ATM Queuing Study

Site Under Study   **Brookhill Azalea**

6301 West Broad Street
Richmond, VA 23227

Intended Use   Exterior DU ATM

**Primary ATM Contact**   Mostafa Sheta
614-217-5111

Overview

- Purpose of Study

  - Understand the average queue length and wait times experienced by Chase customers at Drive-Up ATMs

  - Using ATM transaction data from multiple states and off-premise ATM sites to project the expected queue length and stacking requirement for the Brookhill Azalea Drive-Up ATM location.

  - Data will demonstrate that there will not be an adverse impact to traffic flow in the parking lot even at peak usage times.

DECISION ANALYTICS

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Overview

- A study of 650 off-premise, Drive-up ATMs accounting for 5.4MM annual transactions
- ATM's used for this study are Drive-Up off-premise locations
  - Non-branch connected

- Determine the peak hour as basis for maximum queue experienced

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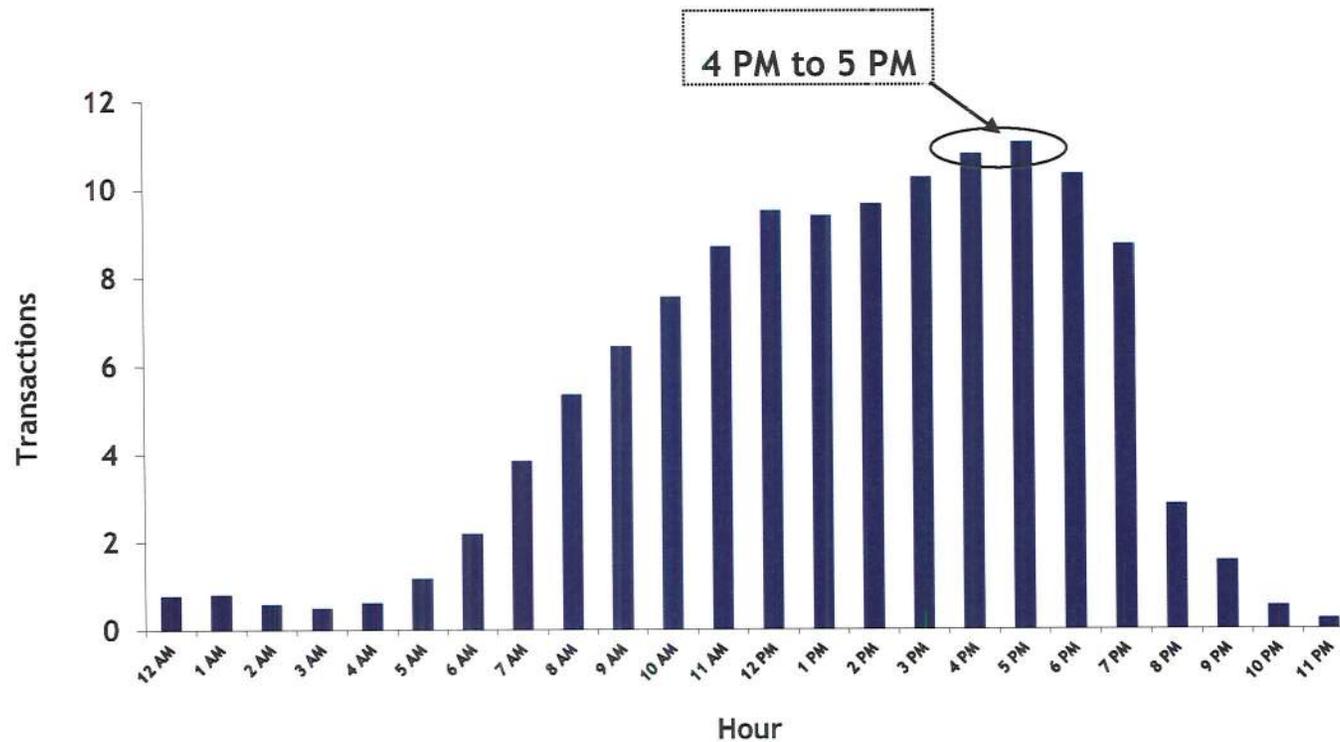
Queuing Results and Recommendation

- The proposed Drive-Up at **Brookhill Azalea** is estimated to average 1,200 monthly transactions, which places it in Tier 1.

- **Does not assume that transactions are evenly distributed, but are random events, which is a more accurate reflection of stacking requirements**

- The maximum theoretical queue that *could* result is 2 cars, although with a statistical probability of less than 0.20%, it is highly unlikely (bottom chart). The average queue length is actually less than 1 car (top chart).

Tier	Avg Q Length (Cars)	Max Q Length (Cars)*	Avg Time in Queue (min)	Avg Time in System (min)	ATM Utilization
1	0.02	2	0.11	1.15	13%
2	0.04	4	0.17	1.16	18%
3	0.07	5	0.25	1.25	24%
4	0.14	6	0.40	1.41	33%
5	0.26	10	0.59	1.56	38%
6	0.63	10	1.11	2.10	53%

* Maximum observed over 100 simulated hours of activity.

Tier	Cars in Queue									
	1	2	3	4	5	6	7	8	9	10
1	1.50%	0.20%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	2.72%	0.49%	0.09%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	4.64%	1.15%	0.29%	0.07%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%
4	7.21%	2.36%	0.77%	0.25%	0.08%	0.03%	0.01%	0.00%	0.00%	0.00%
5	9.29%	3.63%	1.42%	0.55%	0.22%	0.08%	0.03%	0.01%	0.01%	0.00%
6	13.29%	7.09%	3.79%	2.02%	1.08%	0.58%	0.31%	0.16%	0.09%	0.05%

DECISION ANALYTICS

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November 9, 2021