 55 and 64, 35 were between 65 and 74 and seven were older than 74 years old.

Of those traveling to Washington, 136 were under 14 years old, 50 were between ages 14 to 17, one was between 18 and 24, six were between 25 and 34, 21 were between 35 and 44, 23 were between 45 and 54, five were between 55 and 64, one was between 65 and 74 and one was older than 74. Of those traveling to Lancaster, two were under 14, 61 were between 14 and 17, two were between 18 and 24, one was between 25 and 34, five were between 35 and 44, nine were between 45 and 54, 10 were between 55 and 64, nine were between 65 and 74 and one was older than 74. Of those traveling to New York, six were between 14 and 17, 15 were between 18 and 24, 12 were between 25 and 34, 22 were between 35 and 44, 37 were between 45 and 54, 37 were between 55 and 64, 25 were between 65 and 74 and 30 were older than 74.

	Washington	Lancaster	New York	Total
Under 14	136 (56%)	2 (2%)	0 (0%)	138 (27%)
14 to 17	50 (20%)	61 (61%)	6 (4%)	117 (23%)
18 to 24	1 (0.5%)	2 (2%)	15 (9%)	18 (4%)
25 to 34	6 (0.5%)	1 (1%)	12 (8%)	19 (4%)
35 to 44	21 (9%)	5 (5%)	22 (14%)	48 (10%)
45 to 54	23 (9%)	9 (9%)	37 (23%)	69 (14%)
55 to 64	5 (2%)	10 (10%)	37 (23%)	52 (10%)
65 to 74	1 (0.5%)	9 (9%)	25 (16%)	35 (7%)
75 or older	1 (0.5%)	1 (1%)	5 (3%)	7 (1%)

Table 36. Visitor age, by city

Marital Status

(See table 37 below.) Of the combined destinations, 284 (56%) were single, 166 (33 %) were married and 53 (11%) were divorced, separated, or widowed. Of those visiting Washington, 192 (79%) were single, 40 (16%) were married and 12 (5%) were divorced, separated or widowed. Of those traveling to Lancaster, 64 (64%) were single, 20 (20%) were married and 16 (16%) were divorced, separated, or widowed. Of the passengers to New York, 28 (18%) were single, 107 (67%) were married and 24 (15%) were divorced, separated, or widowed.

	Washington	Lancaster	New York	Total
Single (never married)	192 (79%)	64 (64%)	28 (18%)	284 (56%)
Married	40 (16%)	20 (20%)	107 (67%)	166 (33%)
Divorced/separated/ widowed	12 (5%)	16 (16%)	24 (15%)	53 (11%)

Table 37. Visitor marital status, by city

Employment

(See table 38 below.) Of the destinations combined, 0 (0.0%) were executives, 114 (22.7%) were professionals, 22 (4.4%) were labor/service workers, 75 (14.9%) were retired, 273 (54.3%) were students and 4 (0.8%) reported having no job. Of the passengers that visited Washington, 44 (18%) were professionals, 2 (1%) were labor/service workers, 2 (1%) were retired, 189 (77%) were students and 1 (0.5%) reported no job. Of those visiting Lancaster, 15 (15%) were professionals, 21 (21%) were retired and 62 (62%) were students. Of those in New York, 56 (35%) were professionals, 20

(12%) were labor/service worker, 52 (33%) were retired, 22 (14%) were students, 1 (1%) was military and three (2%) reported having no job.

	Washington	Lancaster	New York	Total
Executive	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Professional	44 (18%)	15 (15%)	56 (35%)	114 (22.7%)
Labor/Service Worker	2 (1%)	0 (0%)	20 (12%)	22 (4.4%)
Retired	2 (1%)	21 (21%)	52 (32%)	75 (14.9%)
Student	189 (77%)	62 (62%)	22 (14%)	273 (54.3%)
None	1 (0.5%)	0 (0%)	3 (2%)	4 (0.8%)

Table 38. Visitor employment status, by city

Highest Educational Level

(See table 39 below.) Of the destinations combined 140 (28%) reported grade school, 121 (24%) reported some high school, 98 (20%) reported high school, 13 (3%) reported technical school, 89 (18%) reported college or university and 36 (7%) reported master or Ph.D. Of those visiting Washington, 139 (57%) reported grade school, 49 (20%) reported some high school, 11 (5%) reported high school, 26 (11%) reported college or university and 16 (7%) reported master or Ph.D. Of those passengers in Lancaster, 3 (3%) reported grade school, 63 (63%) reported some high school, 13 (13%) reported high school, 3 (3%) reported technical school, 13 (13%) reported college or university and 5 (5%) reported master or Ph.D. Of those who traveled to New York, 1 (1%) reported grade school, 9 (6%) reported some high school, 74 (47%) reported high school, 10 (6%) reported technical school, 50 (31%) reported college or university and 15 (9%) reported master or Ph.D.

	Washington	Lancaster	New York	Total
Grade School	139 (57%)	3 (3%)	1 (1%)	143 (28%)
Some High School	49 (20%)	63 (63%)	9 (6%)	121 (24%)
High School	11 (5%)	13 (13%)	74 (47%)	98 (20%)
Technical School	0 (0%)	3 (3%)	10 (6%)	13 (3%)
College or University	26 (11%)	13 (13%)	50 (31%)	89(18%)
Master or Ph.D.	16 (7%)	5 (5%)	15 (9%)	36 (7%)

Table 39. Visitor education status, by city

Income Level

(See table 40 below.) Of the combined destinations, 238 (47%) reported less than $50,000, 69 (14%) reported between $50,000 and $74,000, 35 (7%) reported between $75,000 and $99,999, 16 (3%) reported between $100,000 and $124,999, six (1%), 1 (0.2%) reported more than $150,000 and 138 (27%) did not know or refused.

Of those visiting Washington, 139 (57%) reported less than $50,000, 17 (7%) reported between $50,000 and $74,000, 11 (4%) reported between $75,000 and $99,999, 7 (3%) reported between $100,000 and $124,999, 4 (2%) reported between $125,000 and $149,000 and 66 (27%) did not know or refused. Of those that traveled to Lancaster, 19 (19%) reported less than $50,000, 13 (13%) reported between $50,000 and $74,000, 7 (7%) reported between $75,000 and $99,999, 4 (4%) reported between $100,000 and $124,999 and 57 (57%) did not know or refused. Of those in New York, 80 (50%) reported less than $50,000, 39 (24%) reported between $50,000 and $74,000, 17 (11%) reported between $75,000 and $99,999, 5 (3%) reported between $100,000 and $124,999, 2 (2%) reported between $125,000 and $149,999, 1 (1%) reported more than $150,000 and 15 (9%) did not know or refused.

	Washington	Lancaster	New York	Total
Less than $50,000	139 (57%)	19 (19%)	80 (50%)	238 (47%)
$50,000 - $74,999	17 (7 %)	13 (13%)	39 (24%)	69 (14%)
$75, 000 - $99,999	11 (4%)	7 (7%)	17 (11%)	35 (7%)
$100,000 - $124,999	7 (3%)	4 (4%)	5 (3%)	16 (3%)
$125,000 - $149,999	4 (2%)	0 (0%)	2 (2%)	6 (1%)
More than $150,000	0 (%)	0 (0%)	1 (1%)	1 (0.2%)
Don't Know/Refused	66 (27%)	57 (57%)	15 (9%)	138 (27%)

Table 40. Visitor income level, by city

When asked how many people contributed to their household income. The averages were 1.2 from Washington, 1.4 from Lancaster and 1.5 from New York. The average from all three combined was 1.4.

SURVEY FIVE: BUS TERMINAL SURVEY FINDINGS

The final survey, called the "Bus Terminal Survey" (See Appendix A), was completed by passengers who were traveling independently on **regularly scheduled buses.** Again, this survey was to establish the economic impact of passengers arriving on regularly scheduled buses. Data was collected from passengers waiting in the main bus terminals in Washington, D.C. and in New York City (Port Authority).

A total of 394 surveys were collected from all destinations. In the two individual cities being focused on, 84 surveys were collected in Washington and 108 in New York. The majority of travelers were traveling to Washington, D.C. (84) or to New York (108) with the other passengers traveling to various destinations including Albany, N.Y. (10), Albuquerque, N.M. (2), Atlanta, Ga. (6), Arlington, Va. (2), Baltimore, Md. (15), Becket, Mass. (2), Brooklyn, N.Y. (5), Burlington, Vt. (2), Calhoun, Ga. (4), Canada (2), Chicago, Ill. (4), Cincinnati, Ohio (3), Colo. (1), Del. (2), Elizabeth City, N.Y. (2), Fall River, Mass. (1), Fla. (2), Fredericksburg, Va. (1), Harrisburg, Pa. (1), Harrisonburg, Va. (2), Houston, TX (2), Indianapolis, Ind. (1), In transit (1), JFK Airport (3), Knoxville, Tenn. (1), Lee, Mass. (2), Lexington, Ky. (2), Long Island, N.Y. (2), Manhattan, N.Y. (7), Md. (1), Mass. (4), Memphis, Tenn. (2), Mount Pocono, Pa. (6), N.J. (6), Newark, N.J. (2), Norfolk, Va. (1), Ocean City, Md. (16), Ohio (4), Orlando, Fla. (2), Pa. (2), Philadelphia, Pa. (3), Pittsburgh, Pa. (4), Plattsburgh, N.Y. (4), Queens, N.Y. (5), Raleigh, N.C. (5), Richmond, Va. (4), Roanoke, Va. (1), Shepherdstown, W.Va. (1), Va. (1), Virginia Beach, Va. (5) and Wis. (1).

Passengers were asked about other destinations that they have traveled to and the following were listed: Atlantic City, N.J., Austin, Texas, Bloomsburg, Pa., Boston, Ma., Buffalo, N.Y., Cape Cod, Mass., Cleveland, Ohio, Cincinnati, Ohio, Coeburn, Va., Columbus, Ohio, Dallas, Texas, Ithaca, N.Y., Kansas City, Key West, Fla., Lakeland, Fla., Los Angeles, Calif., Maryland, Meridian, Miss., Miami, Fla., North Carolina, San Francisco, Calif., Seattle, Wash., St. Louis, Mo. and Toronto, Ont.

When asked the **reason for choosing to travel by bus,** 249 (63%) said cost, 84 (21%) said ease of travel and 61 (16%) said it was because they had no reliable personal vehicle. Of those traveling to Washington, 59 (70%) said cost, 11 (13%) said ease of travel and 14 (17%) said it was because they had no reliable personal vehicle. Of those traveling to New York, 52 (48%) said cost, 34 (32%) said ease of travel and 22 (20%) said it was because of no reliable personal vehicle.

The **average number of nights that passengers stayed** at their destination was 9.7 for all passengers, 4.4 for Washington visitors, and 5.5 for New York visitors.

Passengers were asked **how much they spent in the local area** (see table 41 below). The averages for all passengers combined were $19.29 for food and beverages, $20.17 for accommodations, $8.61 for local transportation, $9.17 on attractions, $10.37 for theatre, $3.34 for sports events, $1.58 for recreation and $11.31 on other expenditure (gifts, shopping and camping). The averages for those traveling to Washington were $15.56 for food and beverages, $12.14 for accommodations, $5.76 for local transportation, $2.37 on attractions, $8.79 for theatre, $2.14 for sports events, $2.56 for recreation and $5.56 on other expenditure (gifts and shopping). The averages for those traveling to New York were $21.94 for food and beverages, $30.80 for accommodations, $13.33 for local transportation, $17.82 on attractions, $10.03 for theatre, $2.50 for sports events, $2.22 for recreation and $5.54 on other expenditure (gifts and shopping).

	Washington	New York	Total
Food and Beverages	$15.56	$21.94	$19.29
Accommodations	$12.14	$30.80	$20.17
Local Transportation	$5.76	$13.33	$8.61
Attractions	$2.37	$17.82	$9.17
Theatre	$8.79	$10.03	$10.37
Sports Events	$2.14	$2.50	$3.34
Recreation	$2.56	$2.22	$1.58
Other Expenditure	$5.54	$5.56	$11.31
Tips (total)	$5.83	$12.87	$7.87
Total	$60.69	$117.07	$91.71

Table 41. Passenger amounts spent in local areas, by category and city

The **amount spent on tips was also recorded** (see table 42 below). The averages for all passengers combined were $5.06 in restaurants, $2.29 for taxis and $0.52 for guides. Of those traveling to Washington the averages were $4.32 in restaurants, $1.21 for taxis and $0.30 for guides. Of those traveling to New York the averages were $6.11 in restaurants, $6.11 for taxis and $0.65 for guides.

	Washington	New York
Tips in Restaurants	$4.32	$6.11
Tips in taxis	$1.21	$6.11
Tips for guides	$0.30	$0.65

Table 42. Average passenger amounts spent on tips, by city

Further analysis of just those individuals that reported staying in paid accommodations (not staying with family or friend) showed that the average amount spent on accommodations by passengers to all destinations (171 of 394 or 43.4% of the entire sample) was $46.47. Of those traveling to Washington, DC (23 of 84 or 27%) the average spent on accommodations was $44.35. And of those traveling to NY (53 of 108 or 49%) the average spent on accommodations was $62.76.

Passengers were asked to report which bus company they traveled with. Of all bus passengers 78% traveled Greyhound 9% traveled Peter Pan Lines and 13% rode other buses. Of those visiting Washington 88% traveled with Greyhound, 12% traveled with Peter Pan Lines. Of those visiting New York 62% traveled with Greyhound, 14% traveled with Peter Pan Lines and 24% rode other buses. The bus companies that were listed as "other" were Carl Bieber, Bonanza, Delta, Martz, Susquehanna, Trailways and Trans-Bridge.

The passengers were asked **why they chose the particular bus companies that they did** (see table 43 below). Passengers were allowed to choose more than one reason. Of all passengers, 19 said movies offered, 34 said comfort, 225 said cost and 71 said they were satisfied with previous use. Of those traveling to Washington one said movies, four said comfort, 64 said cost and seven said they were satisfied with previous use. Of those visiting New York four said movies, 15 said comfort, 57 said cost and 18 said that they were satisfied with previous use. Other reasons given were location (5%), route (1%) and that it was their only choice (9%).

	Washington	New York	Total
Movies	1	4	19
Comfort	4	15	34
Cost	64	57	225
Previous Use	7	18	71

Table 43. Number of passengers choosing particular bus companies, by reason by city

The **frequency of travel by bus outside of the passenger's home city was also reported** (see table 44 below). All combined, 11% reported very often, 17% fairly often, 25% sometimes, 32% almost never and 15% first time. Of those visiting Washington, 4% reported very often, 7% fairly often, 14% sometimes, 54% almost never and 20% reported that it was their first time. Of those visiting New York, 14% reported very often, 27% fairly often, 27% sometimes, 20% almost never and 12% reported that it was their first time.

	Washington	New York	Total
Very Often	4%	14%	11%
Fairly Often	7%	27%	17%
Sometimes	14%	27%	25%
Almost Never	54%	20%	32%
First Time	20%	12%	15%

Table 44. Frequency of travel by bus (outside passenger's home city), by city

The average price of bus tickets was also gathered. The averages were $67.14 for all passengers, $62.45 to Washington and $60.30 to New York.

Of all passengers 35% had one-way tickets and 65% had round-trip tickets. Individually, Washington had 14% one-way and 86% round-trip and New York had 42% one-way and 58% round-trip.

Bus Terminal Passenger Demographic Information

Gender

(See table 45 below.) Of all passenger 42% were female and 58% were male. Of just those traveling to Washington 30% were female and 70% were males. Of those visiting New York 45% were female and 55% were male.

	Washington	New York	Total
Male	70%	55%	58%
Female	30%	45%	42%

Table 45. Passengers gender, by city

Age

(See table 46 below.) Of all passengers 2% were 14 to 17, 45% were 18 to 24, 20% were 25 to 34, 14% were35 to 44, 11% were 45 to 54, 7% were 55 to 64, 1% was 65 to 74 and 1% was 75 or older. Of only Washington passengers 53% were 18 to 24, 11% were 25 to 34, 11% were35 to 44, 16% were 45 to 54, 5% were 55 to 64 and 4% was 65 to 74. Of those visiting New York 6% were 14 to 17, 34% were 18 to 24, 21% were 25 to 34, 19% were35 to 44, 8% were 45 to 54, 9% were 55 to 64 and 3% was 65 to 74.

	Washington	New York	Total
Under 14	0%	0%	0%
14 to 17	0%	6%	2%
18 to 24	53%	34%	45%
25 to 34	11%	21%	20%
35 to 44	11%	19%	14%
45 to 54	16%	8%	11%
55 to 64	5%	9%	7%
65 to 74	4%	3%	1%
75 and Older	0%	0%	1%

Table 46. Passenger age, by city

Employment

(See table 47 below.) Of all passengers 7% were executive, 32% were professionals, 12% were labor/service workers, 6% were military, 6% were retired, 36% were students and 1% reported no job. Of those traveling to Washington 8% were executive, 25% were professionals, 6% were labor/service workers, 21% were military, 9% were retired, 27% were students and 2% reported no job. Of those traveling to New York 8% were

executive, 37% were professionals, 15% were labor/service workers, 1% was military, 6% were retired and 33% were students.

	Washington	New York	Total
Executive	8%	8%	7%
Professional	25%	36%	32%
Labor/Service Worker	6%	15%	12%
Military	21%	2%	6%
Retired	9%	6%	6%
Student	27%	33%	36%
No Job	2%	0%	1%

Table 47. Passenger employment status, by city

Highest Educational Level

(See table 48 below.) When asked their level of education 4% of all passengers reported grade school, 4% reported some high school, 38% high school, 5% reported technical school, 17% reported college or university and 8% reported master or Ph.D. Of those traveling to Washington reported high school, 5% reported technical school, 17% reported college or university and 8% reported master or Ph.D. Of those traveling to New York 6% reported grade school, 6% reported some high school, 19% reported high school, 12% reported technical school, 45% reported college or university and 11% reported master or Ph.D.

	Washington	New York	Total
Grade School	0%	6%	4%
Some High School	0%	6%	4%
High School	70%	19%	38%
Technical School	5%	12%	11%
College/University	17%	45%	34%
Master or Ph.D.	8%	11%	9%

Table 48. Passenger education level, by city

Income Level

(See table 49 below.) Of all bus passengers 54% reported less than $50,00, 16% reported between $50,00 and $74,999, 10% reported between $75,000 and $99,999, 3% reported between $100,000 and $124,999, 1% reported between $125,000 and $149,999, 2% reported more than $150,000 and 14% either did not know or refused. Of those passenger traveling to Washington 64% reported less than $50,00, 13% reported between $50,00 and $74,999,

7% reported between $75,000 and $99,999, 3% reported between $100,000 and $124,999 and 14% either did not know or refused. Of just those passengers traveling to New York 51% reported less than $50,00, 16% reported between $50,00 and $74,999, 15% reported between $75,000 and $99,999, 4% reported between $100,000 and $124,999, 3% reported more than $150,000 and 11% either did not know or refused.

	Washington	New York	Total
Less Than $50,000	64%	51%	54%
Between $50,000 and $74,999	13%	16%	16%
Between $75,000 and $99,999	7%	15%	10%
Between $100,000 and $124,999	3%	4%	3%
Between $125,000 and $149,999	0%	0%	1%
More Than $150,000	0%	3%	2%
Don't Know/Refused	13%	11%	14%

Table 49. Passenger income level, by city

When asked how many people contributed to the household income, passengers to all destinations reported 69% one contributor, 25% two contributors, 3% three contributors and 3% for or more contributors. Of just those visiting Washington 88% reported one, 8% reported two and 4% reported three. Of those traveling to New York, 71% reported one, 20% reported two, 3% reported three and 6% reported four or more.

ECONOMIC IMPACT ANALYSIS

Summary of Findings by Trip Type and Destination

The following tables summarize, by destination, the findings presented earlier in this report.

A. Average Package Price

	Washington	Lancaster	New York
Day Trip	$58.80	$64.17	$81.38
One Night Trip	$179.00	$171.00	$316.00
Two Night Trip	$334.60	$337.00	$579.00
Three Night Trip	N/A	N/A	$900.00

Table 50. Average per passenger cost for bus tour, for all three destinations

B. Percent Remaining in Local Area

Washington	Lancaster	New York
63.9%	62.1%	47.1%

Table 51. Percent of package price that remains in local area, by city

C. Number of Passengers Per Bus

	Washington	Lancaster	New York
Day Trip	39.1	45.7	45
Over Night Trip	45.4	38.1	38.4

Table 52. Average number of passengers per bus, by city

D. Additional Amount Spent Per Passenger[3]

	Washington	Lancaster	New York
Day Trip	$27.28	$13.00	$63.07
One Night Trip	$54.89	$27.50	$146.05

Table 53. Total additional spent per bus tour passenger, by city

Overall Impact of Various Bus Trip Types on the Destinations Surveyed

By taking the figures summarized above and applying them to a simple formula, the overall impact of various types of bus visitors to the three destinations studied can be calculated (Table 54).

Economic Impact Per Bus = A x B x C + (D x C)

A = average package price

B = percent remaining in local area

C = number of passengers per bus

D = additional amount spent per passenger

[3] The total number of bus tours to Washington, Lancaster and New York City was not measured for this study. Additional data must be provided by individual destinations.

	Washington	Lancaster	New York
Day Trip	$58.80 x 63.9% x 39.1 + ($27.28 x 39.1) = **$2,535.77**	$64.17 x 62.1% x 45.7 + ($13 x 45.7) = **$2,415.23**	$81.38 x 47.1% x 45 + ($63.07 x 45) = **$4,563.00**
One Night Trip	$179.00 x 63.9% x 45.4 + (54.89 x 45.4) = **$7,684.90**	$171.00 x 62.1% x 38.1 + (27.50 x 38.1) = **$5,093.63**	$316.00 x 47.1% x 38.4 + (146.05 x 38.4) = **$11,264.10**
Two Night Trip	$334.60 x 63.9% x 45.4 + (54.89 x 45.4) = **$12,198.95**	$337.00 x 62.1% x 38.1 + (27.50 x 38.1) = **$9,021.20**	$579.00 x 47.1% x 38.4 + (146.05 x 38.4) = **$16,080.35**
Three Night Trip	N/A	N/A	$900.00 x 47.1% x 38.4 + (146.05 x 38.4) = **$21,886.08**

Table 54. Per bus economic impact cost calculations, by city

By combining the aggregate data from all three destinations, Table 55 provides an average per-bus revenue figure by each trip type.

	Average impact per bus tour, for all three destinations
Day Trip	$3,171.33
One Night Trip	$8,014.21
Two Night Trip	$12,433.50
Three Night Trip	N/A

Table 55. Average economic impact per bus tour, for all three destinations

Impact of Passengers on Regularly Scheduled Bus Service

Based upon the data collected in the Washington and New York City bus terminals, passengers traveling on regularly scheduled buses spend on average $91.71 in their destination city. Those passengers traveling specifically to Washington reported spending $60.69 and those traveling to New York City reported a total spending of $117.07.

	Bus Terminal Passenger
Washington	$60.69
New York	$117.07
All Destinations	$91.71

Table 56. Economic impact per passenger on regular scheduled bus service, by city

An area therefore can estimate the economic impact of regularly scheduled bus passengers by multiplying the number of bus passengers arriving in their destination by one of the figures above most representative of their destination.

ANALYSIS

Based on the figures reported by bus companies and tour passengers, there is little doubt that the economic impact of bus travel is significant, and that charter and tour bus passengers experience a high level of satisfaction with both individual tour components and the destinations visited. The local businesses studied proved well aware of the economic importance of bus visits to their own business, in terms of both the revenues taken in from bus groups and their relative share of overall business.

By applying the survey data to a mathematical formula that takes into account these new findings (average package price, the percent that remains in the local area, the number of passengers per bus, and the additional amount spent per passenger), the total economic impact of a bus visit can be estimated for each of the three destinations studied.

To use the formulas, local data will still be required. Specifically, local businesses that serve travelers must be surveyed to determine how many overall bus visits they receive on either a weekly, monthly, quarterly or other relevant seasonal basis. Because obtaining specific revenue data traditionally has been the biggest barrier to bus impact data collection in the past, destination marketing organizations may find their data collection burden substantially eased by the formulas in this report.

Next, it will be necessary to determine the average trip duration to the local destination. Annual bus visit data from local lodging businesses can be compared to annual bus visit data from the destination's major local attraction(s) to roughly determine the overall percentage of local bus visits that remain overnight. An inquiry should be made to local lodging businesses as to what rough percentage of motorcoach groups stay for more than one night, as this figure varies most from place to place based on the nature and number of nearby attractions that support it as a motorcoach tour "hub." A general U.S. and Canadian finding has been that 72 percent of bus visits are day trips and 28 percent of bus visits are by groups staying one night or more.[4]

Motorcoach operators can utilize this data to support their efforts for enhanced bus amenities such as access and parking and more informed oversight at the local level. In addition, destinations can use this data to help shape their own marketing efforts and determine the appropriate level of attention and investment to dedicate to bus tour operators and the group travel segment.

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[4] Breakout of day trips versus overnights is based on an October 1996 survey of 33 million U.S. and Canadian motorcoach travelers by Longwoods International, sponsored by the American Bus Association.

Estimating Economic Impact on Other Destinations

While every destination has its own unique mix of attractions and hospitality offerings, the new data yielded by these formulas offers a starting point for other destinations to estimate their own local stake in the motorcoach tourism market.

To aide in this analysis and planning, the full report offers a formula for calculating the economic impact of bus tours on the three survey sites. Destinations interested in applying these formulas locally should consider which of the three study sites most closely matches their area and use the data provided for that city:

1. **Historical/Cultural Destinations:** Destinations with a number of national monuments, museums, and places of historical interest should use the following formula, based on the study's **Washington D.C.** findings, to determine the economic impact of bus tours on their specific destination:

   # of day-trip buses per year x $2,536 $_____
   # of one-night bus tours per year x $7,685 $_____
   # of two-night bus tours per year x $12,199 $_____

   Add these three figures to estimate the total economic impact of motorcoach visits to this type of destination.

2. **Rural/ Ethnic Heritage Destinations:** Destinations in a more rural setting, with outlet shopping, local food and flavor, and an emphasis on cultural heritage and ethnic tourism should use the following formula, based on the study's **Lancaster, Pa.** findings, to determine the economic impact of bus tours on their specific destination:

   # of day trip buses per year x $2,415 $_____
   # of one-night bus tours per year x $5,094 $_____
   # of two-night bus tours per year x $9,021 $_____

   Add these three figures to estimate the total economic impact of motorcoach visits to this type of destination.

3. **Major Cosmopolitan Destinations:** Destinations in or close to a major city, dense with restaurants and lots of entertainment and shopping should use the following formula, based on the study's **New York City** findings, to determine the economic impact of bus tours on their specific destination:

   # of day trip buses per year x $4,563 $_____
   # of one-night bus tours per year x $11,264 $_____
   # of two-night bus tours per year x $16,080 $_____

   Add these three figures to estimate the total economic impact of motorcoach visits to this type of destination.

CONCLUSION

No two tourism destinations are the same. The characteristics of local geography, regional populations, attractions, weather, accessibility, history and cultural relevance make it difficult to precisely assign dollar values and estimate impacts to the diverse motorcoach tourism that may be experienced in various locales.

The formulas offered in this summary are intended to outline helpful rules of thumb that take into account the many types of expenditures that bus visitors make. Still, the precise ranges of expenditures catalogued through the implementation of these surveys speak for themselves: at a minimum, bus groups spend readily and are relied upon considerably by local businesses that serve travelers. The survey findings demonstrate that motorcoach groups comprise a dynamic and powerful economic force that should be considered when formulating public policy, transportation and overall city planning. Destination marketers can now engage in more informed planning and budgeting in order to both attract motorcoach groups, and serve them successfully, so that tour operators will be encouraged to return, ultimately as partners in their success.

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 631 Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: JACK CARAVANOS (Professor)

Address: 25 Tudor City Place NYC

I represent: Hunter College CUNY

Address: 425 E 25 ST.

THE COUNCIL
THE CITY OF NEW YORK

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Name: Ellen Peterson-Lewis

Address: 622 Greenwich St 3D NY 10014

I represent: ~~[redacted]~~ CB#2 Public Members

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THE CITY OF NEW YORK

Appearance Card

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Name: DEAN MCCANN

Address: 1697 BROADWAY

I represent: MOFTB

Address: _____

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Date: 1/26/09

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Name: Michael Seilback

Address: 116 John St, 3rd Floor

I represent: American Lung Association in New York

Address:

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☑ in opposition

Date: Reconsidered

(PLEASE PRINT)

Name: James Basile

Address: FDNY

I represent: Assistant Commissioner

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: HARRIET PICKER

Address: GRAND STREET

I represent: PARENTS W ASTHMA + CHILDREN W ASTHMA

Address: _____

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☒ in favor ☐ in opposition

Date: ______

(PLEASE PRINT)

Name: CECILIA GALARRAGA

Address: ______

I represent: ~~[illegible]~~ PS 28

Address: BRONX Mt Hope. St Anthony Ave.

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card 684

I intend to appear and speak on Int. No. ______ Res. No. ______
☒ in favor ☐ in opposition

Date: ______

(PLEASE PRINT)

Name: SUSAN STETZER

Address: ______

I represent: COMMUNITY BOARD 3

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. all Res. No. ______
☒ in favor ☐ in opposition

Date: ______

(PLEASE PRINT)

Name: Georgia Pakenham

Address: 161 W 74th St

I represent: NSAFT [illegible] Association of America

Address: ______

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☐ in favor ☑ in opposition

Date: _____

(PLEASE PRINT)

Name: Tom O'Donnell

Address: 1 Hollow Lane Lake Success

I represent: Theatrical Teamsters Local 817

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684A Res. No. _____

☐ in favor ☒ in opposition

Date: 1/26

(PLEASE PRINT)

Name: Tony Argento

Address: Lunalight

I represent: 203 Meserole Ave

Address: Brooklyn

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☑ in opposition

Date: reconsidered

(PLEASE PRINT)

Name: John Peruggia

Address: FDNY

I represent: Chief of EMS

Address: _____

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☑ in opposition

Date: _____

(PLEASE PRINT)

Name: Angela Mieie

Address: _____

I represent: Motion Picture Association of America

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☐ in favor ☑ in opposition

Date: _____

(PLEASE PRINT)

Name: SIMON BROAD

Address: ARA CSC 619 W54th St. NY

I represent: ARLIC

Address: 619 W54th NY NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Matt Miller Esq AICP

Address: 3W 18th St

I represent: Assn. of Independent Commercial Producers

Address: See above

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card all

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Robert Avaltroni, Deputy Commissi

Address: NYCDEP

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Eugene Varnedoe

Address: _____

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THE CITY OF NEW YORK

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☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Rebecca Kalin

Address: 171 Ave B

I represent: Asthma Free School Zone

Address: _____

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☐ in favor ☒ in opposition

Date: 1/26/2009

(PLEASE PRINT)

Name: Thomas J. Hillsgardner

Address: 82-63 170 Street Jamaica NY 11432

I represent: New York City Parking Justice League

Address: 82-63 170 Street Jamaica NY 11432

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

40A 881A opposed

I intend to appear and speak on Int. No. 631 A Res. No. _____

☑ in favor ☑ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: ROBERT BINEAVALTRONI

Address: _____

I represent: NYC DEP

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

40A 881A opposed

I intend to appear and speak on Int. No. 631 A Res. No. _____

☑ in favor ☑ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: ROBERT AVALTRONI

Address: _____

I represent: NYC DEP

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684-A Res. No. _____

☐ in favor ☐ in opposition

Isabelle

Date: 1/26/09

(PLEASE PRINT)

Name: I. Silverman

Address: 257 PAS

I represent: EDF

Address:

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 631 Res. No. _____

☐ in favor ☐ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Isabelle Silverman

Address: 257 PAS

EDF

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THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 631 Res. No. _____

☒ in favor ☐ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Harriet Picker

Address: 572 Grand St

I represent: myself + Asthma Free school zone

Address:

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684A Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: JOHN VANDERLINDEN

Address: 619 W. 54TH ST

I represent: HARI/CSC

Address: SAME ABOVE

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

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☐ in favor ☒ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Faraj Tommy Kharieh

Address: 2070 East 55 Street

I represent: Lightmin Production

Address: 52-69 Gale Ave LIC NY 11101

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 682A Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: CLYDE HART

Address: 700 13th ST NW

I represent: AMERICAN BUS ASSOCIATION

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. ~~Pre-Considered~~ Res. No. ~~Pre-Considered~~ 1477

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: JAMES DASILE

Address: ?

I represent: FDNY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. 684

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: ADAM FLAX

Address: ~~69 Fifth Ave~~ 10001 Hudson St #4C Hoboken NJ

I represent: Style Tease Inc

Address: Same

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

684

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 1/26/05

(PLEASE PRINT)

Name: JOHN JOHNSTON

Address: 26 CORNELIA ST NY (PERA)

I represent: PRODUCTION EQUIPMENT RENTAL ASSOC

Address: NY PRODUCTION ALLIANCE (NYPA) 101 E 31ST ST NY 10001

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684-A Res. No. _____

☐ in favor ☑ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Michael Stoica

Address: 35 Alta Vista Circle Irvington NY 10533

I represent: Kaufman Astoria Studios

Address: 34-12 36 ST Astoria NY 11106

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684A Res. No. _____

☐ in favor ☑ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Paul Jordan

Address: 100 Universal City Plaza Universal City CA 91608

I represent: NBC Universal

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 631-A Res. No. _____
40-A, 634-A, 851-A

☒ in favor ☐ in opposition

Date: 1-26-09

(PLEASE PRINT)

Name: ANN WARNER ARLEN

Address: 147 Sullivan St. #1A NY, NY 10012

I represent: _____

Address: _____

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THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 684A Res. No. _____

☐ in favor ☒ in opposition

Date: 01/26/09

(PLEASE PRINT)

Name: Peter L Burrows

Address: 20 Beechwood Ave, Port Washington NY

I represent: Location Power Source

Address: 20 Beechwood Ave, Port Washington, NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 681-A Res. No. _____

☒ in favor ☐ in opposition

Date: 01/26/09

(PLEASE PRINT)

Name: Anh Thu Hoang

Address: 271 W 125th Street, Suite 308

I represent: WE ACT for Environmental Justice

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 631 Res. No. _____

☑ in favor ☐ in opposition

Date: 1/26/09

(PLEASE PRINT)

Name: Cecilia Galarraga

Address: 7112 5th Ave 11209

I represent: Asthma Free School Zone

Address: 131 Ave B.

Please complete this card and return to the Sergeant-at-Arms