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CATABus Operations Improvement Report

Prepared for use by the Centre Area Transportation Authority

Boarding Policies

Improve boarding speeds with all-door boarding and increase capacity with a fare-free zone on campus and downtown

All-door boarding could reduce dwell-times by over 40%, leading to 5 to 7 percent decreases in overall travel time

San Francisco saw a decrease in fare evasion with proof-of-payment, with the CATA revenue hours equivalent of two fare inspectors

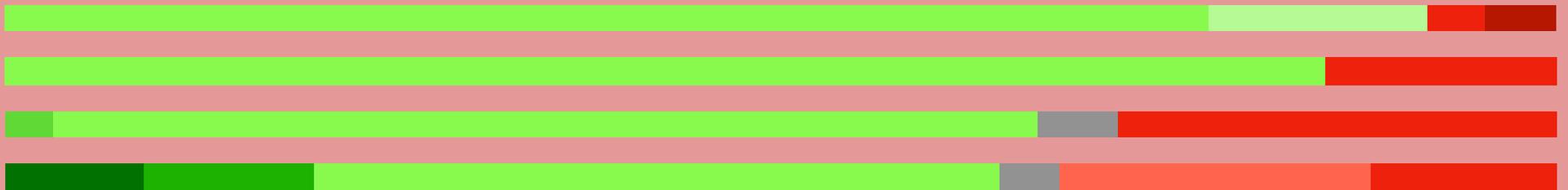
CATA Fare Mix

All-door boarding-ready fare types

Fare types requiring the farebox



Comparison agencies with various all-door boarding initiatives



Introduce all-door boarding and proof-of-payment to lower dwell times and allow for a fare-free zone

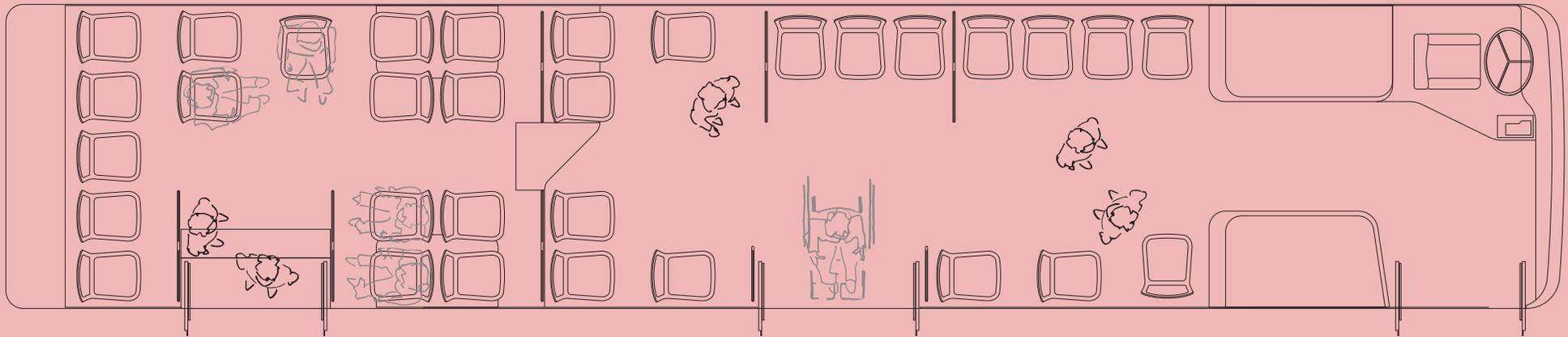
Create a fare-free zone on campus and downtown to supplement Loops and Links with additional capacity and routes

Bus Layout

Amplify gains from boarding improvements by facilitating movement of riders at stops while maintaining comfort while traveling

Purchase three-door 40 foot buses and four-door articulated buses to remove the dead-end behind the middle door and decrease dwell times at stops

Use single, forward facing seats and left-side wheelchair spaces to increase standing room and reduce chokepoints



Encourage more efficient standing patterns with all-door boarding and announcements imploring riders to hold backpacks at their feet

Use buses with wide doors and open layouts on crowded routes to see dwell time reductions of 7 to 8 percent

Explore electric powered buses, including in-motion charging, overhead wires, and battery power

Travel Infrastructure

Speed buses as they move through slow pedestrian-friendly corridors and congested car-oriented corridors



Encourage development around high-frequency bus corridors to increase ridership

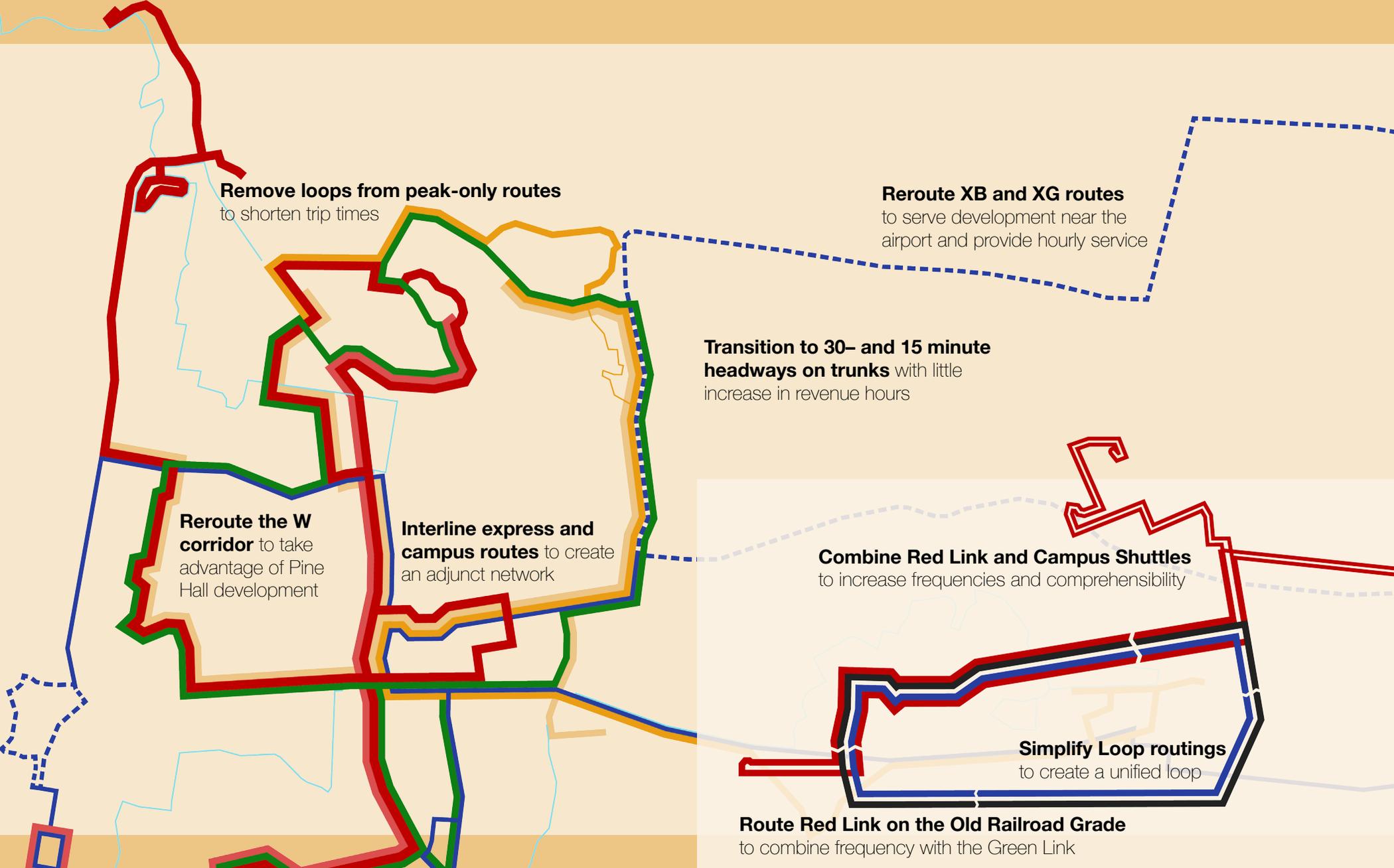
Remove vehicles from campus streets to allow buses to move while maintaining high pedestrian priority

Use bus lanes and intersection improvements to allow buses to bypass congestion

Create visible bus infrastructure to advertise rapid transit-like service to non-transit users

Network Changes

Maximize efficiency of buses currently operating to speed trips and expand accessible destinations



Remove loops from peak-only routes
to shorten trip times

Reroute XB and XG routes
to serve development near the airport and provide hourly service

Transition to 30- and 15 minute headways on trunks with little increase in revenue hours

Reroute the W corridor to take advantage of Pine Hall development

Interline express and campus routes to create an adjunct network

Combine Red Link and Campus Shuttles to increase frequencies and comprehensibility

Simplify Loop routings to create a unified loop

Route Red Link on the Old Railroad Grade to combine frequency with the Green Link

Network Legibility

Increase access to the Community Service network with new branding emphasizing frequent corridors



Vairo Blvd at The Bryn Inbound
stop 513

@ approx time past the hour

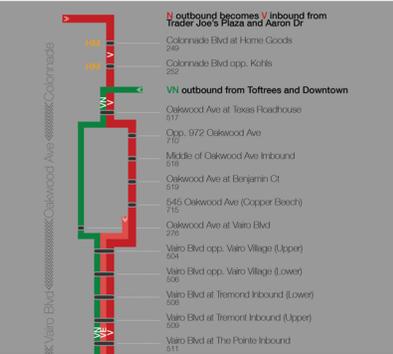
Weekdays

V Year-round	6:33a to 11:53p every 40 min @ :13 :53 odd hrs & :33 even hrs	+	7:13a to 10:33a every 20 min @ :13 :33 :53
VE Full Service	7:11a to 9:51p every 20 min @ :11 :31 :51		
VN Full Service	M-Th 5:22p to 12:22a every 60 min @ :22		F 7:22p to 2:52a every 30 min @ :22 :52

Weekends

V Year-round	7:13a to 11:53p every 40 min @ :13 :53 odd hours & :33 even hours
VE Full Service	does not run
VN Full Service	Sat 5:22p to 6:22p A 7:22p to 2:52a every 30 min @ :22 :52
	Sun 10:52a to 5:52p every 60 min @ :52

Please have exact fare ready before you board
Full Service: PSU Fall and Spring semesters only, catabus.com for details



Curtin Rd at the Pavilion Theatre
stop 51

@ approx time past the hour

Weekdays

V Year-round	6:44a to 12:04a every 40 min @ :04 :44 even hrs & :24 odd hrs	+	7:24a to 10:44a every 40 min @ :04 :24 :44
R Year-round	6:22a to 12:22a every 40 min @ :02 :42 odd hrs & :22 even hrs	+	7:02a to 10:22a every 20 min @ :02 :22 :42
N Year-round	6:25a to 12:25a every 40 min @ :05 :45 odd hrs & :25 even hrs	+	7:05a to 10:25a every 20 min @ :05 :25 :45
W Year-round	6:18a to 8:58p every 40 min @ :18 :38 even hrs & :38 odd hrs	+	8:58p to 11:58p every 60 min @ :38
HM Year-round	6:46a to 12:06a every 40 min @ :06 :46 even hrs & :26 odd hrs		
HC Full Service	7:48a to 6:28p every 40 min @ :08 :48 odd hrs & :28 even hrs		HC UT does not run weekends
UT Full Service	7:17a 7:57a 8:22a 8:57a 9:27a 10:02a 10:32a 11:07a 12:12p 12:42p 3:57p 4:32p 5:02p 5:37p 6:07p		
K Year-round	7:27a to 9:27p every 60 min @ :27		
A Year-round	7:34a 8:34a 4:07p 5:07p 6:07p		A does not run weekends
G Year-round	7:34a 12:05p 4:05p 5:05p		G does not run weekends
F Year-round	7:38a 8:48a 11:23a 3:58p 5:04p		*Note: no service outbound past Whitehall Rd at CATS stop F does not run weekends
S Year-round	6:55a 7:45a 4:15p 5:05p		S does not run weekends



Weekends

V Year-round	7:24a to 12:04a every 40 min @ :04 :44 even hours & :24 odd hours		
R Year-round	7:42a to 12:22a every 40 min @ :02 :42 odd hours & :22 even hours		
N Year-round	7:45a to 12:25a every 40 min @ :05 :45 odd hours & :25 even hours		
W Year-round	9:58a 11:08a 12:18p 1:28p 2:38p 3:48p 4:58p 6:08p	+	6:58p to 11:58p every 60 min @ :58
HM Year-round	8:06a to 12:06a every 60 min @ :06		
K Year-round	Sat 7:27a 8:27a 12:27p 1:27p 4:27p 5:27p		

R, N, VE, W, HM, HC, UT, K, A, G, F, S, V, R, N, W, HM, K
 Full Service: PSU Fall and Spring semesters only, catabus.com for details

A hierarchic color scheme classifies routes by type; including frequency, span, routing downtown, and reduced service type

New stop info signs show timetable information hierarchically and corridor diagrams, and can be updated automatically by GTFS data

A new system map shows all routes by frequency, including routings on campus and downtown, and includes span information



Organization Cooperation

Empower associated organizations and municipalities to improve transit by advocating for rider priorities

Create guidelines for event road closures to ensure consistent service to the most used bus stops

Phase in system-wide apartment passes to provide better value to tenants and encourage off-peak ridership

Advocate for the removal of bus pull-offs, which can increase travel delay by 300% when delay to bus riders is included

Allow residential tower developments to support White Loop service in exchange for lower minimum parking requirements

Negotiate for more bus stop amenities and better temporary construction mitigation measures

Substantially increase bus shelter rollout, as their benefit outweighs the cost at only 2.5 weekday boardings

Report Objective

CATABus ridership has fallen consistently for the past few years,¹ mirroring but surpassing nationwide trends.² Possible factors include:

- Construction impacting system ease-of-use, speed, and reliability
 - Delays due to North Atherton Street construction on the N, V, and W trucks as well as the R trunk due to route interlining
 - Closed sidewalks due to construction at East Halls on Penn State Campus forcing students to backtrack to take the bus, encouraging many to walk instead
- Zagster bike share attracting some potential riders primarily from campus services, especially when routes are slow from congestion
- Ride-hailing apps attracting some potential riders from campus and community services, especially when frequencies are low late-night and on weekends
- Lower gas prices and subsidized parking downtown, on campus, and in the surrounding region encouraging some potential riders to drive

These factors are external to transit and outside the responsibilities of CATA. Therefore, CATA should focus on how it can increase ridership by changing its own policies, network, fleet, and interactions with other agencies without substantially increasing operations or capital spending.

In brief, to increase ridership without increasing expenses.



A crowded White Loop waiting in traffic on Curtin Rd at Allen Rd

¹ PennDOT, "CATA (Centre Area Transportation Authority)," Pennsylvania Public Transportation Performance Report – Fiscal Year 2016-17, April 30, 2018, 79; CATA, "Ridership by Service - Summary," CATABUS Web Statistics, June 19, 2019.

² TransitCenter, "All Transit Ridership is Local," Who's On Board 2019: How to Win Back America's Transit Riders, February 2019, 7.