

Case Study # 1

Baltimore/Washington International Airport



Background

Baltimore/Washington International Airport (BWI) has enjoyed continued high growth for several years, and in 2000 the annual passenger load exceeded 19 million passengers. Of these, approximately three-quarters used BWI as their origin and/or destination point.

The airport is owned by the State of Maryland and managed by the Maryland Aviation Administration, a modal administration of the Maryland Department of Transportation. The facility is located approximately 9 miles from Baltimore and 32 miles from Washington, D.C., and is served by major highways, intercity rail and regional light rail. It is a major center of activity for Southwest Airlines and an origin and destination airport for many national carriers.

BWI will expand both its terminal and parking facilities in the near future and is considering significant expansion of its shuttle fleet. BWI has a large on-site CNG refueling facility and recently had 18 contractor owned and operated CNG powered buses circulating between public and employee parking lots and the terminal. The local utility is Baltimore Gas and Electric (BGE), which has actively supported the expansion of AFVs. The airport does not have refueling facilities for any other alternative fuel.

There are 22 hotels within the immediate vicinity of BWI. Seven major rental car companies serve the airport with facilities next to the terminal. One smaller national company operates off-site. A consolidated off airport remote facility for all rental cars is being planned.

Airport Shuttles at BWI

Over 80 different shuttle companies were observed arriving at BWI during a one-day survey (excluding taxicabs and limousines). The table shows the relevant characteristics of the top shuttle operators at BWI. Only six percent of the shuttle companies exceeded 100 trips to the terminal. Several others, especially hotel shuttles, made just over 20 trips.



Top Airport Shuttles at BWI Airport

<i>Company</i>	<i>Number of Trips to Terminal during survey day</i>	<i>Number of Vehicles in Operation</i>	<i>Telephone Number</i>
Airport Fast Park	354	10 cutaways	410-691-3333
Airport Shuttle/Montgomery Shuttle	234	108 vans in region, 36 based @ BWI	1-301-590-0000
BWI CNG Bus Fleet	617	18 full sized buses	Operated by Airport Contractor
ESP Parking	258	11 large cutaways	Operated by Airport Contractor
Park & Go	348	12 cutaways	410-850-5300
SuperShuttle	165	120 vans in region	410-761-1689 1-703-416-7873

Baltimore/Washington International Airport (BWI)

Survey conducted September 22, 1999

Company	Count	Vehicle Type	Telephone
AATRANSPORTATION	1	Van	410-789-0350
AFFORDABLE AIRPORT SHUTTLE	5	Van	301-670-0440
AIRPORT COACH	1	Van	
AIRPORT EXPRESS SHUTTLE	2	Van	703-241-9747
AIRPORT FAST PARK	354	Cutaway	410-691-3333
AIRPORT SEDAN	4	Sedan	410-760-8884
AIRPORT SHUTTLE/MONTGOMERY SHUTTLE	234	Van	301-590-0000
AIRPORT SHUTTLE SERVICE	3	Van	800-776-0323/410-381-2772/301-490-2625
AIRPORT TRANSFERS	1	Van	
AIRPORT TRANSPORTATION	1	Limo	410-285-3131
ALL AMERICAN TRANSPORT	1	Van	
AMERISUITES	3	Van	410-859-3360
AMTRACK	13	Bus	410-672-6167
ARDWORK AIRPORT SHUTTLE	12	Van	301-346-7081
B & B AIRPORT SHUTTLE	1	Sedan	410-342-6815
BALTIMORE AIRPORT SHUTTLE	6	Van	410-821-5387
BBC EXPRESS	1	Van	703-834-1555
BEST WESTERN	2	Van	410-796-3300
BWI CNG BUS FLEET - all uses	617	Bus	410-684-3346
C&D TRANSPORTATION	1	Van	410-789-8496
CI	3	Van	410-789-9100
COMFORT SUITES	21	Cutaway	410-691-1000
CROFTON COACH & CARRIER	5	Van	410-451-3030
DCE	1	Cutaway	703-913-5652
DELAWARE EXPRESS VAN & SHUTTLE	3	Van	800-648-5466
DGS	8	Cutaway	
DIPLOMAT LIMOUSINE SERVICE	6	Sedan	301-497-1111
DOUBLE TREE	8	Cutaway	410-850-0747
DOVER LIMO	1	Van	302-678-8090

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

DULLES	1	Van	703-481-8181
ENTERPRISE - CAR RENTAL (Concorde)	55	Cutaway	301-212-8246
ESP BWI EXPRESS PARKING	258	Cutaway	800-608-6294
ETC TRANSPORTATION	1	Sedan	410-519-7997
GALAXY EXPRESS SHUTTLE	1	Van	888-820-1200
GMS SHUTTLE	1	Van	
GP	2	Cutaway	
GUNTHER	1	Bus	
HAMPTON INN	11	Van	410-850-0600
HILTON	5	Van	410-653-1100/410-997-1060
HMI	1	Van	
HNBG	1	Cutaway	
HOLIDAY INN	36	Cutaway	410-859-8400
HOMEWOOD SUITES	8	Cutaway	410-684-6100
HUDSON GENERAL	40	Cutaway	operates BWI buses
JO-EE TRANSPORTATION	5	Van	301-444-0888
KEN-DAN TRANSPORTATION INC.	1	Van	
KING AIRPORT VANS	2	Van	
MAP	1	Van	
MARRIOTT	23	Cutaway	410-859-8300
MARRIOTT COURTYARD	2	Van	410-859-8855
MARRIOTT RESIDENCE INN	6	Cutaway	410-691-0255
MARTIN AIRPORT SHUTTLE SERVICE	2	Van	410-373-4407
MCTS	1	Van	
MDNA	3	Van	
MFDC	10	Cutaway	
MIROTEL INN	8	Van	410-865-7500
MPS	3	Van	
MTA – MASS TRANSIT BUS	17	Bus	
ORBITAL SHUTTLE	7	Van	301-253-5033
PARK & GO SHUTTLE	348	Cutaway	410-850-5300
PF	7	Cutaway	
PRINCE WILLIAM AIRPORT	1	Van	
PRIVATE CAR - BWI Limousine Service	44	Limo	410-519-0000
RAMADA INN	4	Van	410-712-4300
RED ROOF INN	9	Van	410-850-7600/712-4070
RELAX AND	2	Van	

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

RIDE			
ROYAL AIRPORT SHUTTLE	5	Van	301-657-0888
RPS	2	Van	
SHERATON	29	Cutaway	410-859-3300
SIGNATURE FLIGHT SUPPORT	4	Van	410-859-4000
SIH	8	Cutaway	
SMART RIDE Inc.	1	Van	410-535-6932
SUISSE CHALET	6	Van	410-859-2333
SUPER SHUTTLE	165	Van	410-761-1689
TOWSON SEDAN SERVICE	1	Sedan	410-321-4567
VARIOUS UNNAMED LIMOS	17	Limo/Sedan	
SUM	2485		

Additional BWI Shuttle Information from other sources

Airport Vans Inc.	410-760-9988
Airport Limo	410-859-7545
Airport Limousine Service	410-730-0414
Dillon	410-647-2321
V&D Sedan	410-752-7985
Wyndom	410-841-6385
Yellow AP Van South	410-208-6900

Case Study #2

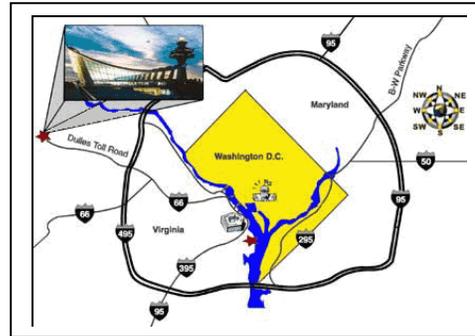
Dulles International Airport

Background

Dulles serves about 16 million passengers a year; of these, just over 9.4 million are origin and destination passengers.

The Metropolitan Washington Airports Authority operates the facility, which is located at

the end of the 16-mile Dulles Access Road that feeds into I-66 and I-495, the Capital Beltway. Dulles is an origin and destination airport; nearly 20 percent of its flights are international. The airport employs over 15,000 people.



The airport has extensive parking facilities for about 23,000 vehicles. CNG refueling facilities are being planned for installation soon near the airport to provide CNG for 23 SuperShuttle vans serving this airport and Reagan National. No other AFV infrastructure is planned at this time.

Only one hotel is located at the airport site; however there are numerous hotels in nearby Tyson's Corner, Herndon and adjacent areas. Eight major rental car companies are listed at the airport.



Airport Shuttles at Dulles

The Table provides data for the top shuttle operations at Dulles. Almost 90 shuttle companies were observed arriving at Dulles during a one-day survey (excluding taxicabs and limousines). Of that number, only three exceeded 50 trips and an additional two exceeded 20 trips. The latter two were local hotels. None of the rental car courtesy bus or van totals exceeded 17 trips to the terminal.

Top Airport Shuttles at Dulles International Airport

Company	Number of Trips to Terminal during survey day	Number of Vehicles in Operation	Telephone Number
Airport Express/ Montgomery Shuttle	84	108 vans in region	1-301-588-0455
Dulles Parking Shuttles	76	20 full & small sized buses	Operated by airport contractor
Super Shuttle	82	120 vans in region	1-703-416-7873
Days Inn	23	4 vans	1-703-741-6700
Homewood Suites	30	2 vans	1-703-793-1700

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

Dulles International Airport (IAD)

Survey completed October 27, 1999

Company	Count	Vehicle Type	Telephone
(D=Dulles, RN=Reagan National. Dulles unless marked)			
A METRO CONNECTION	1	Van	
ABE'S	1	Van	
AEROLINK-AR	13	Van	703-661-5780/703-572-4580
AFFA	3	Van	
AFFORDABLE AIR SHUTTLE	3	Van	301-670-0440
AIR METRO	1	Unknown	
AIR TRANSPORTATION	3	Van	
AIRPORT EXPRESS SHUTTLE	12	Vans/Cutaway	301-588-0455 202-829-6210
AIRPORT EXPRESS & MONTGOMERY SHUTTLE	84	Van	301-590-0000
ALAMO - CAR RENTAL	8	Small Bus	RN 703-684-0086
AVIS - CAR RENTAL	8	Van	RN&D 800-831-2847
AWARDS SH	1	Unknown	
BALTIMORE AIR SHUTTLE	2	Van	410-821-5387
BBC EXPRESS	10	Van	202-296-8855
BELTWAY TRANSPORTATION	6	Cutaway	202-857-0440
BUDGET - CAR RENTAL	6	Buses/Vans	703-486-3059
BWI	2	Van	
COACH USA	1	Van	800-334-4441
COMFORT INN	4	Van	703-448-8020
DAFRE TRANSPORTATION	1	Van	703-680-0987
DAYS INN	23	Van	703-471-6700
DD	1	Cutaway	
DIAMOND CHEX	1	Cutaway	
DOLLAR - CAR RENTAL	11	Cutaway	D 703-661-6630 RN 703-519-8700
DREAM	1	Sedan	301-982-2005
DT	1	Small Bus	
DULLES PARKING SHUTTLE	76	Large/Small Bus	Airport Contractor
EMBASSY SUITES	8	Van	703-464-0200 703-883-0707
ENTERPRISE - CAR RENTAL	2	Van	D & RN: 703-553-7744
FAIRFIELD INN	1	Van	703-435-5300
FANCY FLIER	1	Van	
FAUQUIER AIR COACH	4	Van	540-347-2577

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

GCT	1	Large Bus	
GER 2	1	Van	
GFC	2	Van	
GREYHOUND	1	Van	
HAMPTON INN	6	Van	703-793-1700
HAMPTON PLANNING	1	Van	
HAWTHORNE	4	Van/Cutaway	
HAYMARKET	1	Large Bus	
HERTZ – CAR RENTAL	2	Cutaway	201-307-2000/800-336-2496
HILTON	12	Cutaway	703-847-5000
HOMEWOOD	30	Cutaway	800-225-5466
HYATT	17	Van/Cutaway	703-713-1234
INTERNATIONAL	1	Cutaway	
LANDSDOWNE RESORT	5	Cutaway	
LIGHTFOOT LIMO	1	Limo	
LIMOUSINES, VARIOUS NO NAME	21	Limo	
LONGWHITE	2	Cutaway	
LOUD TR	2	Cutaway	
MADISON LIMOUSINE SERVICE	2	Cutaway	703-534-9700
MARRIOTT	13	Cutaway	703-413-5500; 703-920-3230; 703-734-3200; 800-562-2511
MARRIOTT COURTYARD	3	Van	703-478-9400
MARRIOTT WESTFIELDS	8	Van	703-818-0300
MARY WASHINGTON COLLEGE	6	Van	
METRO AIR CONNECTION	1	Van	703-313-4848
NATIONAL - CAR RENTAL	8	Van	703-471-5278
NEALS TRANSPORTATION NS	1	Van	
OBER UNITED	1	Van	800-345-6237
PIEDMONT	3	Van	804-432-4491
PRINCE WILLIAM	3	Van	
RITZ CARLTON	1	Van	703-506-4300/703-415-5000
ROYAL AIRPORT SHUTTLE	7	Van	301-657-0888
SHAOW2	2	Van	
SHERATON	6	Van	202-775-0800
SIGNATURE	2	Van	703-419-5486/703-661-0031
SKY CHIEFS	1	Van	
SUMMERFIELD SUITES	7	Van	703-713-6800

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

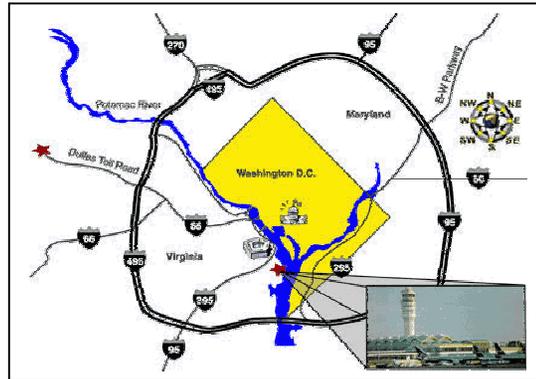
SUPER SHUTTLE	82	Van	800-258-3826/3866
THRIFTY – CAR RENTAL	17	Van	202-783-0400
TRIANGLE	2	Van	
TSENG BROTHERS	1	Large Bus	
TYSON'S CORNER	1	Large Bus	
UNITED	1	Small Bus	
UNITED PLANNING	2	Van	
UNITED SHUTTLE	3	Van	
UTS	1	Large Bus	
VANGO	3	unknown	
VEAL MOTOR COACH	1	Large Bus	
VICAR	1	Limo	
VISION TRANSPORT	5	Limo/Large Bus	301-680-0334
WASHINGTON FLYER	14	Large Bus	888-927-4359; 703-528-4440; 703-572-7606
WORLD AIRPORT SHUTTLE	3	Limo	
YELLOW AIRPORT SHUTTLE	3	Limo	301-208-6900
NO IDENTIFICATION	17	various	
TOTAL PASSES BY TERMINAL	643		

Case Study # 3

Reagan National Airport

Background

Approximately 16 million passengers a year use Reagan National Airport; of these, about 12.9 million are origin and destination passengers. Reagan offers service to destinations no further than 1250 miles from the District.



The Metropolitan Washington Airports Authority operates the airport. The facility is located across the Potomac River from Washington, D.C. Parking is relatively limited at this airport with only 7500 spaces. The airport is primarily served by taxicabs with approximately 5000 taxis dispatched to the airport daily.

Reagan National is served well by public transportation including a Washington Metro (heavy rail) subway stop at the facility. Public access to hundreds of hotels in downtown D.C. is possible through the extensive D.C. Metro network, bus and taxicabs. Eight major rental car companies operate at Reagan National. A CNG refueling facility has been completed adjacent to the airport and is serving 23 area SuperShuttle vans that operate on natural gas.

Airport Shuttles at Reagan National

An informal assessment was substituted for a full-day survey because the airport's ground transportation is so heavily dominated by taxicabs and public transportation. Limited observation revealed that the primary airport shuttles at Reagan National are:

- Airport Shuttle/Montgomery Shuttle (vans)
- Sun Park (cutaways) Airport Parking Shuttle (airport contractor) (medium-sized buses)
- SuperShuttle (vans)
- Washington Flyer Express Bus (full-sized bus)

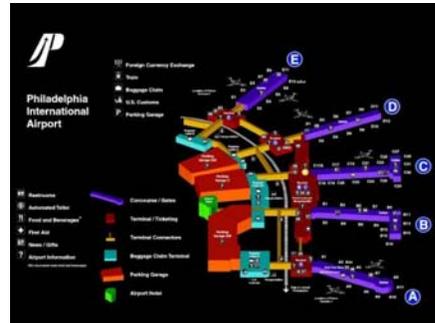
Case Study # 4

Philadelphia International Airport

Background

Philadelphia’s airport serves over 24 million passengers annually; of these over 14.2 million are origin and

destination passengers. The airport is owned and operated by the City of Philadelphia and serves Philadelphia, the surrounding Pennsylvania suburban and New Jersey suburban areas and the Wilmington, Delaware area as well. The airport is easily accessible from I-95 and is served by high-speed rail as well as taxicabs, shuttles and buses. In addition to its origin and destination business, Philadelphia is a major hub for U.S. Airways domestic and international flights (this could change with the pending merger of U.S. Airways and United Airlines).



New additions to the airport will include two new parking garages as well as expanded ground transportation facilities. There are 19 hotels listed in the vicinity of the airport and six major rental car companies.

Airport Shuttles at Philadelphia International Airport

The following table provides data for the top shuttle operations at Philadelphia International Airport. Just over 40 shuttle services were observed at Philadelphia International Airport during a two-hour survey. The observations were projected for a 19-hour day. This was the only airport in the region with a high volume of rental car shuttle vehicles. Avis, Budget, Hertz and National operate buses and vans on a continuous basis. All the major rental car facilities are located on airport property away from the terminal. The typical rental car shuttle trip is a two to three mile round trip. Several regional shuttles serve the airport from long distances (e.g. Tropicana, Delaware Shuttle, Main Line). The hotel vans noted in the survey appeared to come from hotels within a 10-mile radius of the airport. Only one hotel was located at the airport. This hotel had three vans (which were not observed taking passenger to and from the terminal) and operates one AFV – an electric cart type that runs inside the carpeted bridge from the hotel to Terminal B.



Top Airport Shuttles at Philadelphia International Airport

Company	Number of Trips to Terminal (19 hour projection)	Estimated Number of Vehicles in Operation	Telephone Number
Avis Rent a Car	608	9 bus, 2 cutaways	516-222-3469
Budget	380	6 mini buses	215-937-5222
Hertz Corporation	513	8 buses	201-307-2000
National Rent a Car	437	5 buses and minibuses	800-468-3334
Philadelphia Airport Authority	456	18 buses	215-683-9840/215-937-6963
Sun Park	323	7 cutaways	888-654-7627

Philadelphia International Airport

Survey conducted February 7, 2000

One Hour Survey, Baggage Claim B, Road Far Side, 11:00 a.m. to 12:00 noon

Company	Vehicle #	Type	Est. No. of Units in Fleet	Telephone Number
ACE PARK & FLY	2	van	unknown	877-727-5223/215-492-3551
ALAMO RENT A CAR	4	cutaway	2	954-769-6000
AMPCO EXPRESS AIRPORT PARKING	4	cutaway	5	215-934-1700
AVIS RENT A CAR	25	bus/cutaway	9 bus,2 cw	516-222-3469
AVISTAR	2	van	unknown	800-621-7275
BUDGET RENT A CAR	17	minibus	6	215-937-5222
COLONIAL PARKING	1	cutaway	3 plus	610-521-6900
COMFORT INN	1	van	1	610-521-9800
DOLLAR RENT A CAR	7	cutaway	2	918-669-3000
ECONO LODGE	1	cutaway	1	610-521-3100
ECONOMY LOT (AIRPORT AUTHORITY)	6	bus	18 plus	215-683-9840
EMBASSY SUITES	1	van	1	215-365-4500
ENTERPRISE RENT A CAR	6	cutaway	unknown	800-736-8222
EXPRESS PARK	2	van	2 plus	800-930-7275
HAMPTON INN	1	van	1	610-363-555/610-962-8111
HERTZ CORPORATION	21	bus	8	201-307-2000
HILTON (AIRPORT HILTON)	1	cutaway	1	770-953-4400
HOLIDAY INN PHILADELPHIA INTERNATIONAL	1	van	unknown	215-755-9500/610-521-2400
KINNEY AIR PARK	3	cutaway	3 plus	215-492-5353
NATIONAL RENT A CAR	18	bus/minibus	4 or 5	800-468-3334
PARK & GO	4	minibus	2 plus	610-521-5050
RAMADA INN	2	van	2	610-521-9600
RENAISSANCE HOTEL	1	cutaway	unknown	
SEPTA (BUSES)	7	bus	unknown	
SMART PARK	3	van	8	610-521-3400
SUN PARK AIRPORT PARKING	7	cutaway	7	888-654-7621
WESTIN SUITES FOUR POINT HOTEL	2	cutaway	2	800-937-8461
TOTAL PASSES FOR 1 HOUR:	150			

**Alternative Fuel Vehicles in the Airport Shuttle
Industry: Characterization of a Niche Market**

Philadelphia International Airport

Survey conducted February 7, 2000

One Hour Survey, Terminal B and Inner Loop Baggage Claim B, 1:00 p.m. to 2 p.m.

Company	Vehicle #	Type	Estimated No. of units in fleet	Telephone
AEROLINK SHUTTLE	1	van	unknown	215-369-5669
AIRPORT DEBUTANTE LIMOUSINE	1	van	unknown	215-638-9500
AIRPORT INN	1	cutaway	unknown	
AIRPORT SHUTTLE DELUXE	3	van	1	
ALAMO RENT A CAR	2	cutaway	2	954-769-6000
AMPCO EXPRESS AIRPORT PARKING	5	cutaway	5	215-934-1700
ATLANTIC AVIATION	1	van	unknown	302-322-7000
AVIS RENT A CAR	7	bus	9 bus, 2 cw	516-222-3469
AVISTAR	1	cutaway	unknown	800-621-7275
BUDGET RENT A CAR	3	minibus	6	215-937-5222
CARGO CITY (AIRPORT AUTHORITY BUS)	4	bus	18	215-683-9840
COLONIAL PARKING	5	cutaway	3 plus	610-521-6900
DELAWARE EXPRESS	3	van	unknown	800-648-5466
DOLLAR RENT A CAR	1	cutaway	2	918-669-3000
ECONOMY LOT (AIRPORT AUTHORITY)	6	bus	18	215-683-9840
EMBASSY SUITES	2	van	unknown	215-365-4500
EMPLOYEE LOT (AIRPORT AUTHORITY)	8	bus	18 plus	215-683-9840
ENTERPRISE RENT A CAR	1	cutaway	unknown	800-736-8222
EXPRESS PARK	5	van	2 plus	800-930-7275
HERTZ CORPORATION	6	bus	8	201-307-2000
HILTON (AIRPORT HILTON)	2	cutaway	1	770-953-4400
HOLIDAY INN PHILADELPHIA INTERNATIONAL	3	van	unknown	215-755-9500/610-521-2400
KINNEY AIR PARK	7	cutaway	3 plus	215-492-5353
LADY LIBERTY	2	van	unknown	215-724-8888
MAIN LINE AIRPORT SERVICE	2	van	unknown	800-427-3464/610-525-0513
METRO RAPID ROVER	6	van	unknown	215-492-2084/215-428-1500/609-428-1500
NATIONAL RENT A CAR	5	bus/cutaway	4 or 5	800-468-3334
PAOLI AIRPORT LIMOUSINE	1	van	unknown	800-640-7428

Alternative Fuel Vehicles in the Airport Shuttle Industry: Characterization of a Niche Market

PARK & GO	3	minibus	2 plus	610-521-5050
PHILADELPHIA SHUTTLE	1	van	unknown	215-333-1441/215-258-1000 *
PRIORITY VALET AIRPORT PARKING	6	van	3 plus	877-359-4100
RAINBOW AIRPORT SHUTTLE	1	van		
RAMADA INN	5	van	2	610-521-9600
RENAISSANCE	1	cutaway	unknown	
SKY SHUTTLE	1	van	unknown	215-771-
SMART PARK	1	van	8	610-521-3400
SUN PARK	10	cutaway	8	888-654-7621
SUPER SHUTTLE	6	van	5 plus	215-551-6600/800-246-0770
THE LAGOON HOTEL	2	van	unknown	610-521-1400
TROPIANA AIRPORT SHUTTLE	6	van	unknown	215-643-5397
USA LIMOUSINE	2	van	unknown	800-872-6070
WESTERN BURKS	1	van	unknown	
TOTAL PASSES FOR 1 HOUR:	140			