



Sacramento Streetcar System Plan

12th National Light Rail Conference
Sustaining the Metropolis: LRT & Streetcars
For Super Cities
November 12, 2012

*Development of Sacramento's
Streetcar System Plan
using Transportation, Land Use
and Economic Development
Performance Measures*



AUTHORS

- Bob Grandy, Fehr & Peers
- Sparky Harris, City of Sacramento DOT
- Denise Malvetti, City of Sacramento
Economic Development Dept.

2030 City General Plan (adopted 2009)

Excerpt from Mobility Element



*“Increased transit use will further the City’s efforts to become more sustainable and energy efficient. Transit and land use will be tightly linked, with transit stations integrated into walkable, transit-oriented districts and neighborhoods. Plans will be developed for new transit service such as high speed rail, regional rail, bus rapid transit, **streetcars**, new bus routes between urban centers, and neighborhood bus service.”*

Streetcar System Plan Goals



- Conduct Alternatives Analysis to establish citywide Streetcar Network
- Identify preferred initial streetcar route and associated funding plan

Sacramento's Streetcars

1930

SACRAMENTO'S TROLLEYS BEGAN SERVICE IN 1890 AND CONTINUED IN OPERATION UNTIL JANUARY 4, 1947. FARES WERE 7¢ ON ALL LOCAL LINES, HAVING BEEN INCREASED FROM 5¢ IN 1929.



THE CARBARNS AT 20ST + N WERE THE TROLLEYS HOME BASE FOR OVER HALF A CENTURY. SACRAMENTO'S PRESENT BUS SYSTEM STILL USES THIS SAME LOCATION.



25 PASSENGER BUSES WERE USED AS EXTENSIONS TO SOME STREETCAR ROUTES DURING THE 1920'S. THIS MODEL WAS BUILT BY P.G.&E. IN THE SACRAMENTO SHOPS.

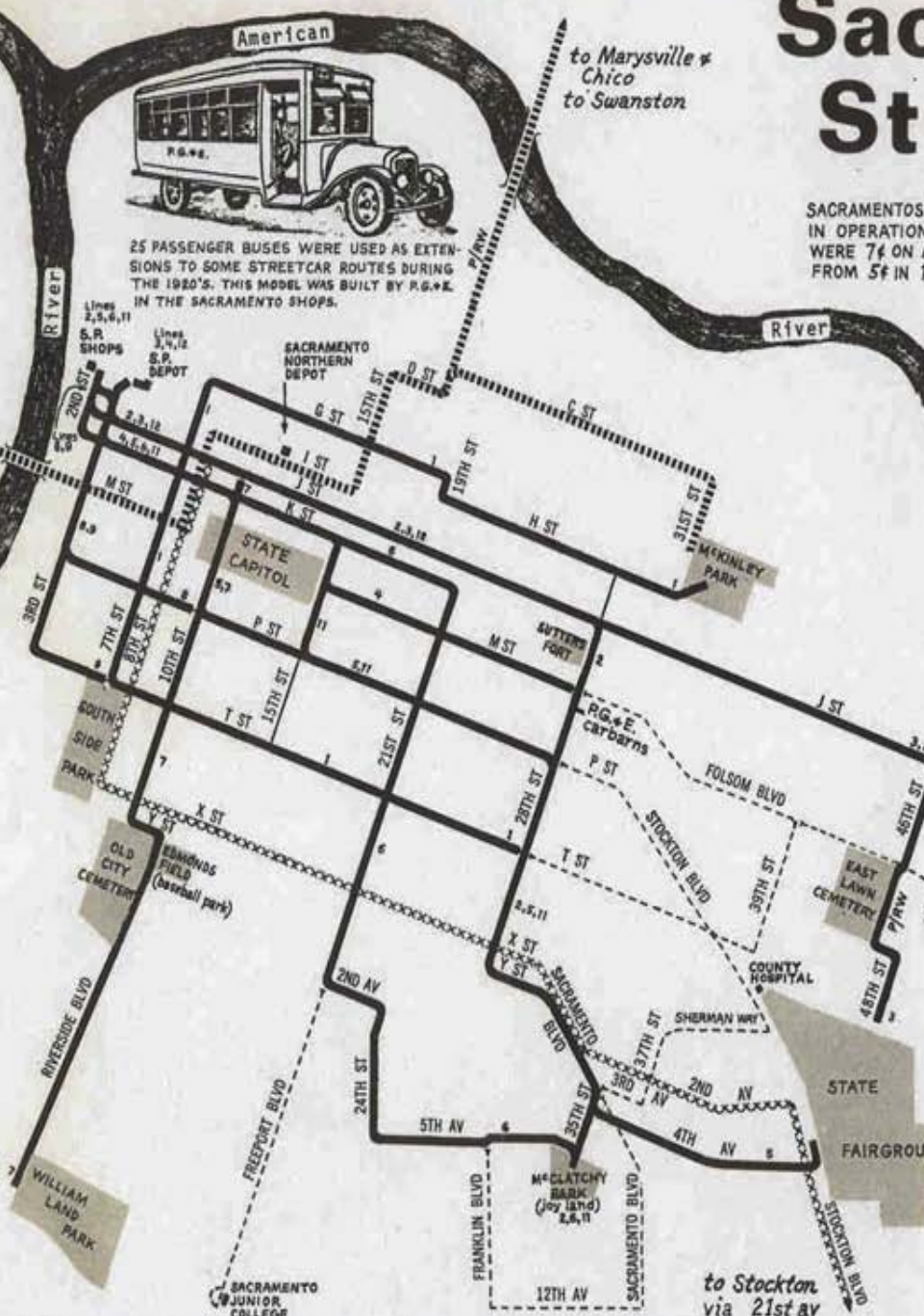
to Marysville & Chico
to Swanston

to Woodland

to San Francisco



THE FIRST TROLLEY CARS, BUILT IN THE 1890'S, WERE VERY SMALL WITH A BUMPY RIDE. MANY OF THEM STARTED OUT AS HORSE-CARS AND WERE CONVERTED TO ELECTRIC OPERATION.



NEWEST CARS IN SACRAMENTO, BUILT BY THE AMERICAN CAR COMPANY IN 1929, SAW MUCH SERVICE ON THE 'J' AND 'P' STREET LINES.



BUILT IN P.G.&E.'S OWN SHOPS AROUND 1905, THESE CARS WERE SEEN ON SACRAMENTO STREETS FOR MANY YEARS.



THE LITTLE BIRNEY CARS, BUILT IN 1918, RAN ON THE 'C' STREET LINE UNTIL 1946.

LEGEND

- Pacific Gas & Electric trolleys 3 (route no.)
 - Pacific Gas & Electric buses
 - Sacramento Northern Rwy.
 - Central Calif. Traction Co.
- 1 MILE

to Stockton
via 21st av





Project Approach



Phase 1

..... Phase 2

Goals and Context

Routes

Screening

Evaluation

Select Preferred Route

Funding Plan

Project Goals and Issues

- Study Purpose
- Streetcar Purpose
- Streetcar Economics
- Purpose and Need
- Ranking Criteria

Identify Streetcar Routes

- Planning Context
- Economic Context

Initial Screening

- Fatal Flaw Assessment
- Demographic Analysis
- Connectivity Assessment
- Constraints Review

Route Analysis

- Ridership Forecasts
- Streetcar Operations
- Traffic Operations
- Preliminary Cost Evaluation
- Environmental Issues

Prioritize Final Routes

- Network Evaluation
- Economic Analysis
- Select Preferred Route

Develop Funding Plan

- Cost Estimates
- Funding Plan

Deliverables

- Working Paper 1: Purpose and Need, Ranking Criteria
- Profiles of Comparable Streetcar Systems

Deliverables

- Working Paper 2: Description of Streetcar Routes

Deliverables

- Working Paper 3: Initial Screening

Deliverables

- Working Paper 4: Streetcar Route(s) Evaluation

Deliverables

- Working Paper 5: Final Streetcar Prioritization

Deliverables

- Working Paper 6: Funding Plan
- Draft Report
- Final Report

Outreach Milestone

- TAC Meetings (2)
- CAC Meetings (1)

Outreach Milestone

- TAC Meeting (1)
- BAC Meeting (1)

Outreach Milestone

- TAC Meeting (1)
- CAC Meeting (1)
- Council Meeting (1)

Outreach Milestone

- TAC Meeting (2)
- CAC Meeting (1)
- BAC Meeting (1)

Outreach Milestone

- TAC Meeting (1)
- CAC Meeting (1)

Outreach Milestone

- TAC Meeting (1)
- CAC Meeting (1)
- BAC Meeting (1)
- Council Meeting (1)

Evaluation Process



- Stage 1: Streetcar Route Screening
 - Fatal flaw screening to select most promising routes for detailed evaluation

- Stage 2: Streetcar Route Evaluation
 - Detailed route evaluation based on Purpose & Need and key Alternatives criteria

- Stage 3: Streetcar Network Evaluation
 - Identify optimal network with best performing routes

Project Stakeholders



- Citizen's Advisory Committee
- Technical Advisory Committee
- Business Advisory Committee

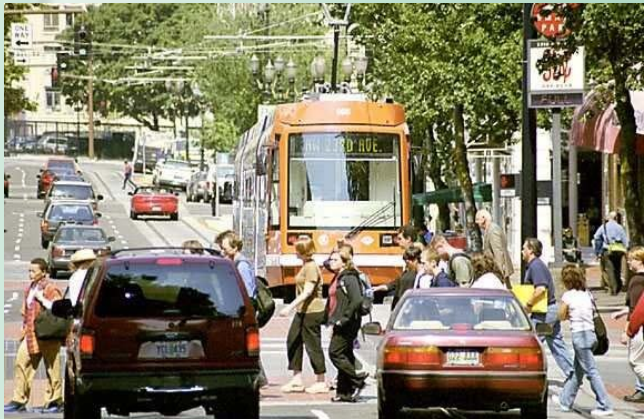


Why are Cities & Businesses Taking the Lead in Streetcar Implementation?



- Modern streetcar lines are downtown circulators, with substantially higher ridership than bus lines they replace
- They link residents, employees, and tourists with commercial districts, entertainment venues, and recreation areas
- Streetcar lines have played a significant role in economic revitalization and redevelopment

Streetcars and Development



“Streetcars promote a “ribbon” of development instead of the nodal development that occurs around light and heavy rail stations.”

—American Public Transportation Association

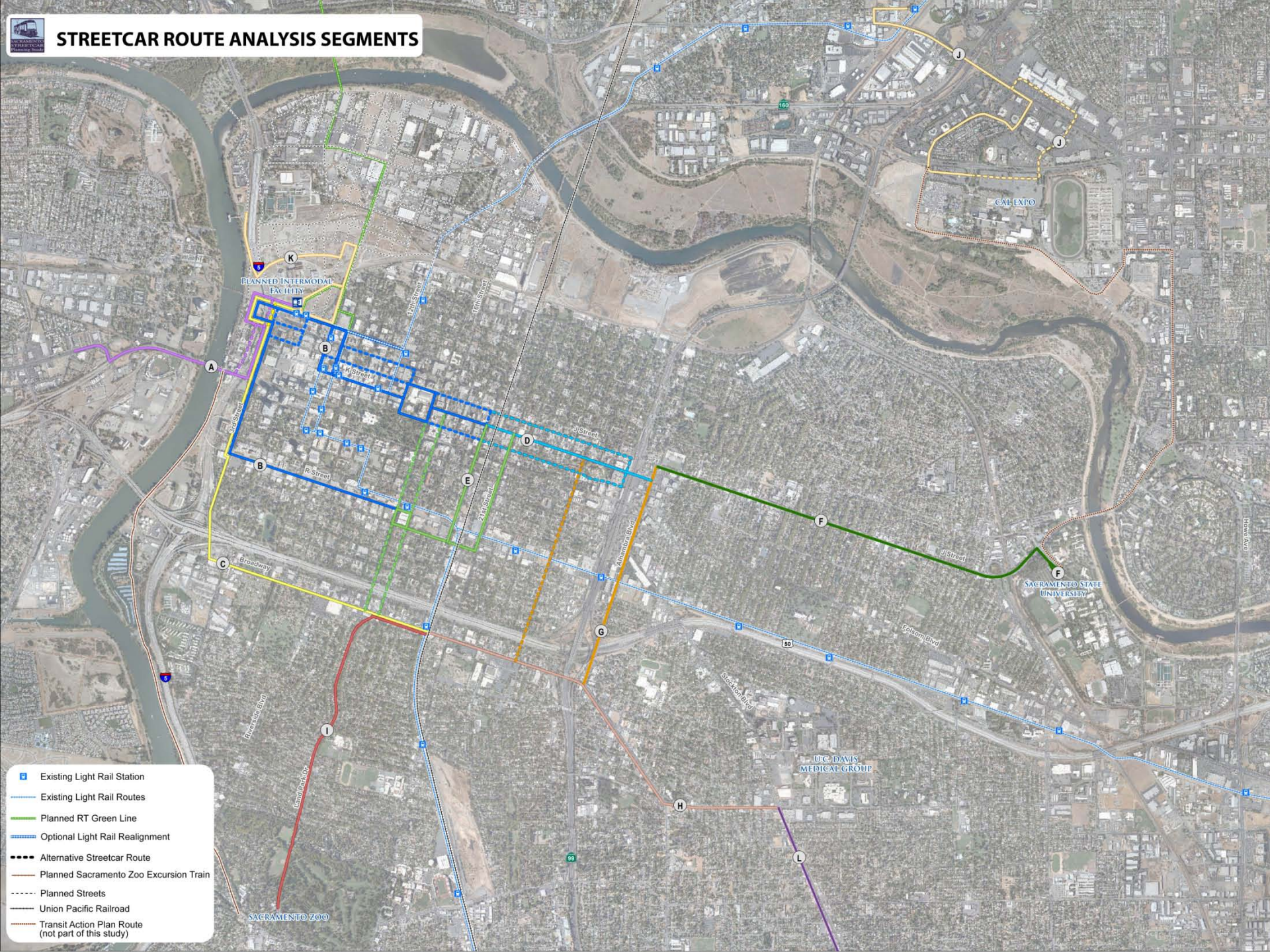











Streetcar Purpose (Highlights)

- **Connect** major transit stations and lines, employment centers, commercial corridors, tourist destinations, future development areas, transit supportive residential neighborhoods, and other major **activity centers**
- **Support community and economic revitalization and redevelopment** in the Central City and surrounding areas
- Increase multi-modal travel choices in the study area by establishing a **network of streetcar routes that complements existing rail and bus service**



STREETCAR ROUTE ANALYSIS SEGMENTS



-  Existing Light Rail Station
-  Existing Light Rail Routes
-  Planned RT Green Line
-  Optional Light Rail Realignment
-  Alternative Streetcar Route
-  Planned Sacramento Zoo Excursion Train
-  Planned Streets
-  Union Pacific Railroad
-  Transit Action Plan Route (not part of this study)

PLANNED INTERMODAL FACILITY

CAL EXPO

SACRAMENTO STATE UNIVERSITY

U.C. DAVIS MEDICAL GROUP

SACRAMENTO ZOO

Key Performance Metrics



- Daily Ridership
- Existing Population & Employment Per Track Mile (1/4 mile catchment area)
- 2035 Population & Employment Per Track Mile
- Existing Annual Retail Sales Per Track Mile

Daily Ridership



- 2035 ridership forecasts prepared for all 13 preliminary routes studied – to create network

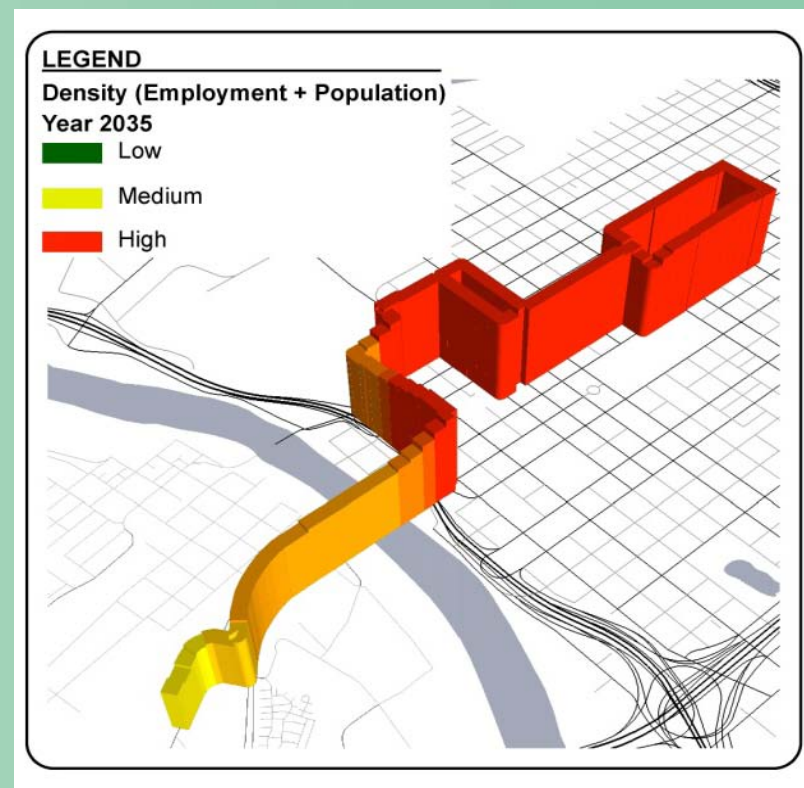
- More detailed forecasts prepared for recommended starter line
 - 2035 forecasts using 3 tools
 - Regional four-step model
 - New regional activity based model
 - Direct Ridership Model (DRM)
 - Opening day forecasting using Direct Ridership Model

Land Use



➤ Population + Employment (1/4 mile catchment area)

- Existing conditions
- 2035 conditions
- Growth from Existing to 2035



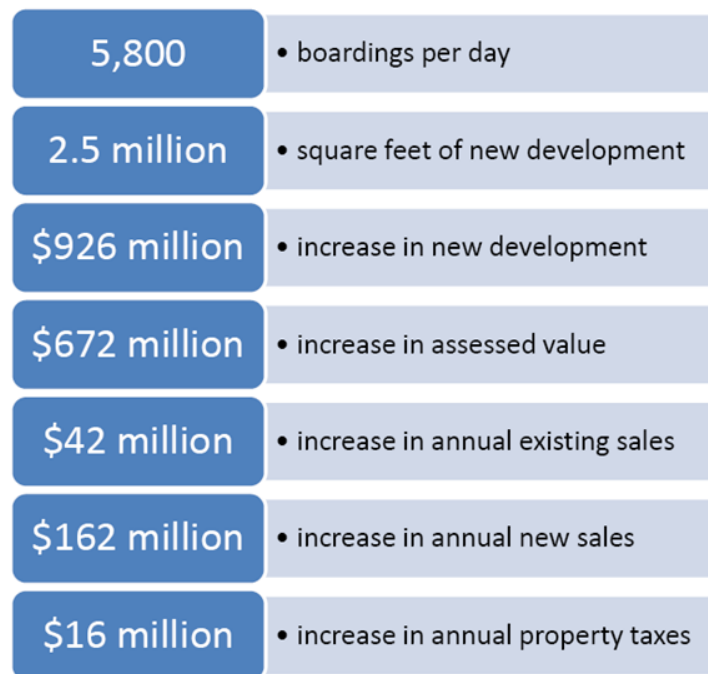
Economic Development



- Annual retail sales
- Acres of existing vacant land
- Acres of underutilized land

- All data generated for:
 - 1 block catchment area
 - 1 to 3 block catchment area

DOWNTOWN/RIVERFRONT STARTER LINE



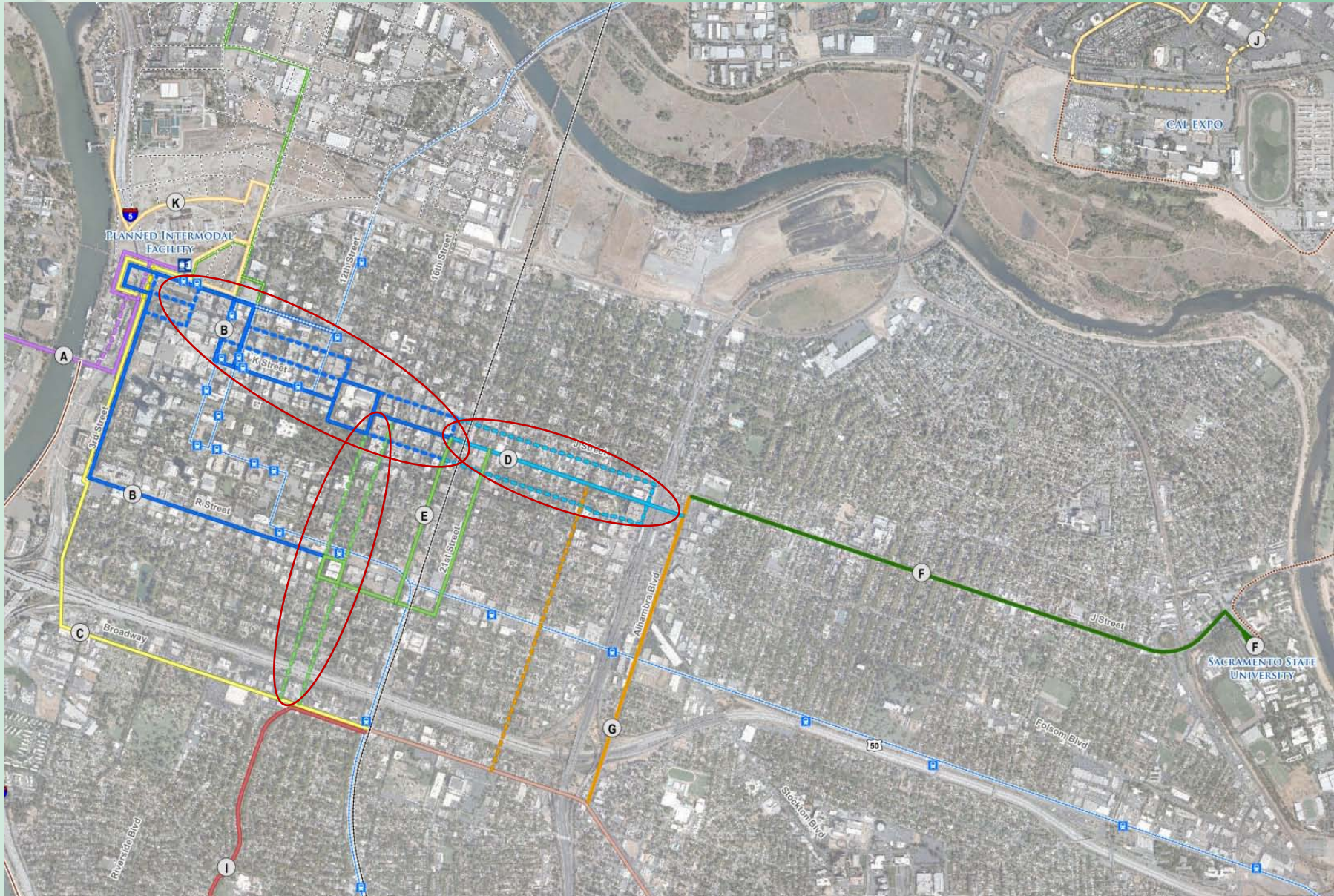
* Financial estimates for City of Sacramento only

Summary of Key Performance Data

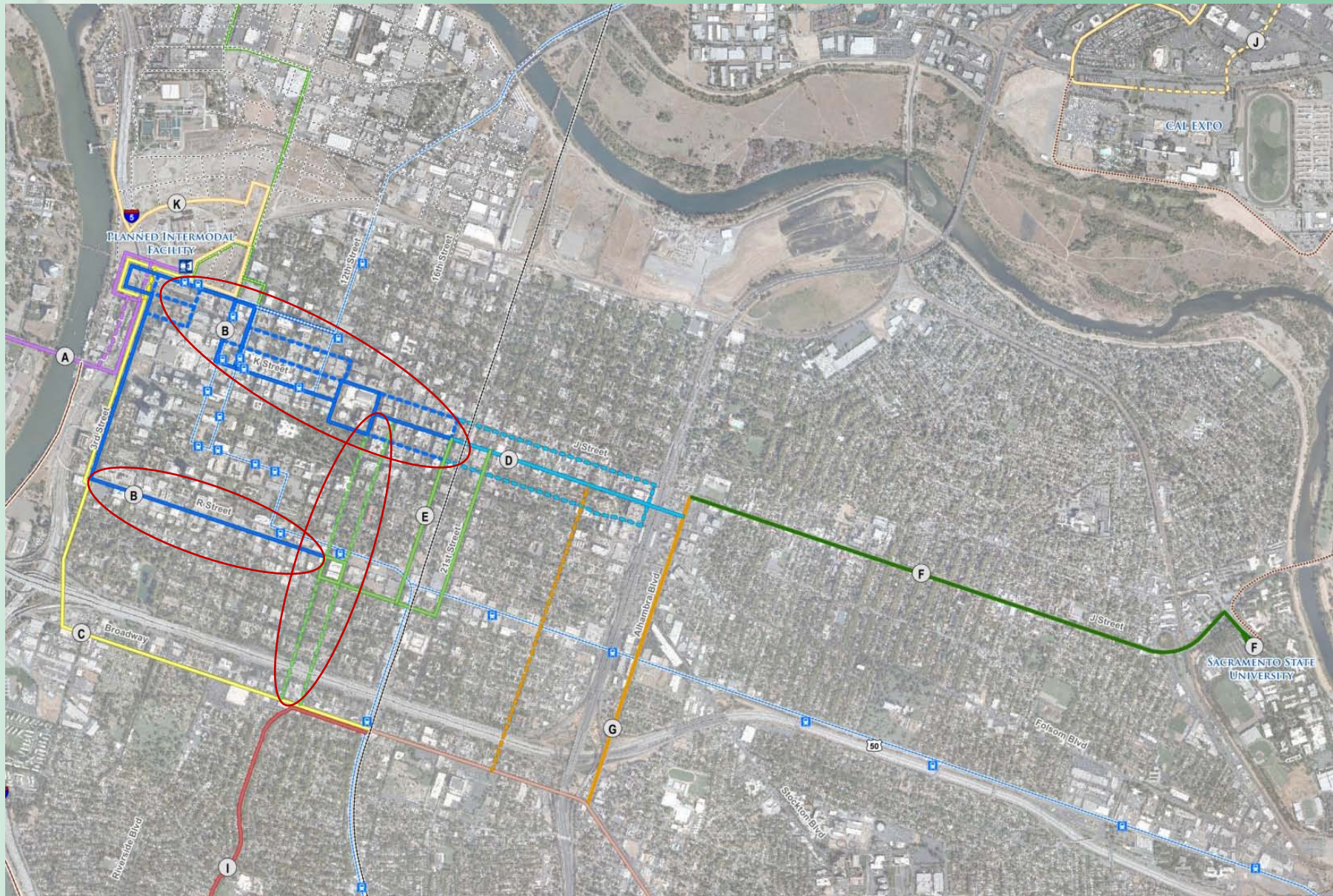


Alternative	Travel Metric	Land Use Metric (data per track mile, in ¼ mile catchment area)			Economic Development Metric (data per track mile, within 1 block)	
	Daily Ridership	Existing Pop + Employment	2035 Pop + Employment	Growth in Pop + Employment	Existing Retail Sales	Existing Vacant Property (acres)
A	1,000-3,000	5,600	12,200	6,600	\$15.1 million	2.2
B-1	<1,000	10,900	16,000	5,100	\$6.9 million	4.7
B-2	>3,000	20,500	24,400	3,900	\$54.8 million	7.4
C	1,000-3,000	5,200	8,200	3,000	\$15.8 million	9.6
D	1,000-3,000	14,600	15,400	800	\$61.5 million	3.3
E	1,000-3,000	13,800	15,900	2,100	\$60.2 million	10.3
F	1,000-3,000	4,000	7,000	3,000	\$11.8 million	5.8
G	<1,000	6,900	7,700	800	\$23.1 million	8.2
H	1,000-3,000	3,900	4,300	400	\$7.1 million	5.7
I	1,000-3,000	2,400	2,600	200	\$8.3 million	1.5
J	1,000-3,000	3,100	3,500	400	\$121 million	4.2
K	1,000-3,000	5,300	15,000	9,700	\$0 million	21.2
L	1,000-3,000	2,300	2,700	400	\$14.3 million	10.3

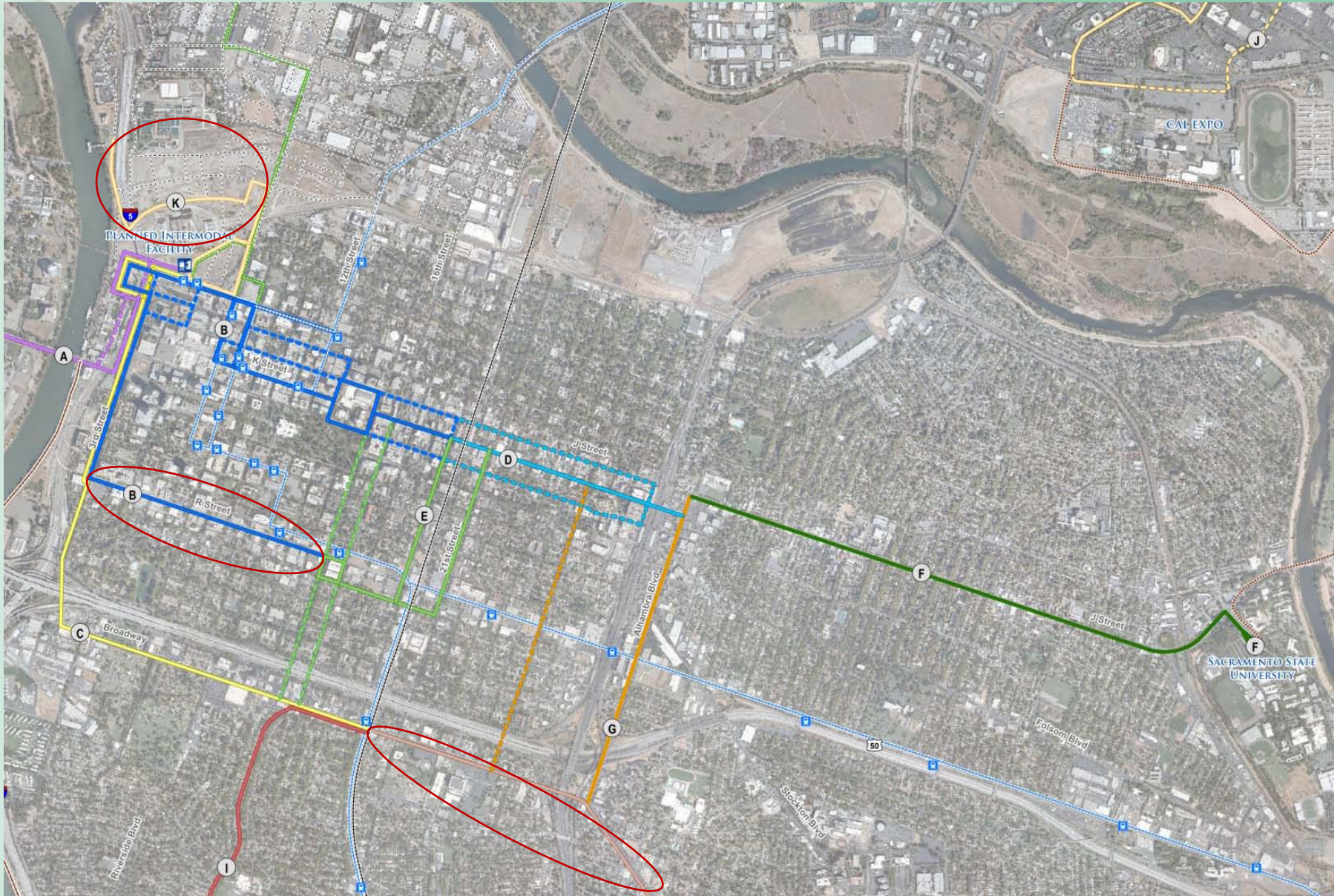
Current Population & Employment – Top 3



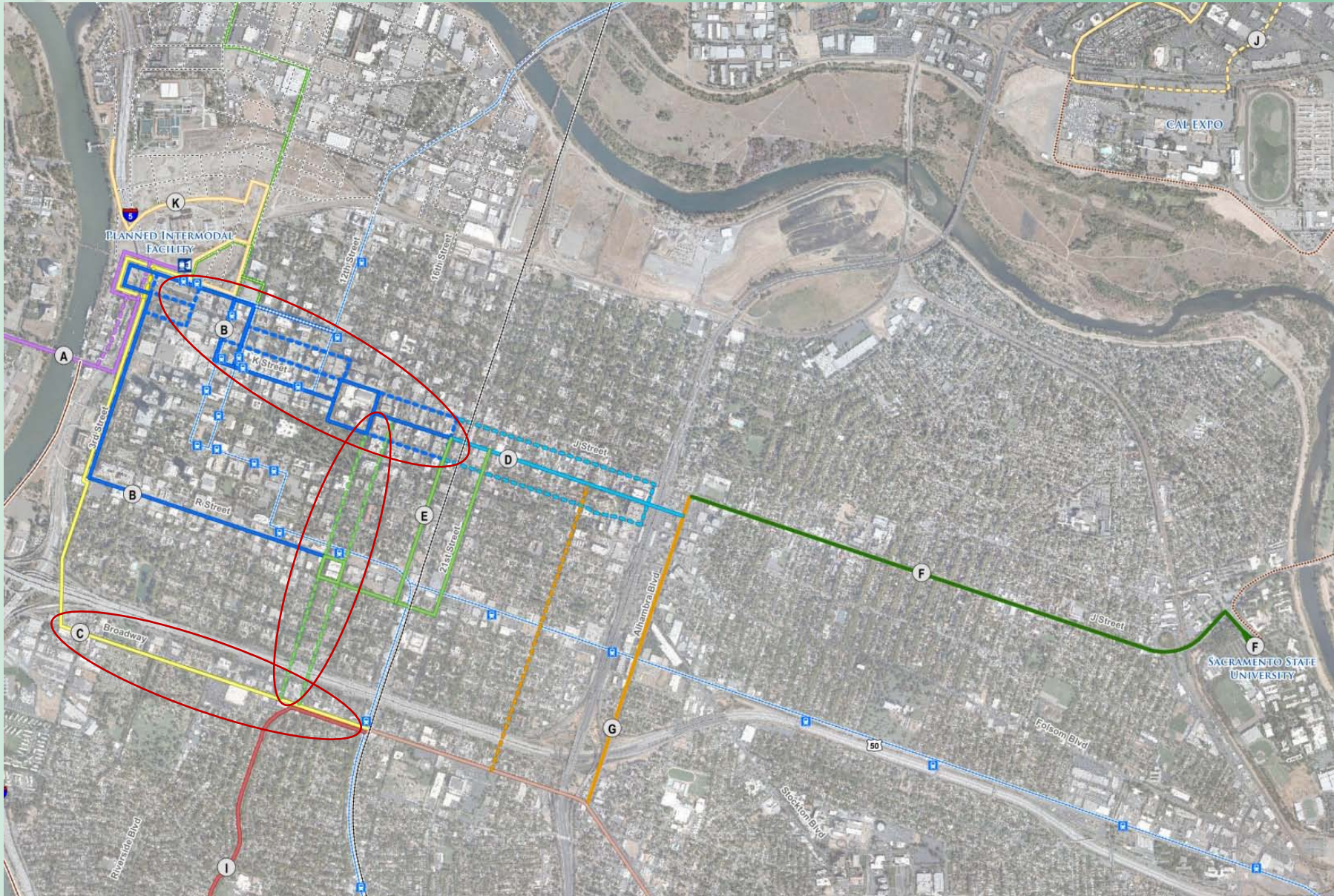
2035 Population & Employment – Top 3



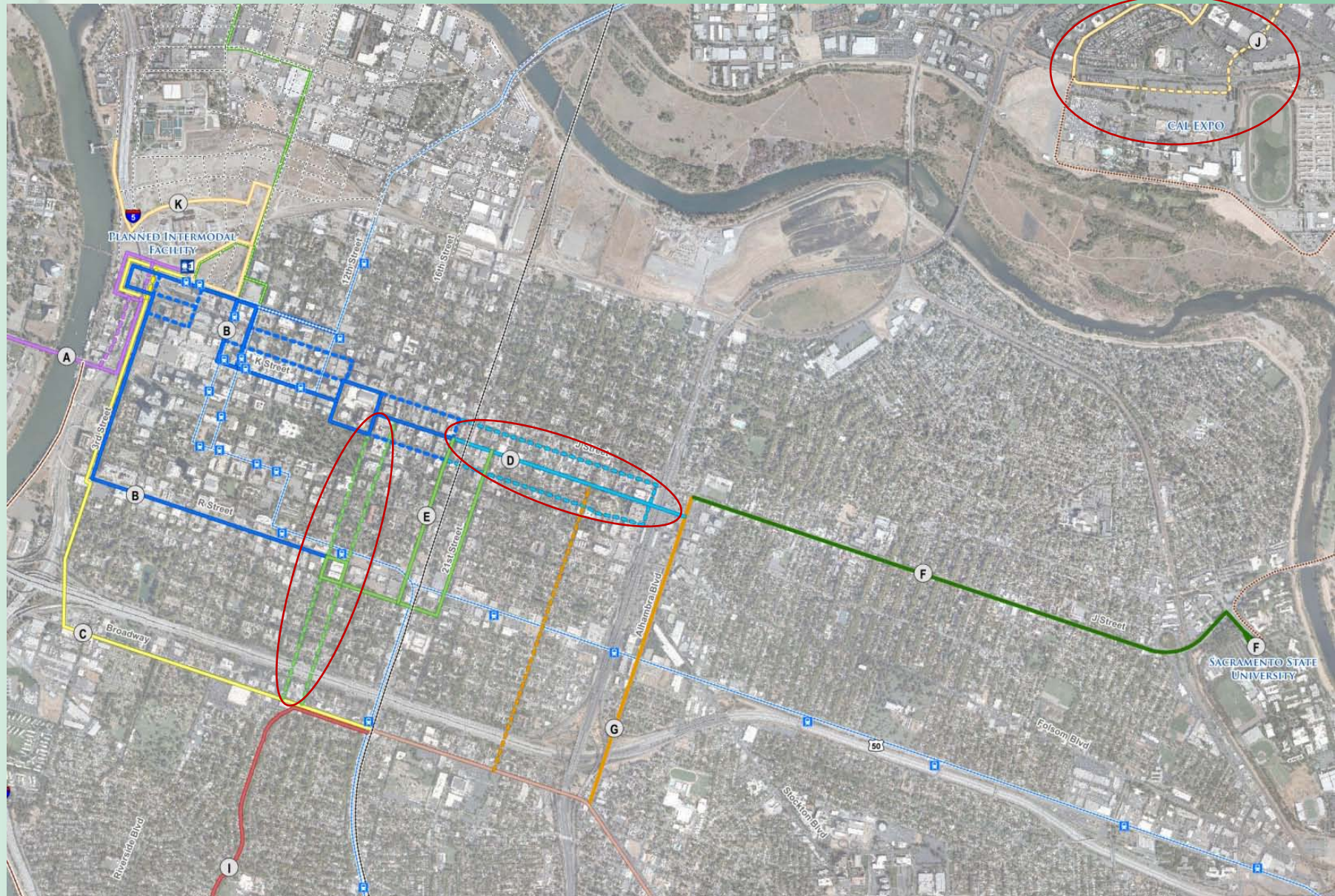
Growth in Population & Employment – Top 3



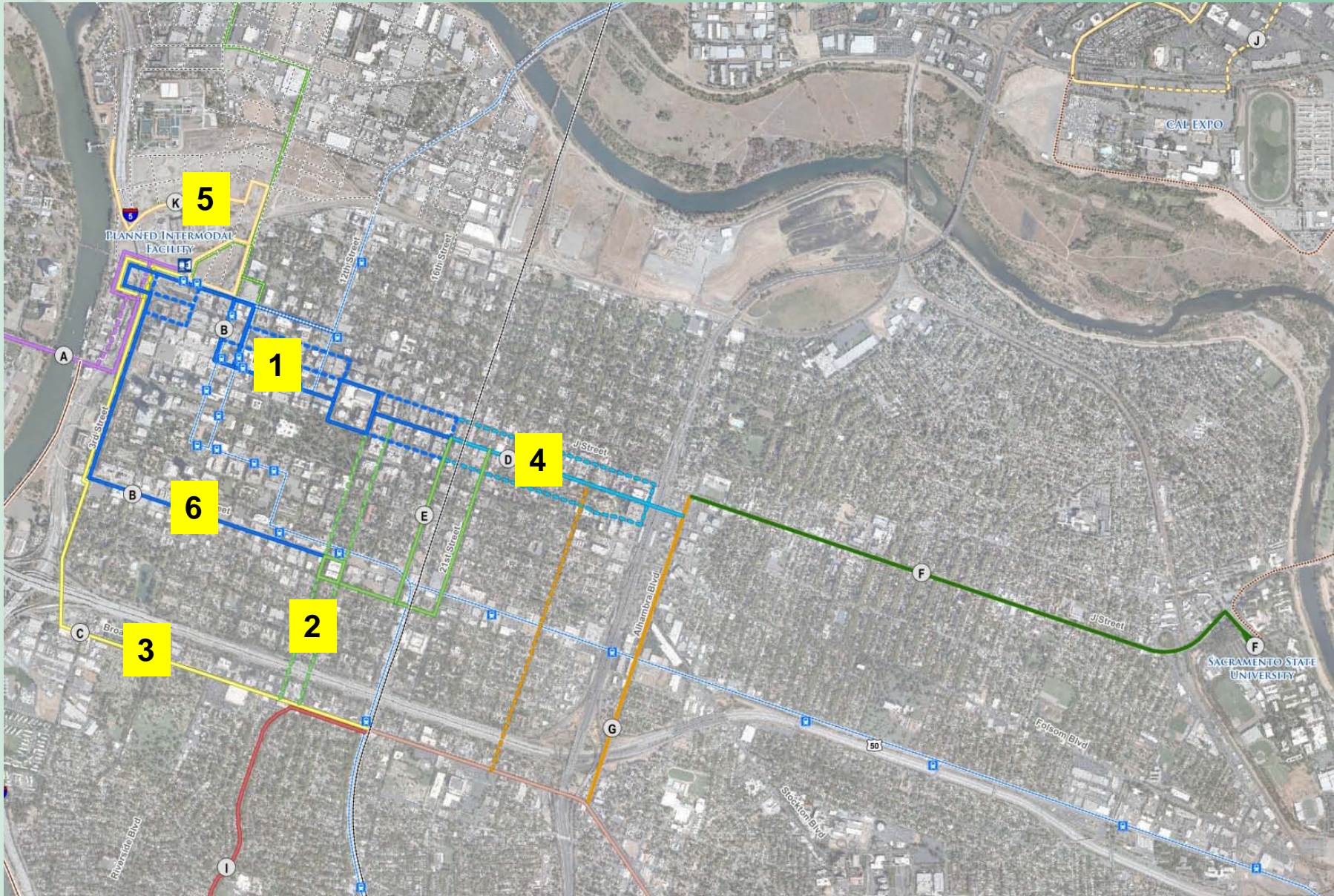
Future Ridership – Top 3



Retail Stimulus Potential (Existing Sales) – Top 3

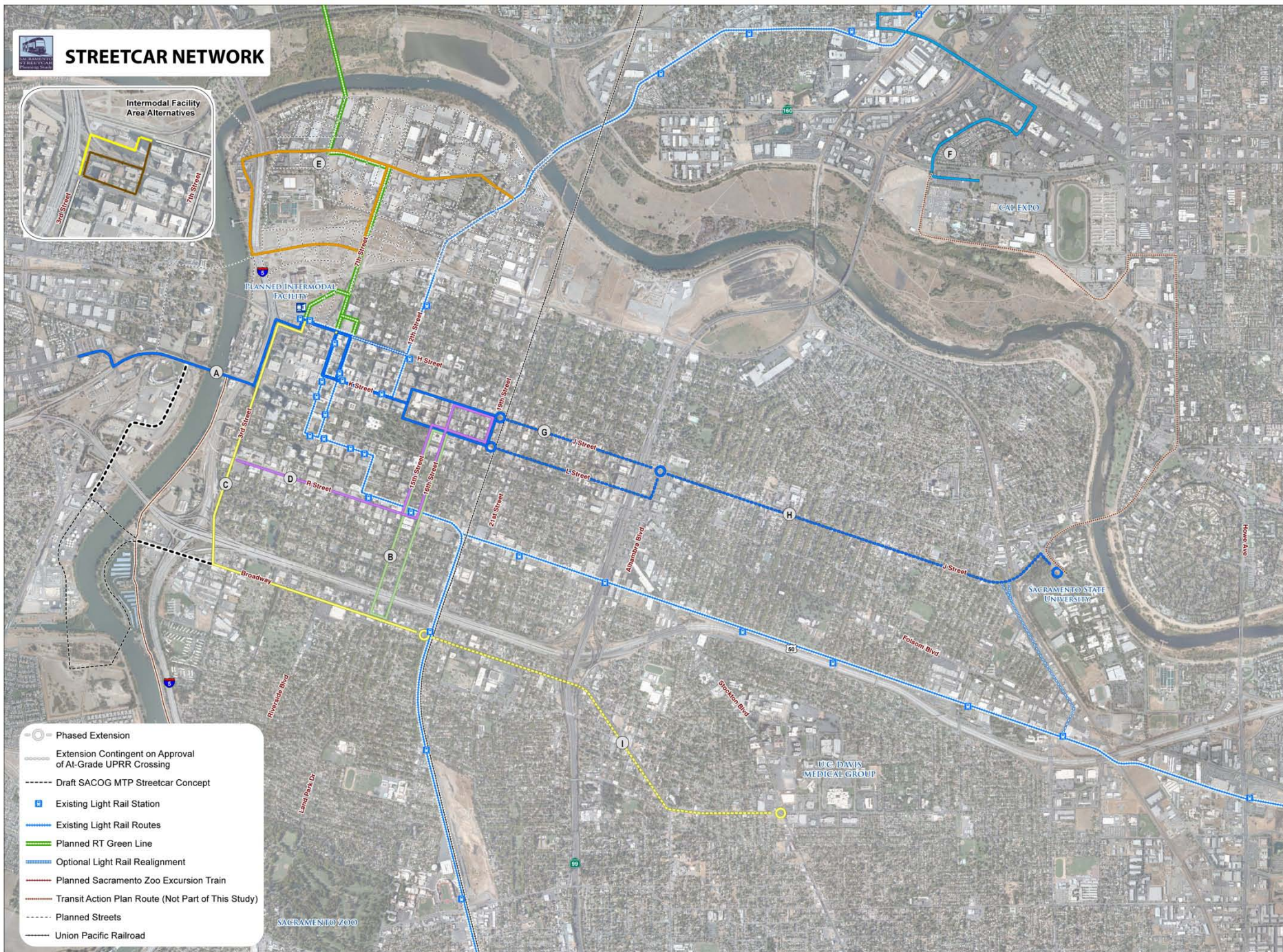


Top 6 Ranked Segments





STREETCAR NETWORK



- Phased Extension
- Extension Contingent on Approval of At-Grade UPRR Crossing
- Draft SACOG MTP Streetcar Concept
- Existing Light Rail Station
- Existing Light Rail Routes
- Planned RT Green Line
- Optional Light Rail Realignment
- Planned Sacramento Zoo Excursion Train
- Transit Action Plan Route (Not Part of This Study)
- Planned Streets
- Union Pacific Railroad

Characteristics of Best Performing Lines



PERFORMANCE MEASURE	VALUE
Daily Ridership	> 1,500
Existing Population + Employment (1/4 mile) per track mile	> 10,000
2035 Population + Employment (1/4 mile) per track mile	> 15,000
Existing Annual Retail Sales (within 1 block) per track mile	> \$15 million



INITIAL STREETCAR ROUTE

Intermodal Facility Area Alternatives



CALIFORNIA INDIAN HERITAGE CENTER

Powerhouse Science Center

RIVER DISTRICT

RAILYARDS

NORTH 16TH STREET HISTORIC DISTRICT

WASHINGTON SPECIFIC PLAN

West Sacramento City Hall

Raley Field

Old Sacramento

Intermodal Facility

Holiday Inn

Downtown Plaza

Sacramento County Offices

City Hall

Chavez Plaza

Citizen Hotel

Music Circus

Memorial Auditorium

BRIDGE DISTRICT

Embassy Suites

Crocker Park

Crocker Art Museum

Sheraton Grand

Crest Theater

Hyatt Regency

Sacramento Convention Center

Community Theater

State Capitol

Capitol Park

State East End Complex

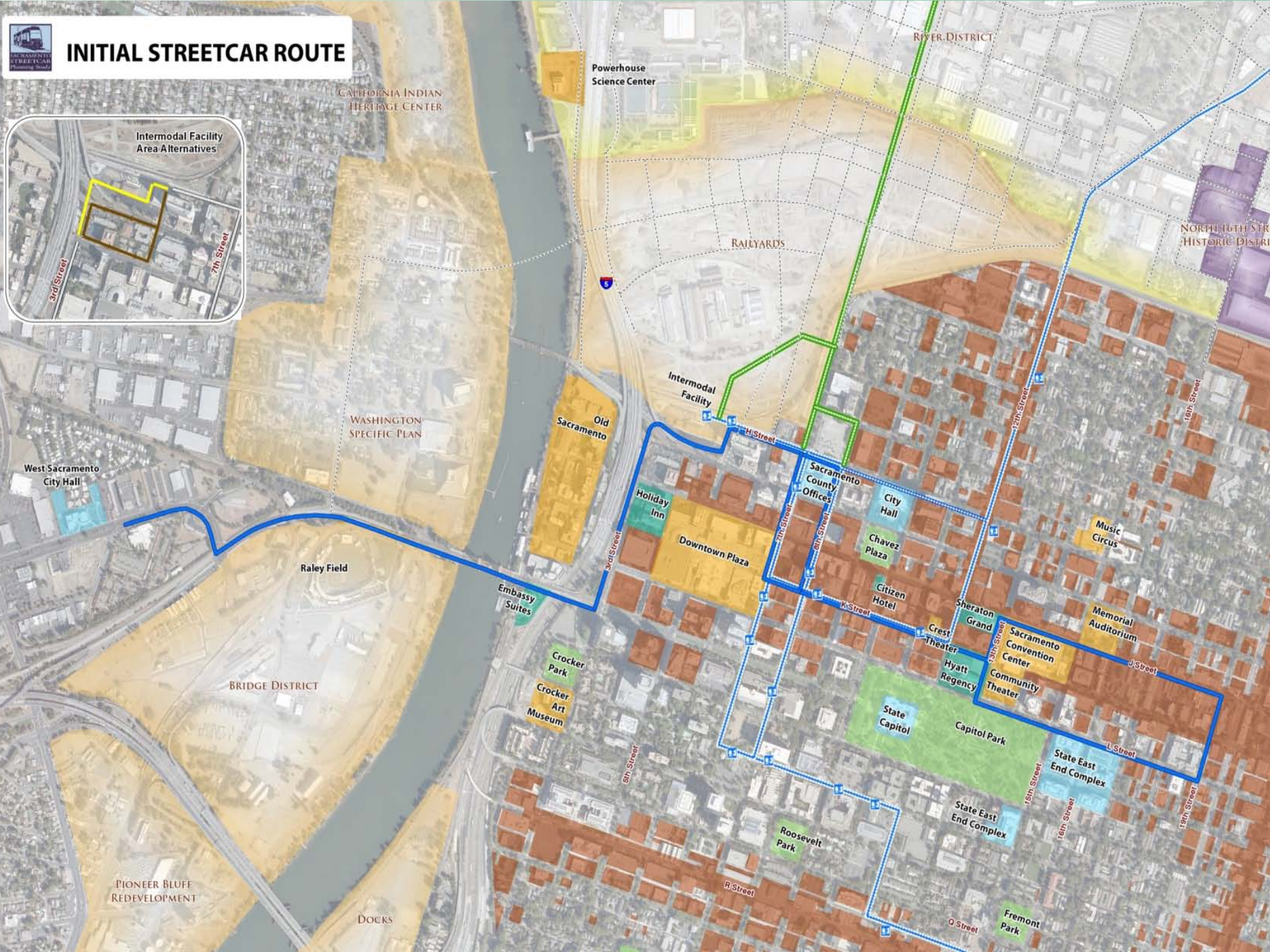
State East End Complex

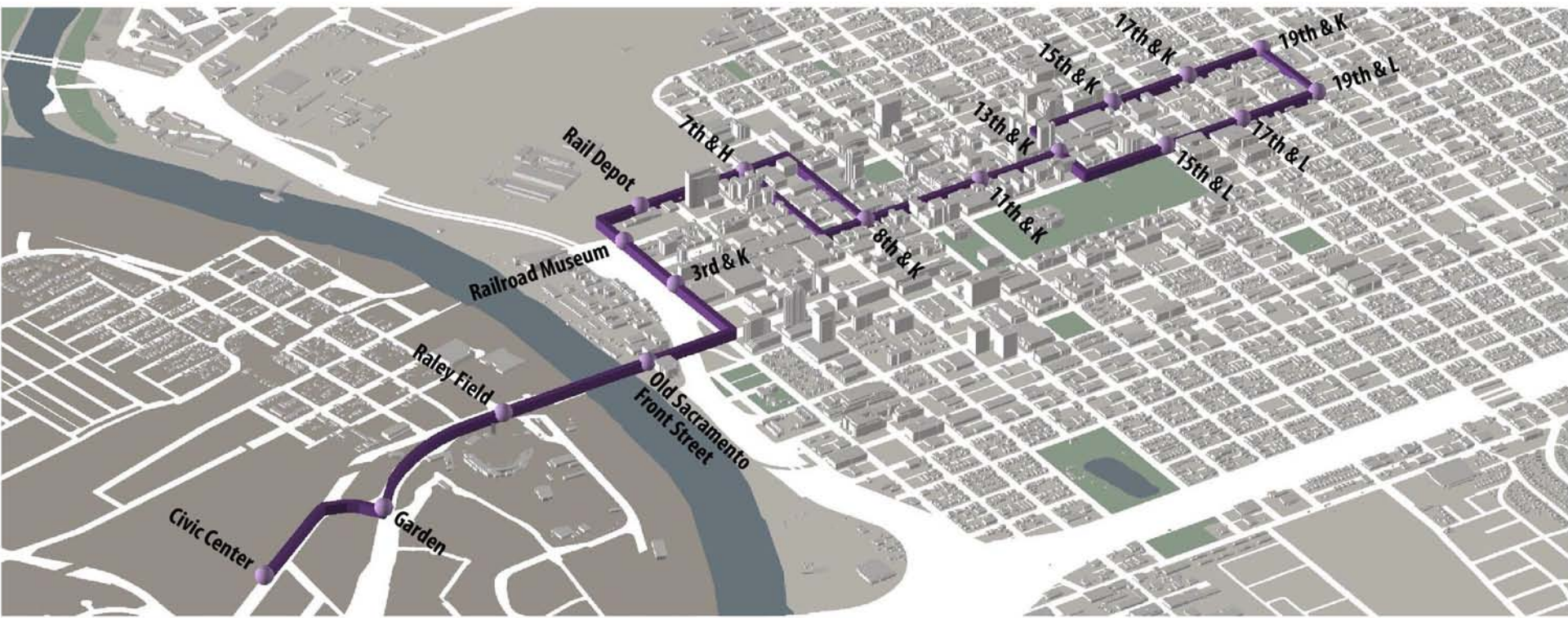
Roosevelt Park

PIONEER BLUFF REDEVELOPMENT

DOCKS

Fremont Park





OPENING DAY RIDERSHIP (DAILY BOARDINGS)

