January 25, 2010 7:30 p.m.
Township Administration Building

The regular meeting of the Environmental Advisory Council (EAC) was held tonight. Voting members present were: Daryl Carrington, Mary Beth Carroll, Bridget Chadwick, Barbara Duffy, Bill Mettler, David McVeigh Schultz, Miriam Moss and Lorna Rosenberg. Also present were: Dottie Baumgarten, Bob De Maria, John Frey, Judith Gratz, Bob Hamburg, Bonnie Hamburg, Paul Iverson, Olga McHugh, Tom McHugh and Jeff Olawski. Staff present was: Bryan T. Havir, Assistant Township Manager.

1. Call to Order - Ms. Duffy called the meeting to order at 7:30 p.m.

2. Acceptance of Meeting Minutes – Mr. Mettler requested that under the Energy Committee report on page 5 that it be amended to reflect that the Transition Town meeting on Permaculture was held on November 19, 2009 at Arcadia University. Under Building Committee, Item(C.) Ms. Rosenberg asked to have the word "program" changed to "charette". And under Transportation Committee, paragraph 2, Rydal Train Station should be changed to Noble Train Station. A motion was made by Mr. Mettler to approve the December 21, 2009 Meeting Minutes as amended; seconded by Mr. Schultz.

3. Committee Reports were as follows:

A. *Energy Committee* – 1) Mr. Mettler reported on Mr. Bale's behalf that Mr. Bale followed up with the issues concerning OPower, formerly Positive Energy USA and attempted to communicate directly with Mr. Cauley of the Public Utility Commission (PUC) and Mr. O'Brien of PECO Energy concerning household energy conservation. Mr. Mettler said Mr. Bale spoke with Mr. Michael Sachse Sr., Director of Regulatory Affairs & General Counsel of OPower and it was his understanding that Con Edison and PECO work completely separate from each other. Con Edison found the incentive plan to be very good.

PECO's informal response was the use of OPower, while it looked good, it probably will not work. He is thinking he reached a dead end with trying to convince PECO to allow Cheltenham Township to be a test case for using OPower. Mr. Mettler explained the plan involves neighborhood comparisons of electric usage shown on utility bills in order to modify human behavior to reduce energy consumption. Ms. Rosenberg said Ms. Ryan previously stated that Positive Energy was tried out by Exelon elsewhere and would trickle down to PECO. Exelon reported excellent results in Chicago. Mr. Mettler said it could be effective in Cheltenham Township.

2) Community Gardens: Mr. Mettler talked about how much energy it takes to produce food for human consumption. A community garden concept will allow for food to be grown locally for consumption without having to expend a lot of energy for transportation to grocery stores. He noted that Temple University has allowed the citizens of Philadelphia and LaMott the use of small plots of ground on about one acre of land the University owns in the LaMott neighborhood for gardens for the last eighty (80) years. The property is now for sale. There are rumors of a development of houses in that area according to Mr. Mettler. There is a movement in LaMott to appeal to Temple University to donate the gardens to the community. Following a discussion about the gardens on the Temple University property, as well as the gardens located on the West Oak Lane Church of God property on Ashbourne Road, Mr. De Maria said Penn State Extension Service in Abington may be interested in the property and may help in an advocacy role. Mr. Mettler made a motion to recommend to the Public Works Committee that the Township send a letter of support or authorize a resolution supporting that the community garden use be retained and that Temple University be encouraged to donate of the property to a community

garden group or a separate 501c3 non-profit entity. The motion was seconded by Mr. Carrington and unanimously approved.

3) Mr. Mettler said a public meeting will be held on February 25, 2010 at St. Paul's Church at Mt. Carmel and Easton Road, regarding energy efficiency awareness and weatherization. Mr. Mettler also stated that every fourth Thursday of the month, there would be sustainability awareness raising events and he will send out information.

B. *Watershed Committee* – Ms. Duffy reported that the subcommittee finished the landscape ordinance for native species. The committee also worked on the riparian corridor conservation ordinance using the Montgomery County model with the technical assistance from Ms. Mazzaccaro. Discussion ensued about the width of the riparian buffers on residential properties that back up to the creek. Ms. Duffy mentioned a two-tier approach with a sliding scale or a varying buffer width for properties already built upon and proposed a greater buffer width regulation for undeveloped lands. There was some concern expressed about the need for potential variances and the cost to file an appeal to the Zoning Hearing Board being burdensome to the homeowner. It was suggested that the Tookany/Tacony-Frankford Watershed Partnership (TTFWP) provide on-going education to residents who live along creeks.

Ms. Duffy reported that the Earth Day Festival is scheduled for April 25; however, the venue and format might change from last year. She noted the new stormwater management regulations may be a focus of this year's festival. Ms. Duffy asked members to contact her regarding projects and community groups for the April 17-18 Earth Day Clean-Up activities. She noted that Arcadia University students have already inquired about projects.

Ms. Duffy said that representatives of TTFWP, Mr. Havir, Ms. Steffan and she met with SEPTA recently regarding forming a working relationship with SEPTA on addressing concerns on future capital projects such as track maintenance and cutting of vegetation on the banks of the rail lines. SEPTA is also proposing improvements to the Washington Lane Station near Aubrey Arboretum and will partner with the TTFWP on a demonstration project on the site. TTFWP did stress its concerns to any potential channeling of the Tookany Creek adjacent to the Jenkintown Wyncote Station Improvement Project.

Ms. Duffy reported the stream naming project has been postponed until September. The Montgomery County Planning Commission has a GIS specialist who might work with the EAC.

Ms. Rosenberg mentioned that a congregant of Adath Jeshurun was concerned about the health of the creek at Leech's Run and asked Ms. Duffy if the creek was in jeopardy. Ms. Duffy stated that it is in need of serious protection and was assessed in 2003 and targeted for future riparian buffer. It is channeled upstream and has a lot of covered banks eroding. Ms. Rosenberg asked, other than riparian buffer, is there anything else that can be done? Ms. Duffy stated she would coordinate a site visit of the area.

C. *Transportation Committee* – Ms. Chadwick would like to recommend another committee chairperson which will be decided at the February meeting. Ms. Chadwick has been to two recent SEPTA Board Meetings and reported on the meetings.

Ms. Chadwick suggested a way to promote the bus routes was to place bus schedules of the routes at the various train stations. She also suggested making sure there were links on the Township website for bus schedules and lines. An increase usage of bus service would help alleviate the need for parking lots, and pedestrian access to the bus stops needs to be improved. Ms. Chadwick noted that on Easton Road near Cedarbrook Plaza,

there is a sign for the bus routes 22 & 77 but no crosswalks. She suggested that a letter should be written to PennDOT asking for crosswalks. Ms. Chadwick also noted that the shelters and benches for the Route 17 & 18 buses, located in front of Walmart and Modell's is not planned properly in her opinion. Discussion ensued about future coordination with the bus shelter company and SEPTA.

Mrs. McHugh also mentioned that there is no pedestrian crossing on Rices Mill Road & Glenside Avenue and suggested one be considered. Ms. Chadwick further remarked on pedestrian concerns near the Holy Sepulchre entrance across from the Towers at Wyncote because of a lack of shelter and no lighting. Discussion of the Cheltenham Transit Bus ensued and Ms. Chadwick offered her comments as a resident who observed the transit bus as having very little ridership from the few times she used the service.

D. *Buildings.* Ms. Rosenberg stated that two short videos were completed concerning energy conservation and efficiency and have been placed on Channel 42 by Mr. Volpe. If the EAC wants to develop more videos from the remaining footage, then additional funding is needed. Ms. Rosenberg mentioned educational grants could be written to help fund the video project. The committee will review and bring back a cost proposal. Mr. Havir suggested that the EAC committee should review the videos before they are aired publically.

Mr. Schultz and Ms. Rosenberg met with the Township Engineer regarding the International Energy Conservation Code (IECC) for 2009 on January 6, 2010 and distributed a list of action items from that meeting (see attached) which were reviewed by the EAC. Ms. Rosenberg discussed drafting a letter concerning energy efficiency design for the Ashbourne Country Club development as well as having the EAC co-sponsor educational workshops with other Townships. Ms. Moss motioned to endorse the idea of

the Township co-hosting educational workshops, seconded by Ms. Carroll, and unanimously approved.

Ms. Rosenberg reported that Mr. Bavi will be invited to the EAC's March meeting along with the School District's Engineer for a presentation and discussion on the Glenside Elementary School Reconstruction project. Ms. Rosenberg agreed to facilitate the invitations.

Ms. Rosenberg reported on a meeting held at her home for School District representatives and personnel on January 7, 2010 about enhancing the recycling program within the Cheltenham Township School District. Ms. Rosenberg reports that Dr. Keifer agreed to place more recycling bins in the schools and that the district is working on contract changes with Waste Management to install outdoor recycling containers at every school. It was suggested that the district's changes to its recycling program coincide with Earth Day. Ms. Moss suggested that the School District Administration review its contract with Waste Management to ensure compliance. She noted that Arcadia University contracts with Allied Waste Company to collect its recycling.

Mr. Schultz reported that he will be meeting with the Downtown Glenside Merchants' Association at its regular meeting of March 3, 2010 regarding energy conservation.

E. *Communication Committee* – Ms. Carroll reported that the EAC constant contact e-mail account was absorbed by the Township contract and the EAC will no longer be charged separately for e-mail blasts.

4. Old Business:

Mr. Havir reported that the Energy Efficiency and Conservation Block Grant (EECBG) quarterly report was filed on January 10, 2010 with federal reporting.gov. The $147,400 in grant funds was deposited to the interest bearing account. Before bids can be let, contractors

have to be pre-qualified. DVRPC is compiling a list of recommended contractors to submit to the federal government for pre-qualification. It is expected that Requests For Proposal will go out sometime in February-March, 2010 to hire a consultant. Bids to be received in mid-summer to fall. The grant will help pay for a new boiler, lighting upgrades and automatic controls for the heating system at the Rowland Community Center.

5. New Business -

A. Mr. Havir announced that the Township met with PECO representatives who have begun their five year vegetation management program. They will be working on overhead lines. Notifications have been sent out. Elkins Park should be completed within the next six months. All of the information is on the Township website. Discussion ensued about tree take downs. The Township has no ordinance to protect tree removals on private property, if in fact; the homeowner removes all the trees on private property.

B. Mr. Havir announced that the 5-Star Restoration Grant Application is due April 1, 2010. The matter was referred the Watershed Committee for a recommendation.

C. Mr. Havir stated that he asked Suzanne Ryan to make a presentation on the PECO Residential, Commercial and Municipal Rebate Programs offered via Act 129 Plan at the EAC's February 22, 2010 meeting.

D. Mr. Havir stated that the Township is looking at ways to cut energy costs in deregulated energy markets. The Township is looking at bulk purchasing of electric generation and transmission charges through the Municipal Utility Alliance via the PA League of Cities and Municipalities. The Township Administration suggested that the EAC may want to have one of its committees review the concept and provide a recommendation. The matter was referred to Messrs. Mettler and Schultz.

E. Mr. Havir circulated information of House Bill 221 introduced by State Representative Curry regarding banning toxins from plastics in baby products. Following discussion, Ms. Carroll recommended that the Township submit a letter of support to State Rep. Curry for his proposed House Bill 221, seconded by Mr. Schultz and unanimously approved. A copy of House Bill No. 221 is attached.

F. Jenkintown-Wyncote Train Station Parking Garage – Mr. McHugh recapped the progress on the R8 study as recommended by the Public Works Committee and Board of Commissioners.

Mr. McHugh commented on the recent SEPTA Meeting held on January 13, 2010 at Curtis Hall. He also referred to a handout from the U.S. Department of Transportation Federal Transit Administration, Public Transportation's Role in responding to Climate Change and noted on page 2 that if just one driver switched from driving to taking the train, it reduces the carbon footprint five times more than converting to 20 cfl's. (see attached report)

The Cheltenham Chamber of Citizens (CCC) asked the EAC to support a petition sent to Ms. Letitia Thompson, Regional Administrator for the U. S. Department of Transportation encouraging the Federal Transportation Administration to require a complete Environmental Impact Statement (EIS) be performed for the Jenkintown-Wyncote Station Improvement Project rather than an Environmental Assessment (EA) which is what SEPTA is proposing. Mr. Carrington volunteered to draft a letter of support and advocacy and forward to Mr. Havir. (see attached) Mr. Havir suggested that an EAC representative may want to be present at the Public Works Committee Meeting to discuss the recommendation with the Committee.

A motion was made by Ms. Carroll and seconded by Mr. Carrington, to recommend to the Public Works Committee that the Township encourage SEPTA to include the Township and the EAC as parties of interest for the Jenkintown-Wyncote station improvement project. Mr. Carrington suggested drafting a second letter to SEPTA regarding the EAC's position statement to provide clarification from the June 2009 letter. The EAC concurred and asked Mr. Carrington to proceed. (see attached)

6. Other Business - Mr. De Maria briefly discussed his idea on a new project involving growing lavender plants. Ms. Duffy also noted that on behalf of the EAC members, she will review again Mr. De Maria's issues noted in his white paper and e-mail to him an explanation of the EAC's position on each point in his paper.

7. The meeting was adjourned at 10:35 p.m. The next meeting is scheduled for February 22, 2010, at the Wall Museum Carriage House.

David G. Kraynik,
Township Manager

Submitted by:
Kathryn McDevitt

MEETING ATTENDANCE

Environmental Advisory Council

Monday, January 25, 2010 @ 7:30 P.M.

Carriage House at Wall Park
One Wall Park, Elkins Park, PA 19027

(Please Print Clearly)

Name	E-mail or Other Contact Info, if desired	Member (Y/N)
David McHugh-Schultz	davids@delawareriverkeeper.org	Y
Bob DeMaria V	DEMARIA@VERIZON.NET	
BONNIE HA	BELH@VERIZON.NET	
Dottie Baumgarten	dottiebaumgarten@gmail.com	N
Paul Iverson	piverson@r8newtown.com	n
Jon Frey	JFREY@R8NEWTOWN.com	N
Tom McHugh	tom.mchugh@monitordata.com	
Olga McHugh	olga.McHugh@gmail.com	N
Judith Gratz	judithgratz@gmail.com	N
Jeff Qawski	~~Jeffrey~~: jao913@verizon.net	
BOB HAMBURG	bha.normaLOUIS7@gmail.com	N
Please add to email notification list! This is my 3rd attempt & I received nothing.		
Bridget Chadwick	chadwick@voicenet.com	Y
DARYL CARRINGTON		
BILL METTLER		
MIRIAM MOSS		
LORNA ROSENBURG		
BARBARA DUFFY		
MARY BETH CARROLL		

Action items from:

January 6, 2010

Meeting with David Lynch, Abby Spector of the Cheltenham Township Engineering and Building Office with David Schultz and Lorna Rosenberg

- Information Kiosk for Township Engineer. – gather appropriate information for residences and business about energy and water efficiency, construction waste management, green materials, rebates and tax credits, stormwater management, etc.
  - Township will provide a display rack and Lorna and David will collect appropriate materials

- Lorna and David will work with Nancy Gibson to include the same information for a possible page on the Township Website

- Mr. Lynch asked if the EAC would write a letter to the Supervisors regarding the Ashbourne Country Club- Matrix Development asking for the buildings and residences to be LEED or at least ENERGY STAR certified and that all stormwater management happen on site using infiltration beds and with no detention ponds

- Lorna will provide Mr. Lynch with information on the long term effectiveness and maintenance of stormwater BMP like bioswales and raingardens and pervious pavement

- Township has one inspector who is certified in the IECC (International Energy Conservation Code) and is using this knowledge when working with residences and business.

- Mr. Lynch also asked if the EAC could hold a workshop for contractors (perhaps in the Spring) w/ Abington, Rockledge and Jenkintown regarding new building codes and policies on energy, stormwater management, construction etc. from the various communities.

- Mr. Lynch expressed interest in helping develop and promote an event of this type. David agreed contact fellow EAC leaders from neighboring townships to survey their interest in promoting this kind of event prior to our next meeting.

- Mr. Lynch will enforce the 2009 EICC building code, according to state law, on any housing construction projects where the design contract is signed after December 31, 2009. However, construction projects that have conceptual design contracts signed before that date, and are not yet zoned residential, will also have to meet the 2009 code requirements.

- Mr. Lynch expects to direct building inspections department to contract out for duct blaster testing services when they are required to meet the 2009 EICC code requirements. He asked David to provide him a list of persons that are certified HERS or BPI auditors that have been trained to conduct these tests. David agreed to provide that by our next meeting.

- Abbe Spector will be attending a Construction Code Academy workshop on enforcing the 2009 EICC Energy Efficiency Codes over the next month. We ask that he share some of the perspective he gained there at our next meeting.

- We will schedule another meeting of our group of 4 to further discuss these topics in a month or more.

PRINTER'S NO. 226

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE BILL

No. 221 Session of 2009

INTRODUCED BY CURRY, BELFANTI, BEYER, BRENNAN, CALTAGIRONE, COHEN, CREIGHTON, CRUZ, FRANKEL, GOODMAN, JOSEPHS, KORTZ, MAHONEY, MANN, McILVAINE SMITH, MELIO, MUNDY, M. O'BRIEN, PETRARCA, PRESTON, RAPP, SIPTROTH, STURLA, SWANGER, THOMAS, WALKO, WANSACZ AND YOUNGBLOOD, FEBRUARY 3, 2009

REFERRED TO COMMITTEE ON CONSUMER AFFAIRS, FEBRUARY 3, 2009

AN ACT

Amending the act of December 17, 1968 (P.L.1224, No.387), entitled "An act prohibiting unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce, giving the Attorney General and District Attorneys certain powers and duties and providing penalties," providing for toxin-free toddler and baby products.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. The act of December 17, 1968 (P.L.1224, No.387), known as the Unfair Trade Practices and Consumer Protection Law, reenacted and amended November 24, 1976 (P.L.1166, No.260), is amended by adding a section to read:

Section 9.4. Toxin-Free Toddler and Baby Products.--(a) (1) No person or entity shall manufacture, sell or distribute any toy or child-care article that contains di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP) or benzyl butyl phthalate (BBP) in concentrations exceeding 0.1 per cent.

(2) No person or entity shall manufacture, sell or distribute any toy or child-care article intended for use by a

child under three years of age if that product can be placed in the child's mouth and contains diisononyl phthalate (DINP), diisodecyl phthalate (DIDP) or di-n-octyl phthalate (DnOp) in concentrations exceeding 0.1 per cent.

(3) No person or entity shall manufacture, sell or distribute any bottle, cup or other container that contains bisphenol A at a level above 0.1 parts per billion (ppb) if the container is designed or intended to be filled with any liquid, food or beverage primarily for consumption from that container by infants or children three years of age or younger.

(4) The provisions in clause (3) shall not apply to food and beverage containers designed or intended primarily to contain liquid, food or beverages for consumption by the general population.

(5) The provisions in clause (3) shall not apply to any liquid, food or beverage in a can or jar that contains bisphenol A.

(b) (1) Manufacturers shall use the least toxic alternative when replacing bisphenol A in containers and when replacing phthalates in accordance with this section.

(2) Manufacturers shall not replace bisphenol A and phthalates pursuant to this chapter with carcinogens rated by the United States Environmental Protection Agency as A, B or C carcinogens or substances listed as known or likely carcinogens, known to be human carcinogens, likely to be human carcinogens or suggestive of being human carcinogens, as described in the "List of Chemicals Evaluated for Carcinogenic Potential."

(3) Manufacturers shall not replace bisphenol A and phthalates pursuant to this chapter with reproductive toxicants that cause birth defects, reproductive harm or developmental

harm, as identified by the United States Environmental Protection Agency.

Section 2. This act shall take effect in 60 days.

U.S. Department of Transportation
Federal Transit Administration

Public Transportation's Role in Responding to Climate Change

UPDATED JANUARY 2010

The Federal Transit Administration (FTA) collects and analyzes data from across the country on public transportation fuel use, vehicles deployed, rides taken, and other key metrics. These data, taken from the National Transit Database and combined with information from the U.S. Department of Energy and the U.S. Environmental Protection Agency, provides valuable insight into the impacts of automobile, truck, SUV, and public transportation travel on the production of greenhouse gas emissions. National level data show significant greenhouse gas emission savings by use of public transportation, which offers a low emissions alternative to driving. This paper presents an analysis of the data and frames it in a broader context. It concludes with a description of FTA actions that address climate change.

Based on an examination of FTA's data and other academic, government, and industry sources, public transportation can reduce greenhouse gas emissions by:

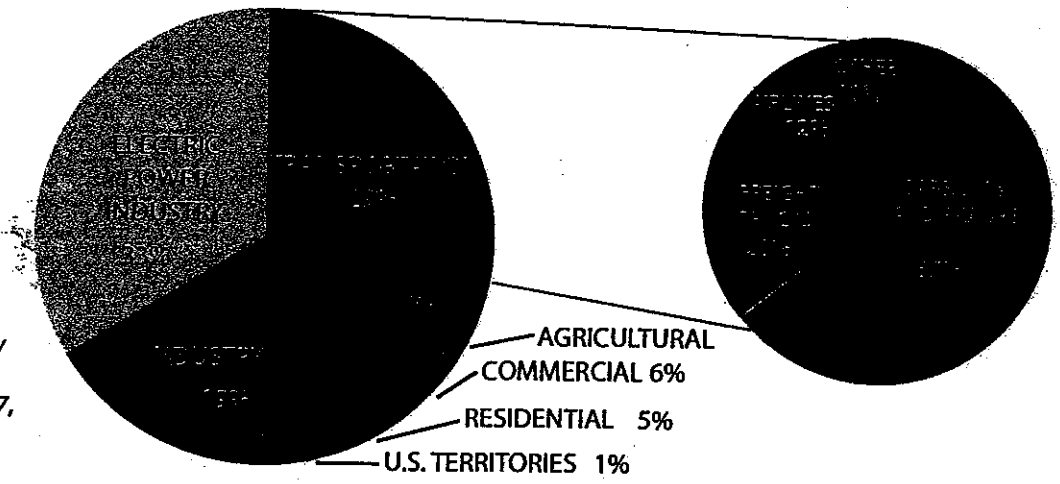
- Providing a low emissions alternative to driving.
- Facilitating compact land use, reducing the need to travel long distances.
- Minimizing the carbon footprint of transit operations and construction.

Greenhouse Gas Sources: Vehicles and Carbon Dioxide

Carbon dioxide makes up 95% of all transportation-related greenhouse gas emissions. Cars, SUVs, and pickup trucks running on conventional gasoline, diesel, and other fuels emit carbon dioxide. Combined, these vehicles account for roughly two-thirds of transportation-related emissions, (see fig. 1) ranking transportation as the second largest source of total U.S. greenhouse gas emissions.

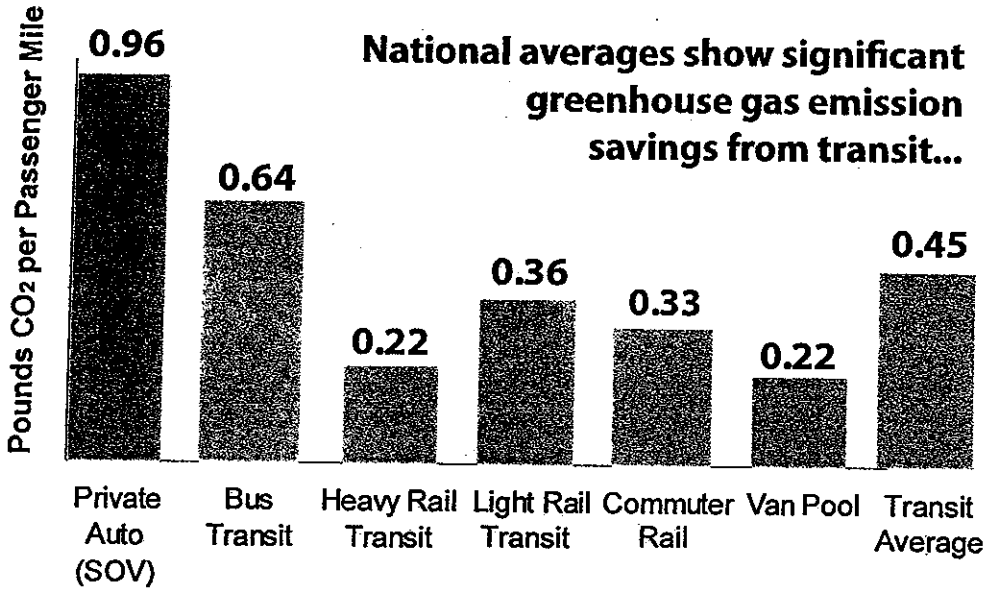
FIGURE 1
Transportation Accounts For 29% of U.S. Greenhouse Gas Emissions.

Source:
U.S. Environmental Protection Agency, *Inventory of Greenhouse Gas Emissions and Sinks: 1990-2007*, April 2009.



The Nobel Prize winning 2007 Intergovernmental Panel on Climate Change report concluded that greenhouse gas emissions must be reduced by 50% to 85% by 2050 in order to limit global warming to four degrees Fahrenheit, thereby avoiding many of the worst impacts of climate change.

Reducing greenhouse gas emissions from transportation will likely require a broad range of strategies, including increasing vehicle efficiency, lowering the carbon content of fuels, and reducing vehicle miles of travel. Public transportation can be one part of the solution.



National averages show significant greenhouse gas emission savings from transit...

FIGURE 2

Estimated CO_2 Emissions per Passenger Mile for Transit and Private Autos

Source:
See Appendix II for data sources and methodology.

The average passenger car in the United States produces just under one pound of carbon dioxide per mile traveled.

Public Transportation Produces Lower Greenhouse Gas Emissions than Autos

National averages demonstrate that public transportation produces significantly lower greenhouse gas emissions per passenger mile than private vehicles (see Figure 2).[1] Leading the way is heavy rail transit, such as subways and metros, which produce 76% less in greenhouse gas emissions per passenger mile than an average single-occupancy vehicle (SOV). Light rail systems produce 62% less and bus transit produces 33% less.[2]

Estimates are calculated from fuel usage and passenger mile data in the 2008 National Transit Database, standard emissions factors for different fuels are from the U.S. Department of Energy, and sub-regional electricity emissions factors are from the U.S. Environmental Protection Agency (see Appendix II: Methodology).

The environmental benefits of public transportation vary based on the number of passengers per vehicle, the efficiency of the bus or train, and the type of fuel used (see Appendix I for estimates for transit agencies across the country).

The number of riders greatly impacts transit's emissions savings.

The more passengers that are riding a bus or train, the lower the emissions per passenger mile. For instance, U.S. bus transit, which has about a quarter (28%) of its seats occupied on average, emits an estimated 33% lower greenhouse gas emissions per passenger mile than the average U.S. single occupancy vehicle. The savings increases to 82% for a typical diesel transit bus when it is full with 40 passengers (see Figure 3).

What Individuals Can Do to Reduce their Carbon Footprint

Switching to riding public transportation is one of the most effective actions individuals can take to reduce their carbon footprint.

Car transportation alone accounts for 47% of the carbon footprint of a typical American family with two cars—by far the largest source of household emissions and, as such, the largest target for potential reductions. (a) The average passenger car in the U.S. produces just under 1 pound of carbon dioxide per mile traveled.

If just one driver per household switched to taking public transportation for a daily commute of 10 miles each way, this would save 4,627 pounds of carbon dioxide per household per year—equivalent to an 8.1% reduction in the annual carbon footprint of a typical American household. This benefit has a greater impact than other actions, such as replacing light bulbs with compact fluorescents (a 1.6% reduction based on 20 out of 25 light bulbs change) or adding R-40 insulation to a home attic (a 1.2% reduction). (b)

Visit FTA's carbon calculator at www.fta.dot.gov/sustainability to estimate how much you can reduce your carbon footprint by switching to public transportation.

(a) Godo Stoyke, The Carbon Buster's Home Energy Handbook, 2007, pp22-23.
(b) The Carbon Buster's Home Energy Handbook, 2007, pp22-23

With these data in mind, when expanding transit service as a greenhouse gas reduction strategy, communities would likely want to ensure that passenger loads are sufficient to achieve efficiencies over the alternative of driving.[3] For example, the average 40-passenger diesel bus must carry a minimum of 7 passengers on board to be more efficient than the average single-occupancy vehicle. Similarly, the average heavy rail car would need to have at least 19% of seats full to exceed the efficiency of an automobile carrying an average passenger load.

Taking lifecycle emissions into account also shows emissions savings from transit.

Transit-based greenhouse gas emissions per passenger mile are significantly lower than those from driving, even taking into account emissions from construction, manufacture, and maintenance.

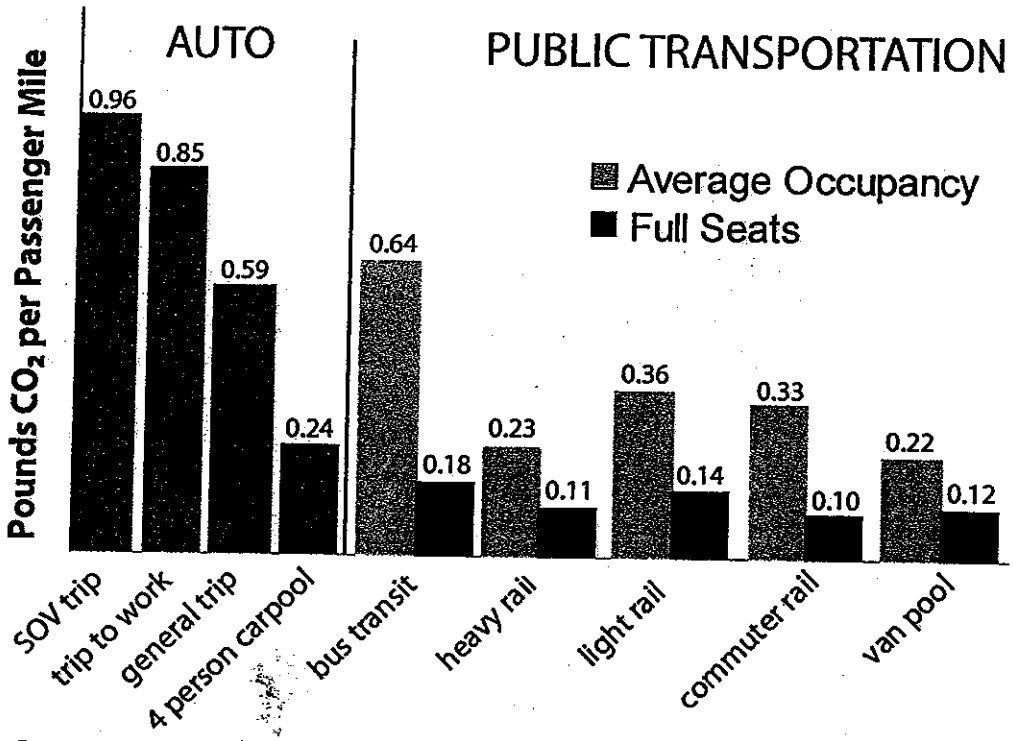


FIGURE 3
Estimated CO_2 Emissions per Passenger Mile for Average and Full Occupancy

Sources:
See Appendix II for data sources and methodology.

Notes: The average number of passengers for private auto trips is 1.14 for work trips and 1.63 for general trips.

Power sources and vehicle efficiency also impact transit's emissions.

Most rail transit systems are powered by electricity. Those relying on electricity from a low emissions source, such as hydroelectric, not surprisingly, have much lower emissions than those relying on electricity from coal power plants. (See Appendix I for emissions factors). Rail vehicles also vary in terms of energy efficiency due to weight and engineering factors.

Emissions from bus systems vary due to the use of low carbon fuels, more energy efficient vehicles, and different operating environments (such as frequent stops in denser urban areas). In terms of vehicle efficiency for instance, many transit agencies are replacing older diesel buses with new hybrid-electric buses, which consume 15% to 40% less fuel, and consequently produce 15% to 40% fewer carbon dioxide emissions.

Life cycle emissions include a full accounting of all emissions generated over the full life of a transportation system. This includes emissions from building the highway or rail system, manufacturing the vehicles, maintaining the infrastructure and vehicles, producing and using the fuel, and eventually disposing of the vehicles and infrastructure. The previous graphs only showed tailpipe emissions, or solely the emissions from burning fuel or generating electricity to move a vehicle.

Researchers at the University of California at Berkeley have developed a methodology for measuring life

cycle greenhouse gas emissions from cars and public transportation (see Figure 4).[4] As transit systems vary greatly, the researchers chose a handful of systems, including the San Francisco Bay Area's heavy rail BART system and light rail Muni system, California's commuter rail system Caltrain, and Boston's light rail Green Line. In a second study, they added analysis of New York City's subway, the PATH system serving New York and New Jersey, and Chicago's "L" and commuter rail. The researchers found that including full life cycle greenhouse gas emissions increased estimates by as much as 70% for autos, 40% for buses, 150% for light rail, and 120% for heavy rail.

While including emissions from construction of infrastructure has a larger impact on rail transit than on automobiles, the results still show significant emissions savings from average occupancy rail and bus transit over average occupancy sedans, SUVs, and pickups.[5] The researchers found that including greenhouse gas emissions from construction and maintenance of the BART heavy rail transit system increases estimated greenhouse gas emissions per passenger mile from 64 grams to 140 grams, but that this still represents a 63% and 69% savings over travel by sedan and SUV, respectively. Similarly, emissions per passenger mile on Boston's light rail Green Line increase from 120 to 230 grams, still offering a 55% and 62% savings over sedan and SUV travel, respectively.

...transit greenhouse gas emissions per passenger mile are still significantly lower than those from driving, even taking into account emissions from construction, manufacturing, and maintenance.

Public Transportation Facilitates Compact Land Use, Which Plays a Role in Greenhouse Gas Reductions

Public transportation reduces emissions by facilitating higher density development, which conserves land and decreases the distances people need to travel to reach destinations. In many cases, higher density development would be more difficult without the existence of public transportation because more land would need to be devoted to parking and travel lanes. By facilitating higher density development, public transportation can shrink the footprint of an urban area and reduce overall trip lengths. In addition, public transportation supports increased foot traffic, street-level retail, and mixed land uses that enable a shift from driving to walking and biking. Public transportation can also facilitate trip chaining, such as combining dry-cleaning pick-up, shopping, and other errands on the way home from a station. Finally, households living close to public transportation tend to own fewer cars on average, as they may not need a car for commuting and other trips. A reduced number of cars per household tends to lead to reduced car use, and driving may cease to be the habitual choice for every trip.[6]

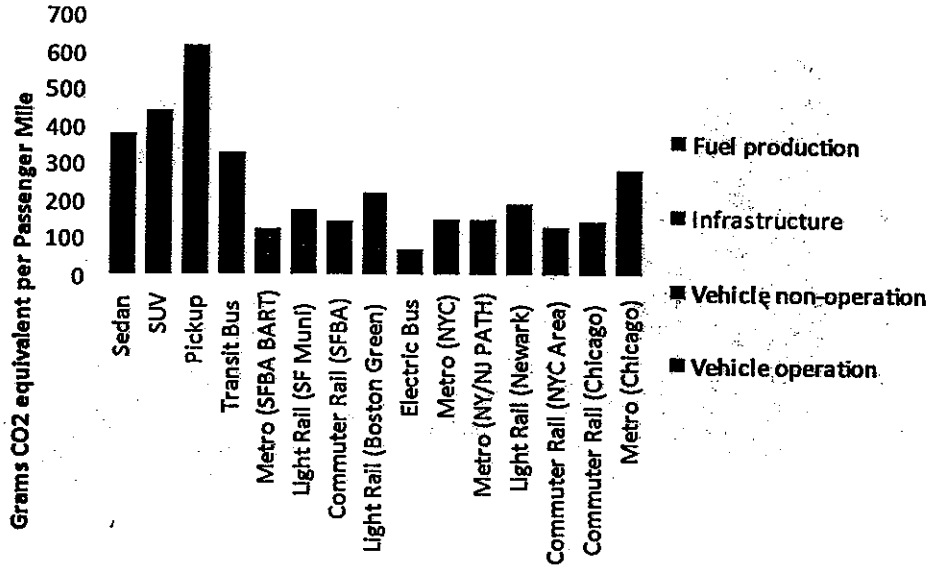
Multiple studies have quantified this relationship between public transportation, land use, and re-

FIGURE 4
Life Cycle Greenhouse Gas Emissions

Source:

Mikhail Chester and Arpad Horvath. *Life-cycle Energy and Emissions Inventories for Motorcycles, Diesel Automobiles, School Buses, Electric Buses, Chicago Rail, and New York City Rail*, 2009. http://escholarship.org/uc/item/6z37f2jr

Note: The study uses average occupancies for these vehicles and systems.

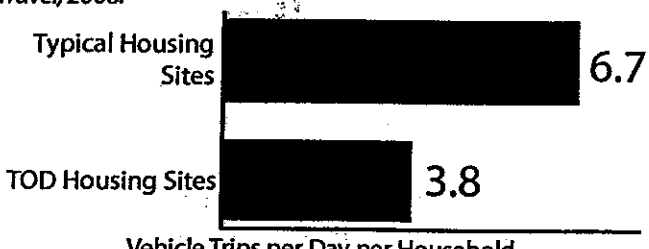


duction in travel. Studies show that for every additional passenger mile traveled on public transportation, auto travel declines by 1.4 to 9 miles.[7] In other words, in areas served by public transportation, even non-transit users drive less because destinations are closer together. One study used modeling to isolate the effect of public transportation on driving patterns (rather than that effect combined with denser land use creating a need for improved public transportation). That study, conducted by consulting firm ICF and funded through the Transit Cooperative Research Program (TCRP), found that each mile traveled on U.S. public transportation reduced driving by 1.9 miles. It concluded that public transportation reduces U.S. travel by an estimated 102.2 billion vehicle miles traveled (VMT) each year, or 3.4% of annual U.S. VMT.[8] Moreover, the report argued, by reducing congestion, transit lowers emissions from cars stuck in traffic. The Texas Transportation Institute's 2007 Mobility Report estimates that by reducing congestion, transit saved an estimated 340 million gallons of fuel in 2005.[9] Combining the emissions savings from passengers taking transit rather than driving, with VMT reduction due to transit's impact on the built environment, and savings from reduced congestion due to transit, the ICF report finds that public transportation reduces carbon dioxide emissions by 37 million metric tons annually.[10]

FIGURE 5

Vehicle Trips per Day of Transit Oriented Development (TOD) Housing Sites versus Typical Housing Sites

Source: *TCRP 128: Effects of TOD on Housing, Parking and Travel, 2008.*



Combining investment in public transportation with compact, mixed-use development around transit stations has a synergistic effect that amplifies the greenhouse gas reductions of each strategy. TCRP Report 128, "Effects of TOD on Housing, Parking and Travel," surveyed 17 transit-oriented development (TOD) housing projects and found that these projects averaged 44% fewer vehicle trips for a typical weekday period than that estimated by the Institute of Transportation Engineers (ITE) manual for a typical housing development.[11] The weighted average differentials were even larger during peak periods – 49% lower rates during the A.M. peak and 48% lower rates during the P.M. peak.[12] A study by the Center for Transit Oriented Development (CTOD) compared CO_2 emissions per household based on location efficiency, as defined by access to rail transit and neighborhood land use characteristics. The study found that, compared to the average metropolitan area household, households in transit zones that fell into the two middle categories of location efficiency produced 10% and 31% lower transportation emissions, and households in the highest location efficient category produced 78% lower transportation emissions than the average metropolitan area household.[13] A study published by the Urban Land Institute found that within areas of compact development, driving is reduced 20% to 40% compared to average U.S. development patterns.[14]

On a national scale, a recent Transportation Research Board report estimated that the reduction in vehicle miles traveled (VMT), energy use, and CO_2 emissions resulting from more compact, mixed-use development would be in the range of less than 1% to 11% by 2050.[15] A report by Cambridge Systematics found that pursuing a combined land use, transit, and non-motorized transportation strategy bundle could reduce U.S. transportation greenhouse gas emissions by 9% at an aggressive level or 15% at a maximum deployment level. The study found that savings from reduced driving costs would outweigh implementation costs. (The study did not quantify other benefits and costs such as changes in environmental quality, public health, travel time, safety, and user fees.)[16] Adding a strong price signal such as a VMT fee and varying car insurance rates by the number of miles driven would almost double the emission reductions.[17]

There are several examples in the United States of communities that are planning integrated public transportation and land use strategies in order to enhance quality of life, reduce congerstion, lower household transportation expenses, and reduce greenhouse gas emissions as well. Salt Lake City is one example. Through a participatory pro-

The left photo shows an intersection near Central Pointe Station in Salt Lake City. The right photo shows the same intersection with proposed transit oriented development. *Photo Credit: Reproduced from Envision Utah, Wasatch Front Transit Oriented Development Guidelines, 2002.*

cess called "Envision Utah" residents of Salt Lake City chose between four alternative growth scenarios. In the end, residents chose the scenario with growth focused into walkable, transit-oriented communities. Under this scenario, daily household VMT is ten miles lower than under the business as usual case, resulting in a significant drop in emissions. Salt Lake City is now building new light rail transit lines and clustering housing, jobs, and recreation around these lines in order to make the community's preferred scenario a reality.[18]

Denver, Portland, the Twin Cities, Washington, DC, and Dallas also provide examples of metropolitan areas aggressively pursuing transit-oriented development, yielding transportation, environmental, and economic benefits. California's experience with a new state law, SB375, requiring integrated transportation and land use planning to reduce greenhouse gas emissions, will provide lessons for other states.

Public Transportation Providers Use Energy Conservation and Technology to Reduce Emissions from Operations

Public transportation agencies across the country are taking actions to reduce the greenhouse gas intensity of their operations. Some agencies are building new administrative and maintenance facilities to Leadership in Energy and Environmental Design (LEED) standards or higher. For instance, New York City Transit built a LEED certified maintenance facility that has fuel cell units, rooftop solar panels, natural lighting, and rain water storage to wash buses and cars. The agency is also reducing emissions from construction by using recycled content in construction materials. Many agencies are replacing older buses with new hybrid buses. In fact, 35% of buses on order by U.S. transit agencies are hybrid electric.[19]

Agencies are also using alternative fuels such as biodiesel and piloting hydrogen fuel cell buses, which produce zero emissions when the hydrogen is produced from a zero emission power source such as solar.

Most rail transit is powered by electricity, which offers efficiency improvements over internal combustion engines. Rail agencies are looking to further reduce energy consumption by lowering the amount of electricity used in powering vehicles. In Phoenix, for example, the new light rail system uses regenerative braking to lower electricity consumption.

As the electric power industry shifts to more renewable sources of energy, as being mandated in several states, electric public transportation systems provide even more emissions reduction benefits. When the electricity is generated from a zero emissions source, such as wind, hydroelectric, nuclear, or solar, the public transportation systems that use these power sources are also zero emission.

Several transit agencies are installing on-site renewable energy generation to power parts of their systems. Boston's transit agency is installing wind turbines, New York City Transit plans to harvest power from the tides by installing turbines in tidal waters, and Los Angeles Metro is installing solar panels on its properties.

FTA Actions to Address Climate Change

The Federal Transit Administration (FTA) works with public transportation providers and other key stakeholders to implement strategies that reduce greenhouse gas emissions from the transportation sector. FTA's grants, technical assistance, research, and policy leadership all play a role in the agency's efforts to address climate change.

Portland Streetcar (TriMet), Portland, Oregon

FTA grows and sustains public transportation as a low-emission alternative to automobiles through the agency's $10 billion a year grant programs. Over 1,500 transit agencies representing every state in the country benefit from FTA grants. Agencies received an additional $8.4 billion infusion of support from the American Recovery and Reinvestment Act (ARRA) of 2009, which provided funding for public transportation, among other job creating strategies.

In its grants, FTA seeks to give local communities flexibility to implement the type of projects that maximize transit's potential to reduce greenhouse gas emissions. For instance, combining investment in public transportation with compact, mixed-use development around transit stations has a synergistic effect that amplifies the greenhouse gas reductions of each strategy. To encourage these synergies, FTA's grants can be used for "joint development," or common use of property for both transit and non-transit purposes.[20] This enables clustered development around transit. FTA's grants can also fund bicycle paths and sidewalks, helping residents better access transit and get around emissions free.[21]

Combating climate change is a key goal of the Secretary of Transportation's signature livability initiative, of which FTA programs are a central element. According to Secretary LaHood, "livable communities are mixed-use neighborhoods with highly-connected streets promoting mobility for all users, whether they are children walking or biking to school or commuters riding transit or driving motor vehicles. Benefits include improved traffic flow, shorter trip lengths, safer streets for pedestrians and cyclists, lower greenhouse gas emissions, reduced dependence on fossil fuels, increased trip-chaining, and independence for those who prefer not to or are unable to drive. In addition, investing in a "complete street" concept stimulates private-sector economic activity by increasing the viability of street-level retail small businesses and professional services, creating housing opportunities and extending the usefulness of school and transit facilities."[22]

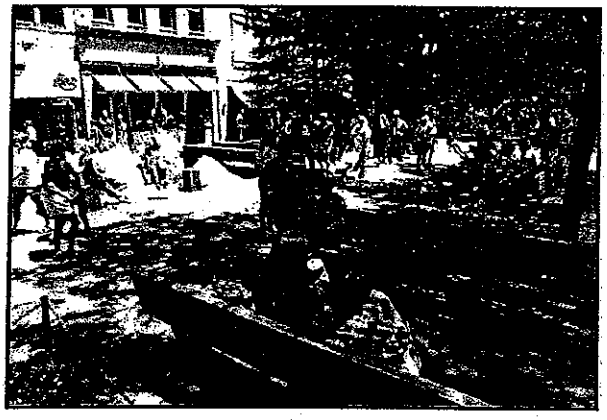
U.S. DOT, the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA) created a high-level interagency partnership to support these goals. The initiative is based on six principles:

- providing more transportation choices,
- promoting equitable, affordable housing,
- enhancing economic competitiveness,
- supporting existing communities,
- coordinating policies and leveraging investment,
- valuing the uniqueness of communities and neighborhoods.

As part of the first batch of funding for the livability initiative, the Secretary announced $280 million in FTA bus and urban circulator grants targeted to projects that meet livability and sustainability criteria, including greenhouse gas reduction.[23]

In addition to FTA's grant programs, FTA's technical assistance is another key part of the agency's efforts to respond to climate change. FTA's technical

assistance gives local communities the tools they need to improve planning practices, engage stakeholders, and build transit-oriented development. FTA provides Environmental Management Systems (EMS) training that helps transit agencies continually assess and reduce the energy and environmental impact of their operations. For instance, in Kentucky, the Transit Authority of River City reduced its carbon dioxide emissions by 907,000 lbs per year and saved $15,000 annually through energy efficiency measures.



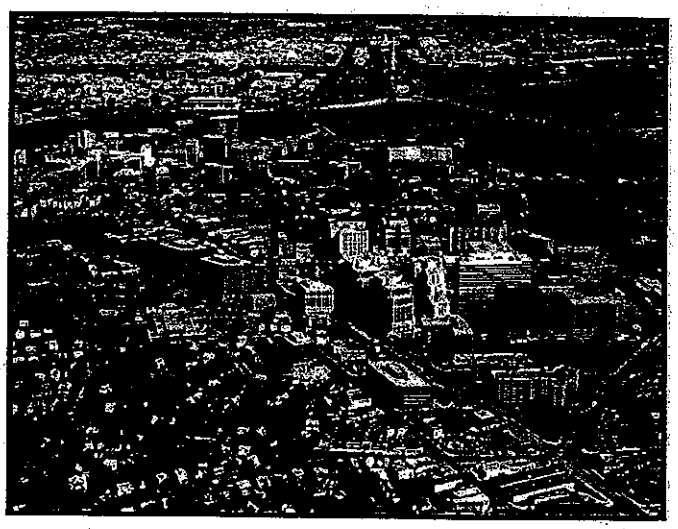
Transit-Oriented Development in Boulder, Colorado

FTA research on alternative fuels and high fuel efficiency vehicles has yielded the introduction of low emission technologies such as hybrid-electric buses, compressed natural gas vehicles, and biodiesel. FTA's new Electric Drive Strategic Plan and the National Fuel Cell Bus Program are intended to introduce the next generation of low emission vehicles. FTA encourages adoption of clean technologies by supporting a higher share of the cost of purchasing clean vehicles. In addition, FTA's Clean Fuel Bus Program targets investment in clean transit vehicles.

And a new FTA program under ARRA, Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER), supports transit agencies in pursuing cutting-edge environmental technologies to help reduce global warming and create green jobs. Among the 43 projects funded under the competitive bidding in 2009, Alabama will replace gasoline and diesel buses with electric hybrids, Massachusetts will construct wind energy generation turbines, and Vancouver, Washington will install solar panels at transit facilities. Transit agencies submitted $2 billion in applications for this $100 million program, indicating pent-up demand. As such, Congress included funding for the program in the 2010 appropriations.

FTA conducts policy research, produces outreach materials, and engages stakeholders in addressing the challenge of climate change. For instance, FTA partnered with the American Public Transportation Association (APTA) to develop a standard methodology for measuring greenhouse gas emissions produced by public transportation, so agencies can track and reduce their emissions.

Finally, FTA contributes to research and policy development on climate change mitigation and adaptation in the transportation sector through the U.S. Department of Transportation Climate Change Center. The Center has produced key studies on the impacts of climate change on transportation infrastructure, reports on integrating climate change considerations into transportation planning, and evaluations of strategies for reducing greenhouse gas emissions from transportation. The Center also maintains a web-based clearinghouse (See www.climate.dot.gov).



A view of Arlington, VA shows clustered development around the transit corridor. Office, retail, restaurants, multi-family housing, and single family housing are all within walking distance to Metrorail stops

FOOTNOTES

1. Passenger miles = vehicle miles x average number of passengers on vehicle. Normalizing by passenger miles allows for comparison between vehicles carrying different numbers of passengers.

2. Comparison is with single occupancy vehicles as policy typically focuses on shifting single occupancy trips to transit rather than shifting high occupancy trips. Comparisons with average occupancy private vehicles and carpools are found in figure 3.

3. Communities may still wish to expand transit for benefits other than environmental ones, such as providing access to jobs, spurring economic development, and providing mobility for people who cannot afford to drive or who cannot drive because of age or disability.

4. Mikhail Chester, *Life-cycle Environmental Inventory of Passenger Transportation Modes in the United States*, University of California, Berkeley, August 2008.

5. Average bus occupancy is 9 passengers, according to the National Transit Database. Authors of the Berkeley study assume peak buses have 40 passengers, off-peak buses have 5 passengers, sedans have 1.58 passengers, SUVs 1.74, and pick-ups 1.46.

6. American Public Transportation Association, Climate Change Standards Working Group, Discussion Paper, July 2008.

7. Newman, P. and J. R. Kenworthy (1999). *Sustainability and Cities: Overcoming Automobile Dependence*. Washington, D.C., Island Press. Studied 32 major cities worldwide. Showed a reduction of 5 to 7 miles.

Neff, J. W. (1996). *Substitution Rates Between Transit and Automobile Travel*. Association of American Geographers Annual Meeting. Charlotte, NC. Studied U.S. urbanized areas. Showed a reduction of 5.4 to 7.5 miles.

Pushkarev, B. S., J. M. Zupan, et al. (1982). *Urban Rail in America: An Exploration of Criteria for Fixed-Guideway Transit*, Indiana University Press.

Holtzclaw, J. (2000). *Does A Mile In A Car Equal A Mile On A Train? Exploring Public Transit's Effectiveness In Reducing Driving*. Studied three cities in the San Francisco Bay Area. Showed a reduction of 1.4 to 9 miles.

8. *The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reduction*, ICF International, TCRP Project J-11/Task 3, February 2008. http://www.apta.com/research/info/online/land_use.cfm

9. Texas Transportation Institute, 2007 Mobility Report, http://mobility.tamu.edu/ums/

10. *The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reduction*, ICF International, funded through Transit Cooperative Research Program (TCRP) Project J-11/Task 3, February 2008. http://www.apta.com/research/info/online/land_use.cfm

11. 3.754 versus 6.715 daily trips per unit
G.B. Arrington and Robert Cervero, *TCRP Report 128: Effects of TOD on Housing, Parking and Travel*. Transportation Research Board: Washington, DC, 2008.

12. Ibid.

13. Center for Transit Oriented Development and Center for Neighborhood Technology. *Transit Oriented Development and the Potential for VMT-related Greenhouse Gas Emissions Reduction*. 2009.

14. *Growing Cooler: The Evidence on Urban Development and Climate Change*, Urban Land Institute, Smart Growth America, National Center for Smart Growth, Center for Clean Air Policy, September 2007. http://www.smartgrowthamerica.org/gcindex.html

15. Transportation Research Board. *Special Report 298: Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions*. 2009.

16. The strategies in this bundle are parking pricing, congestion pricing, smart growth land use strategies, pedestrian and bicycle improvements, public transportation and intercity rail investment, HOV lanes, car-sharing, commuting and carpool measures, urban non-motorized zones, parking restrictions, signal management, traveler information, and urban consolidation centers.

17. Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Urban Land Institute: Washington, DC, 2009.

18. For more information, see http://www.envisionutah.org/.

19. American Public Transportation Association. *2009 Public Transportation Vehicle Database*. June 2009.

20. For more information, please see http://www.fta.dot.gov/documents/Joint_Development_-_State_Public_Transit_Partnerships_Conference_2007-08-09.ppt#291,1,2007 State Public Transit Partnerships Conference —— FTA State Programs Meeting.

21. For more information, please see http://edocket.ac2cess.gpo.gov/2009/pdf/E9-27240.pdf.

22. Statement of Ray LaHood, Secretary of Transportation, before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, June 16, 2009

23. For more information on this funding, officially called, "Section 5309 Bus and Bus Facilities Livability Initiative Program Grants" and "Exempt Discretionary Program Grants (Section 5309) for Urban Circulator Systems," please see http://edocket.access.gpo.gov/2009/pdf/E9-29242.pdf and http://edocket.access.gpo.gov/2009/pdf/E9-29245.pdf.

Appendix I

Estimated Carbon Dioxide Emissions per Passenger Mile for U.S. Transit Systems, 2008

Listed by system type in order of total passenger miles. See Appendix II for data sources and methodology.

Average U.S. Single Occupany Vehicle: 0.964 pounds CO_2/passenger mile

Heavy Rail Systems

State	Heavy Rail Common Name	Pounds CO2 / passenger mile	% of total heavy rail passenger miles traveled in the U.S.	KWH/ seat mile (Efficiency of Vehicle)	Average % of seats full (Ridership)	Pounds CO2/MWH for eGRID subregion (carbon content)
NY	New York City Subway	**0.147**	59.3%	0.107	59%	815
DC	Washington Metro	**0.347**	9.7%	0.101	33%	1,139
CA	San Francisco BART	**0.085**	8.6%	0.069	32%	399*
IL	Chicago "L"	**0.573**	7.0%	0.133	36%	1,538
GA	Atlanta MARTA	**0.245**	3.5%	0.064	39%	1,490
MA	Boston "T"	**0.336**	3.3%	0.167	46%	928
PA	Philadelphia SEPTA	**0.374**	2.5%	0.151	46%	1,139
NJ	New Jersey PATH	**0.302**	2.1%	0.249	94%	1,139
CA	Los Angeles Metro	**0.282**	1.3%	0.248	64%	724
FL	Miami-Dade Transit	**0.656**	0.8%	0.137	28%	1,319
NJ	New Jersey PATCO	**0.519**	0.6%	0.128	28%	1,139
MD	Baltimore Metro	**0.919**	0.4%	0.137	17%	1,139
OH	Cleveland Rapid	**0.805**	0.3%	0.168	32%	1,538
NY	Staten Island Railway	**0.346**	0.3%	0.110	26%	815
National Average Weighted by Passenger Miles		**0.224**	**99.7%**	**0.109**	**47%**	

Source: Calculated from Federal Transit Administration 2008 National Transit Database (NTD), U.S. Department of Energy carbon dioxide conversion factors, U.S. Environmental Protection Agency eGRID.

Note: Energy data not available for the privately operated Tren Urbano system in Puerto Rico.

Note: This paper uses the Climate Registry General Reporting Protocol method for determining the emissions factors for purchased electricity. That method is to use the eGRID subregion data published by the U.S. Environmental Protection Agency unless electricity is purchased directly from a generation source with a known emissions factor. The calculations for all of the transit systems in this paper use the eGRID subregion emissions factors with the exception of the BART system. The BART system purchases electricity directly rather than through the general subregion grid. As such, BART was able to provide an emissions factor specific to the electricity it purchases, 399 pounds per megawatt hour, which was used in the calculations rather than the eGRID factor for its subregion of 724 pounds per megawatt hour. The system specific factor yields .085 pounds CO2 per passenger mile for the BART system while the subregion eGRID factor yields 0.155 pounds CO2 per passenger mile. This changes the national average only slightly, from 0.230 to 0.224 pounds CO2 per passenger mile.

Light Rail Systems

State	Transit Authority	Pounds CO2 / passenger mile	% of total light rail passenger miles traveled in the U.S.	KWH/ seat mile (Efficiency of Vehicle)	Average % of seats full (Ridership)	Pounds CO2/MWH for eGRID subregion (carbon content)
CA	Los Angeles County Metropolitan Transportation Authority	0.219	14.7%	0.138	46%	724.12
CA	San Diego Metropolitan Transit System	0.146	9.9%	0.081	40%	724.12
OR	Tri-County Metropolitan Transportation District of Oregon	0.213	9.3%	0.106	45%	902.24
MA	Massachusetts Bay Transportation Authority	0.266	9.0%	0.208	73%	927.68
TX	Dallas Area Rapid Transit	0.534	7.3%	0.162	40%	1324.35
MO	Bi-State Development Agency	0.284	6.9%	0.083	30%	1019.74
CO	Denver Regional Transportation District	0.683	6.4%	0.081	22%	1883.08
CA	San Francisco Municipal Railway	0.299	6.4%	0.166	40%	724.12
CA	Sacramento Regional Transit District	0.338	4.1%	0.146	31%	724.12
NJ	New Jersey Transit Corporation (privately operated)	0.560	4.0%	N/A*	33%	1139.07
PA	Southeastern Pennsylvania Transportation Authority	0.557	3.5%	0.184	38%	1139.07
UT	Utah Transit Authority	0.260	3.4%	0.111	38%	902.24
MN	Metro Transit	0.422	2.9%	0.109	47%	1821.84
CA	Santa Clara Valley Transportation Authority	0.381	2.6%	0.123	23%	724.12
MD	Maryland Transit Administration	0.627	2.6%	0.126	23%	1139.07
PA	Port Authority of Allegheny County	1.371	1.6%	0.259	29%	1537.82
TX	Metropolitan Transit Authority of Harris County, Texas	0.312	1.4%	0.110	47%	1324.35
OH	The Greater Cleveland Regional Transit Authority	0.912	0.9%	0.188	32%	1537.82
NY	Niagara Frontier Transportation Authority	0.390	0.7%	0.192	35%	720.8
NJ	New Jersey Transit Corporation (directly operated)	0.635	0.7%	0.172	31%	1139.07
NC	Charlotte Area Transit System	0.394	0.6%	0.156	45%	1134.88
LA	New Orleans Regional Transit Authority	0.325	0.4%	0.067	21%	1019.74
CA	North County Transit District	0.474	0.4%	N/A*	36%	
WA	Central Puget Sound Regional Transit Authority	0.411	<0.1%	0.148	33%	902.24
TN	Memphis Area Transit Authority	3.209	<0.1%	0.103	5%	1510.44
FL	Hillsborough Area Regional Transit Authority	1.241	<0.1%	0.177	19%	1318.57
WA	King County Department of Transportation - Metro Transit Division	1.301	<0.1%	0.357	25%	902.24
AR	Central Arkansas Transit Authority	1.837	<0.1%	0.160	9%	1019.74
WI	Kenosha Transit	4.266	<0.1%	0.228	8%	1537.82
	National	0.365	100.0%	0.126	37%	

Source: Calculated from Federal Transit Administration 2008 National Transit Database (NTD), U.S. Department of Energy carbon dioxide conversion factors, U.S. Environmental Protection Agency eGRID.

*New Jersey Transit Corporation in Newark, NJ and North County Transit District in Oceanside, CA do not have values listed for kilowatt hours per seat mile because the former uses both electricity and diesel and the latter uses diesel.

Note: There are two separate entries for New Jersey Transit Corporation as one entry contains the data for the directly operated portion of the system and the other contains the data for the privately operated portion of the system.

Note: Six of the twenty-nine light rail systems, representing less than two percent of all U.S. light rail passenger travel, have carbon dioxide emissions per passenger mile greater than single occupancy cars.

50 Largest Directly Operated Bus Systems

State	Transit Authority	Pounds CO2 / passenger mile	% of total transit bus passenger miles traveled in the U.S.	Average % of Seats Full (Ridership)	Pounds CO2/ Seat mile (CO2 Efficiency of Vehicle)
NY	MTA New York City Transit	0.564	8.78%	41%	0.229
CA	Los Angeles County Metropolitan Transportation Authority	0.494	6.68%	38%	0.189
NJ	New Jersey Transit Corporation	0.515	4.66%	30%	0.153
IL	Chicago Transit Authority	0.690	3.68%	27%	0.186
PA	Southeastern Pennsylvania Transportation Authority	0.643	2.59%	32%	0.207
WA	King County Department of Transportation - Metro Transit Division	0.452	2.38%	33%	0.150
DC	Washington Metropolitan Area Transit Authority	0.718	2.10%	28%	0.199
FL	Miami-Dade Transit	0.658	2.01%	33%	0.220
TX	Metropolitan Transit Authority of Harris County, Texas	0.536	1.97%	30%	0.161
MN	Metro Transit	0.512	1.51%	30%	0.153
HI	City and County of Honolulu Department of Transportation Services	0.458	1.42%	37%	0.169
NY	MTA Bus Company	0.956	1.40%	24%	0.225
MD	Maryland Transit Administration	0.682	1.30%	34%	0.231
CA	Orange County Transportation Authority	0.570	1.24%	30%	0.169
MA	Massachusetts Bay Transportation Authority	0.732	1.22%	27%	0.195
PA	Port Authority of Allegheny County	0.718	1.20%	27%	0.197
CO	Denver Regional Transportation District	0.582	1.16%	25%	0.147
NJ	Academy Lines, Inc.	0.177	1.15%	58%	0.104
OR	Tri-County Metropolitan Transportation District of Oregon	0.557	1.05%	25%	0.139
NV	Regional Transportation Commission of Southern Nevada	0.127	1.03%	24%	0.031
IL	Pace - Suburban Bus Division	0.565	1.02%	35%	0.200
GA	Metropolitan Atlanta Rapid Transit Authority	0.782	1.01%	21%	0.160
CA	Alameda-Contra Costa Transit District	0.750	0.93%	22%	0.165
TX	VIA Metropolitan Transit	0.733	0.92%	27%	0.198
NJ	Hudson Transit Lines, Inc.	0.239	0.92%	43%	0.103
TX	Dallas Area Rapid Transit	1.211	0.88%	15%	0.182
MI	City of Detroit Department of Transportation	0.654	0.87%	30%	0.196
CA	San Francisco Municipal Railway	0.658	0.86%	34%	0.221
FL	Broward County Transportation Department	0.620	0.84%	32%	0.199
UT	Utah Transit Authority	0.582	0.83%	27%	0.156
OH	The Greater Cleveland Regional Transit Authority	0.706	0.82%	24%	0.171
NY	MTA Long Island Bus	0.555	0.75%	34%	0.187
WI	Milwaukee County Transit System	0.615	0.72%	25%	0.152
FL	Central Florida Regional Transportation Authority	0.638	0.72%	25%	0.159
WA	Central Puget Sound Regional Transit Authority	0.327	0.71%	39%	0.126
NY	Westchester County Bee-Line System	0.544	0.70%	35%	0.189
CO	Denver Regional Transportation District	0.760	0.69%	24%	0.180
CA	Santa Clara Valley Transportation Authority	0.731	0.68%	22%	0.163
MO	Bi-State Development Agency	0.763	0.64%	20%	0.152
OH	Southwest Ohio Regional Transit Authority	0.570	0.60%	27%	0.156
NJ	Suburban Transit Corporation	0.288	0.57%	38%	0.109
CA	Foothill Transit	0.872	0.54%	23%	0.205
TX	Capital Metropolitan Transportation Authority	0.669	0.52%	34%	0.226
VA	Hampton Roads Transit	0.646	0.48%	25%	0.164
CA	San Diego Metropolitan Transit System	0.845	0.47%	25%	0.212
NC	Charlotte Area Transit System	0.796	0.46%	23%	0.182
PA	Trans-Bridge Lines, Inc.	0.202	0.46%	46%	0.093
MI	Suburban Mobility Authority for Regional Transportation	0.760	0.42%	26%	0.198
MD	Ride-On Montgomery County Transit	0.738	0.41%	24%	0.178
CA	Long Beach Transit	0.611	0.39%	31%	0.187
National Average Weighted by Passenger Miles (includes the 50 systems above as well as the other 412 systems with fuel data in the NTD)		0.643		28%	0.177

Source: Calculated from Federal Transit Administration 2008 National Transit Database (NTD) and U.S. Department of Energy carbon dioxide conversion factors.

Note: Seven percent of bus passenger miles are on systems that did not report fuel data to the NTD (fuel reporting is optional for privately operated systems). The list above is of the 50 largest bus systems with fuel data in the NTD by passenger miles, which account for 69 percent of all transit bus passenger miles traveled in the United States and reported in the NTD. Data for the entire list of 462 bus systems with fuel data is available from FTA but is not listed here due to space constraints. The national averages shown at the bottom of the table as well as earlier in the graphs include all 412 bus systems reporting fuel data.

Commuter Rail

State	Transit Authority	Pounds CO2 / passenger mile	% of total commuter rail passenger miles traveled in U.S.	Average % of seats full (Ridership)	Pounds CO2/ seat mile (CO2 efficiency of train)
NJ	New Jersey Transit Corporation	**0.325**	21.2%	32%	0.103
NY	MTA Metro-North Railroad	**0.072**	19.8%	32%	0.023
NY	MTA Long Island Rail Road	**0.518**	17.0%	26%	0.134
IL	Northeast Illinois Regional Commuter Railroad Corporation	**0.414**	15.9%	31%	0.130
MA	Massachusetts Bay Transportation Authority	**0.358**	7.2%	29%	0.105
PA	Southeastern Pennsylvania Transportation Authority	**0.459**	4.4%	24%	0.112
CA	Southern California Regional Rail Authority	**0.311**	4.0%	29%	0.090
CA	Peninsula Corridor Joint Powers Board	**0.365**	2.5%	37%	0.135
MD	Maryland Transit Administration	**0.013**	2.2%	38%	0.005
FL	South Florida Regional Transportation Authority	**0.454**	1.1%	30%	0.135
IN	Northern Indiana Commuter Transportation District	**0.256**	1.1%	33%	0.085
VA	Virginia Railway Express	**0.359**	1.0%	51%	0.182
WA	Central Puget Sound Regional Transit Authority	**0.369**	0.6%	52%	0.191
CA	North County Transit District	**0.403**	0.4%	33%	0.132
CA	Altamont Commuter Express	**0.283**	0.3%	43%	0.120
UT	Utah Transit Authority	**0.239**	0.3%	17%	0.041
TX	Fort Worth Transportation Authority	**0.616**	0.2%	21%	0.129
TN	Regional Transportation Authority	**1.524**	0.0%	13%	0.197
National Average Weighted by Passenger Miles		**0.326**	**99.1%**	**30%**	**0.098**

Source: Calculated from Federal Transit Administration 2008 National Transit Database (NTD), U.S. Department of Energy carbon dioxide conversion factors, U.S. Environmental Protection Agency eGRID.

Note: Less than 1 percent of commuter rail passenger miles reported to the NTD lack fuel data.

Van Pool

State	Transit Authority	Pounds CO2 / passenger mile	% of total van pool passenger miles traveled in U.S.	Average % of seats full (Ridership)	Pounds CO2/ seat mile (CO2 efficiency of vehicle)
UT	Utah Transit Authority	0.149	7.2%	52%	0.077
WA	King County Department of Transportation - Metro Transit Division	0.246	6.2%	59%	0.144
IL	Pace - Suburban Bus Division	0.345	4.8%	48%	0.166
WA	Ben Franklin Transit	0.155	4.5%	75%	0.116
AZ	Phoenix - VPSI, Inc.	0.216	3.5%	55%	0.120
CT	Greater Hartford Ridesharing Corporation - The Rideshare Company	0.280	3.3%	54%	0.151
TX	Dallas Area Rapid Transit	0.174	2.9%	79%	0.137
GA	Marietta - VPSI, Inc.	0.195	2.9%	40%	0.078
WA	Pierce County Transportation Benefit Area Authority	0.228	2.8%	52%	0.119
TX	Dallas - VPSI, Inc.	0.218	2.6%	60%	0.131
WA	Intercity Transit	0.157	2.5%	76%	0.119
WA	Snohomish County Public Transportation Benefit Area Corporation	0.239	2.4%	53%	0.126
CA	Kings County Area Public Transit Agency	0.267	2.3%	40%	0.108
VA	Greater Richmond Transit Company	0.174	1.8%	62%	0.108
HI	Honolulu - VPSI, Inc.	0.276	1.6%	55%	0.152
NC	Charlotte Area Transit System	0.199	1.4%	57%	0.113
NC	Research Triangle Regional Public Transportation Authority	0.128	1.4%	88%	0.113
CO	Denver Regional Transportation District	0.214	1.4%	48%	0.103
FL	Miami Lakes - VPSI, Inc.	0.200	1.3%	60%	0.119
IA	Des Moines Area Regional Transit Authority	0.209	1.2%	56%	0.117
AK	VPSI, Anchorage	0.220	0.8%	53%	0.117
VA	Hampton Roads Transit	0.187	0.8%	74%	0.139
FL	Space Coast Area Transit	0.646	0.7%	62%	0.403
WA	Kitsap Transit	0.283	0.7%	49%	0.138
GA	Georgia Regional Transportation Authority	0.238	0.7%	51%	0.120
TX	Capital Metropolitan Transportation Authority	0.385	0.6%	39%	0.150
GA	Douglas County Rideshare	0.271	0.6%	39%	0.105
WA	Spokane Transit Authority	0.270	0.5%	45%	0.120
WA	Skagit Transit	0.177	0.5%	63%	0.112
WA	Yakima Transit	0.152	0.5%	67%	0.102
TN	Regional Transportation Authority	0.099	0.4%	83%	0.082
FL	County of Volusia, VOTRAN	0.203	0.4%	83%	0.167
CT	2Plus Partners in Transportation, Inc	0.575	0.3%	74%	0.428
MO	Kansas City Area Transportation Authority	0.268	0.3%	60%	0.161
MI	Interurban Transit Partnership	0.262	0.2%	63%	0.164
FL	Lee County Transit	0.103	0.1%	58%	0.059
WI	Milwaukee County Transit System	0.190	0.1%	66%	0.125
PA	Centre Area Transportation Authority	0.155	0.1%	71%	0.111
VT	Chittenden County Transportation Authority	0.135	0.1%	65%	0.087
TX	Corpus Christi Regional Transportation Authority	0.141	0.0%	79%	0.112
SC	Santee Wateree Regional Transportation Authority	0.191	0.0%	46%	0.087
PA	York County Transportation Authority	0.179	0.0%	94%	0.169
WA	Link Transit	0.299	0.0%	120%	0.359
MI	Kalamazoo Metro Transit System	0.288	0.0%	20%	0.056
National Average Weighted by Passenger Miles		**0.223**	**66.5%**	**56%**	**0.124**

Source: Calculated from Federal Transit Administration 2008 National Transit Database (NTD) and U.S. Department of Energy carbon dioxide conversion factors.

Note: 43 percent of van pool passenger miles reported to the NTD lack fuel data.

Other Modes

The transit modes below represent less than 3 percent of U.S. transit passenger miles, and other than demand response, are generally specific to limited geographic areas.

State	Name	Pounds CO2 / passenger mile	% of total U.S. transit passenger miles	Average % of seats full (Ridership)	Pounds CO2/ MWH for subregion (Carbon content)	lbs CO2/ Seat mile (CO2 efficiency of vehicle)
	Automated Guideway					
FL	Miami-Dade Transit	1.088	0.02%	55%	1319	0.596
FL	Jacksonville Transportation Authority	6.093	<0.01%	6%	1319	0.336
MI	Detroit Transportation Corporation	2.025	0.01%	18%	1563	0.362
	Alaska Railroad					
AK	Alaska Railroad Corporation	1.124	<0.01%	30%		0.342
	Cable Car					
CA	San Francisco Municipal Railway	0.314	0.02%	61%	724	0.192
	Ferry Boat					
WA	Kitsap Transit	1.252	<0.01%	19%		0.235
WA	Pierce County Ferry Operations	1.746	<0.01%	17%		0.294
WA	Washington State Ferries	2.123	0.34%	30%		0.629
ME	Casco Bay Island Transit District	3.073	<0.01%	13%		0.392
NY	MTA Metro-North Railroad	4.896	<0.01%	21%		1.007
NY	New York City Department of Transportation	0.864	0.19%	24%		0.210
NJ	Port Authority Trans-Hudson Corporation	3.989	0.01%	12%		0.488
NY	BillyBey Ferry Company, LLC	4.248	0.01%	13%		0.533
NJ	Port Imperial Ferry Corporation, NY Waterway	2.295	0.03%	18%		0.406
VA	Hampton Roads Transit	3.061	<0.01%	15%		0.471
GA	Chatham Area Transit Authority	4.660	<0.01%	11%		0.525
PR	Maritime Transportation Authority of Puerto Rico	2.214	0.03%	36%		0.790
LA	Crescent City Connection Division - Louisiana Department of Transportation	8.567	<0.01%	11%		0.971
TX	Corpus Christi Regional Transportation Authority	2.775	<0.01%	16%		0.437
HI	City and County of Honolulu Department of Transportation Services	3.099	<0.01%	15%		0.462
CA	Golden Gate Bridge, Highway and Transportation District	1.599	0.04%	27%		0.427
CA	City of Alameda Ferry Services	2.325	0.01%	21%		0.492
	Inclined Plane					
PA	Cambria County Transit Authority	8.934	<0.01%	35%	1139	3.147
PA	Port Authority of Allegheny County (directly operated)	3.220	<0.01%	20%	1538	0.632
PA	Port Authority of Allegheny County (privately operated)	4.166	<0.01%	18%	1538	0.745
TN	Chattanooga Area Regional Transportation Authority	0.380	<0.01%	51%	1510	0.195
	Monorail					
WA	City of Seattle - Seattle Center Monorail Transit	0.190	0.00%	24%	902	0.046
	Publico					
PR	Department of Transportation and Public Works	0.318	0.26%	34%		0.109
	Trolley Bus					
WA	King County Department of Transportation - Metro	0.388	0.07%	29%	902	0.111
MA	Massachusetts Bay Transportation Authority	0.778	0.01%	33%	928	0.256
PA	Southeastern Pennsylvania Transportation	0.709	<0.01%	37%	1139	0.259
OH	Greater Dayton Regional Transit Authority	0.882	0.02%	18%	1538	0.162
CA	San Francisco Municipal Railway	0.234	0.20%	32%	724	0.074
	Demand Response National Average	3.100	1.57%	12%		0.364

Note: Ferry boats are particularly challenging to compare directly to emissions from an equivalent number of miles in an automobile as ferries often carry automobiles as well as passengers and often allow for a much shorter route across a body of water rather than a circuitous route by land. Demand response consists largely of paratransit services for persons with disabilities, and is not typically conducted for environmental purposes, but rather for social and equity purposes. Trolley bus may be instructive for systems considering electrifying their buses. Note the large range in carbon efficiency, depending on carbon content of the electricity, ridership, and efficiency of the vehicle.

Definitions of Transit Modes

Bus: A transit mode comprised of rubber-tired passenger vehicles operating on fixed routes and schedules over roadways. Vehicles are powered by diesel, gasoline, battery, or alternative fuel engines contained within the vehicle.

Heavy Rail: A transit mode that is an electric railway with the capacity for a heavy volume of traffic. It is characterized by high speed and rapid acceleration passenger rail cars operating singly or in multi-car trains on fixed rails, separate rights-of-way from which all other vehicular and foot traffic are excluded, sophisticated signaling, and high platform loading.

Light Rail: A transit mode that typically is an electric railway with a light volume traffic capacity compared to heavy rail. It is characterized by passenger rail cars operating singly (or in short, usually two car, trains) on fixed rails in shared or exclusive right-of-way, low or high platform loading, and vehicle power drawn from an overhead electric line via a trolley or a pantograph.

Commuter Rail: A transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs.

Vanpool: A transit mode comprised of vans, small buses and other vehicles operating as a ride sharing arrangement, providing transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area.

Alaska Railroad: In recognition of the special Federal relationship with the Alaska railroad (AR), a segment of the passenger service portion of the Alaska railroad (AR) is considered to be eligible for certain FTA funding under the Fixed Guideway Modernization program. The service encompasses only those lines operating within the Anchorage, Alaska, urbanized area (UZA) where passenger service is provided and only includes car miles for passenger cars; car miles for freight cars are specifically excluded.

Automated Guideway: A transit mode that is an electric railway (single or multi-car trains) of guided transit vehicles operating without vehicle operators or other crew onboard the vehicle. Service may be on a fixed schedule or in response to a passenger activated call button. Automated Guideway (AG) transit includes personal rapid transit, group rapid transit, and people mover systems.

Cable Car: A transit mode that is an electric railway with individually controlled transit vehicles attached to a moving cable located below the street surface and powered by engines or motors at a central location, not onboard the vehicle.

Ferryboat: A transit mode comprised of vessels carrying passengers and / or vehicles over a body of water that are generally steam or diesel powered.

Inclined Plane: A transit mode that is a railway operating over exclusive right-of-way (ROW) on steep grades (slopes) with powerless vehicles propelled by moving cables attached to the vehicles and powered by engines or motors at a central location not onboard the vehicle. The special tramway type of vehicles have passenger seats that remain horizontal while the undercarriage (truck) is angled parallel to the slope.

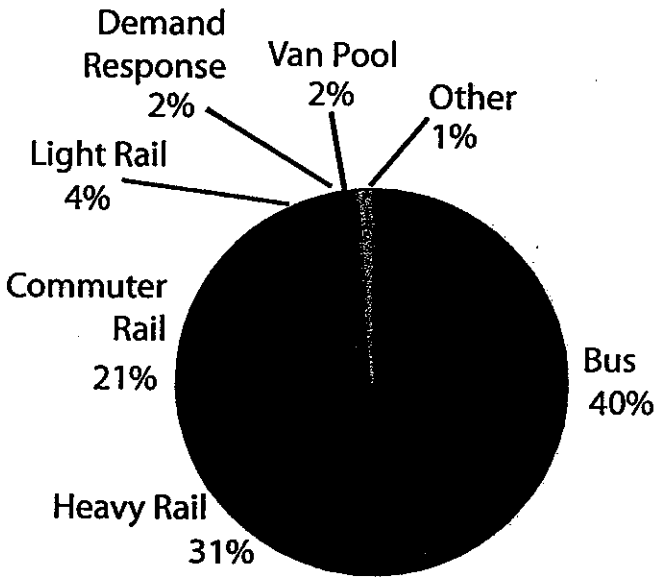
Monorail: A transit mode that is an electric railway of guided transit vehicles operating singly or in multi-car trains. The vehicles are suspended from or straddle a guideway formed by a single beam, rail or tube.

Publico: A transit mode comprised of passenger vans or small buses operating with fixed routes but no fixed schedules. Publicos (PB) are a privately owned and operated public transit service which is market oriented and unsubsidized, but regulated through a public service commission, state or local government. Publicos (PB) are operated under franchise agreements, fares are regulated by route and there are special insurance requirements. Vehicle capacity varies from eight to 24, and the vehicles may be owned or leased by the operator.

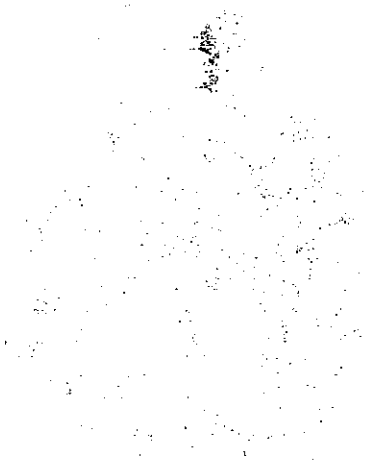
Trolleybus: A transit mode comprised of electric rubber-tired passenger vehicles, manually steered and operating singly on city streets. Vehicles are propelled by a motor drawing current through overhead wires via trolleys, from a central power source not onboard the vehicle.

Demand Response: A transit mode comprised of passenger cars, vans or small buses operating in response to calls from passengers or their agents to the transit operator, who then dispatches a vehicle to pick up the passengers and transport them to their destinations.

Distribution of Public Transportation Passenger Miles, 2008



Total 2008 public transportation passenger miles: 54 billion.
Other: ferryboat, publico, trolleybus, automated guideway, cable car, Alaska Railroad, inclined plane, monorail.
Source: National Transit Database, 2008



Appendix II: Data Sources and Methodology

Pounds of carbon dioxide emissions per passenger mile is calculated using the following formula:
lbs CO2 / passenger mile = units of fuel used x (lbs CO2 / unit of fuel) / passenger miles

Transit energy and passenger mile data
The Federal Transit Administration's National Transit Database (NTD) provides data on fuel and electricity used in powering transit vehicles such as buses and trains, number of people riding, and distances traveled for each transit system. The analysis uses passenger mile data, vehicle capacity data, and energy data in Tables 17 and 19, as well as their associated database files, of the most recent full set of annual data available, the 2008 National Transit Database, http://www.ntdprogram.gov/ntdprogram/data.htm.

Energy data is available for 96% of passenger miles reported in the NTD. Transit agencies are not required to report energy usage from privately operated services, though some do so voluntarily.

Seat miles traveled is calculated by multiplying vehicle revenue miles by average seating capacity, as reported in the 2008 National Transit Database. Average percent of seats full is calculated by dividing seat miles by passenger miles.

Conversion factors
For fuels such as diesel, gasoline, and compressed natural gas, the total quantity of each fuel type was multiplied by the standard CO2 emissions factor provided by the Department of Energy to obtain pounds of CO2 produced.

Almost all heavy and light rail transit systems, such as subways and streetcars, are powered by electricity. For these systems, the level of carbon dioxide emissions depends on the types of power plants supplying the electricity (coal, gas, nuclear, hydroelectric, wind, etc.). The calculations in this publication use the carbon dioxide emissions per megawatt hour for the power supplied to the electrical grid in the particular subregion in which the transit agency operates. The data is from the U.S. Environmental Protection Agency's Emissions & Generation Resource Integrated Database (eGRID) 2007 v1.1, published in April 2009 and available at http://cfpub.epa.gov/egridweb/ghg.cfm. Sub-region emission factors are used rather than state level emission factors as regional power grids do not correspond with state lines. In addition, using the eGRID sub-region data rather than the state level data is recommended by the Climate Registry General Reporting Protocol, Chapter 14, http://www.theclimateregistry.org/downloads/GRP.pdf.

Private car
The average fuel economy for the in-use fleet of all light-duty vehicles (cars, SUVs, and pick-up trucks) is 20.3 miles per gallon according to EPA data. See "Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle, EPA420-F-05-004, February 2005, http://www.epa.gov/OMS/climate/420f05004.htm. Gasoline releases 19.564 pounds of carbon dioxide per gallon burned according to the U.S. Department of Energy, Energy Information Administration, Voluntary Reporting of Greenhouse Gases Program, Fuel and Energy Source Codes and Emission Coefficients, http://www.eia.doe.gov/oiaf/1605/coefficients.html. Therefore, for each mile traveled driving alone, 0.964 pounds of carbon dioxide (19.564/20.3), or about 1 pound, is released into the atmosphere.

According to the 2001 National Household Transportation Survey, the average private auto work and general purpose trips have 1.14 and 1.63 passengers, respectively. These load factors are used for calculating greenhouse gas emissions per passenger mile for private auto work and general trips.

FOR MORE INFORMATION, PLEASE SEE:
http://www.fta.dot.gov/sustainability

Author:
Tina Hodges
Office of Budget and Policy
Federal Transit Administration, U.S. DOT
tina.hodges@dot.gov

Editing/Design:
Jarrett Stoltzfus, Office of Research, Demonstration and Innovation
Federal Transit Administration, U.S. DOT

JANUARY 2010

PETITION TO DIRECT PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

December 22, 2009

VIA Overnight Delivery

Ms. Letitia A. Thompson, Regional Administrator
U.S. Department of Transportation
Federal Transit Administration, Region III
1760 Market Street
Suite 500
Philadelphia, PA 19103-4124

RE: Southeastern Pennsylvania Transportation Authority (SEPTA)
Proposed Parking Garage/Transportation Center at Jenkintown-Wyncote Station
MPMS #84642

Dear Ms. Thompson:

Cheltenham Chamber of Citizens (CCC)[1] is a member-based non-profit organization concerned with the health, safety and welfare of its members and of the communities in and adjacent to Cheltenham Township. CCC members, approximately 500 strong, live, work and recreate in the communities and areas adjacent to the garage and transportation center SEPTA is proposing for the Jenkintown-Wyncote (JW) commuter rail station. The proposed project borders public parkland, a bird sanctuary, and the National Register-listed Wyncote Historic District. The Tookany Creek flows along the entire western edge of the project site.

CCC and its members will be substantially, specifically and directly affected by the outcome of this controversial project. As such, we, the undersigned, respectfully request that your office direct the preparation of an EIS. We believe SEPTA has not justified the need for this project, has not seriously and comprehensively considered all reasonable

[1] See http://www.cheltenhamchamberofcitizens.com/

Between 2000 and 2005, outer suburbs have experienced a 9% increase in population, while the city has seen a 2% decrease in population. Developed communities, such as Cheltenham Township, have remained stable.[4]

It has been documented that this project was not conceived of as a means to increase rider service at JW, a residential neighborhood, but rather, as part of an economic re-development plan for the Glenside commercial district.[5,6,7] From various discussions with Township officials and residents, it appears SEPTA has made construction of a garage and transportation center at JW a prerequisite for the proposed 2013 Glenside garage project, presumably so that riders displaced during construction of the Glenside project will have a place to park. SEPTA has made clear that it will not proceed with the Glenside garage, located approximately 1 mile away from JW, without first having constructed the proposed JW project.[8]

The feasibility study,[9] produced to justify the project need and thus secure funding, was flawed and included a biased survey that only asked respondents if they would park at JW or Glenside if more parking were provided at either or both of those stations. No attempt was made at discerning parking demand at the other stations located within the identified ridershed. Based on year 2000 figures, at least 150 (29%) of the 527 existing parking spaces at JW are occupied by cars driven from outside Abington Township, Cheltenham Township and Jenkintown Borough. That number rises to 220 (41.5%) when passengers that have by-passed their local stations[10] are included.

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[4] Delaware Valley Regional Planning Commission (DVRPC), *Tracking Progress Toward 2030: Regional Indicators for the DVRPC Long Range Plan*, August 2008.

[5] "Glenside Parking Garage Plan Buoyed by Feasibility Study," *Montgomery Newspapers*, 13 September 2000.

[6] "County Approves $15,000 for Glenside Parking Garage," *Montgomery Newspapers*, 11 October 2000.

[7] Jeffrey Knueppel, SEPTA, at All Hallows Church meeting, 6 April 2009.

[8] Id., with further elaboration indicating SEPTA agreed to consider building a garage at Glenside provided that SEPTA gets to build a garage at Jenkintown-Wyncote station.

[9] DVRPC, *Parking Demand Study - GLENSIDE AND JENKINTOWN SEPTA STATIONS*, October 2000.

[10] Local stations are those regional rail stations closest to one's home residence.

Responding to a question about the reason for parking garages not being considered for the Gwynedd Valley station, SEPTA stated:

> Parking garages have not been considered for this station because of the small scale of the station where a garage would not appear to fit into the context. Additionally, it is SEPTA's belief that local residents will not accept a garage at that station.

When questioned about the criteria used to determine parking enhancements, SEPTA responded:

> The process is primarily driven in two ways: 1) availability of land and 2) parking capacity at a particular station and its surrounding stations. If an opportunity to purchase land presents itself and there is a need for parking at that particular station, the acquisition is analyzed and, if feasible, pursued. Second, if there is a station at full capacity, and the next station or two inbound (towards Center City) are also filled to capacity, the area around that station is viewed to see if any opportunities for parking expansion might exist. If a suitable location is found it would be analyzed and pursued in further detail.

By its own admission, SEPTA's criteria for identifying stations suitable for parking "enhancements" are based on availability of land, parking capacity at a particular station and its surrounding stations, the physical context of a particular station and public acceptance. Notwithstanding the above, SEPTA has apparently chosen to ignore the facts pertaining to the proposed project as they relate to its stated project-siting criteria.

For example, SEPTA's Noble station, the first outbound station from JW on the West Trenton line, is located in the Route 611 corridor. The corridor is comprised of PA Route 611, a four-lane highway fronted by mixed-use, large-scale commercial development. Availability of suitable land does not appear to be an issue. Approximately 4 acres of vacant commercial land abuts SEPTA's Noble station parking lot. Approximately 3 more acres are located within 100 feet of the station's Old York Road frontage.[13] Siting a

[13] Former Foy Buick and gas station sites, combined 2.87 acre parcel, Montgomery County parcel ID 30-00-49280-00-1, 30-00-49288-00-2, and 30-00-49284-00-6; former Eckenhoff Cadillac site, 4.14 acre parcel, Montgomery County parcel ID 30-00-66656-00-4.

patronage of that station. Once passenger boardings fall below 50 per day, SEPTA actively considers that station for abandonment.[19] Closing low activity stations has been, and appears to continue to be, a part of SEPTA's strategy for reducing on-board travel time.[20] However, that aspect of its strategy needs to be examined, particularly as it relates to the proposed project, especially since SEPTA has not been forthcoming regarding its long-term plans regarding reductions in service and station closures.[21]

Station closures negatively affect not only those who use the station, but also the surrounding community. At the very least, station closures add travel time to displaced riders and increase VMT. Of those displaced riders who own a vehicle, those that were previously walk-ups would now have to drive and those previously driving would now have to drive further to an alternate station. In some cases, displaced riders would wind up skipping regional rail altogether. The Regional Rail Closure Study estimated that each passenger displaced would, on average, experience an additional 20 minutes in travel time. Conversely, it was estimated that each non-displaced passenger would save a little over 1 minute for every station skipped. The study made no attempt to make a full accounting of the costs associated with station closures;[22] however, it did note that some of the costs would be shifted to local and county transportation programs.

Closures, as well as reduced service levels, will affect parking demand conditions at adjacent stations as those displaced riders who do not abandon regional rail, seek out other stations.[23] We are already seeing such effects at JW station, as the May 2009 survey indicate nearly 80% of the JW ridershed do not consider JW their local station and their patronage of JW is driven by inadequate service at their local station.

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[19] DVRPC, *Regional Rail Stations Closure Study*, November 2003.

[20] Id.

[21] SEPTA would not rule out closure of stations immediately adjacent to JW, nor did they comment on closure of any other nearby stations. As stated at the Cheltenham Township Public Works Committee meeting held at Cheltenham High School, 14 April 2009.

[22] Personal time cost/benefit, pollution costs due to increased VMT and GHG and other externalized costs.

[23] SEPTA, *A New Look at Restoration of Rail Service to Newtown*, January 1991. Copy available at http://www.r8newtown.com/documents/1991_NewtownStudy.pdf

> trucks, buses, and motorcycles. These transportation sources emit four key greenhouse gases: carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. Together, these transportation sources are responsible for 23 percent of total annual U.S.greenhouse gas emissions, making this source the second largest in the United States behind electricity generation.

Pursuant to the CAA, "effects on welfare" include, but are not limited to, effects on manmade materials, climate, damage to and deterioration of property, as well as effects on economic values and personal comfort and well being. Public health is endangered by GHG through a wide range of pathways, including an increase in regional ozone pollution and the associated negative impact on respiratory health. The Finding notes that substantial challenges remain with respect to achieving national ambient air quality standards (NAAQS) for ozone and that those challenges will be exacerbated by climate change.

The link relationship between VMT and vehicle emissions is self-apparent. Likewise, the contribution of vehicle emissions to GHG has been well established, as noted by the U.S Supreme Court.[27] A recent study[28] examined various policy scenarios for reducing GHG and energy consumption in the U.S transportation sector. Using variations of the National Energy Modeling System, the researchers concluded that even the most stringent policy scenario modeled failed to prevent an increase in oil consumption and greenhouse-gas emissions, mainly due to the persistent trend of rising VMT, noting that:

> A critical underlying challenge for oil security and greenhouse-gas emissions from the transportation sector is the persistent historical trend of growth in vehicle-miles traveled in the United States.

In 2005, VMT constituted approximately 30% of the carbon dioxide equivalent (CO2e)[29]

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[27] Massachusetts v. EPA, 549 U.S. 497, 525 (2007). "[j]udged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, ... to global warming."

[28] Gallagher, Kelly Sims, and Gustavo Collantes, "Analysis of Policies to Reduce Oil Consumption and Greenhouse-Gas Emissions from the U.S.Transportation Sector." Discussion Paper 2008-06, Cambridge, Mass.: Belfer Center for Science and International Affairs, June 2008. Copy available at http://belfercenter.ksg.harvard.edu/files/2008_Gallagher_Collantes_AutoPolicyModelingResults.pdf

[29] CO2e is a greenhouse gas's 100-year warming potential normalized with respect to that of CO_2.

and materially harmed through declining property values,[37,38,39] the negative health and welfare effects due to increased pollution, including noise pollution,[40] increased GHG,[41] decreased pedestrian safety, and the direct and spillover effects of increased crime.

8. CCC has concerns with the impact on Historic Resources. The National Register-listed Wyncote Historic District is a 108-acre area developed as a residential district between 1865 and 1938. The majority of dwellings are two and one-half story stone and wood, structures primarily in the Queen Anne architectural style, set back from tree-lined streets. The houses and overall district retain much of their original appearance and integrity. The district includes 178 contributing structures and only 14 non-contributing buildings.[42] The district also includes the existing JW station, accessory buildings and the adjacent Ralph Morgan Park. The resultant intrusion of a 700-car parking structure, proposed to be over four stories tall, would severely compromise the integrity of the historic district and would set a precedent for further intrusions. In addition, the proposed channelization of the Tookany Creek, including placement of riprap, would be a further affront to the Ralph Morgan Park.

The traffic increase associated with the project will increase air and noise pollution, both of which have the potential to impact the district's historic structure envelopes. Noise and other vibrations, both during and after construction, could have an effect on the

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[36] Due to proposed hydromodifications/channelization.

[37] Gordon Bagby, "Effects of Traffic Flow on Residential Property Values," *Journal of the American Planning Association*, Vol. 46, No. 1, APA (www.planning.org), January 1980, pp. 88-94.

[38] D. Haling & H. Cohen, "Residential Noise Damage Costs Caused by Motor Vehicles," *Transportation Research Record*, Issue 1559, 1996, p. 84-93.

[39] William Hughes and C.F. Sirmans, "Traffic Externalities and Single-Family House Prices," *Journal of Regional Science*, Vol. 32, No. 4, (www.blackwellpublishing.com/), 1992 pp. 487-500.

[40] M. Nathaniel Mead, "Noise Pollution: The Sound Behind Heart Effects," *Environ Health Perspective*, 115(11): A536–A537, National Institutes of Health - National Institute of Environmental Health Sciences, November 2007.

[41] U.S. EPA Endangerment and Cause or Contribute Findings for Greenhouse Gases

[42] National Register of Historic Places, Wyncote Historic District, # 86002884. Recorded with the Keeper of the National Register, U.S Department of the Interior, National Park Service, 16 October 1986.

The U.S. EPA[48, 49] recognizes that stream channelization can cause adverse impacts, such as:

- Threats to human safety, especially in concrete channels where banks lack measures for people and animals to escape;
- Damage to public roads and bridges due to undercutting;
- Damage to utilities and pipelines from uplifting;
- Increased flooding, upstream or downstream, due to decreased flow capacity;
- Damage to public or private property resulting from bank erosion and increased flooding; and
- Decreased property values in areas where flooding is more frequent.

While stream channelization may provide relief at a specific location, it drastically alters the stream flow characteristics and may cause additional problems both upstream and downstream of the project site. This is because the channel-straightening projects tend to focus on one stream function—water transport—without adequately accounting for other functions, such as energy dissipation and sediment transport and impact on riparian ecosystem.

It is noted that a sewer interceptor is located in portions of the Tookany Creek bed located adjacent to and downstream of the proposed project.

10. The proposed project conflicts with local, state and federal efforts, pursuant to the Clean Water Act[50] (CWA), to restore and preserve the Tookany Creek watershed, namely the Tookany Creek Watershed Management Plan[51] and the Tookany/Tacony-Frankford

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[48] U.S. EPA Region 7, Section 404 of the Clean Water Act/Wetlands Program, *Fact Sheet Number 1 Stream Channelization*, February 2005.

[49] U.S. EPA, Office of Water, *National Management Measures to Control Nonpoint Source Pollution from Hydromodification*, EPA 841-D-06-001, July 2006.

[50] The Clean Water Act as amended by the Water Quality Act of 1987, Public Law 100-4.

[51] Heritage Conservancy, *Tookany Creek Watershed Management Plan*, September 2003.

- Designing non-engineering best management practices and techniques aimed at reducing flooding and improving soil and sedimentation controls.

The plan concludes that habitat loss, landscape fragmentation, flash flooding and extreme fluctuations in stream water levels are the most significant threats to wildlife in the watershed and its riparian areas. The watershed was last inventoried for fish in 2000 by the Philadelphia Water Department and the presence of Northern water snake and Box turtles were noted.

Tookany/Tacony-Frankford Integrated Watershed Management Plan

The U.S. EPA provided funding under its Wetland Program Grant to help assess existing wetlands within the Tookany/Tacony-Frankford Watershed and provide basic data for developing wetland restoration projects. Through the Act 167 Stormwater Management Program, PA DEP provided funding to PWD for modeling and analysis to support stormwater planning, as well as to initiate the creation of an Act 167 Plan for this watershed. Initial planning efforts and the development of planning goals were embodied in two River Conservation Plans (one for the Montgomery County portion and one for Philadelphia portion of the watershed) funded by PA DCNR.

As stated in the plans, the goals of the initiative are to protect, enhance, and restore the beneficial uses of the Tookany/Tacony-Frankford waterway and its riparian areas, including those portions of the Tookany Creek adjacent to the project site. The plan concludes that stream aesthetics, accessibility, and safety are compromised due a number of factors, including litter and illegal dumping, trash from stormwater discharges, channelization of portions of the stream, and bank deterioration along stream corridors. It is also noted that the existing aquatic and riparian habitats have been degraded by urban runoff, thereby limiting the diversity of fish and other aquatic life and preventing the development of healthy living resource conditions.

Also to be noted is that PWD has expended over $1 million for the development of the plan, and will commit an additional $2-3 million or more per year towards implementing

Dorothy Stone, Resident
221 Maple Avenue, Wyncote PA 19095

Susanne Whitehead, Resident
219 Summit Avenue, Jenkintown PA 19046

Attachment

c: Peter M. Rogoff, Administrator, FTA
Shawn M. Garvin, Administrator, EPA Region III
Frank J. Cianfrani, Chief, Philadelphia District, USACE
John Hanger, Secretary, PADEP
Cathy Curran Myers, Deputy Secretary, Water Management, PADEP
James Newbold, Regional Director, SE Regional Office, PADEP
Barbara Franco, Executive Director, PHMC
Hon. LeAnna M. Washington, PA Senate
Hon. Josh Shapiro, PA House of Representatives

EAC's Current concerns regarding Station design process:

1. To better serve the township in our advisory capacity the EAC requests being designated as an 'interested party'. This will allow us to receive copies of pertinent design documents to facilitate our review and advisory role.

2. The EAC recommends petitioning the Federal Transit Administration to request an Environmental Impact Statement (EIS) for the SEPTA's Jenkintown/Wyncote Station project. An EIS, as opposed to an Environmental Assessment, takes in the *full scope* of environmental impacts related to the project and is performed by a *neutral professional*. The importance of the EIS is indicated by the scale of the proposed project and the extent of impact that will occur beyond the boundaries of the site. Areas of impact that cause our concern include, but are not limited to, increased traffic at major intersections within the township, pedestrian safety, noise and air pollution, water pollution and flooding, upstream and downstream hydrologic and habitat impact, and multimodal opportunities. These impacts will not be addressed unless an Environmental Impact Statement is performed.

Submitted by Daryl Carrington, following recommendation made at the January 25, 2010 EAC Meeting.

EAC's Recommendation for inclusion in a second letter to SEPTA:

In June 2009 the EAC prepared a letter regarding SEPTA's Jenkintown/Wyncote Station design process. The letter enumerated our core concerns, overall environmental goals, and our hope to continue the dialogue with SEPTA. Several of our members have recently heard an unsubstantiated report that SEPTA presented our letter to Commissioners Haywood and Hampton as justification for stopping dialogue with the community. We are contacting you because, if true, this is a misrepresentation of our position and our recommendations in support of an on-going and open design process between SEPTA and the community. If this misrepresentation occurred, we ask your assistance to correct it.

Submitted by Daryl Carrington following recommendation made at the January 25, 1010 EAC meeting.