

**2011 Campus Plan Community
Task Force
July 27, 2010**



1. Welcome and Introductions
2. Transportation Study Results
3. Other Business



General Trends



- ▶ **AU generated traffic is trending down**
 - ▶ AU generated 25% less traffic in 2008 than it did in 2000 during the AM and PM peak hour
- ▶ **The total cars parked on campus is trending down**
 - ▶ There were 21% fewer cars on campus in 2008 compared to 2000 on a typical weekday
- ▶ **AU Shuttle use is increasing**
 - ▶ Currently 1.8 million riders per year, approximately double what ridership numbers were 10 years ago
- ▶ **The AU population is walking and bicycling more**



With the Campus Plan



- ▶ These trends are expected to continue with the proposed Campus Plan
- ▶ Campus Plan incorporates elements that:
 - ▶ Recognize the decrease in dependence on automobile use
 - ▶ Foster continued growth in the AU shuttle
 - ▶ Make it easier to walk and bike to campus



Overview of Technical Discussion



- ▶ Background on process
- ▶ Trends in Traffic Data
 - ▶ Data collected in 2000 (for prior Campus Plan)
 - ▶ Data collected in 2008
 - ▶ Projected conditions in 2020
- ▶ Analysis Results
- ▶ Summary of Impact
- ▶ Ward Circle thoughts - “Big Ideas”
 - ▶ Short-Term
 - ▶ Long-Term



Traffic Impact Studies



- ▶ Type of traffic engineering study
- ▶ Standard way to measure impact of proposed plan or development
- ▶ Puts all applications on even playing field
- ▶ Standardizes methodologies



Traffic Impact Studies



- ▶ **Goal of study is to determine impact**
 - ▶ Impact: When the addition of traffic generated by the proposal pushes traffic levels beyond acceptable thresholds during peak times on typical weekdays
- ▶ **Scenarios**
 - ▶ Existing (2008)
 - ▶ Future Background (2020): Future traffic without any changes to the AU Main Campus
 - ▶ Total Future (2020): Future traffic with full development of the AU Campus Plan
- ▶ **‘Level of Service’: Metric used to measure traffic**
 - ▶ Delay encountered at an intersection



Draft Projections of Future Traffic



- ▶ **Background without Campus Plan (Year 2020)**
 - ▶ Growth to commuter traffic
 - ▶ Traffic generated by nearby developments
- ▶ **Total Future with Campus Plan (Year 2020)**
 - ▶ Changes to vehicular traffic
 - ▶ Removal/addition of parking spaces
 - ▶ Changes to access
 - ▶ Changes to pedestrian traffic
 - ▶ Additional activity at crosswalks
- ▶ **Standard methodologies take conservative assumptions (“worst-case scenario”)**



Traffic Trends since 2000



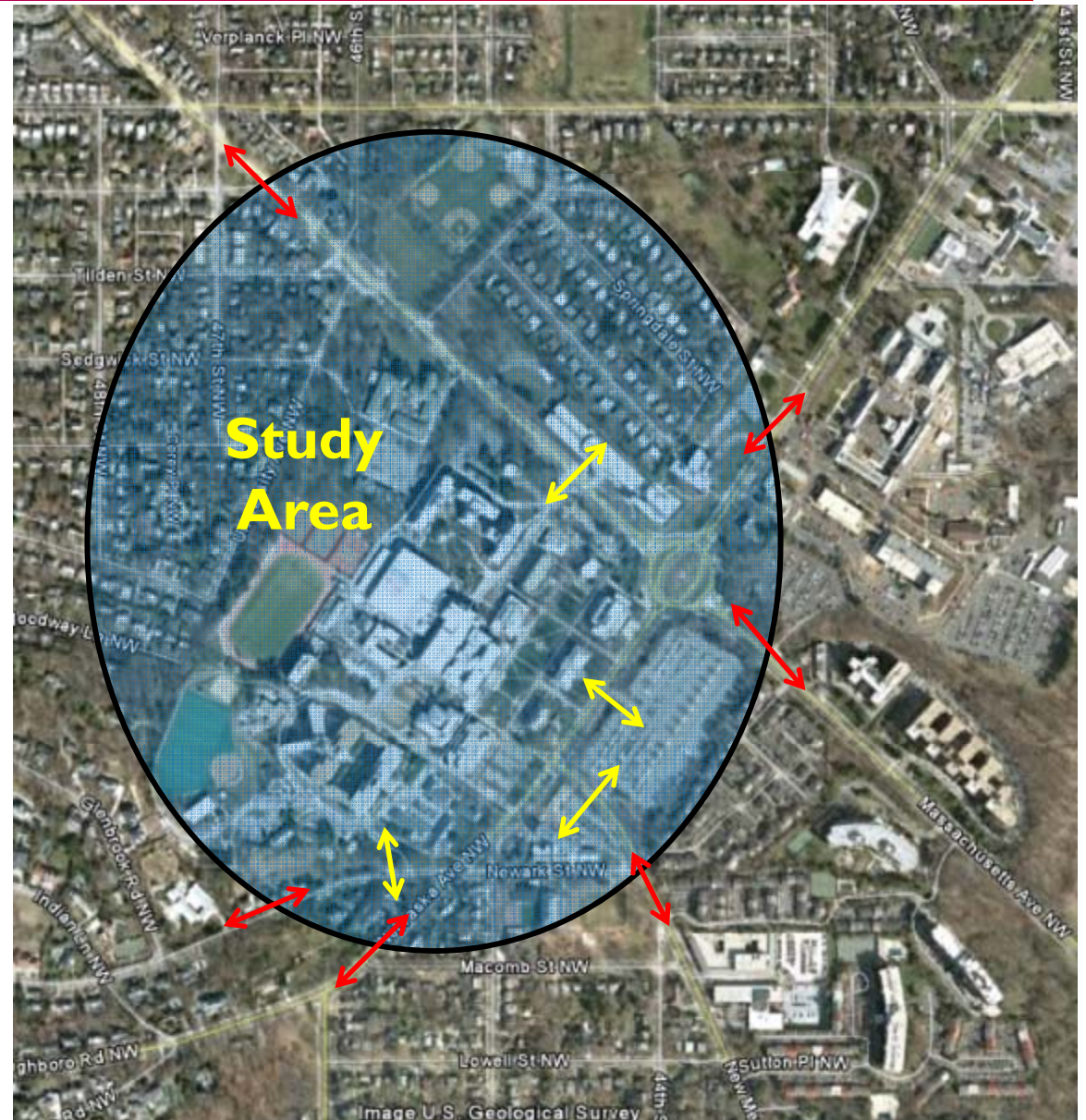
- ▶ Overall amount of traffic relatively same
 - ▶ Some roads up (Nebraska Avenue)
 - ▶ Some roads down (Massachusetts Avenue)
- ▶ Appears to be more variability in traffic
 - ▶ Counts in 2000 more consistent day-to-day
- ▶ Appears that commuter traffic is increasing its percentage over local traffic
- ▶ AU Generated Traffic
 - ▶ Trending down
 - ▶ Sustained growth in use of public transit
 - ▶ AU Shuttle now has 1.8 million riders per year



Traffic Trends



- ▶ Total cars entering/exiting study area during peak times
- ▶ Total cars entering/exiting AU during peak times

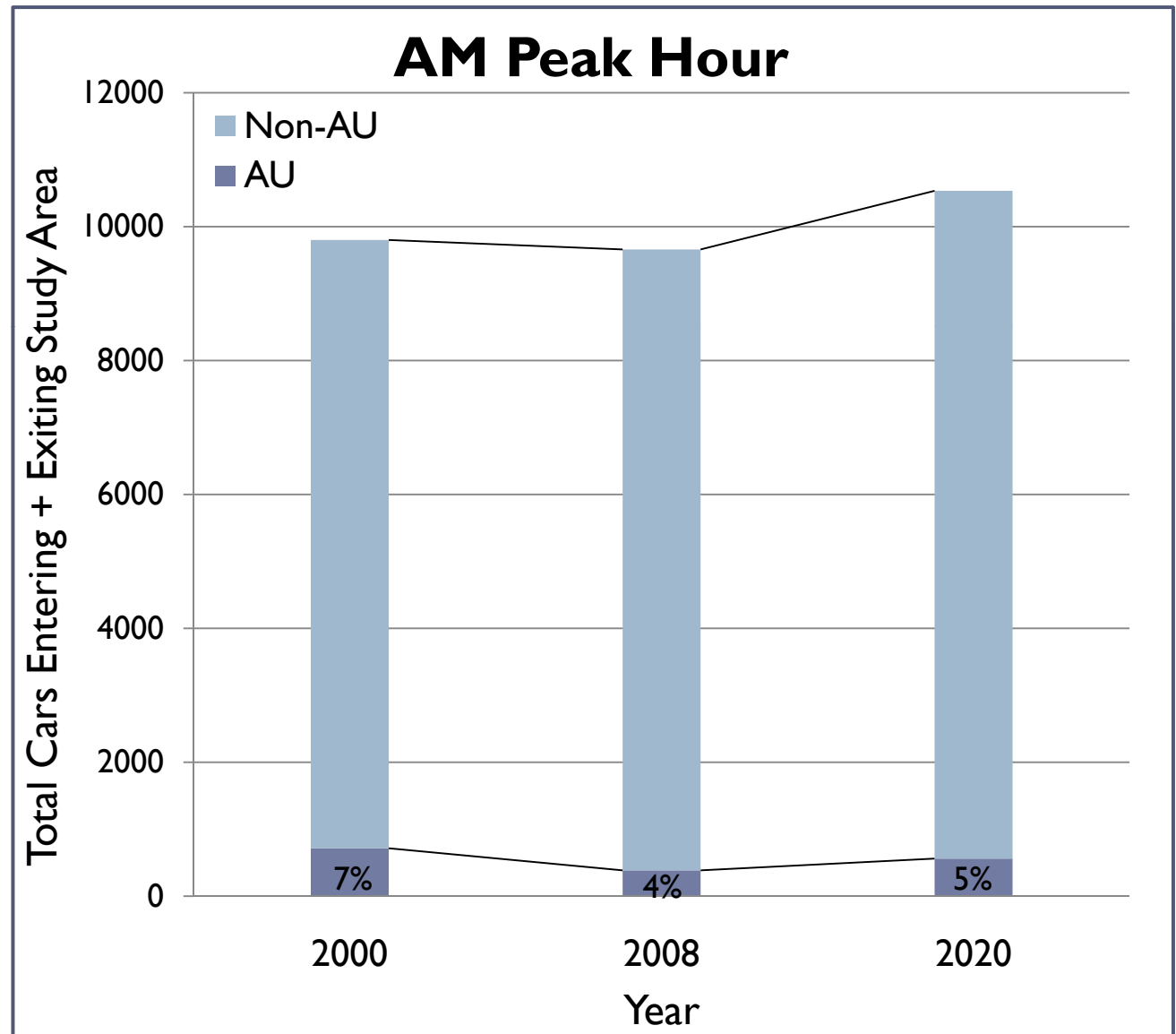




AM Peak Hour 2000 to 2020



- ▶ In 2020, the total cars entering and exiting campus in the AM peak hour = 560 cars
 - ▶ One car every 6.4 seconds
- ▶ AU traffic in 2020 projected to be lower than in 2000

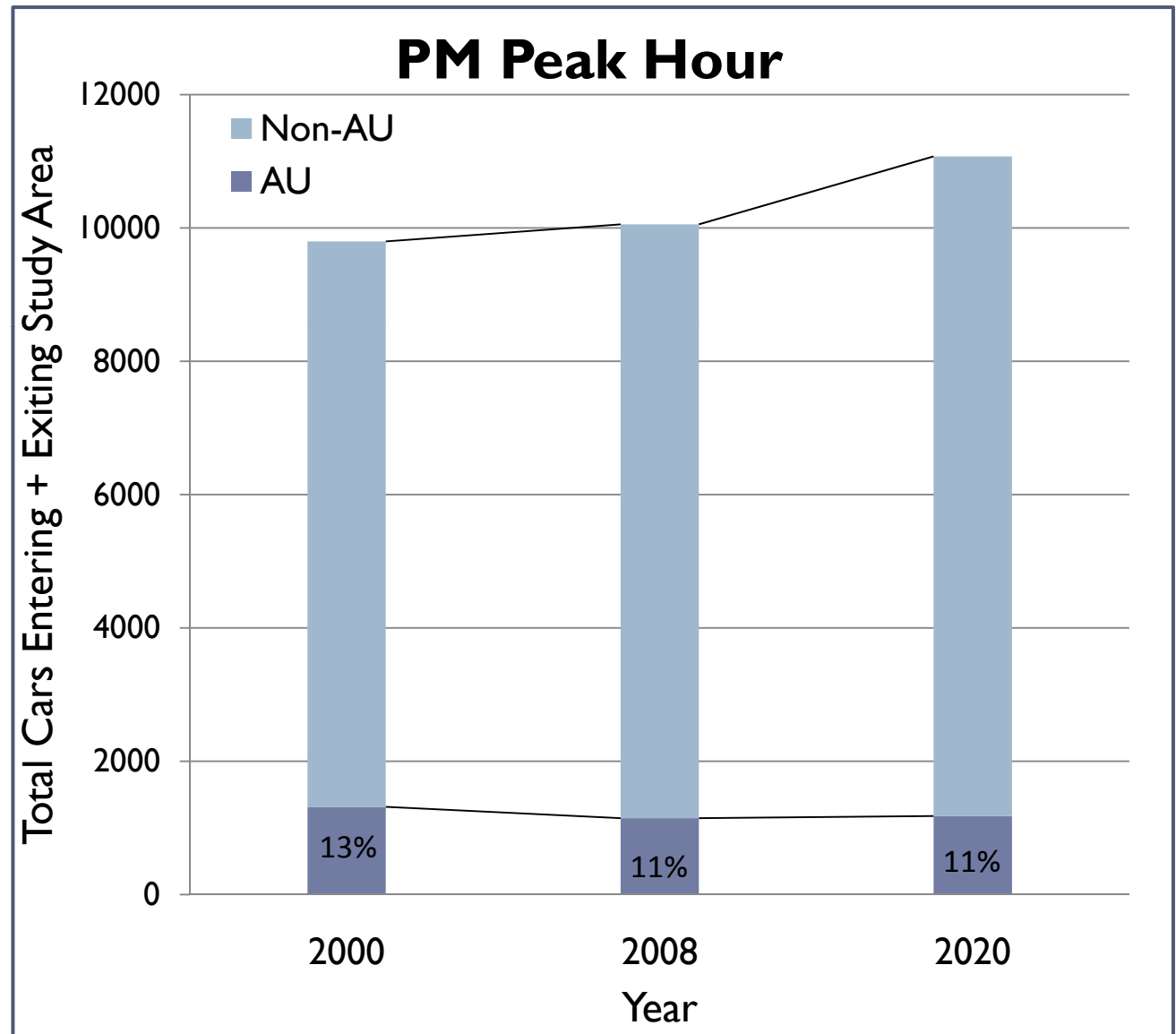




PM Peak Hour 2000 to 2020



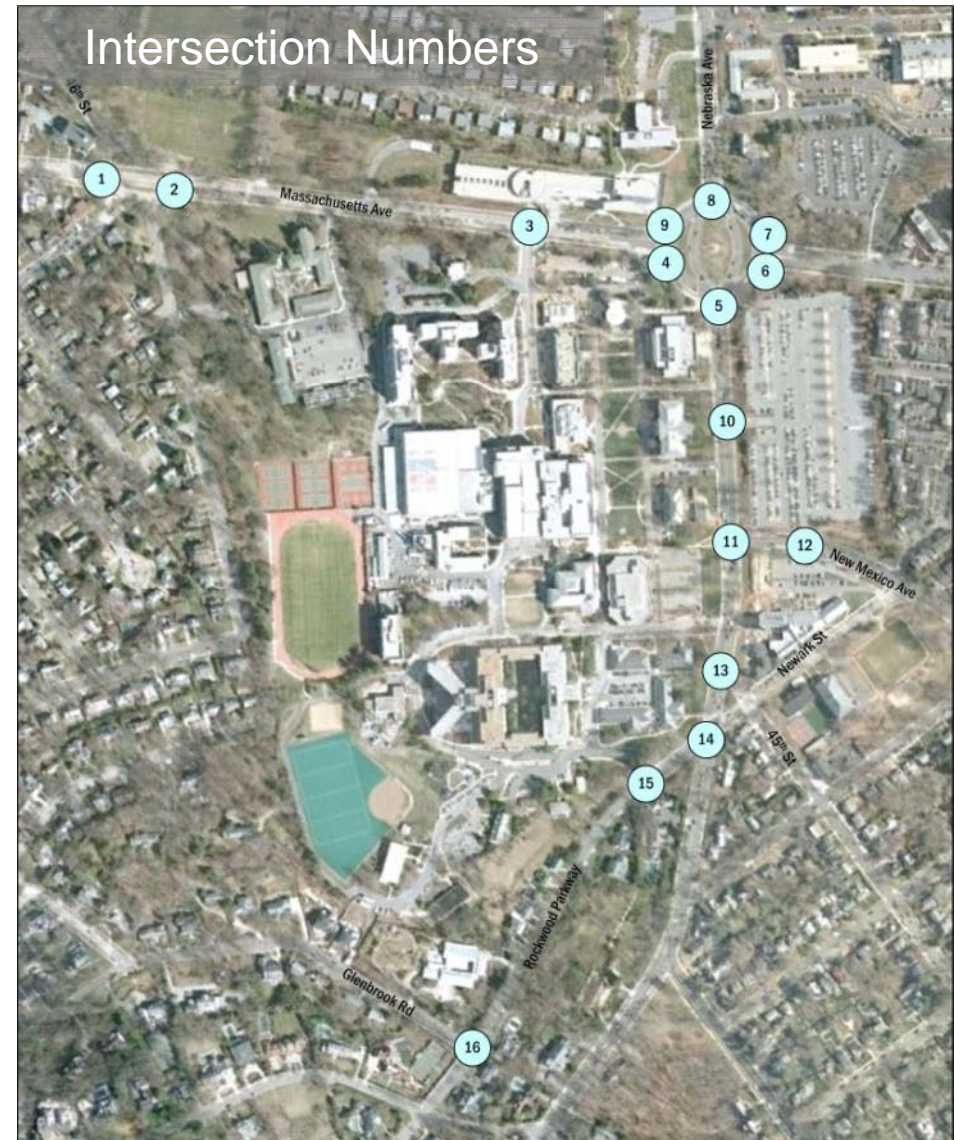
- ▶ In 2020, the total cars entering and exiting campus in the PM peak hour = 1,179 cars
 - ▶ One car every 3.1 seconds
- ▶ AU traffic in 2020 projected to be lower than in 2000





Level of Service (LOS) Results

- ▶ LOS calculated for each scenario
- ▶ Traditional LOS measure is vehicular delay at intersection
- ▶ Pedestrian LOS also calculated (delay at crosswalks)





Level of Service (LOS) Results



- ▶ **Year 2020 without Campus Plan**
 - ▶ A few approaches reach unacceptable thresholds compared to existing
 - ▶ Ward Circle (intersection numbers 5, 7, 8)
 - ▶ Nebraska Avenue southeast bound in evening (intersection number 11)
 - ▶ Both due to general increases in commuter traffic
- ▶ **Year 2020 with Campus Plan**
 - ▶ Only one additional location reaches unacceptable thresholds
 - ▶ Southwest bound right onto Ward Circle (intersection number 4)
 - ▶ Changes in traffic generated by Campus Plan are slight
 - ▶ Impact of the proposed Campus Plan development is concentrated at several crosswalks



LOS Results – Vehicular Delay



Intersection	Approach	AM Peak Hour						PM Peak Hour					
		Existing (2008)		Year 2020 without Campus Plan		Year 2020 with Campus Plan		Existing (2008)		Year 2020 without Campus Plan		Year 2020 with Campus Plan	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 Mass Ave & 46th/Tilden	Overall	15.5	B	16.5	B	17.0	B	10.8	B	11.4	B	11.3	B
	Eastbound	16.8	B	17.9	B	18.4	B	8.8	A	9.2	A	9.1	A
	Westbound	7.1	A	9.0	A	9.4	A	7.8	A	9.1	A	8.9	A
	Southbound	28.9	C	28.9	C	28.9	C	37.5	D	37.5	D	37.5	D
2 Mass Ave & 46th/University	Northbound	11.9	B	12.5	B	12.8	B	13.8	B	13.3	B	13.3	B
3 Mass Ave & Katzen	Overall	10.3	B	11.0	B	11.3	B	13.8	B	13.6	B	13.2	B
	Eastbound	7.0	A	7.3	A	7.4	A	5.3	A	5.5	A	5.4	A
	Westbound	15.0	B	16.5	B	17.3	B	14.0	B	13.8	B	13.5	B
	Northbound	29.6	C	29.6	C	29.6	C	38.5	D	38.5	D	38.1	D
4 Mass Ave & Ward Circle	Southbound	29.3	C	29.3	C	29.3	C	35.6	D	35.6	D	35.9	D
	Eastbound Right	32.6	D	42.6	E	93.5	F	34.2	D	49.7	E	87.6	F
	Overall	27.1	C	39.7	D	45.0	D	22.9	C	50.3	D	50.5	D
	Eastbound	16.3	B	19.9	B	21.9	C	16.8	B	26.2	C	26.0	C
5 Nebraska Ave & Ward Circle	Northbound	56.3	E	91.1	F	105.3	F	40.1	D	66.6	E	72.5	E
	Southbound	12.3	B	13.9	B	15.2	B	15.3	B	67.1	E	62.5	E
	Westbound Right	12.1	B	12.5	B	13.1	B	41.6	E	56.1	F	61.7	F
7 Mass Ave & Ward Circle	Overall	19.1	B	30.6	C	33.6	C	33.1	C	69.5	E	66.3	E
	Westbound	13.1	B	14.9	B	15.1	B	16.7	B	23.0	C	23.3	C
	Northbound	11.6	B	12.9	B	13.1	B	11.2	B	11.8	B	11.3	B
	Southbound	30.4	C	57.9	E	65.7	E	66.3	E	152.4	F	145.7	F
10 Nebraska Ave & Nebraska Lot	Westbound Right	9.4	A	9.7	A	n/a	n/a	9.8	A	10.0	A	n/a	n/a
11 Nebraska Ave & New Mexico Ave	Overall	21.0	C	24.5	C	28.0	C	31.3	C	58.8	E	60.9	E
	Eastbound Right	n/a	n/a	n/a	n/a	36.3	D	n/a	n/a	n/a	n/a	39.8	D
	Westbound	28.4	C	28.7	C	31.7	C	30.1	C	30.4	C	35.7	D
	Northbound	14.4	B	15.7	B	16.3	B	16.1	B	17.5	B	17.4	B
12 New Mexico Ave & Nebraska Lot	Southbound	24.0	C	30.6	C	36.0	D	40.1	D	88.7	F	93.7	F
	Eastbound Left	3.8	A	3.8	A	4.9	A	7.0	A	4.3	A	4.9	A
	Southbound	12.9	B	12.9	B	11.2	B	14.2	B	14.2	B	12.3	B
	Westbound	1.3	A	1.4	A	2.0	A	0.8	A	0.9	A	2.9	A
13 Nebraska Ave & 45th St	Westbound	9.4	A	9.4	A	9.4	A	9.8	A	9.9	A	9.9	A
	Overall	11.4	B	11.9	B	12.0	B	12.2	B	12.7	B	13.4	B
	Eastbound	39.4	D	39.4	D	39.5	D	41.6	D	41.6	D	40.9	D
	Westbound	39.4	D	39.4	D	39.4	D	38.7	D	38.7	D	38.5	D
14 Nebraska Ave & Newark St	Northbound	11.1	B	12.7	B	12.6	B	10.9	B	13.3	B	13.3	B
	Southbound	1.7	A	1.9	A	2.3	A	4.3	A	4.6	A	6.8	A
	Eastbound Left	0.8	A	0.8	A	0.8	A	1.0	A	1.0	A	1.0	A
	Southbound	10.7	B	10.7	B	10.7	B	12.1	B	12.1	B	12.4	B
15 Rockwood & Campus Gate	Overall	8.2	A	8.2	A	8.2	A	7.7	A	7.7	A	8.0	A
	Eastbound	8.2	A	8.2	A	8.2	A	7.7	A	7.7	A	7.8	A
	Westbound	7.6	A	7.6	A	7.6	A	7.7	A	7.7	A	8.1	A
	Southbound	8.5	A	8.5	A	8.5	A	7.8	A	7.8	A	7.9	A
16 Rockwood & Glenbrook	Overall	8.2	A	8.2	A	8.2	A	7.7	A	7.7	A	8.0	A
	Eastbound	8.2	A	8.2	A	8.2	A	7.7	A	7.7	A	7.8	A
	Westbound	7.6	A	7.6	A	7.6	A	7.7	A	7.7	A	8.1	A
	Southbound	8.5	A	8.5	A	8.5	A	7.8	A	7.8	A	7.9	A

Delay: Seconds per vehicle of delay experienced driving through intersection compared to if the intersection did not exist

LOS: A letter grade assigned based on the amount of delay and the type of intersection control

LOS E is generally assigned to analysis results where traffic reaches the capacity of the system. Traffic engineers consider a good design to reach, but not exceed LOS E.

The places within the table where one scenario reaches LOS F when compared to the prior scenario are highlighted in red.

The traffic impact of the AU Campus Plan is determined by comparing the results of the Year 2020 without the Campus Plan column to the Year 2020 with Campus Plan column.



LOS Results – Pedestrian Delay



Signalized Intersections	Crosswalk Specifications		AM Peak Hour LOS			PM Peak Hour LOS		
	Parallel Approach	Approximate Length (feet)	Existing (2008)	Year 2020 without Campus Plan	Year 2020 with Campus Plan	Existing (2008)	Year 2020 without Campus Plan	Year 2020 with Campus Plan
Mass Ave & 46th/Tilden	Eastbound	42.5	B	B	B	A	A	A
	Westbound	19.5	B	B	B	A	A	A
	Northbound	43.5	C	C	C	D	D	D
	Southbound	63.5	C	C	C	D	D	D
Mass Ave & Katzen	Eastbound	38.0	A	A	A	A	A	A
	Westbound	30.0	A	A	A	A	A	A
	Northbound	48.0	D	D	D	D	D	D
	Southbound	44.0	D	D	D	D	D	D
Nebraska Ave & Ward Circle	Eastbound	54.5	B	D	D	B	D	D
Nebraska Ave & Ward Circle	Westbound	44.5	B	D	D	B	D	D
Nebraska Ave & NM Ave	Eastbound	40.5	D	D	D	D	D	D
	Westbound	42.5	D	D	D	D	D	D
	Northbound	47.0	B	B	B	C	C	C
	Southbound	25.0	n/a	n/a	A	n/a	n/a	A
Nebraska Ave & Newark St	Eastbound	56.5	D	D	D	D	D	D
	Westbound	51.5	D	D	D	D	D	D
	Northbound	48.0	A	A	A	D	D	D
	Southbound	43.5	A	A	A	D	D	D
Unsignalized Intersections								
Mass Ave & 46th/Univ	Eastbound	41.5	n/a	n/a	n/a	n/a	n/a	n/a
	Westbound	31.5	n/a	n/a	n/a	n/a	n/a	n/a
Mass Ave & Ward Circle	Southbound	24.0	F	F	F	D	D	F
Mass Ave & Ward Circle	Northbound	27.0	F	F	F	D	D	F
Mass Ave & Ward Circle	Northbound	24.0	D	D	D	D	D	F
Mass Ave & Ward Circle	Southbound	24.0	C	D	D	D	D	F
New Mexico Ave & Nebraska Lot	Westbound	35.5	n/a	n/a	n/a	n/a	n/a	n/a
Nebraska Ave & 45th St	Northbound	49.0	n/a	n/a	n/a	n/a	n/a	n/a
Rockwood & Campus Gate	Westbound	103.5	n/a	n/a	n/a	n/a	n/a	n/a
Rockwood & Glenbrook	Westbound	42.5	n/a	n/a	n/a	n/a	n/a	n/a
	Northbound	33.5	n/a	n/a	n/a	n/a	n/a	n/a
	Southbound	33.5	n/a	n/a	n/a	n/a	n/a	n/a

Signalized Crosswalk LOS:

The pedestrian LOS for signalized intersections is based on the average wait time for a “Walk” signal. Traffic engineers use this LOS to ensure that signal timings don’t encourage jaywalking. Generally, the District considers LOE E or F unacceptable for this LOS.

This LOS calculation is primarily based on signal timings.

Unsignalized Crosswalk LOS: Stop signs

Since pedestrians don’t experience delay at stop sign controlled approaches, there is no calculation for pedestrian LOS. These locations are marked as ‘n/a’ in the results table.

Unsignalized Crosswalk LOS: Yield signs

Although pedestrians should encounter no delay where vehicles are supposed to yield, traffic engineers still calculate a delay and LOS for these locations. The purpose of these analyses is to determine locations where potential risk-taking behavior will take place (either for vehicles or for pedestrians). The calculation for this LOS is based on the number of gaps in traffic that pedestrians can use to cross the street, assuming no vehicles yield to pedestrians. So a poor LOS grade does not equate to long delays, as much as it indicates where a high amount of conflicts exist.



Mitigation Measures



- ▶ **What do these results mean to the Campus Plan?**
 - ▶ Incorporate ideas that do not increase conflicts with commuter traffic
 - ▶ Minimize conflicts at key crosswalks
- ▶ **Measures already incorporated into plan**
 - ▶ Eliminate driveway on Nebraska Avenue (from Nebraska Avenue lot)
 - ▶ Alter signal timings at crosswalks to help separate pedestrians and vehicles
 - ▶ Channel pedestrians to crosswalks



Nebraska Avenue



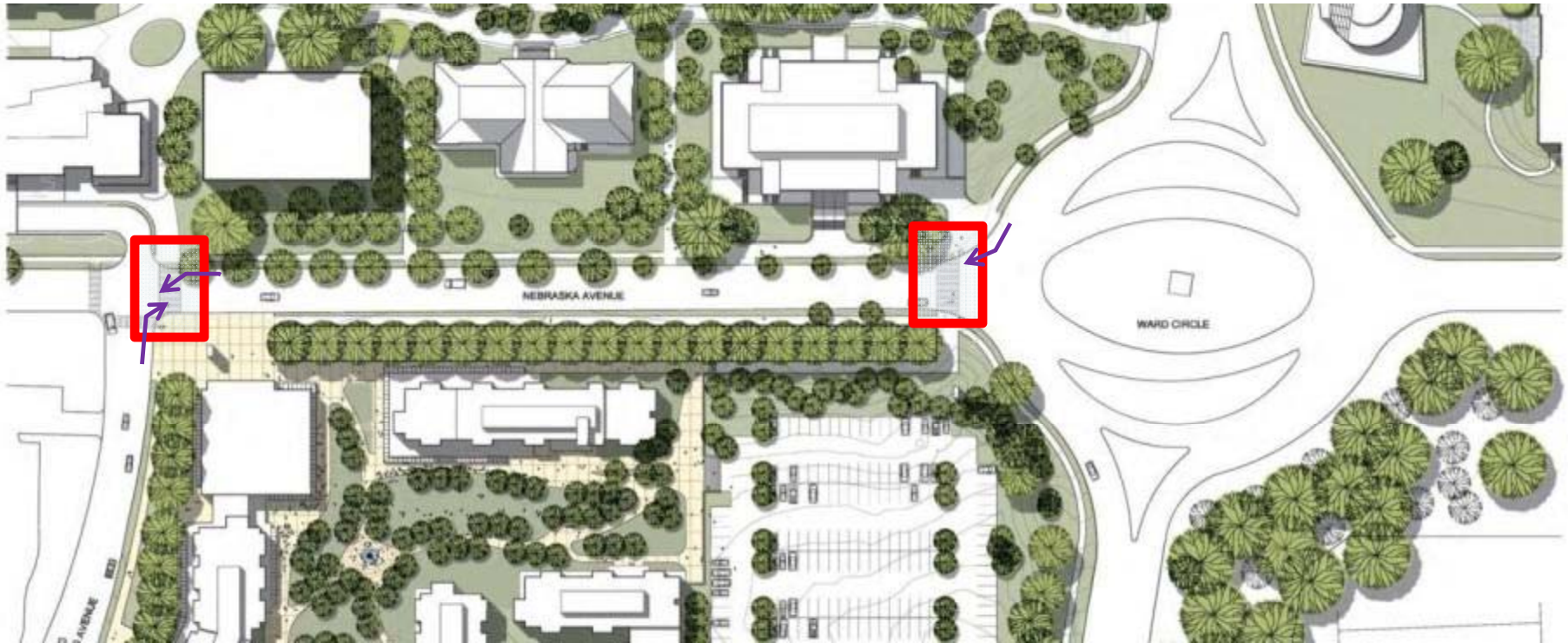
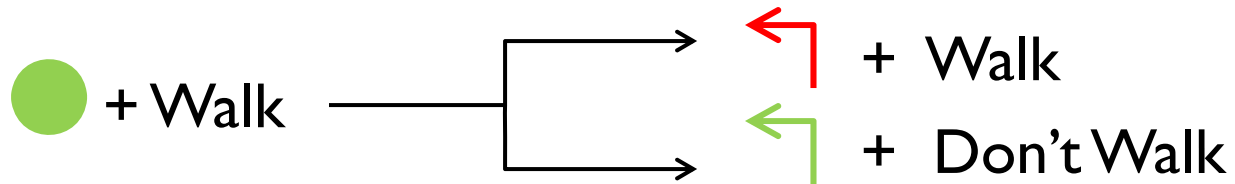
Eliminate driveway

Channel pedestrians
to crosswalks





Nebraska Avenue





Ward Circle – “Big Ideas”



- ▶ “Big Ideas” would require a joint planning effort
- ▶ University is willing to facilitate a discussion on the future of Ward Circle with:
 - ▶ DHS
 - ▶ NPS
 - ▶ Community
 - ▶ DDOT
- ▶ Short term ideas
 - ▶ Reducing ped/veh conflicts
- ▶ Long term ideas
 - ▶ Major infrastructure changes





Short-Term Ideas



- ▶ Continue to increase shuttle ridership
- ▶ Increase compliance with 'Walk' and 'Don't Walk' signals
 - ▶ Increased enforcement
 - ▶ Explore traffic signal technologies such as audible crosswalks
- ▶ Work with DDOT to continue to improve pedestrian safety
 - ▶ Add more options for peds to cross Mass Avenue to reduce number of conflicts between pedestrians and vehicles at a single point
 - ▶ Ward Circle
 - ▶ South of Ward Circle on Massachusetts Avenue



Crosswalks through Ward Circle



- ▶ Crosswalks could be placed within Ward Circle to provide more options for pedestrians
- ▶ Could be implemented with minimal impact to vehicular operations

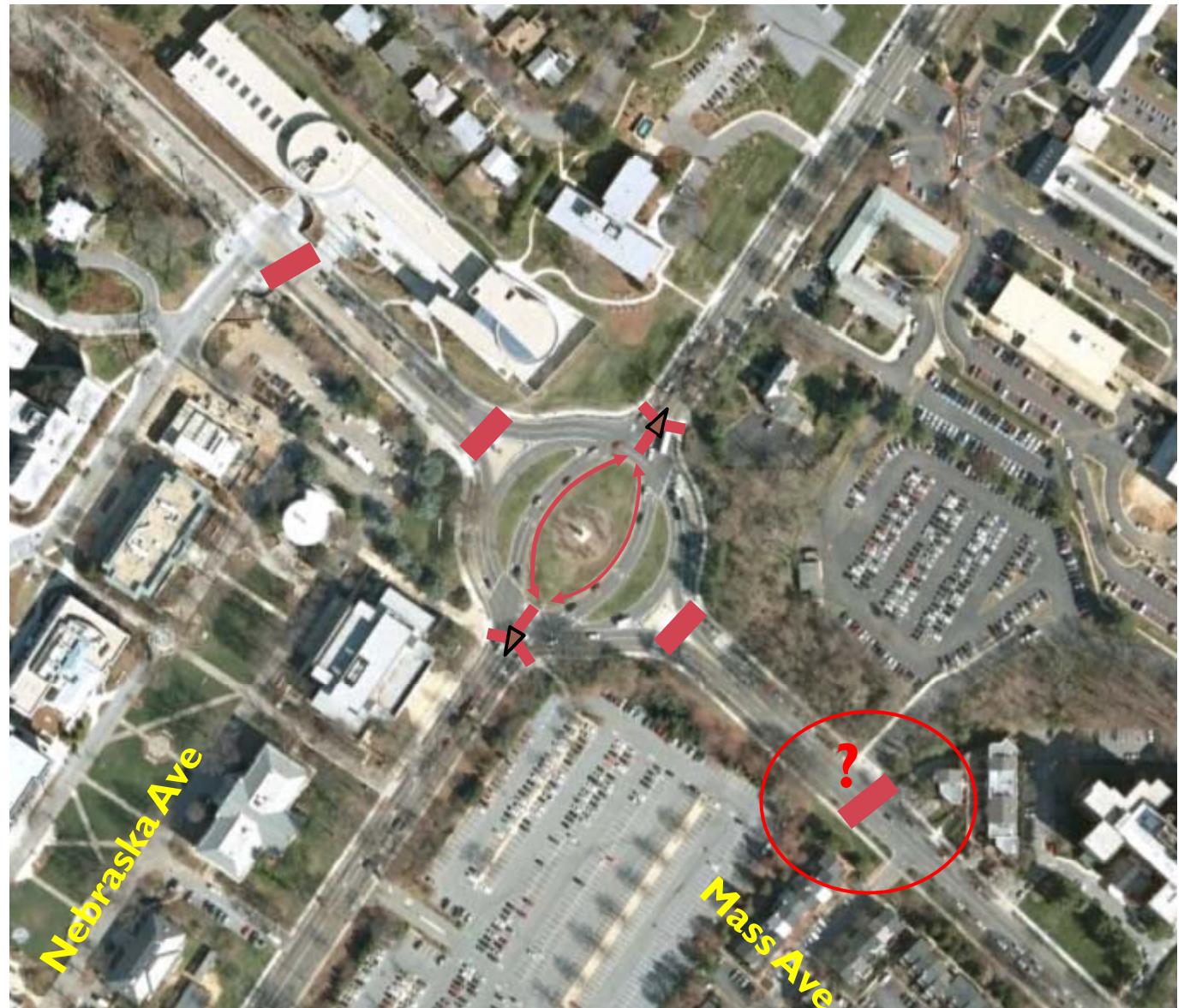




Crosswalks along Mass Ave



- ▶ Consider another signalized crosswalk south along Mass Ave
- ▶ Concept is to provide additional quality crossings to disperse pedestrians
- ▶ Reduce the number of conflicts at any single point





- ▶ **'Dupont' Circle**
 - ▶ Grades & run-up
 - ▶ Benefit reduced unless done as part of regional plan
 - ▶ Not recommended
- ▶ **Pedestrian Bridges**
 - ▶ Space constraints
 - ▶ Lack of use
 - ▶ Not recommended
- ▶ **Place traffic signals at Mass Ave approaches**
 - ▶ Would convert all crosswalks to signalized
 - ▶ Short spacing within circle would negate any traffic benefit
 - ▶ Not recommended



- ▶ **2 Lane Modern Roundabout**
 - ▶ Doesn't solve unsignalized crosswalk issues
 - ▶ Would have less traffic capacity
 - ▶ Would reduce severity of vehicular crashes
 - ▶ Not recommended
- ▶ **Traditional Intersection – “4-Way Controlled Intersection”**
 - ▶ Eliminates the most conflicts, especially for pedestrians
 - ▶ Would eliminate all unsignalized crosswalks
 - ▶ Wouldn't add significant amount of capacity
 - ▶ Recommended for further study



Summary



- ▶ AU generated traffic is trending down
- ▶ Changes in traffic generated by Campus Plan are slight
- ▶ These impacts can be minimized through:
 - ▶ Channelizing pedestrians to signalized crosswalks
 - ▶ Employing signal timings that separate pedestrians and vehicles
- ▶ “Big Ideas” to change Ward Circle could improve conditions even further
 - ▶ Changes would come about through joint planning effort
 - ▶ Campus Plan to include recommendations for short-term ideas