Reducing Parking at Transit Stations

Jeffrey Tumlin
EVALUATING PARKING AT TRANSIT STATIONS

• Effects on transit ridership
  – Transit Oriented Development (TOD): New households & transit trips
  – Parking: Park-&-Ride participants
  – Implications for encouraging future growth in ridership

• Effects on traffic congestion
  – Walking, cycling & transit trips to station
  – Proportion and amount of vehicle trips to station
  – Implications in allocating of street right-of-way

• Effects on revenue generation
  – Lease or sale of land: Land value with higher density & mixed use compared to parking
  – Development of land: Joint development, economic vitality
  – Productive use of land: Economic productivity, sales tax
STRATEGIES FOR REDUCING TRANSIT PARKING

• SkyTrain system in Vancouver, BC (TransLink)
  – Land use concentration around SkyTrain
  – Transportation supply
  – Transportation demand including low to no parking

• Metrorail stations in Arlington County, VA (WMATA)
  – Urban village development
  – Multimodal transportation
  – Shared parking only (No park-&-ride)

• South Hayward station in Northern California (BART)
  – Plans to develop area around station and improve pedestrian, bicycle and bus access
  – Determining amount of replacement parking
Vancouver’s Regional Planning Context

• GVTA Act
  – Support Livable Region Strategic Plan

• Transport strategy aims to increase choice through 3 “levers”
  – Land use i.e. town centers, employment, residential density
  – Transportation supply-side e.g. rapid transit network
  – Transportation demand-side e.g. pricing, TDM
Land Use Strategy

• Transport needs are derived from how people and activities are distributed

• Concentrating population & jobs
  – Activity centers with transit-supportive densities
  – Residential densities e.g. high density residential towers around stations

• Linking town centers with good transit
  – Rapid transit to help ‘shape’ growth
  – Transit investment linked to regional growth management
Land Use Density and Transit

% Transit Use vs. Persons/hectare

Europe
Asia
US-Canada-Australia

GVRD

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Employment Density and Transit

Car trips per 10,000 jobs (round trips)

- Office park: 9,000
- New Westminster: 7,500
- Metrotown: 6,400
- Central business district: 5,000
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Land Use (Concentration & Activity Centers)

Growth Concentration Area – 70% of Future Growth
Transportation Supply (RT Development)

- SeaBus 1977
- West Coast Express 1995
- Millennium Line- 2002
- Coquitlam Light Rail 2009
- RAV – Automated Rapid Transit 2009
- Surrey Busway 2013
- UBC Future Extension
- Expo Line – 1986
- WCE from Langley 2008
Transportation Demand

• Improving services
  – High speed & frequency SkyTrain services (< 5 minutes)
  – Improved connections to other services (e.g. B-Lines)
  – U-Pass program

• Creating a transit culture
  – Encouraging use day & night
  – Creating advocates & supporters
  – Improving image/ reputation
  – Targeting frequent users and students/universities

• Improving station areas
  – e.g. Broadway-Commercial TOD plan to improve livability as well as transit performance and ridership

• No park-&-ride lots at transit stations
Lessons & Results in Greater Vancouver

- Increasing ridership and cost recovery
  - 41% increase in ridership since 1994
  - 20% increase in ridership since 2002
  - Ridership of 200 million by 2010 (33% increase)

- Park-&-ride generally discouraged at stations
  - Allows access to transit & extends system BUT
  - Sterilizes land around stations
  - Disconnects city from system
  - Promotes low density urban development
  - Discourages all-day rides
  - Raises safety, personal security issues
Transportation Demand

- Actual
- Projected

Year
- 1994: 109M
- 1995: 110M
- 1996: 112M
- 1997: 114M
- 1998: 116M
- 1999: 118M
- 2000: 120M (Strike)
- 2001: 90M
- 2002: 125M
- 2003: 154M
- 2004: 170M
- 2005: 180M
- 2006: 190M
- 2007: 200M
- 2008: 210M
- 2009: 220M
- 2010: 204M

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Land Use in Arlington County

- Across the Potomac River from Washington, DC
- High-density commercial and residential development around Metrorail Stations
  - Rosslyn-Ballston Corridor
  - Jefferson Davis Highway Corridor
- Population of nearly 200,000
  - 5% increase since 2000
- Employment of approximately 195,200 jobs
- Density of 7,700 people / square mile
  - One of the most densely populated regions in the country
Metrorail Service in Arlington County

- 11 Metrorail stations within Arlington County
- Approximately 200,000 people/weekday entering these stations
- 61 million one-way trips/year to, from and within the county
- Development planned or under construction in the county
  - 6,000 housing units
  - 3 million sq ft office
  - 1 million sq ft retail
Urban Villages in Rosslyn-Ballston Corridor

- 5 urban villages developed around Metro stations in the Corridor
  - 3 miles long and 2 square miles in area
  - Medium-high density mixed use villages
  - Surrounded by well established low-moderate density neighborhoods

- Supported by multimodal transportation facilities
  - Walkable, pedestrian/bike-friendly environment
  - 5 closely spaced Metrorail Stations that are below grade
  - Local and feeder bus service
  - Extensive, connected network of highways, arterials and local streets

- Close to the center of Downtown DC
- No distinct park-&-ride facilities, only public shared parking
Development Patterns, 1960s – 1970s

• Loss of status as Northern Virginia’s main retail district
  – Declining retail sales
  – Declining population as families moved to the suburbs
  – Disinvestment in residential neighborhoods, absentee landlords, land speculation

• New shopping centers emerging instead in Fairfax County

• Large scale office development and increasing employment in Rosslyn
Redevelopment Initiative

- Use Metrorail transit investment as catalyst for intensive redevelopment of the commercial spine of central Arlington
- Concentrate density and promote mixed use at 5 stations
  - Rosslyn, Courthouse, Clarendon, Virginia Square, Ballston
- Taper development down to adjacent neighborhoods
- Preserve and reinvest in established residential neighborhoods adjacent to the corridor
Household, Population & Employment Trends

![Bar Chart showing household (HH), population, and employment trends from 1972 to 2003.](chart)

- **1972**
  - HH: 15,000
  - Population: 20,000
  - Employment: 25,000
- **1980**
  - HH: 20,000
  - Population: 30,000
  - Employment: 35,000
- **1990**
  - HH: 25,000
  - Population: 40,000
  - Employment: 45,000
- **2000**
  - HH: 30,000
  - Population: 50,000
  - Employment: 55,000
- **2003**
  - HH: 35,000
  - Population: 60,000
  - Employment: 65,000
Retail & Entertainment

- Increase in full service supermarkets in Rosslyn-Ballston Corridor from 1 to 4
- Increase in the number of restaurants (currently over 100)
- Provision of two multi-screen cinemas adjacent to Metro
Transportation System Performance

- Increasing weekday trips at the 5 stations from 57,100 (1980) to 79,500 (2002)
- 73.3% of patrons travel to/from Metro stations on foot or over 58,000 trips daily*
- 11.1% of patron travel to/from Metro by bus or over 8,800 trips daily*
- Increasing pedestrian and cycling activity
  - Over 5,000 walk trips to/from work according to the 2000 Census
- Elimination of dedicated station parking

* WMATA May 2002 weekday Metrorail ridership and access data, WMATA historical ridership counts, Census 2000 Journey to Work
Metrorail Access at 5 R-B Corridor Stations

39,500 daily boardings

- Walk: 73.0%
- Metrobus: 7.5%
- Other Bus/Vanpool: 3.6%
- Auto (incl. Drop-off): 12.9%
- Other: 1.0%
- No Response: 2.0%

Source: WMATA May 2002 weekday Metrorail ridership and access data
Metrorail Access at 4 Orange Line Stations

29,250 Daily Boardings

- Auto (incl. drop-off): 57.6%
-其他: 14.6%
- Metrobus: 9.3%
- Other Bus/Vanpool: 4.8%
- Walk: 1.7%
- No Response/Unknown: 12.0%

Sources: WMATA May 2002 weekday Metrorail ridership and access data
No Park-and-Ride

- All parking charged at market-rate
- Prepaid ParkSmart debit cards can be used to pay for metered parking
- Parking brochure
  - Locations of all public on- and off-street parking in the 5 villages
  - Information on alternative transportation options

Parking at County Meters

- Short-term meter rate: 75¢ / hour
- 12-hour meter rate: 50¢ / hour
- FREE everyday after 6 pm
- FREE all day Sunday
- FREE at designated meters Saturday

YELLOW
1/2 hour
SILVER
1 hour
BLUE
2 hours
RED
4 hours
GREEN
12 hours
South Hayward BART Station Study

Transit-Oriented Design Plan
South Hayward BART

Transit-Oriented Design Plan Study Area

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South Hayward BART Station Study

Existing Character and Transit-Related Facilities
South Hayward BART Station Study

Existing Character and Transit-Related Facilities

• 7 AC Transit Routes serve the station, the most frequent operate at 30-minute headways
• Barriers to pedestrian movement, including:
  – BART tracks. Pedestrian crossings of BART are limited to vehicular undercrossings.
  – Dangerous connections from main transit corridors
• 5 bikeways in station area, with 30 bike lockers at station
• Heavy vehicular traffic on main roads accessing the station
• Parking oversupplied, only 83 percent of surface parking lot is full on a daily basis
BART has well-established policies and guidelines regarding access to its stations. These seek to reduce the drive alone access mode share, in favor of increased use of carpools, transit, walking and cycling.
Access Survey Results

- Patrons primarily arrive (63%) by car.
- 96 percent of patrons driving alone parked in the BART parking lot.
- Bus and bicycle access share higher for trips at the non-home end.
- 75 percent of patrons use BART three or more days a week, mainly for commute purposes (66 percent).
- 79 percent of the respondents’ trips, originated in Hayward, ten percent started at Union City and five percent from Fremont.
South Hayward BART Station Study

Access Survey Results

Usage of BART
- 3+ days/wk: 75%
- 1 - 2 days/wk: 8%
- Less often: 17%

Ethnicity
- White: 20%
- Black/African American: 22%
- Asian/Pacific Islander: 26%
- Spanish/Hispanic: 19%
- Other: 13%

Coming from Home
- 77%
- 23%

Access Mode
- Walked: 22%
- Drove/Carpooled: 44%
- Dropped off: 19%
- Bus/Transit: 12%
- Bike: 2%
- Other: 1%
Access Survey Results - Riders Coming to the BART Station from Home

South Hayward BART
South Hayward BART

Access Survey Results – Riders Coming to the BART Station from Another Origin

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Reducing Replacement Parking

- Benefits:
  - BART’s surface parking lots represent prime transit-oriented development sites
  - Ridership growth can be achieved through transit oriented development
  - Existing parking does not fill up.
  - Expensive costs of providing parking can be used for access improvements instead.
    - Annual cost per surface space: $353.04
    - Annual cost per structure space: $537.62
- But - BART has commitment to existing riders
South Hayward BART Station Study

Net Revenue and Ridership Effects of Reducing Replacement Parking


![Graph showing net revenue and number of riders for different percentages of replacement parking.](image-url)
South Hayward BART Station Study

Results of Replacement Parking Analysis:

• More ridership will be generated if less land is occupied for replacement parking.

• The cost of building replacement parking is expensive. BART generates more net annual revenue the less replacement parking built.

• Improving pedestrian, bike and bus access to the station will increase ridership.
Why provide parking at Rail Stations?

- Land banking for future joint development
  - Danger: may be politically difficult to eliminate later!
- Only effective use of land
  - Freeway interchange
  - Airport zone
  - Toxins
  - But why put rail line here at all?
- Free capital money from FTA to build parking, no operating money to run shuttle connections
- Appeal to affluent suburban voters
- Appeal to sprawl developers and building trades
Why require replacement parking?

- Replacement parking puts huge cost burden on joint development projects, oftentimes precluding them.
- Replacement parking reduces development envelope, resulting in less JD ridership.
- At most urban rail stations, eliminating station parking for more JD would result in higher ridership and revenue.
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... transportation planning for livable communities