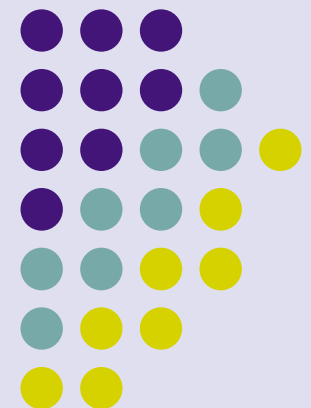


Before-and-After Studies – Examples

Session 12

- Interstate MAX LRT in Portland
 - Joe Recker, TriMet
 - Jennifer John, John Parker Consulting
- Newark-Elizabeth Rail Link
 - Bill Woodford, AECOM
- Charlotte South Corridor LRT
 - Bill Woodford, AECOM



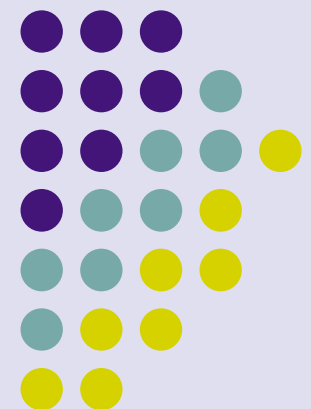
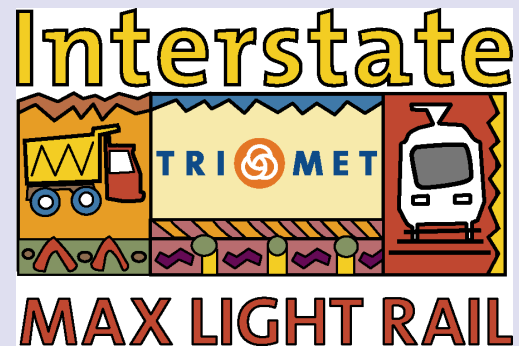
Before-and-After Study for Interstate MAX LRT in Portland

Key Findings and Lessons Learned

Joe Recker
TriMet

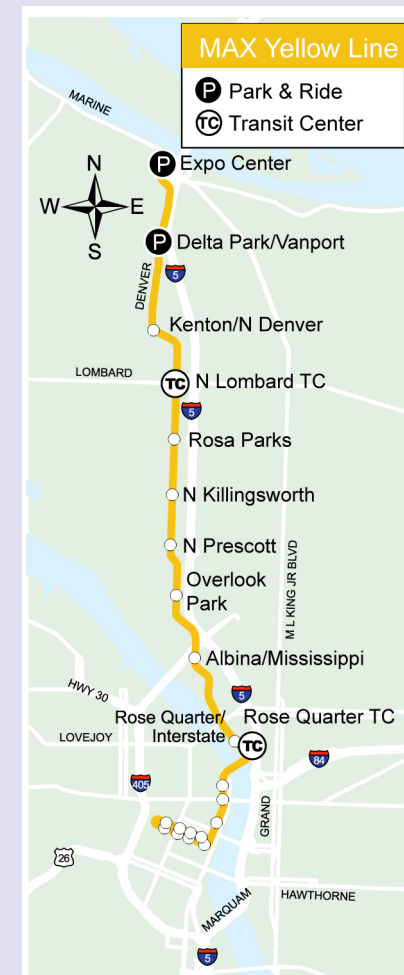
Jennifer John
John Parker Consulting

Presented by Ken Cervenka
FTA



Project Description

- Planning began in 1980's
 - Bi-state south/north corridor
 - Project salvaged from failed bond measure for entire corridor
- 5.8-mile extension (10 new stations) north from existing 33-mile east-west system
 - Bus service replaced with light rail
 - Traffic lanes replaced with exclusive transit lanes





Project Purpose

- Provide a faster/more reliable connection to largest employment center in region - downtown
 - Serve commuter market
 - Majority of trips in/out of the downtown
 - Intercept trips crossing the river through park and ride facilities and bus transfer points at the northernmost terminus of the route
- Other goals included:
 - Maximize effectiveness and efficiency of transit system in older, urban neighborhood
 - Support land use goals
 - Accommodate future growth

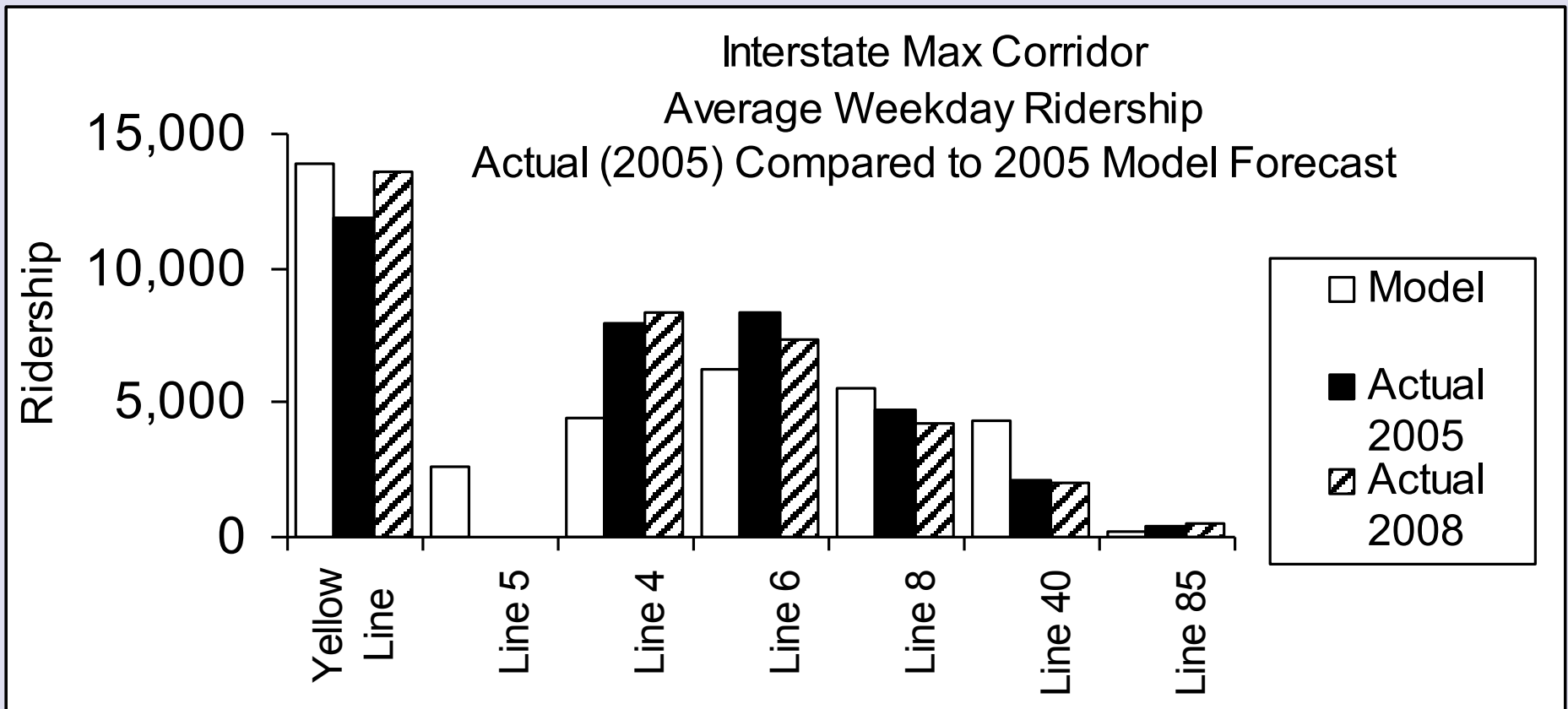


Weekday Project Ridership

- 2005 forecast (completed in 2000) – 13,900
- Opened May 2004 for revenue service
 - Spring 2005 – 11,830
 - Spring 2007 – 12,900
 - Spring 2008 – 13,800
 - Summer 2008– 14,700
- Aggregate ridership forecast pretty good
- Insights are gained from delving deeper into the forecasts at a more disaggregate level

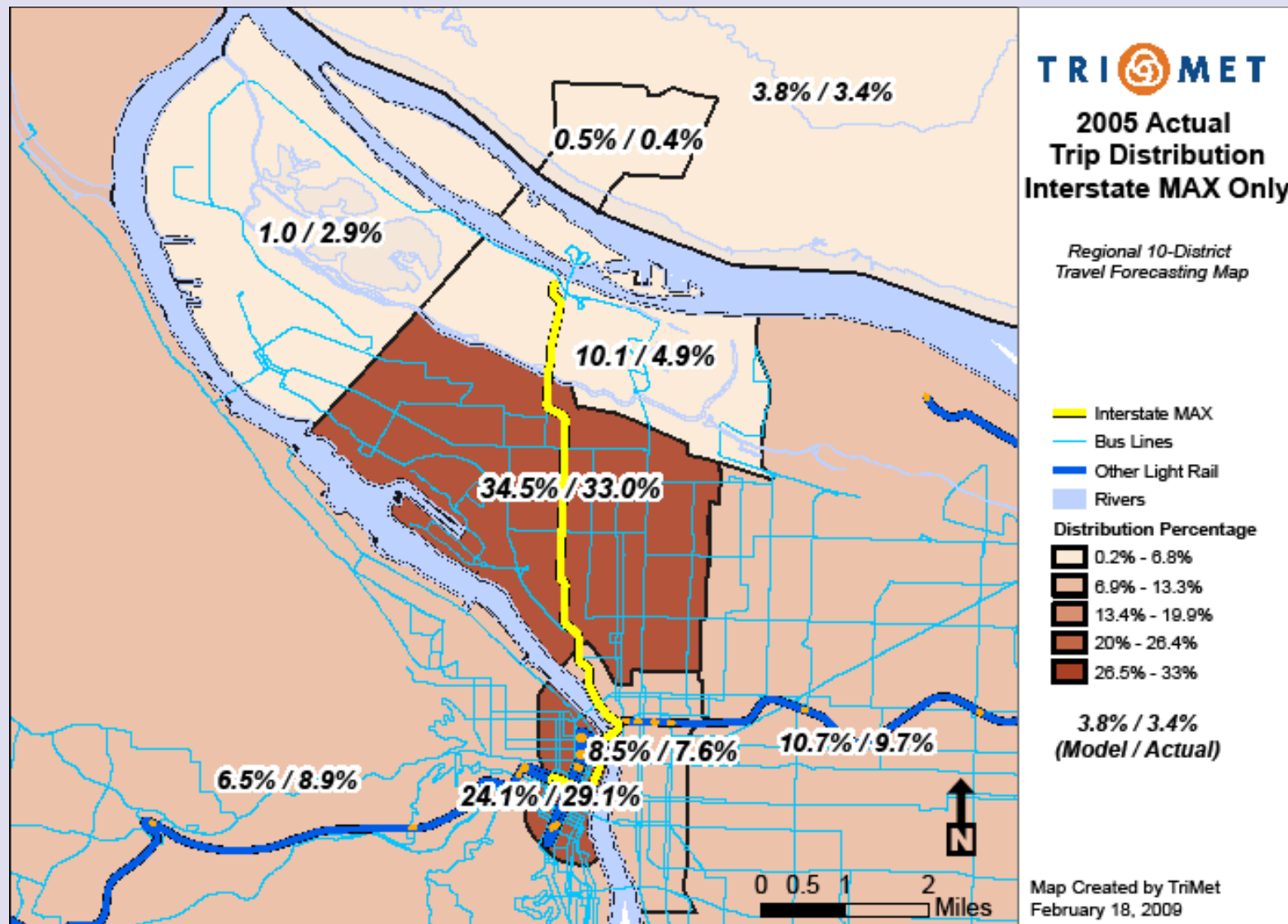


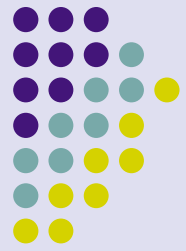
Weekday Corridor Ridership



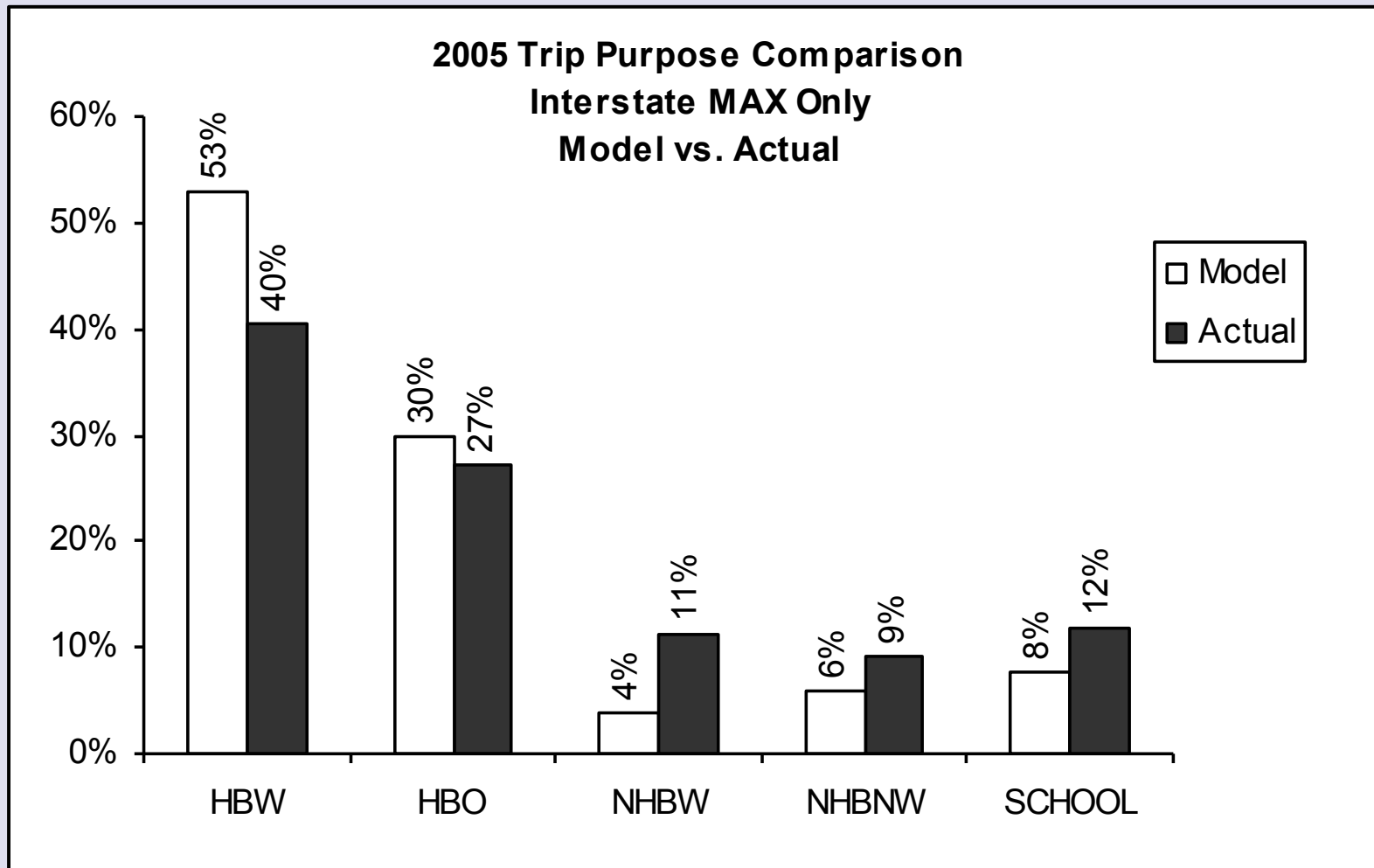


Transit Rider Travel Patterns





Distribution by Trip Purpose

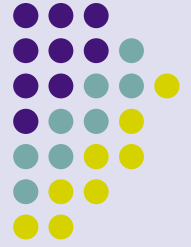




Land Use

- Predicted – Roughly 2% annual growth thru 2025
- Actual – Roughly 2% contraction of employment between planning and project opening (national recession)
- Opening year interpolated from horizon year forecast (not a 2005 land use allocation process)
- Economic cycles impact land use projections more in the short term than long term

	2005 Projected	2005 Actual	Absolute Difference
Households	10,587	9,217	-1,370
Employment	104,022	94,851	-9,171



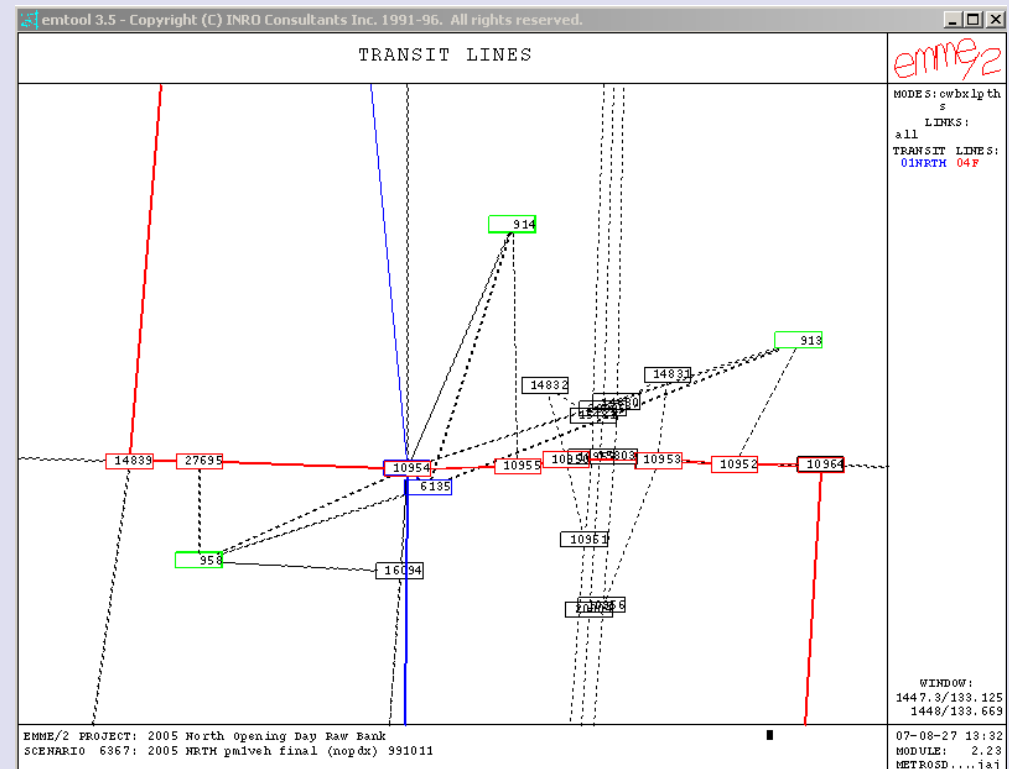
Service Levels

- Predicted
 - Replace bus with rail
 - Reallocate bus service to rest of N/NE Portland
- Actual
 - Modest service changes
 - Generally met expectations
- Issues
 - Line coding checks
 - Horizon vs. opening year service planning

Modeling Inputs

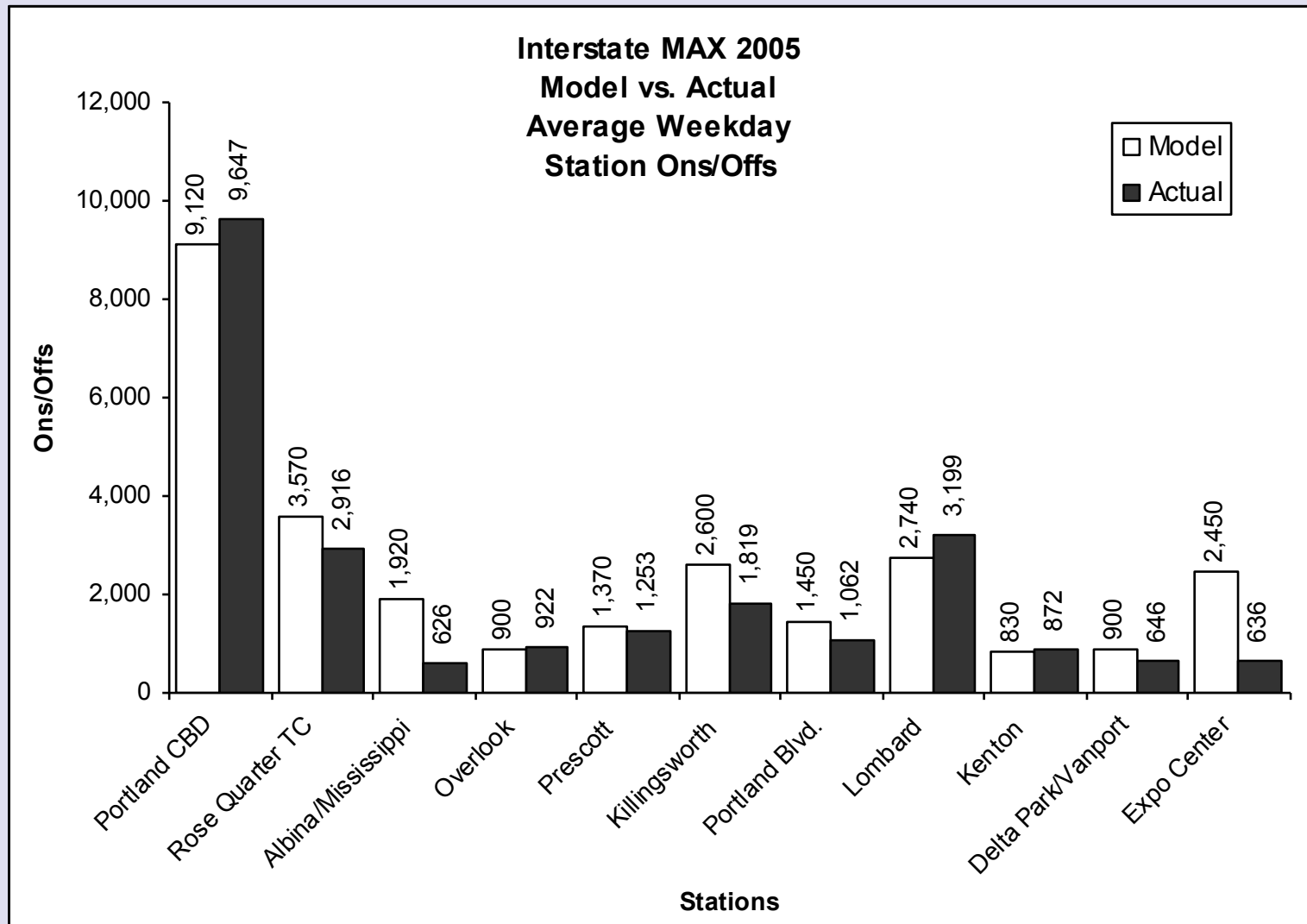


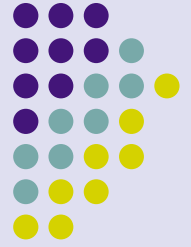
- Understand software
 - Emme2 multipath assignment
- Mode of access
 - Park-and-ride assumptions
 - Walk connections
 - Transfer rates



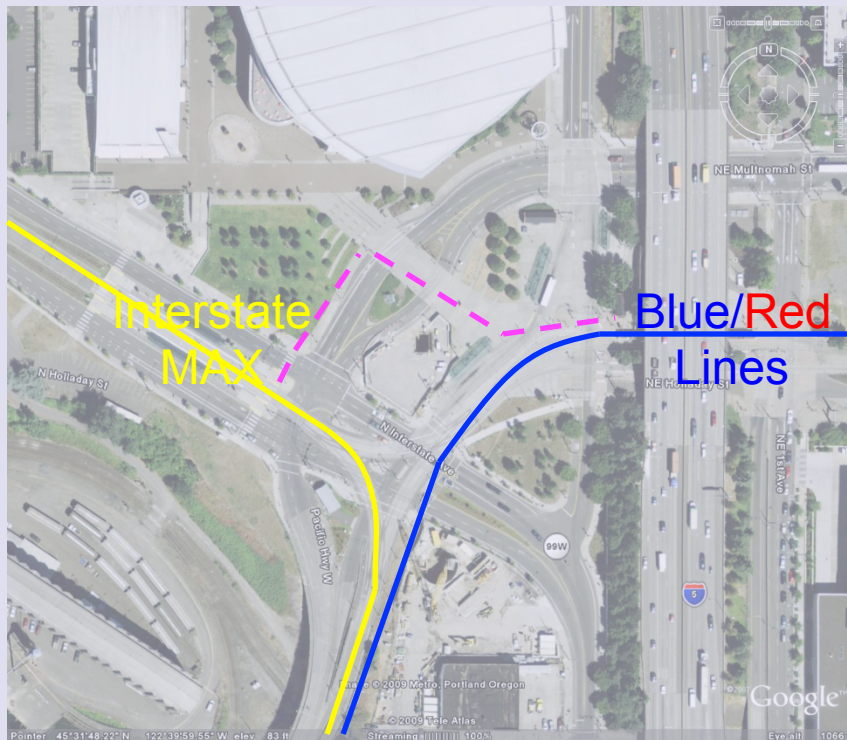


Overall Ridership By Station





Rose Quarter Transit Center



- Predicted: heavy transfer activity to MAX trunk line
- Actual: long walk at transfer point with 2-3 signalized crossings – fewer transfers
- 30% fewer transfers and 18% less station activity than forecast



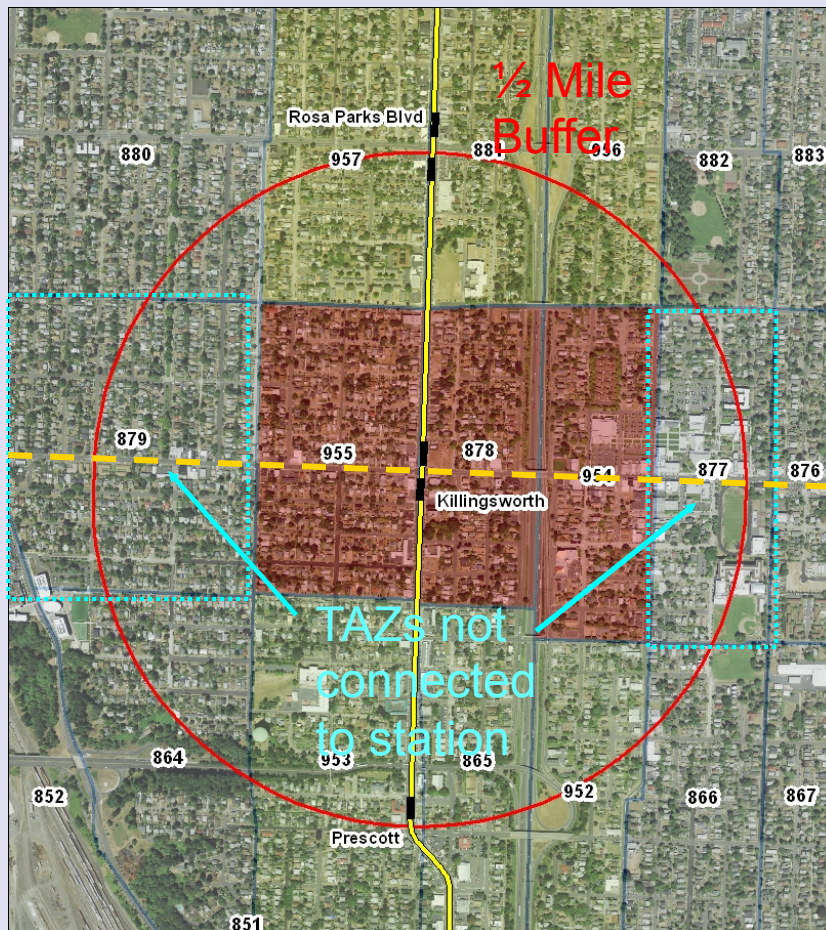
Albina/Mississippi Station

- Predicted: walk access to dense employment/medical center TAZ
- Actual: indirect, uphill walk connection to that TAZ on narrow sidewalk underneath freeway
- 67% less station activity than forecasts





Killingsworth Station

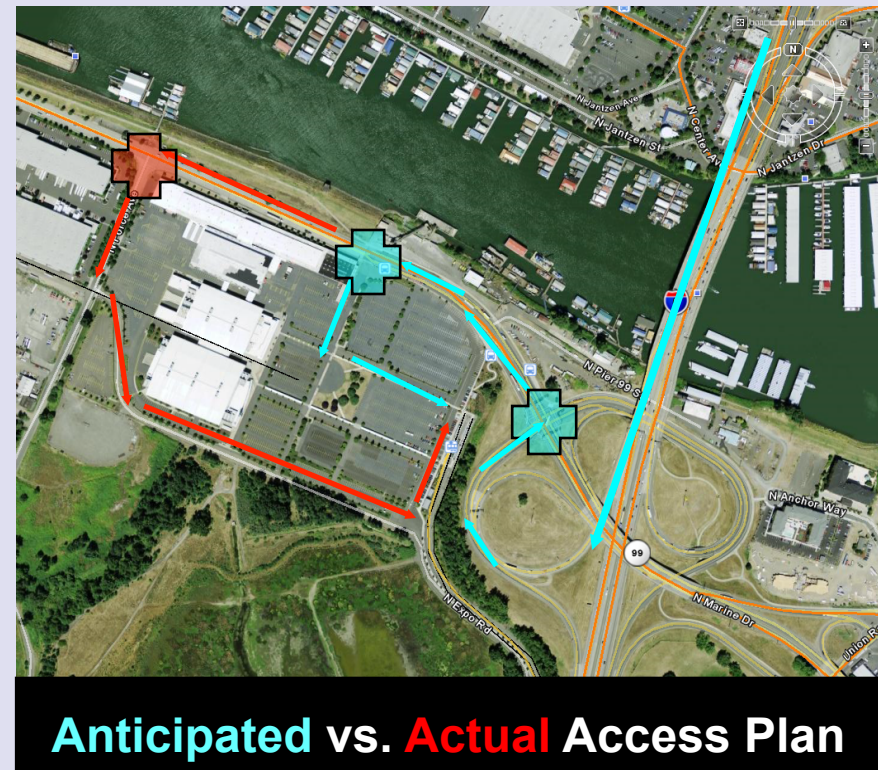


- Predicted: typical urban neighborhood station with mix of walk and transfer access
- Household and employment projections not realized
- Standard coding conventions utilized in model, did not reflect actual access to the station
- 75% actual walk access vs. 54% forecasted



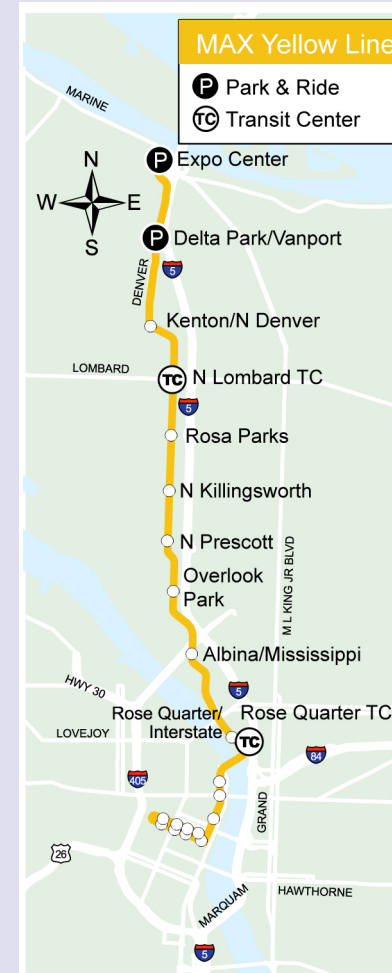
Expo Center Station

- Predicted: main access station for Vancouver residents via park-and-ride and Line 5 bus transfer
- Actual: State DOT didn't allow bus/car access from freeway expected in model
- Park-and-ride and buses routed to different station
- Transfers occurred at Lombard – 17% more station activity there
- Park-and-ride underutilized



Other Stations

- Overlook: Actual land use and access modes close to forecast – 2% higher station activity than forecasted
- Kenton and Lombard: Unanticipated transfers led to higher actual station activity – 5% and 17% over forecast, respectively
- Delta Park/Vanport: Recent direct access to C-Tran transit market – 2008 actual station activity 11% over forecast





Before-versus-After Observations

Line 5 vs. Interstate MAX

MAX riders more likely to...

- Walk further
- Drive to transit
- Need fewer transfers to complete trip
- Own a car
- Have higher incomes
- Make more occasional trips

Number of Blocks Walked at Origin Interstate Corridor O/D Survey Line 5 and Interstate MAX Only			
Number of Blocks Walked	2004 Line 5	2005 Interstate MAX	% Point Change
0 - 1	35%	25%	-10%
2 - 3	36%	32%	-4%
4 - 5	18%	19%	0%
6 - 7	5%	9%	5%
8 - 9	2%	5%	4%
10+	5%	10%	5%
Total	100%	100%	



Key Takeaways

- Portland Metro has a good model that has been calibrated with LRT experience in place
- Use available tools (GIS, Google Earth, existing service/operational data, along with understanding of software) for realistic coding conventions in networks
- These before and after studies help us understand ridership and aid in forecast assumptions (“unofficial” park-and-riders)
- Economic cycles unpredictable – attention to detail in land use forecasts is important
- While in the past, opening year was not main focus of modeling/ New Starts in terms of reporting process, it is very important