

FINAL

VLT FACILITY OPERATION LICENSE IN  
PRINCE GEORGE'S COUNTY

MGM NATIONAL HARBOR CASINO/HOTEL

Secondary Review of Applicants' Traffic Flow  
Studies

FINAL

December 18, 2013

**Sam  
Schwartz  
Engineering  
D.P.C.**

**TABLE OF CONTENTS**

1. EXECUTIVE SUMMARY ..... 1  
    1.1 Background..... 1  
    1.2 Projected Conditions..... 1  
    1.3 Analysis..... 2  
    1.4 Proposed Improvements..... 2  
    1.5 Parking and Internal Access..... 2  
2. INTRODUCTION ..... 3  
3. BACKGROUND..... 3  
4. PROJECTED CONDITIONS ..... 4  
    4.1 Trip Generation ..... 4  
    4.2 Trip Distribution..... 6  
    4.3 Network Assignment..... 6  
    4.4 Mode Choice..... 6  
5. ANALYSIS ..... 7  
6. PROPOSED IMPROVEMENTS..... 10  
7. PARKING AND INTERNAL ACCESS..... 10

**LIST OF TABLES**

Table 1: Trip Distribution – MGM ..... 6  
Table 2: Network Assignment – MGM ..... 6  
Table 3: Intersection Level of Service Results – MGM..... 8  
Table 4: Ramp Level of Service Results – MGM..... 9  
Table 5: Proposed Parking – MGM..... 10

# **1. EXECUTIVE SUMMARY**

The Traffic Group prepared a Traffic Flow Study for the National Harbor site dated April 18, 2013 in response to the Request for Proposal (RFP) for a Video Lottery Operation License in Prince George's County, MD. The National Harbor site is located on the Beltway parcel of the National Harbor development. According to the applicant's plan, the casino would include a maximum of 3,600 slot machines and a maximum of 140 table games (30 poker/110 Gaming) with ancillary bars and restaurants and retail. The site will also include a 1,000 seat event center for live entertainment and a 300 room hotel with spa and conference center.

## **1.1 Background**

The location and number of intersections and ramps within the study area appear to be appropriate given the scale of the project and likely paths taken by projected visitors to the site. The applicant uses the highest hourly volumes recorded on a Friday evening and Saturday which are typically the peak times of activity at a casino. They also include a weekday AM peak hour when background volumes are high. The annual growth rate coupled with the extensive number of development sites in the area that were included appears to be appropriate for this portion of Prince Georges County.

## **1.2 Projected Conditions**

The applicant used Maryland State Highway Administration Trip Generation Rates from three casino studies previously submitted to the Lottery Commission. When developing gaming positions used to determine traffic generation for a casino, the assumption of one gaming position equating to each slot machine is appropriate. The assumption of seven gaming positions are assigned for every table game is slightly less than the eight that some studies have used.

It was also appropriately assumed that the gaming and food and beverage were bundled together to the casino trip generation. Although the trip rate per room for the hotel component was taken from an earlier version of the ITE Trip Generation Manual, it did not make an appreciable difference in the traffic volumes. The use of separate hotel and casino vehicle trip rates is conservative since some hotel guests frequent the casino. However, the applicant also assumes in the proposal that nine leased outlets, potentially ranging in size from 1,200 to 9,500 square feet, be bundled with the casino trip generation. In view of the size and uniqueness of these "destination" establishments, part of their clientele could be people specifically coming to the site for retail and would not be patrons of the casino. Because of this, some additional vehicles should be included in the trip generation to account for this.

For the entertainment facility, an alternative methodology used in lieu of the ITE Trip Generation Manual was appropriate because it was higher than what appears in the ITE Trip Generation Manual. In addition, the trip rate per room from the ITE Trip Generation Manual was appropriately used for the hotel component. Overall, the traffic volumes developed for the three time periods appear to be appropriate with the exception of the retail component that may be understated because it is destination based.

Based on independent market research performed for the Commission, the routing assignment proposed by the applicant generally appears to be reasonable for the site. The applicant may have slightly understated the number of patrons that would travel to the site from the south

along I-95 as this is projected to be the biggest draw for a casino in Prince George's County. Although transit service is provided to National Harbor, it does not currently serve the proposed site. The applicant has indicated that an internal shuttle bus will be provided between the main National Harbor development and hotels and the proposed casino site. The applicant does not take credit for visitors or employees that are projected to travel to the site by transit with the exception of people traveling to and from the entertainment facility.

### **1.3 Analysis**

The methodology used appears to be appropriate based on the traffic impact studies conducted in Prince George's County. Based on the results of the 2016 and 2036 analyses, the effect of the project on area traffic would be minimal as only one intersection would be adversely affected by the proposed project. However, the impact could be offset through the implementation of mitigation measures at the affected intersection (MD 414 and National Avenue).

### **1.4 Proposed Improvements**

Overall, it appears at the conceptual level that the proposed improvements would minimize traffic disruptions for the area roadway network as a result of the proposed project. The applicant is committed to pay 100% of the \$3,676,571 in roadway improvements proposed. The applicant would need to obtain the necessary approvals from Prince George's County and the State of Maryland to implement the planned improvements.

### **1.5 Parking and Internal Access**

The main vehicular access around the site is through the National Avenue and Harborview Avenue one-way ring road. The layout and overall size of the site allows for vehicles to move freely around the site and into and out of parking facilities at designated locations. Based upon the layout, it does not appear that internal site circulation should be an issue. However, this could be further addressed as detailed designs are prepared.

## 2. INTRODUCTION

A Traffic Impact Study was prepared for the National Harbor site by The Traffic Group dated April 18, 2013 in response to the Request for Proposal (RFP) for a Video Lottery Operation License in Prince George's County, MD. The National Harbor site is located on the Beltway parcel of the National Harbor development. As part of the overall National Harbor development, this parcel has previously received both District Council and Prince George's County Planning Board Planning Approvals. According to the plan, the casino would include a maximum of 3,600 slot machines and a maximum of 140 table games (30 poker/110 Gaming) with ancillary bars and restaurants and retail. The site will also include a 1,000 seat event center for live entertainment and a 300 room hotel with spa and conference center.

The main vehicular access into the National Harbor site is via the I-95 National Harbor interchange ramps, I-295 National Harbor interchange ramps, I-295 and MD 210 interchange ramps, and the MD 210 off-ramp to Harborview Avenue. Prince George's County Planning Board and the staff of the Transportation Planning Section have established technical standards for the evaluation of the adequacy of transportation facilities. The Traffic Impact Analysis in Section 3 of the *Transportation Review Guidelines – Part 1, 2012*, prepared by The Maryland-National Capital Park and Planning Commission, was used as a reference for evaluating the applicant's Traffic Impact Study.

## 3. BACKGROUND

Friday and Saturday evenings are typically the peak hours of activity at a casino. Existing condition traffic volumes were collected in the spring of 2013 on a weekday morning, weekday evening (6:00 to 9:00 pm), and Saturday (10:00 am to 8:00 pm) at the following 15 (eight intersections and seven ramps) locations:

### Intersections

- Harborview Avenue and MD 295 on Ramp
- MD 414 and Harborview Avenue
- Harborview Avenue and Business Access
- MD 414 and National Avenue
- MD 414 and MD 210 SB Ramps / Bald Eagle Road
- MD 414 and MD 210 NB Ramps
- MD 414 and I-95 NB Ramps
- MD 414 and I-95 SB Ramps / Bald Eagle Road

### Ramps

- I-295 to National Harbor and on-ramp from I-495 WB
- I-295 to National Harbor and on-ramp from National Ave
- I-295 to National Harbor and on-ramp from I-495 EB
- National Harbor to I-295 NB and on-ramp from National Ave
- National Harbor to I-495 WB and on-ramp from National Ave
- National Harbor to I-495 EB and on-ramp from National Ave
- National Ave and off-ramp to I-495 EB

The highest one hour counts within these periods were used for each location. The opening year of the project was estimated to be 2016. Therefore, the future 2016 background traffic was estimated using a 0.35% per year growth rate over the three year period (2013 to 2016). The full build out of the project is estimated as 2036 and the future 2036 background traffic was estimated using a 0.35% per year growth rate over a twenty-three year period (2013 to 2036). In addition, the proposed traffic to be generated by 16 area developments was added to the background 2016 and 2036 traffic. The background traffic growth rate of 0.35% per year and development projects were gleaned from the approved Salubria Centre/Tanger Outlet Mall Study completed in 2011.

The MD 414/National Harbor Improvements in the Maryland State Highway Administration Consolidated Transportation Program (CTP) and the Oxen Hill Road Improvements currently under construction are projected to be implemented by 2016. The widening of several MD 414 intersections and possibly the construction of Ramp E-2 connecting MD 414 directly to MD 210 southbound via Harborview Avenue, funded by Maryland State Highway Administration/Peterson Companies, would reduce future traffic volumes along MD 414. Several local roadway improvements are also planned in the area to accommodate future growth by nearby developments. These improvements are all assumed in the future area traffic network. Two additional intersections on the proposed internal MGM National Harbor site are included in the future traffic network:

- National Avenue and West Street
- Harbor Avenue and West Street

**Assessment: The location and number of intersections and ramps within the study area appear to be appropriate given the scale of the project and likely paths taken by projected visitors to the site. The applicant uses the highest hourly volumes recorded on a Friday evening and Saturday which are typically the peak times of activity at a casino. They also include a weekday AM peak hour when background volumes are high. The annual growth rate coupled with the extensive number of development sites in the area that were included appears to be appropriate for this portion of Prince George's County.**

## **4. PROJECTED CONDITIONS**

### **4.1 Trip Generation**

The Institute of Transportation (ITE) *Trip Generation Manual* is the standard by which traffic volumes are determined for specific land uses. However, empirical data that is available from surveys of analogous sites can be used to supplant the ITE data. Trip rate per gaming position is typically used to determine traffic generation for a casino. In addition, facilities within the casino such as hotel, food and beverage outlets, and retail are dealt with differently depending upon the facility and how the rates were calculated. Some studies have assumed that these facilities are used help to support the gambling operations while others provide a separate trip generation rate for these facilities. The applicant used Maryland State Highway Administration Trip Generation Rates from three casino studies (Baltimore Casino, Hollywood/Perryville Casino, and the Ocean City Facility) previously submitted to the Lottery Commission.

Based on the applicant's proposal, 3,600 slot machines and 140 table games were assumed. This equates to 4,580 gaming positions if it is assumed that one gaming position equates to each slot machine and there are seven gaming positions for every table game. It was also

assumed that the gaming, hotel, food and beverage (14 restaurants and 4 bars/lounges), and nine retail outlets were bundled together into the casino trip generation. The vehicle rate used for the weekday AM peak hour was 0.06 x gaming position was used. For the weekday PM peak hour a vehicle rate of 0.27 x gaming position was used. For the Saturday peak hour, a vehicle rate of 0.33 x gaming position was used.

Since the applicant determined that the ITE *Trip Generation Manual* Land Use Code 441 was not appropriate for their facility, an alternative methodology was used. For the entertainment facility, a trip rate per seat was used to determine traffic generation. It was estimated by the applicant that of the 1,000 seats, 10% would be occupied by MGM hotel guests, 10% would be occupied by persons coming from National Harbor on shuttle buses, and 40% would be occupied by casino guests and would not generate new traffic. It was assumed that the remaining 40% of the seats would be occupied by people traveling by auto with two people in each vehicle (vehicle occupancy rate of 2.0). This would yield a vehicle rate of 0.2 x the number of seats for the weekday PM and Saturday peak hours. It was assumed that the entertainment facility would be closed during the weekday AM peak hour.

The number of rooms was used from an earlier version of the ITE *Trip Generation Manual* Land Use Code 452 to determine traffic generation for the 300 room hotel. This yielded vehicle rates of 0.56 x the number of rooms for the weekday AM peak hour, 0.59 x the number of rooms for the weekday PM peak hour, and 0.72 x the number of rooms for the Saturday peak hour.

The overall vehicle trips projected by the applicant to be generated by the project were 452 during the weekday AM peak hour, 1,804 during the weekday PM peak hour, and 2,141 during the Saturday peak hour.

**Assessment: The applicant used Maryland State Highway Administration Trip Generation Rates from three casino studies previously submitted to the Lottery Commission. When developing gaming positions used to determine traffic generation for a casino, the assumption of one gaming position equating to each slot machine is appropriate. The assumption of seven gaming positions are assigned for every table game is slightly less than the eight that some studies have used.**

**It was also appropriately assumed that the gaming and food and beverage were bundled together to the casino trip generation. Although the trip rate per room for the hotel component was taken from an earlier version of the ITE Trip Generation Manual, it did not make an appreciable difference in the traffic volumes. The use of separate hotel and casino vehicle trip rates is conservative since some hotel guests frequent the casino. However, the applicant also assumes in the proposal that nine leased outlets, potentially ranging in size from 1,200 to 9,500 square feet, be bundled with the casino trip generation. In view of the size and uniqueness of these "destination" establishments, part of their clientele could be people specifically coming to the site for retail and would not be patrons of the casino. Because of this, some additional vehicles should be included in the trip generation to account for this.**

**For the entertainment facility, an alternative methodology used in lieu of the ITE Trip Generation Manual was appropriate because it was higher than what appears in the ITE Trip Generation Manual. In addition, the trip rate per room from the ITE Trip Generation Manual was appropriately used for the hotel component. Overall, the traffic volumes developed for the three time periods appear to be appropriate with the exception of the retail component that may be understated because it is destination based.**

#### 4.2 Trip Distribution

The applicant assumed the following for trips into and out of the site (Table 1):

**Table 1: Trip Distribution – MGM**

Land Use	Direction	Weekday AM	Weekday PM	Saturday Midday
Casino	In	75%	60%	53%
	Out	25%	40%	47%
Entertainment	In	Closed	50%	50%
	Out	Closed	50%	50%
Hotel	In	61%	53%	56%
	Out	39%	47%	44%

**Assessment:** The trip distribution proposed by the applicant appears to be reasonable for the site.

#### 4.3 Network Assignment

According to the applicant, traffic to and from the site would be routed generally according to Table 2:

**Table 2: Network Assignment – MGM**

Direction	Percentage
North (Capital Beltway)	46%
South (Capital Beltway)	38%
North (Local)	0%
South (Local)	6%
East (Local)	1%
West (Local)	1%
Internal	8%
<b>Total</b>	<b>100%</b>

**Assessment:** Based on independent market research performed for the Commission, the routing assignment proposed by the applicant generally appears to be reasonable for the site. The applicant may have slightly understated the number of patrons that would travel to the site from the south along I-95 and this is projected to be the biggest draw for a casino in Prince George's County.

#### 4.4 Mode Choice

National Harbor is currently served by the Washington Metropolitan Area Transit Authority (WMATA) with bus service. The applicant has indicated that there will be an internal shuttle bus between the main National Harbor development and hotels and the proposed casino site.

**Assessment:** Although transit service is provided to National Harbor, it does not currently serve the proposed site. The applicant has indicated that an internal shuttle bus will be provided between the main National Harbor development and hotels and the proposed casino site. The applicant does not take credit for visitors or employees that

are projected to travel to the site by transit with the exception of people traveling to and from the entertainment facility.

## 5. ANALYSIS

The eight existing and two proposed intersections identified previously were evaluated using the Critical Lane Volume (CLV) Methodology. This is the preferred methodology for traffic impact analysis within Prince George's County as per the *Transportation Review Guidelines – Part 1, 2012*. The seven ramp locations were analyzed using the *Highway Capacity Manual (HCM)* methodology. The results of the analysis indicate that all of the study intersections (Table 3) and the ramp locations (Table 4) with the planned improvements by others are projected to operate at acceptable levels of service with the exception of one with the implementation of the proposed project. The MD 414 and National Avenue intersection is projected to operate at an acceptable level of service with the proposed improvements. According to the applicant, the peak hour trips projected to be generated by the MGM project and the trips to be generated by the remainder of the Beltway Parcel do not exceed the trip cap previously placed on the entire Beltway Parcel of the approved National Harbor Project.

**Assessment:** The methodology used appears to be appropriate based on the traffic impact studies conducted in Prince George's County. Based on the results of the 2016 and 2036 analyses, the effect of the project on area traffic would be minimal as only one intersection would be adversely affected by the proposed project. However, the impact could be offset through the implementation of mitigation measures at the affected intersection (MD 414 and National Avenue).

Table 3: Intersection Level of Service Results – MGM

Intersection	Existing	2016		2036	
		No Build	Build	No Build	Build
<b>Morning Peak Hour</b>					
1. Harborview Avenue and MD 295 on Ramp	A	A	A	A	A
2. MD 414 and Harborview Avenue	A	A	A	A	A
3. Harborview Avenue and Business Access	A	A	A	A	A
4. MD 414 and National Avenue	A	F	F	F	F
With Improvements	-	-	A	-	A
5. MD 414 and MD 210 SB Ramps / Bald Eagle Rd	A	A	B	B	B
6. MD 414 and MD 210 NB Ramps	A	A	A	A	A
7. MD 414 and I-95 NB Ramps	A	B	B	B	C
8. MD 414 and I-95 SB Ramps / Bald Eagle Rd	A	A	A	A	A
9. National Avenue and West Street	NA	NA	A	NA	B
10. Harbor Avenue and West Street	NA	NA	A	NA	A
<b>Evening Peak Hour</b>					
1. Harborview Avenue and MD 295 on Ramp	A	A	A	A	A
2. MD 414 and Harborview Avenue	B	A	A	B	B
3. Harborview Avenue and Business Access	A	A	A	A	A
4. MD 414 and National Avenue	A	A	A	A	A
With Improvements	-	-	A	-	A
5. MD 414 and MD 210 SB Ramps / Bald Eagle Rd	A	B	C	B	C
6. MD 414 and MD 210 NB Ramps	A	A	A	A	A
7. MD 414 and I-95 NB Ramps	A	B	D	D	D
8. MD 414 and I-95 SB Ramps / Bald Eagle Rd	A	A	A	A	A
9. National Avenue and West Street	-	-	A	-	A
10. Harbor Avenue and West Street	-	-	A	-	A
<b>Saturday Peak Hour</b>					
1. Harborview Avenue and MD 295 on Ramp	A	A	A	A	A
2. MD 414 and Harborview Avenue	A	A	A	A	A
3. Harborview Avenue and Business Access	A	A	A	A	A
4. MD 414 and National Avenue	A	A	A	A	A
With Improvements	-	-	A	-	A
5. MD 414 and MD 210 SB Ramps / Bald Eagle Rd	A	B	C	B	C
6. MD 414 and MD 210 NB Ramps	A	A	A	A	A
7. MD 414 and I-95 NB Ramps	A	B	C	C	C
8. MD 414 and I-95 SB Ramps / Bald Eagle Rd	A	A	A	A	A
9. National Avenue and West Street	-	-	A	-	A
10. Harbor Avenue and West Street	-	-	A	-	A

Note: Potential capacity issues are highlighted.

Table 4: Ramp Level of Service Results – MGM

Intersection	Existing	2016		2036	
		No Build	Build	No Build	Build
<b>Morning Peak Hour</b>					
1. I-295 to National Harbor and on-ramp from I-495 WB	A	B	B	B	B
2. I-295 to National Harbor and on-ramp from National Ave	A	B	B	B	B
3. I-295 to National Harbor and on-ramp from I-495 EB	A	B	B	C	C
4. National Harbor to I-295 NB and on-ramp from National Ave	A	A	A	A	A
5. National Harbor to I-495 WB and on-ramp from National Ave	B	B	B	B	B
6. National Harbor to I-495 EB and on-ramp from National Ave	A	A	A	A	A
7. National Ave and off-ramp to I-495 EB	B	B	B	B	B
<b>Evening Peak Hour</b>					
1. I-295 to National Harbor and on-ramp from I-495 WB	A	A	B	A	B
2. I-295 to National Harbor and on-ramp from National Ave	A	A	A	A	A
3. I-295 to National Harbor and on-ramp from I-495 EB	A	B	B	B	B
4. National Harbor to I-295 NB and on-ramp from National Ave	A	A	A	A	B
5. National Harbor to I-495 WB and on-ramp from National Ave	B	B	B	B	B
6. National Harbor to I-495 EB and on-ramp from National Ave	A	B	B	B	B
7. National Ave and off-ramp to I-495 EB	A	B	B	B	B
<b>Saturday Peak Hour</b>					
1. I-295 to National Harbor and on-ramp from I-495 WB	A	A	B	A	B
2. I-295 to National Harbor and on-ramp from National Ave	A	A	A	A	A
3. I-295 to National Harbor and on-ramp from I-495 EB	B	B	B	B	B
4. National Harbor to I-295 NB and on-ramp from National Ave	A	A	A	A	A
5. National Harbor to I-495 WB and on-ramp from National Ave	B	B	B	B	B
6. National Harbor to I-495 EB and on-ramp from National Ave	A	B	B	B	B
7. National Ave and off-ramp to I-495 EB	A	B	B	B	C

Note: Potential capacity issues are highlighted.

## 6. PROPOSED IMPROVEMENTS

The applicant has developed the necessary roadway improvements to accommodate the proposed site plan. These include the National Avenue and Harborview Avenue one-way counter-clockwise ring road around the site and the development of the National Avenue/West Street and Harbor Avenue/West Street intersections. In addition, mitigation measures were developed for the MD 414 (Oxen Hill Road) and National Avenue intersection including restriping of existing lanes on the northbound and southbound approaches. According to the applicant, no widening of the roadway is necessary to mitigate impacts at this intersection as a result of the project. The resulting level of service based upon these improvements (Table 3) shows that the affected intersection is projected to operate at an acceptable LOS A with the project in place. A total of \$3,676,571 has been dedicated by to applicant to implement al of these improvements.

**Assessment:** Overall, it appears at the conceptual level that the proposed improvements would minimize traffic disruptions for the area roadway network as a result of the proposed project. The applicant is committed to pay 100% of the \$3,676,571 in roadway improvements proposed. The applicant would need to obtain the necessary approvals from Prince George’s County and the State of Maryland to implement the planned improvements.

## 7. PARKING AND INTERNAL ACCESS

The applicant’s submission to the Commission proposes approximately 5,000 parking spaces (Table 5). All of the parking is to be provided in an eight-level deck.

**Table 5: Proposed Parking – MGM**

Parking Type	Number of Spaces
General Surface	-
General Garage	3,516
Valet	649
Handicapped	65
Employee	752
Reserved	10
<b>Total</b>	<b>4,992</b>

The site will be bounded by National Avenue to the north and Harborview Avenue to the south. These roads will form a one-way counter-clockwise loop road around the site. All traffic into and out of the parking deck for visitors and employees, deliveries, etc. will be directed into and out of the facility at specific designated driveways. This scheme minimizes internal vehicular conflicts on the site.

**Assessment:** The main vehicular access around the site is through the National Avenue and Harborview Avenue one-way ring road. The layout and overall size of the site allows for vehicles to move freely around the site and into and out of parking facilities at designated locations. Based upon the layout, it does not appear that internal site circulation should be an issue. However, this could be further addressed as detailed designs are prepared.