



Washington Metro



Beijing Metro



Hyderabad Suburban Rail

Park and Ride for Rapid Transit



Washington Metro



Houston

- Why Park and Ride (P/R) dedicated to rapid transit (metros, BRT)?
- Why not?
- Examples
- Planning factors
- Lessons learned



Why Provide Dedicated Parking for Rapid Transit Systems?

- Expand rapid transit market: Attract customers beyond walking distance of stations at trip “production” trip end
- P/R Rapid Transit perceived as different from local bus/rapid transit by choice customers who can't or won't walk
 - Infinite frequency, always available
 - Avoids crowding, other perceived bus access issues
- Reserves land for latter development



Why Not: The Down Side

- Creates traffic congestion around stations, especially end of line terminals
 - Makes bus, pedestrian access difficult
 - Detracts from developability
- Uses high value land close to stations that could be developed as TOD
- High direct costs not coverable by users
- Contributes to sprawl



Examples: The Good, the Bad and the Ugly

- Washington
- Toronto
- Beijing



*The Good
Washington: Ballston
3,000 shared spaces*

M

P

Image © 2009 Sanborn



Ballston: 3,000 Multi-use Spaces



Shady Grove

Washington



The Not so Good
Shady Grove
~6,000 spaces



Date: Feb 2008

39°07'14.73" N 77°09'50.34" W

Image U.S. Geological Survey

© 2009 Google

Toronto TTC Subway



Beijing Metro



Factors to Consider in Planning

- **Land use master plan, availability of land**
- **Market:**
 - Densities, O/D patterns, household character
 - Customers generally will not drive more than 10-12 minutes to P/R
 - **Ability to offer access alternatives**
- **Ability of connecting road system to absorb parkers plus sustain effective bus access**
- **Costs**
 - “feeder” bus, taxi
 - Cost of land, works



Costs

WASH. POST, 10/11/2009

LOCAL I

THE DISTRICT Metro opens garage at Minnesota Avenue

A new parking garage is scheduled to open at 5 a.m. Monday at the Minnesota Avenue station on Metro's Orange Line. The four-level, \$16 million structure holds 333 vehicles and replaces a sur-

face parking lot with the same number of spaces, according to Metro.

Spaces in the garage, built by the District, are closer to the station entrance via sidewalk, according to Metro. Construction of the garage began in January 2006.

**~\$50,000/Space,
Cost (not Price)
>\$10.00/Day!!**
— Dan Morse



Relative Costs of Different Types of Parking Net of Land*

No.	Car Park Type (1)	Cost per Parking Space Differential (2)
1	Ground level - gravel, un-surfaced	x , where x = cost per parking space
2	Ground level - asphalt surface	2.5x
3	Two storey, simple construction	7.5x
4	Multi-storey, standard construction	7.5x
5	Multi-storey, high specification	10x
6	Underground, standard	20x
7	Underground, high specification	30x

* Taken from presentation by Gladys Frame, Consultant to World Bank



Lesson Learned

- Metro, etc. adjacent P/R:
 - Can subsidize passengers that drive to rapid transit more than those that use “feeder” buses
 - Can promote sprawl
 - Can detract from ability of high cost rapid transit investment to shape land in sustainable directions
- Make Improving access, expanding “reach” the issue, look at alternatives as part of comprehensive analysis



P/R Alternatives



Washington, Metro & Express Bus on HOV



Bogota BRT



Beijing Metro



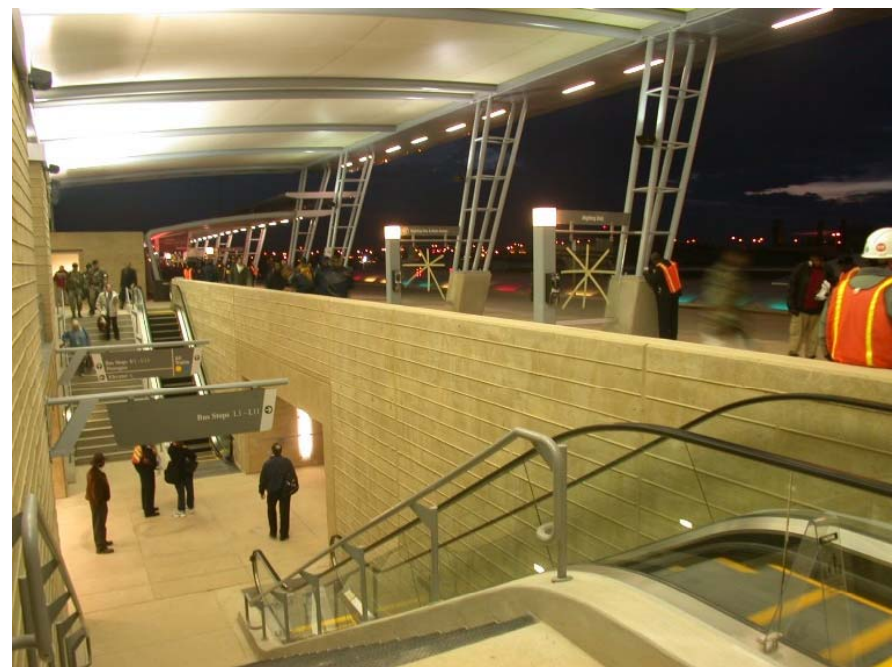
Washington Metro



Don't Forget Bus Integration



Washington Pentagon Station Metro/Bus Interface



Remote Parking for Metros



980

Herndon – West Falls Church Line

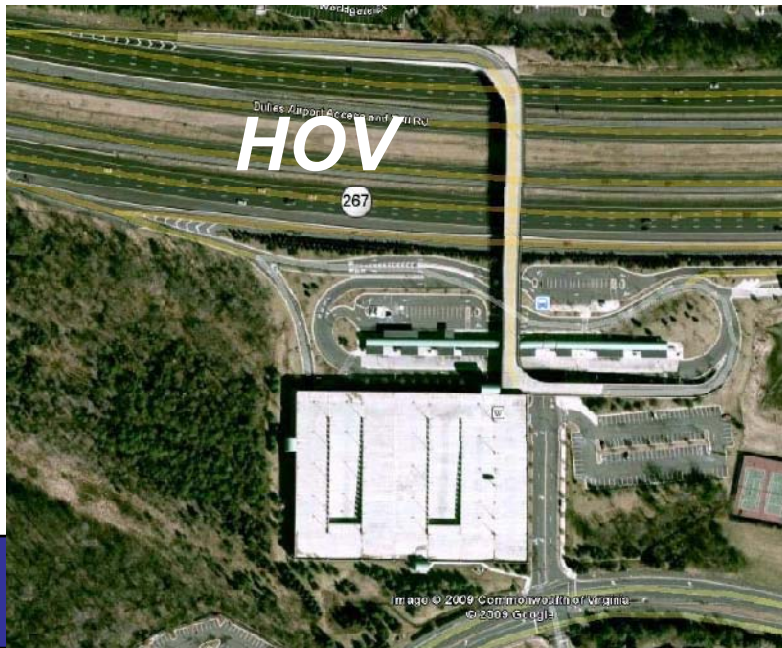
**From Herndon Monroe Park & Ride
To West Falls Church Metro**

WEEKDAY SERVICE ONLY

5:08a
5:20a
5:32a
5:44a

Buses are scheduled to depart Herndon-Monroe every 6 minutes between the times above and below. Actual frequency may vary dependent on traffic and passenger demand.

8:37a
8:49a
9:01a
9:13a
9:25a
9:37a



Conclusions

- Make metro/BRT access the issue, not P/R
- Look at other options in objective, multi-factor analysis

