

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION BIO-DIESEL BUS PURCHASE – CAPE MAY 2010 CMAQ PROJECTS
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Element:

Improve air quality by reducing diesel emissions through the replacement of older diesel buses with new, cleaner running bio-diesel fueled vehicles.

Description:

Cape May County wishes to purchase 6 new buses to replace the 10 year-old vehicles currently used for the existing Fare Free Transit System.

Location:

Cape May County

Methodology:

The “Bus Replacement” methodology contained in the NJ-AQONE software was used to estimate the benefits of this project. The daily mileage for the buses was estimated at 175 miles/day. This mileage is multiplied by emission rates generated by running MOBILE6.2, a process automated by the NJ-AQONE software. The total emission of the old buses is subtracted from the emissions of their new replacements, with the difference being the total benefit of the program.

Inputs/Assumptions:

- Retired buses are assumed to be diesel fueled and model year 2000.
- While the new buses will be running on Bio-diesel fuel, it was assumed there would be no appreciable difference in emissions over using Ultra Low-Sulfur Diesel (ULSD) fuel. ULSD fuel was mandated nationwide in 2006.
- Average miles traveled per day = 175 miles/day/bus, for both the existing and new vehicles, provided by the operating agency
- Average Bus Speed = 19.6 miles/hour (value obtained from National Transit Database information for New Jersey Transit Service)

Results:

Benefits (Emission Reductions)

	Kg/day
VOC	-0.29
NOx	-14.11
CO	-2.12

Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Bus Model Year

Number of Buses

Fuel Type -- Assume Diesel

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Replacement Buses

Bus Model Year

Number of Buses

Fuel Type

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number: 1
 Report Title: Cape May County Bus Replacement
 Analysis Year: 2010
 Mobile Version: Mobile 6.2
 Analysis Type: Typical Summer Day

Cat	ID	County	Description	Yr. Compl	VEHICLE			Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)										
					VT	VMT	BUS VMT	VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A						
TR7	1	Cape May	Bus Replacements	2010	0	0	0	-0.29	-14.11	-2.12	-0.21	-0.01	N/A	N/A	N/A							
Total impacts for all projects in this scenario: (kg/day) (tons/day)													-0.29	-14.11	-2.12	-0.21	-0.01	0.00	-0.02	0.00	0.00	0.00

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
BUS REPLACEMENT – ATLANTIC COUNTY
2010 CMAQ PROJECTS

Element:

Improve air quality by reducing emissions through the replacement of older diesel buses with new, cleaner running diesel-fueled vehicles.

Description:

Atlantic County wishes to purchase 7 new, diesel-fueled buses to replace 7 older model year diesel buses.

Location:

Atlantic County

Methodology:

The “Bus Replacement” methodology contained in the NJ-AQONE software was used to estimate the benefits of this project. The daily mileage for the buses was estimated at approximately 150 miles/day. This mileage is multiplied by emission rates generated by running MOBILE6.2, a process automated by the NJ-AQONE software. The total 2010 emissions that would have been produced by the older buses were subtracted from the emissions of their replacements, with the difference being the total benefit of the program.

Inputs/Assumptions:

- The retired buses vary in age, but all replacement buses will be model year 2010 paratransit (typically “cut-away”) diesel buses.
- All buses being replaced were analyzed as model year 2002 (this will yield a conservative estimate)
- Average miles traveled per day = 150 miles/day/bus, for both the existing and new vehicles
- Deadhead for the bus route is assumed to be 15%
- Average Bus Speed = 19.6 miles/hour

Results:

Benefits (Emission Reductions)

	Kg/day
VOC	-0.29
NOx	-14.11
CO	-2.12

Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Bus Model Year

Number of Buses

Fuel Type -- Assume Diesel

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Replacement Buses

Bus Model Year

Number of Buses

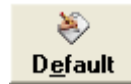
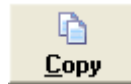
Fuel Type

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor



Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number: 1
 Report Title: Atlantic County Bus Replacements
 Analysis Year: 2010
 Mobile Version: Mobile 6.2
 Analysis Type: Typical Summer Day

Cat	ID	County	Description	Yr. Compl	VEHICLE			Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)							
					VT	VMT	BUS VMT	VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A			
TR7	1	Atlantic	Bus Replacements	2010	0	0	0	-0.29	-14.11	-2.12	-0.21	-0.01	N/A	N/A	N/A				
Total impacts for all projects in this scenario: (kg/day)													-0.29	-14.11	-2.12	-0.21	-0.01		
(tons/day)													0.00	-0.02	0.00	0.00	0.00		

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
HYBRID VEHICLE PURCHASE – CUMBERLAND COUNTY
2010 CMAQ PROJECTS

Element:

Improve air quality by using small hybrid light duty vehicles to provide demand responsive transit services rather than using buses.

Description:

Cumberland County wishes to use energy efficient, hybrid vehicles to give more flexibility in responding to transit requests involving smaller passenger loads. Currently, the Cumberland Area Transit Service (CATS) can only respond with an 18-20 passenger diesel bus even if only one passenger is involved

Location:

Cumberland County and surrounding areas.

Methodology:

Various methodologies in the NJ-AQONE software were used to estimate the benefits of this project. Estimates obtained from the applicant indicate that the service provides 20 trips per day with an average mileage of 4 miles. It was assumed that these bus trips were replaced 1 for 1 and mile for mile with the hybrid light duty vehicles. Emissions of the hybrid vehicles used the Advanced Technology Vehicle methodology in NJ-AQONE, the emissions from the buses used the bus replacement methodology.

Inputs/Assumptions:

- Buses used previously on the service were analyzed as model year 2008
- Hybrids were analyzed solely as SUV's, model year 2010
- Average miles traveled per day = 20 trips/day x 4 miles/trip = 80 miles/day
- Average Bus Speed = 19.6 miles/hour
- Deadhead was not analyzed
- Due to the low emissions involved, inputs to NJ-AQONE were factored by 1000 in order to display significant figures. Results below are simply the output from NJ-AQONE divided by 1000

Results:

Benefits (Emission Reductions)

	Bus Emissions Kg/Day	Hybrid Emissions Kg/Day	Emissions Benefits Kg/day
VOC	-0.0141	0.00088	-0.0132
NOx	-0.0827	0.00320	-0.079
CO	-0.210	0.168	-0.042

Advanced Technology Vehicles

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Retired Fleet Information:

Check box to use default ages.

Age of Retired Veh	# of Passenger Cars Retired	# of Light Duty Trucks Retired
1	<input type="text" value="1"/>	<input type="text" value="1"/>
2	<input type="text" value="0"/>	<input type="text" value="0"/>
3	<input type="text" value="0"/>	<input type="text" value="0"/>
4	<input type="text" value="0"/>	<input type="text" value="0"/>
5	<input type="text" value="0"/>	<input type="text" value="0"/>
Total =	<input type="text" value="1"/>	<input type="text" value="1"/>

+ =

Annualization Factor (days)

Annual Average Miles/Veh

Average Speed (mph)

Total Daily Current Fleet miles/day

Replacement Fleet Information:

Replacement Vehicle Type	Replaced # of Vehicles
<input type="text" value="Hybrid SUVs"/>	<input type="text" value="1"/>
<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>
Total =	<input type="text" value="1"/>

Annualization Factor (days)

Annual Average Miles/Veh

Average Speed (mph)

Total Daily Future Fleet miles/day

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Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Bus Model Year

Number of Buses

Fuel Type -- Assume Diesel

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Replacement Buses

Bus Model Year

Number of Buses

Fuel Type

Bus Type

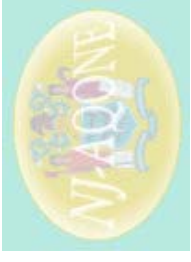
Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type

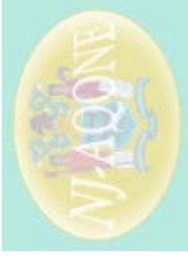


Report ID Number: 1
 Report Title: Cumberland Hybrid Vehicle Purchase for CATS
 Analysis Year: 2010
 Mobile Version: Mobile 6.2
 Analysis Type: Typical Summer Day

Cat	ID	County	Description	Yr. Compl		VEHICLE		Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)									
				2010	2010	VT	VMT	VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A					
ATV	1	Cumberland	Emissions from hybrid vehicles: Factored by 1000	0	0	0	0	0.88	3.20	168.00	0.80	0.80	N/A	N/A	N/A						
Total impacts for all projects in this scenario: (kg/day) (tons/day)													0.88	3.20	168.00	0.80	0.80	0.00	0.18	0.00	0.00

Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number: 1
 Report Title: Cumberland Hybrid Vehicle Purchase for CATS
 Analysis Year: 2010
 Mobile Version: Mobile 6.2
 Analysis Type: Typical Summer Day

Cat	ID	County	Description	Yr. Compl	VEHICLE		Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)				
					VT	VMT	VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A
TR7	1	Cumberland	Emissions from Bus: Factored by 1000	2010	0	0	80,000	14.12	82.65	210.40	1.23	0.88	N/A	N/A	N/A

Total impacts for all projects in this scenario: (kg/day)
 (tons/day)

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
BUS PURCHASE AND OPERATION OF THE SE/SW BOULEVARD SHUTTLE SERVICE
2010 CMAQ PROJECTS

Element:

Improve air quality by providing transit service connecting downtown Vineland residents with employment centers.

Description:

The Vineland SE/SW Boulevard Shuttle Service would provide residents in the downtown Vineland neighborhoods with direct access to employment opportunities in outlying areas. Benefits of this project include reduced emissions from private vehicles and congestion relief due to reduced traffic.

Location:

The shuttle will originate at the Vineland Transportation Center. It will proceed east on Landis Avenue to right on SE Boulevard to the intersection with Burns Avenue and return. Intermediate stops include the intersection of the Boulevard and Landis Avenue, Montrose Street, Chestnut Avenue, Walnut Road, Elmer Road, Sherman Avenue, Butler Avenue and Burns Avenue.

Methodology:

The impacts of this project were estimated using the NJ-AQONE software analysis tool in conjunction with mileage and trip reduction estimates based on the assumptions below. The benefits achieved from the elimination of auto trips were determined using the "Emissions Only" analysis in NJ-AQONE, while the additional emissions from the shuttle were calculated by using the bus replacement methodology (which allows the calculation of emissions from individual buses, not just the benefits of bus replacements). The combination of these two estimates yields the net benefit of the project.

Inputs/Assumptions:

- The shuttle was assumed to be model year 2010, 18 passenger bus
- The route was assumed to operate at 60% occupancy over the course of the day
- Average private vehicle occupancy was assumed to be 1.35 persons/vehicle
- The one way route was assumed to be 10 miles round trip, 10 trips per day, deadhead for route is 15%
- Auto trips that would otherwise take place were assumed to be 7.5 miles round trip, 2 trips per day

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
BUS PURCHASE AND OPERATION OF THE SE/SW BOULEVARD SHUTTLE SERVICE
2010 CMAQ PROJECTS

Results:

Benefits (Emission Reductions)

Pollutant	kg/day
VOC	-0.16
NOx	-0.10
CO	-1.81

SJTPO 2010 CMAQ Analysis
SE/SW Boulevard Shuttle Service

Data:

- Service will operate at 60% of Bus Capacity / 18 passenger buses
- Shuttle will operate 10 Round Trips/Day
- Average length of vehicle trip replaced is 7.5 miles round trip
- Average Vehicle occupancy is 1.35 persons/auto

Calculations:

$$\begin{aligned} \text{Total one way passenger trips} &= \text{Trips} * \text{Bus Capacity} * 60\% \\ &= 10 \text{ trips} * 18 \text{ passengers} * 60\% \\ &= 108 \text{ trips/day} \\ &= 54 \text{ round trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto Trips Reduced} &= \text{One Way Trips/Average Vehicle Occupancy} \\ &= 108 \text{ trips} / 1.35 \\ &= 80 \text{ one-way vehicle trips/day} \\ &= 40 \text{ round trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto VMT Reduced} &= \text{Round Trips reduced} * \text{Average Trip Length} \\ &= 40 \text{ trips} * 7.5 \text{ Miles} \\ &= 300 \text{ Vehicle Miles/Day} \end{aligned}$$

$$\begin{aligned} \text{Revenue Bus Mileage} &= \text{Round Trips/Day} * \text{Mileage} \\ &= 10 \text{ trips} * 10 \text{ Miles/Round Trip} \\ &= 100 \text{ Miles/Day} \end{aligned}$$

Emissions Only Analysis

Project ID County Area Type PPMS#

Description Completion Year

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Enter base transportation impact data
 (Enter Reductions As Negative)

Total Change in VMT

Total Change in work related VT

Total Change in non-work related VT

Total Change in Idling Hours

Vehicle Types

Autos and Light-duty Trucks Only

Heavy Duty Trucks

All Vehicle Types

Distributions by time period (must equal 100%)

Time period
 Peak Off-Peak Daily

	Trip Distributions		
	VMT	Work	Non-work
AM	50%	50%	50%
Midday	0%	0%	0%
PM	50%	50%	50%
Night	0%	0%	0%
	100%	100%	100%

Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Replacement Buses

Bus Model Year

Bus Model Year

Number of Buses

Number of Buses

Fuel Type -- Assume Diesel

Fuel Type

Bus Type

Bus Type

Annual Vehicle Revenue Miles per Bus

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Average Bus Speed (mph)

Deadhead Factor

Deadhead Factor

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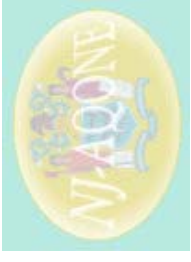
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Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number 1
 Report Title SE/SW Boulevard Shuttle Service
 Analysis Year 2010
 Mobile Version Mobile 6.2
 Analysis Type Typical Summer Day

Cat ID	County	Description	Yr. Compl	VEHICLE			Total Emissions Impacts (Kg/Day)					Cost Effectiveness (\$/Kg)				
				VT	VMT	VT	VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	Total	
EMO 1	Cumberland	Auto Trip Reduction Impacts	2010	-80	-300	0	-0.18	-0.12	-2.04	-0.01	0.00	0.00	N/A	N/A	N/A	
TR7 1	Cumberland	Bus Emissions	2010	0	0	115	0.02	0.02	0.22	0.00	0.00	0.00	N/A	N/A	N/A	
Total impacts for all projects in this scenario: (kg/day)				-80	-300	115	-0.16	-0.10	-1.81	-0.01	0.00	0.00	0.00	N/A	N/A	N/A
(tons/day)							0.00	0.00	0.00	0.00	0.00	0.00				

**SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
OPERATION OF A RAIL SHUTTLE SERVICE TO ATLANTIC CITY AIRPORT AND
STOCKTON COLLEGE - 2010 CMAQ PROJECTS**

Element:

Improve air quality by providing shuttle service from the Egg Harbor NJ Transit rail station serving the Atlantic City Airport, Stockton State College and other local employment centers during the peak periods

Description:

The proposed rail feeder route would provide a last-mile connection from the NJ Transit rail station to employment destinations. This would replace longer-distance auto trips, ultimately resulting in a reduction in congestion and associated vehicle emissions.

Location:

The shuttle will originate at the Egg Harbor train Station, White Horse Pike to Pomona Road, to Jimmy Leads road to Stockton State College, Back on Jimmy Leads road AtlanticCare regional Medical Center, Back on Jimmy Leads Road to Tilton Road to FAA Technical Center/Atlantic City International Airport , Back on Tilton road to White Horse Pike to the Egg Harbor Train Station.

Methodology:

The impacts of this project were estimated using the NJ-AQONE software analysis tool in conjunction with mileage and trip reduction estimates based on the assumptions below. The benefits achieved from the elimination of auto trips were determined since emissions analysis in NJ-AQONE, while the additional emissions from the shuttle were calculated by using the bus replacement methodology (which allows the calculation of emissions from individual buses, not just the benefits of bus replacements.) Auto trips were assumed to be longer distance trips as is typical for suburban rail. The combination of these two estimates yields the net benefit of the project.

Inputs/Assumptions:

- The shuttle was assumed to be model year 2010, 18 passenger bus
- The shuttle route was assumed to be 22 miles round trip, 6 trips per day, deadhead for route is 15%
- The route was assumed to operate at 60% occupancy over the course of the day
- Average private vehicle occupancy was assumed to be 1.42 persons/vehicle
- Auto trips that would otherwise take place were assumed to be 36.25 miles round trip, 2 trips per day

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
OPERATION OF A RAIL SHUTTLE SERVICE TO ATLANTIC CITY AIRPORT AND
STOCKTON COLLEGE - 2010 CMAQ PROJECTS

Results:

Benefits (Emission Reductions)

Pollutant	kg/day
VOC	-0.25
NOx	-0.23
CO	-3.19

SJTPO 2010 CMAQ Analysis
SE/SW Boulevard Shuttle Service

Data:

- Service will operate at 60% of Bus Capacity / 18 passenger buses
- Shuttle will operate 6 Round Trips/Day
- Average length of vehicle trip replaced is 736.25 miles round trip
- Average Vehicle occupancy is 1.42 persons/auto

Calculations:

$$\begin{aligned} \text{Total one way passenger trips} &= \text{Trips} * \text{Bus Capacity} * 60\% \\ &= 6 \text{ trips} * 18 \text{ passengers} * 60\% \\ &= 64 \text{ trips/day} \\ &= 32 \text{ round trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto Trips Reduced} &= \text{One Way Trips/Average Vehcile Occupancy} \\ &= 64 \text{ trips} / 1.42 \\ &= 48 \text{ one-way vehicle trips/day} \\ &= 24 \text{ round trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto VMT Reduced} &= \text{Round Trips reduced} * \text{Average Trip Length} \\ &= 24 \text{ trips} * 36.25 \text{ Miles} \\ &= 870 \text{ Vehicle Miles/Day} \end{aligned}$$

$$\begin{aligned} \text{Revenue Bus Mileage} &= \text{Round Trips/Day} * \text{Mileage} \\ &= 6 \text{ trips} * 22 \text{ Miles/Round Trip} \\ &= 132 \text{ Miles/Day} \end{aligned}$$

Emissions Only Analysis

Project ID County Area Type PPMS#

Description Completion Year

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Enter base transportation impact data

(Enter Reductions As Negative)

Total Change in VMT

Total Change in work related VT

Total Change in non-work related VT

Total Change in Idling Hours

Vehicle Types

- Autos and Light-duty Trucks Only
- Heavy Duty Trucks
- All Vehicle Types

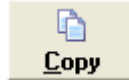
Distributions by time period (must equal 100%)

Time period

- Peak
- Off-Peak
- Daily

Trip Distributions

	<u>VMT</u>	<u>Work</u>	<u>Non-work</u>
AM	50%	50%	50%
Midday	0%	0%	0%
PM	50%	50%	50%
Night	0%	0%	0%
	100%	100%	100%



Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Replacement Buses

Bus Model Year

Bus Model Year

Number of Buses

Number of Buses

Fuel Type -- Assume Diesel

Fuel Type

Bus Type

Bus Type

Annual Vehicle Revenue Miles per Bus

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Average Bus Speed (mph)

Deadhead Factor

Deadhead Factor

Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number: 1
 Report Title: ACY Stockton College Shuttle Service
 Analysis Year: 2010
 Mobile Version: Mobile 6.2
 Analysis Type: Typical Summer Day

Cat ID	County	Description	Yr. Compl	VEHICLE		BUS VMT	Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)									
				VT	VMT		VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A					
EMO 1	Atlantic	Auto Trip Reduction Impacts	2010	-48	-870	0	-0.27	-0.26	-3.48	-0.01	-0.01	N/A	N/A	N/A						
TR7 1	Atlantic	Bus Emissions	2010	0	0	152	0.03	0.03	0.29	0.00	0.00	N/A	N/A	N/A						
Total impacts for all projects in this scenario: (kg/day)													-0.25	-0.23	-3.19	-0.01	-0.01	N/A	N/A	N/A
(tons/day)													0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
ATLANTIC CITY AIRPORT/DELILAH ROAD SHUTTLE
2010 CMAQ PROJECTS

Element:

Improve air quality by providing shuttle service from the Pleasantville Bus Station along Delilah Road to the Atlantic City Airport.

Description:

This proposal is to continue funding for the shuttle service from the Pleasantville Bus Station along Delilah Road to the Atlantic City Airport. This service has been in operation for one year and is averaging 56 passengers/day, with increased ridership in the summer months.

Location:

Atlantic City Airport, Delilah Road and Pleasantville

Methodology:

The impacts of this project were estimated using the NJ-AQONE software analysis tool in conjunction with mileage and trip reduction estimates based on the assumptions below. The benefits achieved from the elimination of auto trips were determined using emissions only analysis in NJ-AQONE, while the additional emissions from the shuttle were calculated by using the bus replacement methodology (which allows the calculation of emissions from individual buses, not just the benefits of bus replacements.) The combination of these two estimates yields the net benefit of the project.

Inputs/Assumptions:

- The shuttle was assumed to be model year 2009 paratransit (cut-away) bus
- Daily revenue mileage on the route is 123 miles, deadhead was assumed at 10%
- Average rideship has been recorded at 56 passengers/day. On a typical week the service carries 280 passengers, however a peak week in the summer ridership is as high as 600 passengers. As this is an ozone analysis and the emissions are calculated for a summer day, ridership was factored upwards using a ratio of $600/280 = 120$ Riders/Day
- Average private vehicle occupancy was assumed to be 1.42 persons/vehicle
- Average auto trip length was assumed to be 7.01 miles

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
ATLANTIC CITY AIRPORT/DELILAH ROAD SHUTTLE
2010 CMAQ PROJECTS

Results:

Benefits (Emission Reductions)

Pollutant	kg/day
VOC	-0.25
NOx	-0.23
CO	-3.19

SJTPO 2010 CMAQ Analysis
ACY - Delilah Road Shuttle

Data:

- On a peak summer day the service carries 500 passengers / week - 100/day
- Average length of auto trip replaced is 7.01 miles round trip
- Average Vehicle occupancy is 1.42 persons/auto

Calculations:

$$\begin{aligned} \text{Total one way passenger trips} &= 100 \text{ one-way trips/day} \\ &= 50 \text{ round trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto Trips Reduced} &= \text{One Way Trips/Average Vehcile Occupancy} \\ &= 100 \text{ trips} / 1.42 \\ &= 70 \text{ one-way vehicle trips/day} \end{aligned}$$

$$\begin{aligned} \text{Total Auto VMT Reduced} &= \text{Trips reduced} \times \text{Average Trip Length} \\ &= 70 \text{ trips} \times 7.01 \text{ Miles} \\ &= 490.7 \text{ Vehicle Miles/Day} \end{aligned}$$

Emissions Only Analysis

Project ID County Area Type PPMS#

Description Completion Year

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Enter base transportation impact data
 (Enter Reductions As Negative)

Total Change in VMT

Total Change in work related VT

Total Change in non-work related VT

Total Change in Idling Hours

Vehicle Types

Autos and Light-duty Trucks Only

Heavy Duty Trucks

All Vehicle Types

Distributions by time period (must equal 100%)

Time period: Peak Off-Peak Daily

	Trip Distributions		
	VMT	Work	Non-work
AM	50%	50%	50%
Midday	0%	0%	0%
PM	50%	50%	50%
Night	0%	0%	0%
	100%	100%	100%

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Bus Replacements

Project ID County Area Type PPMS#

Description Completion Year (Purchase Year)

Cost Benefit Analysis

Capital Cost: Service Life (in years): Annual Operating Cost:

Associated Transit Agency:

Annualization Factor (days) =

Retired Buses

Bus Model Year

Number of Buses

Fuel Type -- Assume Diesel

Bus Type

Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Replacement Buses

Bus Model Year

Number of Buses

Fuel Type

Bus Type

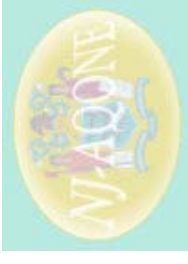
Annual Vehicle Revenue Miles per Bus

Average Bus Speed (mph)

Deadhead Factor

Output Report -- Transportation and Emissions Impacts: Total Emissions & Cost Effectiveness

Sorted by Project Type



Report ID Number 1
 Report Title ACY - Deiliah Road Shuttle Service
 Analysis Year 2010
 Mobile Version Mobile 6.2
 Analysis Type Typical Summer Day

Cat ID	County	Description	Yr. Compl	VEHICLE		BUS VMT	Total Emissions Impacts (Kg/Day)				Cost Effectiveness (\$/Kg)							
				VT	VMT		VOC	NOx	CO	PM2.5	SO2	Total	VOC	NOx	N/A			
EMO 1	Atlantic	Auto Trip Reduction Impacts	2010	-70	-491	0	-0.21	-0.17	-2.57	-0.01	-0.01	N/A	N/A	N/A				
TR7 1	Atlantic	Bus Emissions	2010	0	0	135	0.02	0.03	0.26	0.00	0.00	N/A	N/A	N/A				
Total impacts for all projects in this scenario: (kg/day)													-0.18	-0.14	-2.31	-0.01	0.00	0.00
(tons/day)													0.00	0.00	0.00	0.00	0.00	0.00