

Ann Arbor DDA Parking Data and GHG emissions

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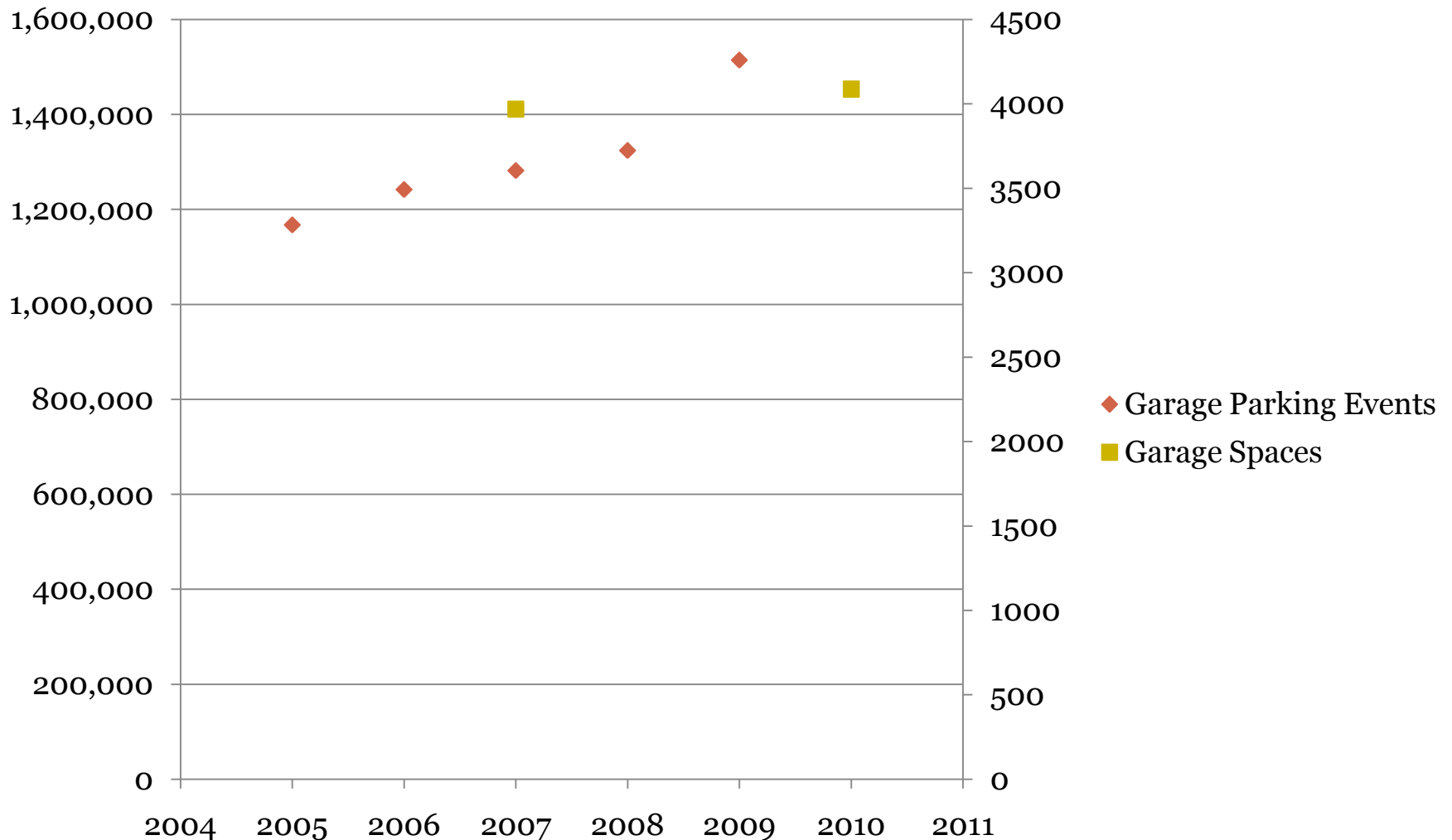
DRAFT - SEPTEMBER 2011

This Presentation...

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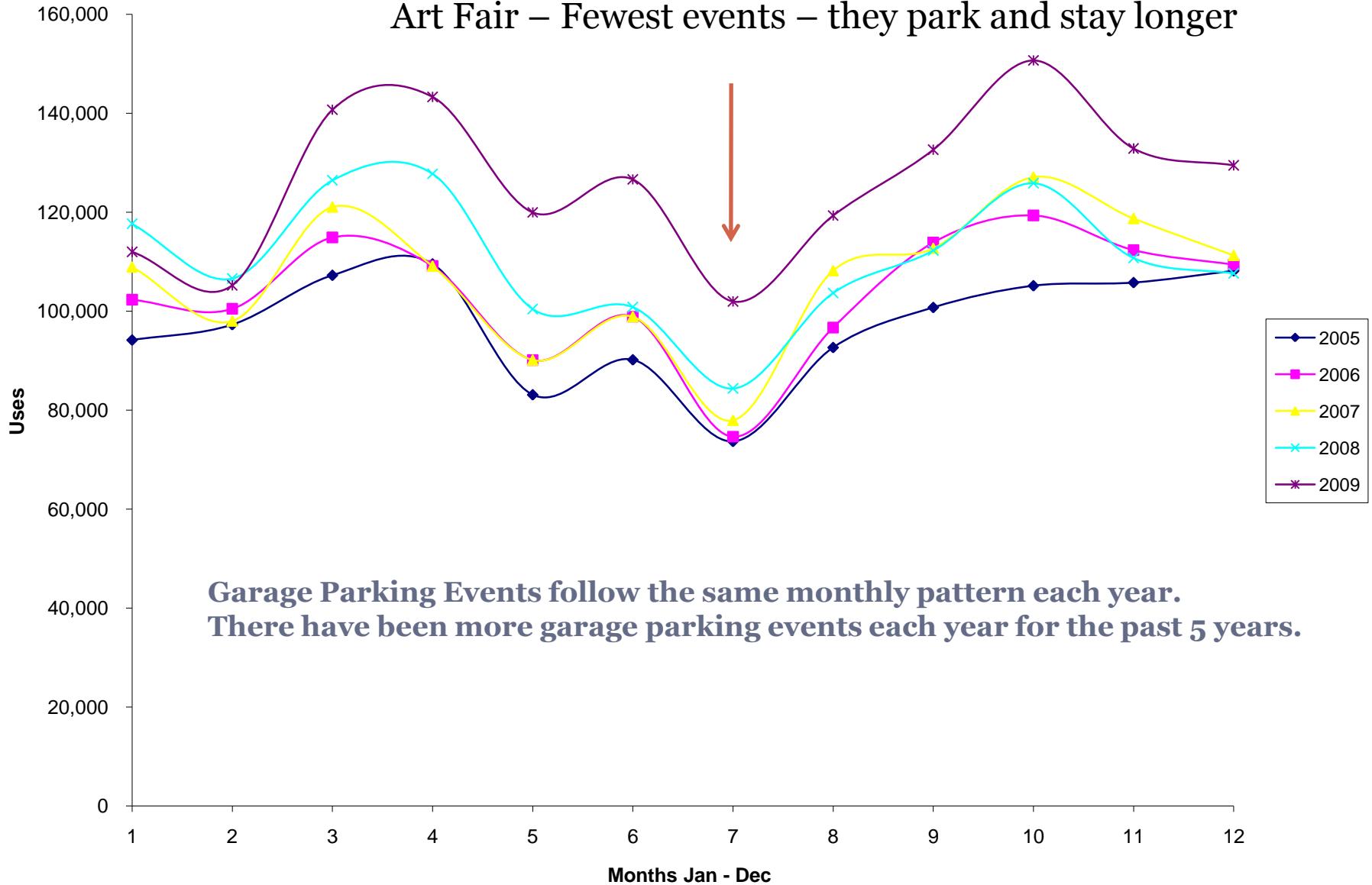
- Shares data on changes in available garage parking spaces and how these new spaces accommodate individuals seeking parking
- Looks at the GHG emissions associated with trips by those seeking parking
- Looks at the GHG emissions associated with trips accommodated by new parking spaces
- Looks at transportation and other mitigation strategies underway by the DDA
- Does not discuss causation

Garage Parking Events and Available Spaces

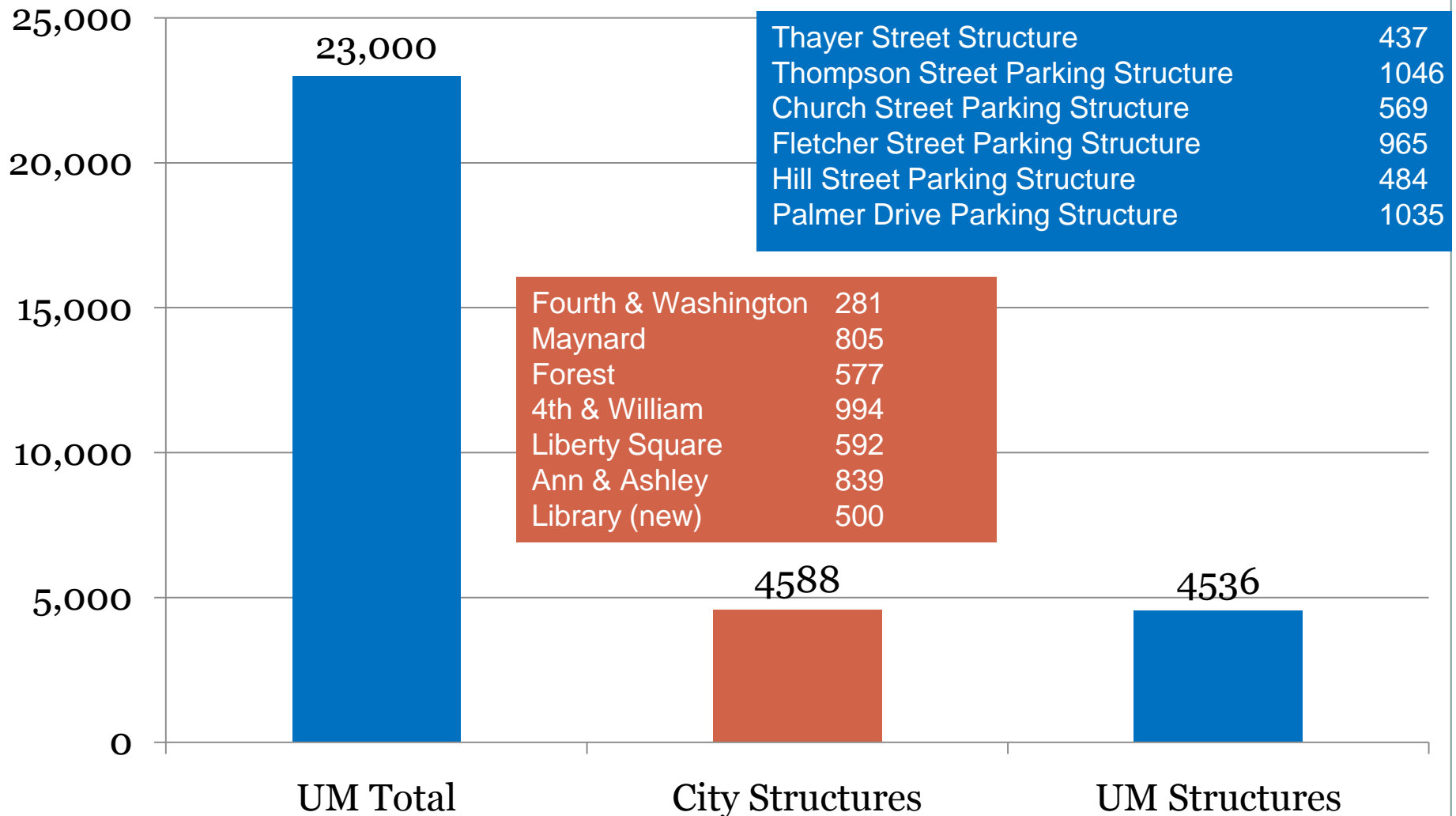


Garage Parking Events - by year

Art Fair – Fewest events – they park and stay longer



Parking Spaces in 2012

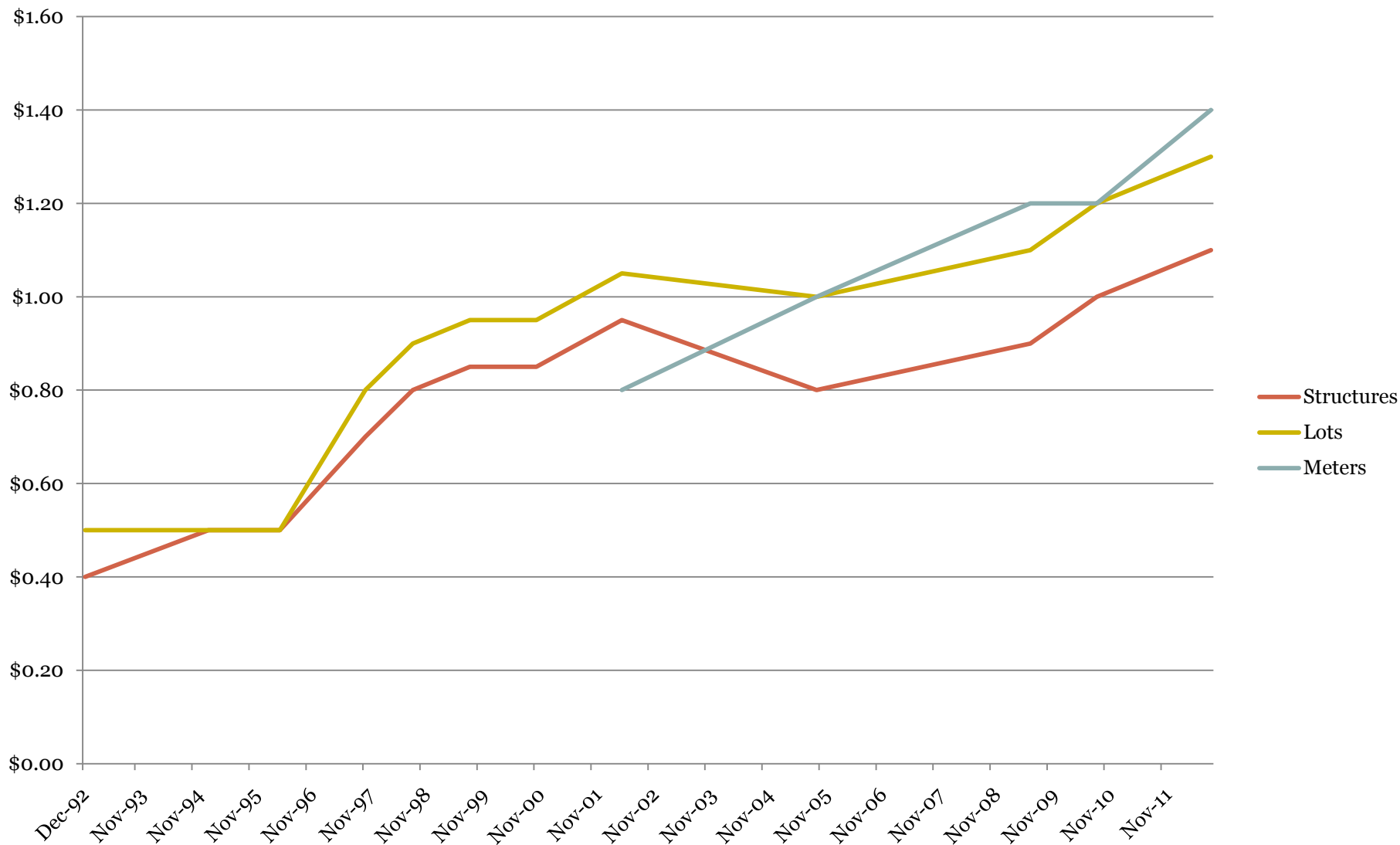


Context: Garage Parking Events have increased each year for the past 5 years

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- **22% increase in garage parking events from 2007 - 2010**
 - Despite only 3% increase in available garage spaces
 - Despite similar levels of parking permits
 - Despite increase in bus service
 - Despite increase in bus ridership
 - Despite decrease in meter tickets
 - Despite economy changes
 - Despite parking price increase
 - Despite gas price increase
 - Despite increase in GoPasses, bike facilities, GetDowntown staffing
 - Despite decrease in number of downtown workers

Parking Rates – Meters, Lots, Structures



Summary

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- Despite a weak economy and many other factors, trips seeking parking continue to increase
- Policy tools used by Ann Arbor to reduce VMT have probably worked and mitigated some of the growing VMT but clearly not all

Step 1: List Parking Decisions

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- List all decisions that have been made by the DDA or the city after the 2007 Ann Arbor Downtown Parking Study data were collected but on or before January 31, 2010

DDA Decisions from Minutes

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- 7/07 - 415 W Washington - @150 lot spaces
- 9/07 - First and Washington - 205-260 spaces added to the deck
- 10/07 - William Street Station - add 27 spaces to 163 = 190 spaces
- 10/07 - Ann Arbor Hotel – add 26 spaces to 44 = 70 spaces
- 10/07 - Renewal of Fingerle Lot
- ?? – Demo of old Y lot and Temporary Lot Spaces
- City Council – Study Parking sites – Library Lot
- City Council Direction – Demand Strategies Plan
- On-street spaces – 5th and Division

Step 1: Determine difference in spaces

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- Determine the difference in overall number of parking spaces available in Ann Arbor in 2011 compared to 2007 study level.
 - $4588 - 3969 \text{ (2006)} = 619 \text{ (@15\%)}$
 - We use 2012 parking deck spaces because this is the estimated completion date for the deck
 - We used DDA data not Neigard data

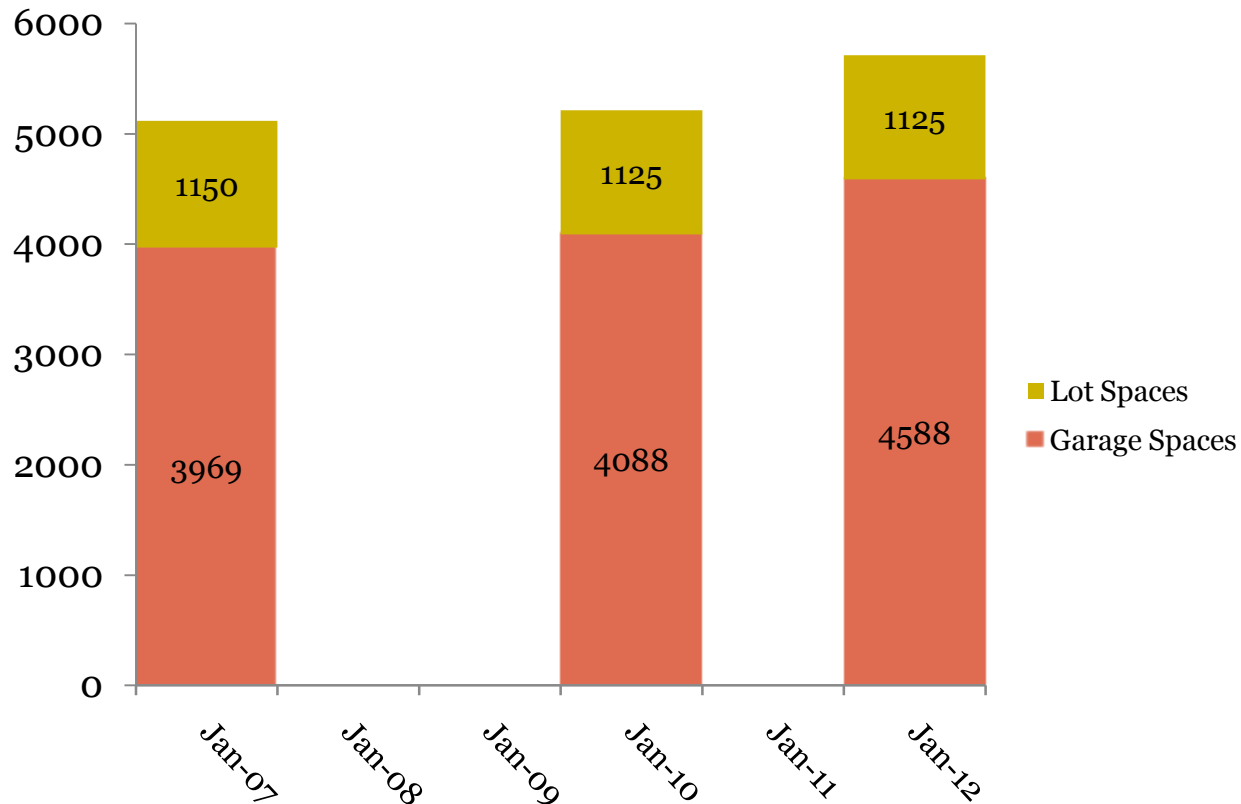
Spaces

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Facility	Jan, 2007	Jan, 2010
Fourth & Washington	281	281
Washington & First	64	64
Maynard	805	805
Forest	577	577
4th & William	875	994
Liberty Square	592	592
Ann & Ashley	839	839
Library Lot	192	0
South Ashley	134	134
First & Huron	168	168
Fifth & Huron	56	56
First & William	112	112
Fingerle	45	45
Fifth & William	0	64
415 W. Washington	0	134
Palio Lot	24	22
Broadway Bridge	17	17
Main & Ann	45	45
Farmer's Market	76	76
City Hall	33	6
Fourth & Catherine	49	47
Kerrytown	24	24
Community High	74	74
Depot Lot	37	37
On Street Meters	1506	1527
lot spaces	1150	1125
deck spaces	3969	4088

Likely mix of garage, lot and meter spaces in 2012?

January 2007 – January 2010 - 2012

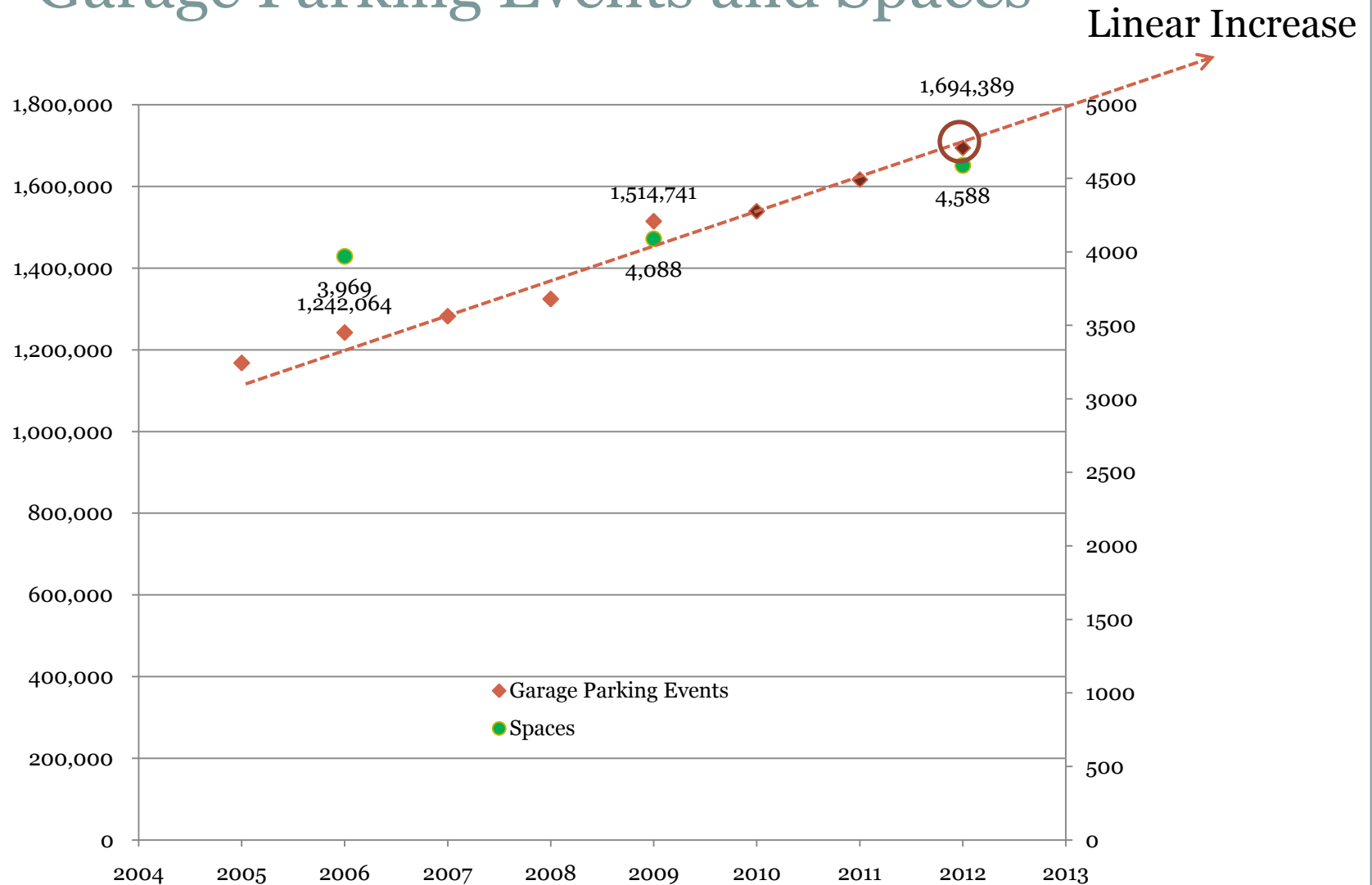


Step 2: Estimate expected number of cars seeking public parking in 2011

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- No expectation that demand will decrease
- Difficult to estimate number of cars
- Instead, Demand = Trips = Estimated number of garage parking events in 2012
- Likely Demand Scenario
 - Forecast increase in parking events based on past 5 years

Forecasting Garage Parking Events and Spaces



Context: Demand is very uncertain

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- Events by 2012 that could change the number of garage parking events
 - WCC campus in the downtown
 - Use of new courts building
 - New Hotel
 - North Quad residents with no parking and neighborhood permit parking
 - Zaragon 2
 - 1st and Washington – Village Green with Parking
 - 601 Forest (parking?)
 - Removal of surface lots
 - ✦ Sale of Library Lot
 - ✦ Sale of 415 W Washington
 - Rail from Howell (WALLY)
 - EW Rail for special events (Fall 2010)
 - County Juvenile Court Downtown
 - Significant Change in Gas Prices – Carbon Tax
- Invisible Demand
 - There is an unmeasured increase in backyard parking
 - \$135/month DDA pricing drives \$100/month backyard parking
 - No enforcement

Step 3: Estimate how many of the additional cars could be accommodated by the net increase in the number of spaces

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- Again, difficult to estimate number of cars
- Instead, we use a Level of Service Estimate
- How intensely are the spaces used?
 - Number of Garage Parking Events (per year)/Number of Spaces
 - This ratio provides an intensity of space use that supports the question of how the available spaces accommodate the number of cars seeking spaces.

Garage Parking Events (GPE) – Hourly Parking

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Year	Garage Parking Events (per year)	Permits	Spaces	GPE/space Level of Service?
2005	1,167,578			
2006	1,242,064			
2007	1,282,027		3969	312
2008	1,324,252			
2009	1,514,741			
2010	1,539,087 *		4088	370
2011	1,616,738 *			
2012 (linear growth)	1,694,389 *		4588	369

* estimated

Results – Likely Scenario

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- Linear growth in garage parking events (demand) maintains a space intensity similar to that which is available in 2009

Trip Length

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- The GHG estimates are heavily dependant on the trip length estimate
 - Nelson-Nygaard trip length is 13.7 average (2006)
 - ✦ 15.7 day
 - ✦ 10.7 evening
 - National Household Transportation Survey 2009
 - ✦ 10.1 for ALL trips
 - ✦ 12.6 for work trips

Average Vehicle Trip Length, 1969-2009 Survey Year	Average Vehicle Trip Length for All Trips (miles)	Average Journey-to-Work Trip Length (miles)
1969	8.9	9.4
1977	8.4	9.0
1983	7.9	8.5
1990	8.9	11.0
1995	9.1	11.8
2001	9.9	12.2
2009	10.1	12.6

Sources: [Nationwide Household Travel Survey website.](#)

Step 3: GHG estimates

Trip miles accommodated by 500 new spaces

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	GPE/space (trips/space)	Miles per trip	Spaces in New Deck	Trip Miles Accommodated by 500 new Deck Spaces	GHG estimate Annual Metric tons CO₂
2012	369	13.7	500	2,527,650	1221
	369	10.1	500	1,863,450	807

GHG estimates based on total trips

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	GPE (trips)	Miles per trip	Spaces in New Deck	Total trip miles	GHG estimate Annual Metric tons CO ₂ e	Net from 2009
2007	1,242,064	13.7	NA	17,016,276	7,373	
2009	1,514,741	13.7	NA	20,751,951	8,992	
2012- Linear	1,694,389	13.7	NA	23,213,129	10,059	1067
Comparison of 2012 – 2009 using 10.1 trip length from 2009 National Household Travel Survey						
	1,514,741	10.1		15,298,884	6,624	
	1,694,389	10.1		17,113,329	7,410	786

Assumptions

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- 2005 EPA data
 - <http://www.epa.gov/otaq/climate/42of05004.htm>
- 5.2 metric tons CO₂e for the average passenger vehicle (1.4 metric tons CE) based on 12,000 miles
 - .000433 metric tons per mile

Step 4: Transportation Mitigation

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- **Transportation Mitigation Strategies**
 - The GetDowntown Program started in 1999 – 337 mTCO₂e/yr
 - ✦ Over 6000 GoPasses
 - ✦ Nov 2009- Apr 2010 average of 40,000 rides per month
 - ✦ Commuter Challenge - 296,103 sustainable miles in May 2009
 - ZipCars
- **Non-Transportation Mitigation Strategies**
 - LED Streetlights - 267 mTCO₂e/yr
 - ✦ 1,000 Downtown Globes –
 - Energy Efficiency Program
 - Grants Supporting LEED buildings – Zingerman's, Tierra on Ashley