

IMPROVING AIR QUALITY AT OUR PORTS & AIRPORTS

Setting an Agenda for a Cleaner Future



**New Jersey Clean Air Council
2008 Annual Public Hearing**

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IMPROVING AIR QUALITY AT OUR PORTS & AIRPORTS

Public Hearing April 9, 2008

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New Jersey Clean Air Council Public Hearing

April 9, 2008

Trenton, New Jersey

Table of Contents

Clean Air Council Public Hearing.....	1
Executive Summary.....	1
Recommendations	3
1) Airports	3
2) Seaports.....	4
3) Rail	7
4) Highway.....	7
5) Cross Cutting Issues	8
Testimony.....	9
Invited Speakers.....	9
Lisa P. Jackson.....	9
John Matheussen.....	10
Peter Greenwald.....	13
Tim Pohle.....	17
Brent Barnes.....	20
Reema Loutan	21
Jay Jones	23
Susan Bass Levin.....	24
Monica Mazurek, Ph. D.....	28
Valorie Caffee.....	29
Christina Montorio	30
Amy Goldsmith	31
Gail Toth.....	32
Eileen Murphy, Ph.D.	34
Dianne Brake.....	36
Frank McDonough, Esq.	37
Public Speakers	39
Robert Belzer.....	39
Carrie Sargeant.....	40
Wilbur McNeil.....	41
Jeff Tittle.....	42
Background.....	44
NJ Seaports and Airports	44
I. New Jersey Seaports.....	44
II. Rail	47
III. Airports	48

IV. Projected Growth 48
V. Emissions Inventories 49
VI. Port Communities..... 53
VII. Environmental Justice 53
VIII. Health 54
IX. Actions to Improve the Ports Effects on the Environment..... 54
X. Challenges 55
Glossary..... 58
Clean Air Council Public Hearing History 59
References 61

New Jersey Clean Air Council Website
www.state.nj.us/dep/cleanair

Clean Air Council Public Hearing

Executive Summary

On April 9, 2008, the New Jersey Clean Air Council (CAC) conducted a public hearing entitled “Improving Air Quality at Our Ports and Airports” to obtain testimony from the public, scientific, and regulated communities that could be used by the CAC to develop recommendations to the Commissioner of the New Jersey Department of Environmental Protection (NJDEP) on improving air quality at and around New Jersey’s primary seaports and airports.

The Clean Air Council is an advisory body to the NJDEP. Each year the Council conducts a public hearing and releases a report highlighting air quality issues affecting New Jersey.

A summary of the Council’s recommendations is as follows:

Background

At the public hearing, and in the preparation of this report, the CAC recognized:

- The need for rigorous control of air pollution to prevent the deterioration of public health; the importance of energy conservation; and the high cost of all types of fuel, especially petroleum-based fuels.
- Ship, airplane, rail, ground-based equipment, and motor vehicle traffic in and out of airports and seaports affect local and regional air quality.
- Federal and international laws and agreements regulate vessels such as ships and airplanes. International, federal, state and local jurisdictions overlap, creating a complex puzzle that requires multi-stakeholder input.
- The logistical and physical operations unique to seaports and airports present challenges to improving air quality.
- Global warming legislation and regulation, new technologies for reducing air quality impacts, current and projected economic and societal costs of air quality improvements will impact seaports and airports.

Summary of Recommendations

Control of idling engines on stationary ships, airplanes, locomotives, trucks and other vehicles is critical. The CAC is making recommendations on practical options for curbing emissions from idling.

- Consider cold-ironing (when ships in port plug into on-shore electric power and shut off their large diesel engines) at the ports.
- Enforce idling laws for cars, trucks, and locomotive sources.
- Provide auxiliary power sources at airport terminal gates to avoid operating plane engines at gates.
- Procedural and technological enhancements should be utilized to allow locomotive engines to be turned off.

Efficient traffic management ultimately results in less air pollution. Traffic management approaches that will help to reduce air pollution exposures include:

- Improve management of airplanes backed up at airports while waiting to take off.
- Extend operational hours of truck access for goods movement to alleviate traffic and waiting lines at the port gates.
- Enhance short-line rail transport throughout the state to move goods from the port areas.
- The CAC is recommending strategies to influence clean fuel choices for marine vessels, locomotives, trucks, and other vehicles.
 - Federal and international actions are needed to require lower sulfur fuels.
 - Investigate potential applicability of ultra-low sulfur diesel fuel in diesel locomotives.
 - Gasoline refueling operations at airports should use vapor recovery systems.
- On-site operations at seaports, airports, rail yards, and other shipping facilities also emit air pollutants. The CAC is making recommendations on options for reducing these air pollution emissions.
 - Continue to expand the port facilities' use and innovation of safe and cleaner technologies, such as battery or hybrid ground service equipment.
 - The port authorities' facilities should eventually only be accessible to "clean" trucks. The port authorities should provide incentives for the retrofitting of trucks with diesel particulate matter traps.
 - Invest in transit services and infrastructure to optimize rail and other public transit services (e.g., jitney) over auto dependency.
 - Encourage development of transit villages centered on passenger rail transit stations. This will allow travelers to avoid the road, hence reducing both vehicle miles traveled and air pollution.

Other important recommendations are presented in detail in the following sections on airports, seaports, rail, highway, and cross-cutting issues.

Clean Air Council Public Hearing

Recommendations

The New Jersey Clean Air Council makes the following recommendations to decrease air pollution and increase fuel savings:

1) Airports

A) Idling & Traffic Management

- Turn off ground support equipment, such as tugs, when not in use.
- Provide auxiliary power sources at all gates to avoid operating plane engines when planes wait at gates.
- Improve management of airplanes backed up at airports while waiting to take off. The Council recognizes the need and supports the enhancement of the air traffic control system to current standards, which could potentially include the enhanced management of air traffic on the ground and at the gates. Improved fuel savings and reduced air pollution should be considered during the evaluation of enhanced management systems for air traffic, both in the air and on the ground.
- Improve access and use of short-term parking through both incentives (e.g., discounted rates) and infrastructure improvements to allow airport visitors to park while dropping off and picking up passengers. This will reduce air pollution and improve fuel savings by preventing cars from idling.
- Install and implement up-to-date technology and other management tools to improve passenger flow and road-traffic management at the airports. This will reduce congestion, excessive idling and poor traffic flow that contribute to greater emissions from vehicles traveling to drop off and pick up travelers.
- Enhance train and Monorail service to the airport.
 - Increase incentives for use of the Newark Airport Monorail.
 - Conduct an evaluation to determine barriers to the use of the train and Monorail and develop methods to reduce those barriers for citizens traveling to the airport. In particular, travelers need an effective method to get to the major New Jersey Transit rail hubs from their

homes. This would give travelers the option of leaving their cars at home when traveling to the airports.

- All of the major regional airports (LaGuardia, Newark, JFK, and Philadelphia) should coordinate their traffic management and congestion reduction efforts on a regional scale.
- Buses, shuttles, and van pooling should be considered and enhanced at the airport, including services for both employees and visitors to the airport.

B) Fuels

- The Council recognizes that development and application of advanced “synthetic” fuels and their application to airplanes may potentially provide fuel savings and other benefits. However, emissions resulting from the use of these new fuels should also be carefully evaluated and considered during their certification for use in aircraft.
- Gasoline refueling operations at the airports should use vapor recovery systems.

C) Operations

- Invest in transit services and infrastructure to optimize rail and other public transit services (e.g., jitney) over auto dependency.
- Alternative energy sources that require large open areas, such as photovoltaic (i.e., solar) panels and arrays, may be particularly applicable to airports. In addition, the application of “green roof” designs may also present unique opportunities at the airports.

The Council supports the development and encourages wider application of “green” technologies at the airports, such as conservation and the use of electric and hybrid ground service equipment. The airports should also consider particulate control on diesel ground service equipment that is not converted to electric.

2) Seaports

A) Idling & Traffic Management

- Evaluate, and use where feasible, cold-ironing (when ships in port plug into on-shore electric power and shut off their large diesel engines) to lessen the need to run ships' engines while docked.
- All diesel trucks, construction equipment, and cargo handling equipment should adhere to idling limits. Enforce idling laws.

- Extend operational hours for the goods movement system to alleviate truck traffic and waiting lines at the port gates. This would entail longer or extended hours of the port gates and would also require that remote warehouses on designated corridors operate at an extended or shifted schedule. The warehouses and municipalities should coordinate the location of designated corridors for such schedules.
- Provide more locations for trucks to wait, with technology that allows trucks to plug into power and other services which in turn will allow trucks to turn off their engines. Additional capacity for truck stops is needed in the port areas of NJ, including areas with access to auxiliary power.
- Develop additional measures that can encourage truck drivers to turn off their engines at truck stops. This can include areas for truck drivers to turn off their engines and rest indoors during periods of bad weather.
- NJDEP, in conjunction with United States Environmental Protection Agency (USEPA), should set a target date for use of clean trucks (i.e., as clean as model year 2007 trucks) for regional clean ports. EPA should encourage other East Coast states to participate in a clean truck program.

B) Fuels

- The CAC agrees with International Maritime Organization (IMO) objectives for the seaport areas to adopt engine and fuel requirements for ocean-going vessels, which will meet appropriate standards
- Vessels should use low-sulfur fuels. Federal and international actions are needed to require lower sulfur fuels. The State of New Jersey should formally contact the New Jersey Congressional delegation to request they support and initiate this action.
- Participate in USEPA retrofit programs offering incentives to finance acquisitions of newer trucks and also retrofit older trucks with diesel particulate matter filters.
- Port bulk fuel storage operations should further enhance their leak detection and repair efforts to reduce fugitive vapor emissions at the storage terminals.

C) Operations

- Incorporate emissions inspections and other factors that impact fuel efficiency (e.g., tire pressure) into the safety inspections conducted for trucks carrying cargo as they leave terminals. These inspections should be conducted at all cargo terminals.

- Continue to expand the Port facilities' use and innovation of safe and cleaner technologies, such as battery or hybrid ground service equipment. In addition, the ports may provide a unique environment that would make solar and wind energy a viable additional energy option.
- The port authorities' facilities should eventually only be accessible to "clean" trucks. The port authorities should provide incentives for the retrofitting of trucks with diesel particulate matter traps.
- Recognize that fumigants (such as methyl bromide) are air contaminants. Fumigation for sterilization or pesticide control is not well regulated at our ports. Evaluate the controls in place for the fumigation process of bulk produce and agricultural products with methyl bromide or other potential fumigants. Assess this process from an emissions perspective and an environmental and occupational health standpoint. This fumigation process needs to be carefully performed to contain fugitive emissions and prevent air pollution hazards from resulting in adverse health outcomes among the workers and residents living near the port.
- Increase the use of and install more solar panels and "green roofs" on warehouses to provide on-site power generation and conserve energy.
- Improve management of empty inter-modal cargo containers at the ports. Orphaned containers at the ports have resulted in the development of a "Container City" in certain neighborhoods. A significant amount of truck traffic on local streets and the cranes used to stack containers contribute to air pollution. Develop a management plan that supports the proper disposition of orphaned containers, which might include recycling by the scrap metal processors in the area or a manner to return containers to destinations for reuse. Support incentives to remove the containers.
- Encourage technological development of efficient ships to improve their environmental performance. These technologies should also be applicable to foreign flagged ships.
- Future land use plans near ports and servicing areas should consider creating buffers between residential and port areas.
- Support Portfields, a program with New York, Pennsylvania and New Jersey and the NJ Economic Development Authority to establish nearby port warehouses and distribution centers on underutilized industrial sites. Redevelopment near the ports will reduce vehicle miles traveled by trucks serving the marine terminal, in turn reducing energy consumption and air pollution. Enhance rail service to the ports.

3) Rail

A) Idling & Traffic Management

- All locomotives should adhere to idling limits. Procedural and technological enhancements should be utilized to allow locomotive engines to be turned off when not in use.
- Enhance short-line rail transport throughout the state, which would improve capacity, reduce traffic and its associated emissions, and more efficiently move goods from the port areas. Expand the short-line rail transport to reach warehouse facilities and connect to rail hubs for long range transport.
- Utilize battery powered or hybrid locomotives when feasible.

B) Fuels

- Investigate potential applicability of ultra-low sulfur diesel fuel in diesel locomotives.
- Investigate the potential applicability and use of after-market control devices, such as selective catalytic reduction (SCR) on diesel locomotives.

C) Operations

- Address parking issues for people who do not have access to train or jitney services and need to use their vehicle to travel to train stations.
- Provide facilities to encourage bike, scooter, and similar small vehicle use at stations including lower cost and more convenient parking.
- Encourage development of transit villages centered on passenger rail transit stations. This will allow travelers to avoid the road, hence reducing vehicle miles traveled and result in reduced air pollution.

4) Highway

A) Idling & Traffic Management

- Enforce idling laws by conducting inspections in urban areas around the ports. Encourage and facilitate local law enforcement involvement in anti-idling campaigns.
- Add truck stops to the transportation system. These stops must incorporate the capacity to use electric power to run ancillary truck equipment so that trucks need not idle when stopped.

B) Operations

- Develop jitney and train service for public transport to airports and to ferry service terminals, which have grown along the Hudson River waterfront.
- Address truck routing through residential neighborhoods and use smart planning to prevent trucks from being routed through these neighborhoods. A large volume of trucks traveling through residential neighborhoods has contributed significantly to residential exposures to diesel particulate matter and in particular has disproportionately affected children in minority groups.

5) Cross Cutting Issues

- The NJDEP should request USEPA to coordinate a national ports' emissions inventory
- The CAC has received inquiries over the years regarding noise from various types of transportation operations. The lack of addressing noise issues at the state level is demonstrated by the relegation of noise enforcement to local health departments. The State needs to take ownership of the issue, address noise as a health issue, elevate, and coordinate it at the State level.
- USEPA should coordinate interstate collaboration between New Jersey, New York, and Pennsylvania to improve air quality at the ports
- Incorporate full use of transit villages and projects such as Portway and Liberty Corridor as examples of improvements in the distribution of goods throughout New Jersey with minimal environmental impact. Local development planning should allow for efficient mass transit to and from the densely populated port areas. This will greatly reduce traffic and the associated air pollution.
- Any initiatives by NJDEP with respect to NJ ports and airports should be evaluated for their effectiveness at 5 and 10-year intervals. Furthermore, NJDEP should periodically report on the status of these initiatives to the CAC.

Testimony

Invited Speakers

Lisa P. Jackson

Commissioner, New Jersey Department of Environmental Protection

I commend you for being here today to understand an issue that affects the pollution-focus side of our department, and that is the ports and their impact, not only on our economy, but on the health of residents near and far, particularly those who live in and around our ports. As you all know, New Jersey is the most densely populated state in the nation and home to two of the busiest ports on the eastern seaboard. With the realistic assumption that our ports are thriving and will continue to thrive, your hearing today is especially timely because it is on top of an issue that will either, through its growth, make environmental progress or contribute to environmental degradation and I hope it's the former.

Ports are not without their potential health impacts and obviously the health impacts are not simply from the ships that visit those ports, but the ancillary services, the so-called logistics business that grows in order to support the delivery of goods and then the reception of goods by those who are clamoring for them in our area and beyond. So that means just like the movie "Trains, Planes and Automobiles" to a degree, but certainly trucks, if not automobiles, and the economic activities that they generate as well. As ports grow and as we at the same time continually work to reduce emissions from point sources like power plants, like motor vehicles, like heating oil, port emissions will, unless they are addressed, continue to grow and those we hope will continue to decline. So that means the impact and the percentage of problems caused by our ports can potentially increase and that is the trend which we must first try to stem and then hopefully reverse.

The bigger concern, of course, is local pollution impacts. We can talk about the aggregate, but I think the beauty of today's schedule is that you focus on both the aggregate, as well as the local impacts which sometimes make the aggregate meaningless, or at least not meaningful, to the people who are most affected by an issue. Let us remember first and foremost the health impacts that we are here to address. Fine particulate matter is a problem across many areas of our state, but the matter associated with diesel emissions, diesel fuel are particularly troublesome depending on local weather conditions. We know that particulates can stay in a community for a long percent of time. Those emissions are linked to cancer and premature death and other adverse affects including visibility effects. Health studies have shown that there is no clear threshold below which you do not see impacts when it comes to diesel emissions. Based on our national data, air toxic data, mobile sources in New Jersey are estimated to contribute two-thirds of the average cancer risk to the residents of our state and New Jersey is determined that diesel emissions result in the greater cancer risk of all air pollution sources in New Jersey. In addition, oxides of nitrogen from combustion and disproportionately from diesel also contribute in the forms of ozone. The Federal Government recently did a minor lowering of the ozone standard, but whether they had or not, our area remains challenged even at the old standard although we were on course to meet our ozone standards. We certainly will not meet the new standard, certainly without significant action with respect to diesel.

Environmental justice is part of the agenda today. I touched a little bit on local impacts, but I think it is important to know the location of the ports we are talking about. They are in Newark and Camden and those two areas are clearly environmental justice communities and communities

that are already overburdened in terms of pollution that they face. Because of that, they are already disproportionately impacted by diesel exhaust. Newark is a transportation hub so we have a port, but we also have an airport and some train lines that go through, and major highway lines as well. Camden has pollution both within its borders and at its ports. According to the New Jersey Environmental Federation in June, it studied diesel hot spots, a snapshot of Newark, New Jersey, Essex County around in which Newark is located has the highest asthma related mortality rates in the state. A doubling of rates within minority populations and furthermore short-term monitoring studies found that levels of diesel exhaust at parks and playgrounds along several Newark streets were two to five times higher than in a similar residential or quieter residential area in this our state. At one location an average of two hundred fifty to three hundred trucks passed by in an hour. These are the kinds of industrial impacts that I hope you will focus on in your report with respect to ports.

Regional impacts, we already know that there is local, but there are also transport impacts and the cumulative affects of the air that passes over us. About a third of our pollution comes from outside of our state, but we are not the end of the line in terms of transporting it and so the direct emissions of particulates can be blown by winds along many miles that impact New York, Connecticut, Rhode Island, Massachusetts and beyond. The ports of Philadelphia, Baltimore and upwind and others upwind of New Jersey also form our air quality. I am proud of the action DEP has taken action. That does not mean that we cannot take more. We have an incredibly determined, focused and productive mobile source group. They have done a lot of work and I think they look to you to give them additional marching orders. We have passed a law in this state that has a comprehensive and aggressive statewide diesel retrofit program. We have an outreach program and education campaign and stringent rules that phase out trucks that have sleeper births. We require heavy-duty diesel trucks in our state to undergo an annual inspection for opacity smoke. We were the first state in the nation to impose that requirement. We sponsor demonstration projects for particular control auxiliary power units and cab heating and cooling systems at truck stops. The IdleAir projects come to mind. Last month I was in Washington providing testimony to the Senate Environmental Public Works Committee in support of a bill sponsored by the White House to lower the sulfur content of fuel used by ocean going vessels when they get within about twenty miles of our shore. It is modeled on work that California has already done and I hope it will continue to push forward the aggressive national and international talks to reduce the level of sulfur and the oil that is used in fuels. We have been active in efforts to reduce NOx, VOCs, particulates and greenhouse gasses to obtain ozone standards, those on the implementation has been finalized and rules that are in that plan are in various stages of proposal, review and adoption. We have a regional haze plan and we have a greenhouse gas reduction plan that is due out for public comment within the next several months.

In conclusion, we have a lot of work to do here today. I thank you again for taking up this very important charge. I look forward to the recommendations that you produce and the strategies that will come out of the meeting, not because of the report which is always helpful, but because of the health impacts and I hope the protection that will result for our citizens.

John Matheussen

Chief Executive Officer, Delaware River Port Authority President, Port Authority Transit Corporation

The Delaware River Port Association (DRPA) is a bi-state transportation authority. We operate four bridges that cross the Delaware River: the Ben Franklin, Walt Whitman, Commodore Barry and Betty Ross Bridge, as well as the PATCO Rail Line from Lindenwold, New Jersey to Center City Philadelphia. In addition, the DRPA owns and operates the Philadelphia Cruise Terminal as

well as the RiverLink Ferry. DRPA has a long-standing commitment to clean air, clean water and sustainable development. Each capital project conducted at DRPA and PATCO undergoes an environmental review and is designed to the highest environmental standards. We are always looking to identify opportunities to improve our impact on the environment.

DRPA has been investing in environmental friendly technologies and processes since its inception. Other examples of recent and past investments and processes include our PATCO train line. As the cost of a gallon of gasoline in the region hits three dollars or more, many more drivers are escaping the pain at the pump by riding PATCO. Today, PATCO daily ridership is averaging around thirty-five thousand passengers, up close to seven percent over last year; getting them to work, school, sporting events, shopping and anywhere else they need to go quickly, easily and in an environmentally-friendly way. PATCO is one of the regions primary mass transit providers. It helps reduce air pollution and traffic congestion in South Jersey and Philadelphia by removing more than twelve thousand five hundred cars from the roadways each day. Recent studies sponsored by the American Public Transportation Association show that public transportation reduces natural carbon dioxide emissions by approximately seven million metric tons annually by getting people out of their cars and into buses and trains for work and recreational transportation. For example, a solo commuter switching his or her commute to existing public transportation in a single day can reduce their CO (carbon monoxide) emissions by twenty pounds daily or more than forty-eight hundred pounds in a year. If we do the math, PATCO reduces regional CO emissions by approximately fifty-five million pounds per year by taking twelve thousand five hundred cars off the road.

Further expansion of rapid transit in the region will increase these benefits. The recent introduction of the PATCO Freedom Smart Card is a service enhancement that our riders are very happy with. A tiny computer chip makes this credit card-sized, stored value smart card a big help to our frequent PATCO riders. To enter and exit the system, riders just wave the card near a sensor located on each turnstile. It is efficient, contactless and modern. In addition, it can be automatically refilled just like E-Z Pass. Our Freedom Card has been designed using the National Fare Collection Standard which means we have taken the first step toward developing a regional transit fare card that will facilitate transfer among transit systems when our regional transit partners implement similar systems. Another incentive for increased mass transit ridership, and helping the environment.

Not only is it DRPA's goal to make travel on our facilities more environmentally friendly, we are always looking for ways to upgrade and maintain our facilities with as little impact as possible. For example, we undertake an off-hours construction schedule whenever possible. Off-hours construction reduces travel delays, the associated congestion, and the pollution caused by idling cars. We have converted to the use of low- sulfur diesel fuel for our construction and maintenance equipment, to reduce the impact of our operations on air quality. Plus, we are in the process of implementing a pilot program to convert a portion of our fleet to natural gas powered vehicles.

However, at DRPA we are not content to rest on the past. We are still innovating by looking at the following cutting edge projects and technologies to further improve our reliability, value and service to the commuting public. Future short-term investments and processes include a Traffic Management Center (TMC) which improves the efficiency of all DRPA facilities by allowing sharing real time information between our bridges and PATCO. The delay information, once centrally accessible at the TMC, can be shared directly with businesses, such as the ports. A national regional network of intelligent transportation systems, the TMC will help to facilitate the continuous movement of people and goods between New Jersey and Pennsylvania. It will

complement the existing operations center at NJDOT and PennDOT, allowing for a seamless operations and management plan for the region's highways to take hold, getting timely and accurate traveler information out to the public and businesses, reducing response and clean up times for accidents, improving overall traffic flow, redirecting drivers to less congested roadways thereby reducing backups and vehicle emissions, and improving overall quality of life.

DRPA is actively working with New Jersey communities around our stations to encourage transit-oriented development (TOD). TOD can help municipalities in coordination with the private sector, concentrate development around transit stations. It encourages transit use, promotes walking, reduces auto emissions and preserves the capacity of the existing road network. We recently completed a master plan for all seven of our stations in New Jersey that have surface parking lots to help guide us as we look at the potential for creating TODs around each of those stations.

DRPA is taking on the role of facilitator for a green port with our regional stakeholder neighbors on the river, including the South Jersey Port Corporation and the Philadelphia Regional Port Authority, with the collective goal of a comprehensive and coordinated approach to reduce or neutralize the impacts of port development and operations on the environment and the community. We are beginning to map out a framework and strategy for this initiative.

Finally, there are two PATCO transit station studies presently underway. The projects under consideration in both studies will improve air quality by removing cars from the road; provide an alternative for people who cannot or choose not to drive; encourage TOD; help communities preserve precious land and water resources; strengthen the linkage between land use and transportation to aid in land use planning; support regional effort to reduce making auto trips; continue to directly improve air quality by reducing auto dependence; and promote walking and a healthy lifestyle. The first, the PATCO Southern New Jersey expansion alternative analysis will address the lack of transit/mobility alternatives in South Jersey. The existing PATCO line ends in Camden County. The proposed expansion would provide a new rail line through rapidly growing Gloucester County, providing greater transit connectivity between the key regional employment locations of Philadelphia, Camden and Gloucester County with the growing residential areas of south Jersey. By providing a high quality transit alternative, this investment would result in many environmental benefits related to fewer cars on the road, including improved air quality. Expanded PATCO service would support population and employment growth in south Jersey by providing a logical framework around which transit oriented development could occur. This investment would not only permit thousands to take the train instead of driving, but it would serve to preserve open space, slow the creation of impervious surfaces, and encourage walking and cycling. Several of the alternatives being studied would provide a one-seat ride from southern New Jersey to Center City Philadelphia. Initial order of magnitude ridership estimates for this expanded service indicate the potential for between ten thousand and fifteen thousand new transit uses on a daily basis. This can translate into the potential reduction of approximately thirty to fifty million pounds of CO per year on top of the current PATCO system.

The second study is the PATCO Philadelphia Waterfront Transit Expansion Alternatives Analysis. The purpose of this project is to support housing, employment and entertainment investments along the Delaware River waterfront in Philadelphia. This area is presently not easily accessible by both transit systems that serve the region, PATCO and SEPTA. Developing transit will decrease auto travel and the need for parking facilities along the water front corridor, saving valuable space for public access to the river via bike and walking paths. This is consistent with the public visioning undertaken by PennPraxis and reported in their vision for the Delaware

waterfront. If undertaken, expanded transit investments along the Philadelphia waterfront will potentially reduce greenhouse gas emissions further by thousands of pounds annually. The following are my recommendations to improve air quality: The CAC' can help to keep these transit expansion alternatives in the public eye. We have conducted extensive public outreach during our initial feasibility study and now during our alternative analysis efforts. What we have heard consistently and almost unanimously is that residents of our study area and those that use the highway network within the study area feel very strongly about the need for expanded mass transportation. Transit investments provide numerous benefits both to society and to individual travelers. Getting commuters out of cars and onto trains is perhaps the best investment in clean air we can make. The CAC's active support, by discussing these and other transit investments with New Jersey department leaders, our state legislators, members of Congress and other stakeholders will maximize the likelihood of these proposed investments going the distance.

We communicated with the individual communities that it was their choice whether or not we would develop transit oriented development in the boundaries of their communities and respect their zoning and planning rights within each community. There are some communities that do not want to see any further development. There are some communities that want to see a particular kind of development; possibly low impact on their school system, or age related, so working with the individual communities is perhaps the most challenging, but I think perhaps the most important element. To be successful, we need to involve the entire community. We have to build these things not as DRPA dictates, but as the community desires.

First, the DRPA is coordinating the green port because we have the money to do it. Second, the relationship between the three entities are that the DRPA is in the business of moving traffic through the region. Most of that traffic is truck traffic on both the Philadelphia side and New Jersey side of the Delaware River. The DRPA and its neighbor across the river are both involved in the truck traffic once it leaves or once it gets to the port. Our coordination is helping to move traffic to and from the ports as well as investing in opportunities that will allow the ports to take a look at some green projects, whether it be cold steel, cold-iron, low sulfur fuels or electronic operations of forklifts. We are also involved in a master plan for the City of Camden that will separate the commercial traffic that visits the port from the residential neighborhoods.

Peter Greenwald

Senior Policy Advisor, South Coast Air Quality Management District, California

I am with the South Coast Air Quality Management District which is a government agency responsible for achieving clean air in a roughly four county area of southern California including Los Angeles County, comprised of about sixteen million people. We have made a lot of progress in reducing air pollution in southern California, but we still have the worst air quality in the country. Goods movement is a big and growing part of that problem and there are a number of efforts underway to try to reduce emissions from sources and goods movement due to legal restrictions on state and local authority. We also are active in advocating for stronger standards at the federal and international levels. Which is how I recently came into contact with representatives of the New Jersey Department of Environmental Protection in supporting the bill that Commissioner Jackson referred to earlier, which would cut sulfur content for marine vessels. I must say we thought that Commissioner Jackson's testimony before the Environmental Public Works Committee was some of the most effective provided that day.

We believe it is important to get support for stronger policies at the federal level and international levels, have wide understanding of these issues and wider implementation of the control technology, that will help us and around the country. The Southern California area has a population of about sixteen million people. Our key pollutant problems are particulates and

ozone. We have made a good deal of progress in meeting the federal ozone standards. The bad news is that we are concerned the progress seems to be leveling off and we still have about eighty days out of the year that the federal ozone standard is exceeded. Also in the realm of bad news, there have been a number of medical studies recently, which have shown that even with the levels of pollution we have now, there are some very severe adverse health affects. A USC children's health study shows that children growing up with relatively high particulate pollution are at greater risk of reduced renal function which in turn is a risk factor for a number of adverse health affects, including premature mortality. The researchers believe that the reduction of lung function is likely permanent, particularly in young woman because it exists at the time their lungs have fully formed by age eighteen and a bit older. The California Air Resources Board, the state agency that has responsibility for mobile source controls in California, has estimated that there are some fifty-four hundred premature deaths every year in the south basin because of particulate pollution. There are many other health effects such as hospitalization and lost workdays. In terms of geography, the impacts for criteria pollutants in our area are largely in the inland area and the left coast. We have got primarily on-shore breezes and in those breezes ozone builds up over the course of a day. Particulate pollution problems are very similar.

In terms of toxics, however, the picture geographically is quite different. A monitoring study the South Coast Air Quality conducted a few years ago, which estimated cancer risks over our region. If we include diesel, we have a very different picture. The average cancer risks in our area are approximately one thousand two hundred in a million is from air toxics. We consider that very significant. Air quality district rules prohibit stationary sources from emitting toxics creating risk in excess of ten in a million for new sources and twenty-five in a million for existing sources so twelve hundred in a million average over the area is considered very high. The key transportation corridors including freeways, areas with a lot of rail traffic, the primary source for this risk of over eighty percent is diesel particulate matter.

One final point, there is currently a lot of research going on the subject of ultra-fine particulates which are less than a tenth of a micron in diameter. The air resource board did some research. They drove an electric vehicle on the highways and other areas and counted ultimate fine particles. The highest levels were up to a million particles per cubic centimeter, found on freeways behind diesel trucks. Some of the key air quality challenges we have are the easy reductions that have been achieved. We have the most stringent standards in the country for factories and power plants. New standards alluded to end growth and goods movement. A container ship arrives from Asia to the port of Los Angeles. This container ship is powered by an enormous diesel engine. I recently had an opportunity to go into the engine room of one of these vessels. As I was standing there looking at this engine which is about three stories tall, I was struck that in this country we have such severe pollution problems in many areas that we regulate pollution of small underarm antiperspirants and barbecue lighter fluids and yet there are no federal, state or local emission standards that apply to that three-story tall engine. The U.S. government has not adopted an emission standard for foreign flag vessels.

A vessel holding thousands of containers, every one of those containers will become a truck powered by diesel on our highways. The ports of Los Angeles and Long Beach are growing container cargo throughputs. Over forty percent of the nation's imported goods come through these ports. The majority of goods go to the rest of the country. The container will be removed from the vessel by large gantry cranes, the only sources in the goods equipment movement chain that is not powered by diesel. The container will be dropped on yard equipment that is powered by diesel. Cargo handling equipment is also powered by diesel fuel or the container is placed onto a train pulled by diesel locomotives. The large portion of the containers will travel our highways, again, on diesel powered trucks. Rail intermodal ports serve the whole country.

According to an inventory recently conducted by the ports of Long Beach, the key pollutants created by this equipment are diesel particulates, sulfur oxides and NOx. Diesel particulates created by these port sources are a very large and growing portion of our inventory. A key point is that proximity matters with diesel particulates; they can create significant localized impacts. There is a school playground, near the ports of Los Angeles and Long Beach, located next to a highway on which container traffic is carried, and across the street from the location of a new rail yard. We have a QMD particulate monitor on that elementary school. The filters that go into the monitor look like white coffee filters. When removed twenty-four hours later the filters are dark colored, which is indicative of products of combustion, largely diesel exhaust. Diesel exhaust is a designated carcinogenic in California. The volume of air pulled through the filter is approximately equal to what a human being would breathe in a three months' time. It is very important to be cognizant of location when siting goods movement facilities. It is also very important to reduce diesel emissions and consider alternatives such as alternative fuels or electrification.

The Air Resources Board has conducted health risk assessments of many facilities involved in goods movement in our area. Some of the key findings: Cancer risks are in excess of five hundred in a million from the ports and similar levels from some of the rail yards. We zeroed out emissions from all sources other than marine vessels. We found that about four million people are exposed to cancer risks in excess of a hundred in a million maximum risk. Cumulative impacts are of concern particularly with diesel particulates as well as some of the other pollutants.

Sulfur oxides, the key message here are the ships are predominant because of the high sulfur fuels they burn over fifty percent; actually seventy percent I think, it is similar in areas such as this which are caused by the marine vessels. The reason for that difference is that the state adopted a rule that limits the sulfur content of fuels used in auxiliary engines in marine vessels.

The hourly sulfur content of fuel used in ocean going vessels, is twenty-seven thousand parts per million. On road and other fuels in the United States is limited to fifteen parts per million. That is an enormously high level and contributes to particulates. We have analysis showing that about seven hundred premature deaths could be avoided in southern California just by controlling marine pollution.

In our area, of the ten NOx sources, ships are the third highest source. This is one reason the level of control is relatively low, particularly for ships.

Professor Corbit at the University of Delaware recently published a global study of health impacts of marine vessel emissions. The study for the United States shows there are significant health impacts from marine vessel emissions all around the country. An EPA website shows levels of diesel particulate matter in the country. This is not just a southern California issue. Control action on the ships, the International Maritime Organization standards are extraordinarily weak. We allow forty-five thousand PPM sulfur content. It does not do anything when the average content is twenty-seven thousand PPM. Last Friday a committee of the maritime organization proposed a tighter standard and there will be a meeting in October where those standards will be considered. We will see what happens. USEPA rules don't apply to foreign flag vessels. They represent ninety percent of pollution problems so they have not had a significant impact on those ocean going vessel emissions. EPA had committed to consider adopting standards by April and extended that date. We have sued them about that and we are hoping for more stringent standards at the national level. We are advocating the bill, which requires adoption of more stringent standards. Locomotives, again, level of control is not up to what other sources are which generally are about ninety percent controls in southern California for stationary sources. The

newest locomotives being sold right now have a fifty-eight percent control for NO_x and a similar level for particulates. Much better can be achieved, in fact, filters which have ninety percent control level are installed on locomotives in Europe and the new rule will again require deployment of those more stringent technologies, but it will take time. There are a number of legal hurdles any time a state or local government tries to control emissions from sources in international or interstate commerce. Nevertheless, California has some unique authorities and there are things that can be done even if we are not talking about California. California has adopted and is proposing to adopt a number of rules that would limit emissions from marine vessels, require turnover of the truck fleets, marine vessel auxiliary engine rules, and short power dock. In South Coast we have adopted rules that would require risk assessment at rail yards and limit locomotive idling. Locomotives idle an extraordinary amount of time and we believe unnecessarily so. Those rules were challenged by the railroads and were recently invalidated by the Federal Court. Those are on appeal and other actions that are described in our air quality management plan, which is all on the Internet. In southern California environmental groups have challenged port projects. One such legal challenge was under the Environmental Quality Act. With the growth in goods movement throughput, there are efforts to expand the infrastructure. The ports want to grow and the cargo throughput is a very important part of our economy. This particular litigation resulted in a settlement where shore power was implemented and also a number of other air pollution control actions. Probably because of those kinds of challenges, the two ports, Los Angeles and Long Beach have recently obtained and adopted San Pedro Bay ports action plan. It is the first time the ports assembled in a joint meeting in forty-nine years so they obviously thought this was very important. The Plan includes a wide range of control measures to be implemented by the ports, and cover all the sources including low sulfur fuels, cargo-handling equipment, retrofit and replacement. The legal mechanisms that the ports are using are, project approvals and a recent port of Los Angeles project approval where the ports have imposed environmental conditions on a lease and on approval of a project which require short power and other things designed to reduce emissions from current levels. The ports are also considering port wide programs. They recently adopted a clean truck program which is designed to turnover the entire fleet, the sixteen thousand eight hundred drayage trucks by to or later model year.

About one or two weeks ago, they adopted a main engine low sulfur program for marine operators to use low sulfur fuels on approach and on exit from the ports. Technology advancement program is also part of these joint efforts. One project, we are co-funding, is development of an electrical power drayage truck to take the containers from the ports to near dock rail yards. The key message is the technological solutions are available. The key issue is how to get them implemented. There are controls applicable to all the sources I have been talking about and in many respects that are starting to be deployed right now and we expect a lot more in the near future. Some recommendations, I'm not entirely familiar with your circumstances here so these are rather general: 1) ensure that policymakers and the public are informed about air quality issues; 2) advocate for sufficient federal, international actions particularly important with some of these international interstate sources; 3) use all available state and local authority; 4) funding programs; and 5) support technology demonstration as appropriate infrastructure to log the location of sources that are involved in goods movement, particularly diesel sources. The take away message is that impacts are very severe at least in our area, we think in many areas of the country. Solutions are available and all levels of government must act. Our general philosophy is to push all levels of government. That is because there are uncertainties, IMO may adopt sufficient stringent orders, or they may not. The Federal Government may or may not. The point being we are advocating all levels of government become involved. This is a sense of inevitability created we believe, for example, that the marine vessel building has already had beneficial impact on the international maritime organization as IMO sees that the U.S. government is serious about controlling these emission sources here.

Industry would prefer to see international standards rather than individual standards and different ports or different countries so even large industry such as the World Shipping Council has supported IMO action that is sufficiently stringent to meet the air quality needs of all areas. We think it is very important to be acting when it can be done at all levels of government. In terms of competitive disadvantage, we sometimes hear arguments about this. Also, it is important to keep in mind the cost and benefits of, for example, low sulfur fuels. We have done analysis that the costs are really quite reasonable and we do not believe it will result in any significant amount of diversion. To give you some examples, we calculated that increase of the cost for a pair of tennis shoes imported from Arabia or plasma TV. It is fractions of a penny for the shoes and just a few cents for the plasma TV. We compare that to the health benefits, but they are in the dollars.

The standards that the marine environmental protection committee of IMO proposed last Friday, the ultimate standards are in our view, good. The question is will they be adopted and secondly the timing. The timing is relatively out in the future, for example, for sulfur content of fuels they are proposing one thousand parts per million. That may sound high, but the current level is well over ninety-five percent reductions, but only in certain levels. The most stringent NOx standard, eighty percent NOx standard over and above the current standards, they are proposing, but only for new vessels built in the year and later. Again, vessels last a long time so fleet turnover is the big issue in terms of significant benefits there. So those reductions ultimately will translate into benefits and, in fact, essential benefits in our case for attainment purposes as well as in reduced particulate levels causing cancer risks and other health impacts in the vicinity of the ports, as well as large areas downwind. We have modeled those benefits because we are assuming those kinds of reductions in our state implementation plan. We cannot get to attainment without those several reductions.

We handle about a quarter of our containers by on dock rail at the ports of Los Angeles and Long Beach. We'd like to see that go higher because when it is not handled by on dock rail, at least the portion that goes out of our region gets on the truck on the highway, then a rail yard, and put on a train which is not particularly efficient and results in impacts all along. The ports are targeting getting up to thirty-eight or forty percent on dock rail. The efficiencies of the ports are one big issue. Some of the other ports around the world particularly in Asia have higher efficiencies per acre than our ports, but they are set up very differently. On-dock rail capacity is limited space, which raises an issue of how they conduct their operations within the port boundaries.

Tim Pohle

Managing Director, U.S. Environmental Affairs and Assistant General Counsel of Air Transport Association of America, Washington, D.C.

The Air Transport Association of America (ATA) is the oldest airline association. Our members and our affiliates transport over ninety percent of passengers and cargo in the U.S.

Environmental issues are of huge importance to us and have taken on even greater importance recently. We have created an environmental department in the last year. I run the environment council, which is U.S. domestic affairs. Then we have an international noise and emissions committee, which deal with international affairs.

Where do our emissions come from? The aircraft ground support equipment, the equipment scurrying around the aircraft at the airport to help support our operations, for example, catering trucks and baggage loaders. Like all sources, impacts are both global and local. The global are the greenhouse gas. Local air quality emissions and there are potential trade-offs among these emissions including trade-offs with other impacts, mainly noise. Another aspect of our emissions profile is that it is extremely emissions efficient, relative to the economic impact. We have a relatively small emissions footprint.

I just want to touch on the regulatory framework both at the international and U.S. level and also at the local level. Local level when there are infrastructure improvements, there is an approval process which is a de facto additional layer of regulation. The things to stress here is our emissions, aircraft emissions are purely a function of fuel burn and the constituents are seventy percent carbon dioxide, about twenty-nine percent plus of water vapor. That is just the carbon and the hydrogen oxidizing in engines and the fuel is extremely efficient because that accounts for ninety-nine percent plus of our emissions. There are traces of these other emissions. The more we save, the less we emit and our economic and our environmental impairment reinforce one another. Fuel is our number one cost center. It is around forty percent for some carriers now. Fuel cost translates into about two hundred million dollars of our bottom line. Therefore, if we can save fuel and we can avoid burning it, we do it. The other point is that we are a relatively small contributor. We account for about two percent of greenhouse gases in the U.S. Local emissions are generally less than six percent around most airports. That is airport emissions, that is everything, not just airport GES, that is everything as an airport. Our footprint is relatively small. In fact, it is a small sliver in some cases. We are an extremely emissions efficient economic engine.

Nationally, we support about nine percent of employment. We drive about five percent of gross domestic product. We carry twenty-five percent of U.S. international merchandise trade measured by value. That is not weight, that is by value. By weight we are less than one percent. The value of our cargo is so high; it is eighty-eight thousand dollars per ton versus about less than eight hundred dollars per ton for a truck and less than four hundred dollars for shipping. Even though we carry a very small portion of the trade by weight, we carry a huge twenty-five percent portion when it is measured by value. Therefore, it is fewer emissions and more service. It is more passengers, more cargo. I think it is an enviable record that is really unparalleled.

There are challenges. One is that we plan to grow and emissions are likely to follow. The IPCC (International Panel of Climate Change), the United Nations panel says that aviation for about three percent of CO and six percent of time. So that gives you a sense of we are, two percent domestically and three percent worldwide. In the U.S. we have very mature markets. It is not going to grow at the rate of China, India and the Middle East. That is where we most of the growth is occurring. There are structural issues that constrain our operations. Our aircraft and engines are extremely expensive. They have a long useful life so it is hard to turn that over. Safety is our absolute number one imperative and we have to make sure that any kind of advances with our equipment or fuel meets those safety standards. It takes a great deal of lead-time to develop technologies and deploy them in the real world and we have a limited ability to pass on our cost. We have attempted to impose fuel surcharges and have had intermittent success. That means as the fuel prices have gone up, we have tried to recover some of that cost through airfare increases and the market is such that we have not necessarily been able to do that. Local emissions constrain, facility expansion as I talked about before and I wanted to emphasize again that there are potential trade-offs. There are other environmental parameters that mean a great deal to us including noise and sometimes there are trade-offs with noise versus fuel burn and we have to deal with, fuel management, ensuring that fuel doesn't leak into the ground water and controlling stormwater run off from the area port.

Aircraft emission standards are set or originate at the international level through ICAO and these standards are set at the international level and adopted by the EPA and a FAA clean area. The CO, HC and smoke have been reduced so much that in recent times it has been considered unnecessary to reduce them even more. About forty-one percent the NOx standard has come down. ICAO has considered doing a carbon dioxide standard, but they decided it was

unnecessary because fuel is the driver and we are already motivated to minimize our fuel burn. EPA is planning advanced notice to the public of proposed rulemaking. That is in response to a petition to the states asking EPA to take a closer look. New Jersey is one of the petitioners. We are driven to be as fuel-efficient as possible; fuel is our number one cost center. Again, it is about forty percent, thirty to forty percent, depending on the carrier in terms of their overall costs. Our fuel efficiency record is hard to match from any other sector. We have improved about a hundred and three percent. Fuel efficiency of aircraft operated is about seventy percent more efficient. The aircraft may become more efficient, but we do not stop there. We implement new operational measures. We are able to operate the aircraft even more efficiently so that the overall efficiency is even higher than the equipment improvement. We have had this absolute reduction in our emissions. We are not stopping there; ATA airlines have additional improvement and so we have a great record in the past compared to cars which essentially have remained flat in terms of their fuel efficiency. Meanwhile our fuel efficiency has gotten much better each year. We do absolutely everything we can here. We have a four-pillar approach to our addressing emissions. It involves technology, operations, infrastructure, and economic incentive. There is an article from the New York Times today entitled "A Cleaner Leaner Jet Age Has Arrived" and they are not kidding. The article is about such developments as reliance on composites as opposed to aluminum, which are stronger, lighter materials transitioning from hydraulic systems like systems aboard the aircraft and the geared turbo fan which was developed by Pratt Whitney which offers about a twenty percent increase in fuel efficiency. Therefore, we never stop trying to enhance our existing technology. Winglets that are added to aircraft wings reduce turbulence. This adds about six percent increase in fuel efficiency. They are not cheap; it is about a million dollars to retrofit an aircraft. In addition, advance navigation aides allow us to improve our operations. We continue to invest in new aircraft. The Boeing Dream Liner will have about a fifteen percent increase in fuel efficiency. We are also looking to alternative fuels and through the Commercial Aviation Alternative Fuels Initiative (CAFI). We want all the alternatives we can get considering skyrocketing fuel prices. ATA just approved principal documents to guide the petroleum companies in their development of alternative fuels for aviation and in the non-negotiable part of that any new alternative fuel on a life cycle basis has to be more environmental friendly than existing fuel. So we are asking for a new fuel that is more environmentally friendly.

We also do everything we can to improve our performance through improved maintenance and optimal operations. The easiest action is reducing weight, removing items such as magazines, and replacing heavy food carts with lightweight ones; removing paint from the aircraft improves the aerodynamics; reduce the thrust on take off; and single engine taxiing; washing an engine can improve its performance and save fuel; and continuous descent arrivals. Compared to the past it has been more of a descent going through plateaus and with each plateau the power is increased and the aircraft arrives in steps. Fuel is saved and NOx and noise are reduced with the continuous glide into the airport.

We are looking for the next generation air transport system which is Nextgen. That will allow us to drive straighter paths instead of zigzagging across the country from radar station to radar station to allow us to fly straighter paths. It will allow us to fly more efficient routes and closer together which will reduce delays and improve efficiency. The bottom line is we need a system and the Federal Government is the one in charge of making this happen. We are not asking for a handout here; we paid for this system. We paid for our infrastructure and that distinguishes us from virtually everyone else. We are asking the Federal Government to use our money in a smart way to help us improve our environmental profile and improve our economic impact.

We are extremely emissions efficient and we represent a small sliver of many of the air emissions. We have gotten there by working hard to improve performance. We are driven by

fuel costs in part. We are going to continue to develop technology and to develop alternative fuel. We are going to continue to look for air management improvement to do everything we can to improve our overall efficiency.

Ground Service Equipment is very important. There are electrification options. There are conversions to newer diesel engines. If we can electrify gates and not have to burn our fuel with our auxiliary power units we are all for it. If we can get electric at airports that will help us reduce our fuel burn, we support it. But I can tell you in southern California about fifty percent of the GSE is electric and it is concentrated in certain types of GSE which are amenable to electric. When you are talking about really heavy cargo movers or cargo loaders, that is a difficult application. When you are talking about belt loaders and baggage tugs, that is a much different animal.

Brent Barnes

Director of Statewide Planning, New Jersey Department of Transportation

We have been a land use asphalt highway department for eighty years at least and in the last five to eight years we are breaking out of that mold and thinking about new things. We are heavily engrained with New Jersey Transit and do transit planning, as well as highway planning. We are not in the road building business anymore, but we are in the business of fixing bottlenecks, making small intersection improvement, creating more efficient roads so that traffic can flow more easily and air quality is improved. Importantly, here we are looking heavily at demand management. The land use side of the parking where you get into your car and how you travel to work is very important to us. So we are trying to create alternatives to the single occupancy vehicle. Another good way to create efficient transportation is through using technology in intelligent transportation systems. The most obvious visual symptoms are those variable message signs that you see on the highways, but that is just the part that you see. There are a lot of cameras and transportation centers working behind the scenes for those visual message signs to redirect traffic in the event of accidents.

More importantly are land use patterns in the state. The state is heavily built. We are the most densely populated state in the nation. We are working to help urbanize that just a bit more to create land use nodes that can be supported by other things; notably transit. So the key question for us is can land use changes reduce vehicle miles traveled and if so how much. There is compelling evidence over the last five years that land use changes do, in fact, significantly reduce travel.

There are five times more trips per square foot in these sprawl developments than there are in the densely developed areas of the city. Future transportation is our way of looking at land use and transportation corridors around the state. We work with multiple municipalities at the same time to help them understand how their land use patterns impact our transportation network and vice versa. We work with them on community development issues primarily, but our focus for the hand off for our engineers is those bottleneck solutions I talked about a few moments ago.

Another program is our transit village program. These programs are developed around bus and rail stations, and this seeks to recreate dense nodes of development in these areas that have excellent job, and housing so folks can live, work and play in the immediate vicinity of transit and not have to use their cars. Collingswood is a very successful area along the PATCO line, which was a sleepy little community a few years ago, and it is now a happening place.

Consider the Atlantic City master plan. Atlantic City is scheduled to grow by about forty thousand new employees over the next fifteen to twenty years. They cannot all live on the island.

We do not want them making long commutes to work which is the case for some of the workers. There are people coming from Pennsylvania to work in Atlantic City. Therefore, we are working with the communities around Egg Harbor, Pleasantville, and some other close cities to recreate growth nodes in conjunction with this growth. We are also working across the range of transit options including some you probably never heard of like personal rapid transit which is a sort of Disneyland like pod that works on a semi-fixed guide with a system. Imagine a taxi on a guide way. A full range of transit options is applied here and then across the state when they can be demonstrated to be successful here. Mobility and community is our way of working with municipalities to link transportation and land use in their master plan. Under the law the land use element of master plan is mandatory, but the circulation element is not. Many communities do not have adequate circulation element. We are working very heavily around the state to make those two things integrate and talk to each other so you can actually create places that support less transit. We are working heavily with municipalities around the state to link their transportation and land use systems together.

A new product that has a lot of appeal speaks very directly to communities. As an implementation tool we are developing street design guidelines for a full range of different street types and using this to educate local engineers and planners that one size does not fit all. You can have different ranges of streets and the way that they work together with the particular land uses around them is very important. This book is just about to be published. This was a bi-state product, both Pennsylvania and New Jersey DOT worked on this together. It has been successful.

A few years ago we made a commitment that less than four percent of our overall capital program would be for new capacity and roadways. In fact, it is about 1 1/2 to 2 percent and expected to remain low. We have enough highways, we just need to make them work better. In north Jersey around the ports we are looking at truck and rail infrastructure. Our main goal of course is to get as much as we can into the rail system, but that's a tough thing to do. A new technology is IdleAir. It basically turns the truck cab into a hotel room offering a landline, Internet service, long distance phone service and air conditioning are available through one plug in at these places. There are only two right now in New Jersey, but we are working on building more of these. Idle Air is a private installer; however, we have funded and helped technically with the installations.

Reema Loutan

Environmental Engineer, Mobile Source Team Senior Staff

United States Environmental Protection Agency, Region 2

I will touch on some EPA regulations, our partnerships, and the EPA ports vision mission and strategy for moving ahead with ports. The mobile sources of airports that we look at are the aircraft, some infrastructure such as shuttle buses, ground support equipment, and maintenance and construction vehicles. Within the region we mainly work with voluntary initiatives around the airports. We have worked with the Federal Aviation Administration on their voluntary airport low emission program. Recently the Port Authority of New York and New Jersey received funding to purchase hybrid shuttle buses to operate at the area airports.

Vessel sizes are increasing. There is a vessel planned that will hold up to fifteen thousand containers and is coming to New York. It is good in a way because it reduces two ships coming in, but also you still have that one large ship. It is going to have emissions that go along with it and also the trucks are going to need to get those containers where they need to go. Because increasing vessel size, there is dredging in the harbor, there is dredging in the New York harbor, there is dredging in the South Jersey/Philadelphia area as well. The ports are facing community

pressures. A lot of the ports are in non-attainment areas. New York and New Jersey and the Long Island area are non-attainment for NOx and PM.

Regarding emissions inventory, highway trucks were dominating our mobile source inventory at sixty-two percent for nitrogen oxide. For particulate matter, highway vehicles were dominating, and the non-road vehicles were also dominating, but again it will be the ocean going vessels. This phenomenon is seen with sulfur oxides.

EPA realizes that mobile source programs are a key tool for improving air quality at the ports. Previously, we have regulated highway trucks and non-road engines. There are sulfur diesel requirements for on-road engines and nonroad which includes locomotives. Ports have increased the use of ultra-low sulfur fuel to help clean emissions. EPA recently signed a locomotive and marine rule. There are three parts to the rule:

- 1) An engine remanufacture standard for existing locomotives and marine. We thought that was key because while our standards mainly covered new engines, that legacy fleet exists and must be addressed. We believe these remanufacturing standards will reduce their emissions;
- 2) There are tier three standards for newly built locomotive and marine engines;
- 3) A tier four standard requires an after-treatment technology to meet the EPA standard. The after-treatment technology is similar to a selective catalytic reduction technology as well as a diesel particulate filter.

The International Maritime Organization proposed standards to reduce the sulfur fuel for the ships. We believe it is necessary to move forward with the regulation of ocean-going vessels. We are also working on our own ocean-going vessel industry standards.

A lot of actions are occurring in the ports. For example, non-road engine, nonroad equipment greatly reduces emissions from that category of port vessels. Vessel speed reduction is when the ocean going vessels slow down as they approach the dock. That greatly reduces emissions. Star Crest Consulting in Seattle provided a statistic - if a ship reduces speed from sixteen knots to about twelve knots, nitrogen oxide can be reduced by 135 tons in one thousand round trips. We are working on a program with Port Authority to implement that. We are working to get some buy-in from the ocean going vessel operators.

Cold ironing, an alternative marine power, is another program we are working on with the PANYNJ. In addition, we are working on the hydraulic hybrid with the Port Authority and APM terminals. It's a hydraulic hybrid for a yard tractor and will rely on less diesel fuel. We hope to see about a fifty to sixty percent reduction in fuel consumption. We hope to develop partnerships with ports with Clean Ports USA, and EPA program. We believe working together with the port is the best way to get these projects underway and address the emissions. The technology has to be cost effective because the ports will not buy into programs unless they get the biggest bang for their buck.

Our website showcases some of the good projects being conducted across the nation. We are also recognizing the port authorities for their giant step towards reducing their operating pollution. In September, EPA Region 2 hosted the EPA regional administrators and assistant administrators to talk about the agency's port strategy. We want our ports to be environmentally and socially responsible, but also economically viable, safe, and secure.

Our port strategy consists of six themes. We are covering clean air and affordable clean water, healthy communities with local environment, port communications enforcement and compliance assistance.

Cost-effective strategies are available today. The ports are using ultra low-sulfur diesel ahead of schedule and that is helping to control port emissions. We have broad stakeholder support and EPA is supporting our port strategy.

Jay Jones

Deputy Executive Director, Administration, South Jersey Port Corporation

The South Jersey Port Corporation, a quasi-state agency that has the authority to develop strategies and operate the marine terminals in the seven southern counties of New Jersey. We have two deep-water terminals in Camden. We have a small barge facility in the Salem River in Salem City, and we are in preliminary development of a new terminal in Paulsboro. With the current facilities, we are generating four million tons of cargo through the ports. We are not a container facility; we are a bulk facility. Four hundred ships a year move through our facilities. We are the largest plywood port in the country. We are the second largest cocoa bean port on the east route. We are one of the largest scrap metal export facilities. This generates economic activity in South Jersey.

Certainly green initiatives are a priority for us. A few years ago, we brought in a tenant, Saint Lawrence Cement, which brings slag from Italy and makes a cement product, called Gramsend. The ships would arrive at Becker Street and by diesel powered cranes would unload them. Then eighty thousand trucks per year would need to move that cargo to the facility at our other terminal at Broadway. We developed a forty million-dollar clean air project. We built a new pier, bought a seven million dollar electronic crane and eliminated those trucks from running. Now the ship pulls up next to their facility, a fully electric crane unloads the product onto their hooded conveyer system and the product goes directly to their facility.

We have a \$ 550,000 grant to evaluate our 160 diesel-powered forklifts and equipment in the port and install air emission control units on that equipment. We have employed a fleet maintenance software program to manage and monitor for preventive maintenance and equipment repairs to ensure the equipment runs efficiently. At the Broadway terminal, Delmonte is our tenant. It is their largest port in the world, with 500,000 tons of fresh fruit (bananas and pineapples) entering the facility and go directly to supermarkets. They use electricity for their refrigerator warehouse, but they also have refrigerator trucks and we have refrigerator plugs. Ten percent of the electric we provide them is through a third party supplier. Twenty thousand refrigerator trucks move through that facility. We think an environmentally sound green initiative to look at how that electricity is brought to that tenant at our facility. The Broadway terminal was the former New York Shipbuilding Corporation. When we took it over we also received the right to resell electric power. We are investigating not only putting solar panels on two million square feet of warehouse, but looking at other ways to create an energy park, to look at a cogeneration facility because there is a trash facility adjacent to it that could provide electrical power for users.

We have electric crane and electric conveyer adjacent to St. Lawrence Cement. Cold ironing is a challenge because most of the ships would require expensive retrofitting and expensive equipment would be needed at the terminal. Therefore, you have to work with ships that will frequently return. We are looking to do that with Saint Lawrence at the Broadway terminal.

As we look to develop new terminals along the Delaware River we have identified Brownfield sites and Paulsboro marine terminal, the BP facility and Exxon were right for port development. We are also looking at facilities in East Greenwich and Deep Water.

We are looking at green initiatives from stormwater to electrical power. We are looking into propane-powered forklifts for Becker Street and Broadway, and at the new port in Paulsboro. We

are investigating technologies to green the port, but there's a cost issue involved. We are trying to implement cost-effective solutions that enable the port to bring down emissions. The sustainable port model is environment, community, and finance. Our partnership with the community is very important. We partnered with Heart of Camden on a project at one of our properties. We allowed them to plant trees on a nine hundred-foot long berm they had built. It will help filter particulates and also help reduce the urban heat island. .

The majority of our cargo is imported. About one million tons of scrap metal is exported. Approximately two hundred thousand or three hundred thousand tons of Saint Lawrence cement finished product will leave the port on ships. The rest of the product travels by truck.

Wood products come from Brazil, Malaysia, Indonesia, and China. Cocoa beans come from the Ivory Coast, Indonesia. Scrap metal goes to Turkey and China.

Susan Bass Levin

First Deputy Executive Director, Port Authority of New York and New Jersey

The Port Authority is a bi-state agency that owns, operates and manages a vast transportation and trade network. It includes aviation, maritime and rail facilities, vehicular, Hudson River crossings and real estate in New Jersey and New York. Our five airports are Newark Liberty International, Teterboro in New Jersey, JFK, Laganardia and Stewart in New York. The four bridges are the George Washington, the Outerbridge, the Bayonne, and the Gothels. The two tunnels, the Lincoln and Holland. In addition, two bus terminals, cargo and marine terminals in Port Elizabeth for the Jersey line. The Path rails system and World Trade Center site in lower Manhattan.

The Port Authority is uniquely positioned to improve the quality of life for people who live and work in the region. The Port Authority begins a new era of intense investment in the region's trade and transportation infrastructure. We have made a parallel commitment to ensure that environmental sustainability is paramount to the agency, operating our facilities in a way that conserves the region's resources for future generations. The Port Authority's ten-year capital plan adopted a few months ago is a guiding framework for our efforts to increase energy efficiency, reduce greenhouse gases, improve our environment and expand the capacity of mass transit. We know it is not enough to build, but we must do so in a way that respects the environment and our communities.

So let me turn to our seaports and airports which this committee is focusing on today. First are seaports. The seaports of New York and New Jersey are an economic engine. The seaports have handled a record one hundred sixty-six billion dollars of cargo and created opportunity with more than two hundred forty thousand jobs, twelve billion in wages, and six billion in taxes. With increasing cargo volumes projected, to satisfy growing consumer demands, the challenge we face is how do we accommodate cargo growth that we want with all the economic benefits that it brings, but doing so in a way that protects our environment and quality of life for people who live and work in communities near the port. Our key focus in facing that challenge is on improving air quality and finding ways to reduce port air emissions. To offset increased air emissions that result from the dredging equipment used in the harbor-deepening project, the agency developed the ferry retrofit and marine vessel engine replacement program. That enables ferry and tug operators to replace or retrofit their older diesel engines with cleaner engines. We have contributed fourteen million dollars to marine diesel retrofits. It is estimated, as a result of this program, nitrogen oxide emissions have been reduced by four hundred tons per year.

We have gone on record recently at the request of the DEP partnership supporting regulation that will mandate a reduction in diesel emission from marine vessels. We know that to make a long-term impact, we have to understand the sources of air emission and measure the reductions. Therefore, we have conducted very detailed and specific air emissions inventories of the primary sources of air emissions from the Port Authority's port facilities. We have taken the inventory so we can measure and, therefore, work to reduce. A detailed cargo handling equipment emissions inventory that compared our fleet to our fleet which had modernized vehicles showed a thirty percent reduction in air emissions. We will continue to work to reduce these air emissions and continue to work to modernize our fleet and cargo handling equipment.

We recently completed a greenhouse gas inventory for all of our Port Authority facilities. We know that travel by trucks to Port Authority facilities contributes a large amount of greenhouse gas emissions. We have developed several initiatives to address this problem: 1) Express Rail; 2) Smartway Plus; 3) reducing the length of off terminal trips; and 4) reducing on terminal congestion. Express Rail is a comprehensive rail program that creates a dedicated on-dock rail facility at each of our container terminals. With Express Rail the container comes off the ship, it is put on a rail car that connects to the rail lines and so no truck transport is necessary. We estimate that has taken a hundred and forty-two trucks off the road just in this quarter. Therefore, as cargo containers continue to expand, Express Rail continues to expand giving us an environmental benefit along the way.

The second program I mentioned is Smartway Plus, sponsored by the United States Environmental Protection Agency. It is a program to offer low cost loans to finance acquisition of new trucks so that they can be equipped with special particulate matter filters that will cost the trucks much less over the long haul. The program includes installation of certain upgrade kits to achieve a twenty to ninety percent particulate matter reduction. We are working in partnership with the USEPA. We are also working with lenders and other funding sources so we can promote this program and make the trucks serving the port more environmentally friendly.

The third program is the Port Fields initiative. We have partnered with the New Jersey Economic Development Agency to establish nearby port warehouse and distribution centers on former industrial sites. This will help us clean up the former industrial sites. It will also help to provide warehouse facilities and distribution centers near the ports. This redevelopment reduces vehicle miles traveled by trucks that serve our marine facilities and, therefore, reduces energy consumption once again. We are studying the feasibility of a virtual container yard to reduce dead head truck trips to pick up empty containers.

The fourth area is to reduce on terminal congestion. We are working with our terminal and warehouse operators who have taken voluntary air reduction initiatives such as installing electric cranes or reorienting the terminal footprints to make them more efficient. In other words, dealing with traffic on the ports by installing electronic gates and expanding gate hours to reduce congestion; installing solar panels at a warehouse at the Elizabeth Port Authority marine terminal; using ultra-low sulfur diesel fuel in our cargo handling equipment; establishing a green practices task force with our tenants; and implementing a no idling policy at our terminals; and participating in a pilot program to evaluate the operational performance of hybrid yard tractors at both the APM container terminal in Elizabeth and New York container terminal in Staten Island.

We at Port Authority cannot solve this problem alone. The Port Authority is working with DOT, DEP and various New York City and state agencies.

In sum, we know that our ports are continuing to grow and that is great news for our economy; however, we realize that to be successful we must be a sustainable port and that means finding ways to accommodate port growth that also protects the environment.

So let me shift from the water to the air and talk about airports. Our airports are brimming with customers, with traffic and cargo which is great economic news for the region, but presenting practical and environmental challenges. Like our seaports, we are a landlord airport owner. We own the airports, but we only operate a few of the terminals. As such we are undertaking efforts at our facilities and in conjunction with our tenants to improve air quality in the area surrounding our airports. If you think of airports, you might think of delays. If we decrease flight delays, we will decrease emissions since flight delays increase aircraft idling time by increasing runway congestion. The Port Authority authorized a flight delay task force that brought together all members of the industry and consumer groups and recommended seventy-seven initiatives to the Federal Aviation Administration increase capacity and reduce flight delays.

The Port Authority is renovating runway access roads and increasing the access between those roads and minimize airport congestion as they approach the runways. One way to reduce airport congestion is to acquire another airport and we did that when we purchased Stewart Airport in Newburgh, New York. We are working with airlines to get more flights to go into Stewart to take some of the congestion out of our other airports. We pledged to make Stewart Airport a cutting-edge environmentally friendly airport that we plan to develop into the country's first carbon negative airport. The gates at Stewart will be upgraded with four hundred-megahertz power and reconditioned air so aircraft will simply plug in reducing the use of jet fuel as aircraft are serviced at the gates. We are also buying hydrogen fuel tugs for the aircraft and electronic aircraft ground service equipment, two other great technologies and opportunities to use low emission technology.

We have embarked on an effort to measure air emissions from the aircraft from ground service equipment and cars using a computer modeling process. We are members of the EPA/FAA emission reduction stakeholder for airports which is made up of representatives from engine makers, aircraft manufacturers, and the government all working together to promote lower emissions. To make our airports more sustainable, we now have greener buses which we have added to the shuttle fleet in our airports, Twenty-one hybrid diesel electric buses and thirty clean technology diesel buses. For the first time ever at an airport we are using geothermal energy to power one of our airport buildings. We are replacing inefficient baggage handling equipment with electric energy efficient equipment. We have a hundred and fifty compressed natural gas vehicles at our ports using geothermal energy and Air Train at Newark and JFK is significantly reducing vehicle miles traveled at those two airports.

Our tenants at the airports have made strides towards improving air quality too. At Newark's Terminal C, Continental Airlines has modified jet bridges to supply reconditioned air and power to aircraft parked at the gates. These bridge modifications provide heating and cooling of the airport and allow the aircraft electrical systems to be operational. These measures reduce emissions and fuel consumption. Continental also added winglets to many of its planes lowering aircraft drag and resulting in up to a five percent reduction in emission and noise. Delta Shuttle recently converted its entire fleet of ground service equipment to electric equipment. Continental is looking to do the same thing at Newark.

At Teterboro, Jet Aviation is installing solar panels on the roofs and First Aviation has installed a fuel farm in its facility. At Teterboro Airport, the Port Authority worked with the Meadowlands Commission and New Jersey DEP to fund an air quality study that was completed earlier this

year. We asked a Teterboro Noise Abatement Advisory Committee (TANAC), an independent panel of local and elected officials, to create an air quality committee to examine this issue in depth and deliver recommendations. Along with our tenants, we have invested over a hundred million dollars in capital projects that have an environmental benefit at Teterboro Airport including developing a more efficient taxiway and runway system. The taxiways and runways now intersect at less acute angles, exit and enter runways with much greater efficiency resulting in less ground run up, fewer emissions, less noise. Aircraft queues are shorter, further reducing emissions and noise and idle for less time in part because of our departure clearance e-mail system. This program notifies pilots they have been cleared for takeoff by e-mail so they do not run their engines unnecessarily, again decreasing emission and noise. At Teterboro we purchased hybrid vehicles and we have a program to install solar panels measuring a hundred and fifty thousand square feet.

In conclusion, our ports and seaports are busy and crowded and our regional economy depends on that growth. However, even as we move ahead to implement our new building agenda, we recognize the need for new approaches to the way we conduct business. Environmental sustainability is absolutely vital to the future of our region. The environmental challenges at airports and seaports is to continue to meet current demand and grow in a way that improves and reduces the environmental impact. We look forward to continuing to adopt new innovative strategies in our push for long-term sustainability and we look forward to working with New Jersey state government and agencies like DEP as we move forward together.

I am sure the airlines would gladly takeoff on time if they could. It doesn't help the airlines economics to be late. The key is new airports, they are building airports differently. If you look at our airports facility, they are often close together. They are shorter and so there are safety issues in terms of how frequently you can have planes takeoff. We are constrained in terms of the growth that is how many additional planes we have in our airports. We have a lot of regional jets, smaller aircraft. So there is a number of aircraft, the number of planes taking off may be larger, but their capacity may be less. If you look at international flights, obviously they tend to be bigger planes, they carry more people. We also have weather issues here as anybody knows who travels if the day starts badly, it just gets worse and worse throughout the day. So the best times to travel are early in the morning so that you can get on a plane and hopefully get out. Although we clearly have the worst on time records now, it is very much a national problem because if there is a delay anywhere else, it impacts us. Therefore, I do not think fining the airlines is the answer for us. They would gladly takeoff on time if they could. It is not because their pilots are late or their flight attendants are late or they haven't fueled, it's just the logistics of the airport. Having said that, we clearly recognize it is a problem. One of the things that the government is working on is a new system called Nextgen which is the next generation of computer technology to help with managing flights in the sky. It is billions of dollars of investment.

About fifteen percent of the goods go by rail. As we continue to expand our capacity of Express Rail, we expect that it will continue to increase. We would hope to get up to about thirty percent directed by rail. Remember much of goods go to within this region so they might go by truck because they are not going anywhere by rail.

We are doing Express Rail is adding lines, but we are also, for example, adding a second track so we take in and take out which will help ease congestion and we are certainly committed to that investment and will continue to build out rail as we built out new container facilities.

Monica Mazurek, Ph. D.

**Assistant Professor, Department of Civil and Environmental Engineering and
Center for Advanced Infrastructure and Transportation (CAIT), School of
Engineering, Rutgers University**

I would like to describe are current engineering research programs that are operating within the New York metropolitan area aimed at improving air quality. As our center suggests, we are focused on advanced infrastructure and transportation. So we are working on cutting edge tools that need real world examples, we believe port, and airports give us some problems in great abundance to work with great interest and vigor. I am going to describe are our current efforts at improving some of these state-of-the-art engineering transportation models for the port. My recommendations are three key operations or activities. The first is monitoring. Although the states of New York, New Jersey and Connecticut have been engaged in extensive air quality monitoring programs, have produced vast amounts of data, these monitoring locations are insufficient to really monitor what is going on within the ports and the particular sources. So we need to improve our monitoring capability with better temporal and spatial monitors. There have been improvements in real time measurement technology, particularly in particulate carbon, elemental carbon and PM mass. Second, measurements are very important. These emission inventories are usually based on very few experiments that actually are testing the different types of mobile sources that account for PM and gas emissions in the port area. So then the emission source profiling is going to be key. We also need to know more about the operations. Third the last step is incorporating the emissions information on monitoring methods and operations inventories into state-of-the-art models.

The new tools that we are using for modeling emissions and quantifying operations in the port of New York and New Jersey are key research activities within Rutgers University. The first category is transportation models. The first is micro simulation level which actually looks at vehicle population and quantifies emissions as a function of vehicle speed. The second is regional scale that looks at large network operations or transportation networks. The second area is chemical emissions profiles to generate new profiles relevant to road vehicles in the metropolitan area.

Finally, when we get these two models and profiles working together and they are integrated, we can begin to compare the existing inventories, what we think is happening with ambient concentrations.

We are working with authentic emissions data now from the collaboration with New York State AEL to improve our micro simulation of air pollution from large-scale traffic networks. In my own work and my group, we have been looking at the sources of fine particles in the New York City area. Because we look at one hundred individual marker compounds at the parts per billion level, low parts per billion level, it takes a lot of time to develop the molecular marker ambient concentrations. We are looking at major sources of PM in the New York City area developing chemical mass balance where we will then use the chemical mass balance molecular marker model to provide assessment as to which sources contribute the most amount of organic carbons to find mass and then we are comparing to this emission inventory. Motor vehicles is one big source category within the metropolitan area, but one category we are surprised to see that probably was not accounted for is commercial cooking where all those french fries and fried chicken are cooked in large amount of oil which is volatilized and is not controlled. A large fraction of PM that we see is coming from commercial cooking operations.

Therefore, this is what is lacking in the metropolitan area. We do not have detailed information and the profiles, current profiles. We are working with really outdated databases that go into the chemical mass balance. We really need to improve our profiles here because our models will be better. All of this goes into developing chemical profiles and we use these chemical profiles in the chemical mass balance model. Then we can find out roughly how much of what sources contribute to the PM. The crux of the matter here is this relationship where another molecular tracers related by mass usually in nanograms per cubic meter to our total carbon is composed of elemental and organic carbon. With this information, we can estimate what portion of fine PM is from what types of sources.

Finally, the key points are that we have extensive monitoring projects that give us information about what is going on around the port, but not within the port. Our transportation models are now being developed for the micro and large-scale network levels and this is being improved with emission test from New York State AEL collaborative work. Our chemical profiles are giving us new patterns, updated patterns for emissions, but we need them for the import vehicles to enhance model accuracy and finally these vehicle chemical emission profiles are for the northeast state emissions inventories to develop useful state implementation plans and we will be looking at model output versus observed concentrations. This is very important for predicting the impact of motor vehicle emissions in urban air sheds from transportation systems.

Valorie Caffee

Director of Organizing, New York Work Council and Chair of the Environmental Justice Advisory Council to NJDEP

The Environment Council along with Amy Goldsmith, Director of the New Jersey Environmental Federation will be giving presentations today. We are concerned about the effects of ports operations on human health and the natural environment. Anyway, like I said, also the assemblers of new coalition called the New Jersey/New York Coalition for Healthy Ports and certainly, again, our overall mission is to look at the impacts on human health and the environment. I want to concentrate on the Ironbound community located in the west ward of Newark. The port is very close to the Ironbound. The port itself is unique in respect that there is a convergence of the port, the New Jersey Turnpike (NJTP), freight rail and the airport all in one area. The Ironbound is an adjacent community bounded by the flight path of the airport and the port is close. The Ironbound has rail tracks around three sides, the NJTP, as well as several major roads. There is a lot of activity. Looking at those impacts on this community, we are talking about a community that already has a significant environmental load. One of the main environmental polluters in the Ironbound is the incinerator. The incinerator by itself would be problematic because it is the state's largest solid waste incinerator and one of the largest in the Northeast. It is burning about twenty-eight hundred tons of waste daily and emits hundreds of pounds of toxic mercury and dioxin into the air. It violates the Clean Air Act, which also contributes to the non-attainment of this county, which causes the state to lose money when there are many counties in non-attainment. There are over eight hundred million pounds of toxic air emissions from various facilities in this community that are dumped onto the residents there. At least ninety of the one hundred twenty-five streets have pollution facilities and store hazardous substances on-site. Approximately ten to fifteen thousand trucks from the ports are located in the community, and travel throughout the community. We have over forty-five major chemical manufacturing plants, industrial plans that are very near public housing. We have the legacy of pollution and current polluters that are leaving their own legacy. One of the worst is the Diamond Shamrock Superfund site. Diamond Shamrock produced Agent Orange during the Vietnam War. It is an enormous Superfund site that has not yet been remediated. It is close to lower income housing community in this area. Doremus Avenue dubbed "Chemical Row" is located here. One of the things that spill over from ports into the Ironbound community is the Terrell housing

project. Cargo containers that are stored there are now higher than the housing project homes themselves and are engulfing the projects. We are concerned that these containers are reaching some seven to eight stories high. Interesting enough, the city housing authority signed a contract which allowed more containers to be stored there on a former playground. Promises, made to restore recreational space, have not materialized yet. Also very troubling is the cumulative impact of pollution on the community of population where people are already vulnerable and already overburdened by pollution. This community now has been dubbed "Container City" because of the proliferation of these cargo containers that are spilling into the neighborhoods. Of course, it takes diesel trucks to bring the containers to the neighborhood, which add significantly to the pollution load these people already bear.

Of course, we all know about the diesel pollution's link to health problems. Asthma is one of the primary problems. Asthma in some areas could be classified at epidemic levels, in urban areas. For children of color, Latinos, and African-American children, we have asthma rates that are three to four times higher than their white counterparts. The death rates associated with asthma are also much higher as well. So bringing in additional truck traffic into areas such as the Ironbound community where people are already saturated with pollution adds insult to injury.

I recently read in a report that we just cannot look at greenhouse gas, global warming, and climate change just within the context of carbon monoxide. We have to look at more than that; we need to consider the co-pollutants. The report states black carbon now is second behind the carbon dioxide as a cause for climate change because black carbon particles absorb solar radiation as it enters our earth's atmosphere and creates heat. Heat in urban communities is of great significance because people die from the summer heat waves in urban areas. So this compounds this problem.

I would like to discuss the impacts on the port workers. Workers often sit in queues for hours as they offload and unload at the ports. Meanwhile they are exposed to diesel pollution. Many drivers become ill. These drivers do not have many benefits and as a result do not have good health care. They are classified as independent owner/operators. Many of these workers live in communities like the Ironbound. They do not make much money as well. We think the companies that are hiring should take responsibility for their workers.

Here are a couple suggestions that we have for recommendations. Diesel trucks last a long time. We need changes to occur in ports to happen now. Less idling is less exposure to diesel, less illness, less missed work days and health costs. Decrease co-pollutants and premature deaths that are linked to diesel. The cumulative health impacts from diesel must be considered.

Some other recommendations include adopting operation standards at the ports and examining how pollution impacts communities and the port workers, particularly the drivers because they are being exposed to large volumes of pollution. The Work Environment Council believes the drivers should have the right to organize if they want. Unions have health and safety committees. Independent monitoring should be conducted.

Christina Montorio

Community Policy Coordinator, Change to Win

The Natural Resources Defense Council issued a report, "Harboring Pollution" which shows the port of New York and New Jersey is about double the average power plant. Trucks are a significant part of the pollution that comes from the goods movement in ports.

So we can do better. There is technology that can bring particulate emissions to almost negligible levels. We can encourage truck upgrades. The conditions the drivers face are part of the environmental problem. The fleet does not get upgraded as fast as it should because the drivers do not make a lot of money. Drivers are misclassified as owner/operators. They do not have the ability to set rates. They are paid by the load rather than by the hour. If they wait in lines there is no market incentive to move them faster in and out of the ports because the person that pays for their time is themselves. Many drivers make less than eight dollars per hour. They do not buy health insurance because they do not make a lot of money. They are not making major capital investments in their vehicle. Newer trucks can cost a hundred and fifty thousand dollars and up. Therefore, they drive the older more polluting trucks.

The top five U.S. seaports are all considering reducing diesel pollution. We are not -- I am talking about comprehensive strategies that are discussed here. There are some great policies out there today. They may potentially have some concerns, but may not be able to take advantage of low-interest loans because they are struggling to purchase gas. In addition, a lot can be done with rail. You are going to continue to have trucks so we want to make sure these trucks are the newest, cleanest trucks we can possibly have. Los Angeles passed a clean trucks program which requires an aggressive fleet monitoring system as well as companies moving to being employers as opposed to brokers or owner/operators. Why did they do this? Because before they implemented the new trucks program, the drayage system, which is the port trucking system in Los Angeles, was plagued with operational inefficiencies and community cost and public health cost. Therefore, these are all the reasons for these costs. You think about community cost, road maintenance, environmental damage and operational inefficiencies where it can impact truckers. Truckers do not have health benefits. When the operative of clean trucks program that was passed in Los Angeles reduced emissions, improve the facility of market share for working sporadic on the flows that are problems with it.

Port security is an increasing issue in any port. There was an effort to improve all of these aspects. This is an economic analysis by John Haverman, a leading economist in the field, who did a thorough research of what the trucks program would do to the trucking system. The industry had a lot of concerns with, how it is going to be implemented and what kind of advantage or disadvantage it would put them in with regard to other ports. Haverman found a significant increase in the overall efficiency of the system, cost reductions from economies of scale in addition to not killing people anymore.

There are key points that we would like to leave you with. We urge you to advise the state to enact a plan for reducing the pollution at the port. Other port cities have done this and spurred the conversation. You set the standards and then government entities need to react with good policy. Then we pledge to work with you to implement those solutions and make sure we remain economically viable. We should continue to be competitive and not do anything to the great economic engine, the port, while we also improve air quality, and public health and work opportunities.

Amy Goldsmith
Coalition for Healthy Ports

As most people know, the non-attainment goes to the main traffic corridors and truck corridors of New Jersey. The hot spots, especially when you are looking at diesel pollution, the core of it is right in the middle of the corridors and then a block or so off the highways or past the corridors, the diesel levels dramatically decrease. We did a snapshot study. Dr. Bielory was part of the release of that in the City of Newark. Kids did the monitoring with us at a variety of locations. The locations were Cluster Avenue, a quiet residential neighborhood, no trucks; Weequahic Park,

a major park recreation area and along Frelinghuysen Boulevard which is a truck corridor; Roberto Clemente ball field; and McCarter Highway. This is where the Commissioner mentioned two hundred fifty to three hundred fifty trucks per hour. That is four to five trucks per minute that pass by this ball field on a hot summer day. Idling trucks and warehouses surround Hayes swimming pool, in the middle of the Ironbound. We did curbside monitoring. Truck corridors come out of the port go into the neighborhoods, primarily the southward which is the location of Weequahic Park and the Ironbound in the East Ward of Newark. In Essex County the numbers for asthma, death and hospitalization rates double that of the rural and suburban towns in Essex County. We believe it is partly due to the diesel and truck traffic at the port. One out of four urban kids has asthma as opposed to the state and national average of one out of ten.

Gail Toth

Executive Director, New Jersey Motor Truck Association

The membership of the New Jersey Motor Truck Association strongly supports the achievement of cleaner air and protection of the environment in New Jersey. The trucking industry has made many strides in reducing diesel emissions. Trucking was the first freight industry to widely use advanced engine technology or emission control systems. We had our biggest stride when the industry began buying new trucks that incorporated exhaust gas re-circulation and other emission control to reduce by half the tailpipe emissions of nitrogen oxide. The new diesel trucks purchased by the industry, incorporated diesel particulate filters that reduced the tailpipe emissions of particulate matter by ninety percent. These trucks also began the first half of what ultimately will be an additional ninety percent reduction in NOx emissions. The ultra-low sulfur diesel fuel represents the majority of the on road diesel fuel being purchased in the United States today. It is refined to the lower sulfur content to near zero levels of fifteen parts per million. The new ultra-low sulfur diesel fuel is needed to operate our model engine. We just found the Turnpike does not supply all the pumps with ultra-low sulfur diesel so we will take that issue to the Turnpike. The fuel in older trucks, according to Netcon, will result in an immediate ten to thirty percent reduction in emissions. In New Jersey, less than six percent of all trucks are randomly checked and they are selected by the output from their vehicles. Only six percent of the trucks have failed on your testing and we have agreed to support DEP's move to increase those capacity levels. The random test includes not just Jersey trucks or people operating in around New Jersey, but interstate trucks passing through that may have no business in New Jersey, but are traveling through our state. Emission technology is remarkably cleaner than what was thought to be possible. Smog from nitrogen oxide is unburned matter that generate puffs of black smoke from the exhaust stacks are being stripped to the lowest practical levels by advanced design and ultra-low sulfur diesel fuel. The truck buyers and operators must pay the price for the technologies. Not only is the new equipment more expensive, it is less fuel efficient. Truckers today have to purchase fuel at over four dollars per gallon and went from ten miles a gallon to six miles a gallon. So there is a lot of pressure on the industry to increase fuel efficiencies.

To improve the fuel efficiency and reduce the diesel emissions, the Federal Environmental Protection Agency drafted the Smartway Program in conjunction with the trucking industry. This program is designed to educate heavy-duty diesel truck owners on ways to reduce diesel emissions by reducing idling and improving fuel efficiencies. Some of the technologies include tires, tire inflation systems, air dynamics, lightweight parts and an array of operational services such as temperature control and power such as auxiliary power units and bunk heaters. New Jersey Motor Truck and some of our New Jersey based trucking company members have received Smartways awards in recognition of our efforts to reduce diesel emissions. In New Jersey, the trucking industry has partnered with the DEP to reduce diesel emissions in our state. The NJMTA in partnership with the DEP administered a seven hundred fifty thousand dollar grant program from EPA to provide grants to New Jersey based truck owners to purchase auxiliary

power units, bunk heaters and particulate matter traps or oxidation catalytic converter, also provides programs on diesel emission reduction to its members. We were able to help quite a few people that operate in our region. They have to operate within our region. We will start to get the numbers, and compare the data to see the savings. The DEP has also attained funding to install Idle Air technology at the Vince Lombardi rest area along the New Jersey Turnpike. There is also idle air installation at the Paulsboro Truck Stop. Truckers can connect to facilities that provide power, heat, and air conditioning for a small fee. The NJMTA continues to partner with DEP to seek grants to continue to aid the reduction of diesel emission in our region. Today's hearing focuses on reducing emissions at the ports. From a trucking industry perspective, there are some areas that we can concentrate on such as idling reduction and updating or replacing older trucks. The new tractor-trailer cost is approximately a hundred thousand dollars. Even in the best of times, this is a huge investment for an individual that operates on a profit margin of pennies on the dollar. However, there are incentives and internal operations that we can assist in accomplishing our goals. Any approach to solving this issue must be done in a way that provides a reasonable, efficient and legal approach. The California ports had approved a clean truck plan that would ban on a phase basis the support trucks effective from October and all port trucks must be compliant. Los Angeles has approved a provision of this plan that Teamsters are here today to urge you to consider that will undermine many efforts to implement a workable clean truck program in California or in any other state. By adopting a union-design scheme that in the name of cleaner air bans independent owner/operator drivers from providing port transport services even if they drive a brand new truck, port city officials have now guaranteed that the next venture for any such proposal would be in the courts. Motor port carriers today operate under a federally deregulated competitive open entry business model. Based on a motor carrier's business decision to use employee drivers, trucks deliver by an independent owner/operator or under contract or a combination of the two. The American Trucking Association has announced that it will shortly initiate litigation to block the implementation of the LA proposal and believes that the owner/operator exclusion will run afoul of the federal laws. That prohibits states and political subdivision of states from enacting or enforcing a law that relates to a price route service of any motor carrier. This conclusion was recently affirmed and in a Supreme Court decision, *Rowe, versus, New Hampshire Motor Transport*, the court rules Congress was to assure that carrier rates and services are structured via competitive market forces and not because of government commands. The trucking industry has shown that it does have a sincere commitment to clean air and will continue to work with others to accomplish this goal. In addition to the current advances made by the trucking industry to reduce the emissions, the following recommendations may help to address how we can reduce the emissions at our ports. The first would be to improve efficiencies at our port. Probably the biggest problem at the port is long waiting lines. Therefore, if we can do things to improve efficiencies at the terminal, that will go a long way in reducing port pollution. Extending gate hours has been done, but it was not done correctly. We did have an attempt by several terminals to extend their gate hours so we could work and operate off peak time and reduce the congestion at the port. The problem is that none of the shippers or receivers were in on the plan. What we need to do is work and get the large shippers and receivers to except freight at an earlier hour or later hour. This will enable us to move the trucks in and out and get the goods to where they must go. We know we are a non-attainable state. We found educating and reaching out to the trucking community has gone a long way to get people on board. Tax credits to purchase new technologies or a combination of grants and small business loans with low interest rates will be helpful. Probably the biggest problem for any truck owner is the investment that they have to make for a new truck is approximately one hundred thousand dollars. There are technologies that we can utilize such as particulate traps on these trucks. In California's scrap program, owners of old trucks are encouraged to turn in their trucks. A bolt is put through the truck's engine to remove any after market value. The owner is offered approximately twenty-five thousand dollars

to purchase a newer vehicle. So that is a program I would love to see here although it is extraordinarily expensive.

Instead of the truckers waiting for the gates to open at the terminal, installing Idle Air technology would allow them to plug in and have electricity, air conditioning, and heat. For a small fee, the truckers could stop idling and creating pollution. Traffic can be rerouted away from residential areas into the industrial areas. In conclusion, the New Jersey Motor Truck Association is willing to continue to work with the DEP and with all the motor stakeholders to develop and implement reasonable, legal and efficient programs to aid in the reduction of emissions in our ports.

Eileen Murphy, Ph.D.

Director, Division of Science Research and Technology, New Jersey Department of Environmental Protection

I am actually presenting the work of researcher Dr. Allen Kao, based in Boston, but could not attend but gave me permission to give this information. For a copy of his complete presentation plus the complete report and appendices, they are available on the DEP Division of Science, Research and Technology website at www.nj.gov/dep/dsr/.

Here is a little bit of background before I get into the study. Environ was approached by a community group in the Teterboro area, the Coalition for Public Safety and Health. We were asked to do some limited monitoring in the area. They did do that and found that downwind of the airport, some air toxics were higher than elsewhere in the state. This led them to conclude that monitoring was needed to ascertain the actual impact of the airport on the community. The Environmental and Occupational Health Sciences Institute (EOHSI) did a modeling study to do the same thing without a monitoring. They concluded that a negligible amount, that is one to five percent, of the total air toxics in the ambient residential areas is due to the airport. Therefore, we had two different conclusions from two different studies. In a lawsuit there was a settlement reached between the Coalition for Public Health and Safety and the Port Authority to do a more extensive monitoring study in the area and specifically to use Environ for that study. DEP was asked to manage that project which we did.

The overall goal for the project was to measure the ambient concentrations of specific compounds and see if there is a way to find a signal that would indicate the actual contributions of air toxins, specifically from the airport to the rest of the community. The airport is near major roadways including the New Jersey Turnpike and Moonachie Avenue. There were primary and secondary monitoring sites. A lot of the analysis for the contaminants they were looking at are costly so they did an abridged monitoring at these two secondary sites on this smaller runway and comprehensive monitoring at the primary one and primary two sampling locations. They sampled over the course of one full year for volatile which they took twenty-four hour integrated samples every six days over the course of a year. The particulate and black carbon was sampled continuously over the course of a year. They also tracked wind speed and wind direction. They used a radar device to track the traffic. They were able to distinguish passenger cars from larger vehicles and they received aircraft landings and takeoff information on a monthly basis from the airport. They also put up digital cameras on their primary site and two monitoring sites pointed at the airport so they could look at the landings and takeoffs themselves. So what was happening at the airport versus what is happening at the roads? A pattern can be seen for the landings and takeoffs during the weekday and early morning and then again in the evening, lesser on Sundays, lesser on the weekends. The larger vehicles also did not show that bimodal kind of pattern; it showed the unimodal pattern so you have truck traffic consistently all day versus passenger cars during the rush hour and different pattern on the weekends.

The Results: In general of the sixteen organic compounds that were consistently detected, thirteen were detected at higher levels at Teterboro sampling sites than elsewhere in the state. These are the locations of the other sampling locations that they compared them to: Camden, which is an urban area; New Brunswick which is a suburban area; Chester which is background; and Elizabeth which comes close to the monitoring sites that we had in Teterboro airport. However, all of these locations are cited very specifically in accordance with EPA guidelines and the results are interpreted with that in mind. They were not able to site sampling locations at Teterboro using those same guidelines, those comparisons while interesting we are not too sure what -- how much exactly they tell us. These are the bar charts showing you the formaldehyde, ethylbenzene and xylenes, the medians, the seventy-five percentile, ninety-five percentile for those various contaminants. We are going to talk about formaldehyde in a minute. That is the one that jumps out at you. For a couple of VOCs there was no difference. It is not surprising to see increases in aldehydes in the summer months. What was surprising about formaldehyde it showed up, stayed up, and then gradually declined. This pattern said to us local source. It could be the airport, we do not know definitively, but we at DEP in response to this result are looking at what could have been happening in the area in some of those industries near this monitoring site that could account for this formaldehyde pattern. So keeping that in mind, yes, they did see an increase, a higher range of PM in the Teterboro sites. Again keeping in mind that the methods that they used were not exactly comparable.

One of the interesting things that Environ did in this study that we were interested in as well was the deep ultraviolet technology. It is environmental technology and what it does is put a transmitter and a receiver on either end of where you think your contamination is coming from and it will measure that gas contamination and give you a reading in the form of DUV intensity. So they put receivers and transmitters right here. This is sampling location P. This is as close as they could get to the end of that roadway. As you can see, they are right up on the road and they were constrained, they could not get any closer. This is as close as they could get, but that is pretty good. For P- they were a lot closer to the runway down here transmitter and receiver and here the roadway here. So they put those up and let them run continuously and then took a look at the results. It does represent all the gases that absorb and I have to emphasize it is experimental, it's only been used in a couple of airport studies, this being one of them. What they have concluded from these results is that they can pinpoint the influence of an airplane landing and taking off by the DUV intensity. It is highest during the shortest amount of time between a landing and a takeoff. What is very interesting is that with the use of their cameras and the DUV readings, they could actually pinpoint the source of gas emission. They saw automobiles on the runway and they saw the DUV intensity increase. Therefore, they were definitively able to pinpoint the reason for the DUV increase in intensity using that technology. So is the air near the airport worse than the rest of the state? Well, they did see statistics significant increases in some of the VOCs at the Teterboro monitoring sites as compared to some of the other state sites. The PM was higher; however, they used a different analytical technique that they themselves recognize to skew the results higher. Is it affecting local air quality? They did show a measurable affect in the airport. They showed measurable affect as well from the roadways. The study concluded that less than five percent could be attributed to the airport using professional judgment. These were researchers, they could not quantify what they thought was contributed from the airport to local air quality, but in their judgment they feel it is higher than five percent. It is highly dependent on wind direction and wind speed. Therefore, like any researcher, they are recommending additional study. A lot of folks were hoping that this particular study would answer a lot of their questions and while it answered a lot of them, it did not answer all of them. It just could not, there was not enough money, and we did not have the knowledge that this study itself provided. Therefore, we do need to look at more emission sources. We have to really study what is going on with the VOCs and the PM. Like I said, I was very interested in the DUV

results. I think it is a very promising tool each time it is used, it is improved, and we learn more. It is just one of those technologies that needs more study before it becomes practical. This was helpful particularly within the community to understand how both the airport and the roadways are influencing the air quality. For those of you who want more information, it is up on the web.

Dianne Brake

President, PlanSmart NJ

I am speaking on this panel to talk about land use issues in particular. One of the things that we have found over the years is if you can connect land use to many of New Jersey ills, and we have been looking at that, but because they are all connected to each other, we have also developed a reputation for looking for win/win solutions because we don't want to solve one problem and then cause other problems in other areas. Basically, the way we talk about land use and how it is connected to these issues is that center based development really is the only way to begin to address all of the issues. It is really connected to transportation. We had a federally funded study and we published the results. For central New Jersey between Trenton and New Brunswick we actually tracked that we could reduce the number of trips by almost sixty percent, at least the growth in trips and also the growth in vehicle miles traveled by as much as forty-three percent and the growth, of course, is because you are adding more people and more trips, but you could get significant results if you center development. So that has something to bring to the airport and ports discussion as well. We began to look at how we could bring these things without hurting all of other things. We take care of better outcomes on the ground from the economy, for the environment, for efficiency, reducing costs and resource consumption and regional equity, the social justice issues and the environmental justice issues. All of these things have to be touched on. We call the four E's as you look at those recommendations. How can you optimize results rather than to maximize any one in particular? We started by looking at the economy. So my first message to you is as you work to improve the environment that you do not kill this very important economic sector. Then we began to map these jobs. The middle of the state is where the jobs are concentrated today. This is, of course, where our major corridors are located. You can see that the jobs are moving west. Now, obviously you get huge increases if you didn't have very many jobs to start with, but we show it because this is where the jobs are moving on their way to Pennsylvania as we are finding out. So that is something very important and one of the things that we have developed in our smart growth economy project is something that I have mentioned to you are these calculations or where we try to say how can you take statewide goals and get to local land use decision-making. One of our first calculators was, in fact, a greenhouse gas emissions reduction calculator taking up at the top the Governor's target and then we look to how can we make a target for each county and then actually get local actions to meet that county level. So it is a way of taking a goal, quantifying it, distributing it so that everybody has equal part in making the answer. But it is this connection between policy to land use that we have been looking to strengthen. The growth areas are where we want new development to happen. We think this could be efficiently served. It could reduce our cost, it could save open land, it could make growth capacity for the economy, but as we put in regulations to try to solve specific problems, we have also put in impediments also to growth in those growth areas. People have told us about impediments that actually make it harder to grow in growth areas and that's one of the reasons they move to Greenfields. It is one of the reasons we have all the warehouses at Exit A where it is Greenfield development, easier than remediating the soils around the port to use for warehouses.

One of the other things that we began to look at is how should transportation fit into goals for small growth. It is reducing auto dependency or reducing truck dependency and you begin to look at how can we invest in transit and begin to make the land use so it makes that transit efficient. Now, as I understand it from my experience with some of the communities in central

Jersey who are looking to reduce the truck traffic and, we've heard from some of the CSX, the freight rail line that we could have as much as twenty-five percent of the containers moving by transit. Right now that level is about six percent. The transportation sector is a model for other important economic force for New Jersey and they come up with a plan of what they need for infrastructure investments, land use changes, highways and rail and other things. But I would say that you should recommend that twenty-five percent target at least in the short-term should be a goal for moving freight by transit rather than by truck. That would be a beginning start. But of course you really can't do that unless the land use is supportive. When you allow through zoning to have big box retailers everywhere, you are going to have trucks needing to go everywhere because the trucks need to be filled. So land use has a significant impact. Again, what I am trying to tell you that we have three particular messages today. First of all, is to worry about the economy in general and this particular sector in particular as you pursue clean air. Push the envelope of transit and you cannot do that without remembering not only the long haul for the CSXs of the world that travels across the country, but short haul and that is, again, a local land use decision-making process where so many of those short haul lines have become defunct because of a neighborhood that complained to a mayor who then decides that they can do without that short haul line. I do not think anybody really thinks about what impact that has. So remember those short haul lines are very significant to New Jersey economy for the last hundred years. It seems to me the decision to erase them has been fairly capricious. Third, to make sure we can have things like the great investment for the train station on the Northeast Corridor line to allow passengers to access the airport. Remember that they are not going to use that wonderful expensive facility unless they can get to the train station from their origin so they could take the train. That is a local land use issue and it is also the kind of emphasis on jitney services as well as these big investments in say the Art Tunnel. It is some of those localized issues that I think are relevant to our overall goal.

Frank McDonough, Esq.

President, New York Shipping Association

As you will recall when we met at the NYSA training center, I reported that my segment of the industry, the people I am representing here today, the port terminal operators and cargo vessels constitute only one percent of the emissions in the North Jersey air shed. A fact that had been established by the Port Authority through its consultants StarCrest. I also reported that as a result of the many improvements in equipment and terminal operations, we collectively had reduced emissions by a minimum of thirty to thirty-five percent in every measured category or forty-five percent across the board. As I understand it, the Port Authority is about to embark on Phase III and take yet another look at it to see how much we've done since then. Some of those improvements included switching to cleaner fuels, looking to electric powered equipment such as substituting electric cranes for diesel cranes, purchasing on road compliant equipment even though we don't fall under the regime, installing idle shutdowns on equipment, switching fuels in equipment and buildings, new lane systems and, more efficient gate systems. Since then we have implemented a number of other programs and stand on earlier initiatives. We hung up "no idling" signs. We also installed plug-ins in a number of areas in the port and I would love to work with the folks that got some more money in that area so we can get them just about everywhere in the port we need them. Right now we don't have enough. Some of you will recall that in the past we supported something called a port inland distribution network, PIDN, program. Unfortunately, it failed, but it failed for reasons not related to our discussion here today, but it was a great way to get the cargo off the road onto barges and run it up to Albany. So it was a result despite the fact that failed, we are working with Connecticut, Camden and other places to see if we can't re-establish some more barge runs. By the way, when we did that, we applied a lower rate to that cargo than all the other cargo that we handled at the time. So if you moved your cargo by barge instead of at that time paying a hundred and twenty-five dollars a box to NYSA for the privilege

of moving that through our port, you only paid twenty-one dollars a box. That was to encourage additional barge traffic. We also have been for years advocating the marine highway system which would take trucks off, put them on the water, move them down the canal and other places by water instead of by truck. Just an aside, we moved seventeen thousand containers a year by barge. I would rather use row-rows to do that, those are bigger ships, and then we can take the eighteen-wheelers, drive them around on a ship, and move them south. That is what I hope to see throughout marine highway system. Congress finally recognized just this last year so that means hopefully the next step we will get some money to do this. We have lobbied for funding for an electrified truck park system. One of our brother agencies, the Metro mechanics, has offered up twenty acres of land near the port. If we can electrify that, we can park those trucks there. We need a place to put those trucks while they are waiting to get in and out of our terminals. We created something called a port support zone and freight logistics zone program to get trucks out of the urban areas into the port area itself, have all of their activities take place in and around the port as opposed to spread out all over the place, and take advantage of portways, port fields and a lot of other problems that are out there.

We actually designed the Liberty Corridor Program, the initial program. One of our members got Senator Mendez to sponsor it and get funding from Congress. In addition, we want to utilize that program as a steppingstone to increase and improve those last mile projects in and out of the port and the rail projects. This past year fifty-seven million dollars was allocated to seven port related projects through the Liberty Corridor Program. Everybody knows that railroads are more efficient than trucks. We created a rail incentive to move cargo out of this port by rail versus truck. Therefore, if you bring a box through this port and you move it by rail to its customer, we will only charge you ten bucks. If you move it by truck, we charge you a hundred and ten bucks. As a result of that program, our rail movements are now twelve percent out of the port and going up. This first quarter they increased twenty-one percent. So it is having an impact and we are going to continue that program, as long as we can continue to pay the bills. We are currently projected to move more than three hundred fifty thousand boxes this year, but I think that number is going to go up substantially. Each rail car can carry twice the number of containers as a truck. If you take four hundred fifty-six forty-foot containers and put them on trucks, you will consume somewhere around six hundred and fifty barrels of oil. If you move that same quantity of cargo by rail, you cut that more than half. We negotiated new start times. The problem is you cannot create longer hours if the truck has no place to go. Therefore, we need to deal with the other end of that problem which is the warehouses and the distribution center. I do not think you need to be open 24 hours. We conducted our own analysis a couple years. We think we can just tack on a couple hours on either end of that working day and it will be extremely helpful. We lobbied NJDOT on the rail shuttle program to get some funding. Therefore, we can open up rail shuttles, for example, to Exit 8. There is a rail line there we can use somewhat like the one that runs to Raritan Center. That was an entrepreneur that put that together. I instituted a productivity training program. The faster you move the cargo off the ship, the sooner we get the ship out of here. My guys loved that so we instituted that a couple years ago and our efficiency is up by some thirty percent. Use of alternative fuels is another area we have looked at and we created a discussion agreement under the federal maritime commission which allows our terminal operators to talk to each other. You can't do that ordinarily because there are anti-trust issues. They created an environmental committee looking at the whole range of programs. Alternative fuels, fuel co-ops, new equipment, emission reduction options in addition to all the stuff that we have already done. The equipment we are using now has automatic shut-offs. We have instituted in the terminals a 10-minute time limit for idling. If the truck idles for ten minutes, you must shut it down, it's that simple. In the winter it is a little longer because the engines require a longer time to keep them warmed up. We have additional new on road appliance equipment, electric cranes, the automatic shut-offs, the plug in, and locomotive. We are testing LNG hustlers, the small

truck that hauls boxes. We have a train in our terminals. Instead of one truck per box, there are many cars that upon which a bunch of boxes can be loaded and pulled. We have fixed refrigerator receptacles instead of utilizing the generators that come with the refrigerators, plug them in. We are investigating a number of other emission options for carriers. We discussed a couple years a vessel reduction program. It fell by the wayside because we were already traveling slowly in the port. We were going to reduce speed to twelve knots but we were only going fourteen knots at most. There are some things that cannot travel twelve knots because they have a dead slow issue and, of course, we have a Kill van Kull which is one of the dangerous channels on the East Coast. We don't want to knock down that bridge. In any case, we are going to reopen that discussion because we have an opportunity to slow the vessels down from outside of Ambrose Light to the Verrazano Bridge. The average speed is actually only fourteen knots. Even if we decrease a couple knots off that, it may be helpful. The downside to is if the vessel is slowed, it is in the water longer and can contribute to air emissions. We are looking at alternative fuels at berth. We have done a couple studies, one was to determine the pollution cost of reduced port operations.

We recently analyzed our carbon footprint to give a baseline. EPA has established new emission standards for locomotives, marine engines other than ours. We think that is a good first step. Even more important is the second step that occurred last week; the IMO (International Maritime Organization) environmental committee adopted new standards for engines and fuels for all of our international vessels. We are hoping EPA buys into those standards. We have been pushing for EPA and folks on the West Coast and World Shipping Council (which is all the carriers) to get these standards in place. If EPA signs off on them, we hope the IMO will adopt them in October.

As the Governor said on more than one occasion the port is a major economic engine in New Jersey. We create more than twenty billion in economic activity. We support more than two hundred thirty thousand jobs. We deliver prosperity to our region's citizens. Today I saw an article in the Journal of Commerce; Port of LA and Long Beach that complex lost cargo last year. It wasn't much, but a hundred thousand boxes because that they are going to lose seventeen thousand eight hundred warehouse jobs. So that is how critical these operations are and I hope that you will take those into consideration when you make your recommendations because we live here too and we are as concerned about the environment as you all.

Public Speakers

Robert Belzer

President, New Jersey Coalition Against Aircraft Noise

I represent the New Jersey Coalition Against Aircraft Noise, a grass roots organization in the northern New Jersey area with the primary objective to reduce aircraft noise. We would like an emissions inventory with the current inventory projected five-year and also a projected ten-year inventory. Then the second part is to establish emissions caps at the airport and seaports. A number of emission reduction strategies were discussed today. The key question is are these strategies going to reduce the aggregate level of emissions at these facilities because as we all know, the Port Authority and the various industries and regulatory agencies that are running the airports and the seaports are actively engaged in increasing volume or capacity at these airports. I am assuming the port terminal facility as well.

The Port Authority is actively engrained in expanding airport capacity. They recently concluded a task force with seventy-seven recommendations. A week later the FAA concluded its New York aviation will make a committee task force with seventy-seven recommendations. These

recommendations are very clear that they are interested in expanding the capacity so with more volume are more emissions. One of the key issues I would like the CAC to address is do all these strategies that we heard about offset the increase in volume at these facilities? Recently, the FAA completed the New York airspace redesign project. They concluded that it is not going to increase capacity. We have numerous documents that suggest otherwise. They are very actively trying to increase capacity. The USEPA didn't buy the FAA conclusion and neither did we and both of these are in the public comments on the record here that they are actively engaged in increasing capacity and they are not taking appropriate mitigation measures to offset the increase in volume.

The last issue that I would like to bring up is the excess idling time. There is an excellent report out by the New York Comptroller's Office. Idling time in New York airport is twenty-nine minutes. The national average is sixteen. That is approximately eighty percent higher than the national average. It is up by five minutes since. What is driving this is the overuse of the facility; in other words, air carriers are over scheduling operations. FAA recently put in a cap at Newark that will go into effect next month of eighty-three operations per hour, which attempts to address the delay situation. I am not aware of the FAA looking at the idling situation. I would like the Clean Air Council to look at this issue. Will these eighty-three caps an hour reduce the idling time at the airport? In addition, what is a feasible idling time at the airport? The comptroller's report highlights the excessive volatile organic compounds that are a result of the excess idling time.

Carrie Sargeant
Environmental Director, Heart of Camden

The Heart of Camden is a non-profit community development corporation based in south of Camden City. Our community lies directly between both terminals of the South Jersey Port Corporation. To the north is the Beckett Street Terminal and on the south is the Broadway Street Terminal. The waterfront south is a recognized environmental justice community by the DEP. We are trying to make the neighborhood a healthy place to live and work. We would like to recognize the current work taking place, direct vehicles and equipment at the port made possible by funding by the DEP. In addition, we would like to acknowledge as they had mentioned earlier the cooperation of the board and the Heart of Camden in planting a landscaped berm that is a particulate matter catchment system in the area located between the industry and the neighborhood residents. We feel this type of collaboration between the port and the local community is something that is needed to move forward to green both the port and the local community. In Camden we are concerned about particulate matter which can trigger asthma impair lung development in children and cause cancer. There are four hundred trips per year visiting both terminals of South Jersey Port. We appreciate the DEP's support of federal regulations controlling port emissions, and we would like to see it continued.

We do not have numbers on emissions by the ships at the port. There was an air toxic project done for our community and in that project the emissions from the ships and from the port in general were not modeled so we do not have numbers on that. We do not know what an improvement would be so obtaining numbers would be good. We could determine where we are and where we can go. Our concern, however, is not simply over the port in our neighborhood, but with the ships at berth and operations on the Philadelphia side of the Delaware River. We would like to encourage the Council to recommend to the DEP to incorporate interstate collaboration to improve air quality at the port. We are directly across wind from Philadelphia. In our neighborhood, of one square mile and seventeen hundred residents, there are indications of significant impacts from diesel emissions. Aside from the port, we have a county sewerage treatment plant. We have a trash to steam incinerator. We have two EPA Superfund sites. We

have twenty-eight DEP known contaminated sites. So working with the port is just one issue that we are contending with. From the port alone and from other industries in that area over seventy thousand truck trips per year were generated by the port in industry containers and by Saint Lawrence cement. So that number might be different now since they put the crane at Saint Lawrence, but still the numbers would be high. The direct emissions from the truck traffic at the port were not modeled in air toxic study. The direct truck emissions are difficult to quantify, as I understand so that we would like to get a handle on that information. Perhaps the CAC could recommend DEP get a handle on that as well. Due to the segregation of the port terminals, there is truck traffic between the terminals that travels through the residential core of the neighborhood. There are problems with trucks waiting to get in to the terminal. Enforcement of the anti-idling regulations is a problem. We encourage exploring options to address truck traffic going into the port. Some options include establishing a staging area within the terminal, controlling vehicle idling or a mechanism for the port to enforce idling rules or regulating drivers entering the facility.

Wilbur McNeil

President, Weequahic Park Association

I am president of Weequahic Park Association, a grass roots organization. Our goal is to make Weequahic Park, which is a designed park, one of the best in the land. We are located near Newark Airport.

I have spoken before you on much of the same issues. My concern is the air quality in and around historic Weequahic Park in Newark, New Jersey. Weequahic Park is in proximity of the Newark International Liberty Airport so the problem of harmful air is magnified. We are looking for equity as the top of our goals. Is there anyone in the Clean Air Council who represents the Newark district? I asked the question the last time. When I come to these meetings, I rarely see any of the elected officials from Newark or the Newark vicinity. Air quality is critical for Newark. We have probably the worst air pollution in the state. I know they showed charts and they had Teterboro up here, they used comparison, and they didn't have a comparison from Newark. They had Elizabeth included. They are next door to each other.

The particulates emerging from the aircraft emissions have created a real nightmare for the residents of our community. How many suffer from emphysema and other respiratory illness? Tragically, the incidents of asthma among children are soaring. The airlines at Newark Airport continue to operate with impunity while poisoning the air. I am sure that Newark will be at the top of the list if any emissions testing is conducted.

Any kind of illness from infant mortality to AIDS, you will find that the people in our community are in the ninety-five percentile. So we need all those voices that have some kind of expertise in the area to speak up for the residents.

The airport has a license to kill; they are the James Bonds of our era. They take out more people in our community than traffic accidents and homicides combined. Homicides get a lot of play, but the emissions from those pollutants are killing more people. Newark Airport imposes an alarming rate of danger to human health; in particular the residents of Newark, all while enjoying tax exempted status. The Port Authority of New York and New Jersey amasses billions of dollars of revenue. Today, I heard a staggering figure of over twenty billion in revenues that come into the port. Perhaps one of the cruelest facts is that additional flights are planned at Newark Airport in the absence of any air quality concerns, without efforts to reduce air contamination which will blanket this area combined with the port traffic.

- Monitor and study air pollution in Newark.
- Sound proof the affected public schools and private homes in the flight pattern of the airport.
- Test Weequahic Lake for pollutants from jet fuel and vehicles from local highways.
- Install air quality monitors and noise meters in private dwellings and tall buildings in the area.
- Assess park vegetation damaged from jet fuel pollution. Test vegetation in Weequahic Park for impacts from jet fuel. Compare the results to a control area not affected by jet fuel (example: Sussex, Passaic, and Atlantic counties and the area of Essex County located west of the Park).
- Conduct research using backpack monitors on local grammar and high school students with asthma. Similar testing has been conducted in the state of New York.
- Test for decibel levels.
- Conduct open meetings regarding Brownfields development

The problem with the development on Greenfield or any other new development in Newark. They are planning to expand the Newark warehouses onto Brownfields. We were the anchor institution in the area. Time and time again developers come with plans and ask the community what they want. The last time we had community hearings, they came in with concept plans. We found out that they didn't do the air or water testing. However, the cruelest cut of all in that concept was putting in two basketball courts for the community next to the warehouse. That is all we do, we play basketball. But that's what happens time and time again. They bring in a community concept and they want to give the community funds to put their ideas on the table. They ask us what do you want and then they want to add onto what they have already planned. That is something that cannot work. The Weequahic Park Association that I represent has been designated by the City of Newark as an anchor institution both for the empowerment zone and enterprise zone, identified as an area that extends by the airports. During two meetings we didn't receive any funding for organizing those meetings. The city came in and they had paid somebody to organize it, but we hosted those meetings.

The concept plans were not acceptable to us because of the things I mentioned previously. The bottom line of what we would like is conducting an air study in our community. We'd like to have those public hearings on Brownfield development. We would like the public and schools and private homes to be soundproof. We would like those schools in the flight patterns of those areas soundproofed. We certainly know that the vegetation in our park has been damaged and that is not a scientific study. We can look at vegetation and trees and see that they have been affected by the contaminants coming from the fumes from jets that fly over our park. We would like an assessment of the damage done and you can make a comparison of the trees and the bushes in our area and then areas along. Money is needed to do those studies. We believe that the airport is part and parcel cause of the dying trees and the vegetation in our park. In New York, kids with asthma had backpack monitors. The kids were monitored over a time period. We would like that done in our community. As an anchor institution to two developments, the Weequahic Park Association accepts and is determined to fulfill the role as the monitor and advocate for our community.

Jeff Tittle

Chapter Director, New Jersey Sierra Club

We see the ports and the airport not only from an environmental perspective, but also as a major part of the economic engine that drives our state. There is not a conflict between the environment and economic growth for ports. Because there is a mismatch between how we manage our ports

and airport and how we deal with the environment and when we look at those communities that are directly around the ports and airports, citizens there for certain chemicals like benzene and toluene some of the other volatile organics are basically having their community levels that are not acceptable. Eighteen hundred times what is considered the safe health base standard for certain air toxins especially those two I just mentioned. There are tremendous problems with ground level ozone and particulates. There is a way to keep our ports going and growing at the same time using the economic vitality reports to help clean up our environments.

I know you heard a speaker earlier today talk about what is going on in Los Angeles. We have a full-time staff person with the ports of Los Angeles. Part of the vision task for when we started out was a lawsuit from the Sierra Club and the other groups because of the implications in the LA port area, not just air quality, but also environmental justice. California is moving forward, but it got prodded to do so. So I hope the CAC could help prod this administration and our Port Authority to move forward in a quicker and better way to help our ports. The off-loading of our containers and ships coming in and the truck traveling fifty miles down the Turnpike to Jamesburg or even further south to Washington Township. Then the containers get broken out to distribute and extend back north and other places from there. As this voyage takes place, the goods pass miles of Brownfields, which are underutilized sites closer to the ports or even next to the ports that cannot only be easier to drop off, but also serviced by rail. One of the biggest problems is that our distribution system is not connected to our ports. Another problem is the failure of the state and the region to look more reasonably the ocean terminal site in Bayonne. It would make sense for a container port; it is a deep-water port. The Bayonne Bridge will not need to be raised. The water is deep enough where we dredge it, you can bring in any size ship. The area is large enough that process can go from container to rail right there. A problem at Newark is the older channels and the warehouses are so close, it is almost impossible to go from container to rail. As a result, the goods are off loaded onto trucks and they travel down the Turnpike past plenty of other sites wasting fuel and creating air quality problems for the region.

We have to enforce the idling, provide electric hook-ups in the wintertime, use cleaner fuels and implement a safe and clean truck program. We also should look at rail alternatives. Warehouses should be closer to the port. There is a rail line that runs from Carteret and ends at New Brunswick. There has been discussion about widening the Turnpike for more trucks. The rail line can be extended to Jamesburg and even down to Washington Township. We can use the freight system and run electric versus dirty trucks.

At present, it is mostly jobbers coming in and out instead of having a rationale system through trucking firms to coordinate the trucks arriving in sync with the ship arrivals, which is not done now. That is why there is so many delays and pollution, people wait there for hours if not days. So better management of our ports would do a lot for air quality.

Better fuels not only for trucks, but also for vehicles that are off road would also improve air quality. We can use our ports and our warehouses. It is there as well to promote clean energy by doing green roofs and solar roofs to mitigate pollution problems from ports.

But we also have to think about the communities near the ports. We need to develop a system of mitigation and pollution offsets for the nearby communities that are getting the disproportionate impact of pollution. Things as simple as planting trees, installing buffers, conducting health studies, and assistance from health department to help those communities adapt or deal with the pollution. A better process is to develop strategies to lower the pollution overall. There are power plants in the same areas that could be switched from coal to natural gas to help lower overall pollution.

We shouldn't just look at the port by itself. We should look where can we get reduction so the ports grow and not put toxins in our communities. There are a tremendous amount of resources there and we need to try to tap into it. We are looking at restoring wetlands and buy open space.

A landfill would be a great place for a warehouse and distribution center. Conrail's main line is there as well as the Turnpike. So, again, I think we need to look at regional planning to improve make our ports that will improve air quality. There is a disconnect between what happens at the ports, in the port region and the rest of New Jersey. We need to keep our ports growing, but need to do it in a way that's green and deal with the pollution problems that come from it.

Background

NJ Seaports and Airports

I. New Jersey Seaports

A seaport is a city or harbor with access to water for transporting imported and exporting goods. New Jersey has two main areas of seaports: the ports in northern New Jersey managed by the Port Authority of New York and New Jersey (PANYNJ), and the Camden port managed by the South Jersey Port Corporation. The PANYNJ, a bi-state agency, promotes commerce and trade in the port region. It manages the operation of airports, air trains, tunnels, bridges, ferries, bus terminals and stations, as well as the operation of seven cargo terminals in the New York - New Jersey area.

In New Jersey the PANYNJ operates the Port Newark and Elizabeth-Port Authority Marine Terminal, these terminals work as one integrated marine terminal creating the largest group of maritime cargo handling facilities; Auto Marine Terminal handles vehicle imports and exports; and Global Marine Terminal is the closest container terminal in the harbor entrance. In New York the PANYNJ manages Howlan Hook Marine Terminal, Brooklyn Port Authority Marine Terminal and Red Hook Terminal (Port Authority of New York and New Jersey).

The PANYNJ has the largest cargo capacity of the ports in the eastern United States. It is the main center for bulk and breakbulk cargo.

The tenants in the South Jersey Port are:

- Del Monte Fresh Fruit (the largest port tenant and Del Monte's largest port in the world);
- St. Lawrence Cement (imports 300,000 tons of furnace slag yearly);
- Camden International Commodities Terminal (major cocoa bean import and distribution center);
- Camden Yards Steel (makes carbon steel plates, sheets, and coils);
- Camden Iron & Metal (recycles scrap metal, buys, processes and sells metals);
- Divers Academy International (underwater welding school); and

- Joseph Oat Corporation (fabricates metals used in construction) (South Jersey Port Corporation website).

A. Diesel Use in Support Operations

At marine terminals cargo ships are unloaded and the cargo cranes (some of which are still run by diesel power) usually transport imported cargo to trucks or railroad for transport to warehouses or distribution centers. In addition, at the marine terminals, cargo from regional business is loaded on to freighters to export around the globe. While at the dock, ships need power for their crew and loading equipment, so their diesel engines are often running. The crews at the dock use forklifts to move the cargo or containers onto trucks and trains (some are powered by diesel) (Jones, 2008, p. 4). Large amounts of diesel fuel are used in equipment at the ports.

B. Cargo Containers

Ports handle many types of cargo such as automobiles, liquid and dry bulk, and break bulk. General cargo is placed in steel boxes measured in 20-foot equivalent units, called containers or TEUs (American Association of Port Authorities). Port capacity for cargo is measured in TEUs. The largest ports in the United States are The PANYNJ, Los Angeles and Long Beach, California (McCue, 2006). Currently, the ratio of imports to exports is about 4 or 5; therefore there are many empty cargo containers that become "orphaned" at the ports. These orphaned containers are not effectively managed and often require local truck transport around the port area for stockpiling.

C. Port Newark and Elizabeth

Port Newark and Port Elizabeth in New Jersey are located where Newark Liberty International Airport (EWR), rail freight lines, the New Jersey Turnpike, and other heavily traveled roads intersect. Granted, this nexus provides opportunity for business, economic opportunities, and different forms of transportation, it is also accompanied by air, land, and water pollution which brings health and aesthetic problems for the area workers and residents (Caffee, 2008, p. 1).

The PANYNJ handled 5.3 million loaded and unloaded TEUs in 2007. The dollar value of this cargo was beyond \$166 billion. The 2007 TEU numbers are an increase of 4.2 percent from 2006 (The Port Authority of New York and New Jersey).

Chart 1

New Jersey Container Port Traffic 2007			
Port	TEUs	Boxes	Containerized Cargo (metric tons)
New York - New Jersey	5,299,105	3,099,644	32,817,498
Camden	Not available	Not available	258,311

(Source: American Association of Port Authorities. Available at <http://aapa.files.cms-plus.com/PDFs/North%5FAmerican%5FContainer%5FTraffic.pdf>)

From January through March 2008, the PANYNJ handled 597,161 Import TEUs and 397,801 Export TEUs totaling 994,962 TEUs (Port Authority of New York & New Jersey website).

The New Jersey marine terminals handled 2,611,608 containers in 2006 and 2,630,849 in 2007 (Port Authority of New York and New Jersey, 2007).

D. South Jersey Port Corporation

The South Jersey Port Corporation (SJPC) is a quasi-state agency that has the authority to build and operate marine terminals in seven southern counties in New Jersey. There is some cargo container business but it is predominantly a break-bulk and bulk port with 2 deepwater marine terminals in the City of Camden on the Delaware River, and a barge facility on the Salem River in the city of Salem. The SJPC is enlarging a port in Paulsboro. Two additional ports are being considered in East Greenwich Township and one in Deepwater (Jones, 2008, p. 2).

A 2002 economic study reported the SJPC, one of the largest employers in the Delaware River Valley, provided over 23,000 jobs and \$202 million annually in personal income. The port provided over \$161 million in business earnings annually, over \$13.5 million purchases in the area, and paid annual taxes close to \$21 million (South Jersey Port Corporation website).

E. Port Economics

1. Gross Domestic Product

International trade contributed 13 percent of the United States Gross Domestic Product (GDP) in 1970. In 2000, port activity contributed more than \$700 billion annually to the GDP. International trade accounted for 24.1 percent of the GDP or approximately \$3.2 trillion in 2003 (American Association of Port Authorities website).

In 2005, the United States had more than 16 percent of the import trade (ranking first in the world). That same year, the Country's export trade was second with 8.7 percent of the global export trade, with Germany ranking first (US Department of Transportation, 2007, P.1). In 2005, the United States accounted for 28 percent of the world GDP. That amount was an increase of 25 percent from 1995 (US Department of Transportation, 2007).

2. New Jersey Foreign Trade and Port Data

The ports in Newark, Elizabeth and Perth Amboy handles shipments totaling 70.8 million short tons (1 short ton = 2,000 lb.) of waterborne foreign trade in 2006. This was 4.7 percent of the United States total. The total value of New Jersey shipments handled equaled \$111 billion, which was 8.7 percent of the United States total. The unit value of New Jersey shipments handled were \$1,564 per short ton (1.86 times the US average) (US Census Bureau).

The 2007 annual total of export goods handled by New Jersey was 979,271 short tons of revenue freight. In 2007, NJ exported \$36.8 billion worth of goods. This amount is 3.2 percent of the US total (US Census Bureau).

3. New Jersey Airport Freight Data

In 2006 EWR handled 888,211 short tons of revenue freight, ranking ninth in the United States in the measure of Top 50 Domestic Airport Comparisons (Port Authority, 2006, p.51). In 2006 the annual total of revenue freight EWR handled was 979,271 short tons (Port Authority, 2006. p. 53).

4. United States Deepwater Ports Economic Impacts

Martin Associates (2007) conducted a study for the American Association of Port Authorities on the economic impacts of United States deepwater ports. They determined that in 2006 the domestic and international cargo processed at United States deepwater ports created economic impacts such as jobs, wages, economic activity, and taxes on the local, state and federal levels. Jobs from the port sector numbered 1,444,650. Wages and salaries were reported to be \$107.1 billion. Economic activity totaled \$97.5 billion. Taxes paid were \$35.0 billion.

II. Rail

A. Rail Freight Traffic

In 2006, The railroads carried 2,788 billion tonnes-kilometers (tonnes-kilometer is the performance of transporting one ton of cargo for a distance of one kilometer). In 2006, Rail freight traffic in the US grew by 3 percent from 2005 (United Nations Conference on Trade and Development, 2007).

B. The PATH

The Port Authority Trans-Hudson Corporation, a heavy rail transportation system, commonly referred to as PATH, is an affiliate of the PANYNJ. The PATH links Manhattan, nearby New Jersey cities and suburban railways. About 242,000 people ride the PATH each weekday. The annual number of passenger trips were 71.7 million in 2007. As the expected growth in the area's business, industry, and residents takes place, the ridership numbers are expected to increase (Port Authority of New York and New Jersey).

C. Air Trains

The PANYNJ also offers rail service, Air Train Newark, to transport passengers between the Newark Liberty Airport Train Station and the terminals at EWR. Passengers are able to ride the train to and from the airport because of the connection between the Air Train, New Jersey Transit commuter trains, and Amtrak regional trains. In addition, riders can travel to, auto rental agencies, hotels shuttles, airport parking areas and between airline terminals (Port Authority of New York and New Jersey).

The AirTrain JFK service, also managed by PANYNJ, is available for travel from John F. Kennedy International Airport to railroads, subways and buses in the New York City area.

III. Airports

A. PANYNJ Airports

Five airports make up the PANYNJ airport system: John F. Kennedy International, LaGuardia, and Stewart International in New York; and Teterboro and EWR in New Jersey.

EWR Airport had 36.3 million passengers in 2007, which was an increase of 2 percent from 2006 passenger numbers (The Port Authority of New York and New Jersey, 2007).

More than 24,000 people are employed at the airport. The airport provides approximately \$18.5 billion in economic activity for the New York/ New Jersey area. Included in this amount is more than \$6.7 billion in wages and salaries. Approximately 157,000 jobs have come from the airport and associated operations (Pohle, 2008).

Chart 2

Newark Liberty International Airport Traffic		
	2007	2006
Plane Movements	436,113	444,242
Passengers	36,367,240	35,691,887
Domestic	25,614,140	25,662,797
International	10,753,100	10,029,090
Cargo-tons	953,556	978,343

Source: The Port Authority of New York and New Jersey, 2007, p. 99. Available at: http://www.panynj.gov/AboutthePortAuthority/InvestorRelations/AnnualReport/pdfs/2007_Annual_Report.pdf

IV. Projected Growth

A. Seaport

The PANYNJ projects revenue in 2008 to be \$200 million based on estimates that 35.7 million metric tons of cargo will be processed at the seaports (Port Authority of New York and New Jersey website).

Officials at the port project the amount of cargo to increase by 5 percent per year over the next ten years. This 5 percent increase translates to an annual increase of 4.87 million cargo containers processed through the port (Malinconico, 2007).

The PANYNJ has planned \$2 billion in seaport investments over the next 10 years to enable the port to accommodate the expected growth. Expansion plans include adding 119 acres for redevelopment of new cargo container space and completing the ExpressRail on-dock rail system by 2011. ExpressRail will have capacity to move 1.5 million cargo containers each year via rail transport. ExpressRail use will remove about 2.5 million trucks from the roads (Port Authority of New York and New Jersey website. http://www.panynj.gov/budget_cap_plan/#).

V. Emissions Inventories

Seaport Emissions Inventories

Marine vessels, tug-and-tow operations, diesel-powered engines in boats, ships, and ground handling equipment, trucks, and trains contribute to exhaust emissions at the ports. According to USEPA, diesel emissions are a source of pollution, a likely human carcinogen, and a risk to human health. Diesel exhaust particles (often called particulate matter or PM) can be so small (less than 10, 2.5 or 1 micron in diameter) they can enter the small air sacs in lungs and cause health problems, such as lung damage and premature death (USEPA Health and Environment). They can also exacerbate asthma and bronchitis. People with a history of cardio and pulmonary problems, or asthma are the most sensitive to experiencing health effects from fine particles (EPA, Clean School Bus, USA). Diesel pollutants can contain carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile hydrocarbons, and polyaromatic hydrocarbons (PAHs) (Sharma, 2006, p.222-231).

Many ports pollute the areas surrounding them. Ports are often located near cities that already have high levels of air pollution and additional pollution places a burden on the residents. Almost 40 of the country's largest ports are in locations that do not meet EPA National Ambient Air Quality Standards. Fourteen of those ports are located in areas that do not meet EPA's standards for fine particulate matter (PM_{2.5}) (US Environmental Protection Agency, 2006).

Emission inventories can identify the amount of current emissions and aid in developing strategies for reducing air pollution (US Environmental Protection Agency, 2006). Starcrest Consulting Group, LLC, conducted a 2002 Emissions Summary for the Port of NY-NJ. Measurements for NO_x, VOC, CO, and PM-10 were included. The following charts show the emissions by county and all of New Jersey in tons per year (Chart 7A) and by county and all of New Jersey in tons per day (Chart 7B). To estimate emissions, the consultants used data from non-road powered equipment for cargo handling at container terminals, train emissions (related to container and automarine terminals), vehicles (both imported and exported), and vehicles for moving crews throughout the automarine terminals (Starcrest Consulting Group, LLC, 2003, p. 9).

Chart 3A

2002 NJ Port Emissions Summary by County and State, Tons per Year					
County	NO_x	VOC	CO	PM-10	PM-2.5
Essex	307.76	21.49	87.06	16.78	15.44
Hudson	129.09	10.51	54.19	7.70	7.08
Union	1,747.64	132.86	616.94	95.22	87.60
New Jersey	2,184.48	164.86	758.20	119.70	110.13

Source: Starcrest Consulting Group, LLC, 2003, p. 10.

Chart 3B

2002 NJ Port Emissions Summary by County and State, Tons per Day					
County	NOx	VOC	CO	PM-10	PM-2.5
Essex	0.84	0.06	0.24	0.05	0.04
Hudson	0.35	0.03	0.15	0.02	0.02
Union	4.79	0.36	1.69	0.26	0.24
New Jersey	5.98	0.45	2.08	0.33	0.30

Source: Starcrest Consulting Group, LLC, 2003, p. 10.

The following two tables, provided by the NJDEP are sources of diesel emissions for north and south New Jersey ports for 2002 and projected for 2009.

TABLE 1: 2002 & 2009 DIESEL SOURCE ANNUAL EMISSIONS TONSPERYEAR (TPY) FOR NORTH NEW JERSEY (NJ) PORTS						
EMISSION SOURCE	2002			2009		
	PM2.5	VOC	NOx	PM2.5	VOC	NOx
CONTAINER TERMINAL CARGO HANDLING EQUIPMENT	118	184	2315	106	159	2085
AUTOMARINE TERMINAL CAR TRANSPORTATION	0	1	1	0	1	1
PORT RAILROAD SWITCHING LOCOMOTIVES	2	4	106	4	8	193
NEWARK LIBERTY AIRPORT (EWR) Ground Support Equipment (GSE)	74	703	1938	54	334	1208
NEWARK LIBERTY AIRPORT (EWR) Landing & Takeoff Operations (LTO)	41	577	2361	49	616	2547
NEWARK LIBERTY AIRPORT (EWR) GSE & LTO	116	1280	4299	103	950	3755
ALL COMMERCIAL MARINE	235	224	6041	250	244	6173
OCEAN GOING VESSELS w ASSOCIATED TUGS & TOWS (ALL COMMERCIAL MARINE NOT INCLUDING CRUISE SHIPS, FERRIES, DREDGING, GOVERNMENT VESSELS & HARBOUR NAVIGATIONAL PROJECT (HNP))	172.4369	198.5215	4943.222	175.7956	210.2542	4806.929
ON & OFF-TERMINAL DRAYAGE TRUCKS TRANSIT	27	32	1103	42	50	1704
DRAYAGE TRUCKS IDLING	4	21	248	7	33	384
TOTAL DRAYAGE TRUCKS TRANSIT & IDLING	31	53	1352	49	83	2087
TOTAL MARINE & AIRPORT RELATED EMISSIONS FOR NORTH NJ	503	1747	14113	511	1445	14295
OCEAN GOING VESSELS w TUGS & TOWS & AIRPORT RELATED EMISSIONS FOR NORTH NJ	440	1721	13015	437	1411	12929

TABLE 2: 2002 & 2009 DIESEL SOURCE ANNUAL EMISSIONS TONSPERYEAR (TPY) FOR SOUTH NEW JERSEY (NJ) PORTS						
	2002			2009		
EMISSION SOURCE	PM2.5	VOC	NOx	PM2.5	VOC	NOx
CONTAINER TERMINAL CARGO HANDLING EQUIPMENT	NA	NA	NA	NA	NA	NA
AUTOMARINE TERMINAL CAR TRANSPORTATION	NA	NA	NA	NA	NA	NA
PORT RAILROAD SWITCHING LOCOMOTIVES	NA	NA	NA	NA	NA	NA
ALL COMMERCIAL MARINE	204	196	5209	218	212	5418
OCEAN GOING VESSELS w ASSOCIATED TUGS & TOWS (ALL COMMERCIAL MARINE NOT INCLUDING CRUISE SHIPS, FERRIES, DREDGING, GOVERNMENT VESSELS & HARBOUR NAVIGATIONAL PROJECT (HNP))	NA	NA	NA	NA	NA	NA
ON & OFF-TERMINAL DRAYAGE TRUCKS TRANSIT	NA	NA	NA	NA	NA	NA
DRAYAGE TRUCKS IDLING	NA	NA	NA	NA	NA	NA
TOTAL DRAYAGE TRUCKS TRANSIT & IDLING	NA	NA	NA	NA	NA	NA
TOTAL ALL COMMERCIAL MARINE & AIRPORT RELATED EMISSIONS FOR SOUTH NJ	204	196	5209	218	212	5418
NA: Not Available						

VI. Port Communities

In New Jersey the main communities surrounding the ports are the city of Newark next to the PANYNJ, and the city of Camden next to the South Jersey Port Corporation.

A. Newark

Newark is in Essex County in northeastern New Jersey. The ports are on Newark Bay. The estimated population for Newark in 2003 was 277,911. In 2000, the land area was 24 square miles with 11,495 people per square mile (MapStats webpage).

B. Camden

Camden is located in Camden County in southern New Jersey. The port is on the Delaware River. Camden's estimated population for 2003 was 80,089. In 2000, Camden's land area was 9 square miles with 9,057 people per square mile (MapStats webpage).

VII. Environmental Justice

Both Newark and Camden are considered Environmental Justice communities, meaning the residents experience a disproportionate amount of environmental problems.

A. Newark

Railroads are the boundaries of the Ironbound neighborhood in Newark. Within these boundaries are various facilities that pollute air: Essex County Solid Waste Incinerator burns approximately 2800 tons of waste each day and emits pollution; on ninety of the 125 streets pollution emitting facilities are located and more than 200 facilities store and use hazardous substances on site; and more than 45 major chemical and manufacturing plants are located in industrial areas within a one-half mile from public housing (Caffee, 2008).

In some neighborhoods, empty port containers have been stored in stacks 7 - 8 stories high, presenting quality of life and aesthetic problems. One neighborhood has been given the nickname of "Container City" (Caffee, 2007).

B. Camden

Although residents of Camden are concerned about ports in the area, they have expressed concern about ships berthing and operations across the Delaware River in Philadelphia. The Heart of Camden organization recommends that DEP incorporate interstate collaborative efforts to improve air quality at the ports so that efforts made to improve air quality at the ports are not ineffective (Sargeant, 2008).

The ports in Camden are located in two areas next to the Delaware River with residential areas between them. As a result, trucks traveling between the terminals go through residential areas. Recommendations to reduce truck emissions include installing a staging area within the terminal to control idling; creating a mechanism for the port to inform drivers accessing the port about idling rules and regulations; and enforcing no idling laws (Sargeant, 2008).

Roadmap to Restoration, by Vita Nuova, cited in a NJDEP report (2005) has indicated that 7,768 truck trips were made annually to the Broadway Terminal in Camden. In

addition, 77,019 truck trips per year were made by several businesses located in the port area (p. 21). Four hundred ships annually visit the Beckett and Broadway Terminals in the Port of Camden (NJDEP, 2005).

Facanha & Horvath (2007) explain in their article that geography is important when considering the quality of air and health. The neighborhoods surrounding ports and located near heavily traveled roads experience a large burden of an area's pollution (p.7142).

VIII. Health

A. Asthma

Asthma is a common chronic illness in the United States. For children, it is considered one of the most serious chronic illnesses. Diesel exhaust can exacerbate asthma. The rate of children hospitalized with asthma is higher than the rate for adults. Children under the age of 5 years have the highest rate of hospitalizations from asthma. A New Jersey Department of Health and Senior Services report (2003) provides hospitalization rates that have been averaged from 1994-1999 for children under age 5. The rate for Camden County is 565; Essex County is 1600 (per 100,000 New Jersey residents).

B. Other health issues

Particulates from diesel exhaust combining with SO₂ and NO_x have been linked to respiratory and cardiovascular illnesses, lung cancer, and premature death. Other health issues from exposure to diesel exhaust are hospitalizations, lost workdays and decreased activity days (Caffee, 2008). Noise pollution can be harmful to the cardiovascular system (Sharma, 2006).

IX. Actions to Improve the Ports Effects on the Environment

A. USEPA Clean Ports USA

The USEPA Clean Ports USA was developed to reduce pollution emitted from diesel engines and non-road vehicles at the ports. Because USEPA regulations are only for new diesel engines, this program aims to decrease emissions from old engines operated at ports, by offering assistance, grants and incentives to port and fleet managers. Some diesel engines can operate up to 30 years, therefore Clean Ports USA is targeting the particulates, sulfur oxides and nitrogen oxides emitted from these older engines (USEPA Clean Ports USA).

B. San Pedro Port

The Port at San Pedro, California has introduced a heavy-duty electric short-haul truck. The truck has power to move a 60,000-pound cargo container, operate at 40 mph, and travel 30 - 60 miles with each charge of its battery (Port of Los Angeles, May 16, 2008). In addition, the port's award-winning Clean Air Action Program (CAAP) has developed goals to reduce emissions from vehicles and vessels used at the port of Los Angeles and Long Beach (Port of Los Angeles, May 29, 2008).

C. Camden Port

In May 2008, in New Jersey, environmental group representatives and southern New Jersey / Philadelphia port officials met to start the Green Port Initiative. The

representatives will advise how to green the ports. Future agenda topics will include alternate fuel vehicles, solar and wind energy, logistics, green buildings and traffic control (Carola, 2008).

X. Challenges

Ports create economic, health and environmental challenges for people connected to ports through business or residence. The ports influence, either detrimentally or beneficially, port employees, nearby residents, business and industry, levels of government, consumers, and manufacturers.

As trade increases the number of containers in port areas will also increase and affect nearby communities and residents by bringing an increased number of ships, trucks, and railroads in and around the port area, creating more pollution (US Department of Transportation, 2007).

A. International Maritime Organization (IMO)

The IMO is an organization charged with "for creating the international regulatory framework for safety, security and efficiency of international shipping for the protection of the marine environment from ships" (Mitropoulos).

IMO anti-pollution rules have been considered weak. Because foreign flag ships are under the IMO regulations, and USEPA rules do not apply to these ships, foreign flag ships traveling in United States waters contribute to the county's air pollution. In April 2008, the IMO Marine Environment Protection Committee made a proposal similar to one made by the US to regulate air pollution; however, IMO's implementation date is delayed to 2015, much later than the US date. The IMO may take action on this proposal in October 2008 (Greenwald 2008).

B. Need to Manage Massive Growth Over Next 5 Years But Can Not Stifle Economy

It has been projected a large rate of growth will occur in port commerce over the next few years. Some experts in world trade predict the United States import numbers will double in the next decade (Ferrulli, 2008). Many ports will need to expand to accommodate this growth, and care must be taken to assure that their expansion will not compromise air quality. Strategies need to be developed to reduce pollution but no reduce economic opportunities. There will be competing interests in commerce, health and environmental protection; managing them will be a challenge.

C. Port Trucking System

Some truck drivers are not independent owner-operators so they are responsible for their own business costs. Under this setup they do not have the ability to set their rates. These drivers are paid by the load rather than by the hour. Therefore, because they are not paid for their time there is no incentive for them to improve their wait times at the port. Drivers are exposed to diesel emissions from trucks idling during waiting periods. They do not have good health care benefits, if they become ill, health care may not be affordable or available.

Since many drivers do not make a large salary and can not afford new trucks, they drive older, more highly polluting trucks. To keep pace with truck payments, rising costs of fuel and other expenses, many drivers accept port work at lower rates (Montorio, 2008).

Recommendations have been made for the truck-hiring companies to take responsibility for their workers, provide better salaries, improve benefits, and work to develop an efficient and a safe loading/unloading system.

D. Competition from other States and Ports

Trade is growing and United States ports need to meet the increasing demand to deliver and receive goods. North American ports are spending an average of over \$2 billion annually on cargo handling equipment, dredging to increase depth of waterways, computer products for managing traffic, and expanding capacity (McCue 2006). These ports include Virginia's Norfolk port, the Georgia port of Savannah and Baltimore Port in Maryland. The best natural deep harbor belongs to Virginia. Because of this, the largest container ship can enter the Port of Norfolk without impediment. Norfolk Port has developed facilities to link their docks to rail facilities, creating the largest intermodal location in the east (Bernstein, 2008). The link draws businesses who want to ship and sell their products to inland customers (Malinconico, 2008).

The Port of Savannah's harbor expansion project will deepen the harbor by 48 feet, speed up truck and rail transportation, and increase terminal capacity to build unit container trains. Their goal is to increase capacity from 2.37 million TEUs in 2007 to 6.5 million TEUs in 10 years (Bernstein, 2008).

Although the Baltimore Port has a channel that can handle large ships, they do not have the ability to unload these ships. To correct that, the port is planning a facility for handling the large container ships (Bernstein 2008).

E. Improve Ports' Infrastructure

Ports need to make investments in their infrastructure to support expanding facilities and land/water operations; to handle increased trade from businesses; and strengthen environment protection. Some of the infrastructure items include:

1. **On-dock rail yards** for transporting goods directly from docks to distribution centers, without the need to travel part of the trip via truck. This decreases traffic and congestion at the ports and highways.
2. **Buffer zones** can be created by installing berms or other structures to separate the ports from local neighborhoods. Trees have been planted on berms to reduce noise and filter pollutants.
3. **Electrification** is used to allow cargo handling equipment (such as cranes) to run on electricity as an alternative to diesel fuel. Truck parks located near the ports will eliminate the need to idle heat truck cabs and operate refrigerated units. Use of cold ironing when ships in

port plug into on-shore electric power will allow the ships to shut off their big diesel engines.

F. Linked Issues

The ports offer significant economic benefits to the state and the areas located near the ports; however, environmental and social problems accompany the benefits. These problems include air emissions, energy and land use, noise, and traffic. The challenge in moving the large number of containers requires efficient, safe and secure cargo transportation, improving air quality, decreasing noise, and alleviating traffic jams at the crossroads of trucks and trains at seaport terminals (US Department of Transportation, 2007; Facanha & Horvath, 2007).

Ports activities affect the surrounding environment, neighborhoods and residents. Action is needed to improve efficiency and environmental operations at the ports; however, the cost-effectiveness of these actions for ports must also be considered. The many port issues are linked. A holistic approach should be considered when developing strategies and recommendations for improving ports and neighboring areas.

Glossary

CAC	Clean Air Council
CO	Carbon Monoxide
EWR	Newark Liberty International Airport
GDP	Gross Domestic Product
IMO	International Maritime Organization
NJDEP	New Jersey Department of Environmental Protection
NO _x	Nitrogen Oxides
PAH	Polycyclic Aromatic Hydrocarbon
PANYNJ	Port Authority of New York and New Jersey
PATH	Port Authority Trans-Hudson
PM	Particulate Matter
SJPC	South Jersey Port Corporation
SO _x	Sulfur Oxides
TEU	Twenty-foot equivalent units
VOC	Volatile Organic Compounds
USEPA	United States Environmental Protection Agency

Clean Air Council Public Hearing History

2007	Improving Air Quality through Energy Efficiency and Conservation: The Power of Government Policy and an Educated Public
2006	Indoor Air Quality
2005	Air Pollution—Effects on Public Health, Health Care Costs, and Health Insurance Costs
2004	Fine Particulate Matter in the Atmosphere <ul style="list-style-type: none">• Health Impacts in NJ• Need for Control Measures
2003	Moving Transportation in the Right Direction
2002	Innovative Solutions for Clean Air
2001	Air Quality Needs Beyond 2000
2000	Air Toxics in New Jersey
1999	The Impact of Electric Utility Deregulation on New Jersey's Environment
1998	CLEAN AIR Complying with the Clean Air Act: Status, Problems, Impacts, and Strategies
1997	Particulate Matter: The proposed Standard and How it May Affect NJ
1996	Clearing the Air Communicating with the Public
1995	Strategies for Meeting Clean Air Goals
1994	Air Pollution in NJ: State Appropriations vs. Fees & Fines
1993	Enhanced Automobile Inspection and Maintenance Procedures
1992	Impact on the Public of the New Clean Air Act Requirements
1991	Air Pollution Emergencies
1990	Trucks, Buses, and Cars: Emissions and Inspections

1989	Risk Assessment - The Future of Environmental Quality
1988	The Waste Crisis, Disposal Without Air Pollution
1987	Ozone: New Jersey's Health Dilemma
1986	Indoor Air Pollution
1985	Fifteen Years of Air Pollution Control in NJ: Unanswered Questions
1984	The Effects of Resource Recovery on Air Quality
1983	The Effects of Acid Rain in NJ
1981	How Can NJ Stimulate Car and Van Pooling to Improve Air Quality
1980	(October) Ride Sharing, Car – and Van-Pooling
1979	What Are the Roles of Municipal, County, and Regional Agencies in the New Jersey Air Pollution Program?
1978	How Can NJ meet its Energy Needs While Attaining and Maintaining Air Quality Standards
1977	How Can NJ Grow While Attaining and Maintaining Air Quality Standards?
1976	Should NJ Change its Air Pollution Regulations?
1974	Photochemical Oxidants
1973	Clean Air and Transportation Alternatives to the Automobile and Will the Environmental Impact Statement Serve to Improve Air Quality in NJ?
1972	The Environmental Impact on Air Pollution: The Relationship between Air Quality, Public Health, and Economic Growth in NJ
1971	How Citizens of NJ Can Fight Air Pollution Most Effectively with Recommendations for Action
1970	Status of Air Pollution From Mobile Sources with Recommendations for Further Action

1969 Status of Air Pollution Control in NJ, with Recommendations for Further Actions

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