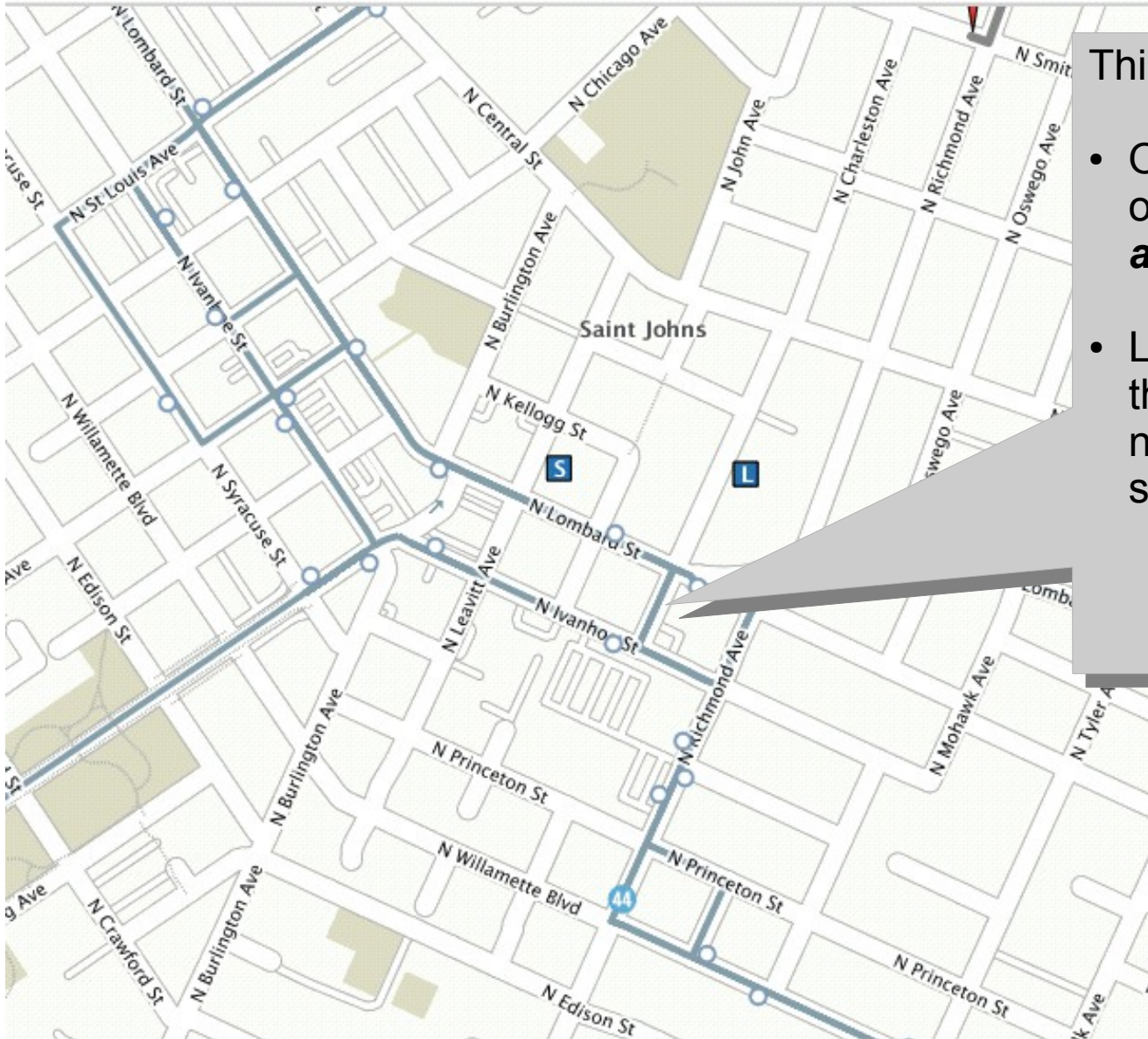


OTP Transit Index and TriMet

Data and functional gaps in the
Transit Index regarding TriMet data

November 2016

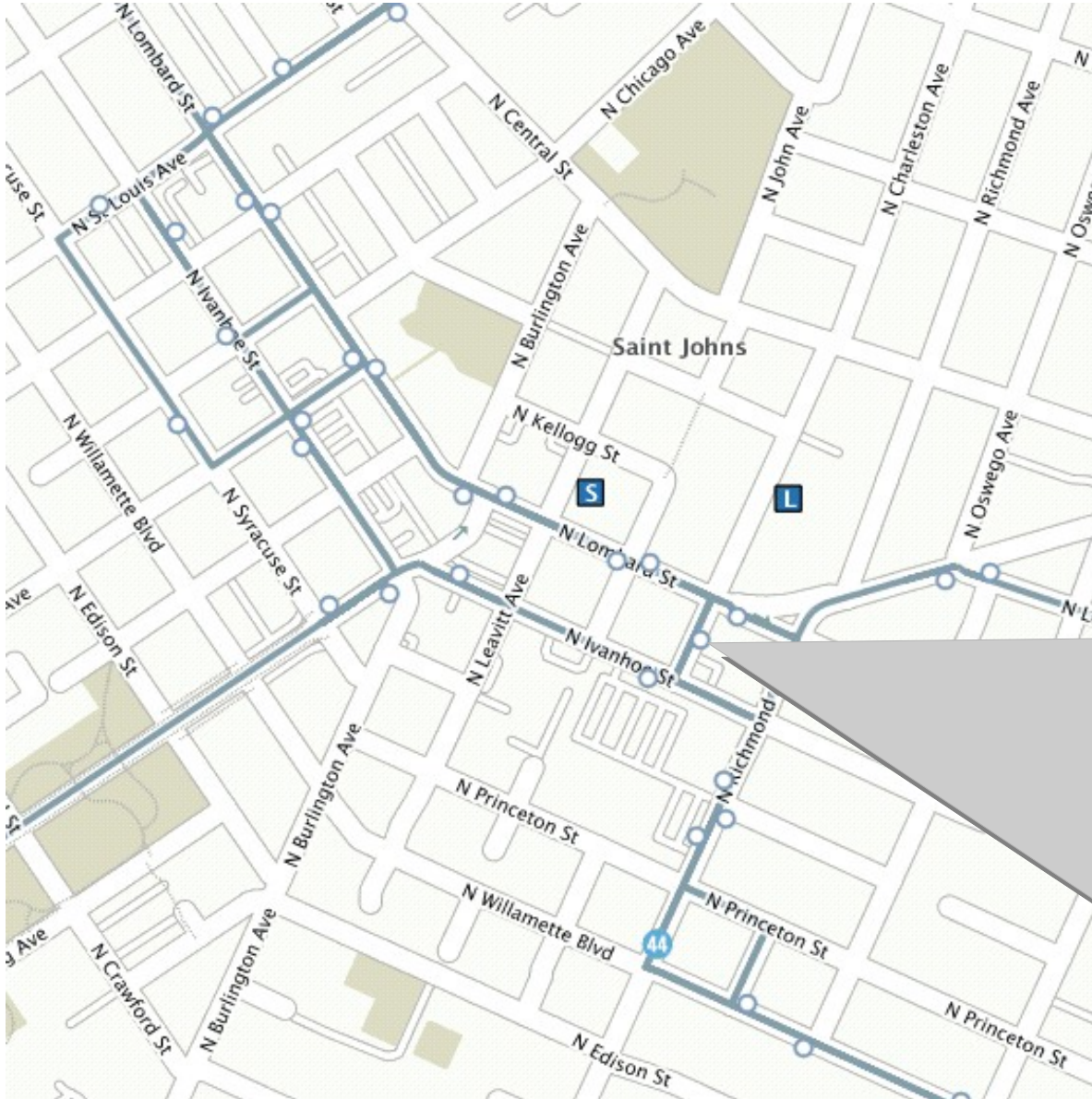
issue #1: current stops



Things to look at:

- On ride.trimet.org stops are only shown that are currently **active**
- Look at the circles between this page and the next, and notice how many more stops show up on call.trimet.org

issue #1: current stops



Things to look at:

- The call.trimet.org system has a stop overlay like ride.trimet.org
- Problem is there's no filtering of stops that appear in TriMet's GTFS.zip file.
- Often stops in the GTFS are not active at certain points in the schedule.
- Determining an effective schedule period requires looking at all the trips in the GTFS, and determining which stops have service ... for this reason, we choose to go the gtfssdb route for our pages

issue #1: current stops

The screenshot shows the TriMet Call Taker Tools interface. At the top, there's a header with the TriMet logo, "TriMet Call Taker Tools", and a dropdown menu set to "Call Taker Interface". Below this, a window titled "3 Itineraries Returned" displays the first itinerary. It starts at 8:40am on 11/08/2016. The itinerary includes a "WALK 1 feet to N St Louis & Lombard" step, followed by a "BUS: TriMet, (4) Division/Fessenden to St Johns" step with a red warning triangle. The bus step shows a boarding time of 8:40am at N St Louis & Lombard (Stop #13876) and a transit time of 2 minutes. To the right of the itinerary, a map shows the location of N Lombard & John. A yellow bus icon with a red "X" is positioned at the intersection. A pop-up window for "N Lombard & John" provides details: "Eastbound stop in Portland (Stop ID 3508)", links for "Stop Viewer" and "Real Time Arrivals", a "Plan Trip" section with "From Stop" and "To Stop" links, and a list of "Routes Serving Stop": (75) Cesar Chavez/Lombard, (16) Front Ave/St Helens Rd, (4) Division/Fessenden, and (44) Capitol Hwy/Mocks Crest.

3 Itineraries Returned

1. 8:40a 4 8:44a

Start: 8:40am, 11/08/2016

WALK 1 feet to N St Louis & Lombard

BUS: TriMet, (4) Division/Fessenden to St Johns ⚠

8:40am Board at N St Louis & Lombard
Stop #13876 [Stop Viewer]
Time in transit: 2 mins [Trip Viewer]

N Lombard & John
Eastbound stop in Portland (Stop ID 3508)
[Stop Viewer] [Real Time Arrivals]
Plan Trip: [From Stop] [To Stop]
Routes Serving Stop:
• (75) Cesar Chavez/Lombard
• (16) Front Ave/St Helens Rd
• (4) Division/Fessenden
• (44) Capitol Hwy/Mocks Crest

Things to look at:

- The stop in call.trimet.org looks like a normal stop, and shows information like it was an active open stop.
- Only by planning a trip from the stop do we get some hint that the stop is not active.

issue #2: stops types



Things to look at:

- On ride.trimet.org, we have 5 different icons for stops.
- Here you see blue bus icons, small black streetcar stops and larger black MAX icons

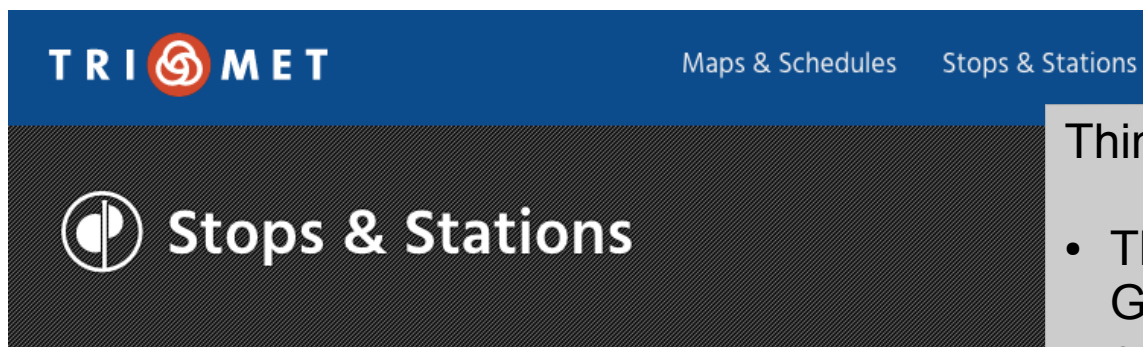
issue #2: stops types



Things to look at:

- Within the OTP transit index, there is no concept of stop (mode) type.
- Thus in call.trimet.org, there's no differentiation between the different rail and bus modes servicing stops.

issue #3: route sort order



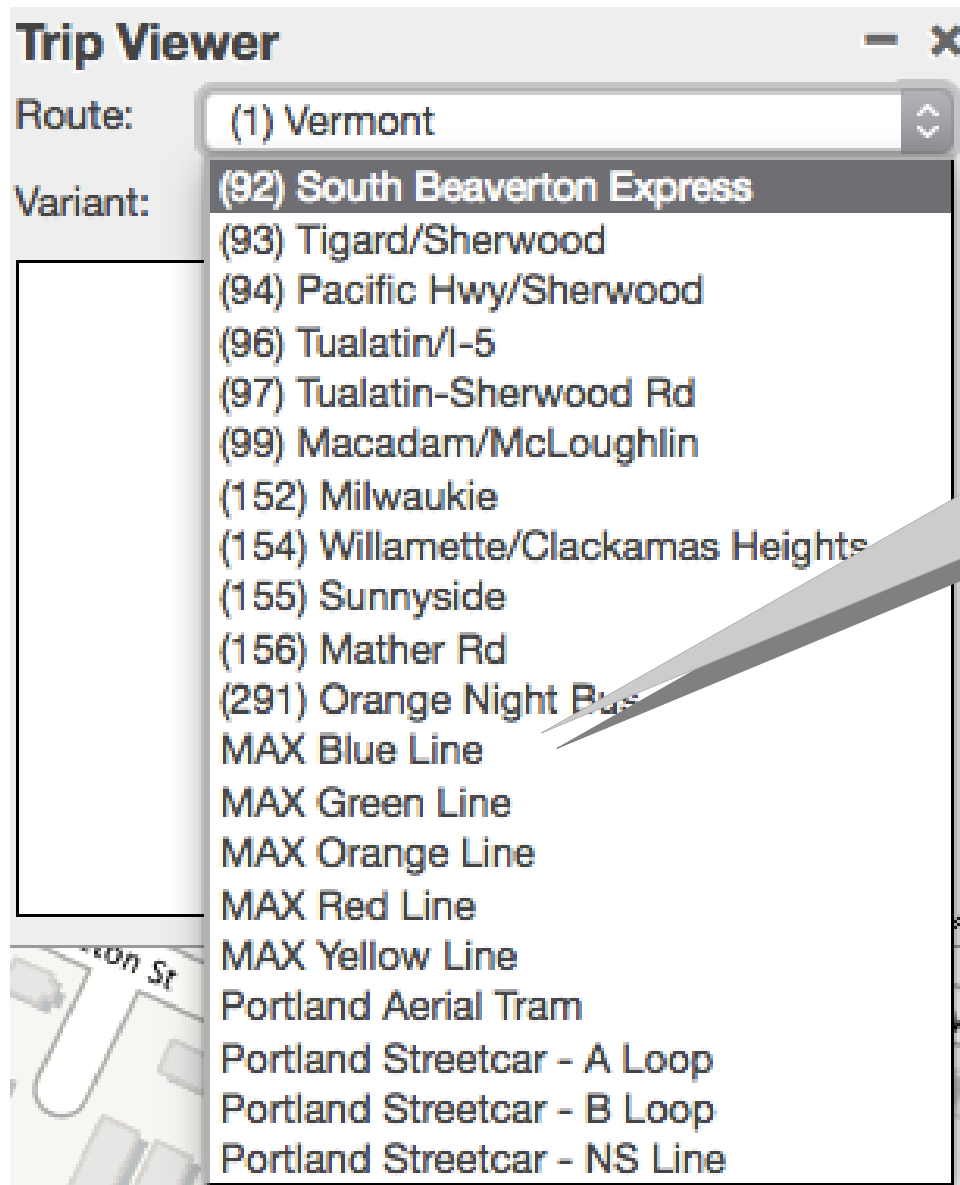
Things to look at:

- There's a proposed extension in GTFS, where a route sort order column is added to routes.txt
- TriMet supplies the route sort order, and gtfsdb reads and returns this info

Find stops and stations near

MAX Blue Line
MAX Green Line
MAX Orange Line
MAX Red Line
MAX Yellow Line
WES Commuter Rail
Portland Streetcar - NS Line
Portland Streetcar - A Loop
Portland Streetcar - B Loop
Portland Aerial Tram
1-Vermont
4-Division/Fessenden
6-Martin Luther King Jr Blvd
✓ 8-Jackson Park/NE 15th
9-Powell Blvd
10-Harold St

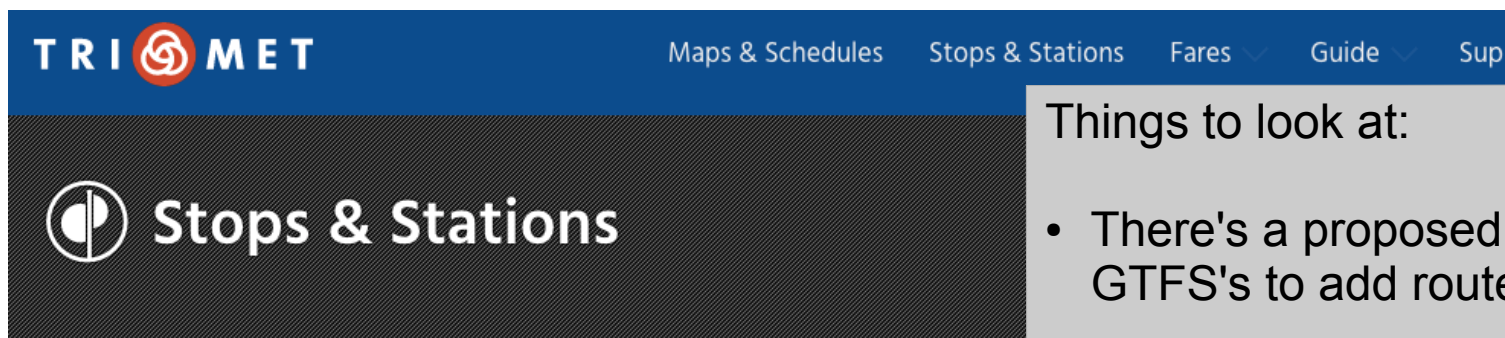
issue #3: route sort order



Things to look at:

- The OTP transit index (and OBA gtfs libs) are not reading route sort order

issue #4: route direction



Things to look at:

- There's a proposed extension in GTFS's to add route_directions.txt
- TriMet supplies route_directions.txt, and gtfsdb reads and returns this info

Select a 4-Division/Feed

To Gresham Transit Center

N Richmond & Syracuse (#4818)

Select stop

OR

To St Johns

Gresham Transit Center (#2253)

Select stop

issue #4: route direction

Trip Viewer

Route: (4) Division/Fessenden

Variant: 4 to Gresham Transit Center (TriMet:13506)

4 to Gresham Transit Center (TriMet:13506) from Rose Q

4 to SW 5th & Salmon (TriMet:7634) from N Richmond & Syracuse

4 to Gresham Transit Center (TriMet:13506) from SW 5th & Salmon (TriMet:8199)

4 to Gresham Transit Center (TriMet:13506) from N Richmond & Syracuse

4 to Gresham Transit Center (TriMet:13506) from SW 5th & Salmon (TriMet:13506)

4 to Gresham Transit Center (TriMet:13506) from N Richmond & Syracuse

4 to Gresham Transit Center (TriMet:13506) from NW 5th & Davis (TriMet:13506)

4 to SW 5th & Salmon (TriMet:7634) from N Richmond & Syracuse (TriMet:13506)

4 to Gresham Transit Center (TriMet:13506) from NW 5th & Davis (TriMet:13506)

4 to N Richmond & Syracuse (TriMet:4818) from N Lombard Transit Center

4 to SW 6th & Taylor (TriMet:7800) from Gresham Transit Center (TriMet:2253)

4 to SW 6th & W Burnside (TriMet:7751) from SE Division & 145th (TriMet:1399)

4 to N Richmond & Syracuse (TriMet:4818) from SW 6th & Taylor (TriMet:7800)

4 to SW 6th & Taylor (TriMet:7800) from Gresham Transit Center (TriMet:2253) via NW Division & Battaglia (TriMet:1318)

4 to N Richmond & Syracuse (TriMet:4818) from SW 6th & Taylor (TriMet:7800) via N St Louis & Kellogg (TriMet:5372)

4 to N Richmond & Syracuse (TriMet:4818) from SE Division & 145th (TriMet:1399) via N St Louis & Kellogg (TriMet:5372)

4 to N Richmond & Syracuse (TriMet:4818) from Gresham Transit Center (TriMet:2253) via 2500 Block NW Division (TriMet:13879)

4 to SW 6th & W Burnside (TriMet:7751) from Gresham Transit Center (TriMet:2253) via 2500 Block NW Division (TriMet:13879)

Things to look at:

- Without route_directions.txt, one alternative is to show all route patterns as variations the route may take.
- Listing route patterns doesn't lend itself to a useful route pull down UI.
- Use of the he GTFS extension route_directions.txt would help here.

issue #5: stop amenities

The screenshot shows a transit website interface. At the top, a dark header displays 'Stop ID 2' with a bus icon and 'A Ave & Chandler Eastbound'. Below this, three stop locations are listed: '37-Lake Grove', '78-Beaverton/Lake Oswego', and 'All routes'. Each location has three buttons: 'Next arrivals' (clock icon), 'Schedule' (calendar icon), and 'Route info' (map icon). A callout box, titled 'A Ave & Chandler', is overlaid on a map, showing a list of amenities under the 'Amenities' tab. A grey callout box with a pointer to the 'Amenities' link at the bottom left contains a list of items to look at.

Stop ID 2
A Ave & Chandler Eastbound

37-Lake Grove

Next arrivals Schedule Route info

78-Beaverton/Lake Oswego

Next arrivals Schedule Route info

All routes

Next arrivals Schedule

Amenities

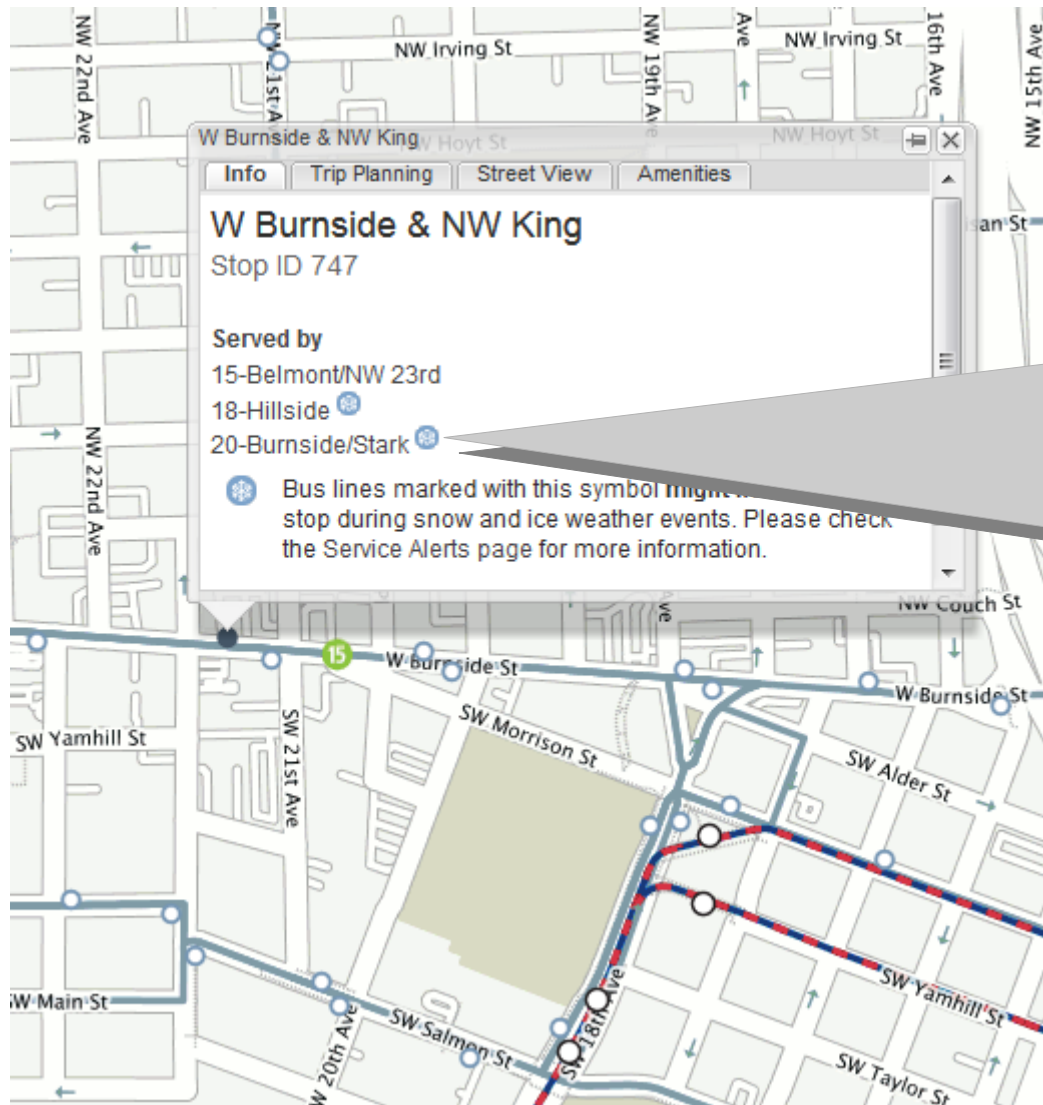
Crosswalk near stop
Curbcut
Front-door Landing Paved
Sidewalk
Schedule display
Back-door Landing Paved

Things to look at:

- The current map and stop pages show stop amenities.
- Yet another proposed extension to GTFS, of which GTFSDb has an implementation.

Crosswalk near stop Curb ramp near stop Pavement at back door Pavement at front door Schedule display Sidewalk at stop

issue #5b: route stop / snow



Things to look at:

- Another 'amenity' for a stop is the ability to mark the stop as a 'snow' stop for a given route.
- How we would even represent this via GTFS is an unknown at this point.
- But it is something we've done in the past with data from TRANS (not gtfs).

Issue #6: developer.trimet.org



Below are some of the free and commercial applications that are available from third-party developers using TriMet's [open data](#).

Show only:

Showing 46 of 46 apps

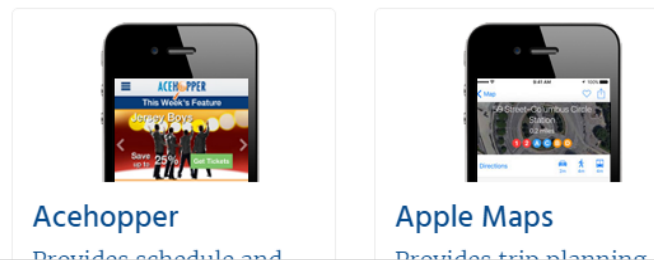
- | | | |
|--|---|------------------------------------|
| <input type="checkbox"/> Android | <input type="checkbox"/> Android Watch | <input type="checkbox"/> Apple iOS |
| <input type="checkbox"/> Windows Phone | <input type="checkbox"/> Mobile Web | <input type="checkbox"/> Web |
| <input type="checkbox"/> New | <input type="checkbox"/> Other Language | |

Things to look at:

- We expose a developer API to 3rd parties
- We have to be careful with changes to this API, since we have customers using apps that could break with any API change
- There's some concern that existing apps may no longer have an active developer who can adapt to any API changes.
- We currently have an API *Wrapper* atop OTP, which insulates the 3rd party apps from change

OTHER THOUGHTS

- Simple API (trip/itins/legs = complex)
- Localization (from the API)?
- Open API or Swagger.io api docs



Pros & Cons to using GTFSdb

(rather than OTP transit index)

PROS

- GTFSdb is successfully running at TriMet now
- If OTP React is built to be back-end agnostic == more flexible & adaptable system
- No need to *fix* the OTP index to work with TM data
- OTP should focus on being the best *routing engine* it can be..original architecture
- *Wrapper* insulates 3rd party developers from OTP change

CONS

- Requires development here at TriMet (OSS)
- Adds complexity to OTP React front-end code
- Might want to fix OTP regardless of this project
- It takes more effort to host, maintain and populate more than one system
- *Wrapper WS* is not (yet) widely adopted by transit app developers