

What is Bus Rapid Transit?

What is BRT?

“A flexible, high performance rapid transit mode that combines a variety of physical, operating and system elements into a permanently integrated system with a quality image and unique identity.”

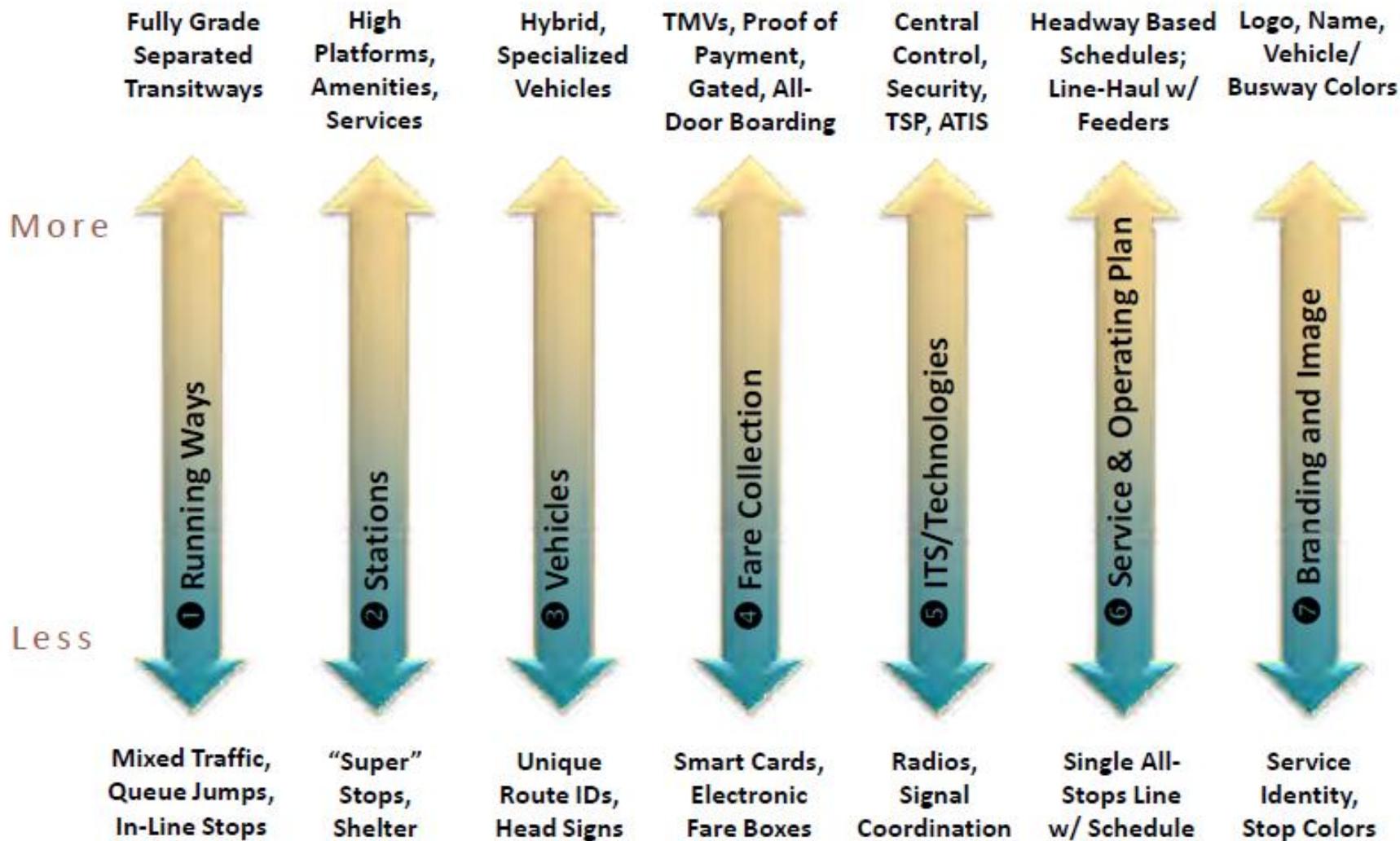
The Problem

Buses stuck in traffic mean:

- ⇒ *Frustrated riders*
- ⇒ *Longer trips*
- ⇒ *More bus-traffic interactions*
- ⇒ *More delay*
- ⇒ *Lose ground every year*
- ⇒ *Unreliable schedules*
- ⇒ *More operating expense*
- ⇒ *Wasted operating costs*
- ⇒ *Detracts from quality*



Elements of Bus Rapid Transit Spectrum of Choices



CH2MHILL

Source: CH2MHill, Tim Bevans

Provide a package that is:

Faster

Transit Signal Priority
Quicker Payment Options
Stations = Limited Stops
Focused Capital Improvements - LESS DELAY

Distinctive

Special Design, Logo, and Color
Unique Vehicle
Stations (Not Stops)
Unique Shelters and Station Designs

Convenient

Good Frequency 7 days/week
Stations @ Highest Use Locations

Comfortable

Large Shelters
Enhanced Bus Interiors
Short Trips

Easy To Use

Distinctive Sign
Stands Out On System Map
Strong and Visible Map and Schedule
Obvious Stations





A Service of
Lane Transit District



Traffic Signal
Priority

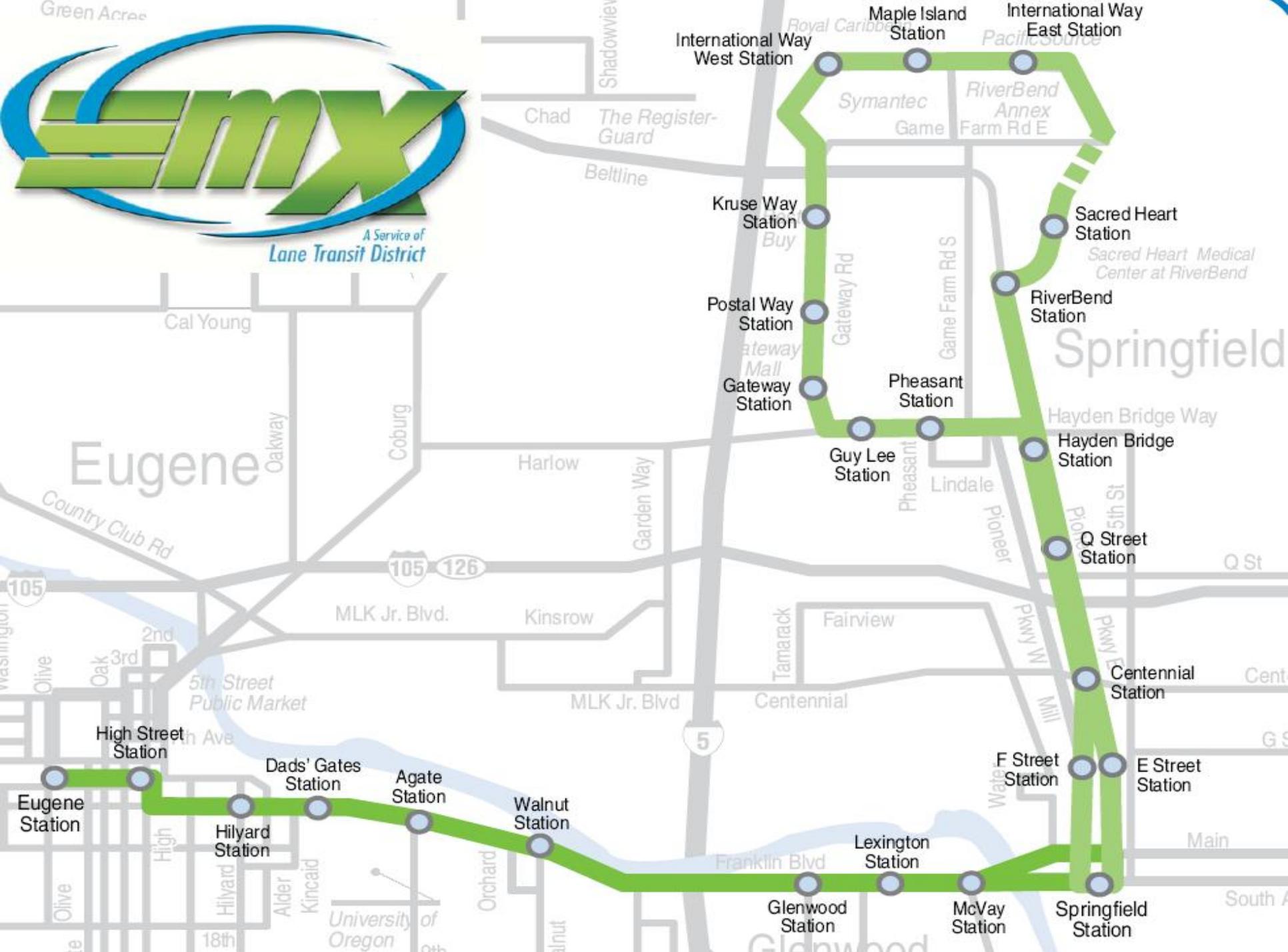
Stations & Shelters



Simple Map with Stations

*Is it
understandable
& legible?*





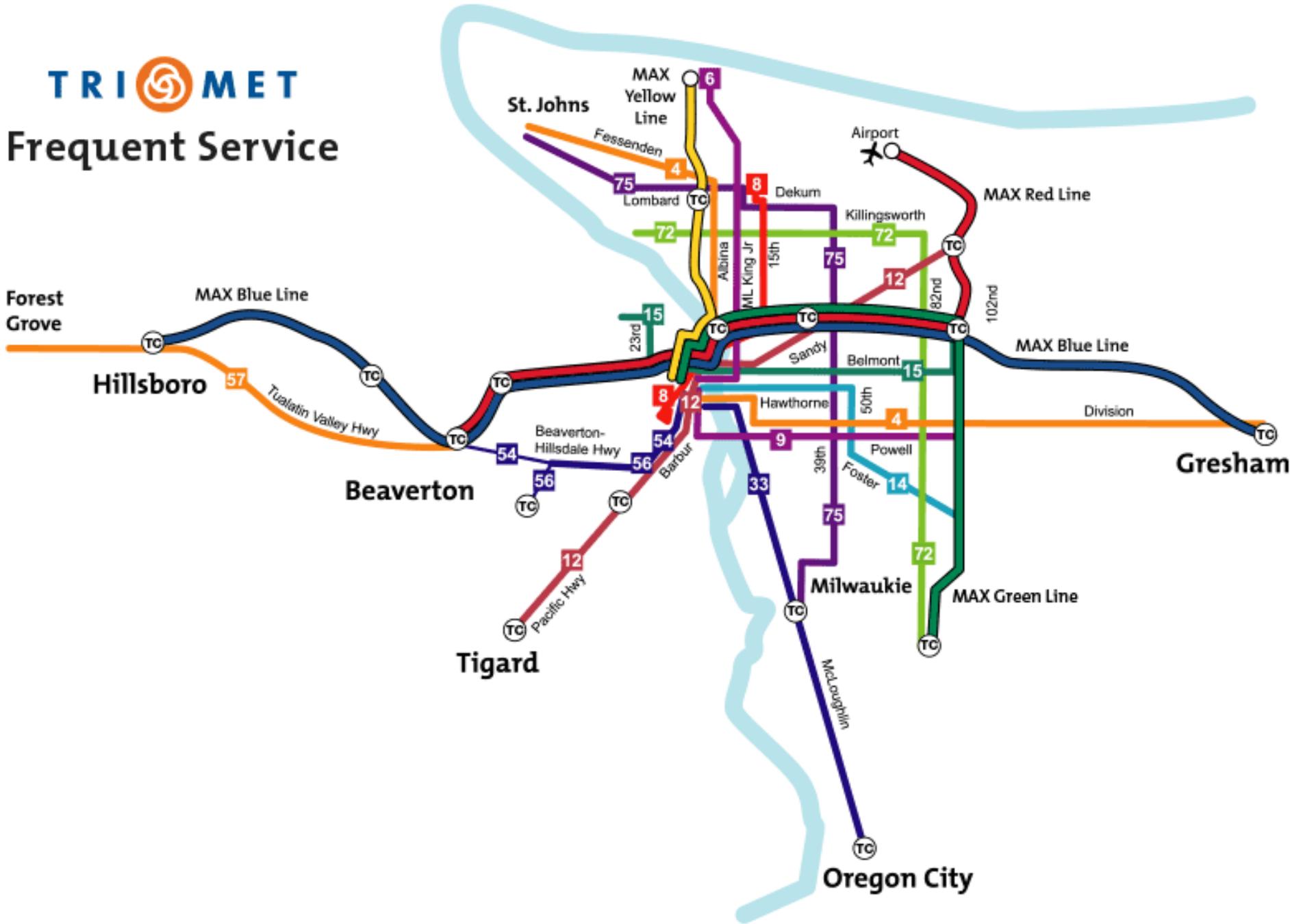
Planning and Applications in the Region

- Frequent Service bus has some of the characteristics
 - Frequent
 - Transit Signal Priority, Queue jumps, etc.
 - Branded separately
 - Modest stop re-spacing





Frequent Service



How?

The Tools

Signal Changes

- Signal Priority - Opticom
- Queue Jump Signal
- Queue Bypass Lane
- Signal Timing/Phasing Change

Passenger Amenities

- Install Bus Shelters
 - Standard
 - High capacity

Operational Changes

- Consolidate Bus Stops
- Relocate Bus Stops
- Streamline Routes
- Restrict Parking

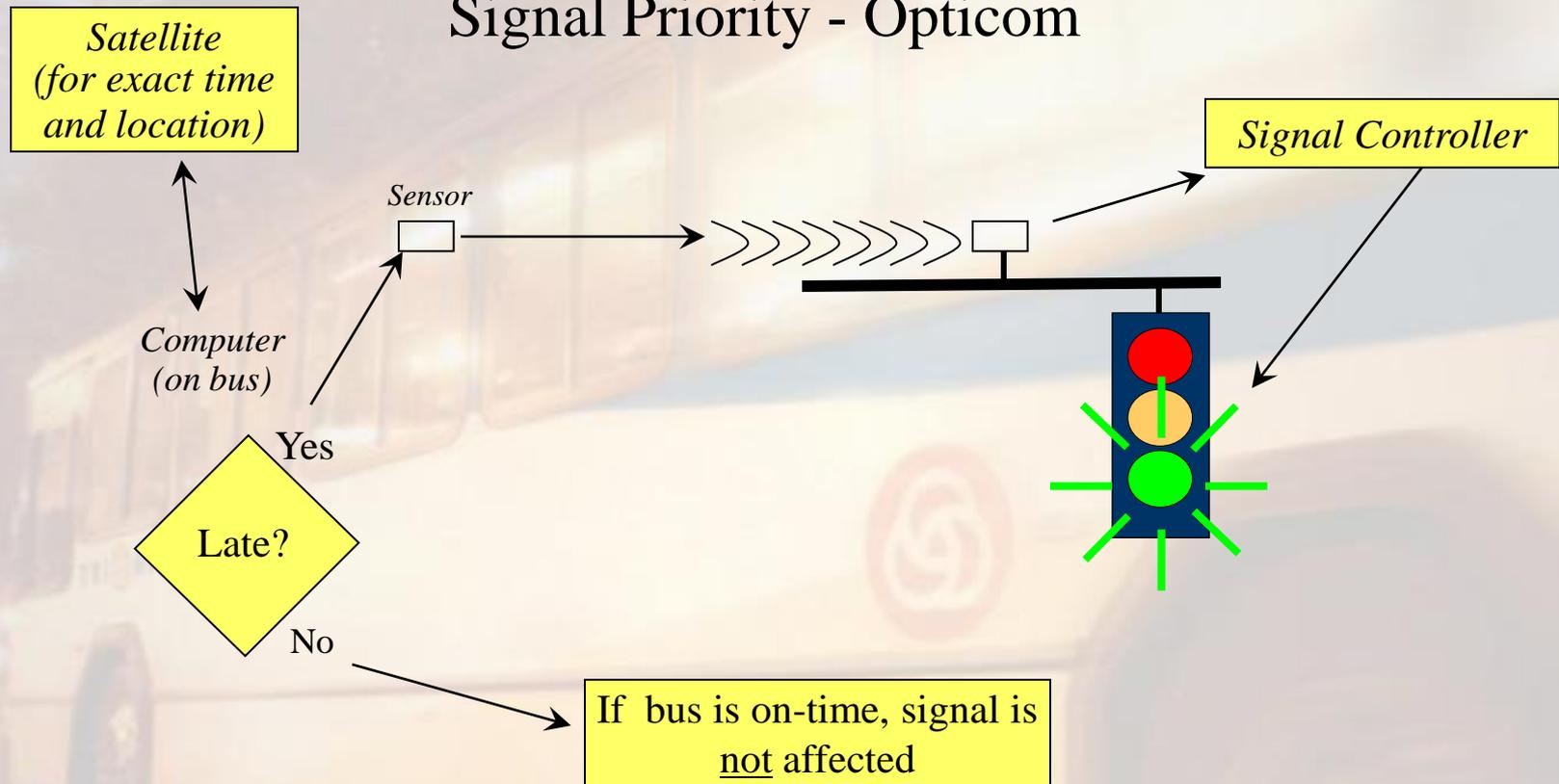
Physical Changes

- Curb Extensions (Bus Bulbs)
- Low Floor Bus
- Exclusive Bus Lane
- Turning Restriction Exemption

How?

The Tools

Signal Priority - Opticom



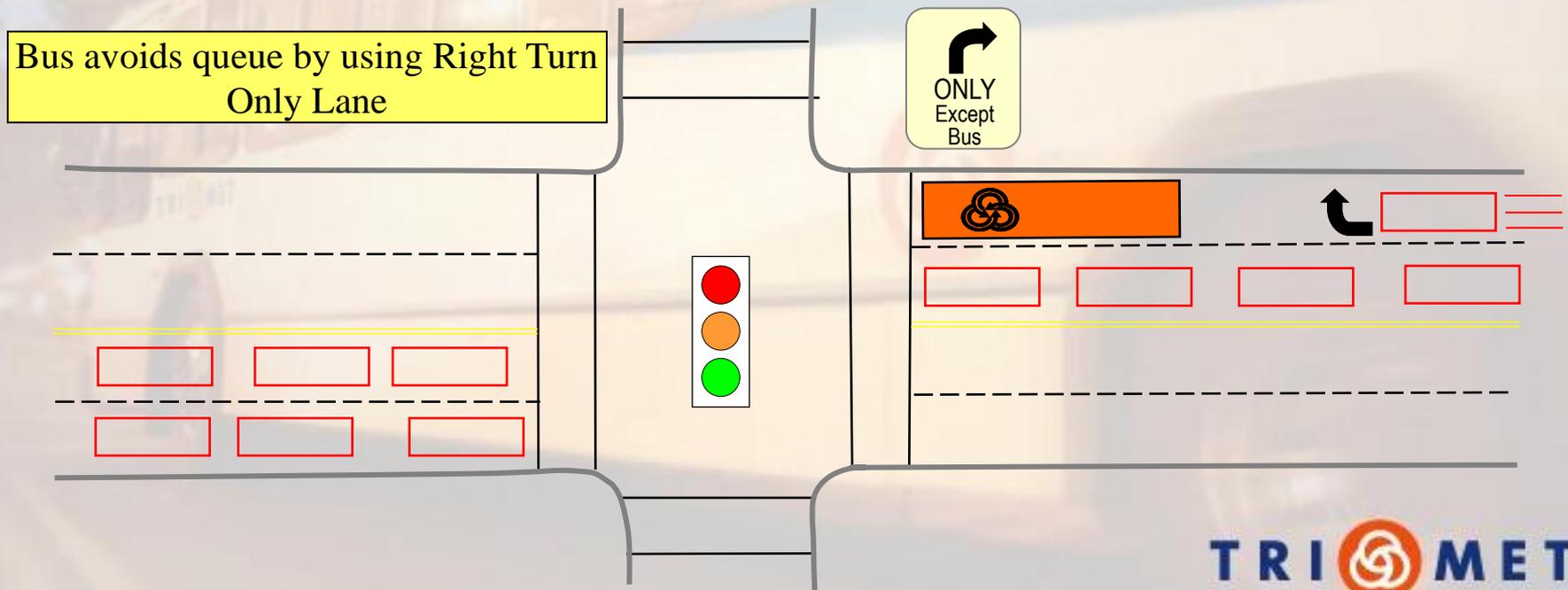
NOTE: System ALWAYS gives priority to fire engines and ambulances

How?

The Tools

Right Turn Only *Except Bus*

- *Avoid long queues by using right turn only lane*
- *Less weaving in and out of right turn lane*



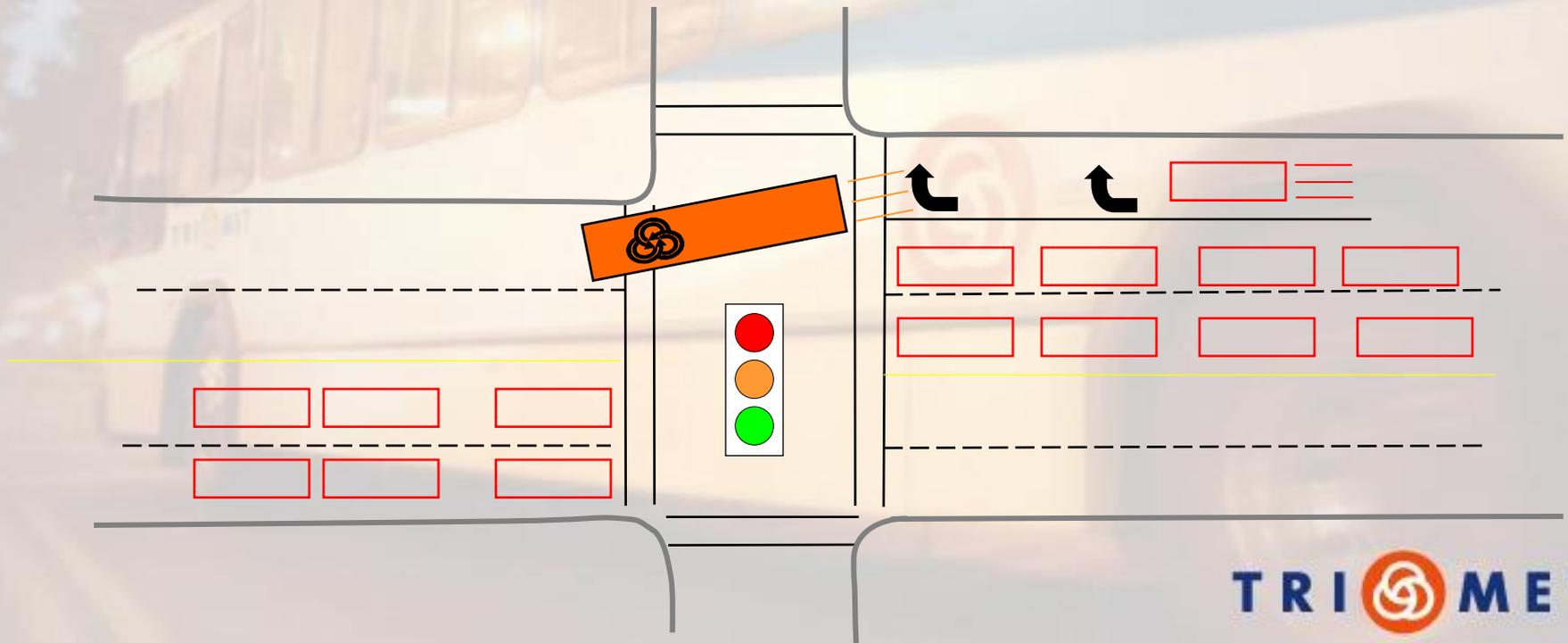
How?

The Tools

Queue Jump Signal

- *Avoid long queues by using right turn only lane*
- *No traffic conflicts as bus pulls back into travel lane*
- *Buses get ahead of traffic queue*

Bus gets green several seconds ahead of general traffic

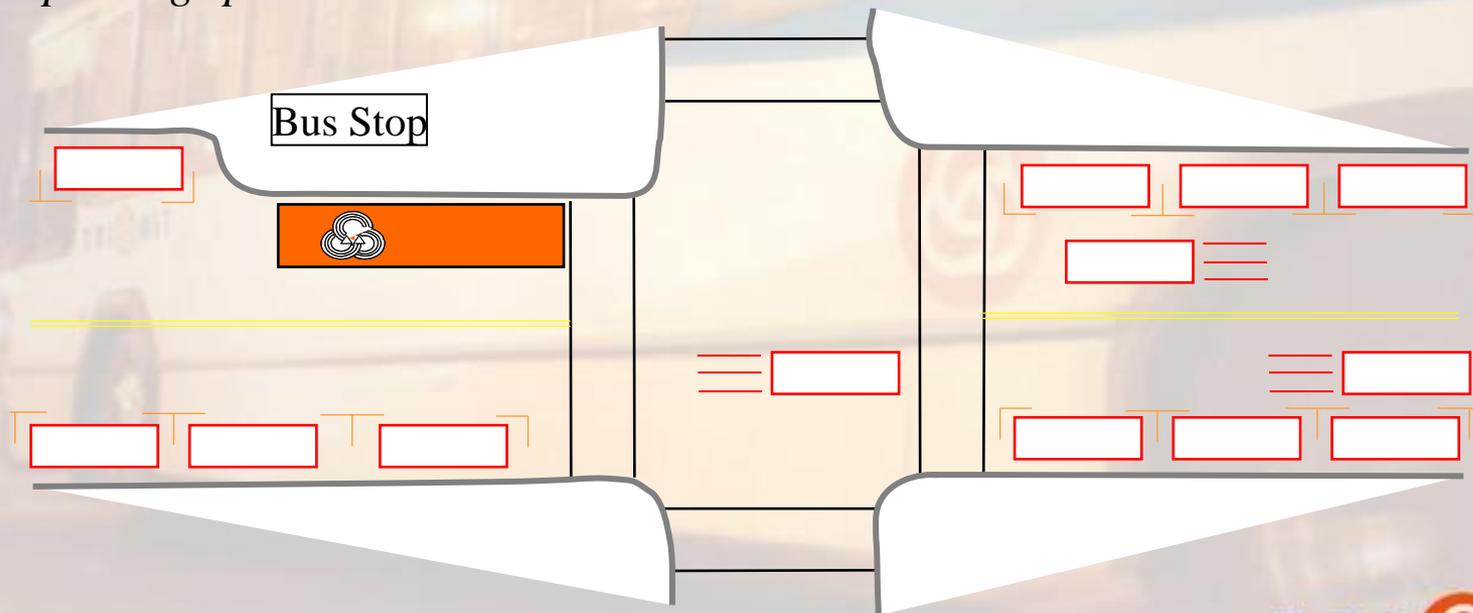


How?

The Tools

Curb Extensions

- *Passengers can see and be seen*
- *Buses serve stop without weaving or waiting to reenter traffic*
- *Saves parking spaces*



Applications in the Region

- Portland Mall (1978) is a busway *and* we added light rail





BAT lane on SE 82nd near Clackamas Town Center

Stations/Stops

Station



Enhanced Stop



Standard Stop



Source: Community Transit











TRI  MET



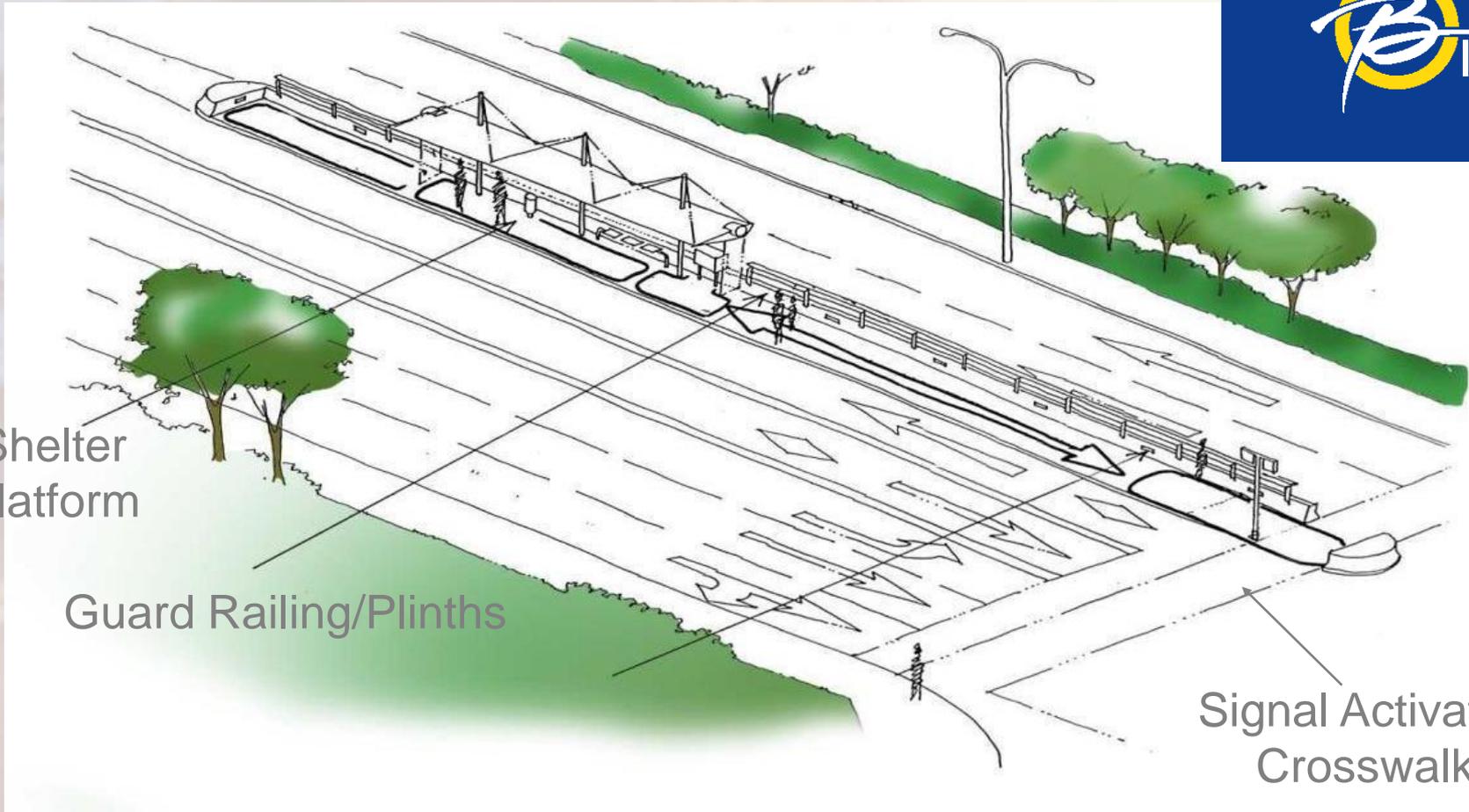
"B-Line" Shelter in Vancouver BC



High Capacity Shelter at 5th & Salmon in downtown Portland **TRI**  **MET**



Median Station



Shelter
Platform

Guard Railing/Plinths

Signal Activated
Crosswalk



City of Richmond





Median
Stations





Vehicles











Photo courtesy of Los Angeles County Metropolitan Transportation Authority





- 60-foot articulated bus
- Domestic manufacturer
- Hybrid-electric propulsion
- Doors on left and right side
- Bikes on board



Vehicle

Energy Source



RAPIDRIDE

C Line

Ride Quality – Same Vehicle, Routing Matters

<http://metro.kingcounty.gov/travel-options/bus/RapidRide/>



<http://www.commtrans.org/swift/>



TRI MET

Vehicle - Interiors



Ramp



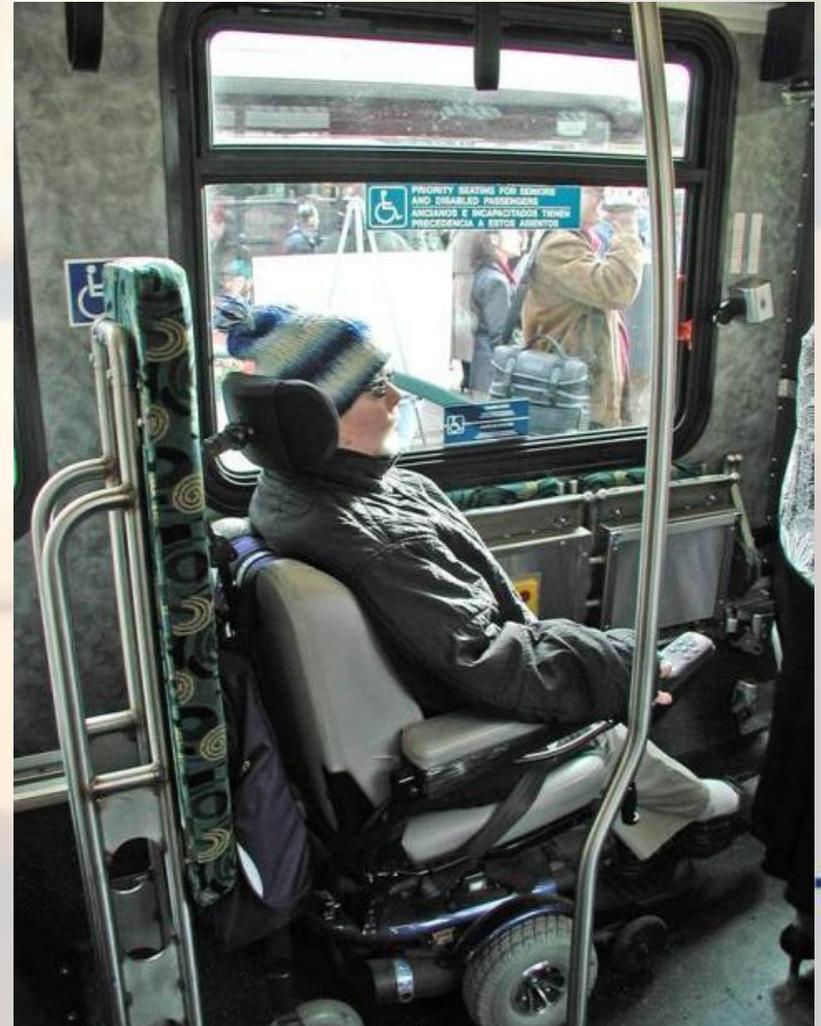
Stowed Position



Deployed Position

Wheelchair securement

Forward facing and rear facing

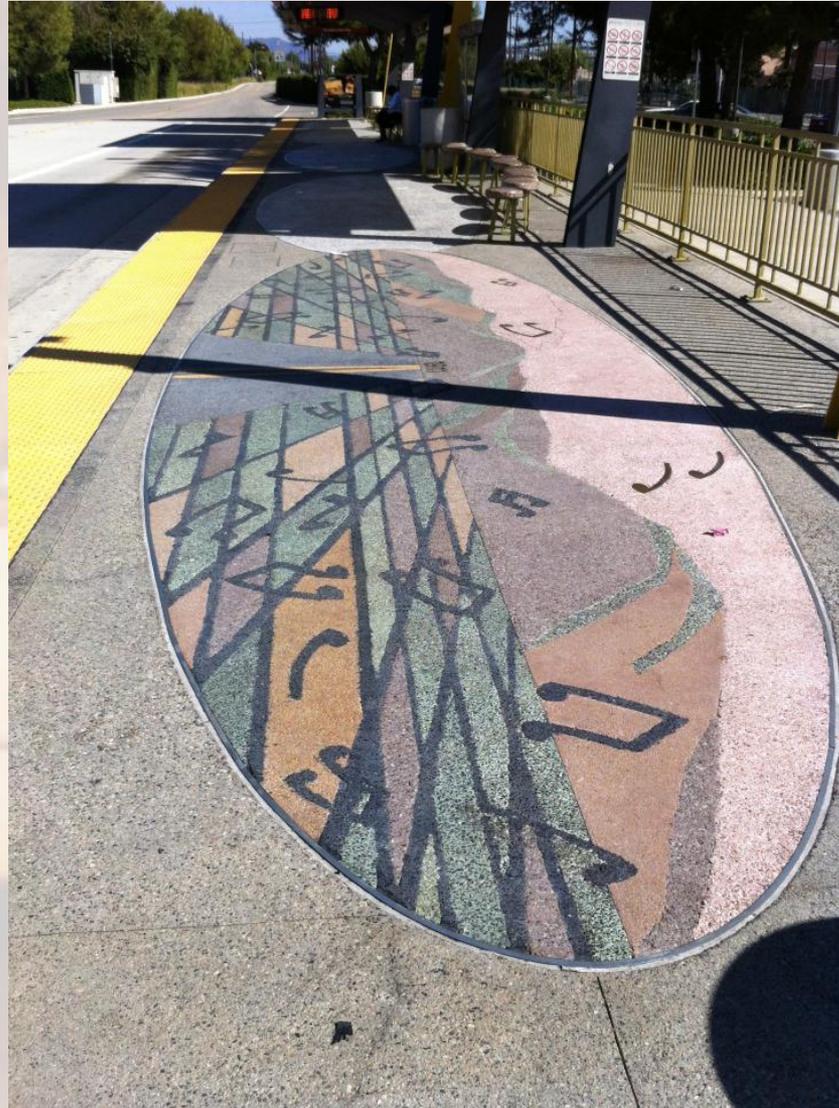


Bikes – on board?



- Bikes use back door
- Designated, marked bike area

Integral Art





Public Art

Bus Guideway



Future Davis Drive in Newmarket



Curbed
Transit Lanes





Guidance

Mechanical



Optical



Magnetic



Other systems to learn from...

Different Assumptions = Different Approach

RapidRide

- 6 lines – an entire system – within a few years
- Modular shelters – kit of parts – sizes vary
- Mix of stops and stations
- High ridership lines
- 100s of stops/stations
- Roadways vary dramatically from 7-lane highway to 2-lane neighborhood collector
- Mix of BAT lanes HOT/BAT lanes and GP
- Connections to Link, Sounder

Swift BRT

- Focus on a single line – more *may* come in future
- Permanent shelters – all the same substantial size
- All stations
- Highest ridership line
- 17 stations
- 4- to 7-lane highway
- Mix of BAT lanes and GP
- Connections to Sounder

Different Assumptions = Different Approach

Cleveland HealthLine

- Single line – newest major transit investment
- Unique shelters
- All stations
- High ridership line with development potential
- Less than two dozen stations
- Roadways vary dramatically from 7-lane highway to 2-lane neighborhood collector
- Almost all exclusive lane
- Connections to rest of high capacity network

Orange Line

- Single line – unique opportunity with alignment. Considered LRT
- Permanent shelters – all the same substantial size
- All stations
- High ridership lines in vicinity
- Less than two dozen stations
- Exclusive rail right-of-way paved for buses
- Almost all exclusive right-of-way – separate from roadway
- Connection to Red Line subway and buses