

# Blank Slate: SacRT Forward Route Optimization

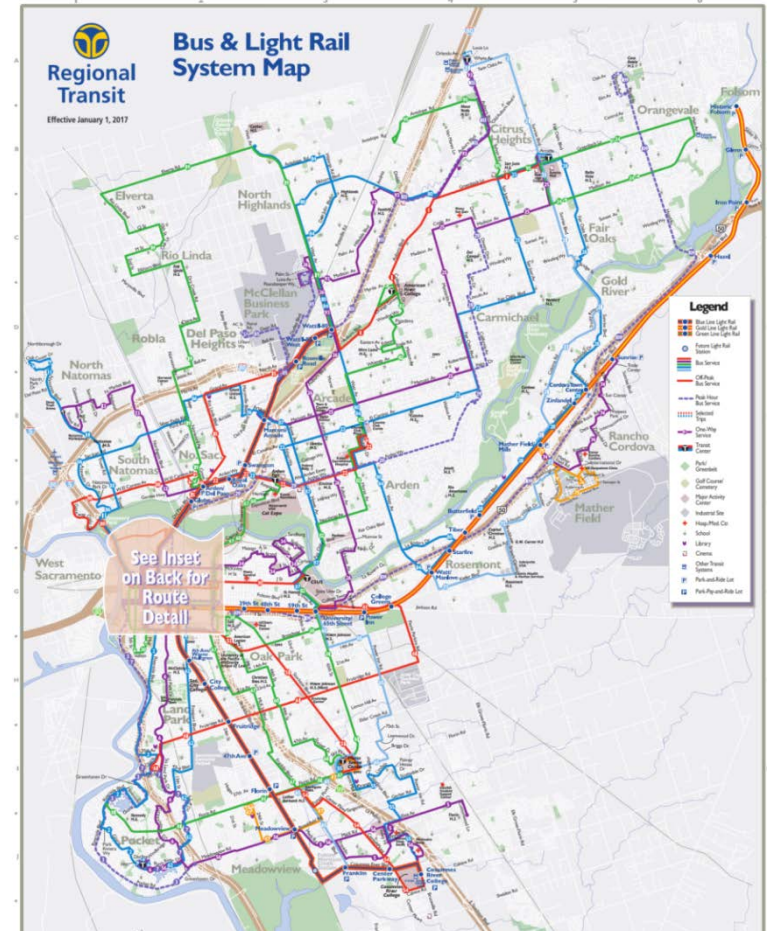
James Drake, Principal Planner  
Sacramento Regional Transit District  
jdrake@sacrt.com

APTA Sustainability and Multimodal Planning Workshop  
Boston, 2019

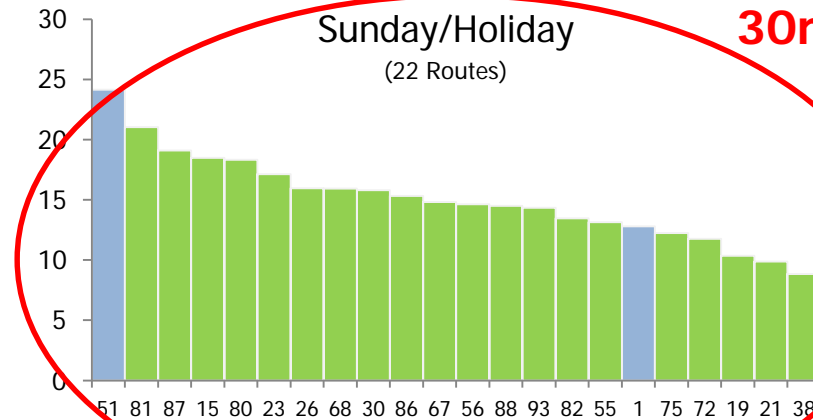
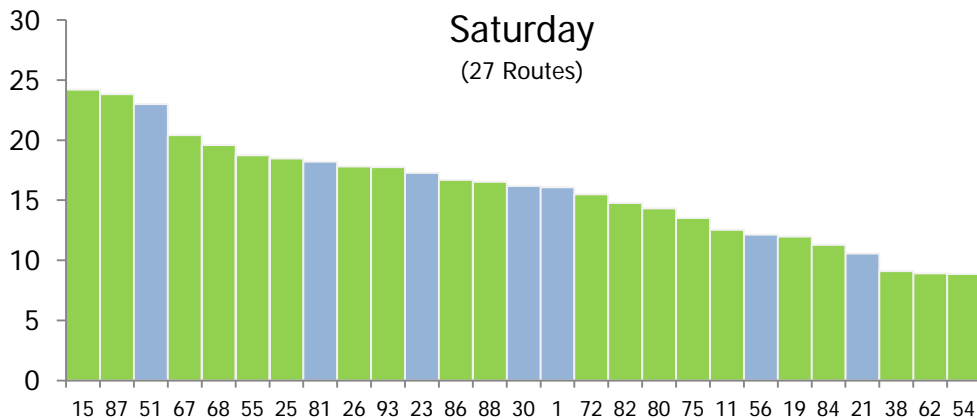
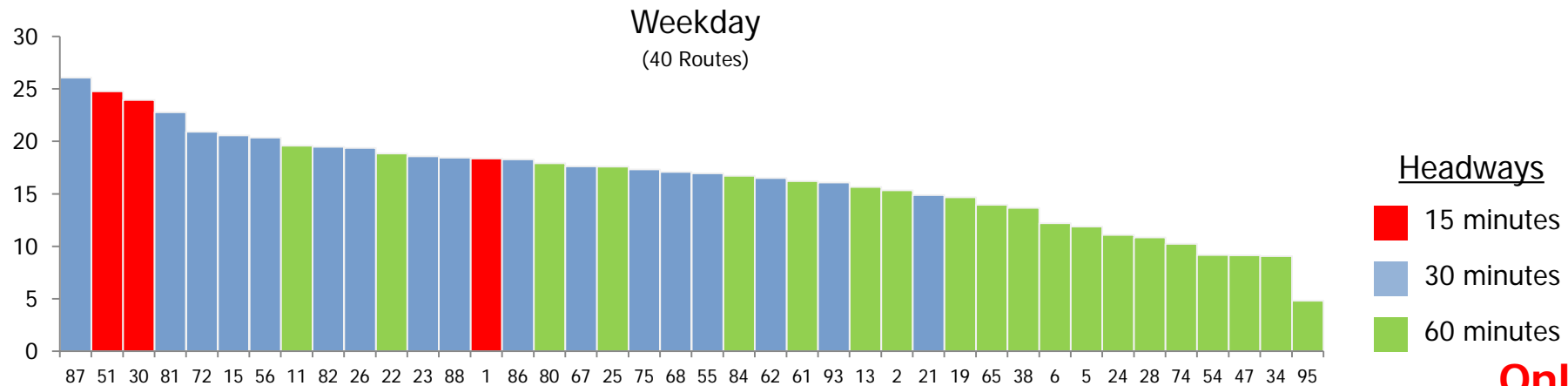


# Background

- 20 million boardings
- Bus, light rail, paratransit, microtransit
- 30% service cuts 2008-10
- Cost-neutral bus network restructuring
- Board adopted 2/25/19
- Takes effect 9/8/19



# Boardings Per Revenue Hour Existing Bus Routes



**Only two routes w/  
30m headways on  
Sundays!**

# How “Frequent” Is the Network?

$$\frac{251\text{k residents w/in 1/2 mile of frequent service}}{928\text{k residents w/in 1/2 mile of all-day local service}} = 27\%$$

(Service area population is 1.1 million over 367 square miles)

# How “Frequent” Is the Network?

40

minutes

Average Weekday Headway

50

minutes

Average Saturday Headway

57

minutes

Average Sunday/Holiday Headway

# Do More With ~~Less~~ What We Have

## Build a New Network

1. More frequent routes
2. More weekend service
3. Jurisdictional equity
4. Cost neutrality
5. Gain ridership



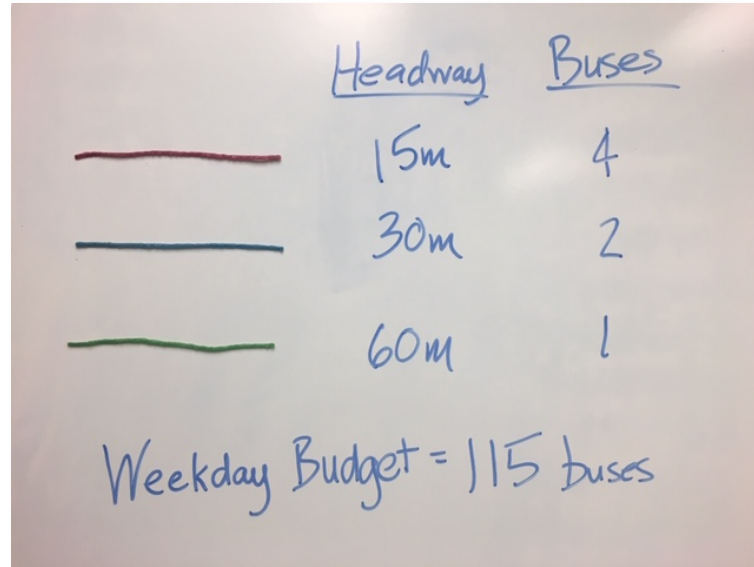
## Build a New Accord

1. Make it faster
2. Better gas mileage
3. Cost less
4. Take public comments and a board vote on every facet of it when you're done

# Network Prototyping on a Budget



Wikki Stix  
Box of 468  
\$27.07 on Amazon



Monopoly Money



Budget-Constrained  
Network Prototype



# Build Your Own Network



## Line up supporters



# What's More Important?



Maximize Ridership	Minimize Cost
<ul style="list-style-type: none"><li>• Speculative</li><li>• Laborious analysis</li><li>• Minimal, delayed fiscal impact</li></ul>	<ul style="list-style-type: none"><li>• Knowable and controllable</li><li>• Simple math</li><li>• Direct fiscal impact</li></ul>

**Farebox Recovery = 20%**

# Cost Estimation

## Advantages of Excel

- Ability to interline
- Flexible, tabular data
- Portable, accessible (e.g., copy/paste)
- Not too simple, not too complex
- Inexpensive

The screenshot displays an Excel spreadsheet titled 'New Network 2018.v3.xls [Compatibility Mode] - Microsoft Excel'. The spreadsheet is organized into several sections:

- Summary Section (Rows 1-4):** A table comparing 'Existing' and 'New' costs for 'SacRT Forward' and 'New Network'.
 

	Existing	New	% Change
RVH	467,393	448,162	-4.1%
Weekday	39,849	55,427	39.1%
Sat	28,409	48,371	70.3%
Sun	535,651	551,961	3.0%
- Route Data Section (Rows 10-48):** A large table with columns for 'Route', 'Name', 'Miles', 'Minutes', 'Rd Trip', 'Cycle', 'Break', '% Break', and various time-based metrics (Early, AM, Midday, PM, Peak, Tl, 7pm, 7-8pm, 8-9pm, 9-9:30pm, 9:30-10:30p, Freq). It lists routes such as 'Greenback', 'Natomas/Land Park', 'Del Paso Hts (w/ 88)', etc.
- Vehicle Requirement Section (Rows 8-10):** A table with columns for 'Vehicle Requirement' (1.0, 2.0, 7.0, 2.5, 1.5, 1.0, 1.0, 0.5, 1.0) and 'Revenue Hours' (Daily, Pre-Adjusted, Annual).
- Summary Row (Row 48):** A 'SUBTOTAL' row showing a total of 23% for a specific metric, 118 for another, and 121 for a third, with a final total of 1,784, 1,719, and 436,547.



# Cost Estimation

## Revenue Hours

	Model Estimate	Run Cut	% Over Budget
Annual	551,961	551,825	0.0%
Weekday	448,162	453,938	+1.3%
Saturday	55,427	52,894	(4.6%)
Sun/Hol	48,371	44,993	(7.0%)

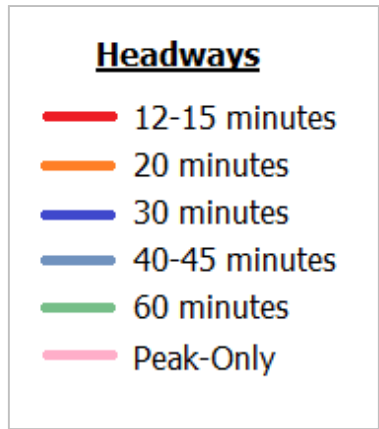
**Calibrate your model!**

# Public Engagement | Know Your Audience

	Pre-Proposal	Public Review
Who Cares?	<ul style="list-style-type: none"> <li>Riders union</li> <li>Environmental groups</li> <li>TAC members</li> </ul> 	<ul style="list-style-type: none"> <li>Customers</li> <li>Neighborhood groups</li> <li>Parents</li> <li>Board members</li> <li>Executive staff</li> </ul> 
Needs	<ul style="list-style-type: none"> <li>Long-form presentations</li> </ul>	<ul style="list-style-type: none"> <li>Management briefings</li> <li>Special ridership stats</li> <li>Special purpose maps</li> </ul>

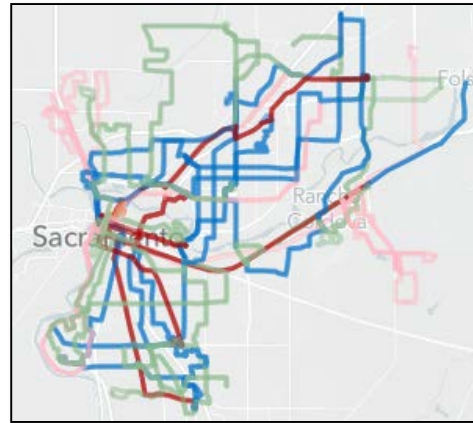
**Don't front-load all your consultant's public engagement time**

# New Network

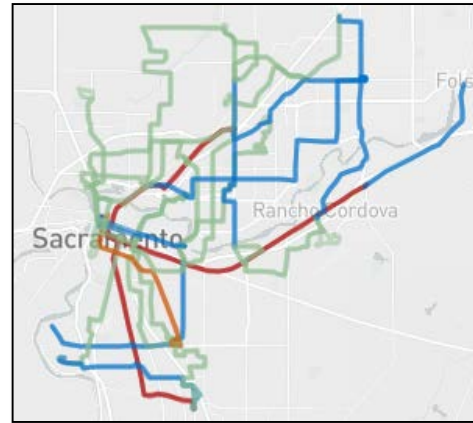


Existing

Weekday



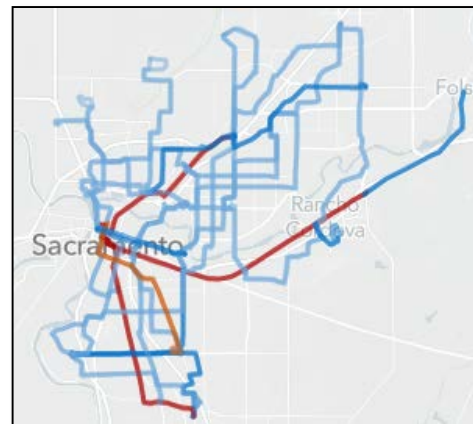
Saturday



Sunday



New Network



# How “Frequent” Is the Network?

**30** ~~**40**~~ minutes

Average Weekday Headway

**42** ~~**50**~~ minutes

Average Saturday Headway

**50** ~~**57**~~ minutes

Average Sunday/Holiday Headway

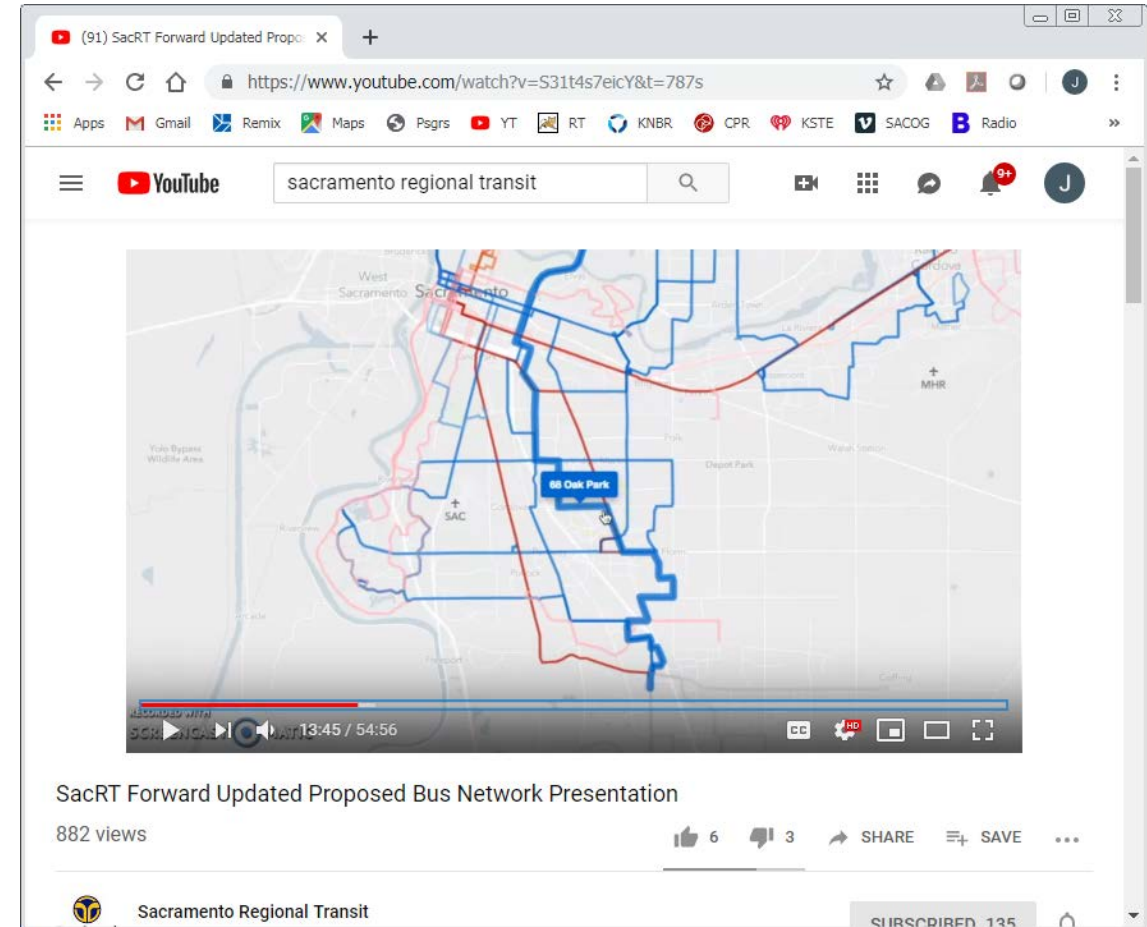
**1 good route > 2 bad routes**



# New Network

	Change in Revenue Hours
Weekdays	<b>-4.1%</b>
Saturdays	<b>+39.1%</b>
Sun/Hol	<b>+70.3%</b>
TOTAL	<b>+3.0%</b>

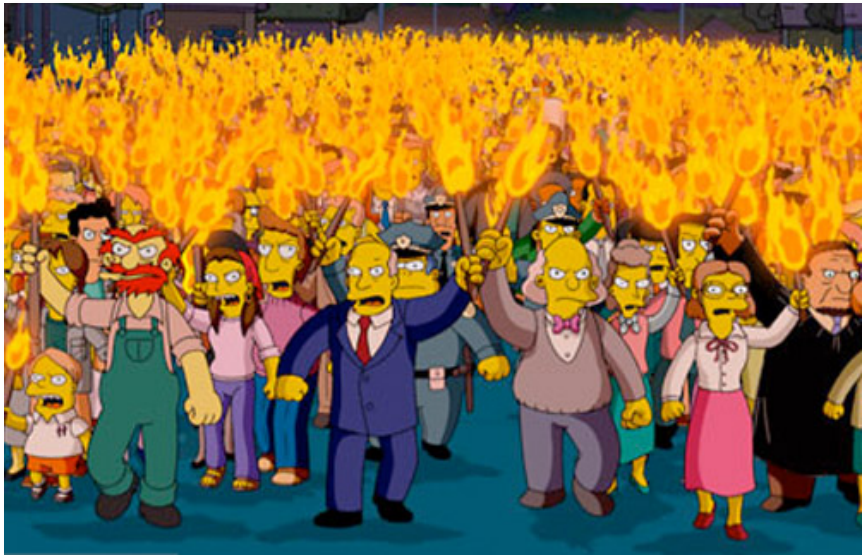
# YouTube Video + Remix



# Operator/Supervisor Training



# Secret Weapon for Public Meetings



+



remix

=



# Rider Alerts



Drivers' Room Display



Riding Buses

**Keep drivers informed!**



# Rider Alerts

## MAJOR BUS ROUTE CHANGES

**NEW SOUTH AREA BUS NETWORK**

**SacRT Forward**  
The new generation network

*Routes 2, 6, 51, 54, 55 and 65 will be discontinued or changed.*

Visit [sacrt.com/forward](http://sacrt.com/forward) for important information

## SERVICE CHANGES COMING

**SEPTEMBER 8, 2019**

**Regional Transit**

**SacRT Forward**  
The new generation network

### Rider Alert Service Changes

Changes effective on **September 8, 2019**

Route	Changes
1	Extend evening frequency and add early morning trips. Add evening trips on weekdays and Saturdays. Cut four early morning trips.
2	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
3	Change number to 103. No other changes.
4	Discontinue route. Covered by Routes 102 and 106.
5	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
6	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
7	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
8	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
9	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
10	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
11	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
12	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
13	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
14	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
15	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
16	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
17	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
18	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
19	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
20	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
21	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
22	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
23	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
24	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
25	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
26	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
27	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
28	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
29	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
30	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
31	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
32	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
33	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
34	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
35	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
36	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
37	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
38	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
39	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
40	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
41	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
42	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
43	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
44	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
45	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
46	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
47	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
48	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
49	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
50	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
51	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
52	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
53	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
54	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
55	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
56	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
57	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
58	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
59	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
60	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
61	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
62	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
63	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
64	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
65	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
66	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
67	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
68	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
69	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
70	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
71	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
72	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
73	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
74	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
75	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
76	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
77	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
78	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
79	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
80	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
81	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
82	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
83	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
84	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
85	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
86	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
87	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
88	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
89	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
90	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
91	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
92	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
93	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
94	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
95	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
96	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
97	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
98	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
99	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
100	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.

Specific trip cancellations and new trips are subject to change.

[sacrt.com/sacrtforward](http://sacrt.com/sacrtforward) | [sacrtforward@sacrt.com](mailto:sacrtforward@sacrt.com) | (916) 321-BUSS (2677)

### Rider Alert Service Changes North Area

**FINAL Approved 2/25/19**

Route	Key Changes
11	Extend south to City College (not shown). Improve midday and Saturday frequency to 45 minutes. Add Sunday/Holiday service.
13	Remain to Travel Rd from North Market St and extend north to Travel Rd and west on Del Paso Rd. Combine with Route 22 on Arden Way. Improve frequency to 45 minutes and add Saturday/Sunday service every 45 minutes. See also Route 113.

[sacrt.com/sacrtforward](http://sacrt.com/sacrtforward) | [sacrtforward@sacrt.com](mailto:sacrtforward@sacrt.com) | (916) 321-BUSS(2677)

### Rider Alert Service Changes East Area

**FINAL Approved 2/25/19**

Route	Key Changes
1	Add evening trips weekdays and Saturdays. Cut four early morning trips.
10	Discontinue service on Wall Ave south of Elmore Blvd. New routing between Rio Linda via Elmore. Add Saturday/Sunday morning trips.
11	Extend Sunrise Mall trips to Lucas/Oberlin.

[sacrt.com/sacrtforward](http://sacrt.com/sacrtforward) | [sacrtforward@sacrt.com](mailto:sacrtforward@sacrt.com) | (916) 321-BUSS(2677)

### Rider Alert Service Changes South Area

**FINAL Approved 2/25/19**

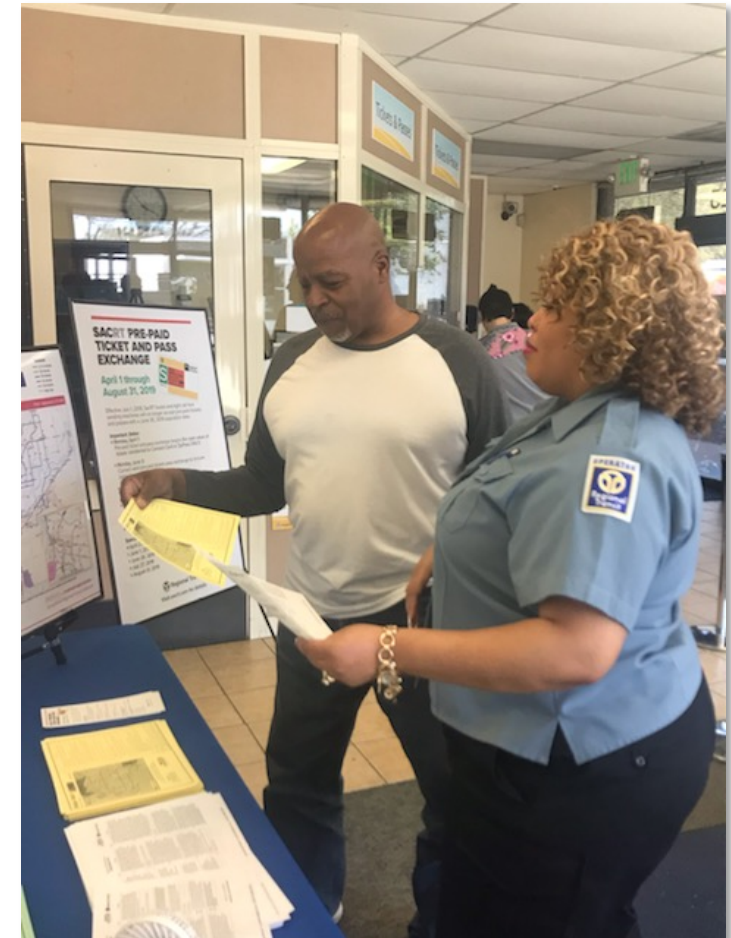
Route	Key Changes
2, 6	Discontinue service for several peak hour trips. Remain on Routes 102 and 106.
5	Discontinue route except for 7:15 a.m. trip from Meadowlark station and 3:42 p.m. trip from Coltonwood Ln.
3, 7	Remain to Routes 103 and 107. No other changes.
11	Extend south to City College via Riverside and Land Park. Improve midday and Saturday frequency to 45 minutes. Add Sunday/Holiday service.
30	Combine with Route 35. Run Route 30 every 15 minutes at peak, every 30 minutes off-peak, and every 60 minutes on weekends.
38	Combine with 408 on J.L. Street from downtown to 38th St. Run 408 every 30 minutes on weekdays and every 60 minutes on weekends. Extend upcoming Downtown SmartRide to cover Seaway Circle and nearby neighborhood.
47	Discontinue route. Covered by Routes 56, 67, 81, and Smart Ride.
51	Improve weekend frequency to 20 minutes. Add Saturday evening trips.
54	Discontinue route. Covered by Routes 56, 67, 81 and future Smart Ride.
55	Discontinue route. Covered by Routes 60.
56	Remain to Brockfield Dr and Franklin Blvd from Mack Rd east of Franklin Blvd. Improve Sunday frequency to 45 minutes.
61	Extend west and to Rush River Dr via Riverside Blvd. Remain east end of route to Flinn Transit Centre via Power Inn Rd, Briggs Dr, and Flinn Rd. Improve weekday frequency to 30 minutes. Add weekend service.
62	Remain to J. Street from Capitol Mall. Remain to South Land Park Dr from 13th St. Add Sunday service.
65	Discontinue route. Covered by Routes 61, 67, 81 and Smart Ride.
67	Remain and extend south and from Flinn Transit Centre to Cooncross River College via Franklin Blvd, Mack Rd, and Riverside Rd. Improve frequency on weekdays and Saturdays. Add New Saturday night service.
68	Remain from Skinner Way via Skatkon Blvd. Extend south to Cooncross River College via former Route 55 with minor adjustments. Improve frequency on weekdays and Saturdays.
81	Improve Sunday frequency to 30 minutes.
SmartRide Downtown	Extend upcoming SmartRide Downtown zone south to cover Seaway Circle and nearby neighborhoods south of Broadway and Franklin Blvd.
SmartRide Rio Garden	New Smart Ride on-dampened constrained zone serving area bounded by Power Inn Rd, Gether Rd, Union Pacific Railroad, and Calvine Rd plus direct service to Cooncross River College.

This is not a comprehensive list of changes. Please visit [sacrt.com/sacrtforward](http://sacrt.com/sacrtforward) for additional details. These changes are scheduled to take effect on **September 8, 2019**.

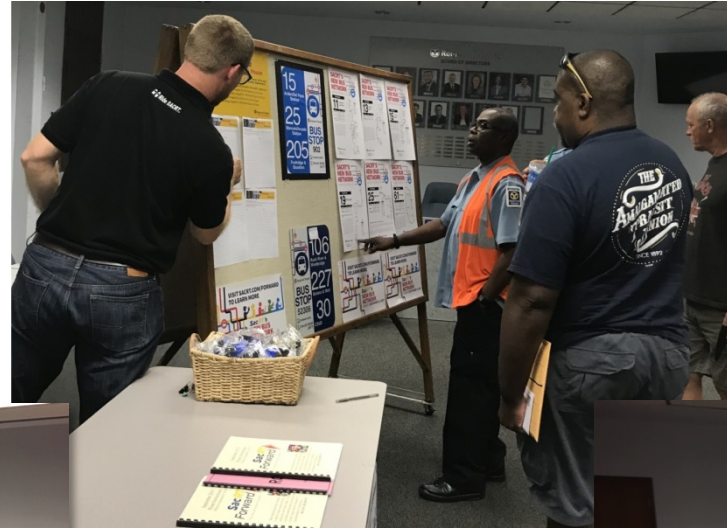
[sacrt.com/sacrtforward](http://sacrt.com/sacrtforward) | [sacrtforward@sacrt.com](mailto:sacrtforward@sacrt.com) | (916) 321-BUSS (2677)



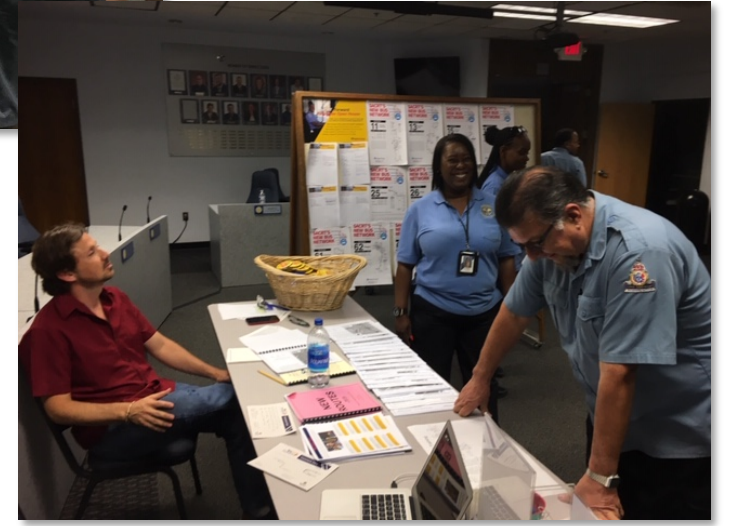
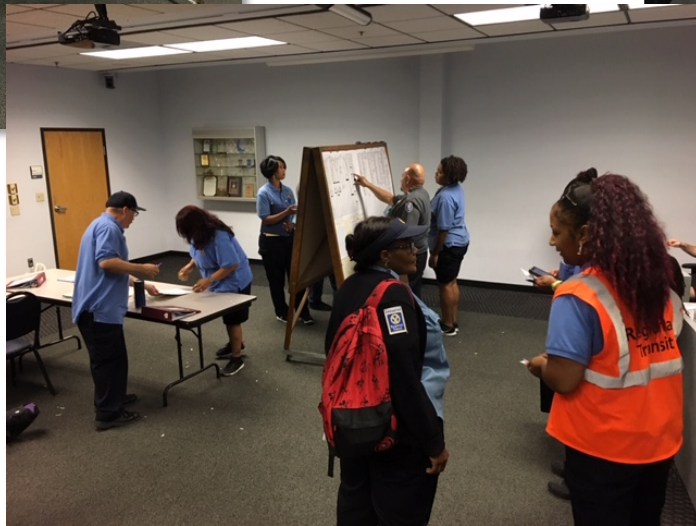
# Customer Service Display



# Operator Signup



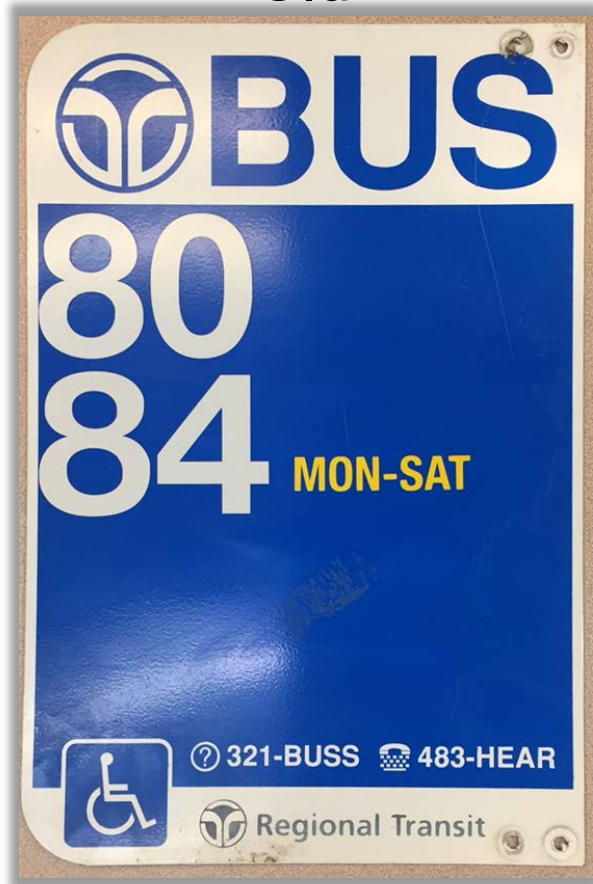
**Paid time  
behind the  
wheel**





# New Bus Stop Signs

Old



New



- 2,500 new signs
- Double sided
- Includes destination
- Renumbered commuter routes to 100's

# Temporary Vinyl Covers

- 3,000 bus stops
- 500 eliminated
- 1,000 with new or different routes



Old Routes



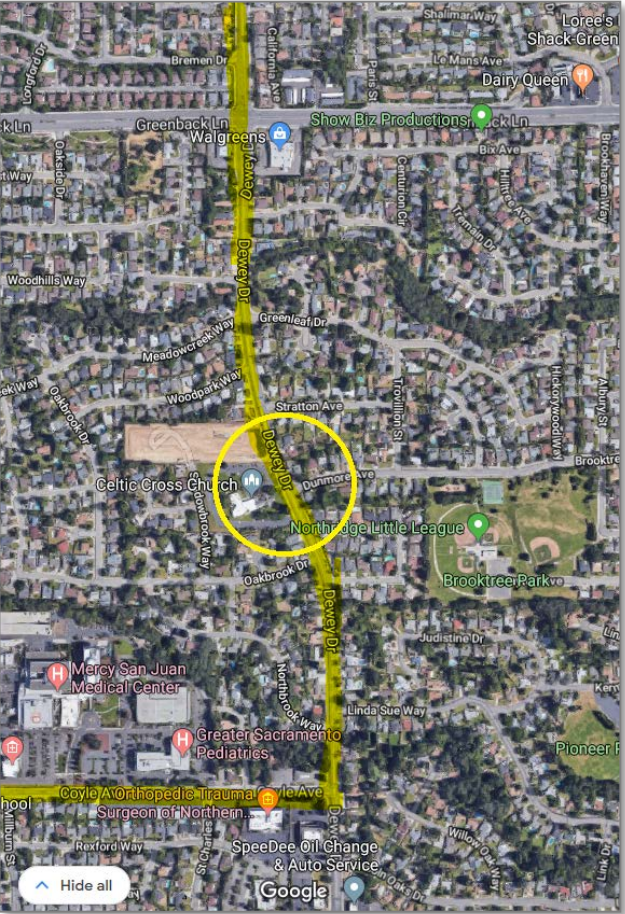
New Routes

# New Signs and Covers



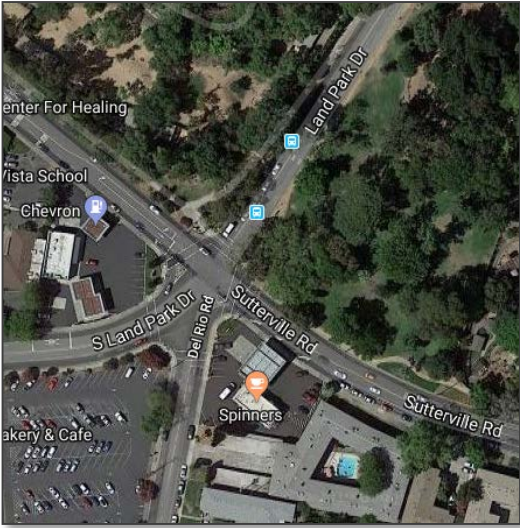


# New Bus Stops (Or Lack Thereof)





# New Bus Stops (Or Lack Thereof)

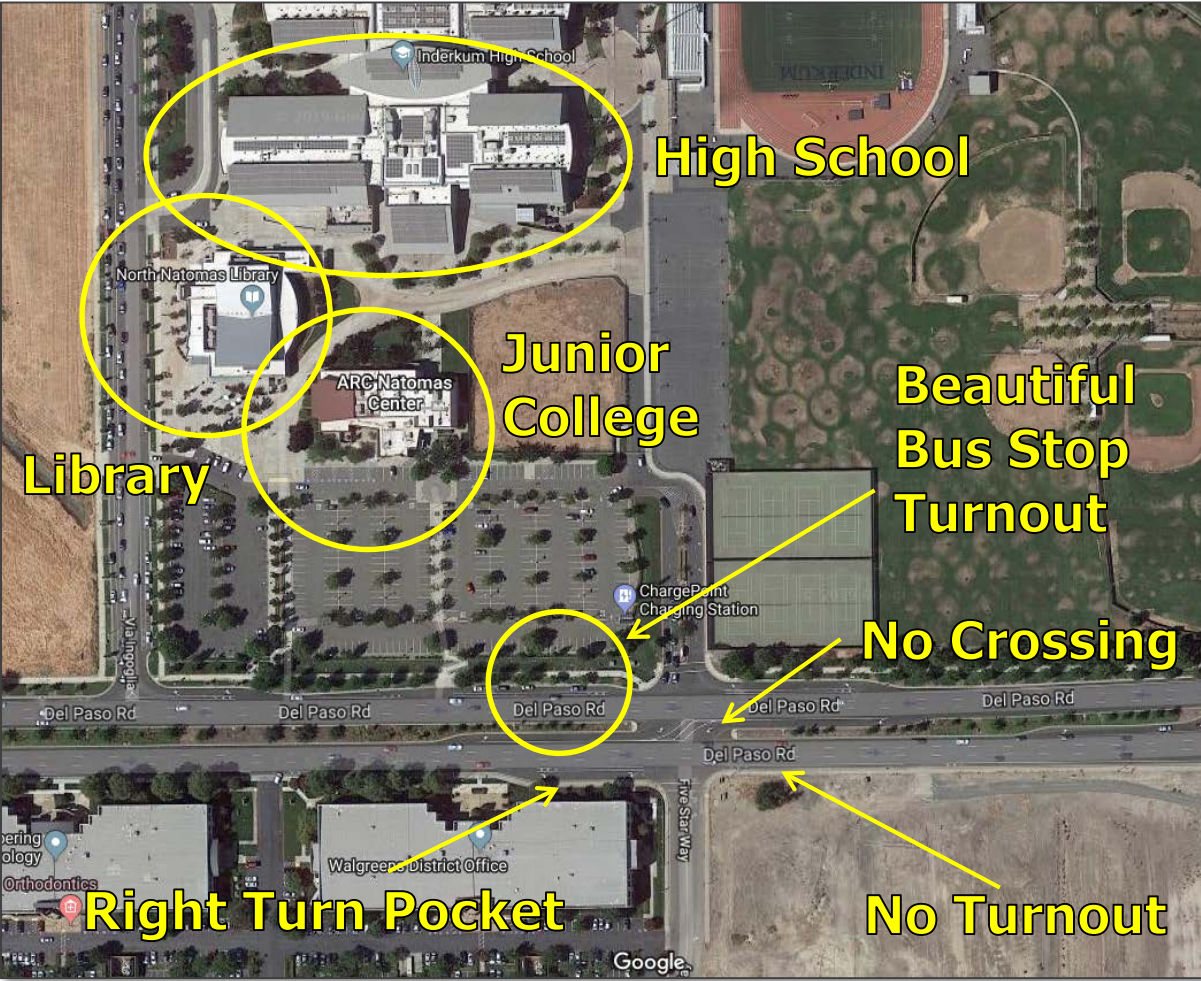


# New Bus Stops (Or Lack Thereof)





# New Bus Stops (Or Lack Thereof)



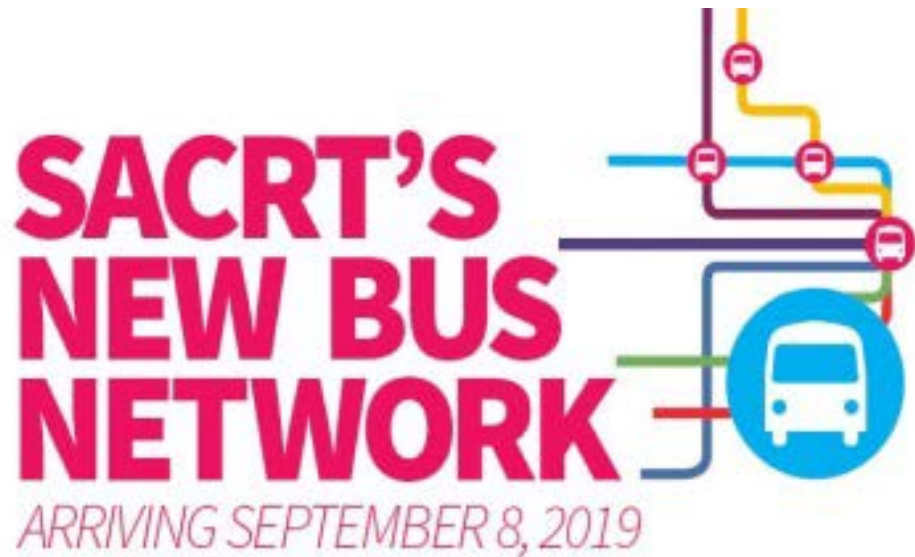
# Speed Matters | Planning vs Action

- Aggressive schedule
- Entire system, all at once
- Considerable staff self-performance



General  
George S. Patton

**Plans have political shelf lives**



## Questions? Comments?

James Drake, Principal Planner  
Sacramento Regional Transit District  
[jdrake@sacrt.com](mailto:jdrake@sacrt.com)