Transit Planning at 3 Scales: the Network, Corridor, and Station Levels

Case studies of challenges, solutions and lessons learned

October 21, 2013

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Presenters

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Overview-
Transit Planning at the Network, Corridor, and Station scales

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John Katz
San Francisco Municipal Transportation Agency
The Context of Transit Planning

• Who are we?

Urban, Suburban, or Rural
Planner, engineer, developer, elected official, student, community activist, none of the above.

• One size does not fit all.
3 Scales of Transit Planning

• Transit Network: Transit Services provided over an entire system, or parts of a transit system.

• Corridor: How to improve a specific transportation corridor.

• Station: Creating a new transit station. A light or heavy rail station with connecting bus service, a BRT station, or a larger multi-modal facility.
Network Example – SF Transit Effectiveness Project (TEP)

- The TEP is a long term prioritization and modernization process for the entire SF MUNI transit system.

- The goal is to get the system in balance with current and future demand while increasing speed and reliability, all within the constraints of projected operating budget budgets, fleet size, and facilities.
STEP 1: Gather Data

• The TEP gathered ridership data from on-board automatic passenger counter technology (APC’s) on all MUNI routes at all times of the day.
Step 2: Analyze the data

- Where and when was the route structure insufficient to handle the demand, where and when does the system have extra capacity. What correctable factors contribute to slower speeds.
Step 3: Apply Tool Kit of Improvements

a) Capital projects: bus bulbs, boarding islands, Transit signal priority, by-pass wires and extensions for trolley coach system, BRT corridors.

b) Route restructuring – re-route and/or combine routes, peak period expresses over heaviest parts of routes, consolidate stops, combine some terminals.

c) Eliminate turns/ route legibility: Convert portions of one-way streets to two way for transit. Back to the future.
Step 4: Developed Preliminary Recommendations

- Preliminary TEP recommendations involved every route in the system.
- Prioritized heaviest routes (TEP dubbed “Rapid routes”) for capital improvements.
TEP Rapid Routes

LEGEND

Rapid Network
(every 9 minutes or better)

Non-stop express segment
Bay Area Rapid Transit
Step 5: Community feedback

Took preliminary recommendations through a series of public meetings in different parts of the city.

Step 6: Modify Recommendations

Recommendations modified in some cases as a result of public input.
Step 7: Environmental Review Process

2-year process to environmentally clear all capital projects and major route changes. Will involve more public comment.

Step 8: Implementation

If environmental document Ok’d, can move forward to implement changes and capital projects over time - funding and staff resources permitting.
Lessons

• Depend on objective/raw data, not previous assumptions.
• Travel patterns change over time, as land uses change.
• Have a variety of tools developed that can be applied appropriately to improve transit speed and reliability.
• Often strategies to improve transit speed are not welcome in parts of the affected communities.
Challenges

• Parking reductions needed to implement improvements to transit service sometimes meet stiff resistance.

• Passengers who lose service often object. But those who will get more service generally don’t self organize in favor.

• Need continuous outreach and political support at every stage.
Corridor Planning

• A specific long street or state route, or several usually parallel streets within the same geographic area.
• One jurisdiction or many
• One transit route or several
• Should involve simultaneous improvements to several transportation modes- implement “complete streets” principles where possible.
22-Fillmore/
16th St. Corridor

Summary of Recommendations for 22 Fillmore:
- Would be rerouted to continue along 16th St. to 3rd St., creating new connections to Mission Bay
- Segment along Connecticut and 18th Streets would be replaced by revised Route 33 Saneyan
- More frequent peak service would reduce crowding
- Current frequencies – 8-9 min peaks; 10 min midday; 15 mn evening
- Proposed frequencies – 6 min peaks; 7-8 min midday; 15 min evening
Lessons and Challenges

• Developing a careful balance of the needs of all stakeholders which often appear to compete:
  o Between transit, pedestrians, bicycles, autos
  o Between residents who want calm streets, and businesses, who generally favor parking.

• Proactive coordination with local jurisdiction(s)

• Be creative, patient, and have political support
Station Planning

• Light rail, heavy rail, BRT station, or multi-modal hub.
Transbay Transit Center in S.F
Van Ness BRT Station
Station Planning Lessons

- Access by other modes critical
- Transferring must be as seamless as possible
- Follow ADA – will benefit all
- Station should be a memorable place
- Fare collection protocols can influence station design
- Understand effects on surrounding land uses- work closely with local jurisdiction, community, and landowners.
METRO Orange Line

Case Study: Balancing Corridor, Network, and Station Design Tensions on I-35W in Minneapolis-St. Paul

Railvolution 2013

Charles Carlson
BRT/Small Starts Project Office
Metro Transit
Context: Planning for BRT on I-35W

Real-time Information + Better Accessibility + Improved Stations and Vehicles = Improved Experience

Less Boarding Delay + Congestion-free Ride + All-day, Frequent Trips = Reliable Service
Orange Line: Part of new METRO Network
Penn-American District

Current Conditions - 1960s Retail

Beginnings of TOD emerge 2011-2013

Penn American District Future Vision
American Boulevard Station Options

Existing Route
- 18-minute travel time
- 15 traffic signals
- Backtracking required
Option A: Freeway Station

- Saves 12 minutes
- 0 traffic signals
- On managed lane, widens freeway
Option B: Street Stations

- Saves 7 minutes
- 7 traffic signals
- Adds I-494 underpass
Option C: Street Stations + Median Ramp
- Saves 9 min
- 4 signals
- Underpass + Wider freeway
Balancing Tensions

Corridor Priorities
- Fast travel
- High ridership
- Minimize cost
- Consistent experience

Network Priorities
- Retain current coverage
- Intuitive route structures
- Optimized service plan

Station Priorities
- Access current destinations
- Catalyze new development
- Maximize rider comfort
Balancing Tensions - Station Priorities

Fast travel
High ridership
Minimize cost
BRT “Experience”

Lake Street Station Design

Existing I-35W & 46th Street Station
Balancing Tensions - Station Priorities

½ mi of Freeway Station:
- 4,600 residents
- 8,100 jobs

½ mi of Street Stations:
- 13,000 residents
- 13,000 jobs

Access current destinations
Catalyze new development
Freeway station is a 1,000’ walk (4 min) From primary redevelopment/TOD area

Maximize rider comfort
Balancing Tensions- Network Priorities

Freeway Station: Divert routes to single station

Streets: Streamline routes, serve two BRT stations

Retain current coverage
Intuitive route structures
Balancing Tensions - Network Priorities

Optimize service plan

Orange Line BRT Service

Traditional Express (Routes vary)

Reverse Commute (Routes Vary)

- Downtown
- Lake St
- 46th St
- 66th St
- American
- 98th
- Burnsville
Key Lessons

• Design a useful process
  ...and then use it
• Develop useful criteria
  ...and then use them
• Look beyond facility design and placement to balance tensions between scales

Project Outcomes

• Decision not yet made
• Similar costs between most alternatives

Closing Thoughts:

• Hire project leads who actually use (and believe in) transit service
• Riders make choices based on service usefulness, so favor a useful service over a familiar facility or corridor experience expectations
• Involve (and know needs of) real riders when making decision
Case Study

Aurora Corridor Improvement Project

City of Shoreline, Washington

October 21, 2013
1998 – Began Multi-Modal Pre-design study

• Citizen Advisory Task Force
  – Business Community
  – Neighborhoods
  – Transit Users

• Interagency Team – Public Sector stakeholders

• Issues
  – Businesses – access, median, driveways, visibility, construction, loss of parking
  – Transit – speed and reliability, rider safety (boarding areas)
  – City – Safety, traffic flow, increased transit use, economic redevelopment, aesthetics, preserve neighborhoods, identity change

• Groups developed preferred design concept and “32 Points”
No Action Alternative
Typical Cross Section at Mid-Block

Alternative A-Modified
Typical Cross Section at Mid-Block
“Parallel” effort – Interurban Trail

• Nonmotorized trail in public utility corridor
• Adjacent to Aurora Avenue N
• Two bridges constructed with Mile 1 of Aurora Avenue N
• City created Aurora Business Team (ABT)
  – Gain business community trust, support of process and outcome
  – Advisory to Aurora staff
  – Located along the corridor
  – Owners and tenants
  – Small and large business/property owners
• Met eleven times
• Developed alternative project design – carried through environmental process
City created Aurora Business and Community Team (ABC Team)

- Monitor progress, provide input, represent community, disseminate information, ensure transparency, answer questions up front
- Provided briefings prior to environmental documentation preparation – vetted the scope of each topic
- Different topics at each meeting
- Three alternatives vetted
- Updated 32 Points
Outcome...

SUCCESS!
PROJECT BENEFITS AND SUCCESSES

• Redevelopment projects
• New jobs
• More shopping and service choices for Shoreline residents and the region
• Improved safety, mobility and choices
• Traffic accidents reduced 60% in the first mile
• Transit speed and reliability
• Gathering spaces created
• Community identity
LESSONS LEARNED

• Importance of community involvement
• Innovative strategies
• “32 Points” and Report Card – keys to success
• Partnerships – WSDOT, King County Metro Transit
• Vision
• Communication – no surprises and follow through
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Bellevue-Redmond Connections
RapidRide B Line Implementation
Network Restructure, Fall 2011
RapidRide

- Frequent, reliable, and Faster
- Enhanced Rider Experience
- 23,000 new annual hours
- B Line Stop Profile
  - 19 Stations
  - 26 Stops
  - 20% faster than current local routes
WHO?

- King County Metro and Sound Transit (ST)
- Cities
- Urban Partnership Agreement (UPA)
- Bellevue College and University of Washington
WHAT?

- Service restructure to complement RapidRide BRT Line and recent ST service improvements
- Shift hours to two-way all-day routes from one-way peak-only routes
- Establish frequent all-day network
WHEN?

- UPA service adds in 2010 and 2011
- B Line restructure in Fall 2011
- Redmond Transit Center in February 2008
- Layover changes
HOW?

- [http://metro.kingcounty.gov/have-a-say/](http://metro.kingcounty.gov/have-a-say/)
- Two-stage public outreach
- New web-based maps and narratives
- Sounding Board
- Council process
CONTEXT:
- Recession, fiscal crisis, and Regional Transit Task Force
- SR-520 Tolling
- BRT implementation
- Two-way demand
- Network obsolete but had existing riders
Get Ready for SR 520 Tolling

- FTA funded buses
- Transit agencies added service
- Restructures maintained number of peak period trips
Project Goals and Objectives

- Build on investments: service and capital
- Prepare for SR 520 tolling
- Improve efficiency and effectiveness
- Invest in routes with highest ridership potential
- Improved transit mobility: span and frequency
- Minimize loss of coverage
Project Constraints

- Limited service budget
- Maintain number of peak bridge trips
- RapidRide alignment and service fixed
- Geographic scope limited
- Current riders
- Layover constraint
Eastside and Crosslake All-Day, Two-Way Frequent Network

BEFORE

AFTER
OUTCOME:
Ridership response to restructure and tolling
- ST weekday productivity up 34 percent over two years
- Metro weekday productivity up eight percent over two years
- Metro weekend productivity improved despite added trips and hours
Route 240 pathway

- Sounding board recommendation via Eastgate
- Management: status quo
- Council: via Eastgate
- Bellevue College lobbying
- Deviation guideline
New Network

- Four new routes
- 12 routes deleted
- B Line and four others provide short headways
- Weekend and off-peak improvements
Questions?