Sacramento Transportation Infrastructure Risk Assessment

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Table of Contents

Introduction 4

Methodology 4

Overview 4

Asset Classes Included 5

Units of Analysis 9

Asset-Hazard Combinations 9

Consequence Metrics 11

Usage 11

Redundancy 11

Critical Facility Access 11

Equity: CalEnviroScreen Score 13

Hazard Likelihood 13

Flooding 13

Extreme Heat 14

Asset Results 15

Major Roadways 15

Consequence Metrics 15

Consequence Scores 22

Likelihood and Risk 27

Bikeways 33

Consequence Metrics 33

Consequence Scores 40

Likelihood and Risk 47

Bus Stops 50

Consequence Metrics 50

Consequence Scores 55

Likelihood and Risk 59

Light Rail Stations 63

Consequence Metrics 63
Consequence Scores 68
Likelihood and Risk 72
Traffic Signals 75
Consequence Metrics 75
Condition Scoring 78
Consequence Scores 88
Likelihood and Risk 91

Introduction

The SacAdapt planning effort will develop prioritized adaptation strategies, which may include capital projects, operational changes, maintenance improvements, policy changes, and other types of interventions. The Risk Assessment deliverable serves to prioritize parts of the transportation system for adaptation strategy development.

The Risk Assessment is performed at a systems scale, meaning that it looks across a broad set of assets to inform which have higher risks from a given climate-related hazard (i.e., flooding, extreme heat). The Risk Assessment prioritizes assets based on both the likelihood of being affected by hazards and consequences to the transportation system, including the people who use it.

The systems-scale risk assessment was shaped by the following considerations:

- The analysis focuses on asset-hazard combinations that present an opportunity for the City or SacRT to directly manage these risks.
- The analysis does not attempt to differentiate between assets when risk is very similar.
- The analysis avoids duplicating recently completed or ongoing efforts.

The systems-scale risk assessment was not completed for asset-hazard combinations where potential projects have already been identified or for asset-hazard combinations where general strategies (e.g., using more resilient materials or design specifications) can be developed without going through asset-by-asset prioritization.

Methodology

Overview

The system-scale risk assessment analyzes and prioritizes different types of transportation assets based on their likelihood of experiencing climate hazards and the consequences to the transportation system when these hazards occur.

Different asset classes are assessed separately. The following list summarizes the basic process for each asset type:

1. Develop a set of metrics for the asset related to their relative importance to the overall transportation system and the consequences when disrupted.
2. Place metrics on a common scale (ranging from 0-10).
3. Weight metrics based on their relative importance.

4. Sum weighted and scaled metrics together to create a consequence score (ranging from 0-10, with 10 being the highest consequence score).
5. Create consequence scores based on combination of consequence metrics (e.g., 0-10 score). The consequence scores are one output of the analysis.
6. Combine consequence scores with likelihood metrics to inform prioritization. This process is handled differently for extreme heat and flooding. Those approaches are described in more detail later in this section.

It is important to understand that this indicator-based risk assessment produces scores that can be used for comparison of risk between different assets in relative terms; however, the scores are not representative of an absolute value of risk. Scaling and weighting enables the comparison of consequence scores between assets within an asset class, but comparisons cannot always be made across asset classes given the metrics used to evaluate each asset class differ.

Asset Classes Included

The asset-hazard combinations identified in the vulnerability assessment are advanced either directly to general adaptation strategies or through the risk assessment. Table 1 lists each of these asset-hazard combinations, potential next steps, and whether or not each is included in the risk assessment. It incorporates input from TAC members.

Table 1: Major Asset-Hazard Combinations and Whether they are included in Risk Assessment

Hazard	Damage & Asset Type	Strategy Identification Pathways	Next Steps
Heat	Outdoor Traveler Comfort and Health: Bus Stops	• General adaptation strategies • Risk assessment	• Risk assessment may identify priority assets where strategies might be needed. • SacRT has current grant-funded project on heat resilient bus shelters for selected stops with existing concrete pads. This and other efforts will inform general adaptation strategies.
Heat	Outdoor Traveler Comfort and Health: Light Rail Stations	• General adaptation strategies • Risk assessment	• Risk assessment may identify priority assets where strategies might be needed.

Hazard	Damage & Asset Type	Strategy Identification Pathways	Next Steps
Heat	Outdoor Traveler Comfort and Health: Active Transportation	• General adaptation strategies	• City's Tree Opportunity Analysis (2024) serves as systems scale risk assessment, identifying gaps in tree canopy over active transportation facilities. • Cool pavements and de-paving should also be considered as general adaptation strategies. Possible recommendations to improve outdoor traveler comfort and health (in the context of heat mitigation).
Heat	Outdoor Workers Health	• General adaptation strategies	• General adaptation strategies are likely to be policy recommendations and not location specific.
Heat	Pavement, Traffic Detection	• General adaptation strategies	• Pavement treatments (e.g., different binder grade specifications) that mitigate degradation from heat stress may be explored in the general adaptation strategies.
Heat	Signage, Striping	• General adaptation strategies	• General strategies can include information on better maintaining signs and striping affected by heat.
Heat	SacRT Light Rail Tracks	• General adaptation strategies	• Recommendations likely to be operational. Additional adaptation implementation guidance may be considered.
Heat	SacRT Power Distribution System	• General adaptation strategies	• Heat management for light rail substations will be assessed through adaptation implementation guidance to inform general strategies.
Heat	SacRT Overhead Catenary System (OCS)	• General adaptation strategies	• Recommendations likely to be operational. Additional adaptation implementation guidance may be considered.
Heat	SacRT Compressed Natural Gas (CNG) Plant	• General adaptation strategies	• Heat resilience for CNG infrastructure will be assessed through adaptation implementation guidance to inform general strategies.

Hazard	Damage & Asset Type	Strategy Identification Pathways	Next Steps
Heat	Transit Facility HVAC Systems	• General adaptation strategies	• Of transit facilities, project-specific analysis would be most helpful at 29th St., though likely moving out of this facility in next 10 years or so. Lower priority for project-specific analysis given the plans to leave the facility.
Wind	Crossing Gate Arms and other SacRT Infrastructure	• General adaptation strategies	• Recommendations likely to be operational. Maintenance staff already understand differential impacts to gates, as summarized in the Vulnerability Assessment.
Wind	Traffic Signals, Streetlights, Trees, and Other City Infrastructure	• General adaptation strategies	• Recommendations likely to be policy and maintenance related (e.g., updating street/traffic infrastructure to current standards and managing trees according to current standards).
Flood	Levee Failure	• General adaptation strategies	• Leverage recent DPW assessment on floodgate improvements for recommendations (beyond what's already covered by Floodgate Modernization and Resilience Project). • SacAdapt project scope does not include assessment of levees.
Flood	Roadways	• General adaptation strategies • Risk assessment	• Perform risk analysis to help prioritize among assets. • Additional adaptation implementation guidance may be considered for permeable pavers or pavement.
Flood	Bikeways	• General adaptation strategies • Risk assessment	• Perform risk analysis to help prioritize among assets.
Flood	Railways	• General adaptation strategies	• Recommendations likely to be maintenance related or specific to bridges. Additional adaptation implementation guidance may be considered.

Hazard	Damage & Asset Type	Strategy Identification Pathways	Next Steps
Flood	Pump Stations and Drainage	• General adaptation strategies	• DOU Local Hazard Mitigation Plan, Comprehensive Flood Management Plan, Repetitive Loss Analysis, and drainage master plans have priority locations and recommendations for stormwater drainage improvements (including pump stations, culverts, etc.). • Will likely include maintenance recommendations regarding culvert and storm drain cleaning. May use risk assessment prioritization among roads to inform where maintenance should be prioritized.
Flood	Traffic Signals	• General adaptation strategies • Risk assessment	• Can use risk assessment to prioritize signals upgrades. • General interest in managing traffic/signal infrastructure in an emergency response and recovery situation.
Flood	Underground Infrastructure	• General adaptation strategies	• Limited ability to use existing data to conduct system level analysis to understand where risks are. May be some operational or maintenance recommendations.
Flood	Transit Facilities	• General adaptation strategies	• For SacRT transit facility improvements, consider overlapping risks through the Zero Emission Bus (ZEB) subtask and general adaptation strategies. • For Sacramento Valley Station, discuss if analysis is needed.
Flood	ZEB Charging Stations	• Advance to ZEB subtask analysis	• For ZEB charging stations, leverage VA and ZEB analysis.
Flood	Transit Emergency Preparedness	• General adaptation strategies	• Recommendations likely to be operational, not location specific.
Flood	Bridges	• General adaptation strategies	• Recommendations likely to be policy and funding related (e.g., more funding for bicycle bridge inspections and mid-level bridge improvements). • Consider case study for potential project-level analysis.

Hazard	Damage & Asset Type	Strategy Identification Pathways	Next Steps
Wildfire	Smoke Impacts to Travelers	• General adaptation strategies	• Recommendations likely to be operational. • Not feasible to manage on a location specific basis.
Multiple	Power Grid Failure	• General adaptation strategies	• Limited ability to manage. Coordination with SMUD is critical. • Highlight importance of DOU analysis on pump station prioritization.

Units of Analysis

The individual assets were the units of analysis that were used.

Bus stops and light rail stations were used directly from SacRT GIS datasets.

Both major roadways and bikeways units of analysis were created by taking the City GIS data and performing further selection and segmentation for purposes of this analysis. For roadways, the dataset was filtered to include only streets functionally classified as arterials or collectors. These features were then dissolved by their names and segmented into intersection-to-intersection units. For bikeways, all existing routes in the City's bikeway dataset were included. Like the roadway network, the bikeways were also segmented into intersection-to-intersection units. The segmentation of both these datasets by intersection-to-intersection segments is more logical for metrics such as detour time or length and enables easier comparison between assets.

The traffic signals were used directly from City GIS data. Components of these assets were further analyzed, although these additional analyses leverage incomplete datasets and are used to support future analysis. These components were cabinets, controllers, detection devices, network devices, and hardware. Only components at or near their End of Life (EOL) were assessed. For these traffic signal components, one or more condition-related metrics were combined to create an EOL indicator score ranging from 0 to 10 (with 10 corresponding with highest need for replacement).

Asset-Hazard Combinations

The asset-hazard combinations used in the risk assessment are depicted by check marks in Table 2

Table 2: Asset-Hazard Combinations in the Risk Assessment

Asset Class	Flooding	Extreme Heat
Major Roadways	✓	
Bikeways	✓	
Bus Stops		✓
Light Rail Stations		✓
Traffic Signals	✓	✓
Cabinets	✓	
Controllers	✓	
Detection Devices		✓
Hardware	✓	

Consequence Metrics

This section gives a brief overview of the different types of consequence metrics used for each asset class. Generally, each asset class has four categories of consequence metrics: usage, redundancy, critical facility access, and equity. This is the case for major roadways, bikeways, bus stops, and light rail stations. Traffic signals are a special case; this special case is discussed in more detail in the Traffic Signals portion of the Asset Results section below.

The four consequence metric categories are introduced in this section. For some of these types, metrics vary heavily by asset class. In those cases, the specific metrics are discussed in each asset class's portion of the Asset Results section. For others, the metrics are the same or very similar across asset classes. In those cases, the metrics are discussed here for sake of brevity.

Usage

One aspect of consequence is the level of usage of a particular asset. Assets with higher levels of usage tend to have greater consequences to the system when damaged or disrupted. The usage metrics vary widely by the asset class, from traffic volume to ridership to level of stress. Therefore, these metrics are discussed in each asset class's portion of the Asset Results section.

Redundancy

Redundancy is also an important aspect of consequence. Assets with low redundancy tend to affect the system more when they are damaged or disrupted. The redundancy metrics also vary widely by asset class so are described in each asset class's portion of the Asset Results section.

Critical Facility Access

Ensuring reliable access to critical facilities is essential for maintaining life-safety services, supporting emergency response, and sustaining day-to-day community functioning. Critical facilities can include a wide range of definitions; for the purposes of SacAdapt, critical facilities were considered in two categories aligned with the transportation networks that serve them: (1) roadway-dependent critical facilities and (2) bikeway/public transit–dependent critical facilities. Maintaining uninterrupted connectivity to these facilities is central to community resilience.

Major Roadway Critical Facilities

These facilities rely primarily on the roadway network for emergency vehicle response, continuous operations, or distribution of essential services. Any disruption of access (e.g., flooding, road closures, debris blockage, structural failures) can directly impact life safety, utilities, and public health. These include hospitals, fire and police stations, utility sites (water, wastewater, electric), transit depots, and flood control assets. These facilities require dependable roadway access for emergency response crews, utility operators, and incident management.

Table 3 shows the categories for access to critical facilities by roadways and the scoring contributing to consequence scores. This metric reflects how reliant a facility is on a specific roadway. If a disrupted road is the only or primary route to a critical facility, the consequence score will be high because the loss of access could impede emergency response, service delivery, or utility operations.

Table 3: Access to Critical Facilities Categories and Scores for Roadways

Category	Description	Score
Exclusive Access	Only route to the facility or its neighborhood; includes one-way-in/out cases	10
Primary Access	Provides direct access to the facility but has a local street network serving the facility at other access points	8
Multiple Access Points	Two or more major roads directly connect to facility	6
Local Access	Access road to a neighborhood or local road network; Does not provide direct access to facility	4
No Access	No access to critical facilities	0

Bikeway and Transit Critical Facilities

This category includes facilities that serve community members who depend on non-automobile travel, including anyone who walks, bicycles, or takes public transportation. Maintaining access to public and active transportation is essential to ensuring equity, transportation resilience, and the continuity of social and community functions. Facilities in this category include schools, community centers, libraries, evacuation shelters, and transit hubs.

Table 4 defines the categories and scores used to measure how close a bikeway, bus stop, or light rail station is to a critical facility. Bikeways or transit stops that are located closer to a critical facility are considered more critical for facility access, resulting in higher consequence scores.

Table 4: Access to Critical Facilities Categories and Scores for Bikeways and Transit Assets

Category	Score
Within ¼ mile	10
Within ½ mile	5
Within ¾ mile	2
Over ¾ mile	0

Equity: CalEnviroScreen Score

CalEnviroScreen percentiles represent how a census tract ranks relative to others in California in terms of environmental pollution burden and population vulnerability, with higher percentiles indicating greater cumulative impacts. Disruptions in these high-percentile areas are more likely to affect already overburdened communities. The maximum CalEnviroScreen score was taken for linear assets (roadways and bikeways).

Hazard Likelihood

Flooding

For flooding, likelihood was assessed using FEMA floodplain data.

For traffic signals and bikeways, likelihood was categorized into the following tiers:

- Tier 1 (highest likelihood): Located in or crosses through 100-year floodplain
- Tier 2: Located in or crosses through shallow 100-year floodplain
- Tier 3: Located in or crosses through 100-year floodplain but protected by a levee or a 500-year floodplain

For major roadways, the following likelihood tiers were used:

- Tier 1 (highest likelihood): At least one of the following is true:

    - Segment crosses through 100-year floodplain one or more times and no bridge appears to be present for at least one of those crossings
    - Segment contains one or more underpasses
- Tier 2: Segment crosses through shallow 100-year floodplain one or more times and no bridge appears to be present for at least one of those crossings
- Tier 3: At least one of the following is true:
    - Segment crosses through 100-year floodplain but protected by a levee or a 500-year floodplain
    - Segment contains a bridge over water

For flooding, likelihood tiers can be combined with consequence scores by first sorting by likelihood tier (highest to lowest) and then by consequence score (largest to smallest). The results section of this assessment focuses on assets in the highest tier of flood likelihood. For roadways and bikeways, it can also be helpful to sort high-likelihood assets by length of overlap with the 100-year floodplain.

Extreme Heat

For extreme heat, daytime Urban Heat Island (UHI) intensity data from NASA in 2020, measured in degrees Fahrenheit, was used to quantify relative likelihood of impacts. Generally, transit stops and light rail stations in areas with more intense UHI were assumed to be higher priorities for extreme heat risk.

UHI intensity at bus stops and light rail stations was normalized from 0 to 10, with 10 corresponding to the highest intensity among the assets. UHI data was only available for the City of Sacramento. Assets outside of the city have no UHI scores leading to null heat risk scores.

A heat risk score was also created by multiplying together consequence scores by the scaled UHI score. Higher scores are associated with higher extreme heat risks.

Asset Results

This section documents the results of the asset risk analysis and is organized by asset type. Each subsection includes, where applicable, maps, a brief narrative summary, the associated consequence metrics and scores, and a list of the highest-priority assets. For brevity, each list shows up to 50 total assets.

Major Roadways

Consequence Metrics

Major roads are defined as City-owned collectors or arterial roadways. Table 5 shows the metrics, scales and weights used for calculating consequence scores for major roads. The metrics were weighed equally. The following subsections describe the metrics in more detail.

Table 5: Consequence Score Metric Weights for Major Roads

Metric	Scale	Weight
Average Daily Traffic (ADT)	Logged value of existing counts. Then, Min-Max scaling from 0 to 10.	25%
Incremental Detour Time	No data or Detour <= 1 minute: 1 Values > 1 minute and <= 10 minutes: Remain as is Values > 10 minutes: 10	25%
Nearby Critical Facilities	Exclusive Access: 10 Primary Access: 8 Multiple Access Points: 6 Local Access: 4 No Access: 0	25%
CalEnviroScreen Score	All scores divided by 10	25%

Average Daily Traffic

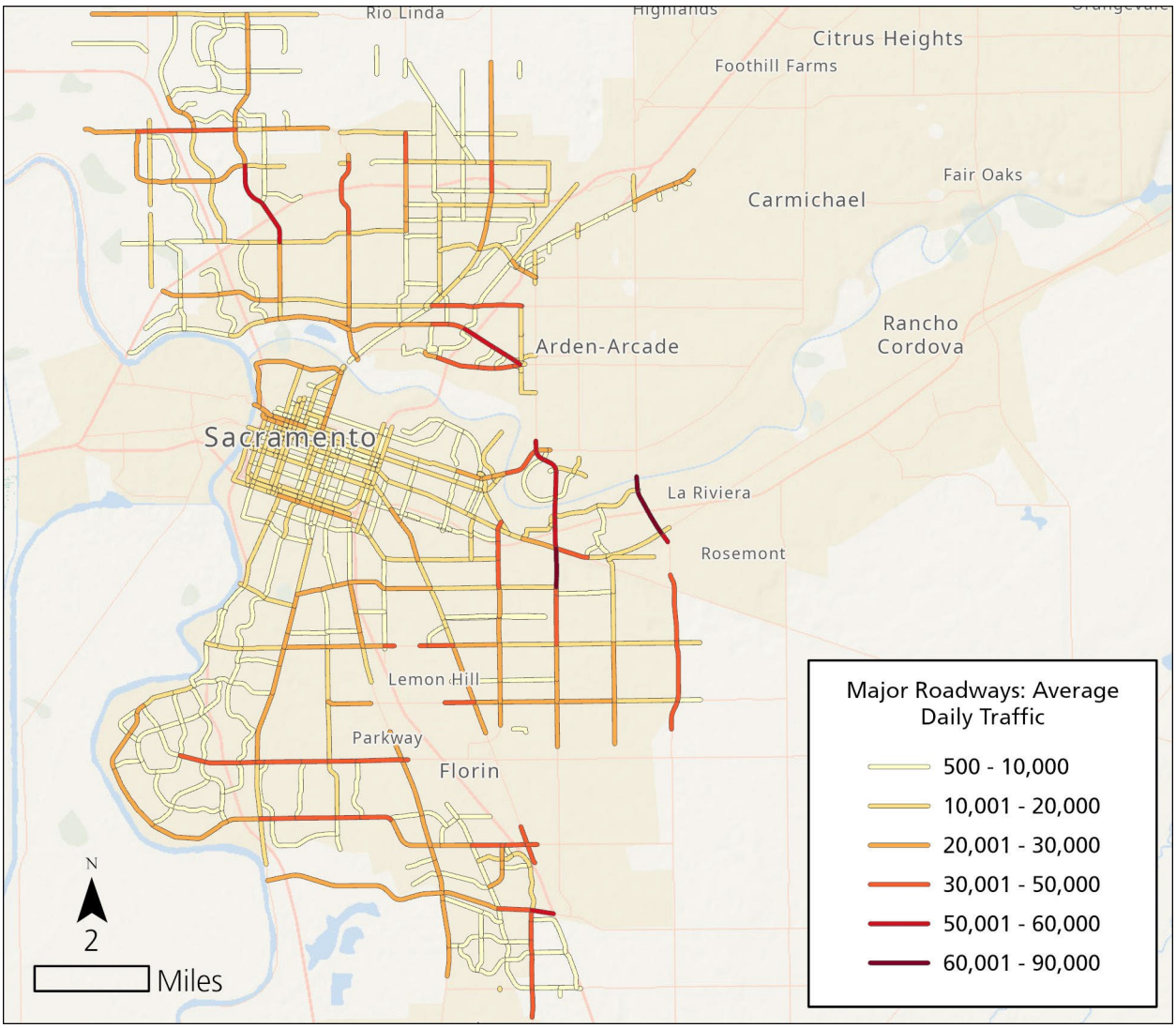
Average Daily Traffic (ADT) is a measure of the average number of vehicles that travel along a given roadway each day. It quantifies how frequently a roadway is used and thus its importance to a transportation network. All else being equal, roads with higher ADTs tend to have a greater societal and economic impact if disrupted during a hazard when compared with roads with lower ADTs.

ADT data for arterial and collector roads were provided by the City of Sacramento based on 2019 counts. The counts were provided in an Excel sheet for road segments by road names

and intersection. To apply this data to the segmented roadway network in GIS, intersections were geolocated using a locator tool, and ADT values were manually assigned to the corresponding road segments based on their spatial relationship to the identified intersections. For segments without ADT, values were gap-filled using a tiered approach. If a segment was located between two others with ADT values, the average of those values was used. If only one adjacent segment had an ADT value, that value was applied, assuming comparable traffic volume. When no suitable adjacent data were available, the 10th percentile ADT for the corresponding functional classification was used (it was assumed that segments without counts were likely to have lower ADT values).

In the original dataset, most ADT values were below 30,000, with a small number of outliers exceeding 60,000 daily users. To prepare the data for analysis, ADT values were log-transformed and then scaled using the minimum and maximum of the logged values. This approach reduced the influence of extreme values while preserving the relative differences across the dataset, allowing for more meaningful comparison.

Map 1 shows the distribution of ADT across the City of Sacramento. Segments with the highest ADT are arterials that serve as access points to highways. These include Watt Ave./South Watt Ave., Howe Ave./Power Inn Rd., and Arden Way in the eastern part of the City; Truxel Rd. in Natomas; and Cosumnes River Blvd. in the south. The gridded downtown area generally has lower ADT values, likely due to the redundancy of the street network in the area, as well as a higher density that allows for higher mode shares for active transportation and transit.



Map 1: Unscaled Average Daily Traffic (ADT) values for major roadways

Incremental Detour Time

Incremental detour time measures the amount of additional time required for a typical detour around a roadway segment if it becomes inaccessible.

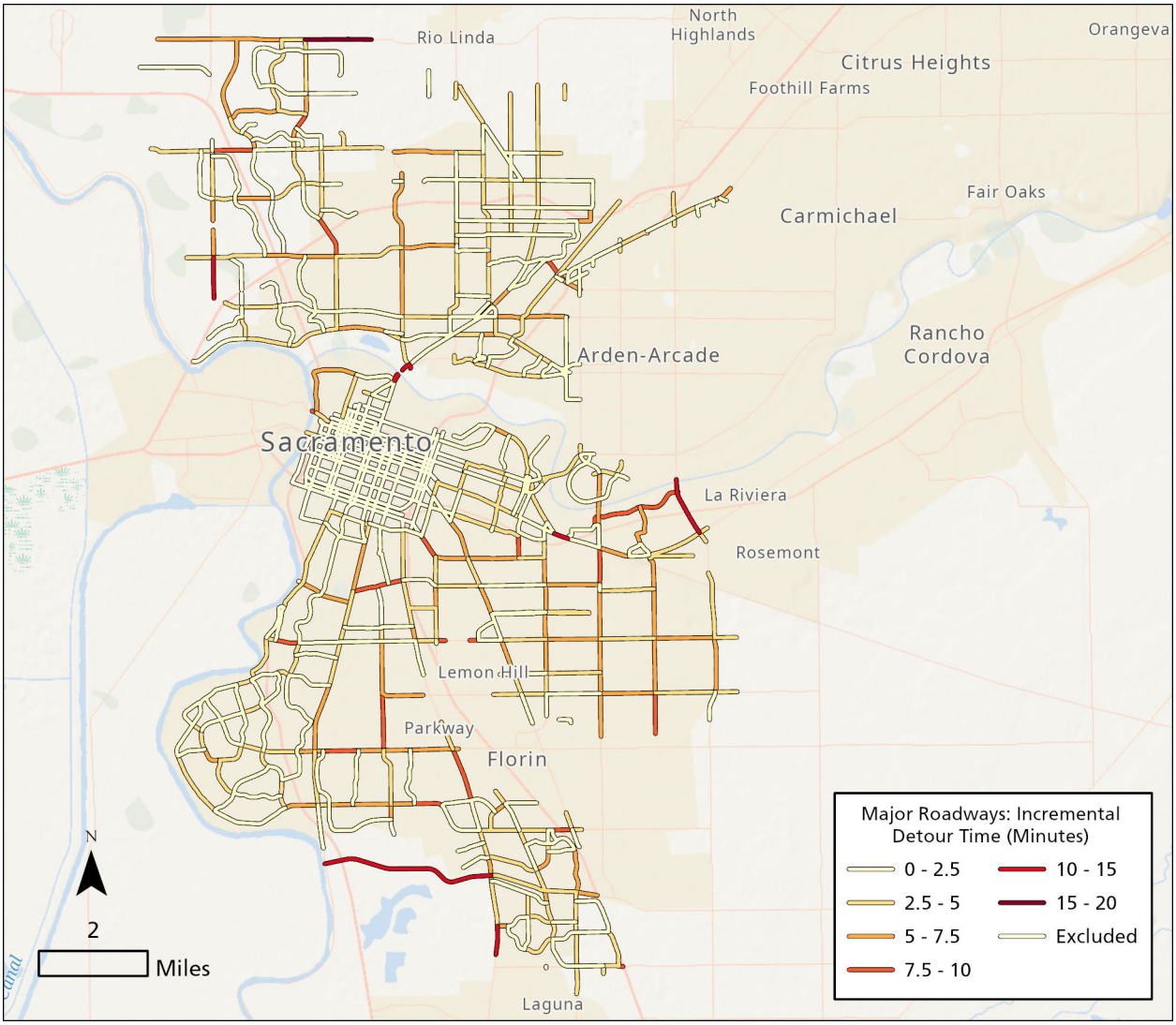
Incremental detour times were estimated by mapping each major roadway segment in Google Maps to identify typical travel time by car in minutes. All measurements used weekday 8am conditions to reflect peak travel patterns. The fastest feasible detour route was then identified using nearby arterials, collectors, or highways that a driver would likely choose if their primary route were inaccessible. In instances where a reroute was not possible or unreasonably long, the detour followed local streets outside the major roads. For 352 road segments in the densely gridded downtown Sacramento area, very short detours were assumed rather than measured in Google Maps due to the high redundancy of the network.

To quantify the incremental detour time, the original travel time was subtracted from the delayed travel time. All roadways that had no incremental detour time, a negative incremental detour time, or an incremental detour time of 1 minute were assigned a score of 1. Roadways with incremental detour times that exceed 10 minutes were given a score of 10. Roadways with incremental detour times between 1 and 10 minutes remained as is (e.g., a road with a 4-minute detour received a 4).

Most segments have relatively short detour times, falling under five minutes. Only a small portion of the network, fewer than 50 segments, have detour times exceeding eight minutes. These longer detour segments may reflect areas with limited connectivity, physical barriers such as rivers or freeways, or a lack of parallel routes, and could represent potential vulnerabilities in the transportation network during closures or emergencies.

Map 2 shows the distribution of incremental detour times across the City of Sacramento. Segments with the highest detour times are predominately located in more suburban or agricultural areas where alternative travel routes via major roadways are limited. For example, the Elkhorn Boulevard segment on the northern edge of the City with the longest detour time is almost two miles away from the next major roadway that could be used as a potential reroute. A similar example is a portion of Cosumnes River Boulevard at the southern edge of the City with a relatively sparse roadway network.

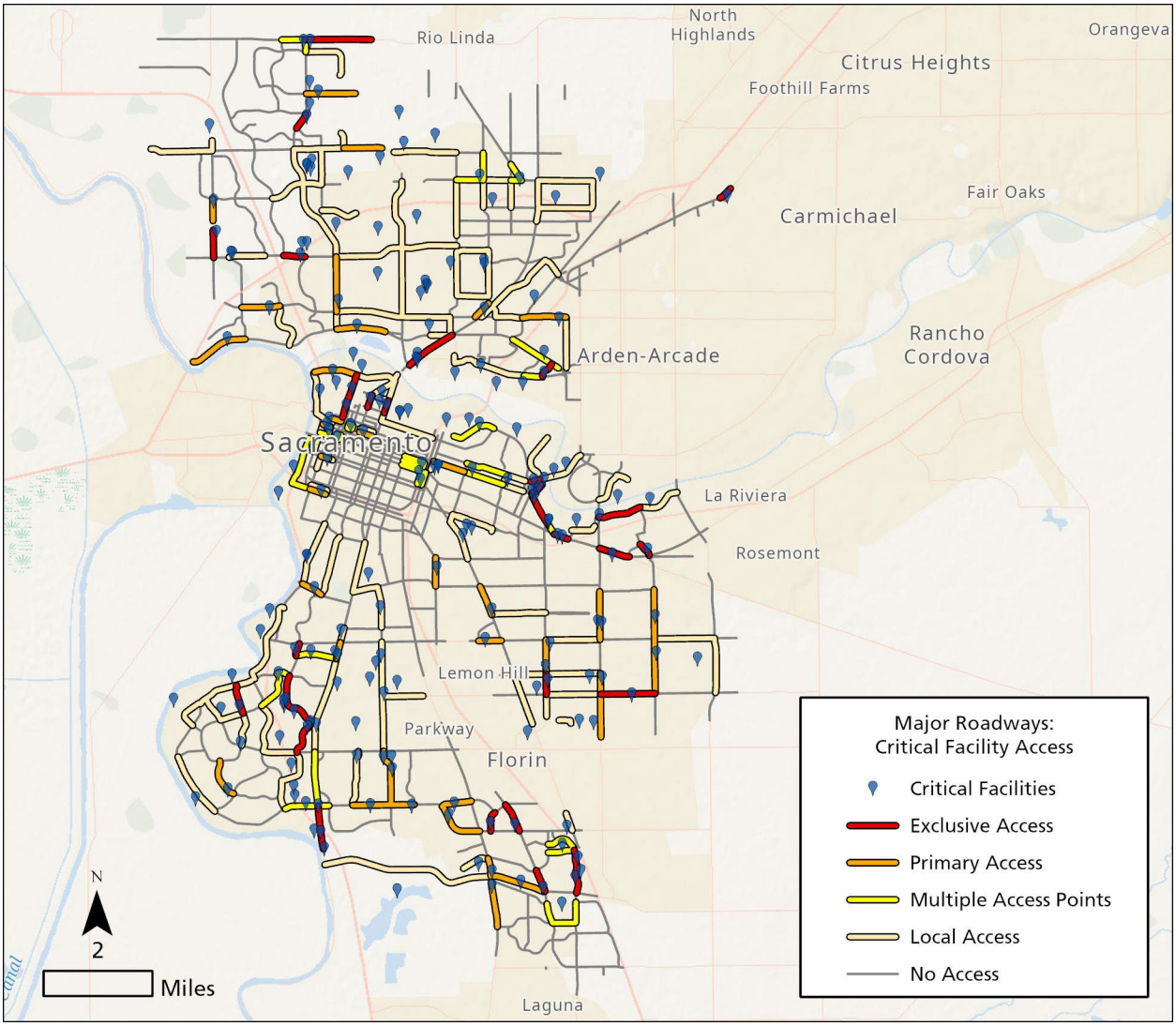
An important exception to this is the high detour times associated with three of Sacramento's bridges: Watt Avenue, N 16th Street leading to N Highway 160, and I Street leading to the I Street Bridge. Few other options exist for travelers to cross the American or Sacramento River, and for those that do, a high detour time is required to access them.



Map 2: Incremental detour time for major roadways in minutes

Nearby Critical Facilities

Map 3 illustrates which roadway segments provide access to critical facilities. While downtown Sacramento benefits from a dense grid that offers multiple alternative routes to most critical facilities, several surrounding neighborhoods rely on only a more limited set of key corridors to reach these facilities.

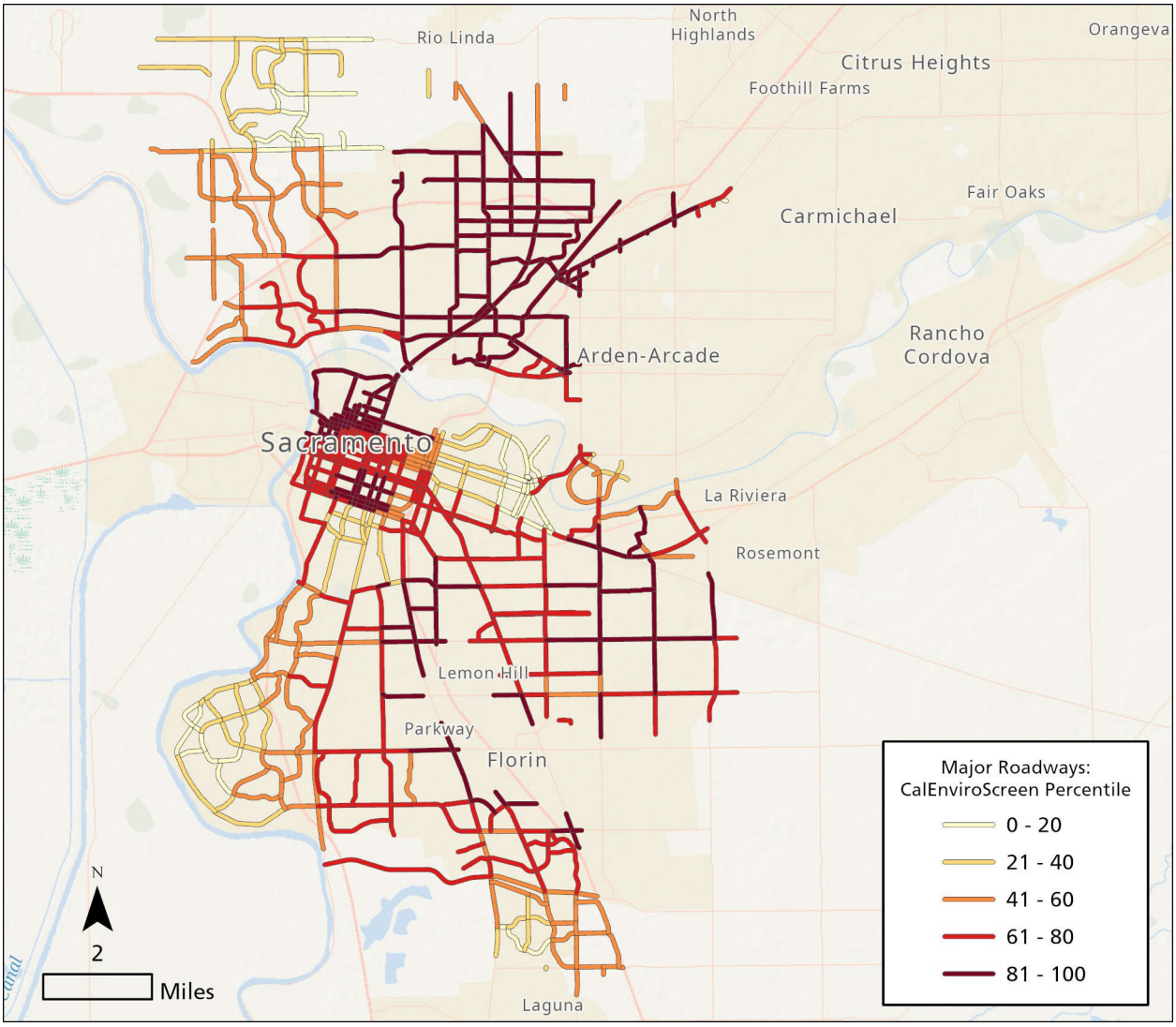


Map 3: Critical Facility Access by Roadways

CalEnviroScreen Score

A large portion of roadways have high CalEnviroScreen scores. A little under 50% of segments have CalEnviroScreen scores of 75 or higher, the State's threshold for disadvantaged community status.

Map 4 has the distribution of CalEnviroScreen percentiles mapped for these segments. Segments with scores of 75 or higher are mostly found in Downtown, the River District, North Sacramento, Southeastern Sacramento, South Oak Park, and Parkway.



Map 4: CalEnviroScreen percentiles for major roads

Consequence Scores

The highest scoring segments consistently serve as exclusive or primary access routes to critical facilities, experience higher ADT, are in areas with elevated CalEnviroScreen scores, and have longer incremental detours. The following segments, listed from highest to lowest consequence score, are considered the most critical. Key drivers contributing to their high scores are also noted:

- **Folsom Boulevard (between Power Inn Rd and Jackson Rd)** High ADT (38,544), Exclusive critical facility access, 6.5-minute incremental detour time, and CalEnviroScreen percentile of 91.3.
- **Folsom Boulevard (between Elvas Ave and State University Dr)** Exclusive critical facility access, long incremental detour time (11 mins).
- **Watt Ave (between Folsom Blvd and La Riviera Dr)** Very high ADT (84,384), long incremental detour time (12.5 mins).
- **Jibboom Street (between I Street and N 7th Street)** Moderate ADT (26,432) and CalEnviroScreen percentile of 98.8.
- **El Camino Ave (between Auburn Blvd and Ethan Way)** Moderate ADT (32,946), primary critical facility access, and CalEnviroScreen percentile of 93.0.
- **Power Inn (between Fruitridge Rd and Belvedere Ave)** Moderate ADT (37,908), moderate incremental detour time (5.5 mins), and CalEnviroScreen percentile of 91.3.
- **Auburn Boulevard (between South Ave and Arcade Blvd)** High ADT (21,160), moderate detour time (4.5 min), CalEnviroScreen percentile of 92.3, primary access to critical facilities.
- **Truxel Rd (between San Juan Rd and Gateway Park Blvd)** High ADT (58,072), long incremental detour time (9 mins).
- **Power Inn Rd (between 14th Ave and Folsom Blvd)** High ADT (62,511), long detour time (10 min), CalEnviroScreen percentile of 91.3.
- **12th (between Richards Blvd and State Highway 160 Bridge)** Long detour time (9 min), CalEnviroScreen percentile of 98.8.
- **San Juan (between Azevedo Dr and E Commerce Way)** Incremental detour time of 7 mins, exclusive critical facility access.
- **Elder Creek (between Power Inn Rd and Florin Perkins Rd)** Moderate ADT (27,088), exclusive critical facility access, incremental detour time 5.5 mins) CalEnviroScreen percentile of 70.5.

Consequence scores listed from highest to lowest for the top 50 segments can be found in Table 6.

Table 6: Top 50 consequence scores for major roads

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	AADT	Incremental Detour Time (minutes)	Critical Facility Access	CES percentile	Consequence Score
1	237	Folsom	Power Inn	Notre Dame Dr	38,544	6.5	Exclusive Access	9.1	7.7
2	249	Folsom	69th/Elvas	State University	19,365	11	Exclusive Access	7.8	7.4
3	359	Watt	Folsom	La Riviera	84,384	12.5	No Access	7.8	6.9
4	0056	Jibboom	C	Richards	26,432	8	Local Access	9.9	6.7
5	800	El Camino	Evergreen	Harvard	32,946	5.5	Primary Access	9.3	6.7
6	206	Power Inn	Fruitridge	Belvedere	37,908	5.5	Primary Access	9.1	6.7
7	910	Auburn	Winding	Kitty	21,160	7	Exclusive Access	6.3	6.6
8	885	Truxel	Gateway	San Juan	58,072	9	Local Access	6.2	6.6
9	236	Power Inn	Folsom	14th	62,511	10	No Access	9.1	6.5
10	738	12th	Richards	Northgate	15,299	11	Local Access	9.9	6.5
11	855	San Juan	E Commerce	Azevedo	12,707	7	Exclusive Access	6.6	6.4
12	133	Elder Creek	Power Inn	Florin Perkins	27,088	5.5	Exclusive Access	7.0	6.4
13	132	Power Inn	Elder Creek	Lorin	29,621	5.5	Primary Access	8.0	6.4
14	0037	H	Camellia	Campus Commons	41,226	12	Local Access	6.5	6.4
15	0038	Fair Oaks	Campus Commons	Howe	41,226	10	Local Access	6.5	6.4

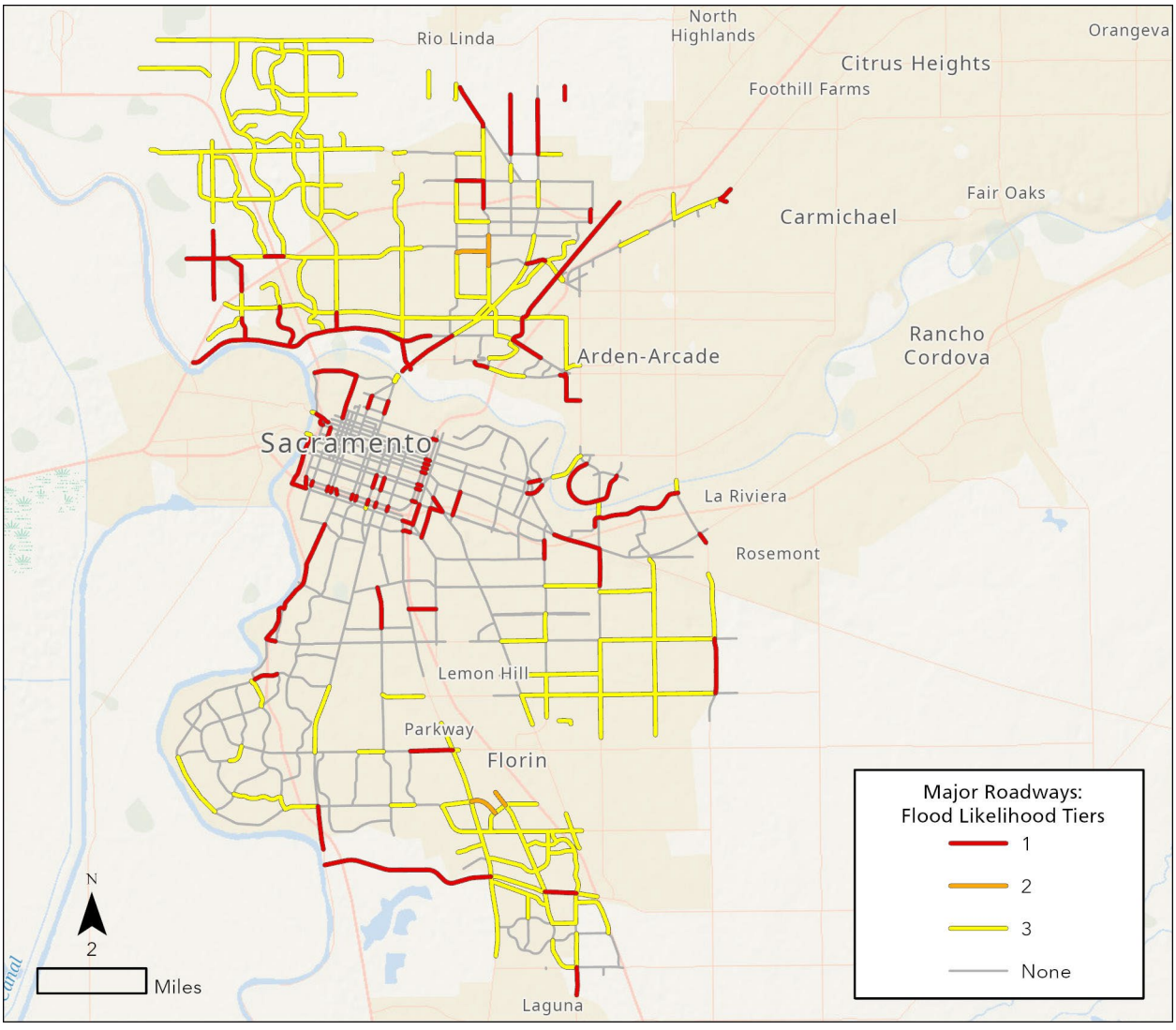
Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	AADT	Incremental Detour Time (minutes)	Critical Facility Access	CES percentile	Consequence Score
16	0082	Del Paso	Northgate	Pell	16,244	5	Local Access	9.4	6.4
17	71	Meadowview	21st	24th	31,108	6	Primary Access	7.4	6.3
18	75	Meadowview	24th	29th	31,108	6	Primary Access	7.4	6.3
19	736	7th	G St	Richards	10,095	4.5	Exclusive Access	9.9	6.3
20	173	65th Street	Fruitridge	Lemon Hill	22,622	6.5	Primary Access	7.8	6.3
21	766	Arden	Blumenfeld	Heritage	54,546	4	Multiple Access Points	9.3	6.3
22	313	La Riviera	Howe	Occidental	18,052	8	Exclusive Access	5.2	6.3
23	418	Watt (bridge over La Riviera)	La Riviera	American River Bike Trail	84,384	12.5	No Access	5.2	6.3
24	968	Natomas	N Bend	N Park	27,718	10	Exclusive Access	2.0	6.2
25	177	Florin Perkins	Fruitridge	Elder Creek	20,583	5.5	Primary Access	9.1	6.2
26	0065	San Juan (bridge over Natomas Ditch)	Northgate Blvd	Western Ave	13,760	5	Local Access	8.5	6.1
27	42	Bruceville	Wyndham	Cosumnes	19,630	5.5	Exclusive Access	6.9	6.1
28	153	Power Inn	Lemon Hill	Elder Creek	29,621	6.5	Primary Access	5.8	6.1
29	0039	Broadway	Front	3rd	10,285	5	Multiple Access Points	6.9	6.0

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	AADT	Incremental Detour Time (minutes)	Critical Facility Access	CES percentile	Consequence Score
30	726	16th	N B	C	24,175	In downtown	Exclusive Access	9.9	6.0
31	59	Mack	Alta Valley	Stockton	38,136	9.5	No Access	9.3	5.9
32	208	Florin Perkins	Belvedere	Fruitridge	11,297	5.5	Primary Access	9.1	5.9
33	37	Franklin	Valley Hi	Cosumnes	27,950	6.5	Primary Access	6.1	5.9
34	209	Sutterville	Freeport	24th	27,246	10	Local Access	6.6	5.9
35	990	Elkhorn	Natomas	E Levee	17,935	13	Exclusive Access	1.4	5.9
36	0077	Raley	Doolittle St	Bell Ave	33,804	6	Local Access	9.4	5.9
37	36	Cosumnes River	Freeport	Franklin	22,868	10.5	Local Access	6.4	5.8
38	149	65th Street	Lemon Hill	Elder Creek	22,622	4.5	Exclusive Access	5.8	5.8
39	917	Northgate	N Market	San Juan	32,742	7	Local Access	8.3	5.8
40	211	Stockton	14th	21st	19,570	6	Primary Access	7.1	5.8
41	841	Arcade	Roseville Rd	Del Paso Blvd	18,241	8	Local Access	9.1	5.8
42	0083	Main	Norwood Ave	Main Ave Bridge	16,244	9	Local Access	8.0	5.8
43	35	Center	Valley Hi	Cosumnes River	6,590	5	Exclusive Access	6.9	5.7
44	0040	Front	Broadway	Neasham Cir	10,285	3	Multiple Access Points	6.9	5.7
45	727	12th	N B	C	19,549	In downtown	Exclusive Access	9.9	5.7

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	AADT	Incremental Detour Time (minutes)	Critical Facility Access	CES percentile	Consequence Score
46	875	El Centro	Radio	San Juan	13,346	5.5	Exclusive Access	5.4	5.7
47	799	El Camino	Evergreen	Harvard/ Auburn underpass	32,946	5.5	Local Access	9.4	5.7
48	130	47th	24th	City boundary	23,856	6.5	Local Access	9.3	5.7
49	0066	Silver Eagle	Western	Norwood	13,760	5	Local Access	8.5	5.6
50	760	Arden	Heritage	Challenge	54,546	4	Multiple Access Points	6.5	5.6

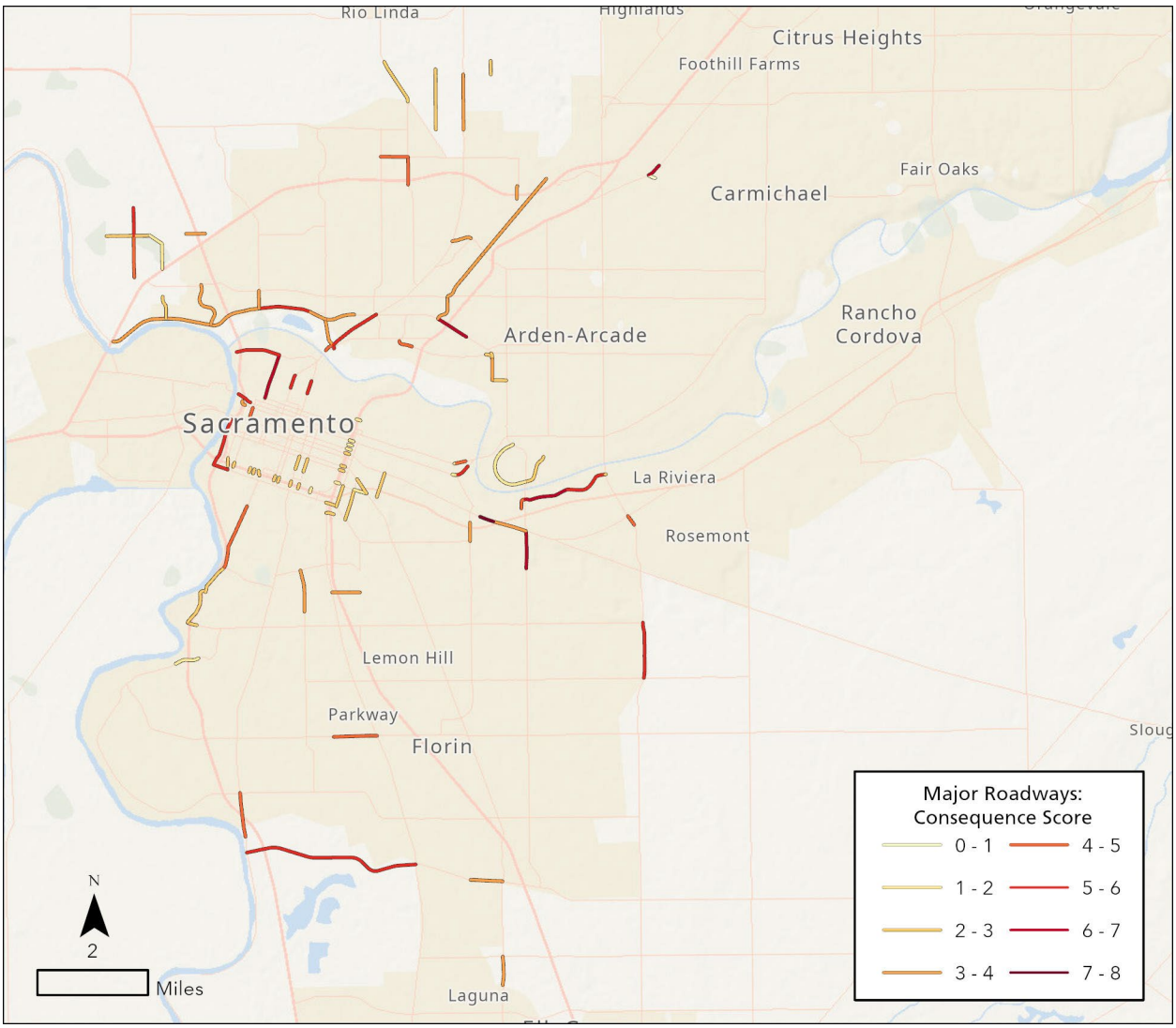
Likelihood and Risk

Map 5 shows the tiered flood-likelihood categories for major roadways across the city, highlighting which segments face the greatest exposure. 104 roadway segments are classified in the highest flood-likelihood tier. Many of these segments are located near the American or Sacramento Rivers or smaller tributaries such as Cosumnes River and Arcade Creek. There are also many shorter segments with underpasses, often under highways; these are often low points that collect water and may drain poorly.



Map 5: Flood likelihood tiers for major roadways

Map 6 shows the consequence scores for the roadways in the highest flood likelihood tier (Tier 1). Other roadways are grayed out. Table 7 list these same assets with higher consequence scores listed first. Roadways with high consequence and high flood exposure include Folsom Blvd., Auburn Blvd., Power Inn Rd., 7th St., and Arden Way. Many of these roads are located along the American River Parkway, where flooding is influenced by the American River, or are underpasses in downtown Sacramento along Capital City Freeway and US-50.



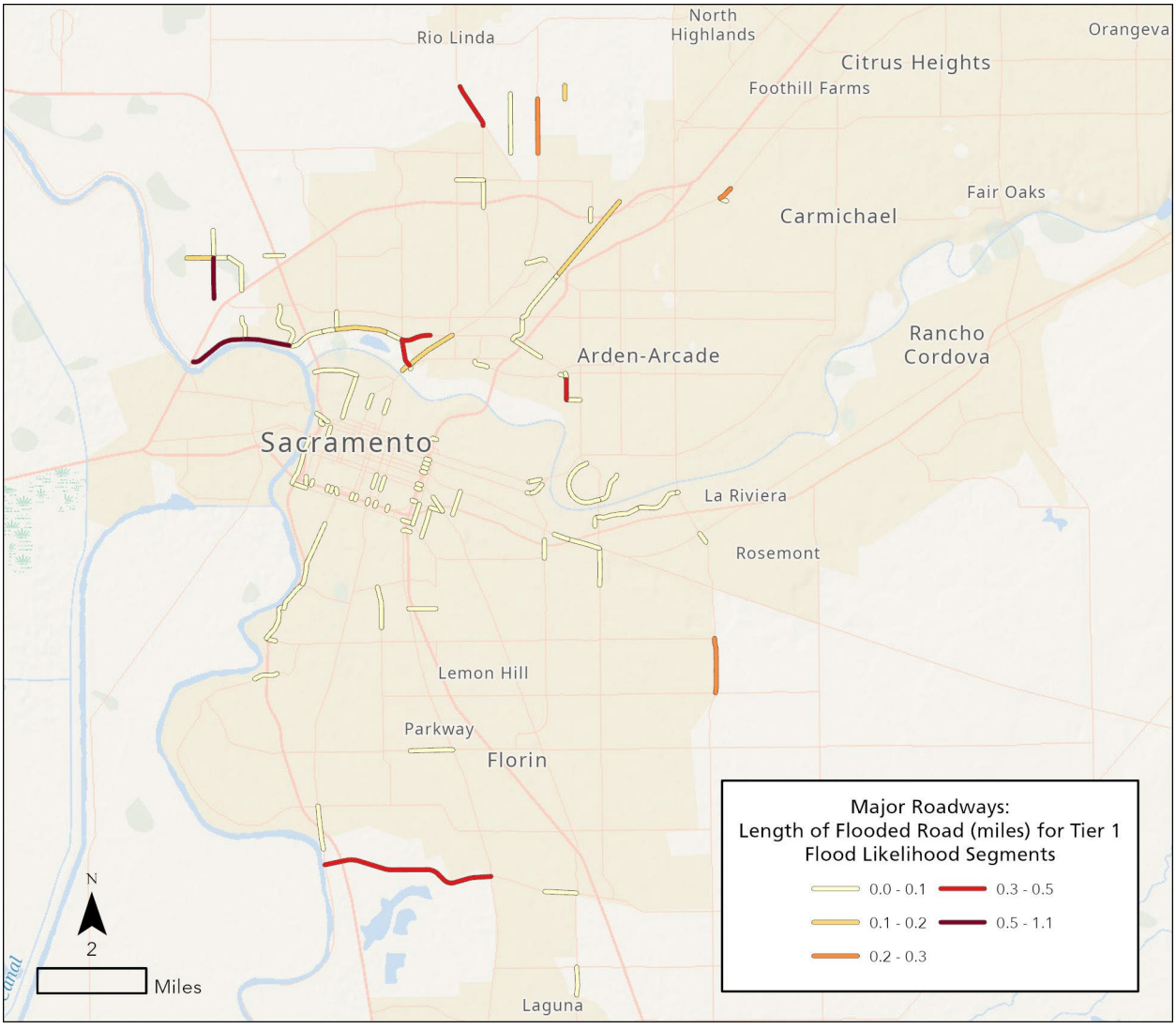
Map 6: Consequence scores of major roads segments in highest flood likelihood tier

Table 7: Major road segments in highest flood likelihood tier by descending consequence score

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	Consequence Score
1	249	Folsom	Elvas Ave	State University Dr E	7.4
2	910	Auburn	Winding Wy	Kitty Ln	6.6
3	236	Power Inn	Folsom Blvd	14th Ave	6.5
4	736	7th	G St	Richards Blvd	6.3
5	766	Arden	Harvard St	Heritage Ln	6.3
6	313	La Riviera	La Riviera Dr Underpass under Howe Ave	Occidental Dr	6.3
7	0039	Broadway	Front St	3rd St	6.0
8	726	16th	N B St	C St	6.0
9	36	Cosumnes River	Franklin Blvd	Freeport Blvd	5.8
10	0040	Front	Broadway	Neasham Cir	5.7
11	727	12th	C St	N B St	5.7
12	875	El Centro	Radio Rd	San Juan Rd	5.7
13	754	Northgate	Del Paso Blvd	State Highway Underpass near Union Pacific Railroad	5.6
14	0057	Richards	N 7th St	Jibboom St	5.5
15	783	Garden	Truxel Rd	Garden Hwy On-Ramp	5.4
16	397	J	J St Underpass under Elvas Ave	Carlson Dr	5.4
17	181	Watt	Fruitridge Rd	Elder Creek Rd	5.4
18	769	Del Paso	Northgate Blvd	Canterbury Rd	5.3
19	358	La Riviera	Occidental Rd	La Riviera Dr Underpass under S Watt Ave	5.3
20	709	I Street	Jibboom St	Sacramento Valley Station	5.1
21	107	Florin	Indian Ln	Florin Rd	5.0
22	758	Exposition	Leisure Ln	Tribute Rd	4.8
23	753	Del Paso	Northgate Blvd	State Highway 160	4.8
24	926	Bell	Norwood Ave	Rio Linda Blvd	4.7
25	276	Riverside	Sutterville Rd	Vallejo Wy	4.5
26	290	La Riviera	College Town Dr	La Riviera Dr Underpass under Howe Ave	4.4
27	669	5th	J St	L St	4.4
28	251	Watt	Folsom Blvd	Manlove Rd	4.3

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	Consequence Score
29	847	El Centro	San Juan Rd	W El Camino Ave	4.3
30	67	Freeport	Pocket Rd	Bill Conlin Youth Sports Complex	4.2
31	923	Rio Linda	Bell Ave	North Ave	4.1
32	419	H	Elvas Ave	Carlson Dr	4.1
33	767	Garden	Orchard Ln	Garden Hwy Underpass under State Highway 80	3.9
34	801	Truxel	W El Camino Ave	Garden Hwy	3.9
35	0002	Arden Garden Connector	Northgate Blvd	Colfax St	3.8
36	30	Cosumnes River	Center Pkwy	Bruceville Rd	3.8
37	764	Northgate	Arden Garden Connector	Del Paso Blvd	3.7
38	779	Arden Garden Connector	Northgate Blvd	Garden Hwy On-Ramp	3.6
39	242	65th	Broadway	S St	3.6
40	854	San Juan	Duckhorn Dr	E Commerce Wy	3.6
41	899	Roseville	Arcade Blvd	Longview Dr	3.6
42	781	Garden	Gateway Oaks Dr	Natomas Park Dr	3.5
43	0055	Ethan	Exposition Blvd	Hurley Wy	3.5
44	243	Folsom	Power Inn Rd	State University Dr E	3.4
45	696	J	3rd St	J St Ramp Near St	3.4
46	3	Bruceville	Sheldon Rd	Big Horn Blvd	3.3
47	825	Auburn	Marconi Cir	Auburn Blvd Underpass under El Camino Ave	3.3
48	785	Harvard	Arden Wy	Auburn Blvd Underpass under El Camino Ave	3.3
49	0001	Folsom	Ascot Ave	Main Ave	3.3
50	830	Auburn	Marconi Cir	Auburn Blvd Underpass under Marconi Ave	3.3

Map 7 and Table 8 show the segments in the highest likelihood tier organized by length of the segment crossing the 100-year floodplain. Most of the affected road segments have less than a quarter mile of inundation. The road with the longest exposed portion is Garden Highway. Other segments with exposed portions over a quarter mile include segments of El Centro Road, Northgate Boulevard, Rio Linda Boulevard, Ethan Way, Cosumnes River Boulevard, Arden Way, and South Watt Avenue.



Map 7: Length exposed (in miles) for major roads segments in highest flood likelihood tier

Table 8: Major road segments in highest flood likelihood tier by length in feet

Number	Asset (WSPID)	Road Name	Cross Street 1	Cross Street 2	Total Length Flooded 100-Year Event (ft)	Consequence Score
1	767	Garden	Orchard Ln	Garden Hwy Underpass under State Highway 80	1.1	3.9
2	768	Garden	Gateway Oaks Dr	Orchard Ln	0.8	3.1
3	847	El Centro	San Juan Rd	W El Camino Ave	0.8	4.3
4	764	Northgate	Arden Garden Connector	Del Paso Blvd	0.5	3.7
5	0055	Ethan	Exposition Blvd	Hurley Wy	0.5	3.5
6	974	Rio Linda	Claire Ave	Crystal Rd	0.5	2.4
7	0002	Arden Garden Connector	Northgate Blvd	Colfax St	0.4	3.8
8	36	Cosumnes River	Franklin Blvd	Freeport Blvd	0.4	5.8
9	0001	Raley	Ascot Ave	Main Ave	0.3	3.3
10	181	Watt	Fruitridge Rd	Elder Creek Rd	0.3	5.4

Bikeways

Consequence Metrics

Table 9 shows the metrics, scales and weights used for calculating consequence scores for bikeways. Bikeway classification and redundancy were weighed twice as much as the other metrics due to their relative importance.

Table 9: Consequence score metric weights for bikeways

Metric	Scale	Weight
Level of Stress	BLTS 1: 10 BLTS 2: 7 BLTS 3: 4 BLTS 4: 1	40%
Redundancy	Longest detour: 10 Long detour, High Stress: 7.5 Long detour, Low Stress: 5 Short detour, High stress: 2.5 Short detour, Low stress: 0	20%
Nearby Critical Facilities	"Primary": 10 "Alternate": 5 None: 0	20%
CalEnviroScreen Score	All scores divided by 10	20%

Level of Traffic Stress

The Level of Traffic Stress (BLTS) was used as a proxy metric for calculating the number of people who use a given bikeway segment. The BLTS metric provides a standardized way to assess how comfortable and safe different bikeway segments are for riders of varying ages and abilities. BLTS reflects the amount of stress a typical bicyclist experiences when interacting with motor vehicles, based on factors such as traffic speed, traffic volume, number of lanes, and the type and quality of bicycle infrastructure.

It was assumed that bicycle facilities with a lower BLTS would have a higher ridership than facilities with a higher BLTS. As a result, it was assumed that, if a bicycle facility with a low BLTS failed, it would have a relatively greater impact on people bicycling as compared to a similar facility with a high BLTS.

Table 10 categorizes the BLTS scores and assigns corresponding scores for the metric. For this assessment, BLTS values are derived from the Neighborhood Connections dataset from the City of Sacramento.

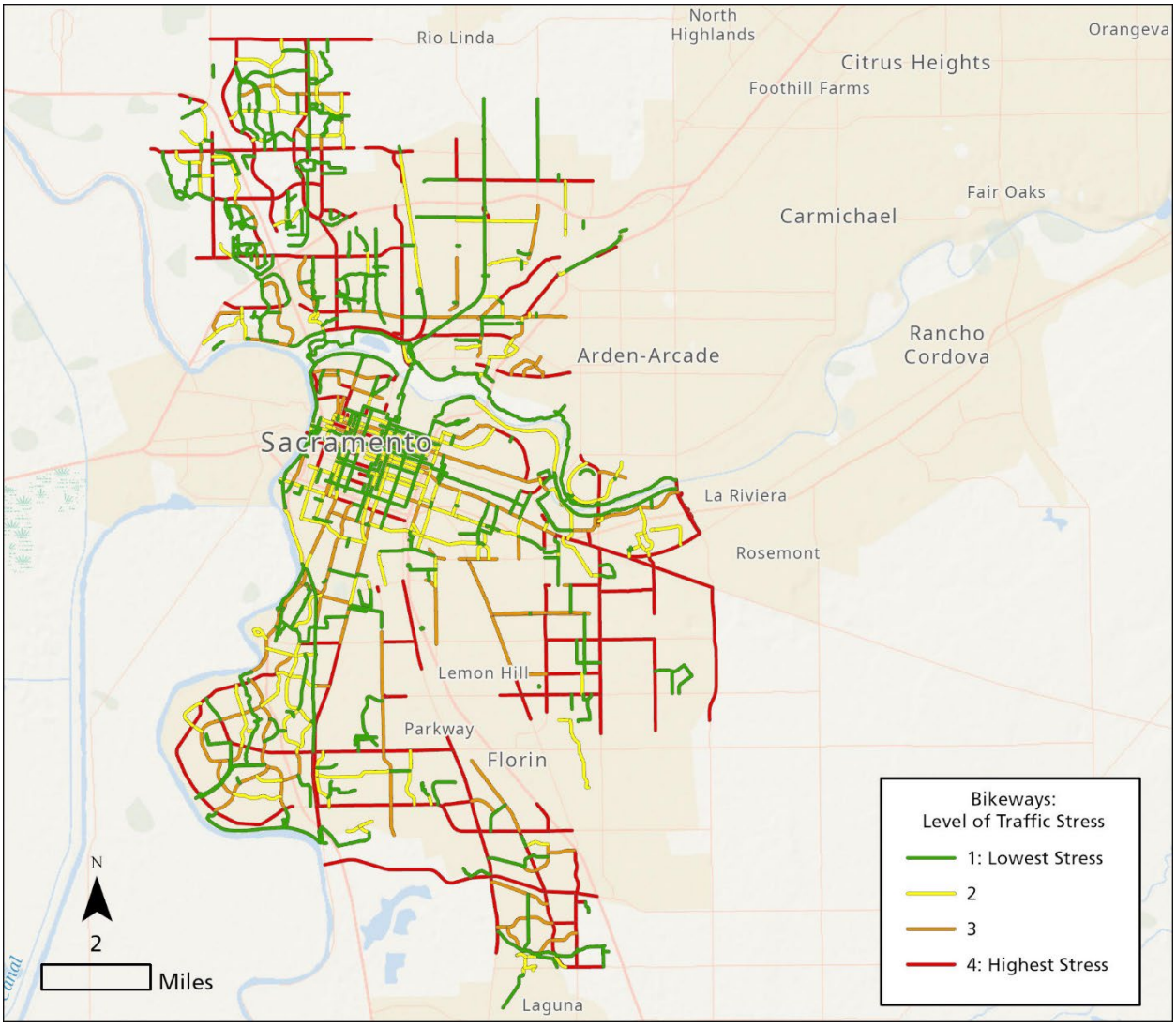
Table 10: BLTS Categories and Scores for Bikeway Consequence Scores

Category	Description	Score
BLTS1	Roadways where bicyclists of all ages and abilities would feel comfortable riding. These roadways are generally characterized by low volumes, low speeds, no more than two travel lanes, and traffic control measures at intersections. These roadways may have bicycle facilities; separated shared-use paths for bicycles also fall into this category.	10
BLTS 2	Slightly less comfortable roadways, where most adults would feel comfortable riding.	7
BLTS 3	Moderately uncomfortable roadways, where most experienced bicyclists would feel comfortable riding	4
BLTS 4	High-stress roadways where only strong and fearless bicyclists would feel comfortable riding. These roadways are generally characterized by high volumes, high speeds, several travel lanes, and complex transitions approaching and crossing intersections.	1

Map 8 illustrates the BLTS across the city's bikeway network. Many lower-stress segments appear in Downtown and Midtown Sacramento, where a denser street grid, slower vehicle speeds, and a higher concentration of dedicated bicycle facilities create more comfortable riding conditions. Other lower-stress segments include dedicated paths or lanes or lower-volume roads in other parts of the city.

In contrast, higher-stress bikeways are more prevalent in outlying neighborhoods, including portions of North Sacramento, South Sacramento, and Southeastern Sacramento. These segments often occur along higher-speed arterials or locations with limited bicycle infrastructure. Several of these high-stress corridors appear where major roadways intersect with fewer alternative routes, making them especially impactful on mobility for people who rely on bicycling as a primary travel mode. Some of the longest segments in the high-stress category include Cosumnes River Blvd, S Watt Ave, Pocket Rd, Del Paso Blvd, and Freeport Blvd.

To note, this SacAdapt planning effort is not suggesting that bicycle facilities with a high BLTS are of lower priority. The Streets for People Active Transportation Plan is the City's bicycle and pedestrian plan that identifies needed bicycle and pedestrian facility upgrades, including both new facilities and improvements to reduce the level of traffic stress for facilities that are currently high stress.



Map 8: Bikeway Level of Traffic Stress

Redundancy

A redundant bikeway network ensures that riders can still reach key destinations using comfortable, continuous routes even when portions of the system are compromised. In contrast, low-redundancy areas force riders onto high-stress corridors or create gaps that reduce overall connectivity.

Table 11 categorized how difficult it is for cyclists to navigate around a disrupted bikeway segment and assigns a corresponding consequence score. The categories account for two factors that directly influence rider impacts:

1. Detour Length – how far a bicyclist must travel on a typical detour to bypass a disruption on the segment of interest. A maximum score of 10 was given to any

detour over 1.5 miles, which approximates a 10-minute detour for a person riding a bicycle at 10 miles per hour.

2. Detour Quality (BLTS Level) – whether the alternate route is high-stress or low-stress.

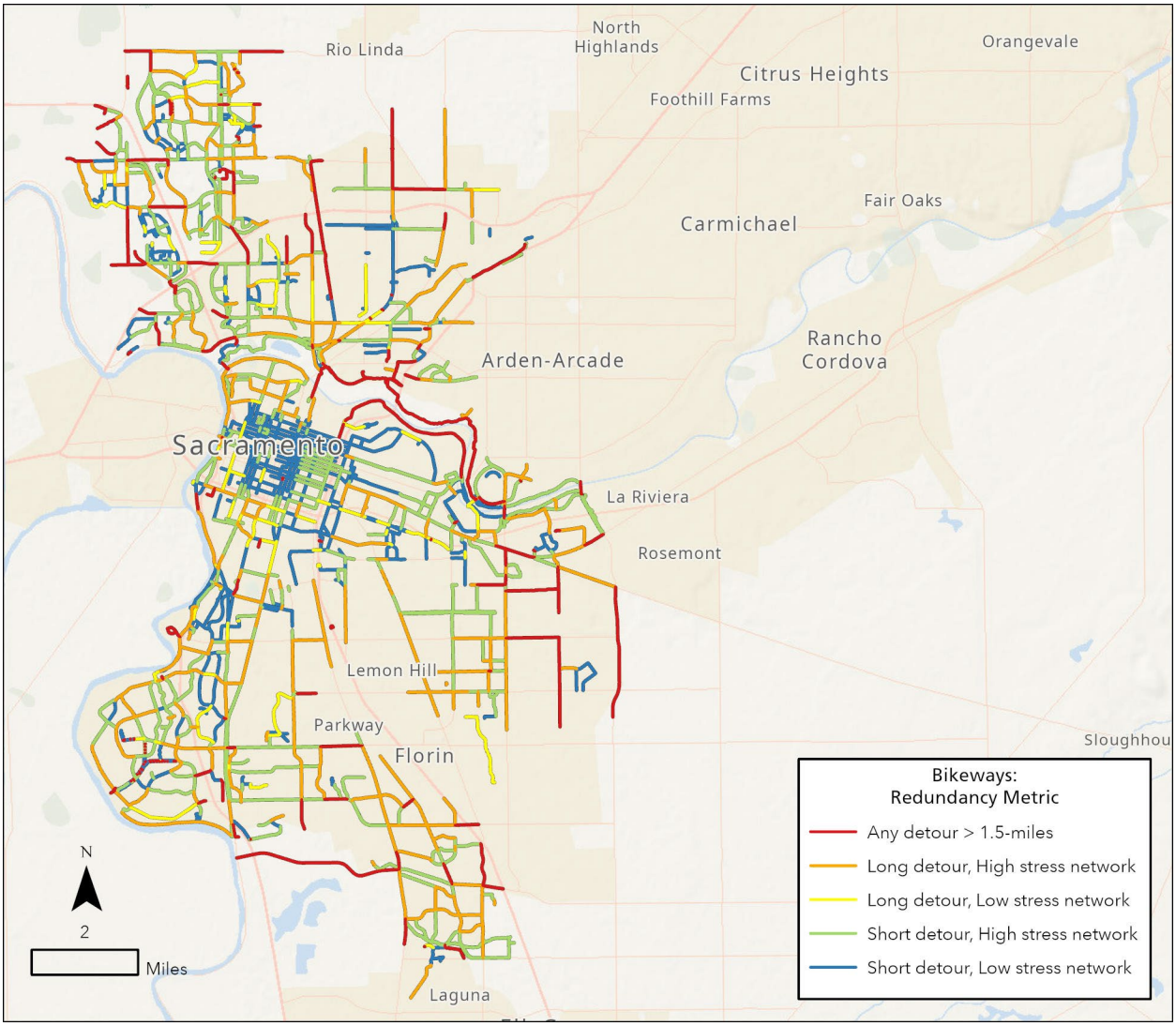
Together, these dimensions quantify how severe the consequences are for people biking when a segment becomes impassable.

Table 11: Bikeway Redundancy Metric Categories and Scoring

Category	Description	Score
Longest Detour	Any detour > 1.5-miles	10
Long detour, High Stress	Detour length is between 0.5 and 1.5-miles, and detour goes on a high stress network (BLTS = 3 or 4)	7.5
Long Detour, Low Stress	Detour length is between 0.5 and 1.5-miles, and detour goes on a low stress network (BLTS = 1 or 2)	5
Short Detour, High Stress	Detour length is <0.5 and detour goes on a high stress network (BLTS = 3 or 4)	2.5
Short Detour, Low Stress	Detour length is <0.5 and detour goes on a low stress network (BLTS = 1 or2)	0

Map 9 illustrates that across the city, redundancy varies significantly. Downtown Sacramento benefits from a denser street grid, providing multiple parallel, lower-stress route options that help maintain safe bicycle access even when individual segments are disrupted.

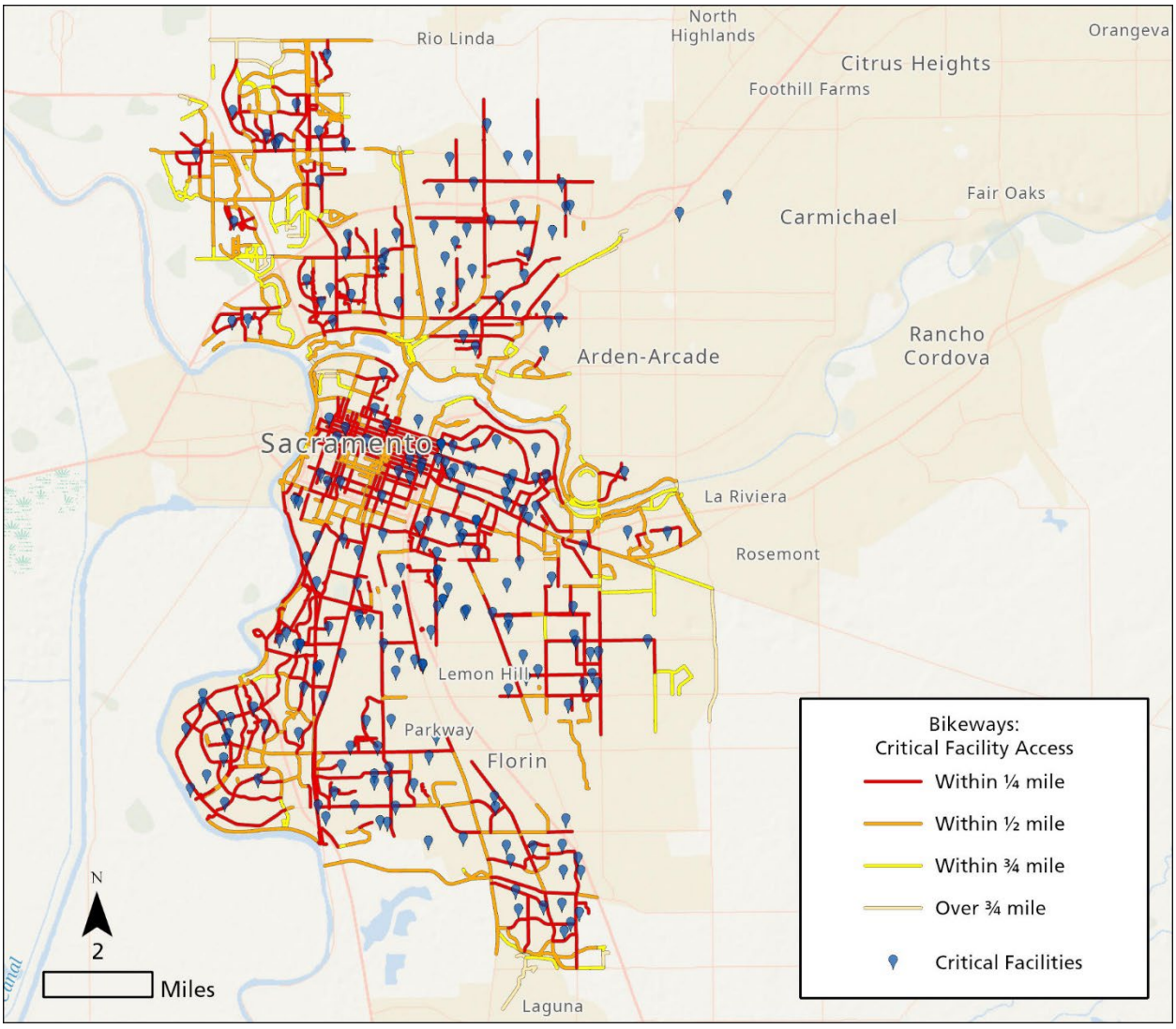
In many peripheral neighborhoods, however, the bikeway network becomes more linear and reliant on a limited number of key corridors. These areas often contain higher concentrations of BLTS 3 and 4 segments, meaning that alternative routes, when they exist, tend to be higher-stress and less comfortable for most riders. Examples of segments with low redundancy include long portions of the bikeways on both sides of the American River, the Consumnes River Blvd. bicycle facility, and the bicycle path on the levee east of Steelhead Creek.



Map 9: Bikeway Redundancy

Nearby Critical Facilities

Map 10 categorizes proximity of bikeway segments to critical facilities: within ¼ mile, within ½ mile, within ¾ mile, or over ¾ mile. Most bikeway segments are within a ¼ mile or ½ miles of a critical facility. A significant portion of the bikeway network in Downtown Sacramento falls within ¼ mile of critical facilities, reflecting the concentration of essential services and the dense street grid that supports multimodal access. Many bikeway segments in South Sacramento, North Sacramento, and the Natomas Basin fall within the ½-mile to ¾-mile ranges.

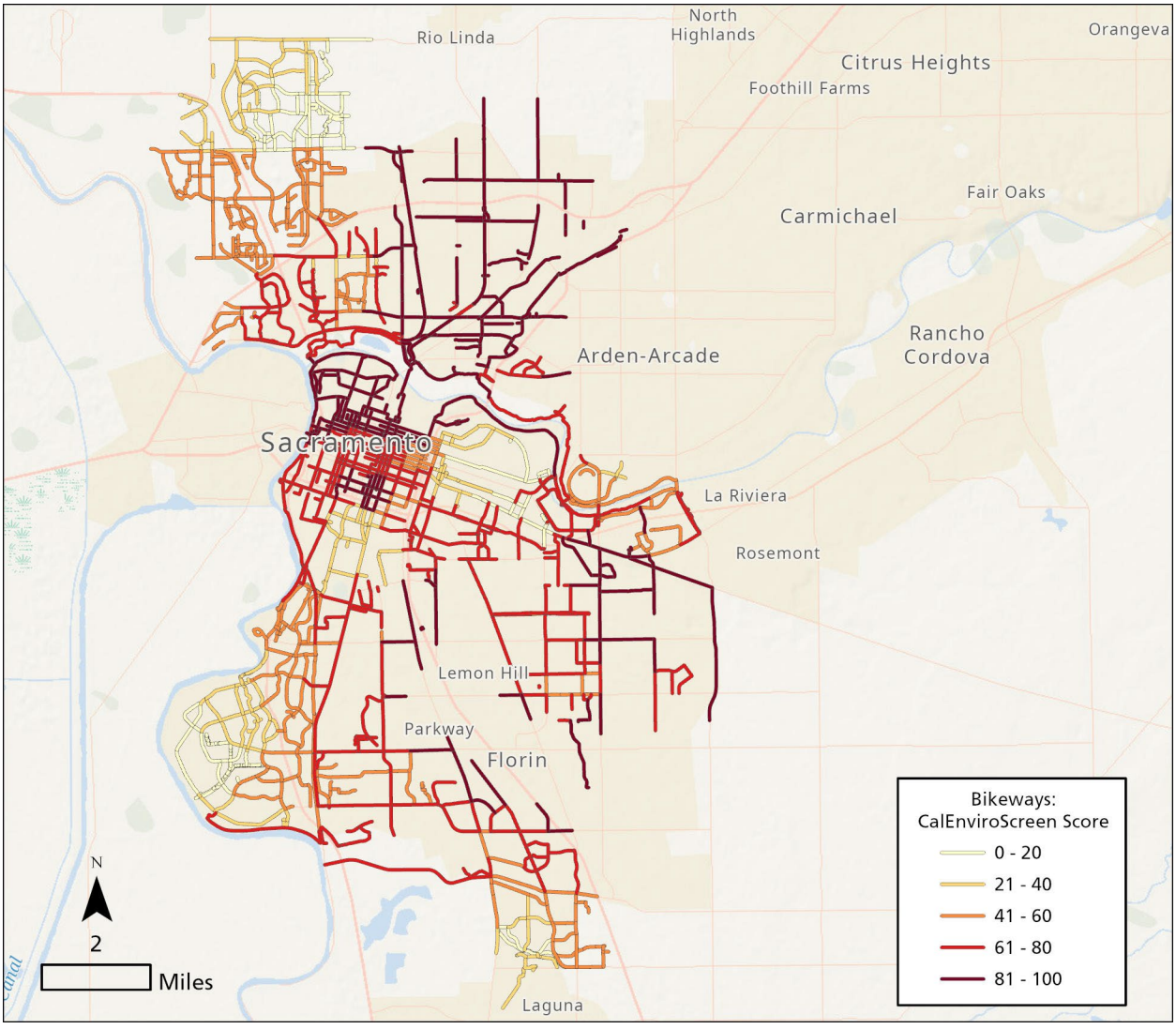


Map 10: Bikeway Critical Facility Access

CalEnviroScreen

A significant portion of bikeway segments pass through communities facing higher cumulative environmental burdens and meeting the 75th percentile criterion for being designated by the State as disadvantaged.

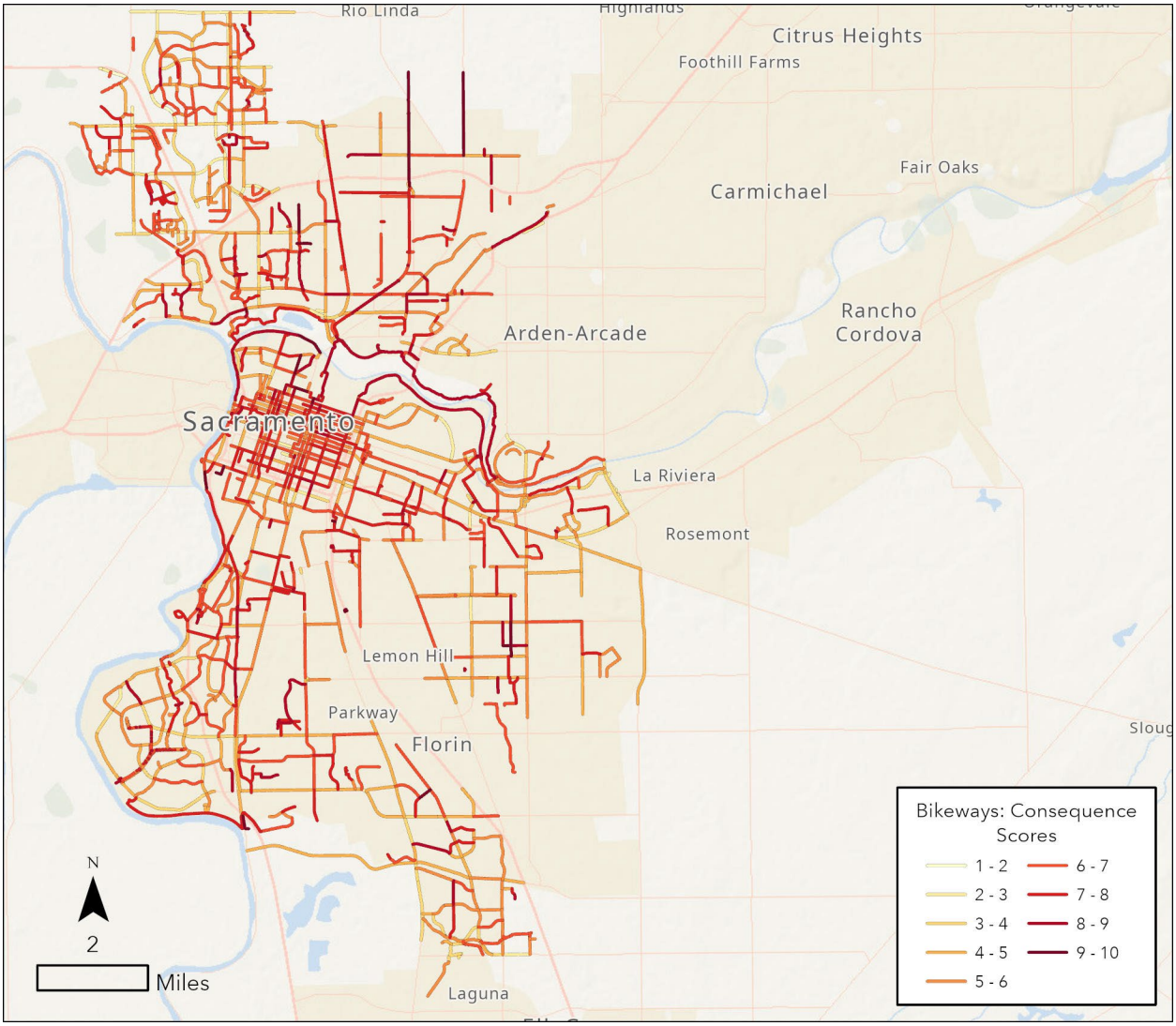
Map 11 shows high-scoring corridors concentrated in areas such as North Sacramento, South Sacramento, the River District, and portions of Oak Park, where bikeways pass through neighborhoods experiencing elevated environmental burdens and socioeconomic disadvantages.



Map 11: CalEnviroScreen percentiles for bikeways

Consequence Scores

Map 12 shows the consequence scores for bikeway segments. Some of the main areas of high-consequence bikeway segments include along the American and Sacramento Rivers and in low-redundancy portion of the network, including in North Sacramento. Bikeways with long segments of high consequence scores include Sacramento Northern Bike Trail, American River Bike Trail, Two Rivers Bike Trail, Raley Blvd., and Garden Highway Bike Trail.



Map 12: Consequence scores for bikeways

Table 12 summarizes the 50 highest-scoring bikeways. A total of 1,787 bikeway segments were analyzed. The top scorers and their key drivers contributing to their high scores are listed here:

- **Sacramento Northern Bike Trail (between Bell Ave and over Rio Linda Creek)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 84.1.
- **99 Pedestrian Overcrossing (POC) At 27th Ave (between 27th Ave and 34th St)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 80.6.
- **Ramp Way (between Front St and Miller Park Marina)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 78.9.
- **3rd St (between Log Pond Ln and Broadway)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 78.9.
- **Tangerine Ave (between Brookfield Dr and Center Parkway)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 74.5
- **Freeport Shores Bike Trail (between Sacramento Water Tower and Bill Conlin Youth Sports Complex)** Low stress (BLTS 1), Longest detour >1.5-miles, Within ¼ mile of critical facility, and CalEnviroScreen percentile of 73.8

Table 12: Top 50 consequence scores for bikeways

Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
1	1737	Sacramento Northern Bike Trail	Bell Ave	Outside City Boundaries	1	Longest Detour	Within ¼ mile	84.1	9.7
2	451	99 POC At 27th Ave	27th Ave	34th St	1	Longest Detour	Within ¼ mile	80.6	9.6
3	804	Ramp Way	Front St	Miller Park Marina	1	Longest Detour	Within ¼ mile	78.9	9.6
4	1821	3rd St	Log Pond Ln	Broadway	1	Longest Detour	Within ¼ mile	78.9	9.6
5	115	Tangerine Ave	Brookfield Dr	Center Parkway	1	Longest Detour	Within ¼ mile	74.5	9.5

Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
6	91	Freeport Shores Bike Trail	Sacramento Water Tower	Bill Conlin Youth Sports Complex	1	Longest Detour	Within ¼ mile	73.8	9.5
7	1239	Dos Rios St	Richards Blvd	N B St	1	Long detour, High Stress	Within ¼ mile	98.8	9.5
8	1278	Two Rivers Bike Trail	N 10th St	State Highway 160	1	Long detour, High Stress	Within ¼ mile	98.8	9.5
9	605	4th Ave	32nd St	4th Ave Dead End	1	Longest Detour	Within ¼ mile	72.0	9.4
10	1731	Raley Blvd	Ascot Ave	Bell Ave	1	Long detour, High Stress	Within ¼ mile	94.1	9.4
11	1807	Ninos Park Bike Trai	San Juan Rd	Waterway North of Rio Norte Wy	1	Longest Detour	Within ¼ mile	62.5	9.2
12	1592	Sacramento Northern Bike Trail	Bell Ave	Rose St cul-de-sac	1	Long detour, High Stress	Within ¼ mile	85.2	9.2
13	1177	18th St	D	E	1	Long detour, High Stress	Within ¼ mile	80.4	9.1
14	1211	C St	13th St	16th St	1	Long detour, High Stress	Within ¼ mile	80.4	9.1
15	1321	Unnamed Rd	Garden Hwy	Natomas Park Underpass	1	Long detour, High Stress	Within ¼ mile	79.7	9.1
16	1440	Edmonton Dr	Westward Wy	Northstead Dr	1	Long detour, High Stress	Within ¼ mile	79.7	9.1
17	401	38th Ave	Wallace Ave	Wilkinson St	1	Long detour, High Stress	Within ¼ mile	78.2	9.1
18	402	Wilkinson St	38th Ave	Lemon Hill Ave	1	Long detour, High Stress	Within ¼ mile	78.2	9.1
19	434	Wilkinson St	Fruitridge Rd	38th Ave	1	Long detour, High Stress	Within ¼ mile	78.2	9.1
20	1172	28th St	McKinley Village Wy	E St	1	Longest Detour	Within ½ mile	98.8	9.0

Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
21	1271	Sacramento Northern Bike Trail	Dreher St	Jedediah Smith Memorial Trail	1	Longest Detour	Within ½ mile	98.8	9.0
22	1216	Sutter Landing Park Bikeway	28th St	Dead End near American River	1	Longest Detour	Within ½ mile	98.8	9.0
23	348	Cougar Dr	Eldercreek Rd	Hometown Wy	1	Long detour, High Stress	Within ¼ mile	70.6	8.9
24	1331	Jackrabbit Trail	River Plaza Dr	Bridge near Orchard Park Skate Park	1	Long detour, High Stress	Within ¼ mile	69.8	8.9
25	1372	Jackrabbit Trail	Bridge near Orchard Park Skate Park	W El Camino Ave	1	Long detour, High Stress	Within ¼ mile	69.8	8.9
26	82	Center Pkwy	Bamford Dr	Center Parkway Ln	1	Long detour, High Stress	Within ¼ mile	69.5	8.9
27	149	Alma Vista Way	Branwood Wy	Pocket Rd	1	Longest Detour	Within ¼ mile	44.3	8.9
28	1618	River Birch Park Trail	Terracina Dr	East Drainage Canal	1	Longest Detour	Within ¼ mile	44.1	8.9
29	1270	American River Bike Trail	State Highway 160 Underpass	Capital City Fwy Underpass	1	Longest Detour	Within ½ mile	93.5	8.9
30	1328	Dixieanne Ave	Union Pacific Railroad	Harvard St	1	Longest Detour	Within ½ mile	93.0	8.9
31	293	Chorley Park	20th St	56th Ave	1	Long detour, High Stress	Within ¼ mile	66.8	8.8
32	580	Maryknoll Ct	Maryknoll Cul-de-sac	Notre Dame Dr	1	Longest Detour	Within ½ mile	91.3	8.8

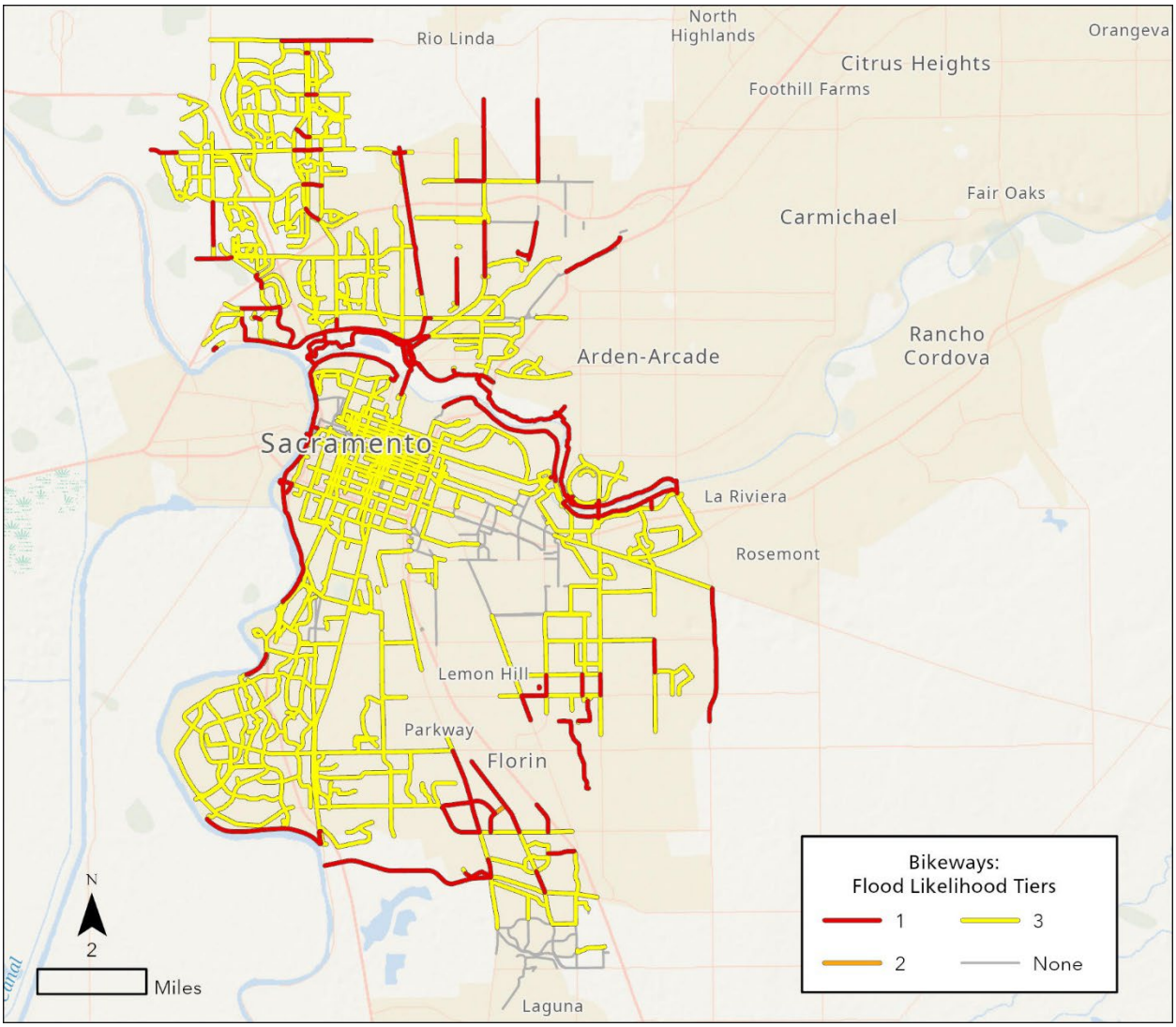
Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
33	483	23rd St	20th Ave	22nd Ave	1	Long detour, High Stress	Within ¼ mile	66.2	8.8
34	1397	Bannon Creek Dr	Crossmill Wy	Azevedo Dr	1	Long detour, High Stress	Within ¼ mile	65.8	8.8
35	1806	Two Rivers Bike Trail	H St	Dead End Near American River and Union Pacific Railroad	2	Longest Detour	Within ¼ mile	98.8	8.8
36	877	18th ST/R ST	R St	Dead End Near Quill Alley and Light Rail Tracks	1	Longest Detour	Within ½ mile	88.6	8.8
37	918	13th St	Quill Aly	T St	1	Long detour, High Stress	Within ¼ mile	88.6	8.8
38	608	17th St	Vallejo Wy	McClatchy School Park	1	Longest Detour	Within ¼ mile	32.0	8.6
39	710	24th St	Broadway	Capital City Fwy E Underpass	1	Long detour, High Stress	Within ¼ mile	56.5	8.6
40	754	24th St	Capitol City Fwy E Underpass	V St	1	Long detour, High Stress	Within ¼ mile	56.5	8.6
41	860	University Ave	University Ave off American River Dr	University Ave cul-de-sac	1	Longest Detour	Within ¼ mile	30.6	8.6
42	1803	Off Katanis Way	Cotton Ln	Kastanis Wy	1	Long detour, High Stress	Within ¼ mile	55.4	8.6
43	1361	Sacramento Northern Bike Trail	Traction Ave	Junction of Sacramento Northern Bike	1	Longest Detour	Within ½ mile	79.8	8.6

Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
				Trail and Altos Ave Near Leitch Ave					
44	1379	Sacramento Northern Bike Trail	Intersection of Altos Ave and Hawthorne St	Junction of Sacramento Northern Bike Trail and Altos Ave Near Lampasas Ave	1	Long detour, High Stress	Within ¼ mile	79.8	8.6
45	1380	Sacramento Northern Bike Trail	Triangle Park	Junction of Sacramento Northern Bike Trail and Altos Ave Near Lampasas Ave	1	Longest Detour	Within ½ mile	79.8	8.6
46	1381	Sacramento Northern Bike Trail	Altos Ave	Junction of Sacramento Northern Bike Trail and Triangle Park	1	Longest Detour	Within ½ mile	79.8	8.6
47	1408	Sacramento Northern Bike Trail	Altos Ave	Junction of Sacramento Northern Bike Trail Adjacent to Rio Linda Blvd	1	Longest Detour	Within ½ mile	79.8	8.6
48	1320	Garden Highway Bike Trail	Gateway Oaks Dr	Natomas Park Dr	1	Longest Detour	Within ½ mile	79.7	8.6

Number	Asset (WSPID)	Asset Name	Cross Street 1	Cross Street 2	BTLS	Redundancy Based Detour	Critical Facility Access	CES percentile	Consequence Score
49	1829	Unnamed Rd	Natomas Park Dr	Discovery Park	1	Longest Detour	Within ½ mile	79.7	8.6
50	455	Del Rio Bike Trail	Normandy Ln	Fruitridge Rd	1	Long detour, High Stress	Within ¼ mile	78.9	8.6

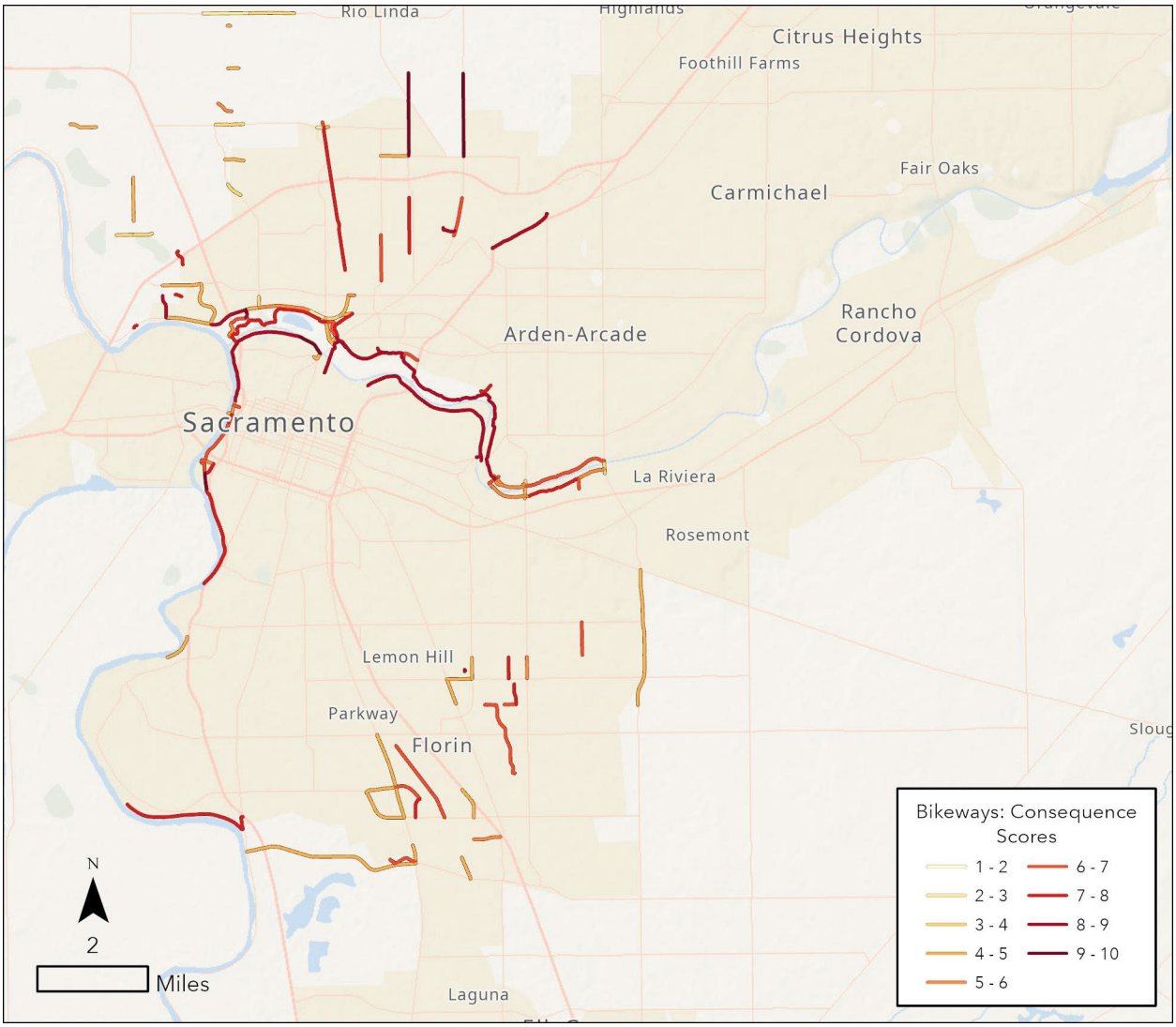
Likelihood and Risk

Map 13 shows bike segments by flood likelihood tier. Most bikeways in Sacramento are located outside the 100-year floodplain or are protected by levees. 140 of almost 1,800 segments cross through the 100-year floodplain. High-consequence and high-exposure bikeway segments include routes along the Sacramento River such as the American River Bike Trail and Two Rivers Bike Trail; Raley Blvd; Sacramento Northern Bike Trail; and Garden Highway Bike Trail.



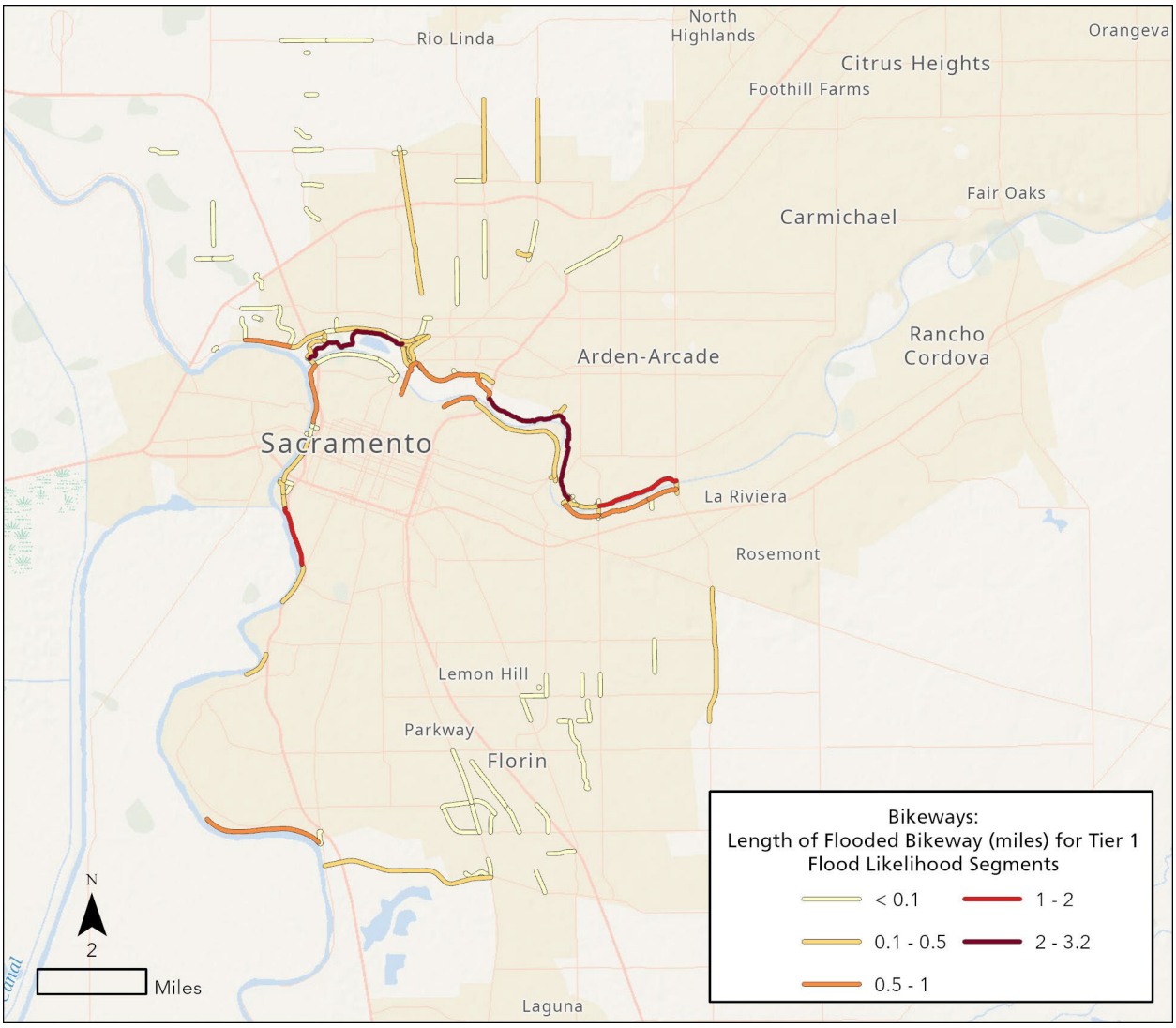
Map 13: Flood likelihood tiers for bikeways

Map 14 shows consequence scores for bikeways located within the 100-year floodplain.



Map 14: Consequence scores of bikeways within highest flood likelihood tier

Map 15 shows bikeway segments crossing the 100-year floodplain by length of exposure. Long portions of the following bikeways are exposed to the 100-year flood: American River Bike Trail, Sacramento River Bikeway, and Jedediah Smith National Recreation Trail.



Map 15: Length of flooded miles for bikeways within the highest flood likelihood tier

Bus Stops

Consequence Metrics

Table 13 shows the metrics, scales, and weights used for calculating consequence scores for bus stops. All metrics were given an even weight.

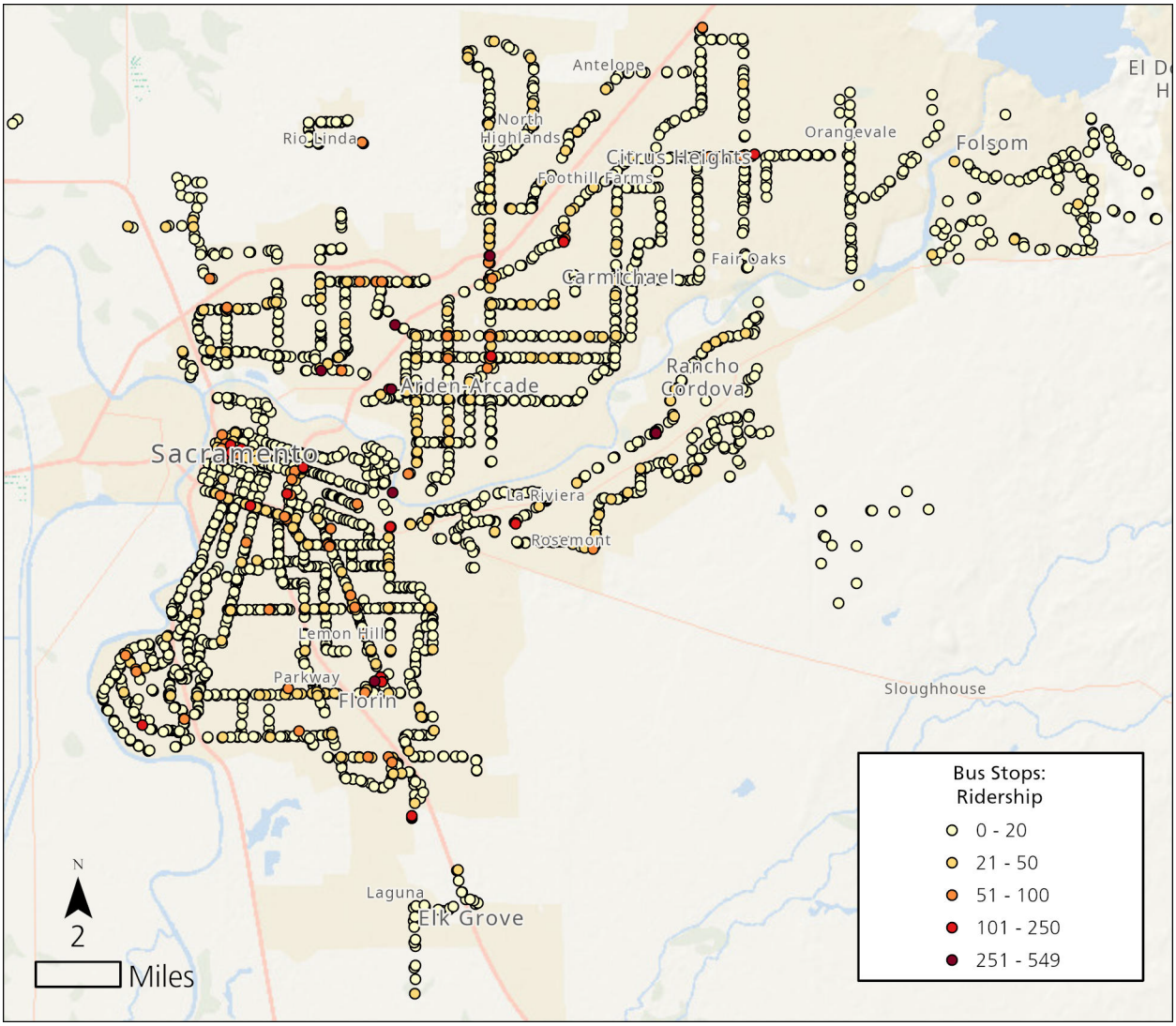
Table 13: Consequence score metric weights for bus stops

Metric	Scale	Weight
Ridership	Average daily boardings normalized from 0 (lowest) to 10 (highest)	25%
Proximity to Closest Stop	Within ¼ mile: 0 Within ½ mile: 2 Within ¾ mile: 5 Over ¾ mile: 10	25%
Nearby Critical Facilities	Within ¼ mile: 0 Within ½ mile: 2 Within ¾ mile: 5 Over ¾ mile: 10	25%
CalEnviroScreen Score	All scores divided by 10	25%

Ridership

Ridership is a key metric for evaluating the importance of individual bus stops within the bus stop network. Average daily ridership data for bus stops was provided by SacRT. The data reflects the average daily boardings at each stop on a typical weekday in January 2025. Ridership is heavily skewed with many stops serving few riders each day and a small number of stops experiencing high volumes.

Map 16 shows these ridership numbers for each bus stop. The stops Carlson Dr & State University Drive North and Arden Way & Del Paso Blvd LRT have the highest ridership values. Carlson Dr & State University Drive North is in the center of California State University, Sacramento (CSUS). Arden Way & Del Paso Blvd is a major hub for connecting buses, serving busy areas like Arden Fair Mall. Other high ridership stops include Marconi-Arcade LRT, Arden Fair Mall & Terminal, 65th St & Sky Parkway, Mather LRS & Bay 2, and Watt Ave & I-80 LRT.



Map 16: Bus Stop Ridership

Proximity to Closest Stop

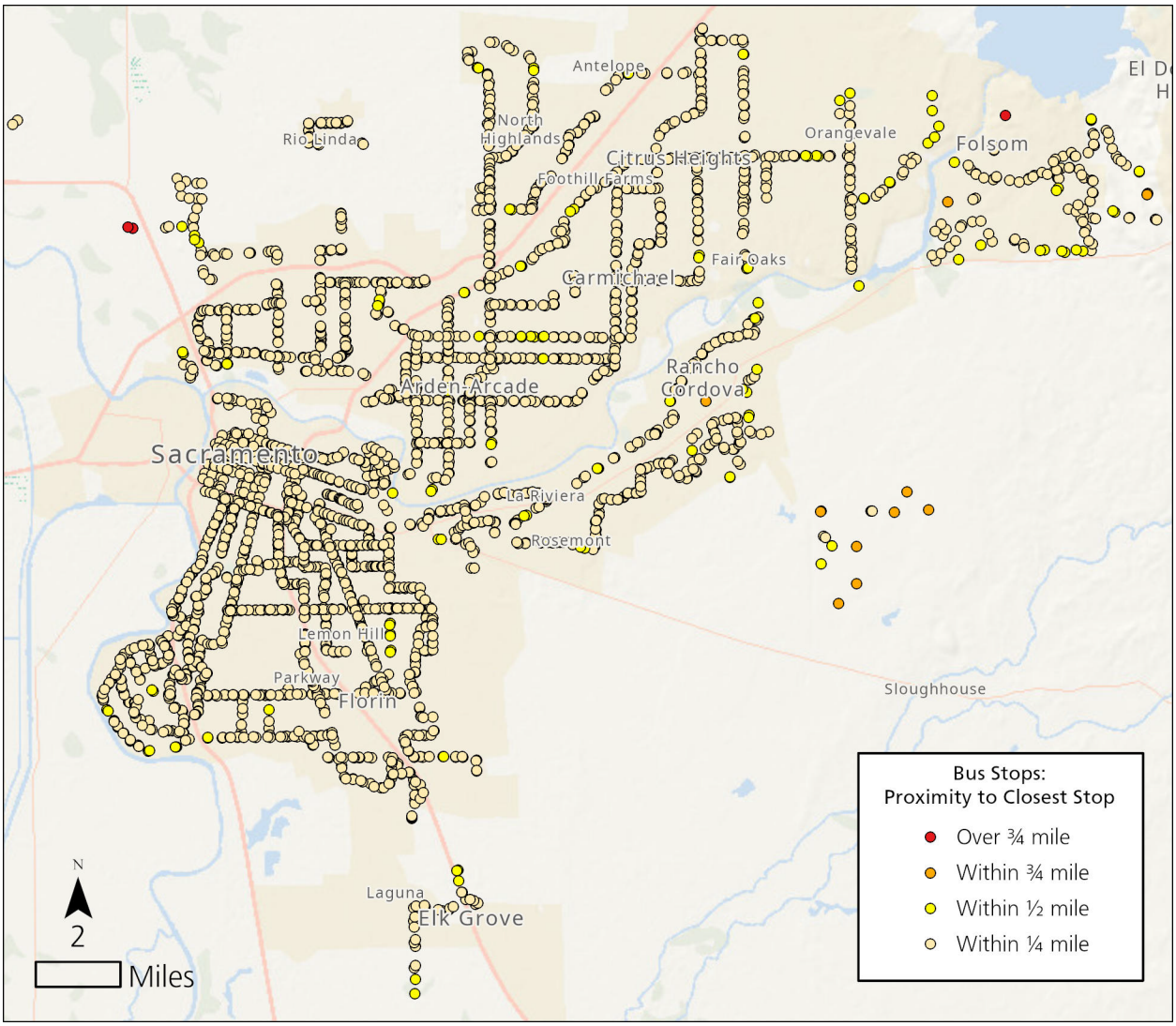
This metric evaluates how far riders must travel to reach the next closest active bus stop if their primary stop becomes inaccessible. This does not include the paired stop across the street serving the opposite direction; instead, it reflects how far a rider must walk to reach an alternate stop that still provides service in their intended direction of travel.

Stops with greater distances to the next closest active bus stop receive higher consequence scores because a disruption at that location requires riders to travel farther to continue their trip. Table 14 categorizes the distance to the next active stop and scores it for the consequence score.

Table 14: Proximity to Next Closest Active Stop Categories and Score

Category	Score
Over ¾ mile	10
Within ¾ mile	5
Within ½ mile	2
Within ¼ mile	0

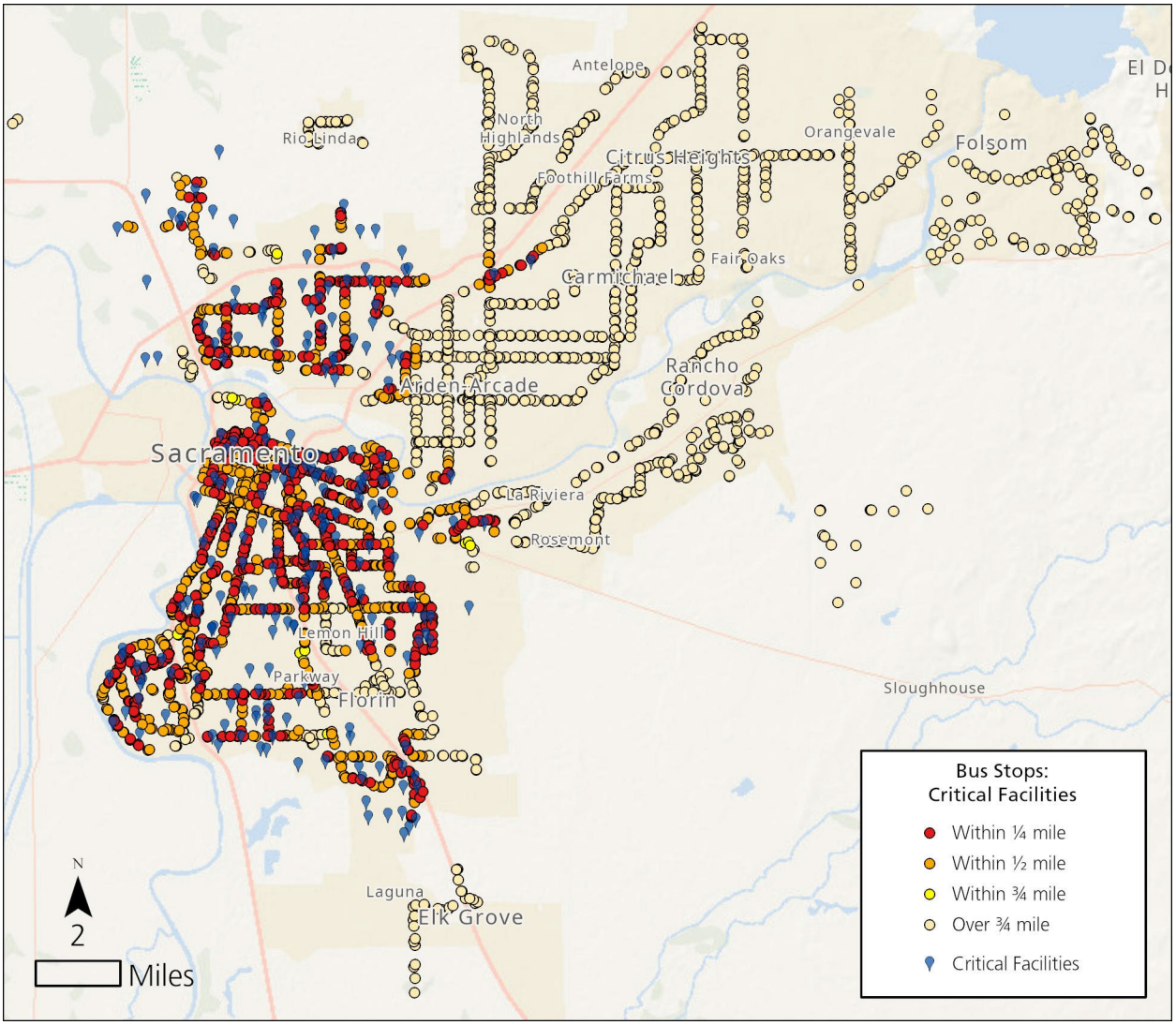
Map 17 shows how far each bus stop is from the next closest active stop serving the same direction, highlighting where disruptions would create the greatest access challenges for riders. The large majority of stops are within ¼ mile of another active stop. Only 16 of over 2,700 stops have proximities of over ½ mile. Only two unique stop pairings have proximities over ¾ mile: Del Paso Rd & El Centro Rd and CA State Prison & Folsom Prison Rd.



Map 17: Proximity to Next Closest Active Bus Stop

Nearby Critical Facilities

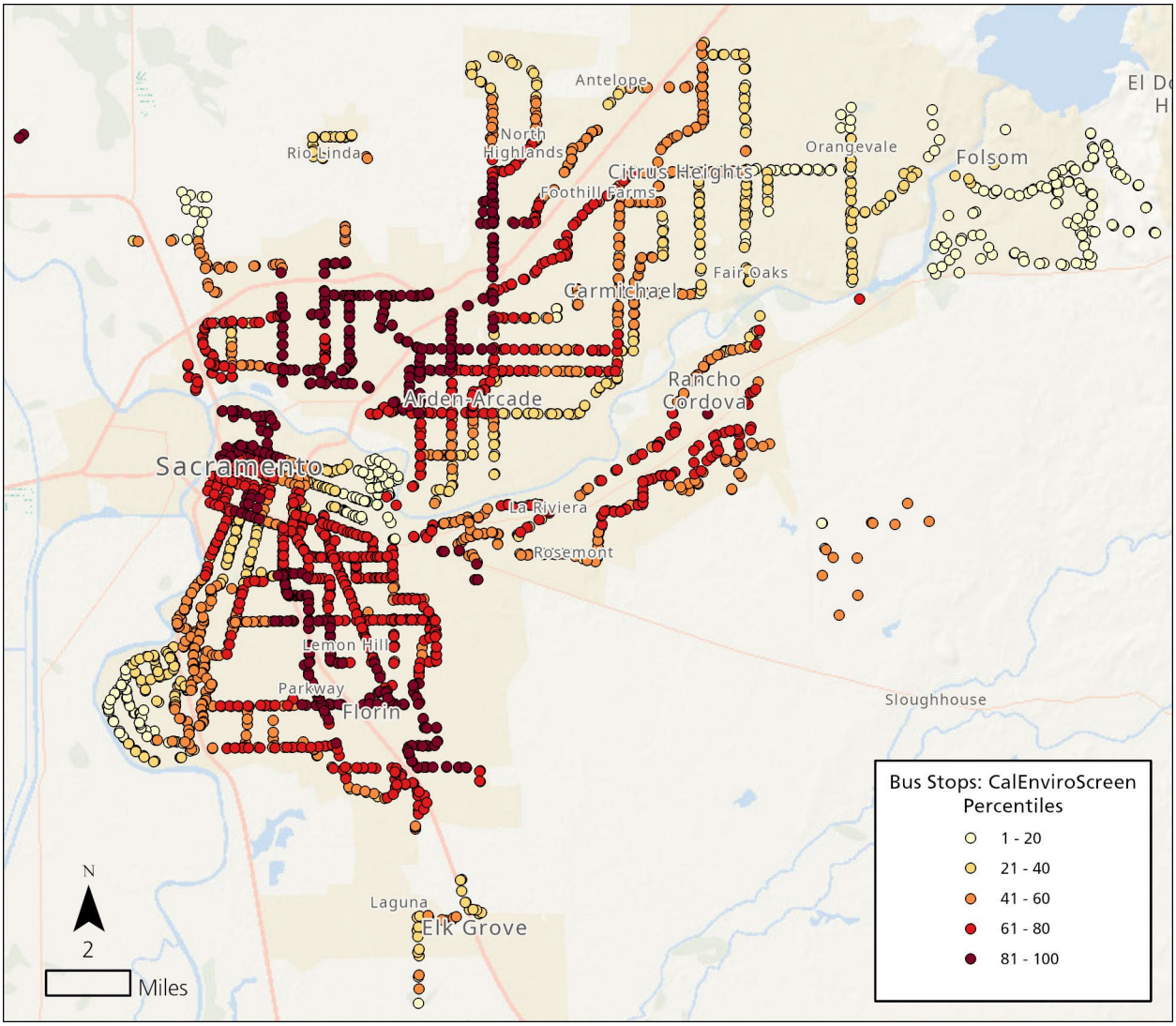
Map 18 shows the proximity of bus stops to critical facilities, highlighting where transit access plays an important role in connecting community members to essential services. A high concentration of stops within ¼ mile of critical facilities appears in central Sacramento, reflecting the dense clustering of hospitals, schools, community centers, libraries, and emergency shelters in the urban core. Note that critical facilities were only evaluated for the City of Sacramento, so many stops outside the City were categorized as over ¾ mile from critical facilities. However, some of these stops may be near other critical facilities that were not included in this analysis.



Map 18: Bus Stop Critical Facility Access

CalEnviroScreen Score

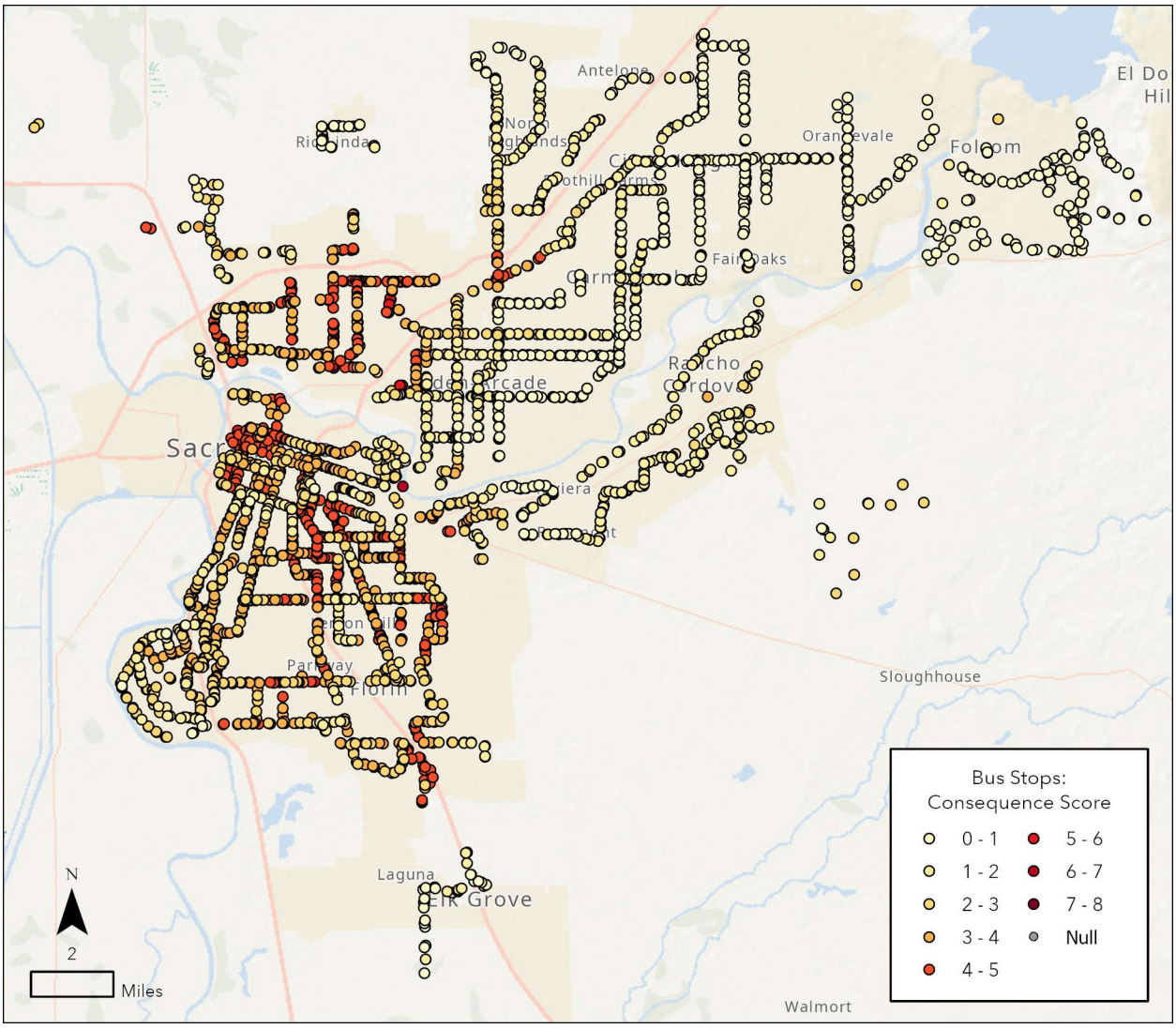
Map 19 shows which bus stops are within census tracts with the highest CalEnviroScreen percentiles. The highest scoring bus stops tend to be in Downtown and surrounding neighborhoods, North Sacramento, McClellan Park, Southeastern Sacramento, South Oak Park, Parkway, Lemon Hill, and Florin.



Map 19: CalEnviroScreen percentiles for bus stops

Consequence Scores

Map 20 displays the spatial distribution of consequence scores across the city. Stops with higher consequence scores tend to serve more riders, have fewer nearby alternatives, provide access to essential destinations, and be in more disadvantaged communities. The stops with the highest scores include Arden Way & Del Paso Blvd. light rail connection, Arden Fair Mall Terminal, Carlson Dr. & State University Dr., 7th St. and J St., J St. and 6th St., and Arden Way & Heritage Lane.



Map 20: Consequence scores for bus stops

Table 15 lists the 50 highest-scoring bus stops by consequence score. Among the 1,582 bus stops analyzed, 3 have consequence scores above 6, indicating their critical role in the transit network. These top-scoring stops are characterized by high daily ridership, close access to critical facilities, and location in communities with elevated CalEnviroScreen scores.

- **ARDEN WAY & DEL PASO BLVD LRT (Stop ID: 9807)** High daily ridership (482), within ¼ mile of a critical facility, CalEnviroScreen percentile of 93.5
- **ARDEN FAIR MALLTERMINAL (Stop ID: 1099)** High daily ridership (343), within ¼ mile of a critical facility, CalEnviroScreen percentile of 93.0.
- **CARLSON DR & STATE UNIVERSITY DRIVE NORTH (Stop ID: 275)** High daily ridership (549), within ¼ mile of a critical facility, CalEnviroScreen percentile of 77.5
- **7TH ST & J ST (Stop ID: 223)** Moderate ridership (86), within ¼ mile of a critical facility, CalEnviroScreen percentile of 95.5
- **J ST & 6TH ST (Stop ID: 414)** Moderate ridership (92), within ¼ mile of a critical facility, CalEnviroScreen percentile of 95.6.
- **L ST & 5TH ST (Stop ID: 5252)** Moderate ridership (182), provide access to critical facilities, CalEnviroScreen percentile of 95.6
- **ARDEN WAY & HERITAGE LN (Stop ID: 1164)** High daily ridership (121), within ¼ mile of a critical facility, CalEnviroScreen percentile of 93.0.

Table 15: Top 50 consequence scores for bus stops

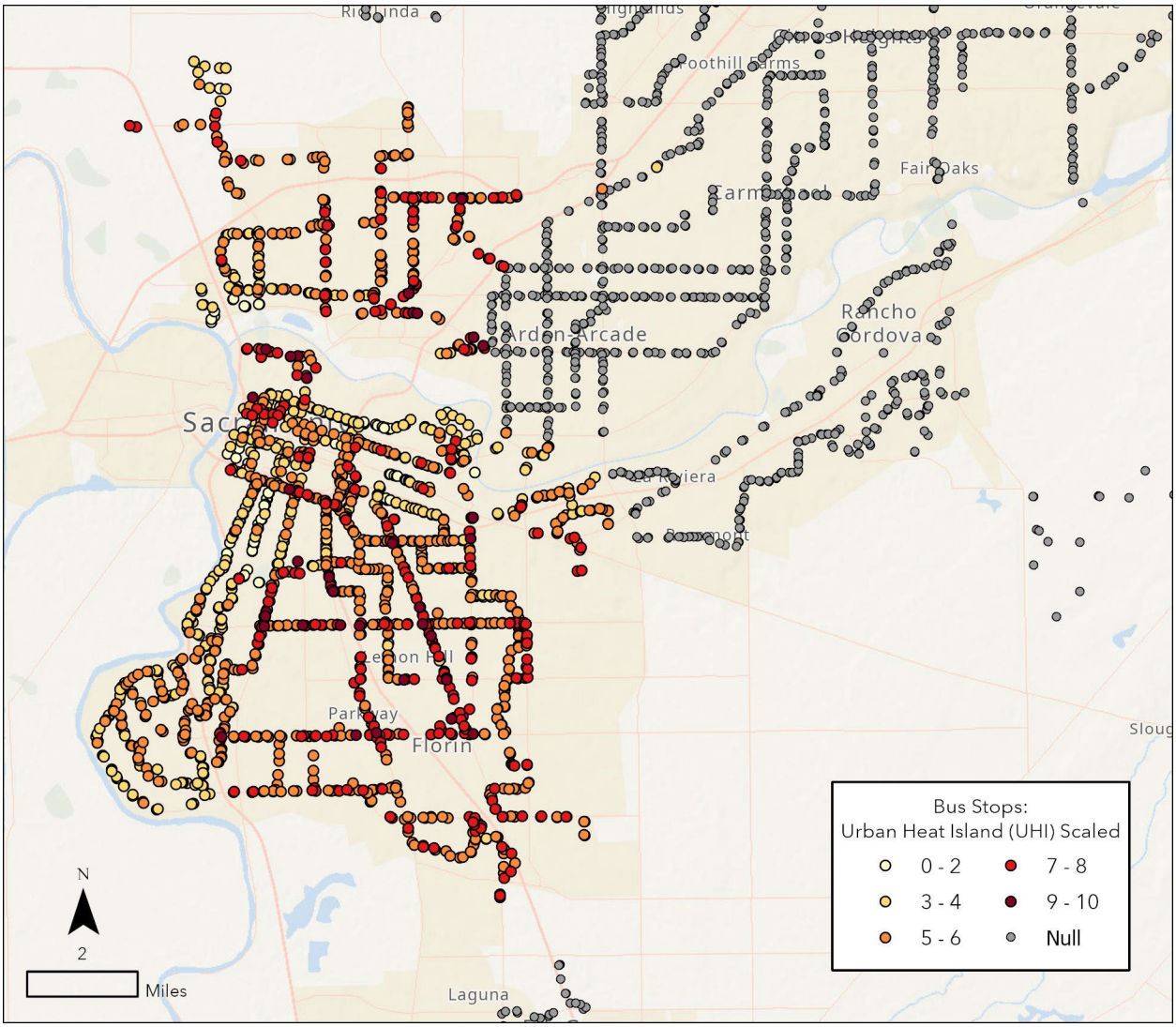
Number	Stop ID	Stop Name	Daily Ridership	Access to Critical Facilities	Proximity to Closest Stop	CES percentile	Consequence Score
1	9807	Arden Way & Del Paso Blvd LRT (Eb)	482	Within ¼ mile	Within ¼ mile	93.5	7.1
2	1099	Arden Fair Mall Terminal (Nb)	343	Within ¼ mile	Within ¼ mile	93.0	6.3
3	275	Carlson Dr & State University Drive North (Eb)	549	Within ½ mile	Within ½ mile	77.5	6.2
4	223	7th St & J St (Sb)	86	Within ¼ mile	Within ¼ mile	95.5	5.4
5	414	J St & 6th St (Eb)	92	Within ¼ mile	Within ¼ mile	95.5	5.4
6	1164	Arden Way & Heritage Ln (Wb)	121	Within ¼ mile	Within ¼ mile	93.0	5.3

7	560	Marysville Blvd & Los Robles Blvd 1 (Nb)	7	Within ¼ mile	Within ½ mile	88.9	5.2
8	561	Marysville Blvd & Los Robles Blvd 2 (Nb)	7	Within ¼ mile	Within ½ mile	88.9	5.2
9	282	Amtrak Depot (Wb)	69	Within ¼ mile	Within ¼ mile	98.8	5.2
10	222	7th St & H St (Sb)	39	Within ¼ mile	Within ¼ mile	95.5	5.1
11	413	J St & 4th St (Eb)	40	Within ¼ mile	Within ¼ mile	95.5	5.1
12	5252	L St & 5th St (Wb)	79	Within ¼ mile	Within ¼ mile	95.5	5.1
13	284	Del Paso Blvd & Hawthorne (Sb)	38	Within ¼ mile	Within ¼ mile	93.5	5.1
14	545	Del Paso Blvd & Winnipeg St (Nb)	29	Within ¼ mile	Within ¼ mile	93.5	5.1
15	547	Del Paso Blvd & El Camino Ave (Nb)	40	Within ¼ mile	Within ¼ mile	93.5	5.1
16	2370	Florin Rd & Luther Dr (Eb)	34	Within ¼ mile	Within ¼ mile	93.3	5.1
17	2375	Stockton Blvd & Elsie Ave (Nb)	29	Within ¼ mile	Within ¼ mile	92.5	5.1
18	1518	Auburn Blvd & Watt Ave (Wb)	33	Within ¼ mile	Within ¼ mile	92.3	5.1
19	583	Marysville Blvd & Los Robles Blvd (Sb)	4	Within ¼ mile	Within ½ mile	81.0	5.0
20	584	Marysville Blvd & Los Robles Blvd (Sb)	4	Within ¼ mile	Within ½ mile	81.0	5.0
21	221	7th St & G St (Sb)	13	Within ¼ mile	Within ¼ mile	98.8	5.0
22	536	Richards Blvd & Dos Rios St (Eb)	0	Within ¼ mile	Within ¼ mile	98.8	5.0
23	603	Richards Blvd & Dos Rios St (Wb)	0	Within ¼ mile	Within ¼ mile	98.8	5.0
24	5328	Richards Blvd & Louise St (Eb)	3	Within ¼ mile	Within ¼ mile	98.8	5.0
25	537	Sunbeam Ave & Richards Blvd (Sb)	3	Within ¼ mile	Within ¼ mile	98.8	5.0
26	418	J St & 11th St (Eb)	109	Within ¼ mile	Within ¼ mile	78.3	5.0
27	415	J St & 8th St (Eb)	125	Within ¼ mile	Within ¼ mile	78.3	5.0
28	528	L St & 9th St (Wb)	123	Within ¼ mile	Within ¼ mile	78.3	5.0
29	3135	65th St & Lemon Hill Ave (Nb)	19	Within ¼ mile	Within ½ mile	78.2	5.0
30	1335	Del Paso Rd & El Centro Rd (Eb)	18	Within ½ mile	Within ½ mile	48.0	5.0
31	1609	65th St & Lemon Hill Ave (Sb)	7	Within ¼ mile	Within ½ mile	76.0	4.9
32	1608	65th St & Mcmahon Dr (Sb)	3	Within ¼ mile	Within ½ mile	76.0	4.9
33	116	3rd St & K St (Nb)	9	Within ¼ mile	Within ¼ mile	95.5	4.9
34	281	5th St & I St (Nb)	3	Within ¼ mile	Within ¼ mile	95.5	4.9
35	531	L St & 4th St (Wb)	26	Within ¼ mile	Within ¼ mile	95.5	4.9
36	577	Grand Ave & Dayton St (Wb)	25	Within ¼ mile	Within ¼ mile	94.1	4.9
37	842	Grand Ave & Jasmine St (Eb)	1	Within ¼ mile	Within ¼ mile	94.1	4.9
38	580	Grand Ave & Jasmine St (Wb)	17	Within ¼ mile	Within ¼ mile	94.1	4.9
39	843	Grand Ave & Mahogany St (Eb)	4	Within ¼ mile	Within ¼ mile	94.1	4.9
40	579	Grand Ave & Mahogany St (Wb)	11	Within ¼ mile	Within ¼ mile	94.1	4.9

41	839	Grand Ave & Dry Creek Rd (Eb)	37	Within ¼ mile	Within ¼ mile	84.1	4.9
42	840	Grand Ave & Elm St (Eb)	54	Within ¼ mile	Within ¼ mile	84.1	4.9
43	850	Grand Ave & Elm St (Wb)	76	Within ¼ mile	Within ¼ mile	84.1	4.9
44	1167	Arden Way & Beaumont St (Wb)	3	Within ¼ mile	Within ¼ mile	93.5	4.8
45	1168	Arden Way & Cantalier St (Wb)	2	Within ¼ mile	Within ¼ mile	93.5	4.8
46	1402	Colfax St & El Camino Ave (Sb)	1	Within ¼ mile	Within ¼ mile	93.5	4.8
47	596	Del Paso Blvd & Winnipeg St (Sb)	1	Within ¼ mile	Within ¼ mile	93.5	4.8
48	595	Del Paso Blvd & El Camino Ave (Sb)	4	Within ¼ mile	Within ¼ mile	93.5	4.8
49	1401	El Camino Ave & Edgewater Rd (Wb)	2	Within ¼ mile	Within ¼ mile	93.5	4.8
50	684	Grove Ave & El Monte Ave (Nb)	13	Within ¼ mile	Within ¼ mile	93.5	4.8

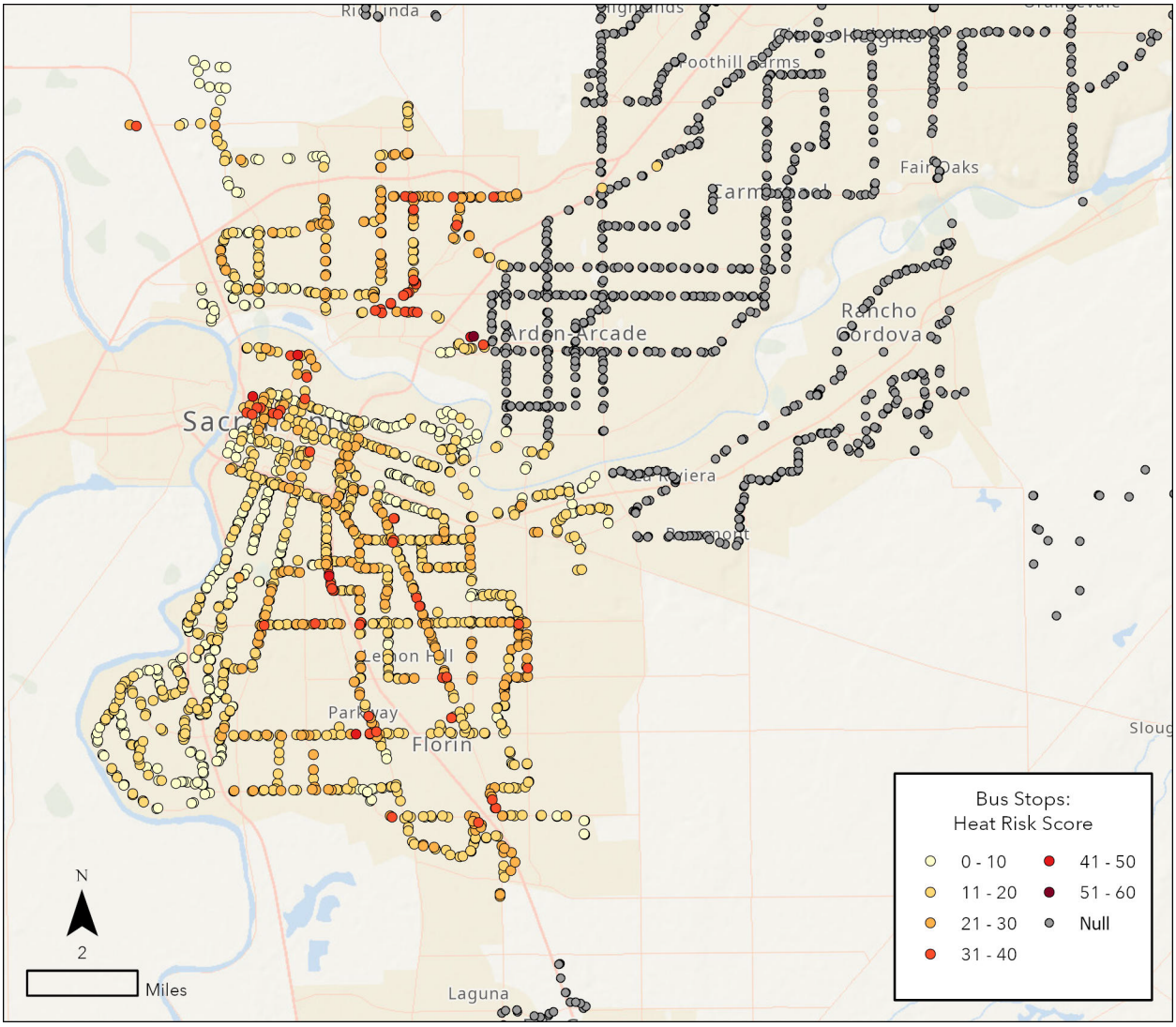
Likelihood and Risk

Map 21 shows the bus stops by UHI intensity scaled from 0 to 10. This metric highlights locations where riders are most at risk during extreme heat events due to both environmental exposure and the consequence of the stop. There are clusters of high UHI stops in the Downtown area, as well as in Southeastern Sacramento (particularly along Stockton Boulevard) and in North Sacramento. Stops outside the City boundary have null values because the UHI dataset used only covered the City of Sacramento.



Map 21: Scaled Urban Heat Island effect for bus stops

Map 22 shows heat risks scores, which are the product of the scaled UHI scores and consequence scores. Table 16 lists the 50 highest-scoring bus stops by heat risk score. Bus stops with the highest heat risk scores include Arden Fair Mall & Terminal, Richards Blvd. & Dos Rios St., Florin Rd. & Luther Dr., Amtrak & Depot, Franklin Blvd. & 16th, and Arden Way & Heritage Lane. Many of the stops with elevated heat risk are concentrated in the downtown area and along major corridors such as Del Paso Blvd., Stockton Blvd., and Franklin Blvd. These high-risk stops can be prioritized for adaptation measures such as shade structures, cooling elements, and improved passenger amenities to reduce heat exposure and enhance user comfort.



Map 22: Heat risk scores for bus stops

Table 16: Bus stops by descending heat risk score

Number	Stop ID	Stop Name	UHI Scaled	Consequence Score	Heat Risk Score
1	1099	Arden Fair Mall Terminal (Nb)	9.1	6.3	57.8
2	603	Richards Blvd & Dos Rios St (Wb)	10.0	5.0	49.7
3	2370	Florin Rd & Luther Dr (Eb)	8.9	5.1	45.3
4	282	Amtrak Depot (Wb)	8.4	5.2	43.7
5	2579	Franklin Blvd & 16th Ave (Sb)	9.4	4.5	42.3
6	1164	Arden Way & Heritage Ln (Wb)	7.8	5.3	41.7
7	2587	M L King Jr Blvd & Fruitridge Rd (Sb)	8.7	4.6	39.8
8	2618	Franklin Blvd & 16th Ave (Nb)	8.7	4.5	39.1
9	3722	Broadway & Stockton Blvd (Eb)	8.6	4.5	39.0
10	601	21st Ave & Franklin Blvd (Wb)	8.6	4.5	38.7
11	9807	Arden Way & Del Paso Blvd LRT(Eb)	5.4	7.1	38.4
12	418	J St & 11th St (Eb)	7.7	5.0	38.0
13	548	Del Paso Blvd & El Camino Ave (Nb)	8.4	4.5	38.0
14	414	J St & 6th St (Eb)	6.9	5.4	37.5
15	684	Grove Ave & El Monte Ave (Nb)	7.7	4.8	37.4
16	5252	L St & 5th St (Wb)	7.3	5.1	37.4
17	1839	Stockton Blvd & Broadway (Sb)	8.6	4.3	37.1
18	6107	Fruitridge Rd & Fruitridge LRT (Wb)	7.7	4.8	36.7
19	545	Del Paso Blvd & Winnipeg St (Nb)	7.2	5.1	36.6
20	531	L St & 4th St (Wb)	7.5	4.9	36.6
21	604	Richards Blvd & North 10th St (Wb)	9.8	3.7	36.6
22	596	Del Paso Blvd & Winnipeg St (Sb)	7.5	4.8	36.3
23	961	Rio Linda Blvd & Lampasas Ave (Nb)	8.0	4.5	36.2
24	223	7th St & J St (Sb)	6.7	5.4	36.0
25	8042	79th St & 32nd Ave (Nb)	8.0	4.5	35.6
26	284	Del Paso Blvd & Hawthorne (Sb)	7.0	5.1	35.6
27	1894	Stockton Blvd & Lawrence Dr (Nb)	9.0	3.9	35.5
28	2375	Stockton Blvd & Elsie Ave (Nb)	6.9	5.1	34.9
29	867	Lampasas Ave & Rio Linda Blvd (Sb)	7.6	4.5	34.3
30	1849	Stockton Blvd & Lawrence Dr (Sb)	8.0	4.3	34.3
31	1136	I St & 12th St (Wb)	7.6	4.5	34.0
32	547	Del Paso Blvd & El Camino Ave (Nb)	6.6	5.1	33.8
33	840	Grand Ave & Elm St (Eb)	7.0	4.9	33.7
34	850	Grand Ave & Elm St (Wb)	7.0	4.9	33.7
35	968	Rio Linda Blvd & South Ave (Nb)	7.3	4.6	33.7
36	1068	16th St & E St (Nb)	7.5	4.5	33.7
37	2409	Stockton Blvd & Massie Ct 1 (Sb)	7.0	4.8	33.7
38	2282	Fruitridge Rd & Freeport Blvd (Eb)	9.0	3.7	33.5

Number	Stop ID	Stop Name	UHI Scaled	Consequence Score	Heat Risk Score
39	855	Grand Ave & Altos Ave (Wb)	7.2	4.6	33.3
40	560	Marysville Blvd & Los Robles Blvd 1 (Nb)	6.4	5.2	33.3
41	594	Del Paso Blvd & El Camino Ave (Sb)	7.3	4.5	33.0
42	1887	Stockton Blvd & Eldercreek Rd (Nb)	7.4	4.4	32.6
43	593	Del Paso Blvd & Lampasas Ave (Sb)	7.2	4.5	32.5
44	3131	65th St & Sky Pkwy (Eb)	9.5	3.4	32.4
45	859	Rio Linda Blvd & Grand Ave (Sb)	7.0	4.6	32.4
46	2597	Franklin Blvd & Florin Rd (Nb)	8.4	3.8	32.2
47	595	Del Paso Blvd & El Camino Ave (Sb)	6.6	4.8	32.2
48	4094	Alta Valley Way & Mack Rd (Sb)	7.6	4.2	32.1
49	5260	North B St & Ahern St (Wb)	8.6	3.7	32.0
50	417	J St & 10th St (Eb)	6.8	4.7	32.0

Light Rail Stations

Consequence Metrics

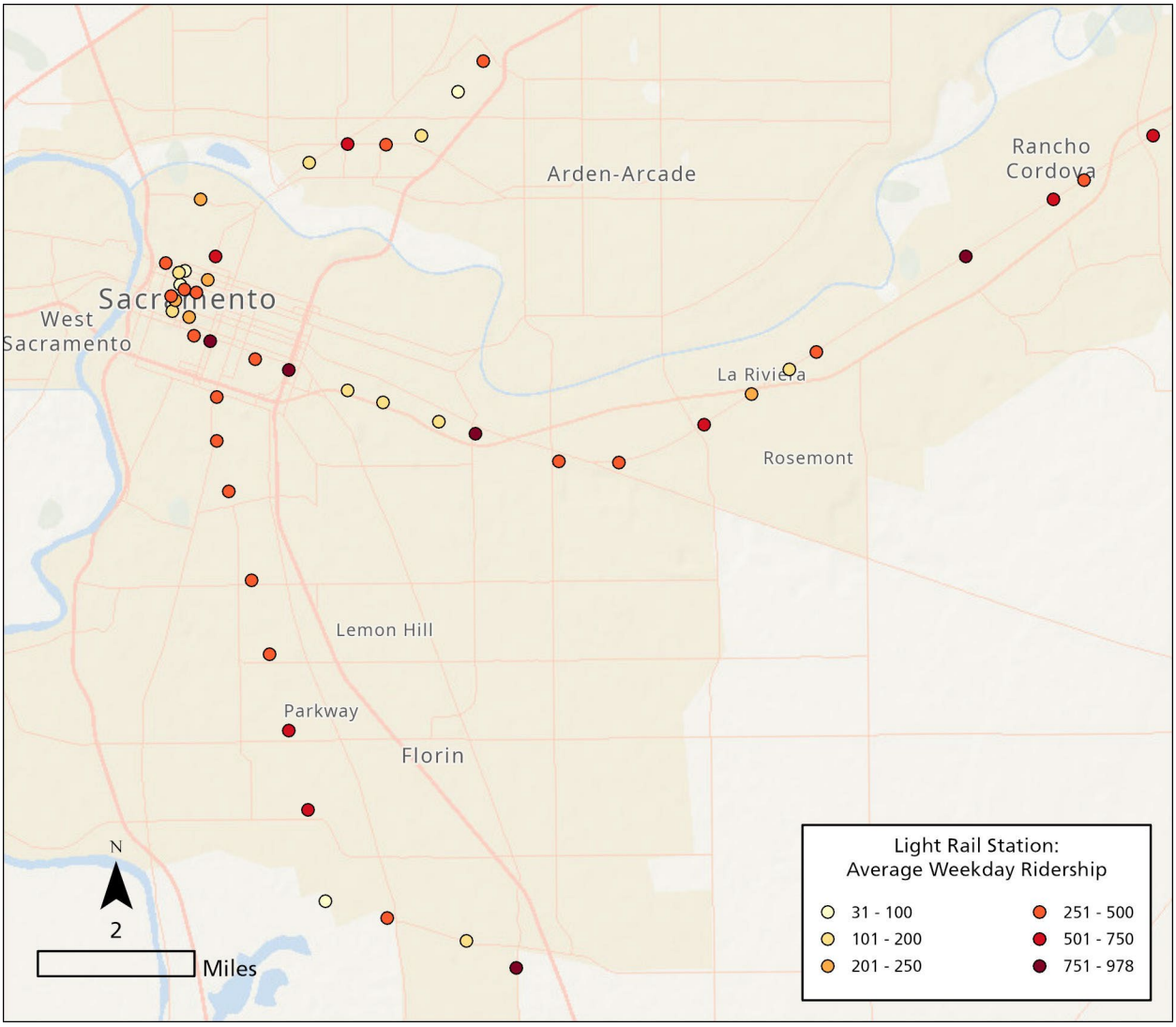
Table 17 shows the metrics, scales and weights used for calculating consequence scores for light rail stations. All metrics were given an even weight.

Table 17: Consequence score metric weights for light rail stations

Metric	Scale	Weight
Ridership	Average boardings normalized from 0 (lowest) to 10 (highest)	25%
Typical Bus Bridge Time Around Station	Values > 1 minute and <= 10 minutes: Remain as is Values > 10 minutes: 10	25%
Nearby Critical Facilities	Within ¼ mile: 0 Within ½ mile: 2 Within ¾ mile: 5 Over ¾ mile: 10	25%
CalEnviroScreen Score	All percentiles divided by 10	25%

Ridership

Average daily ridership data for light rail stations was provided by SacRT for January 2024 to September 2024. The dataset summed the average number of riders boarding at a given stop and was joined to the GIS data by a unique ID. Stops with an unknown ridership value were assigned the median value of the dataset. Map 23 shows the spatial distribution of daily ridership. The highest ridership stations are 16th St, 29th St, Mather Field/Mills, Watt/I-80, University/65th St, and Cosumnes River College (CRC).



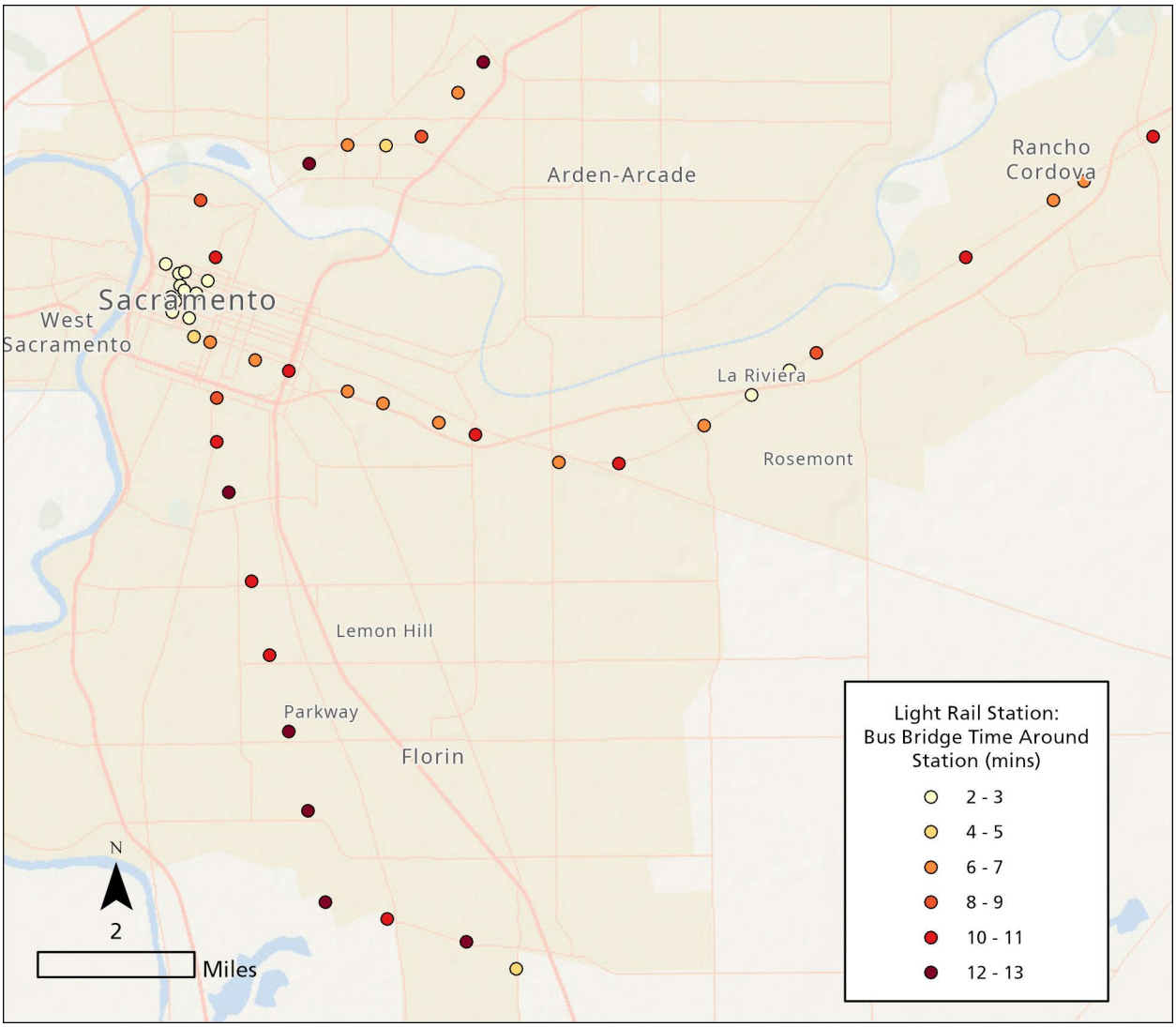
Map 23: Light Rail Station Ridership

Typical Bus Bridge Time Around Station

Typical bus bridge time represents the estimated number of minutes required for a replacement bus service to travel around a light rail station segment if train operations are disrupted. This metric captures how quickly SacRT can maintain continuity of service during an outage and how severely a station closure may affect riders. Stations with longer bus bridge times create greater travel delays for passengers.

Map 24 shows the spatial distribution of bus bridge times across the light rail system. Shorter bus bridge times are primarily found in and around Downtown Sacramento, where the street grid is dense and offers multiple parallel routes.

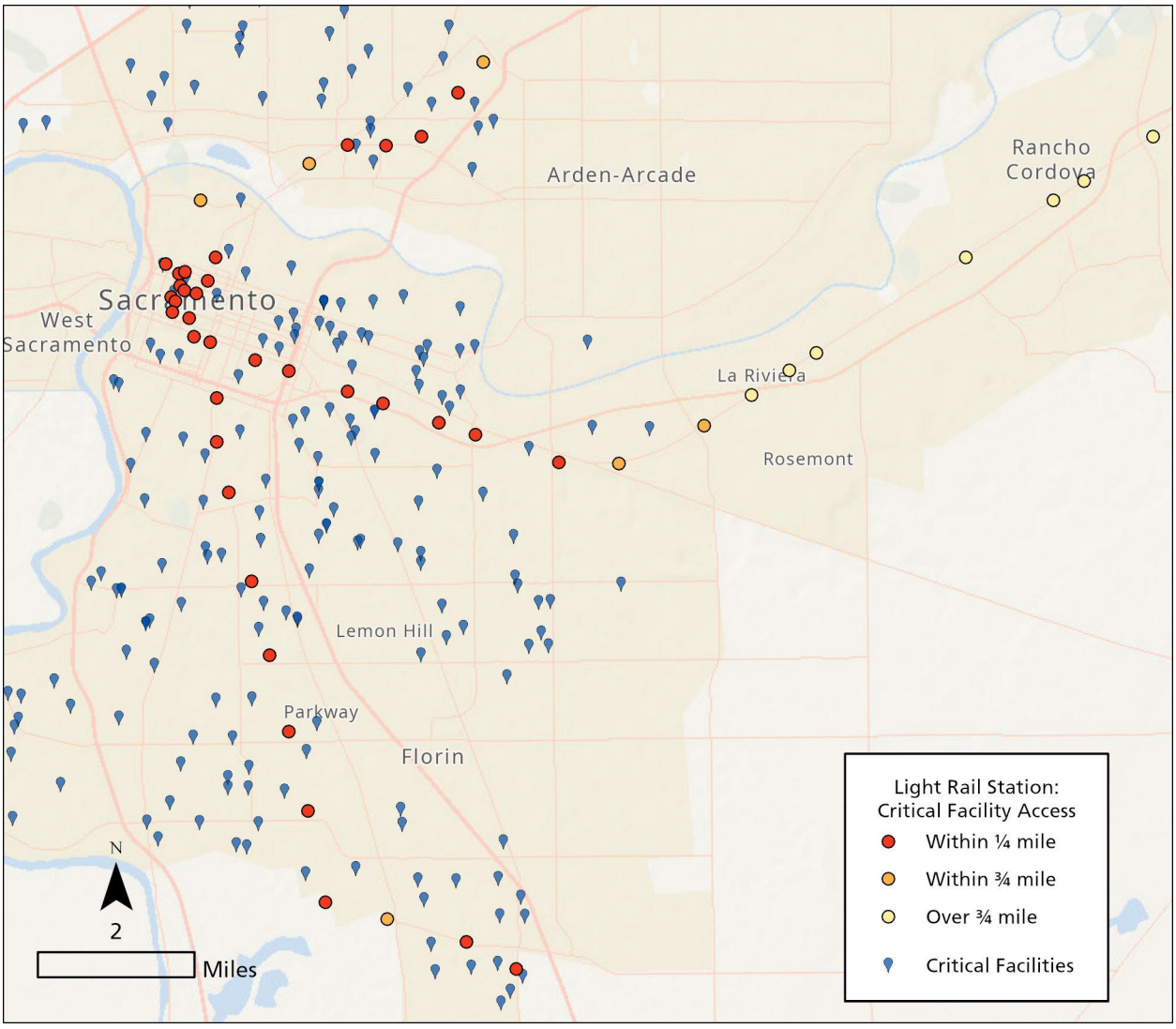
In contrast, longer bus bridge times occur on stations along the Blue and Gold Lines outside of the Downtown core, particularly in South Sacramento, Florin, and portions of Rancho Cordova. These stations pose higher operational challenges during service disruptions, as buses must travel longer distances or navigate limited detour options.



Map 24: Light Rail Stations Bus Bridge Time Around Station

Nearby Critical Facilities

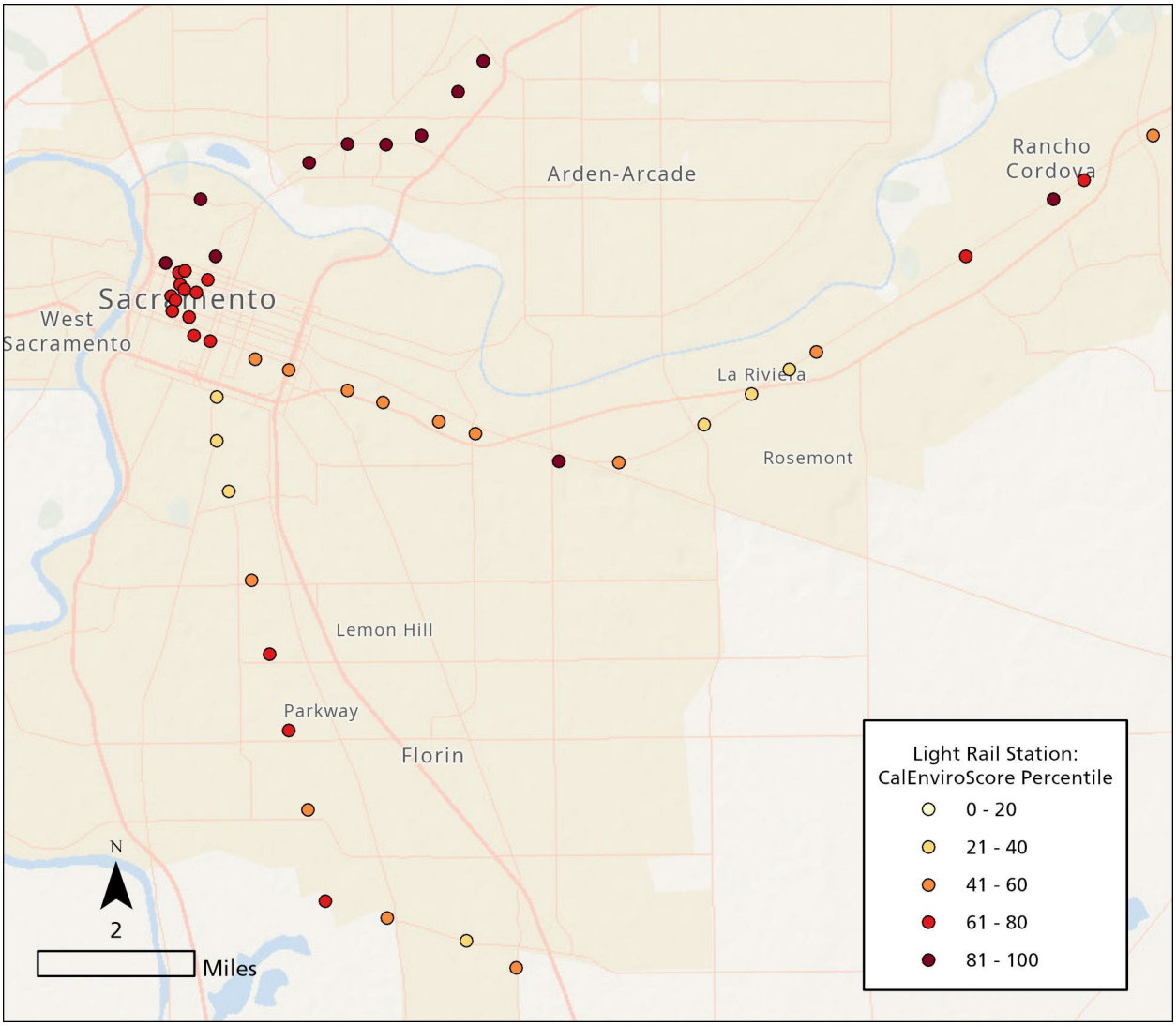
Access to critical facilities is an important metric for understanding the community consequences of disruptions at light rail stations. Map 25 shows each light rail station categorized by its proximity to the nearest critical facility. The large majority of stations within the City of Sacramento are within ¼ mile of a critical facility. Note that critical facilities were only evaluated for the City of Sacramento, so many stations outside the City were categorized as over ¾ mile from critical facilities. However, some of these stations may be near other critical facilities that were not included in this analysis.



Map 25: Light Rail Stations Critical Facility Access

CalEnviroScreen Score

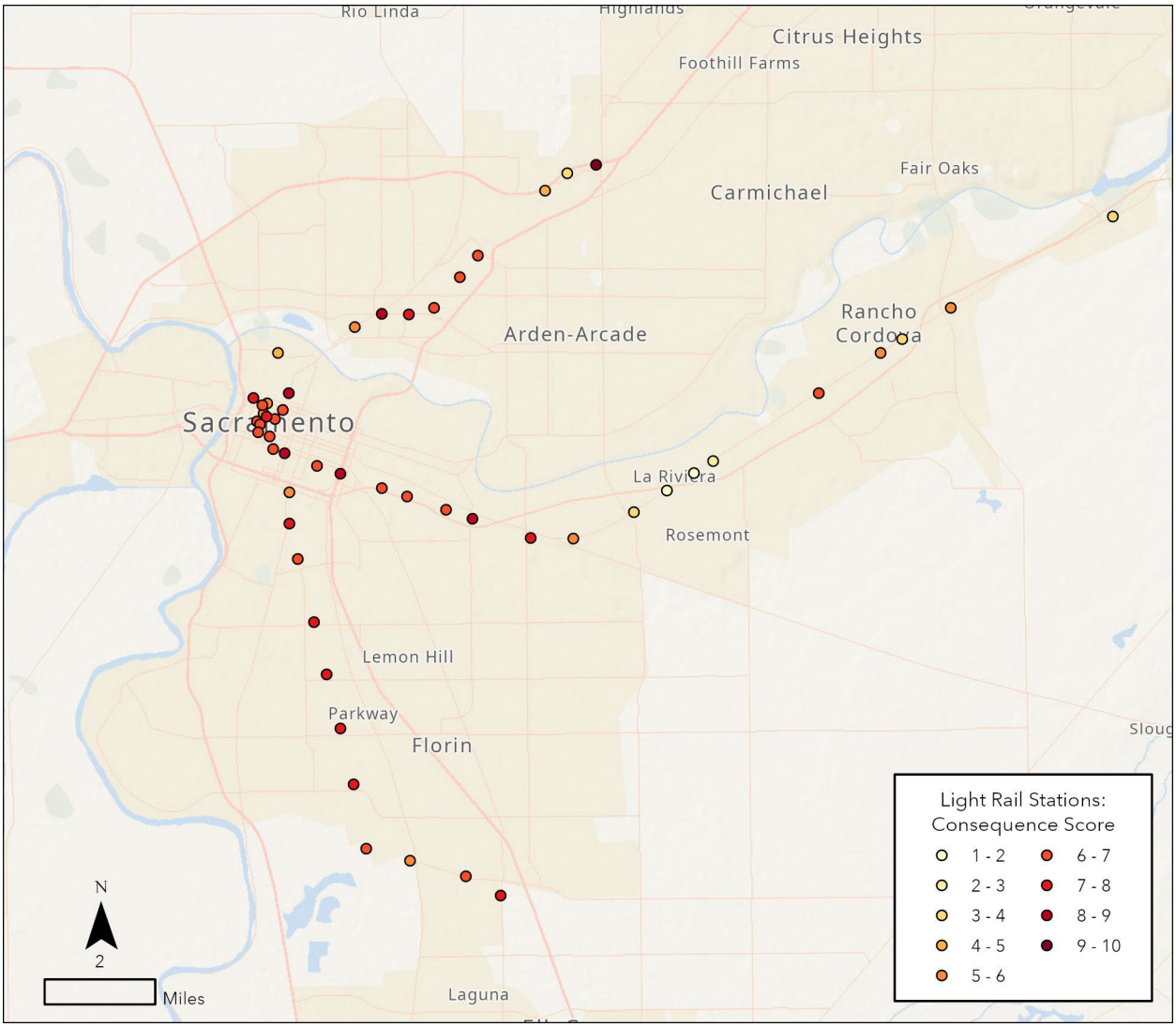
Map 26 shows the CalEnviroScreen percentiles for light rail stations across the network. Of the highest scoring stations, most are located in the Downtown area or along the Blue Line in North Sacramento, with Power Inn, Mather Field/Mills, and Zinfandel being the exceptions.



Map 26: CalEnviroScreen Percentiles for Light Rail Stations

Consequence Scores

Map 27 illustrates the distribution of consequence scores across the light rail system, with higher scoring stations concentrated around major destinations and key transfer points. Stations with higher scores tend to serve large numbers of riders, have longer travel times between stations, provide access to critical facilities, and be located in more disadvantaged communities. The highest consequence score stations are Watt/I-80, University/65th St., 29th St., 16th St., Alkali Flat/La Valentina, and Arden/Del Paso.



Map 27: Consequence scores for light rail stations

Table 18 lists the light rail stations in descending consequence score order. 7 stations have a consequence score of 8 or greater including:

- **Watt/I-80 Station** High ridership (860), long bus bridge time around station (11 mins), within ¼ mile of a critical facility, and CalEnviroScreen percentile of 92.3
- **University/65th Street Station** High ridership (858), long bus bridge time around station (10 mins), within ¼ mile of a critical facility.
- **29th Street Station** High ridership (905), long bus bridge time around station (10 mins), within ¼ mile of a critical facility.
- **16th Street Station** Very high ridership (978), moderate bus bridge time around station (6 mins), within ¼ mile of a critical facility.
- **Alkali Flat/La Valentina Station** High ridership (557), long bus bridge time around station (11 mins), within ¼ mile of a critical facility, and CalEnviroScreen percentile of 80.4.
- **Arden/Del Paso Station** High ridership (610), moderate bus bridge time around station (6 mins), within ¼ mile of a critical facility, and CalEnviroScreen percentile of 93.5.
- **Florin Station** Moderate ridership (569), long bus bridge time around station (12 mins), within ¼ mile of a critical facility.

Table 18: Top 50 consequence scores for light rail stations

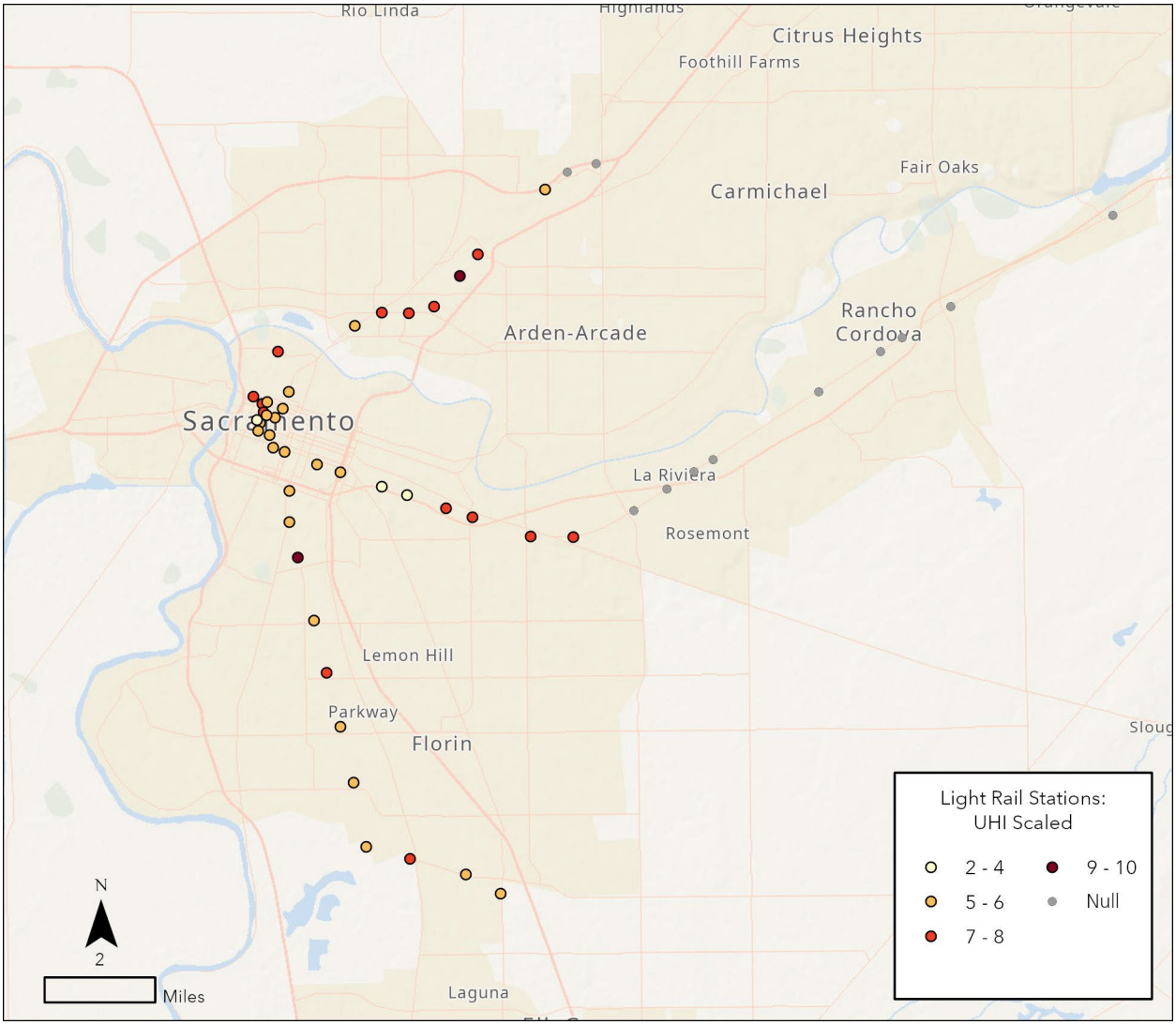
Number	Stop Name	Ridership	Typical Bus Bridge Time Around Station (mins)	Access to Critical Facilities	CES Percentile	Consequence Score
1	Watt/I-80 Station	860	11	Within ¼ mile	92.3	9.5
2	University/65th Street Station	858	10	Within ¼ mile	41.1	8.9
3	29th Street Station	905	10	Within ¼ mile	59.5	8.9
4	16th Street Station	978	6	Within ¼ mile	60.6	8.5
5	Alkali Flat/La Valentina Sta	557	11	Within ¼ mile	80.4	8.4
6	Arden/Del Paso Station	610	6	Within ¼ mile	93.5	8.4
7	Florin Station	569	12	Within ¼ mile	61.8	8.0

8	Meadowview Station	505	13	Within ¼ mile	57.1	7.7
9	CRC Station	809	4	Within ¼ mile	55.4	7.7
10	Power Inn Station	360	6	Within ¼ mile	91.3	7.5
11	Sacramento Valley Station	347	2	Within ¼ mile	98.8	7.4
12	Royal Oaks Station	298	5	Within ¼ mile	93.5	7.3
13	Fruitridge Station	416	10	Within ¼ mile	48.8	7.3
14	47th Avenue Station	286	10	Within ¼ mile	61.8	7.3
15	4th Ave/Wayne Hultgren Station	491	10	Within ¼ mile	32.0	7.1
16	St Rose Of Lima Park Station	429	2	Within ¼ mile	78.3	7.1
17	Swanston Station	139	8	Within ¼ mile	93.5	6.9
18	City College Station	444	12	Within ¼ mile	32.0	6.9
19	7th & Capitol Station	363	2	Within ¼ mile	78.3	6.9
20	Cathedral Square Station	363	2	Within ¼ mile	78.3	6.9
21	Mather Field/Mills Station	901	11	No Access	76.8	6.7
22	Morrison Creek Station	53	12	Within ¼ mile	61.3	6.7
23	12th & I Station	222	2	Within ¼ mile	78.3	6.5
24	23rd Street Station	271	7	Within ¼ mile	59.5	6.5
25	8th & Capitol Station	214	2	Within ¼ mile	78.3	6.5
26	Employee Platform Station	84	6	Within ¼ mile	88.9	6.4
27	Marconi/Arcade Station	453	12	Within ¾ mile	88.9	6.4
28	Archives Plaza Station	206	2	Within ¼ mile	78.3	6.2
29	7th & I/County Center Station	197	2	Within ¼ mile	78.3	6.2
30	39th Street Station	177	7	Within ¼ mile	48.1	6.2
31	59th Street Station	168	7	Within ¼ mile	41.1	6.2
32	13th Street Station	255	5	Within ¼ mile	60.6	6.2
33	48th Street Station	147	7	Within ¼ mile	41.1	6.1
34	Center Parkway Station	182	12	Within ¼ mile	25.4	6.1
35	8th & O Station	128	2	Within ¼ mile	78.3	6.0
36	8th & K Station	78	2	Within ¼ mile	78.3	5.9
37	8th & H Station	41	2	Within ¼ mile	78.3	5.8
38	Broadway Station	421	8	Within ¼ mile	28.8	5.8
39	Globe Avenue Station	145	13	Within ¾ mile	93.5	5.7
40	College Greens Station	425	10	Within ¾ mile	48.7	5.3
41	Zinfandel Station	610	6	No Access	91.8	5.1
42	Sunrise Station	525	10	No Access	49.9	5.1

43	Franklin Station	275	11	Within ¾ mile	53.8	5.0
44	Township 9 Station	201	8	Within ¾ mile	98.8	4.7
45	Roseville Road Station	213	8	No Access	92.3	4.1
46	Hazel Station	95	10	No Access	49.9	4.0
47	Watt/Manlove Station	570	6	Within ¾ mile	35.7	3.9
48	Cordova Town Center Station	311	6	No Access	74.6	3.7
49	Watt/I-80 West Station	31	3	No Access	92.3	3.1
50	Iron Point Station	518	8	No Access	17.7	2.8
51	Glenn Station	305	6	No Access	17.7	2.0
52	Historic Folsom Station	305	2	No Access	26.2	1.9
53	Starfire Station	204	3	No Access	35.7	1.9
54	Tiber Station	185	3	No Access	21.2	1.5

Likelihood and Risk

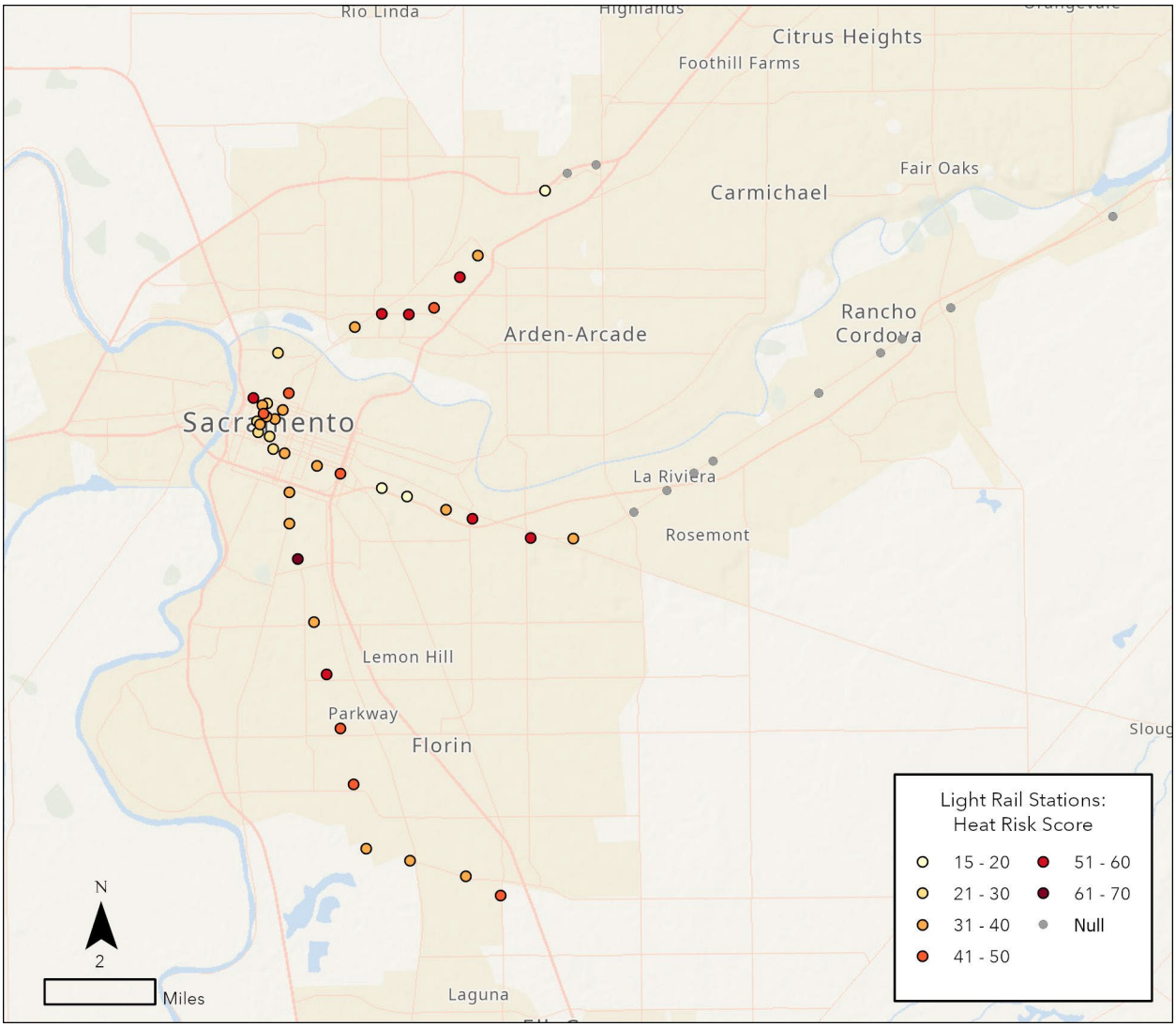
Map 28 shows scaled UHI intensities for light rail stations. City College Station has the highest UHI value in the network. The downtown area contains a cluster of stations with elevated UHI values, reflecting the densely built environment. The UHI data used in this analysis covered the City of Sacramento, so stations outside the city boundary are shown as nulls on the map.



Map 28: Scaled Urban Heat Island scores for light rail stations within Sacramento

Map 29 shows heat risk scores – the product of scaled UHI intensity and consequence score – for light rail stations. The highest-scoring light rail stations by heat risk are listed in Table 19. The rest of the stations fall outside the boundaries of the UHI data and therefore do not have heat risk scores.

The stations with the highest heat risk scores include City College, Watt/I-80, University/65th St., and Royal Oaks. These stations all have relatively high UHI indexes and consequence scores.



Map 29: Heat risk score for light rail stations within Sacramento

Table 19: Light rail stations by descending heat risk scores

Number	Stop Name	UHI Scaled	Consequence Score	Heat Risk Score
1	City College Station	8.9	6.9	61.9
2	University/65th Street Station	6.6	8.9	59.2
3	Royal Oaks Station	7.9	7.3	57.8
4	Employee Platform Station	8.7	6.4	56.0
5	Sacramento Valley Station	7.1	7.4	52.3
6	Power Inn Station	7.0	7.5	52.0
7	Arden/Del Paso Station	6.1	8.4	51.1
8	47th Avenue Station	6.9	7.3	50.4
9	Florin Station	5.8	8.0	46.0
10	29th Street Station	5.1	8.9	45.4
11	Meadowview Station	5.8	7.7	44.8
12	CRC Station	5.8	7.7	44.5
13	8th & K Station	7.5	5.9	44.2
14	Alkali Flat/La Valentina Sta	5.1	8.4	42.8
15	Swanston Station	6.1	6.9	42.0
16	Fruitridge Station	5.4	7.3	39.7
17	4th Ave/Wayne Hultgren Station	5.6	7.1	39.2
18	7th & I/County Center Station	6.3	6.2	39.2
19	Marconi/Arcade Station	6.1	6.4	39.0
20	23rd Street Station	5.9	6.5	38.6
21	Cathedral Square Station	5.6	6.9	38.3
22	59th Street Station	6.1	6.2	37.6
23	16th Street Station	4.3	8.5	36.6
24	St Rose Of Lima Park Station	4.9	7.1	34.6
25	College Greens Station	6.4	5.3	34.1
26	Globe Avenue Station	5.9	5.7	33.8
27	8th & Capitol Station	5.2	6.5	33.7
28	Morrison Creek Station	5.0	6.7	33.6
29	Center Parkway Station	5.5	6.1	33.4
30	12th & I Station	5.0	6.5	32.8
31	Franklin Station	6.1	5.0	30.9
32	Broadway Station	5.3	5.8	30.8
33	Archives Plaza Station	4.8	6.2	29.8
34	Township 9 Station	6.1	4.7	29.0
35	8th & O Station	4.5	6.0	27.0
36	7th & Capitol Station	3.7	6.9	25.5
37	13th Street Station	4.1	6.2	25.2
38	8th & H Station	4.2	5.8	24.3
39	48th Street Station	3.2	6.1	19.6
40	Roseville Road Station	4.4	4.1	18.2
41	39th Street Station	2.4	6.2	14.7

Traffic Signals

Consequence Metrics

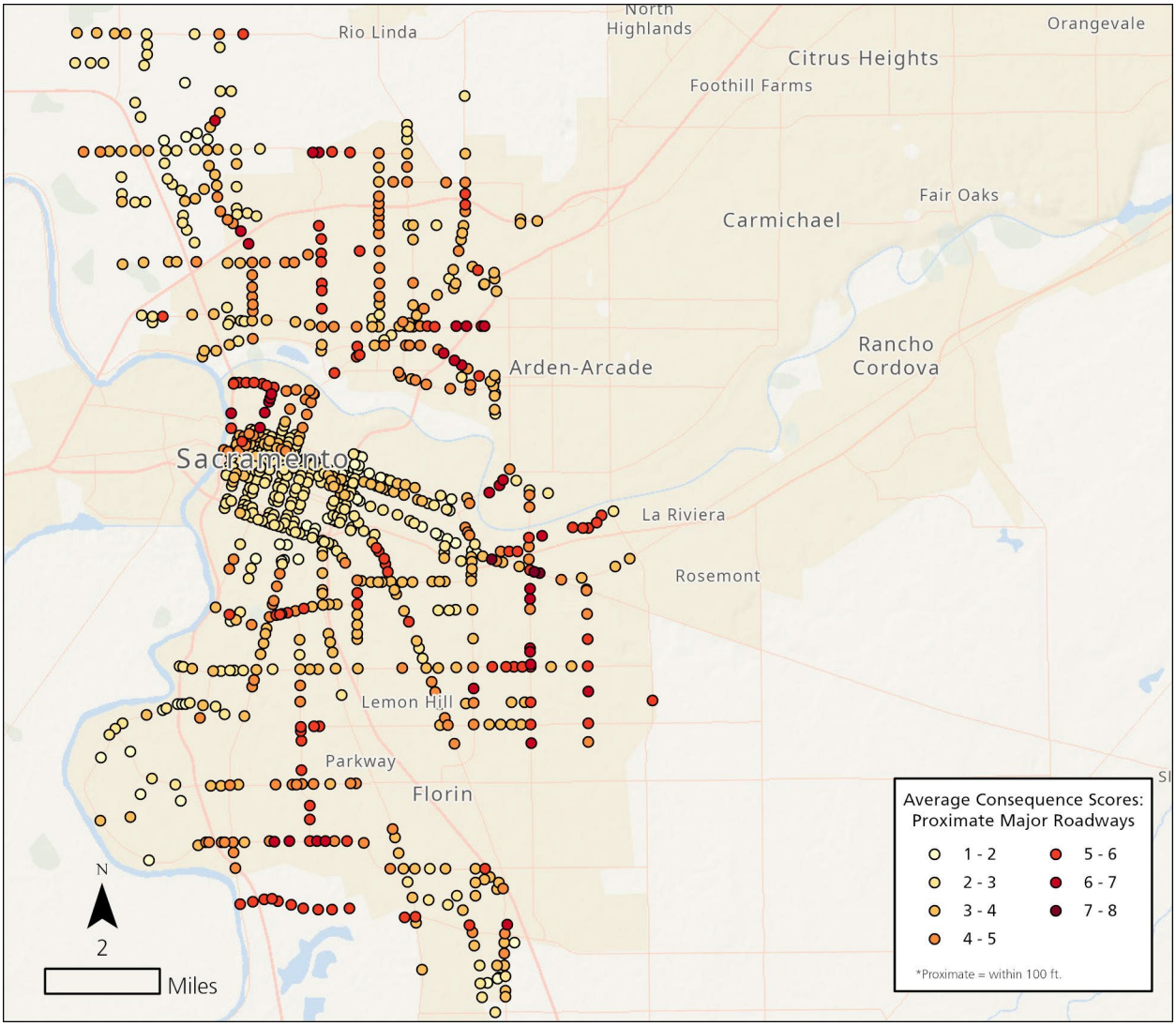
Table 20 shows the metrics, scales, and weights used for calculating consequence scores for light rail stations. Traffic signals inherit most of their consequence scores from the roads at their intersections, with smaller portions coming from the count of roads at the intersection, and whether they serve as light rail signals.

Table 20: Consequence score metric weights for traffic signals

Metric	Scale	Weight
Average Consequence Score of Nearby Major Roads	Average consequence score from segmented arterials and collectors within 100 ft.	50%
Count of Nearby Roads	Count of highways, arterials, collectors, and ramps within 100 ft. 5+ nearby segments: 10 4 nearby segments: 8 3 nearby segments: 6 2 nearby segments: 4 1 nearby segment: 2 0 nearby segments: 0	25%
Rail or On/Off Ramp Signal	“Yes”: 10 “No”: 0	25%

Average Consequence Score from Major Roadways

The average consequence score of major roadway segments located within 100 feet of each traffic signal was assigned to the corresponding signal. If no nearby segment data were available, the signal received a score of 0 for this metric. By using the consequence scores of nearby arterial and collector segments, we can better understand the potential impact of signal disruption within the broader transportation network. Signals located along high-consequence roads, like those serving critical facilities, high traffic volumes, or vulnerable communities are more essential to maintaining network performance and access. Map 30 shows the spatial distribution of these signals.

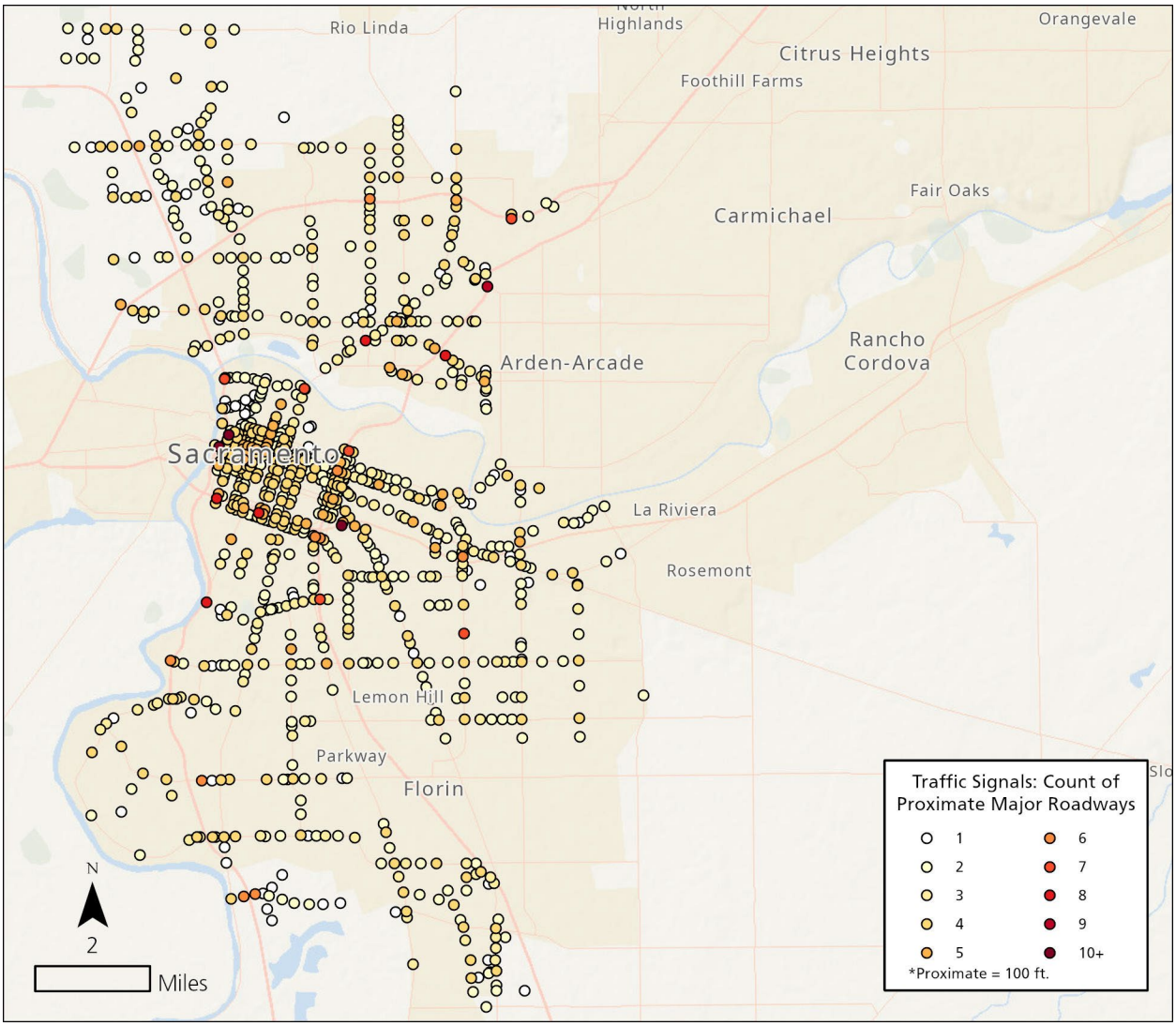


Map 30: Traffic signals by average consequence score from major roadways within 100 ft.

Count of arterials, collectors, ramps, and highways

The number of arterial, collector, ramp, and highway roadway segments located within 100 feet was counted for each signal (see Map 31). Signals with higher counts serve larger portions of the transportation network and may have greater impacts on system performance if disrupted. To align this metric with others in the analysis, the following scoring scale was applied to the counts:

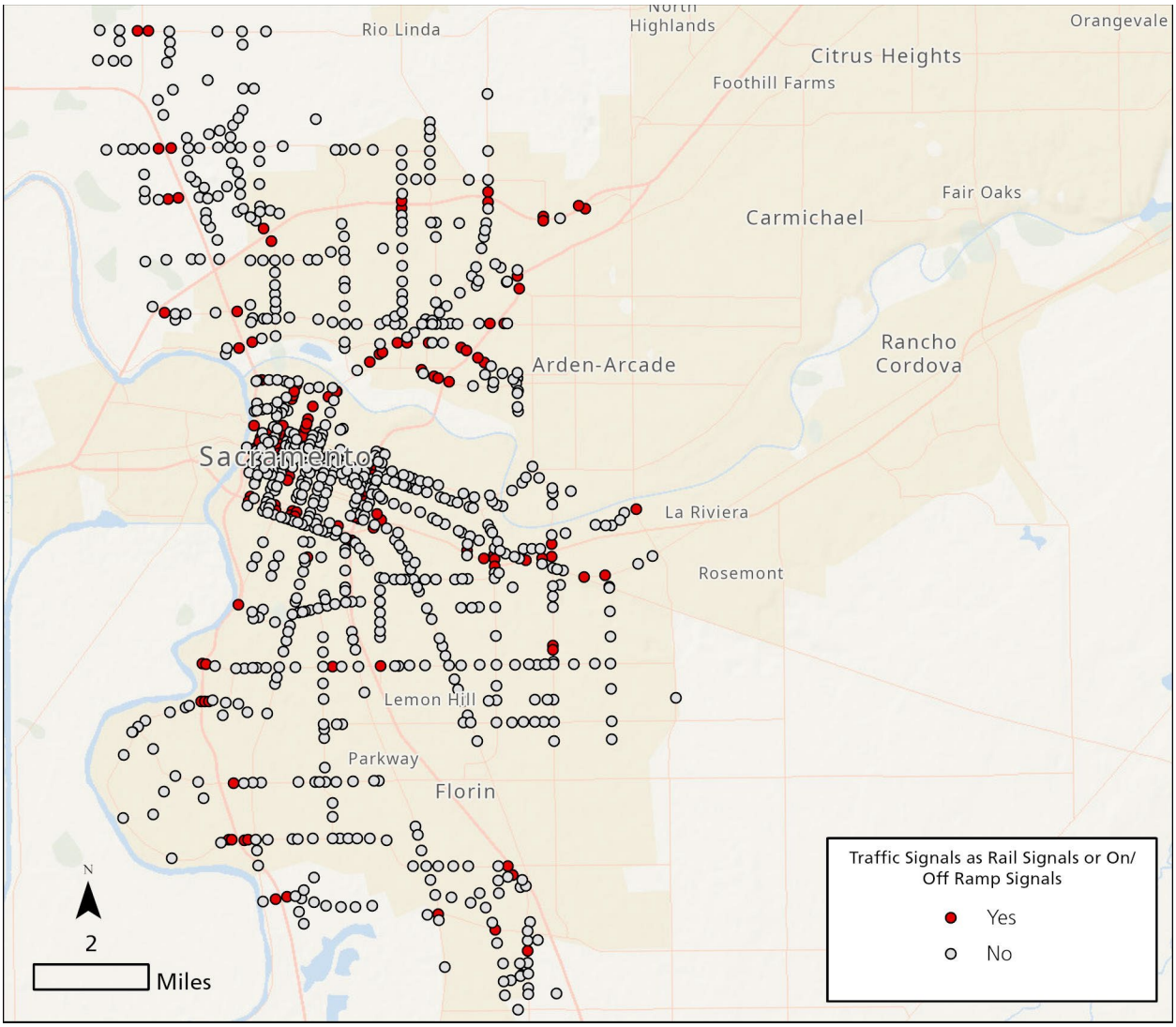
- Traffic signals with a count of 0 received a score of 0
- Traffic signals with a count of 1 received a score of 2.5
- Traffic signals with a count of 2 received a score of 5
- Traffic signals with a count of 3 received a score of 7.5
- Traffic signals with a count of 4 or more received a score of 10



Map 31: Traffic signals by count of major roads within 100ft of each traffic signal

Rail or Ramp Signal

Rail and ramp signals represent specialized traffic control devices that manage high-priority or high-risk movements, making them uniquely important within the signalized network. These devices regulate vehicle flow at railroad crossings, light-rail interfaces, and freeway on-ramps, where failures can create disproportionate safety and operational impacts. Map 32 shows where these key traffic signals are.



Map 32: Traffic signals that serve as rail signals or on/off ramp signals

Condition Scoring

In addition to the general traffic signals asset class, the following sub-asset traffic signal components were analyzed:

- Cabinets

- Controllers
- Detection devices
- Hardware

While each of these sub-assets inherits their consequence scores from the traffic signals asset class, a subset of traffic signal sub-assets that are considered near or at “End of Life” (EOL) were analyzed based on metrics about their condition.

Cabinet EOL Indicator

The Cabinet EOL indicator was based on one metric, shown in Table 21.

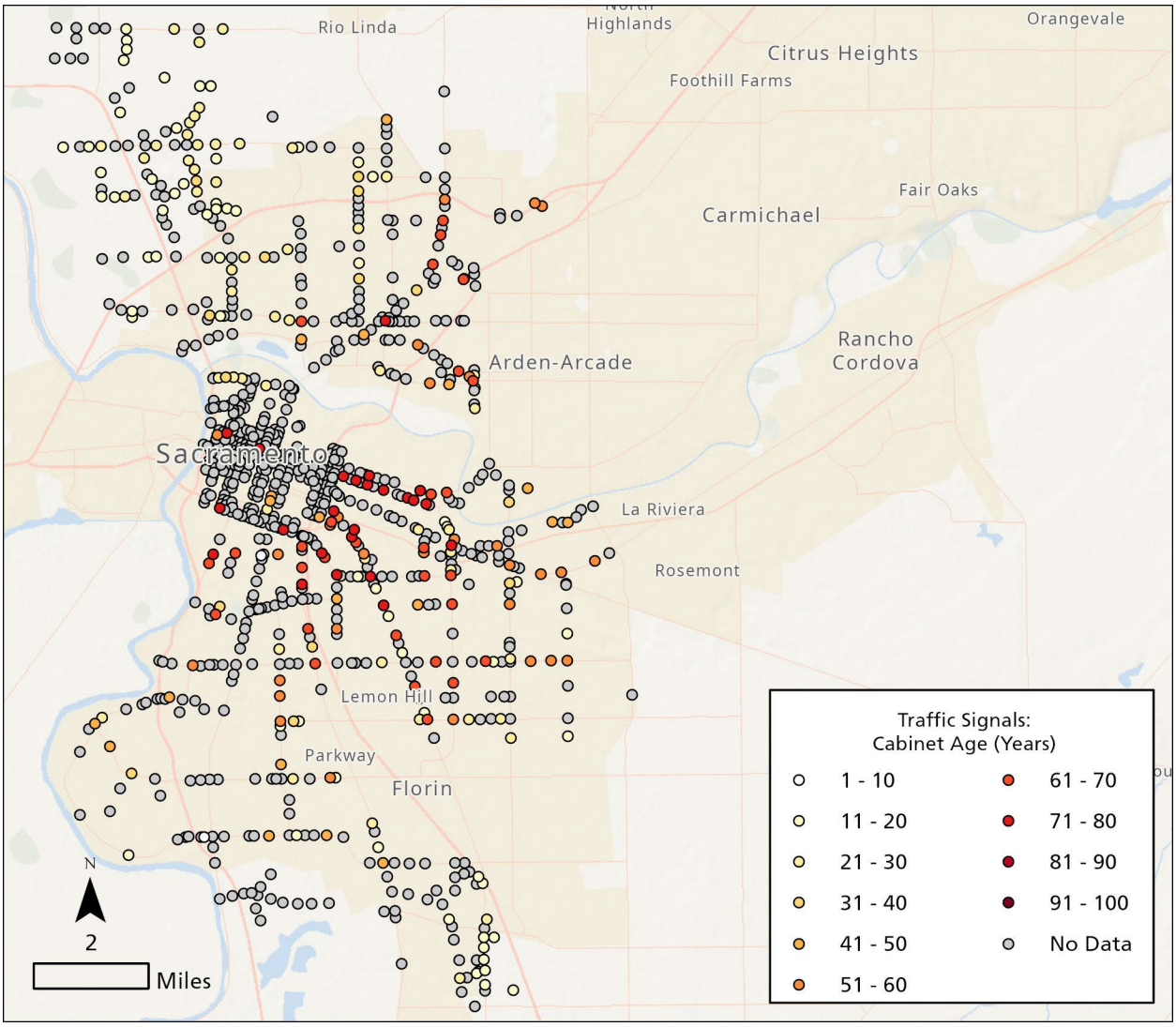
Table 21: EOL metric for traffic signal cabinets

Metric	Scale	Weight
Age of Cabinet	Min-Max scaling from 0 to 10	100%

Age of Cabinet

Older cabinets are higher priority than newer cabinets. The age of each cabinet was calculated based on its approximate activation date. This age was then normalized from 0 to 10. Most EOL traffic signal cabinets are between 15 and 25 years old.

Map 33 shows the oldest traffic signals along J Street and Stockton Boulevard to the east of downtown. “No Data” refers to cabinets that are not considered EOL.



Map 33: Traffic signals by age of cabinet

Controller EOL Indicator

The Controller EOL indicator utilized the following metric, shown in Table 22

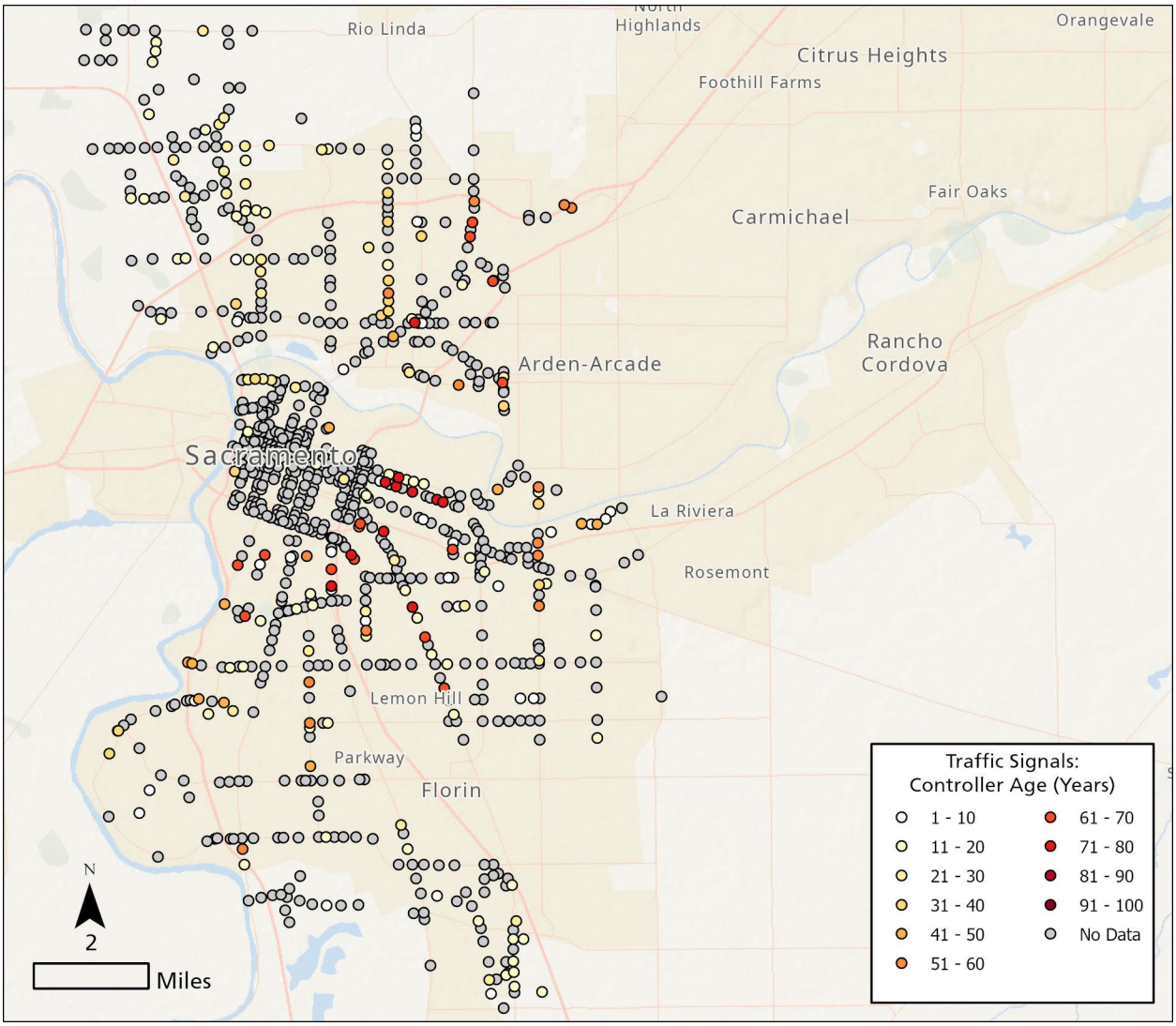
Table 22: EOL metric for traffic signal controllers

Metric	Scale	Weight
Age of Controller	Min-Max scaling from 0 to 10	100%

Age of Controller

Similarly to the age of cabinets, the age of each traffic signal controller was based on the activation date. The values were then normalized from 0 to 10. Most controllers are under 20 years. The oldest controllers have ages of around 70 years.

Map 34 shows the spatial distribution of EOL traffic signal controller ages across Sacramento.



Map 34: Traffic signals by controller age

Detection Device EOL Indicator

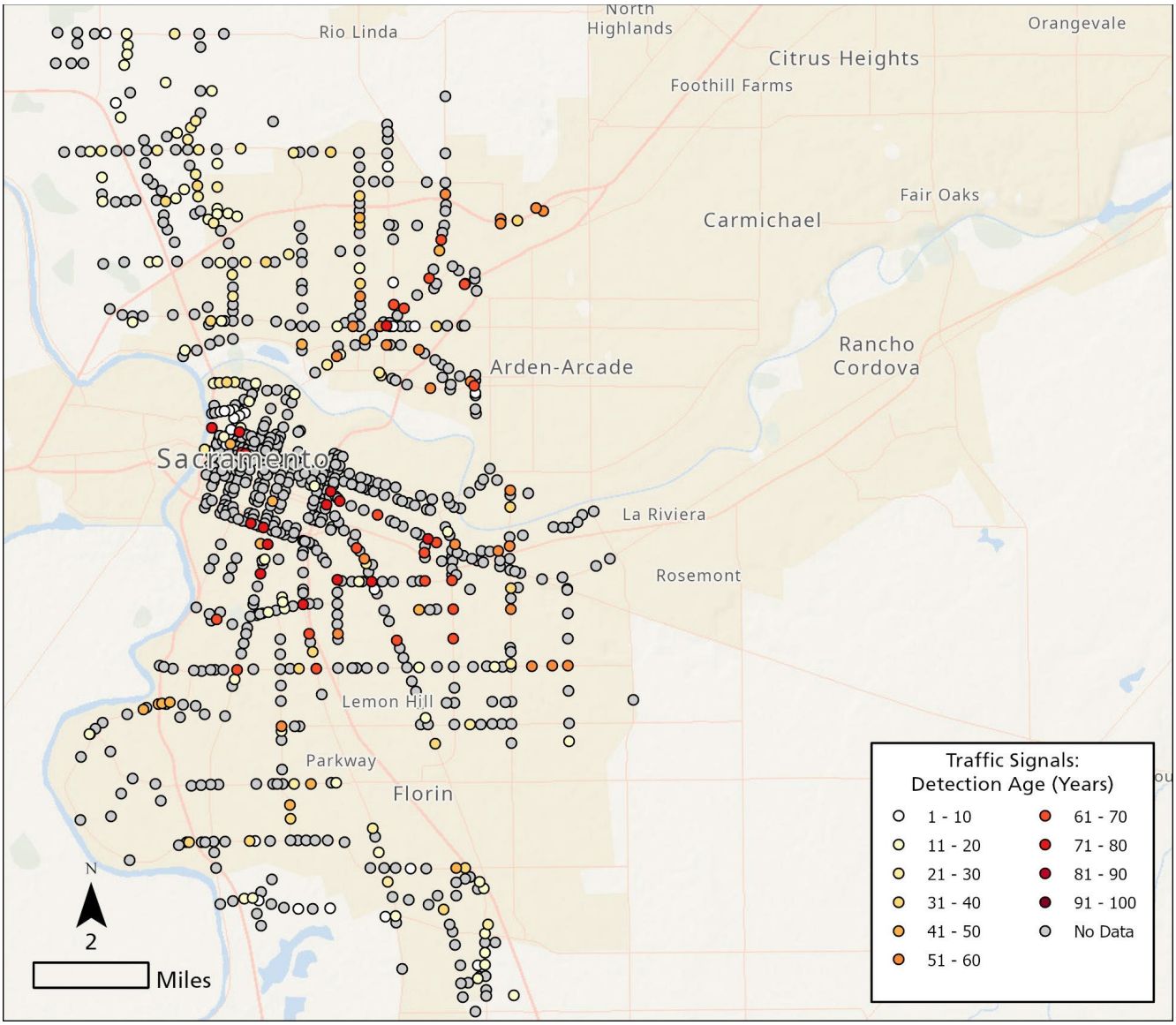
The Detection Device EOL indicator utilized two metrics, shown in Table 23.

Table 23: EOL metrics for traffic signal detection devices

Metric	Scale	Weight
Age of Controller	Min-Max scaling from 0 to 10	50%
Loops in Detection	1 or More Loops: 10 0 Loops or Null: 0	50%

Age of Detection Device

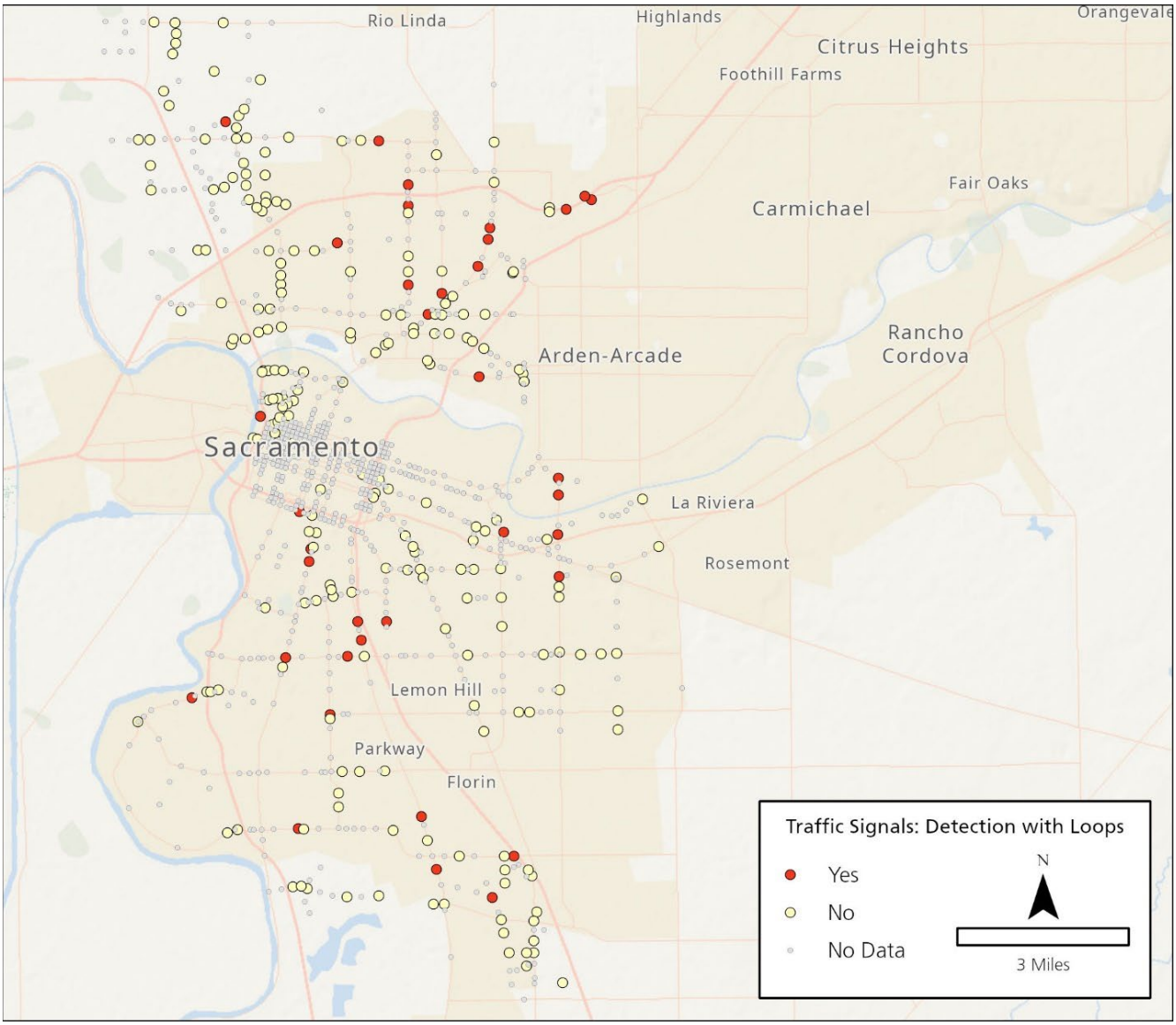
The age of each EOL traffic signal detection device was calculated based on the general activation date, and then normalized from 0 to 10. The results are found in Map 35.



Map 35: Traffic signals by signal detection device age

Loops in Detection Type Stop Bars

All EOL traffic signals with loop detection devices (i.e., traffic sensors embedded into the pavement of intersections) received a scaled value of 10. This is because loops are more susceptible to pavement deformations in high heat. If no loop was present or data was unavailable, the traffic signal instead received a score of 0. The results of this are shown in Map 36.



Map 36: Traffic signals with loop detection devices

Hardware EOL Indicator

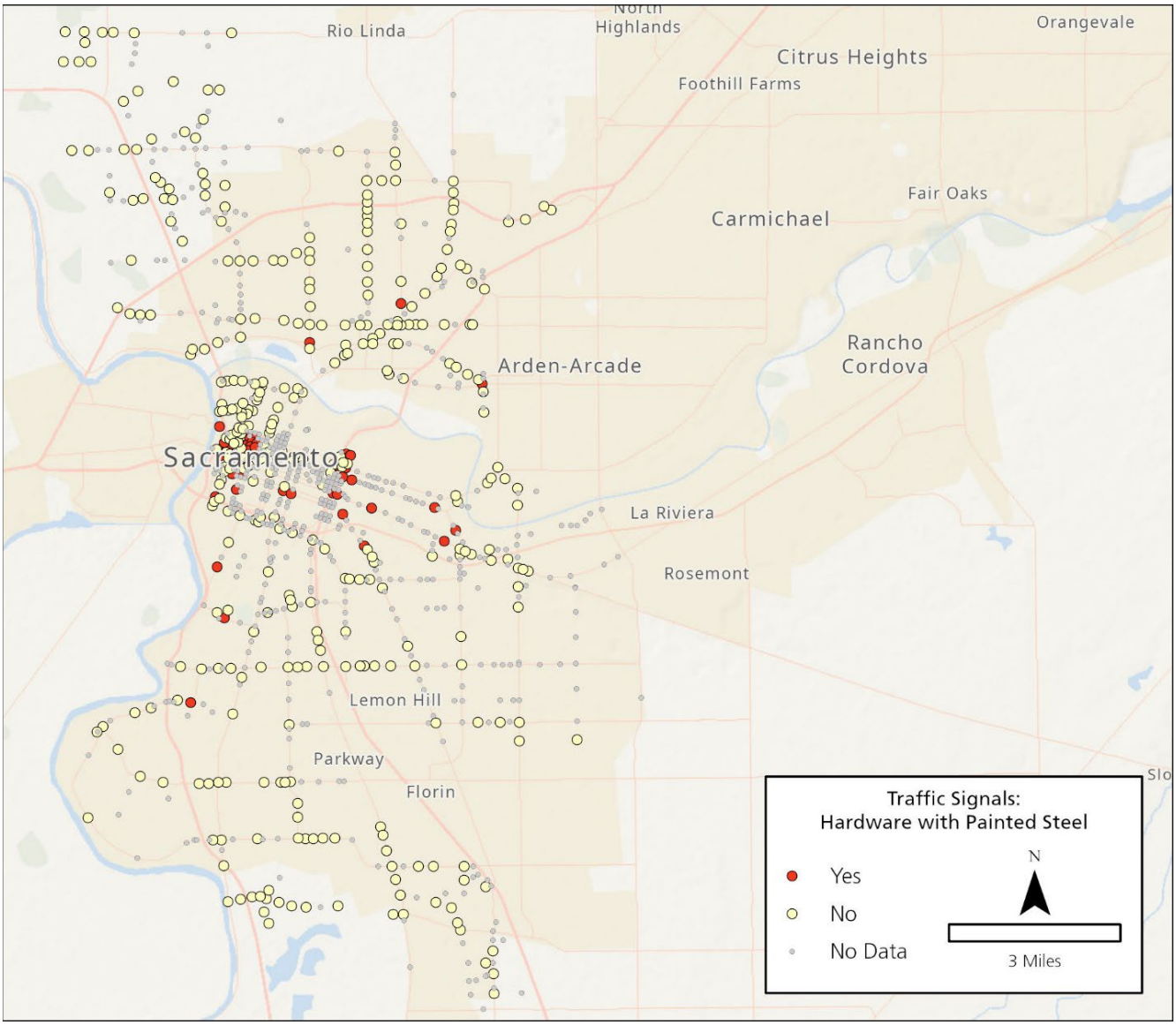
The Hardware EOL indicator utilized one metric shown in Table 24.

Table 24: EOL metric for traffic signal hardware devices

Metric	Scale	Weight
Painted Steel	Devices Use Painted Steel: 10 Devices Use No Painted Steel: 0	100%

Hardware Devices with Painted Steel

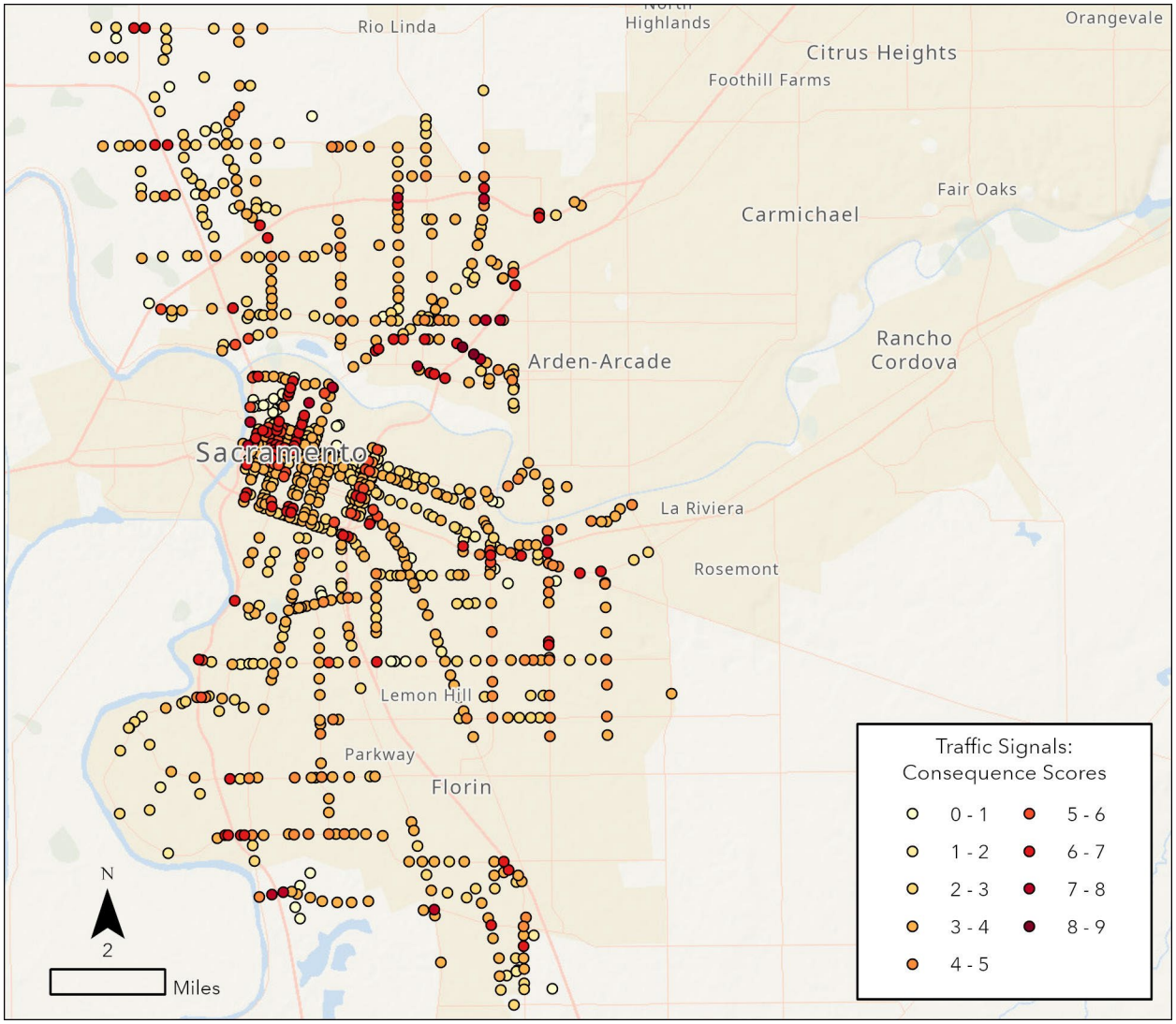
Traffic signal hardware with painted steel is prone to peeling, thus exposing the hardware to potential corrosion and increasing its chances of failure. If traffic signals contained hardware devices with painted signal poles, it was given a score of 10. If no painted steel was present the signal instead received a score of 0. Only 50 EOL traffic signals have their hardware devices painted with steel found on Map 37.



Map 37: Traffic signals with painted steel hardware

Consequence Scores

Map 38 spatially displays the consequence scores for traffic signals. The signals with the highest consequence scores are along light rail lines. The nine highest consequence traffic signals are in or near Downtown, along Arden Way, and along or near Cosumnes River Boulevard.



Map 38: Consequence scores for traffic signals

The top 50 traffic signals can be found in descending order of consequence scores in Table 25.

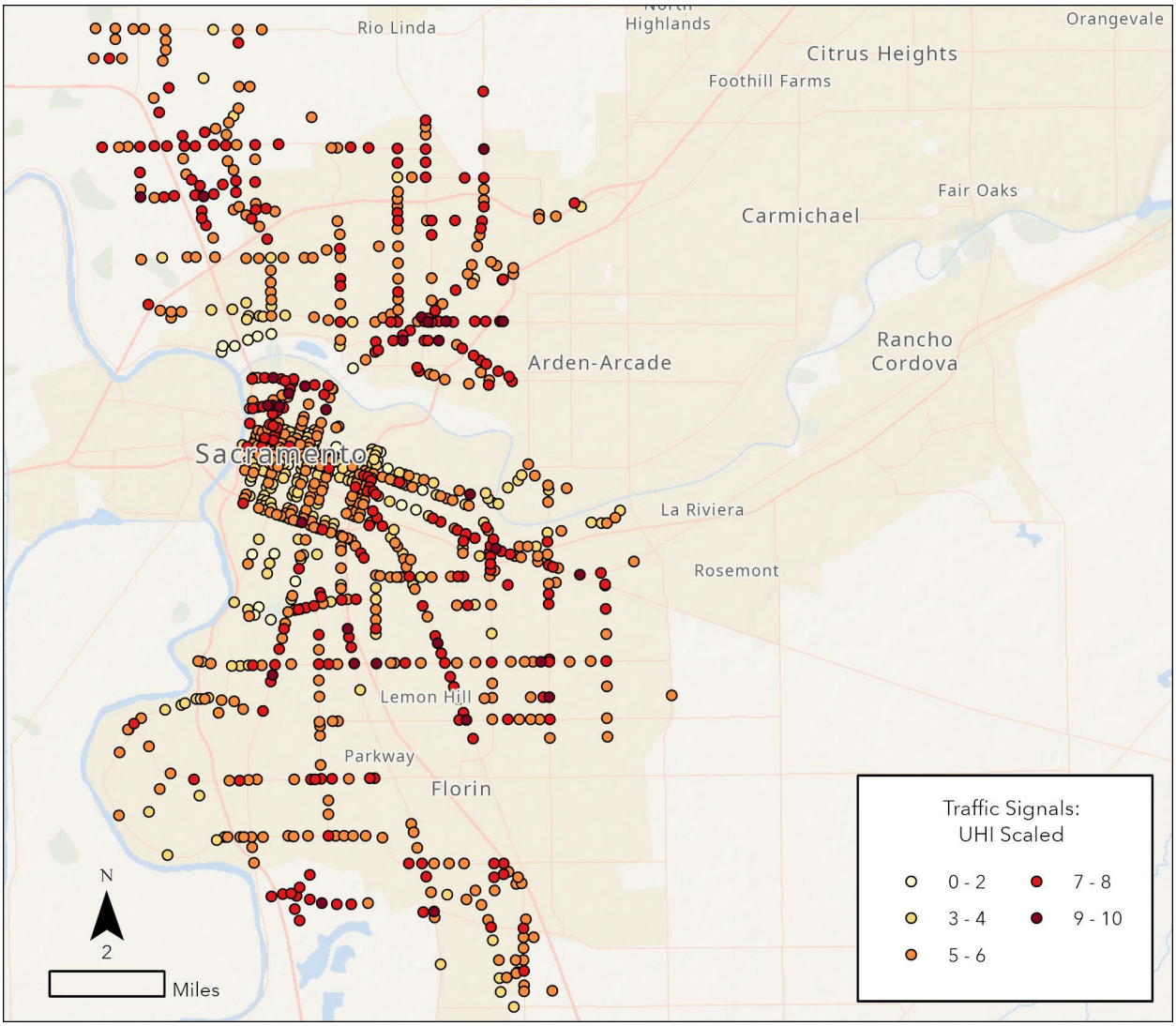
Table 25: Top 50 consequence scores for traffic signals

Number	Asset (WSPID)	Location	Avg Consequence from nearby major roads	Count of nearby major roads	Is Rail or On/Off Ramp Signal	Consequence Score
1	443	Arden Wy & Bus-80 EB	6.3	8	Yes	8.2
2	442	Arden Wy & Bus-80 WB	6.3	5	Yes	8.2
3	333	Raley Bl & I-80 E/B	5.9	5	Yes	7.9
4	822	Cosumnes River Bl & 5 NB off Ramp	5.8	6	Yes	7.9
5	821	Cosumnes River Bl & 5 SB off Ramp	5.8	6	Yes	7.9
6	642	Arden Way And Sears Driveway	6.3	4	Yes	7.7
7	745	Richard Blvd & N 12th ST / N 16th ST	4.8	7	Yes	7.4
8	290	12th Street & North 16th Street	4.8	7	Yes	7.4
9	437	El Camino Av & Bus-80 WB	6.7	3	Yes	7.4
10	436	El Camino Av & Bus-80 EB	6.7	3	Yes	7.4
11	123	Jibboom St & I St Bridge	5.7	4	Yes	7.3
12	600	Exposition & Leisure Ln	4.4	5	Yes	7.2
13	570	Norwood & I-80 Westbound	4.4	6	Yes	7.2
14	40	12th St & North B St	4.3	5	Yes	7.2
15	603	Franklin Bl & Cosumnes River Bl	5.2	4	Yes	7.1
16	838	Riverfront Reconnection - Capital & 2nd ST	4.1	11	Yes	7.1
17	270	Howe Av & College Town / US-50	4.0	5	Yes	7.0
18	595	Exposition & Tribute	4.0	5	Yes	7.0
19	800	I-5 NB & Del Paso Rd	3.9	5	Yes	6.9
20	168	3rd St & J St	3.9	10	Yes	6.9
21	272	Del Paso Bl & Arden/Grove/Cante	3.9	8	Yes	6.9
22	652	Pocket Rd & I-5 N/B	4.9	4	Yes	6.9
23	540	Pocket Rd & I-5 E. Side Beacon	4.9	4	Yes	6.9
24	334	Raley Bl & I-80 W/B	5.9	3	Yes	6.9
25	373	Florin Rd & South Land Park Dr	3.8	6	Yes	6.9
26	615	Exposition Bl & I-80 West Side	4.8	4	Yes	6.9
27	384	Sutterville Rd & I-5 East Side	3.7	8	Yes	6.9
28	N/A	Power Inn Queue Cutters	6.7	2	Yes	6.8

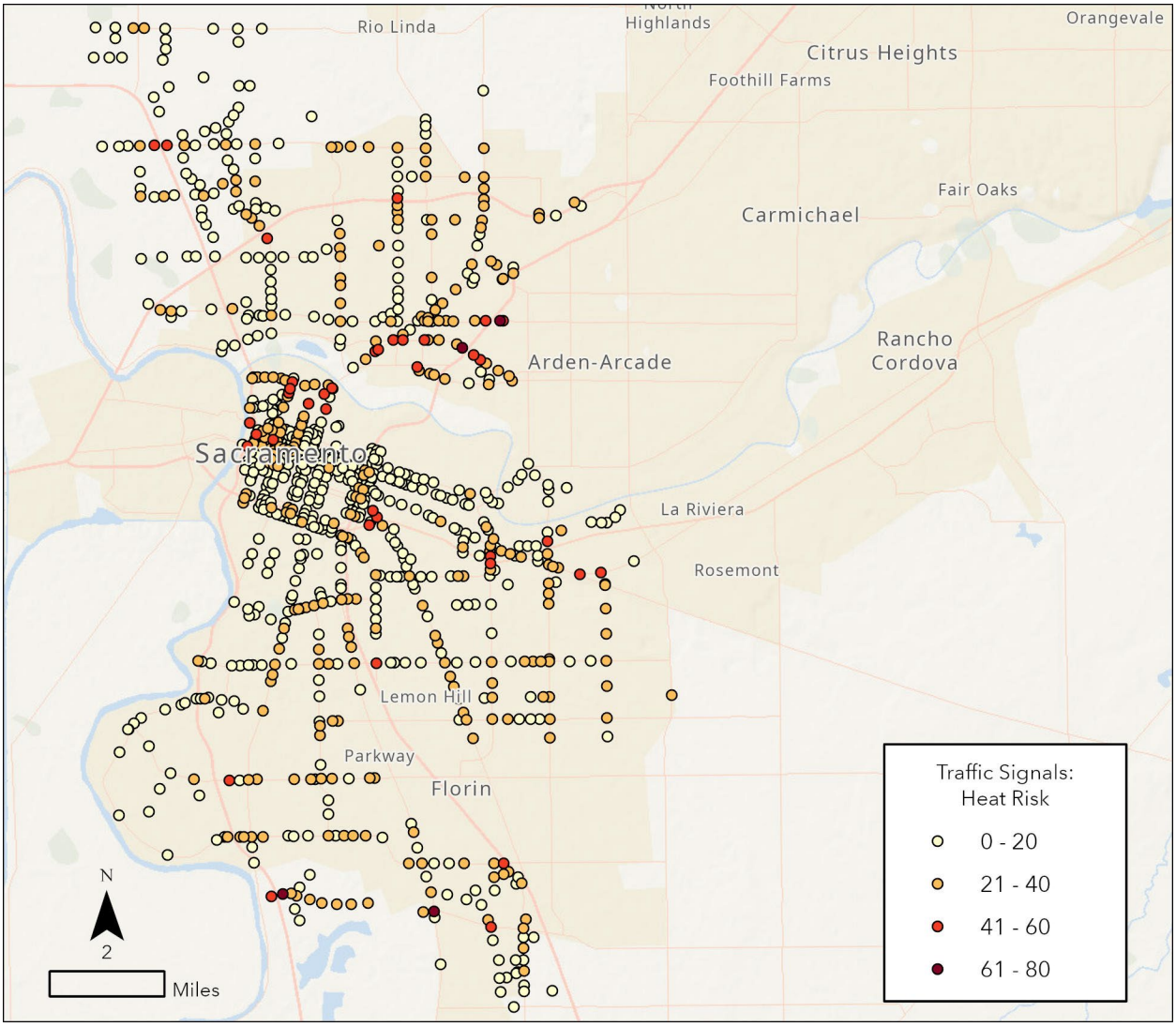
Number	Asset (WSPID)	Location	Avg Consequence from nearby major roads	Count of nearby major roads	Is Rail or On/Off Ramp Signal	Consequence Score
29	364	Folsom Bl & Jackson/Notre Dame	4.6	4	Yes	6.8
30	606	Truxel & I-80 N Side	6.6	2	Yes	6.8
31	607	Truxel & I-80 S Side	6.6	2	Yes	6.8
32	812	4th ST & I ST	4.5	4	Yes	6.8
33	566	Cosumnes River Bl & Center Park	4.5	4	Yes	6.8
34	44	12th St & I St	3.5	5	Yes	6.7
35	455	Richards Bl & North 7th St	5.4	3	Yes	6.7
36	265	Marconi Av & Bus-80 /Connie	3.4	9	Yes	6.7
37	279	Arden Wy & Royal Oaks/Beaumont	4.4	4	Yes	6.7
38	714	N 7th Street & N B Street	6.3	2	Yes	6.7
39	806	7th ST & F ST	6.3	2	Yes	6.7
40	976	North 7th St & North C St	6.3	2	Yes	6.7
41	977	North 7th St & Bannon St	6.3	2	Yes	6.7
42	271	Del Paso Bl & Barstow/Baxter	5.3	3	Yes	6.7
43	807	Colfax St / Southgate & Del Paso Blvd	5.3	3	Yes	6.7
44	11	7th St & L St	3.3	5	Yes	6.7
45	363	Arden Wy & Harvard/Blumenfeld D	4.3	4	Yes	6.6
46	348	65th St & US-50 W/B /S St	3.2	6	Yes	6.6
47	43	12th St & H St	3.1	5	Yes	6.6
48	332	Winters St & I-80 /Grand	3.1	7	Yes	6.6
49	663	Bruceville & HWY 99 S/B Offramp	4.0	4	Yes	6.5
50	253	59th St & S St/US-50 Ramp	3.0	5	Yes	6.5

Likelihood and Risk

A heat risk score was created by multiplying together consequence scores by the scaled UHI score. Higher scores are associated with higher extreme heat risks. Scaled UHI can be found in Map 39, and heat risk scores can be found in Map 40. Traffic signals with the highest heat risk are concentrated just north of Downtown and in North Sacramento, with notable clusters in South Oak Park, Parkway, and Southeastern Sacramento.



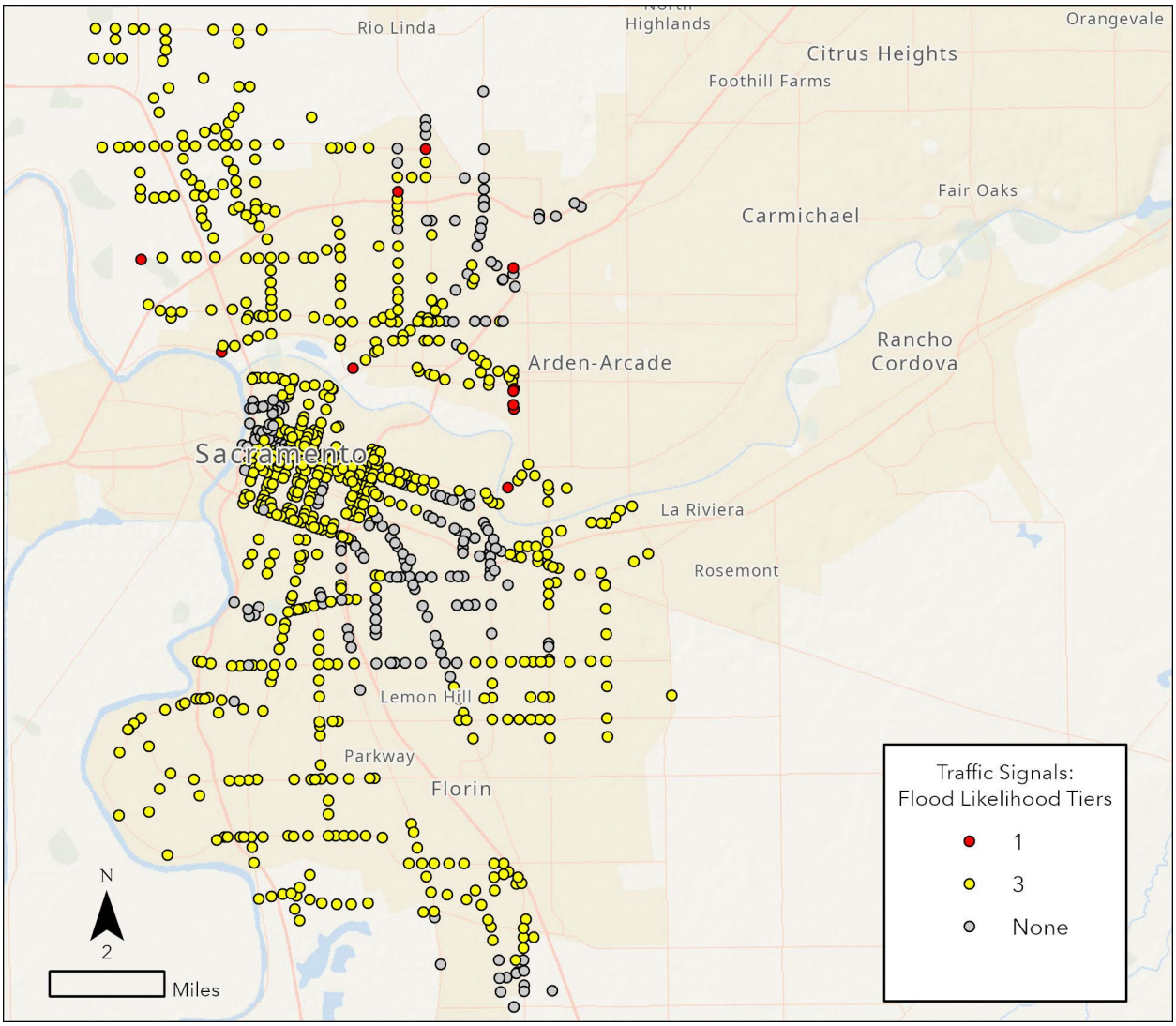
Map 39: Scaled UHI for traffic signals



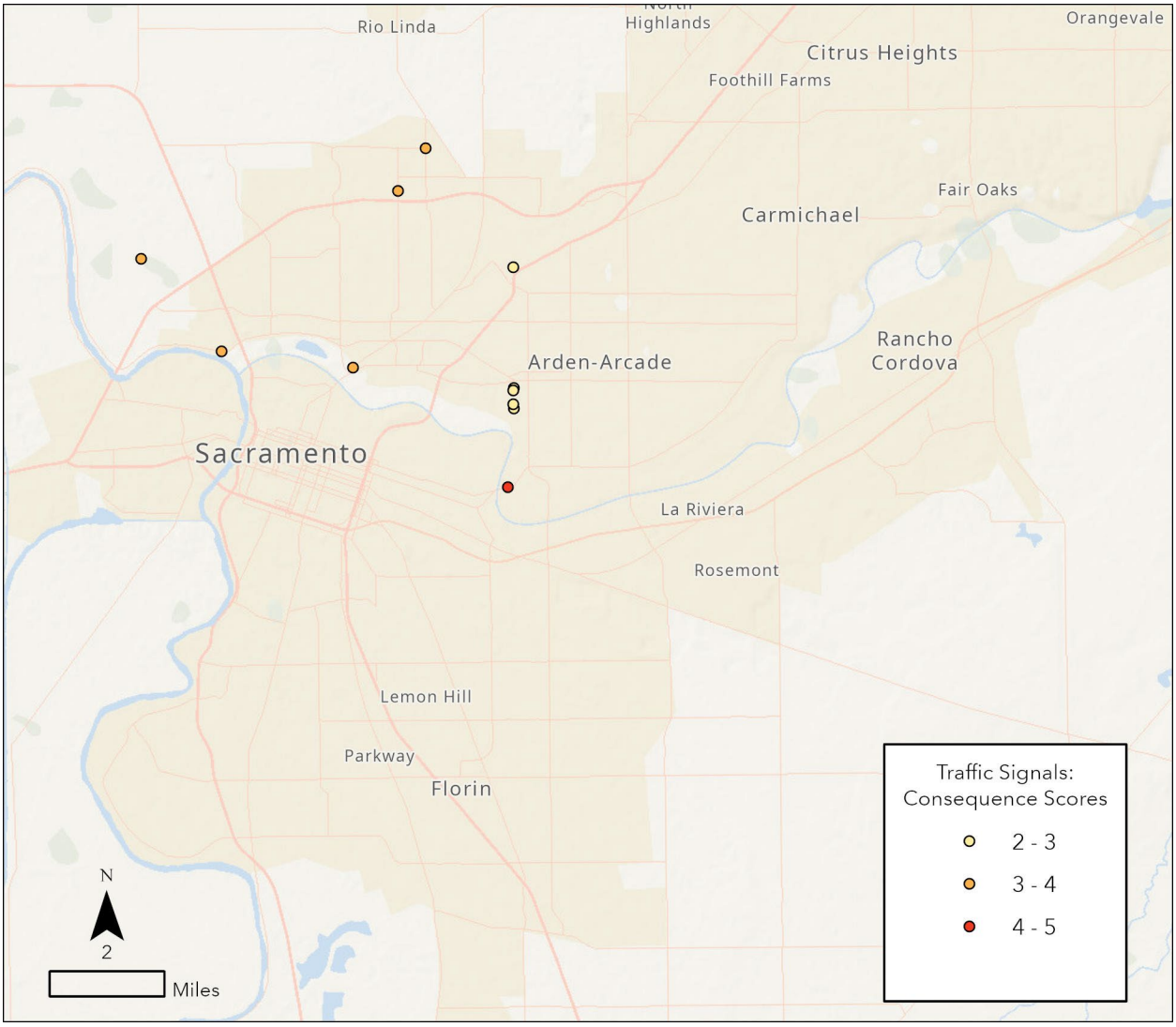
Map 40: Heat risk scores for traffic signals

Map 41 shows traffic signals by flood likelihood tier. Most traffic signals are within a 100-year zone protected by a levee or the 500-year floodplain. Only 11 traffic signals are within the 100-year floodplain, and none are within the 100-year zone with shallow flooding.

The consequence scores of the traffic signals within the 100-year floodplain are in Map 42. All the signals fall north of the American River, with several in the American River floodplain. Their consequence scores are moderate, falling between 3 and 5.



Map 41: Flood likelihood tiers for traffic signals



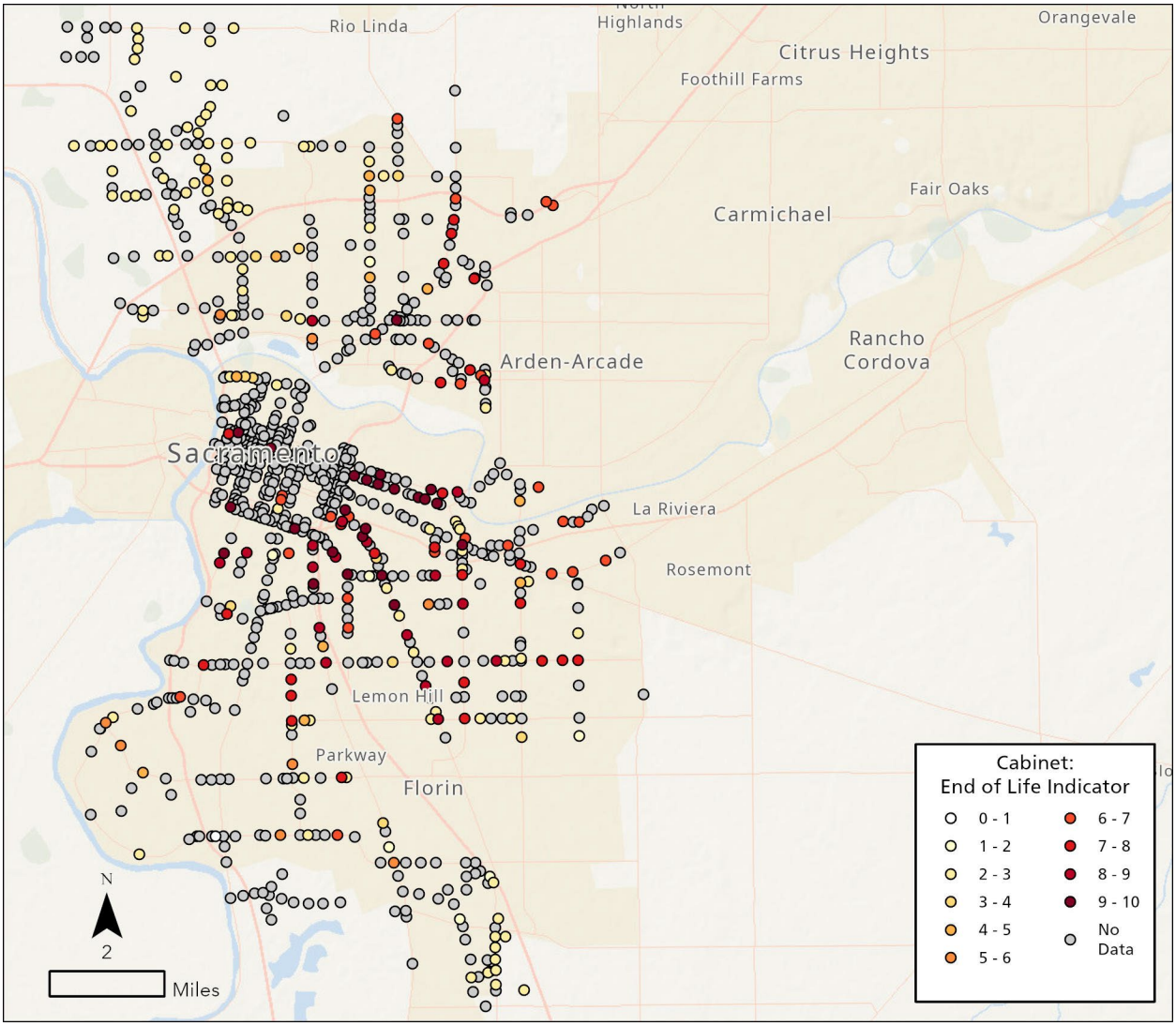
Map 42: Consequence scores for traffic signals within highest flood likelihood tier

Traffic Signal Cabinets

Consequence and Condition

Most EOL scores for traffic signal cabinets fall within the 2 to 3 score bucket for the EOL indicator. There are several older cabinets in the 6 to 10 score range. Map 43 shows traffic signals cabinets spatially, with many older signals along key arterials east and south of the Downtown core, including roads like Broadway, Stockton, and J St.

Table 26 lists cabinets by its descending EOL indicator.



Map 43: EOL indicator for EOL traffic signal cabinets

Table 26: Descending EOL Indictor score for traffic signal cabinets

Number	Asset (WSPID)	Location	EOL Indicator
1	TS_327	9th St & Broadway/Muir	10.0
2	TS_290	Broadway & Stockton Bl	10.0
3	TS_581	Del Paso Bl & El Camino Bl	10.0
4	TS_294	39th St & Stockton/Miller	10.0
5	TS_303	34th St & Broadway	10.0
6	TS_486	34th St & Stockton Bl	9.6
7	TS_307	Broadway & Martin Luther King	9.6
8	TS_396	Riverside Bl & Marion	9.6
9	TS_308	8th Ave & Franklin Blvd	9.6
10	TS_291	14th Ave & Stockton Blvd	9.5
11	TS_299	39th St & T St	9.4
12	TS_473	39th St & J St	9.2

Number	Asset (WSPID)	Location	EOL Indicator
13	TS_347	24th St & Broadway	9.2
14	TS_488	39th St & H St	9.2
15	TS_501	53rd St & H St	9.2
16	TS_688	5th St & I St	9.1
17	TS_539	65th St & Folsom Blvd	9.1
18	TS_491	33rd St & J St	9.1
19	TS_492	36th St J St	9.1
20	TS_692	13th St & J St	9.1
21	TS_496	51st St & J St	9.1
22	TS_494	43rd St & J St	9.1
23	TS_497	Rodeo & J St	9.1
24	TS_498	55th St & J St	9.1
25	TS_304	35th St & Broadway	9.0
26	TS_400	South Land Park Dr & Vallejo Wy	9.0
27	TS_297	Stockton Bl & Colonial	9.0
28	TS_283	Stockton & Elder Creek/47th Ave	8.6
29	TS_317	Franklin Bl & Fruitridge Rd	8.6
30	TS_268	Stockton Bl & Lemon Hill Ave	8.6
31	TS_318	21st Ave & Franklin Blvd	8.6
32	TS_267	Stockton Bl & Mcmahon	8.6
33	TS_397	Riverside & 7th/8th Ave	8.5
34	TS_503	Carlson & H St/Hickok	8.5
35	TS_426	Arden Wy & Ethan/Exposition	8.5
36	TS_269	Fruitridge Rd & Lowell/Wallace	8.5
37	TS_245	59th St & Broadway	8.3
38	TS_300	34th St & T St	8.3
39	TS_271	62nd St & Fruitridge Rd	8.3
40	TS_620	El Camino Av & Northgate Bl	8.2
41	TS_315	21st Ave & Stockton/Perry	8.1
42	TS_246	65th St & 14th Ave	8.1
43	TS_309	2nd Ave & Franklin Blvd	8.1
44	TS_310	5th Ave & Franklin Blvd	8.1
45	TS_547	Marysville Bl & Grand Ave	7.9
46	TS_274	65TH ST & Mc Mahon Dr.	7.9
47	TS_562	Marysville Bl & South Ave	7.8
48	TS_561	Marysville Bl & Arcade	7.8
49	TS_398	Sutterville Rd & Land Park/Del	7.8
50	TS_565	Marconi Circle S & Auburn Bl	7.8

Likelihood and Risk

EOL traffic signal cabinets located within the 100-year floodplain are listed in Table 27. Only 2 out of the 11 traffic signals located in the 100-year floodplain have EOL cabinets.

Table 27: EOL traffic signals in highest flood likelihood tier by descending consequence score

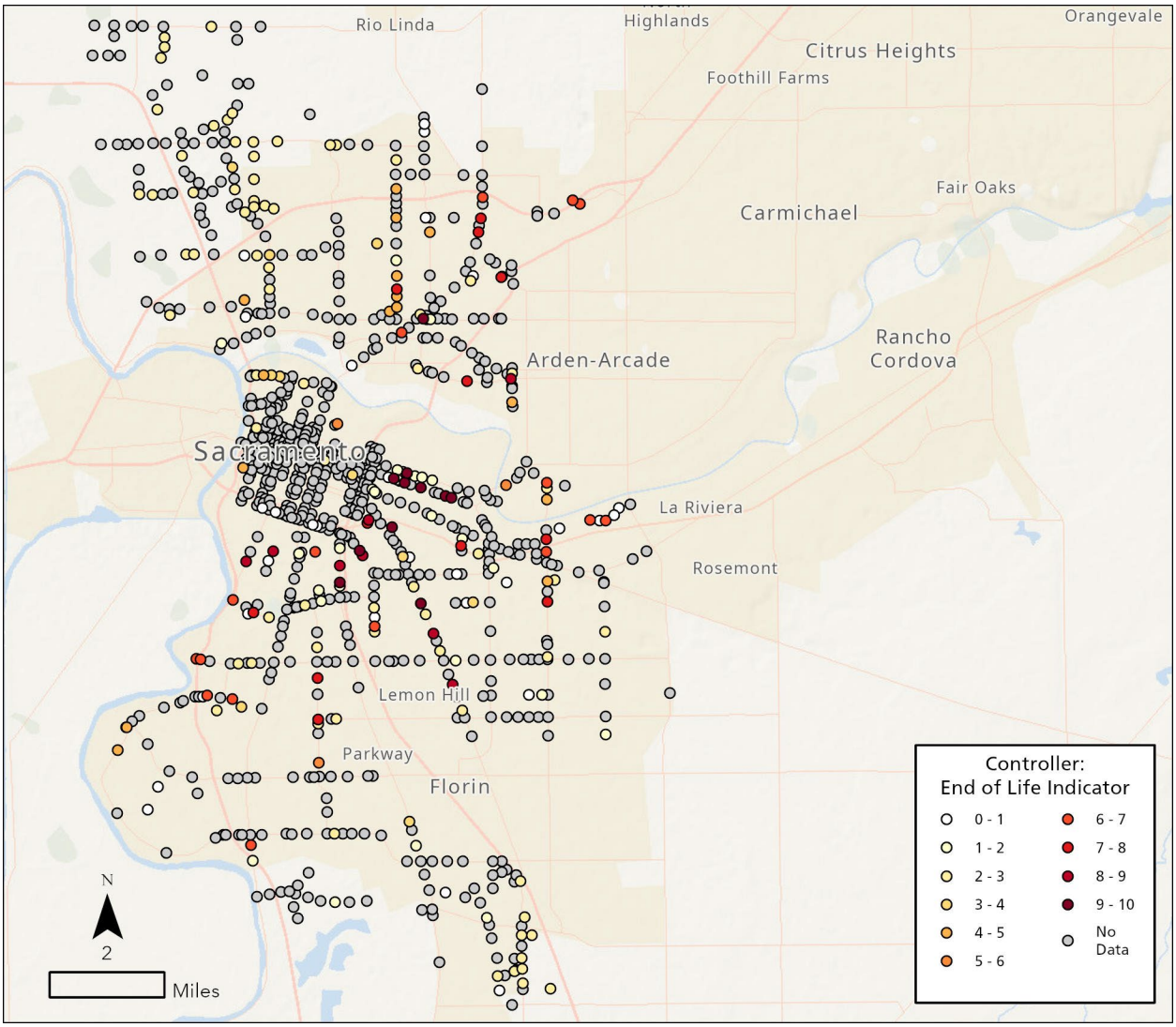
Number	Asset (WSPID)	Location	EOL Indicator	Consequence Score
1	TS_575	Norwood & Jessie	4.2	4.1

2	TS_8	Ethan Way & Hurley Way	2.8	3.7

Traffic Signal Controllers

Consequence and Condition

Most EOL scores for traffic signal controllers fall between 0 to 3, with about 45 ranging from 6 to 10, shown in Map 44. Table 28 shows the top 50 EOL indicator scores for EOL controllers.



Map 44: EOL scores for traffic signal controllers

Table 28: Descending EOL age or condition score for traffic signal controllers.

Number	Asset (WSPID)	Location	EOL Indicator
1	TS_303	34th St & Broadway	10.0
2	TS_581	Del Paso Bl & El Camino Bl	10.0
3	TS_308	8th Ave & Franklin Blvd	9.6
4	TS_291	14th Ave & Stockton Blvd	9.5
5	TS_299	39th St & T St	9.4
6	TS_473	39th St & J St	9.2
7	TS_488	39th St & H St	9.2
8	TS_492	36th St J St	9.1
9	TS_494	43rd St & J St	9.1
10	TS_496	51st St & J St	9.1
11	TS_497	Rodeo & J St	9.1
12	TS_304	35th St & Broadway	9.0
13	TS_400	South Land Park Dr & Vallejo Wy	9.0
14	TS_267	Stockton Bl & Mcmahon	8.6
15	TS_397	Riverside & 7th/8th Ave	8.5
16	TS_426	Arden Wy & Ethan/Exposition	8.5
17	TS_300	34th St & T St	8.3
18	TS_310	5th Ave & Franklin Blvd	8.1
19	TS_315	21st Ave & Stockton/Perry	8.1
20	TS_547	Marysville Bl & Grand Ave	7.9
21	TS_248	59th St & S St/US-50 Ramp	7.8
22	TS_398	Sutterville Rd & Land Park/Del	7.8
23	TS_562	Marysville Bl & South Ave	7.8
24	TS_565	Marconi Circle S & Auburn Bl	7.8
25	TS_320	24th St & Fernandez	7.6
26	TS_323	24th St & 47th Ave	7.4
27	TS_425	Exposition Bl & Heritage	7.3
28	TS_576	Norwood Av & Las Palmas	7.3
29	TS_301	34th St & US-50 Offramp	7.2
30	TS_250	14th Ave & Power Inn Rd	7.1
31	TS_538	Howe Av & College Town / US-50	7.1
32	TS_33	Longview Dr & I-80 EB	6.9
33	TS_34	Longview Dr & I-80 WB	6.9
34	TS_322	21st Ave & Martin Luther King	6.9
35	TS_450	Howe Av & American River Dr	6.9
36	TS_550	Raley Bl & I-80 E/B	6.9
37	TS_253	Howe Av & US-50 E/B	6.8
38	TS_211	Freeport Blvd & South of Meadowview Rd	6.7
39	TS_313	24th St & 4th Ave	6.7
40	TS_399	Sutterville Rd & I-5 East Side	6.4
41	TS_411	Seamas & I-5 Sb W Side	6.4
42	TS_412	Seamas & I-5 Nb E Side	6.4
43	TS_241	La Riviera Dr & Glenbrook Park	6.2
44	TS_597	Del Paso Bl & Oxford	6.2
45	TS_242	La Riviera Dr & Occidental	6.0
46	TS_415	43rd Ave & Gloria Dr	6.0
47	TS_416	43rd Ave & Holstein	6.0
48	TS_24	24th St & 57th Ave	5.8

Number	Asset (WSPID)	Location	EOL Indicator
49	TS_523	Fair Oaks Bl & E Of American Ri	5.8
50	TS_449	20th St & SP Railroad North	5.6

Likelihood and Risk

EOL controllers located within the 100-year floodplain are listed in Table 29. Of the 11 total traffic signals in this flood zone, only 4 have EOL controllers. For each of the four controllers, consequence scores and EOL indicators are relatively low or moderate.

Table 29: EOL traffic signal controllers in highest flood likelihood tier by descending consequence score

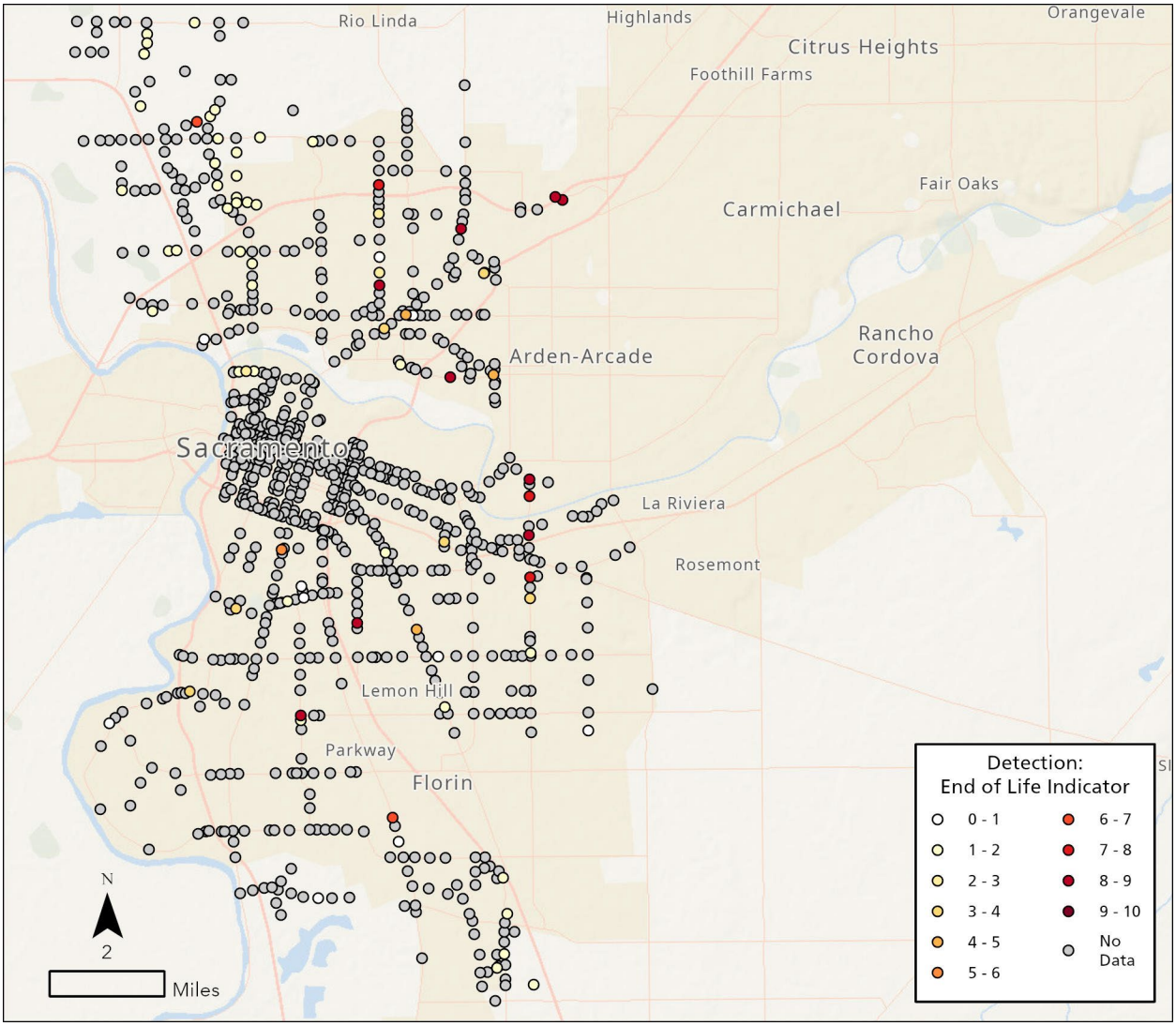
Number	Asset (WSPID)	Location	EOL Indicator	Consequence Score
1	434	Fair Oaks Bl & E Of American Ri	5.8	4.2
2	920	Del Paso Blvd & American River Bike Trail	0.6	3.7
3	576	Norwood & Jessie	4.2	3.2
4	548	Ethan Way & North of Hurley Way	5.0	2.2

Traffic Signal Detection

Consequence and Condition

Detection services EOL indicators are based on two factors: the age of the detection device and whether it utilizes loop detection technology. Most detection devices have EOL scores between 1 and 2. Nine devices fall into the 8 to 9 range.

Map 45 shows this data spatially. Table 30 lists the 50 highest EOL indicator detection devices.



Map 45: EOL indicator for detection devices

Table 30: Descending EOL scores for traffic signal detection devices

Number	Asset (WSPID)	Location	EOL Condition Score
1	TS_562	Marysville Bl & South Ave	8.9
2	TS_323	24th St & 47th Ave	8.7
3	TS_576	Norwood Av & Las Palmas	8.7
4	TS_425	Exposition Bl & Heritage	8.7
5	TS_538	Howe Av & College Town / US-50	8.5
6	TS_322	21st Ave & Martin Luther King	8.5
7	TS_34	Longview Dr & I-80 WB	8.5
8	TS_450	Howe Av & American River Dr	8.5
9	TS_33	Longview Dr & I-80 EB	8.5
10	TS_452	Howe Av & Swarthmore	7.4
11	TS_263	Power Inn & Cucamonga	7.1

Number	Asset (WSPID)	Location	EOL Condition Score
12	TS_575	Norwood & Jessie	7.1
13	TS_138	Franklin Bl & Caselli Cir	6.7
14	TS_157	New Market Dr & High School Access	6.3
15	TS_827	Freeport Bl & 4th Ave	5.6
16	TS_581	Del Paso Bl & El Camino Bl	5.0
17	TS_426	Arden Wy & Ethan/Exposition	4.2
18	TS_315	21st Ave & Stockton/Perry	4.0
19	TS_565	Marconi Circle S & Auburn Bl	3.9
20	TS_248	59th St & S St/US-50 Ramp	3.9
21	TS_398	Sutterville Rd & Land Park/Del	3.9
22	TS_250	14th Ave & Power Inn Rd	3.5
23	TS_597	Del Paso Bl & Oxford	3.1
24	TS_415	43rd Ave & Gloria Dr	3.0
25	TS_629	Richards & North 3rd	2.4
26	TS_577	Norwood Av & Lindly	2.3
27	TS_571	Norwood & Grand	2.2
28	TS_636	Richard Blvd & Sequoia Pacific	1.8
29	TS_139	2nd Ave & Stockton Blvd	1.7
30	TS_152	Truxel Rd & Arena Commons Dr	1.6
31	TS_140	Exposition Blvd & Expo Pkwy	1.5
32	TS_131	Power Inn Rd & Light Rail Drwy	1.5
33	TS_183	Truxel Rd & Teralba Way/Mill Oak Way	1.5
34	TS_184	Truxel & Pebblestone	1.5
35	TS_181	Natomas Blvd & Parkway Plaza Apts	1.5
36	TS_151	Truxel Rd & Prosper Rd	1.4
37	TS_177	Del Paso Rd & Blackrock Dr	1.4
38	TS_173	Northgate Blvd & Main /Del Paso Rd	1.4
39	TS_153	Del Paso Rd & Park Place South Entry/Centerpointe	1.4
40	TS_163	Arena Blvd/N Market Blvd & Gateway Park Blvd	1.3
41	TS_116	Bruceville & Timberlake	1.3
42	TS_190	Richards & Bercut	1.3
43	TS_168	Natomas Blvd & North Bend Dr	1.3
44	TS_166	Elkhorn Blvd & Northbourgh Dr	1.3
45	TS_112	Bruceville & Wyndham	1.3
46	TS_85	Arena & El Central Rd	1.2
47	TS_6	N Freeway Blvd. & Promenade Circle West	1.2
48	TS_87	Gateway Park & N Freeway	1.2
49	TS_90	Bruceville Rd & Calvine Rd	1.2
50	TS_86	N Freeway & Promenade Circle East	1.2

Likelihood and Risk

Table 31 shows EOL detection devices sorted by heat risk. Most of the higher heat risk EOL detection devices have relatively low EOL indicator scores. A few exceptions where both heat risk and EOL scores are relatively high are Howe Av & College Town / US-50, 21st Ave & Martin Luther King, and Power Inn & Cucamonga.

Table 31: EOL indicator, heat risk, and scaled UHI for traffic signals with signal detection

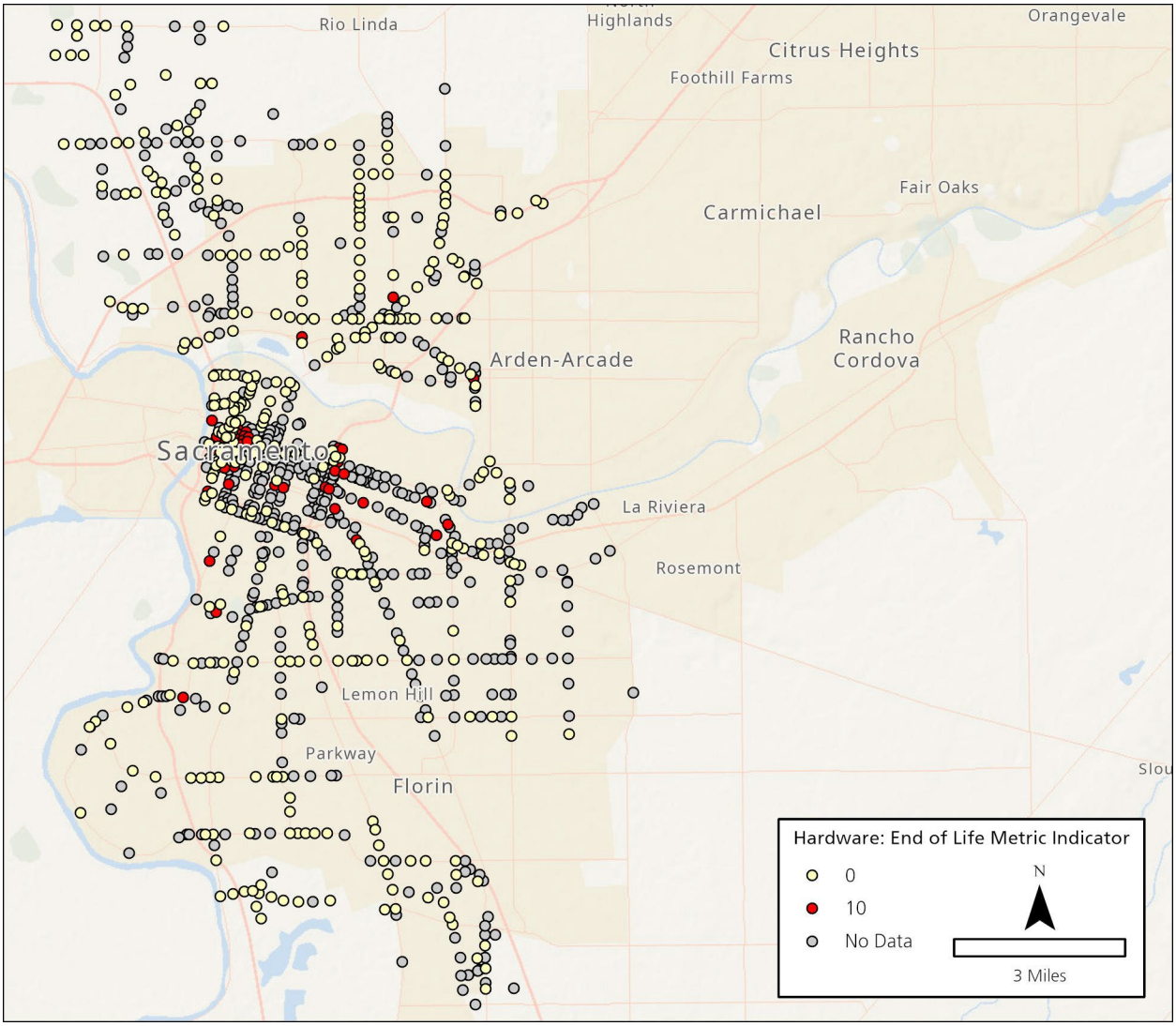
Number	Asset (WSPID)	Location	Heat Risk	UHI Scaled	Consequence Score	EOL Indicator Score
1	270	Howe Av & College Town / US-50	48.2	6.9	7.0	8.5
2	633	Richards & Bercut	36.7	5.9	6.2	1.3
3	198	Arden Wy & Ethan/Exposition	32.3	8.0	4.1	4.2
4	614	Richard Blvd & Sequoia Pacific	31.3	8.4	3.7	1.8
5	276	Del Paso Bl & El Camino Bl	31.2	7.5	4.2	5.0
6	522	Richards & North 3rd	29.5	7.9	3.7	2.4
7	752	23rd Street & Sutterville Rd	29.5	7.5	4.0	1.2
8	827	24th Street & Cosumnes River Blvd	29.1	7.4	3.9	0.6
9	219	21st Ave & Stockton/Perry	28.3	7.3	3.9	4.0
10	741	Arena & El Central Rd	28.3	8.0	3.5	1.2
11	679	Northgate Blvd & Main /Del Paso Rd	26.3	5.6	4.7	1.4
12	325	14th Ave & Power Inn Rd	25.6	6.6	3.9	3.5
13	562	Power Inn & Cucamonga	25.2	5.9	4.3	7.1
14	702	Arena Blvd/N Market Blvd & Gateway Park Blvd	25.1	6.5	3.9	1.3
15	264	Marconi Circle S & Auburn Bl	25.0	7.0	3.6	3.9
16	680	Truxel Rd & Prosper Rd	24.6	7.5	3.3	1.4
17	610	Exposition Blvd & Expo Pkwy	24.5	7.2	3.4	1.5
18	693	Bruceville & Timberlake	24.1	5.9	4.1	1.3
19	253	59th St & S St/US-50 Ramp	23.3	3.6	6.5	3.9
20	335	21st Ave & Martin Luther King	23.2	6.4	3.6	8.5
21	648	Power Inn Rd & Light Rail Drwy	23.2	6.1	3.8	1.5
22	402	Del Paso Bl & Oxford	21.9	7.5	2.9	3.1
23	544	Norwood & Grand	21.8	6.2	3.5	2.2
24	782	Stockton Blvd & Dias	21.5	6.2	3.5	1.1
25	330	Longview Dr & I-80 WB	21.4	6.1	3.5	8.5
26	753	Truxel Rd & N Market Place N Entrance	21.1	5.6	3.8	1.2
27	777	24th Street & Hogan Drive/48th Ave.	21.0	5.9	3.6	1.1
28	831	Sutterville Rd & Crocker Dr	20.6	5.0	4.1	0.7
29	706	Bruceville & Wyndham	20.4	5.4	3.8	1.3
30	783	East Commerce & North Park	19.7	7.3	2.7	1.1
31	278	Norwood Av & Las Palmas	19.5	6.2	3.1	8.7
32	815	El Camino Ave & Boxwood ST	19.4	7.0	2.8	0.6
33	188	Exposition Bl & Heritage	19.2	5.5	3.5	8.7

34	673	Del Paso Rd & Blackrock Dr	18.6	6.4	2.9	1.4
35	262	Marysville Bl & South Ave	18.6	5.0	3.7	8.9
36	294	24th St & 47th Ave	18.5	5.2	3.6	8.7
37	735	Bruceville Rd & Calvine Rd	18.2	5.3	3.4	1.2
38	576	Norwood & Jessie	18.2	5.7	3.2	7.1
39	653	Truxel Rd & Teralba Way/Mill Oak Way	17.5	5.2	3.3	1.5
40	632	Franklin Bl & Caselli Cir	17.5	5.2	3.4	6.7
41	629	2nd Ave & Stockton Blvd	17.2	4.8	3.6	1.7
42	738	Gateway Park & N Freeway	16.9	6.3	2.7	1.2
43	537	Norwood Av & Lindly	16.7	5.3	3.1	2.3
44	754	San Juan Rd & Duckhorn Dr/ Tolliver	16.7	5.5	3.0	1.2
45	630	Truxel Rd & Arena Commons Dr	16.2	5.6	2.9	1.6
46	809	Florin Perkins Rd & Morrison Creek Dr	16.2	5.0	3.3	0.9
47	756	San Juan Rd & Buchman Cr./ Myna	15.9	5.5	2.9	1.2
48	651	Truxel & Pebblestone	15.0	4.5	3.3	1.5
49	677	Del Paso Rd & Park Place South Entry/Centerpointe	14.7	5.3	2.8	1.4
50	768	Gateway Park Blvd..& Terracina Dr.	14.4	5.5	2.6	1.2

Traffic Signal Hardware

Consequence and Condition

There are 52 signals that are painted steel and therefore receive an EOL indicator score of 10 (see Map 46, and Table 32). Most are in or near the Downtown area.



Map 46: EOL indicator for traffic signals with painted steel hardware

Table 32: Descending EOL for traffic signals with painted steel hardware

Number	Asset (WSPID)	Location	EOL Condition Score
1	TS_643	7th St & H St	10
2	TS_426	Arden Wy & Ethan/Exposition	10
3	TS_491	33rd St & J St	10
4	TS_498	55th St & J St	10
5	TS_398	Sutterville Rd & Land Park/Del	10
6	TS_105	Elvas Ave & ST Francis HS DRWY SO.(320' N 62 ST)	10
7	TS_645	7th St & J St	10
8	TS_540	60th St & Folsom Bl	10
9	TS_656	9th St & K St	10
10	TS_651	8th St & K St	10
11	TS_652	8th St & L St	10
12	TS_647	7th St & L St	10

Number	Asset (WSPID)	Location	EOL Condition Score
13	TS_649	8th St & I St	10
14	TS_474	39th St & Folsom Blvd	10
15	TS_486	34th St & Stockton Bl	10
16	TS_700	Jibboom St & I St Bridge	10
17	TS_644	7th St & I St	10
18	TS_695	5th St & L St	10
19	TS_511	Alhambra Bl & N St	10
20	TS_721	4th St & L St	10
21	TS_481	21st St & Q St	10
22	TS_453	19th St & Q St	10
23	TS_622	Northgate Bl & Garden/Jefferson	10
24	TS_467	30th St & N St	10
25	TS_655	9th St & J St	10
26	TS_326	9th St & P St	10
27	TS_410	43rd Ave & South Land Park Dr	10
28	TS_715	3rd St & L St	10
29	TS_297	Stockton Bl & Colonial	10
30	TS_558	Rio Linda Bl & Eleanor	10
31	TS_650	8th St & J St	10
32	TS_397	Riverside & 7th/8th Ave	10
33	TS_477	Alhambra Bl & J St	10
34	TS_657	9th St & L St	10
35	TS_638	3rd St & Capitol Mall	10
36	TS_648	7th St & Capitol Mall	10
37	TS_359	5th St & W St	10
38	TS_653	9th St & H St	10
39	TS_661	10th St & J St	10
40	TS_328	9th St & T St	10
41	TS_739	7th St & Q St	10
42	TS_459	29th St & H St	10
43	TS_722	3rd St & K St	10
44	TS_444	30th St & F St	10
45	TS_475	Alhambra Bl & H St	10
46	TS_443	30th St & E St	10
47	TS_659	9th St & N St	10
48	TS_716	3rd St & N St	10
49	TS_440	29th St & G St	10
50	TS_660	10th St & I St	10
51	TS_722	3rd St & K St	10
52	TS_739	7th St & Q St	10

Likelihood and Risk

None of the EOL hardware traffic signals are located within the 100-year floodplain.