



**BROADBAND
FOR ALL**

Middle-Mile Advisory Committee

April 22, 2022





AGENDA

- Welcome/Opening Comments
- Executive Report Out
- Project Approach Updates
 - Third Party Administrator
 - California Department of Technology
 - California Public Utilities Commission
 - California Department of Transportation
- Public Comment

Mark Monroe

**Deputy Director, Middle-Mile Broadband Initiative
California Department of Technology**

Third Party Administrator

Tony Naughtin
President and CEO
GoldenStateNet

Presentation Overview

- **Overview of Design Objectives, Factors, and Process**
- **Presentation of Statewide Middle Mile Network Design**
- **State divided in to 5 Development Regions**
- **Overview of topology and highlights for each Region**
- **Support for Optimization Process**



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Statewide Middle-Mile Network Design

April 22, 2022

Design Process

- Analyzed extensive mapping resources to understand: existing technical and telecom assets, road and highway systems, topological factors, socioeconomic composition by region, broadband speeds (or lack thereof) by region, among other factors.
- Used CPUC middle-mile recommendation routes as anchors for route solutions adding regional rings.
- Engaged with a diverse set of community groups to understand needs, requirements, existing assets, and potential opportunities.
- Engaged service providers (carriers, vendors, ISPs, etc) to examine potential solution sets.
- Integrated proposed 18 projects into the initial statewide network recommendation.
- Identified regions where the unserved population is >50 miles from current design to build fiber paths where feasible.
- Estimated the cost for building proposed routes in preparation for an optimization analysis.

Design Factors

- Primarily utilize new fiber-optic cable construction where feasible (Caltrans Right of Way).
- Seek joint build partnerships to reduce costs to the state and to partners.
- Use long-term IRUs where appropriate to reduce cost, time to service, and to add resiliency.
- Align to organizations with existing regional, state, and federal broadband infrastructure funding to maximize investments, e.g. CASF-funded organizations.
- Aim for “early wins” to meet expectations of residents, policymakers, and other stakeholders.
- Utilize well-established best practices in network design principles, protocols, engineering, and operation.

Support for Optimization Process

Inform CDT to enable partner-based optimization and application of available budget. This includes:

- Providing comprehensive information to drive decision-making for Build vs. Buy vs. Joint Build
- Working with CDT to determine contingency reserve percentage against \$3.2B budget (typically 10-20%)

Steps to achieving optimization:

- Show total routes, mileage, and projected cost of statewide Middle Mile Network that would be 100% newly-built fiber, including required equipment and facilities
- Determine newly-built routes that are *no regrets* and most *feasible* within available budget
- Determine routes for dark fiber IRUs within remaining budget
- In addition, determine joint-build portions of MM network within remaining budget

Final CDT decisions for all MM network segments within \$3.2B budget (minus contingency):

- 18 Initial Projects
- Newly built fiber routes
- Dark Fiber IRU routes
- Joint build routes
- Equipment and facilities

STATEWIDE MAP

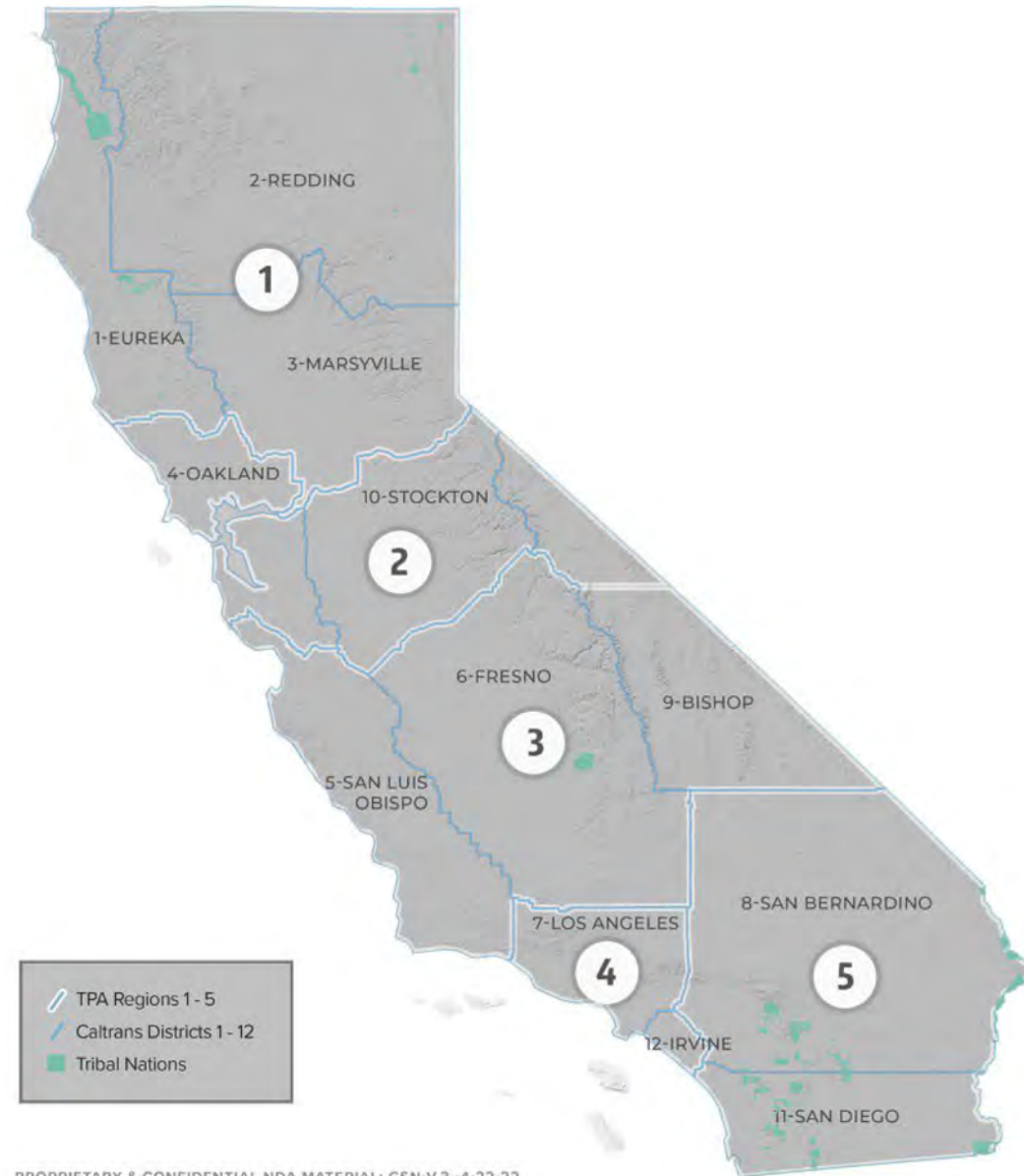
Region 1: Caltrans Districts 1, 2, 3

Region 2: Caltrans Districts 4, 9 (portion), 10

Region 3: Caltrans Districts 5, 6, 9 (portion)

Region 4: Caltrans Districts 7, 12

Region 5: Caltrans Districts 8, 11



STATEWIDE MAP

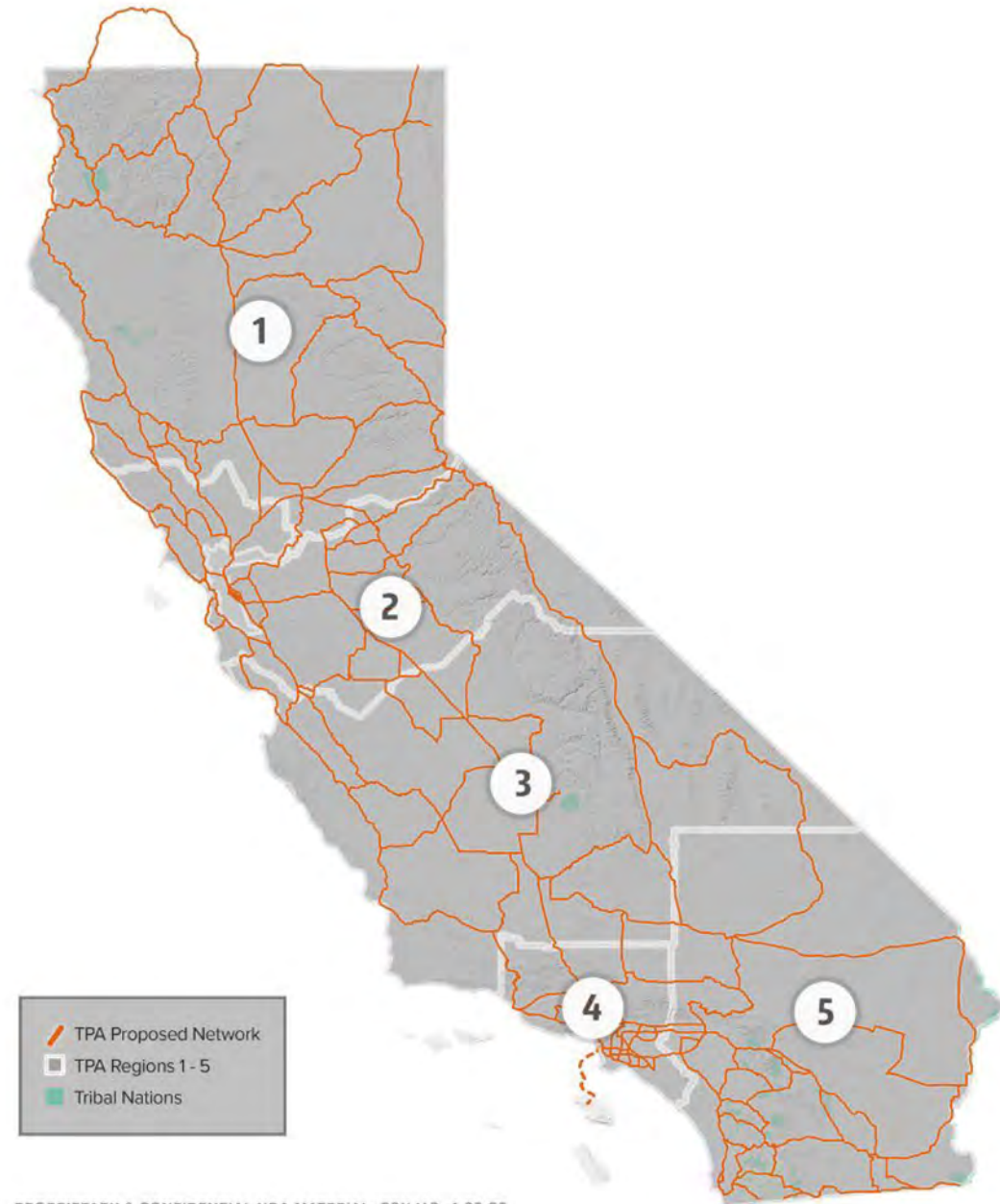
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REGION 1



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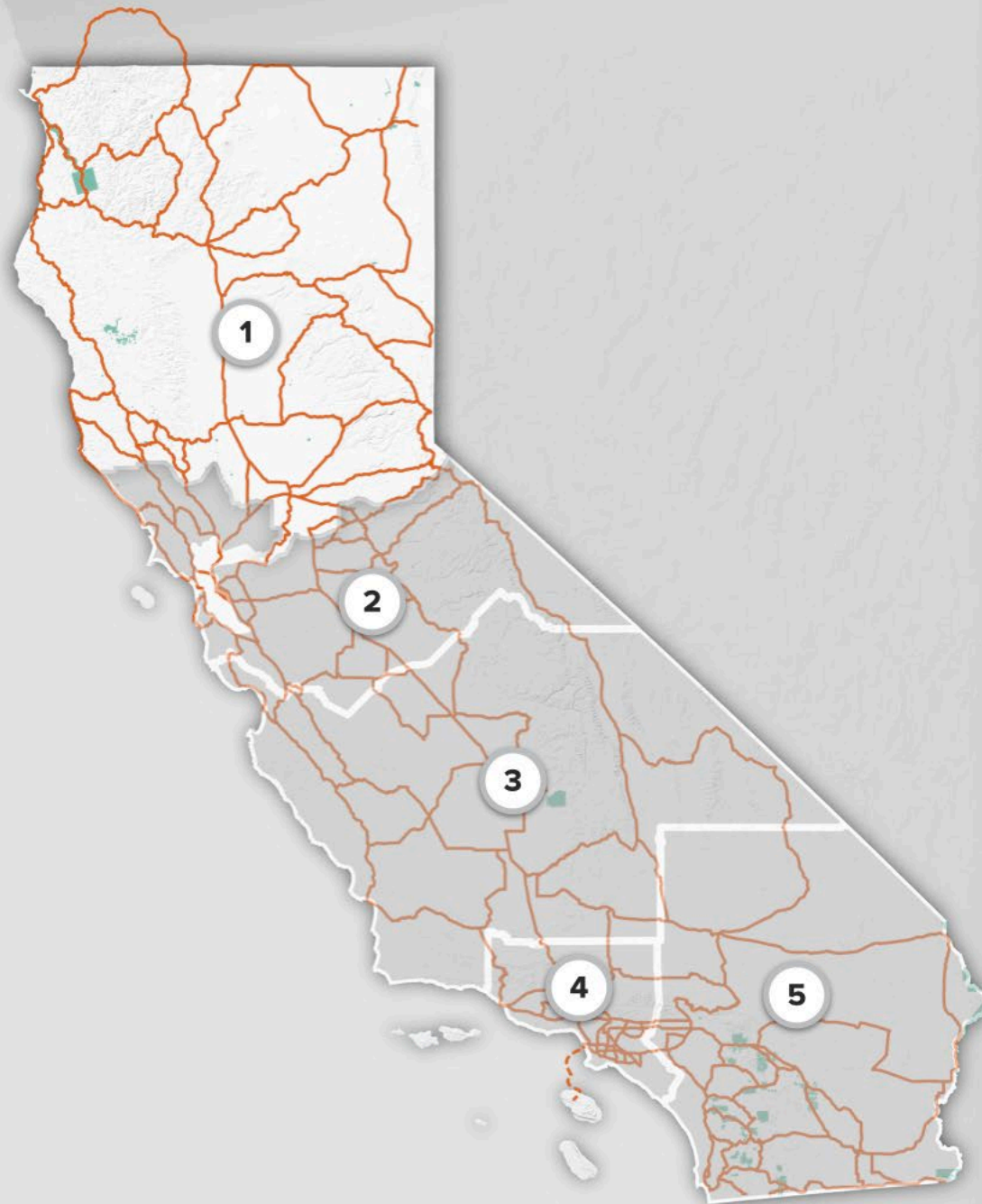
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REGION 1

OVERVIEW MAP

- Regions 1 - 5
- TPA Proposed Network
- Tribal Nations



LEGEND

-  State & National Highways
-  Tribal Nations
-  Caltrans Districts
-  Initial 18 TPA Projects
-  CalREN Backbone
-  Recommended Hut Locations
-  TPA Proposed Network
-  CPUC Anchor Builds



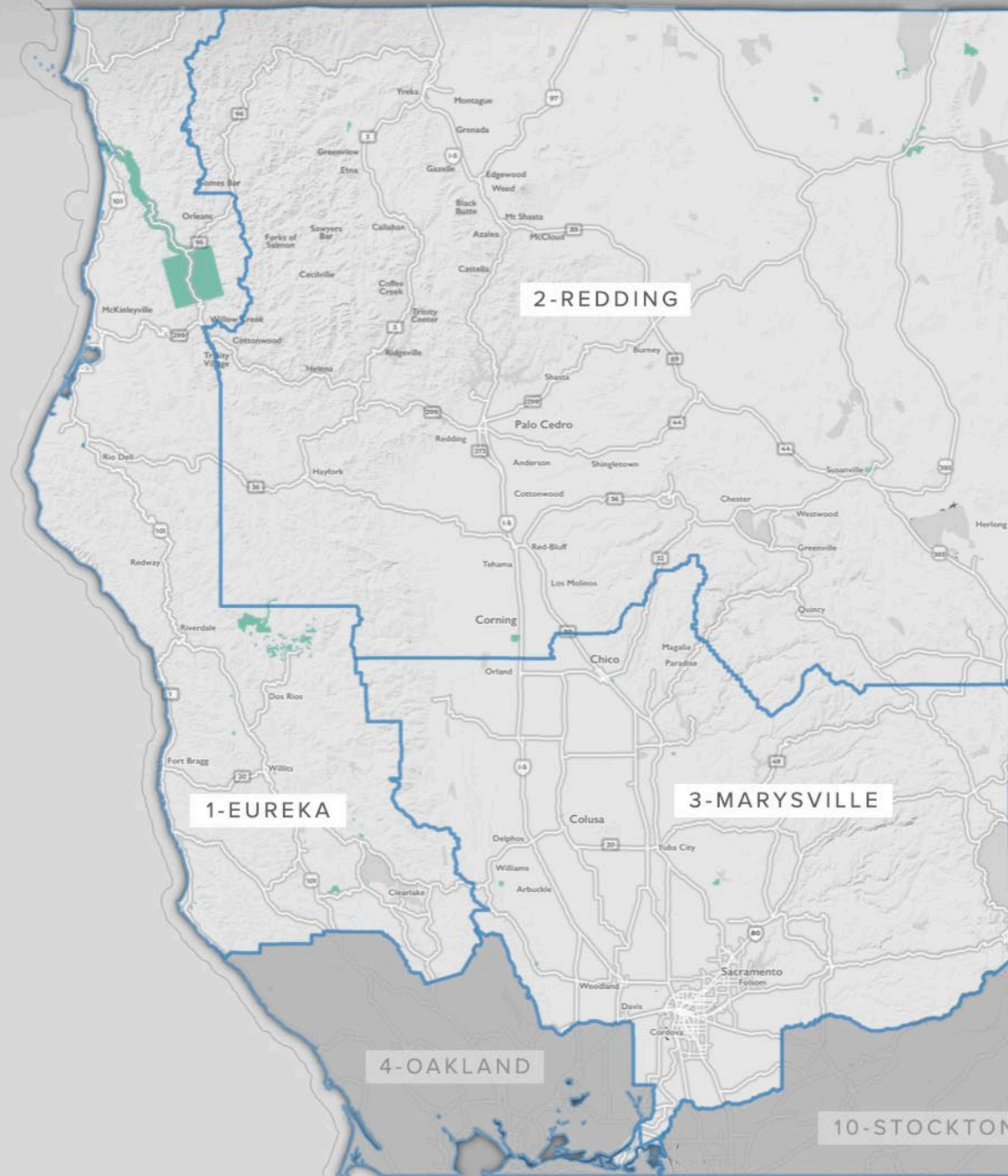
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REGION 1

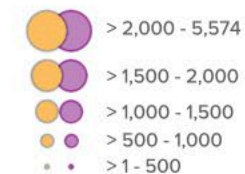
- State & National Highways
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LEGEND

- State & National Highways
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- Initial 18 TPA Projects
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- CPUC Anchor Builds

- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line



Census tract data from U.S. Census Bureau's American Community Survey (ACS) - 2015-2019 5-year estimates

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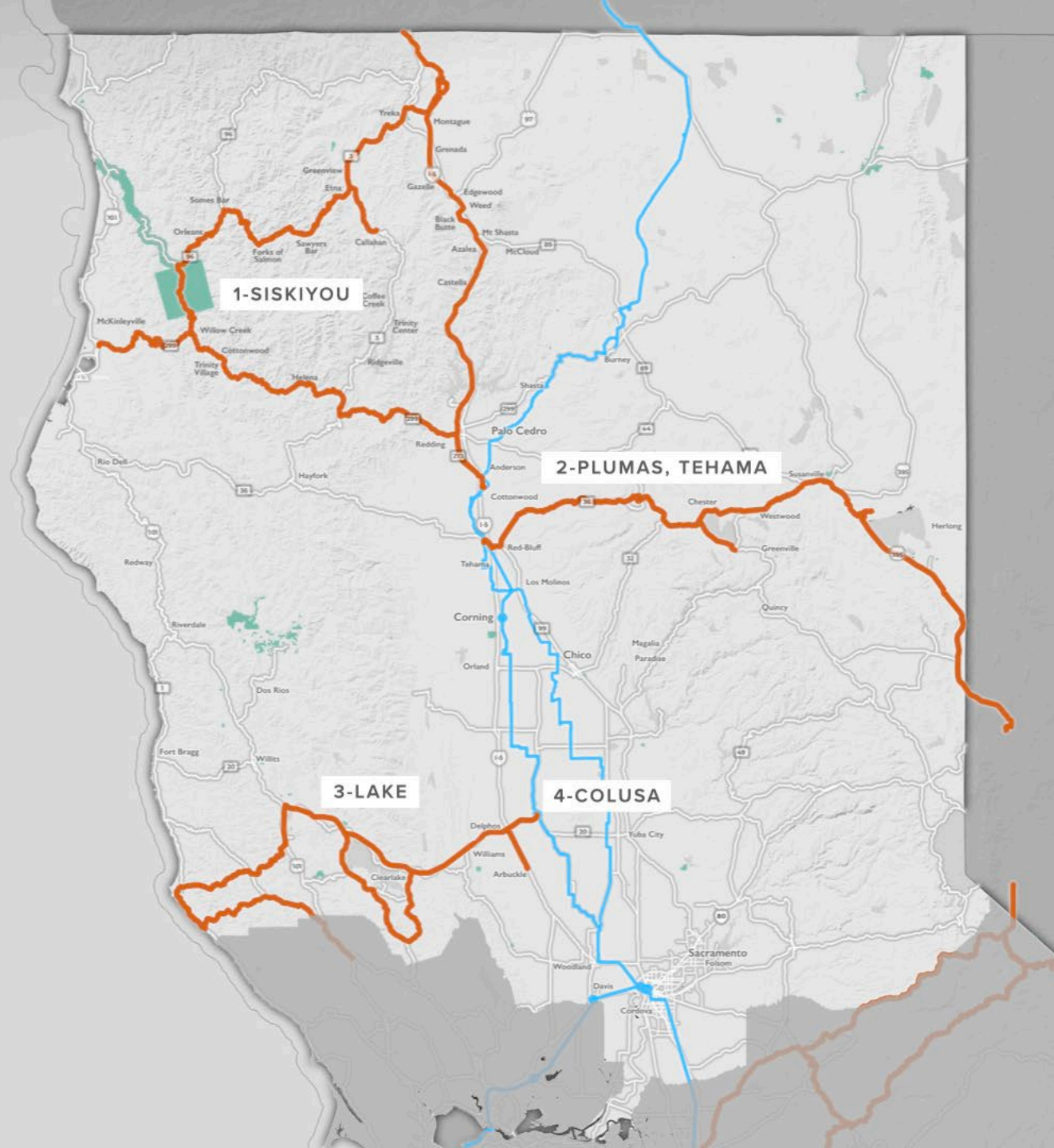
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REGION 1

- Initial TPA Projects - 1/31/22
- CalREN Backbone



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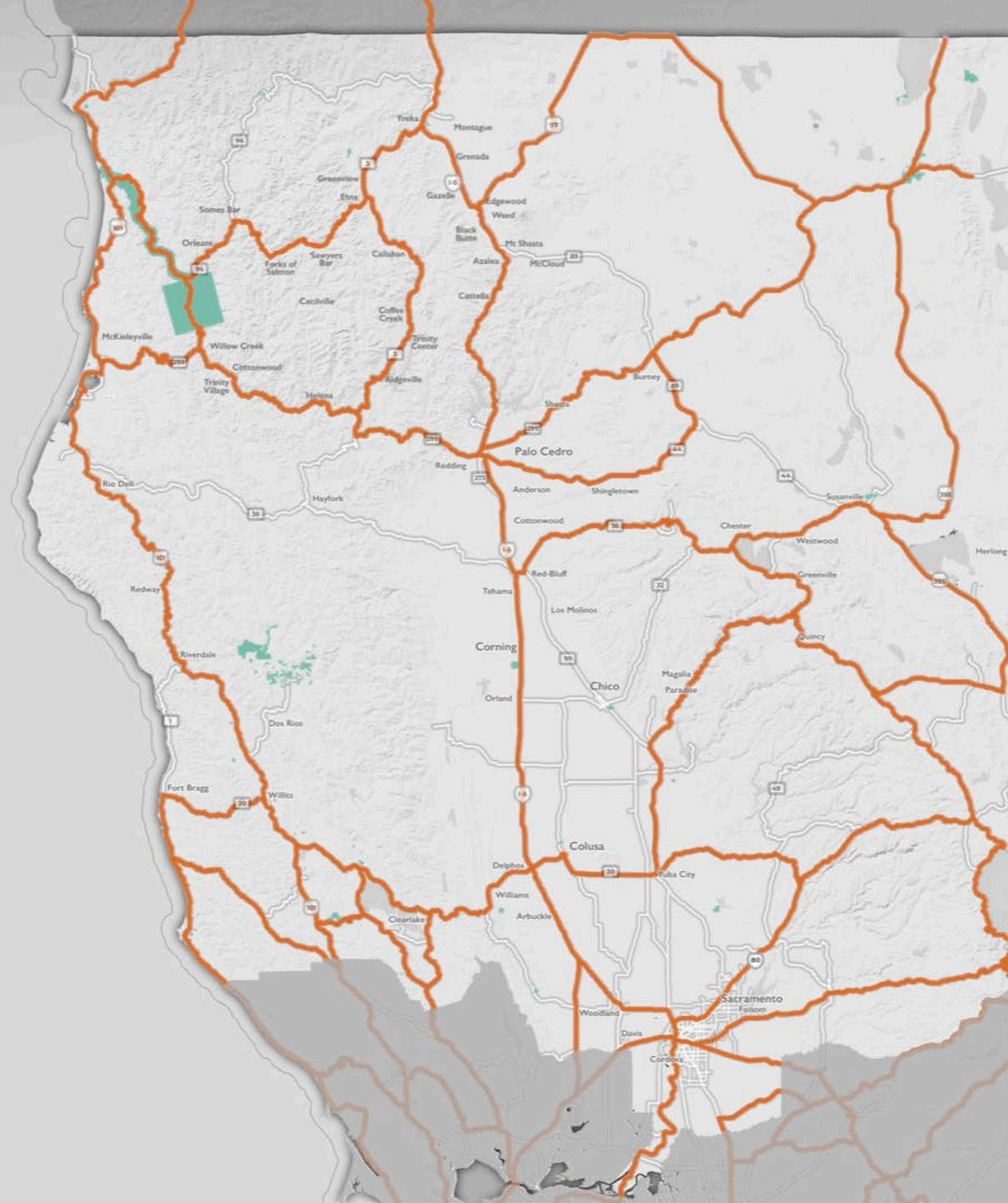
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REGION 1

- TPA Proposed Network



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GOLDENSTATENET

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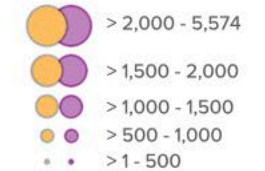
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REGION 1

- TPA Proposed Network
- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

Census tract data from U.S. Census Bureau's American Community Survey (ACS) - 2015-2019 5-year estimates

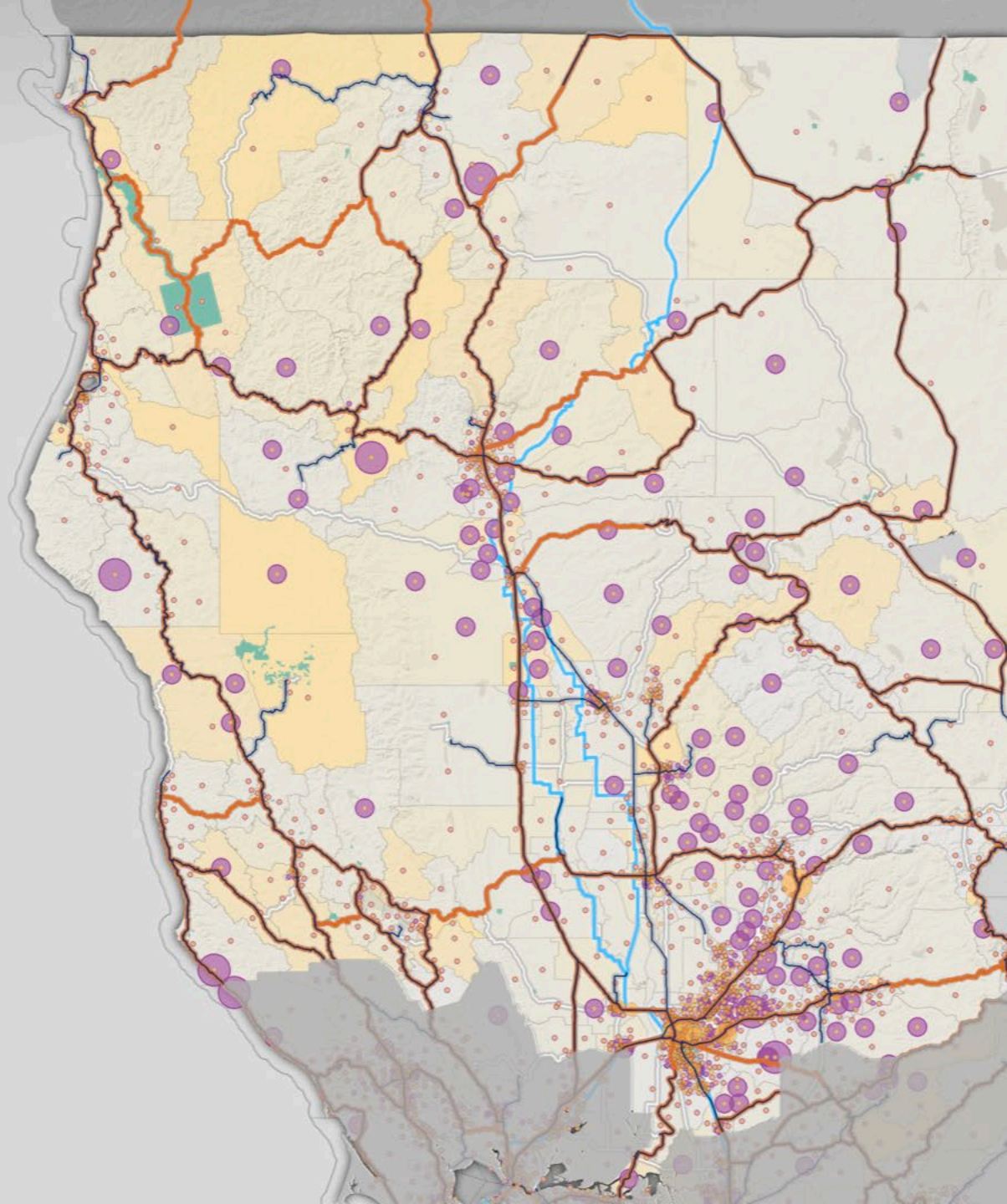
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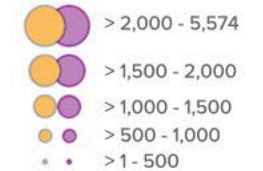
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REGION 1

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- CPUC Anchor Builds

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

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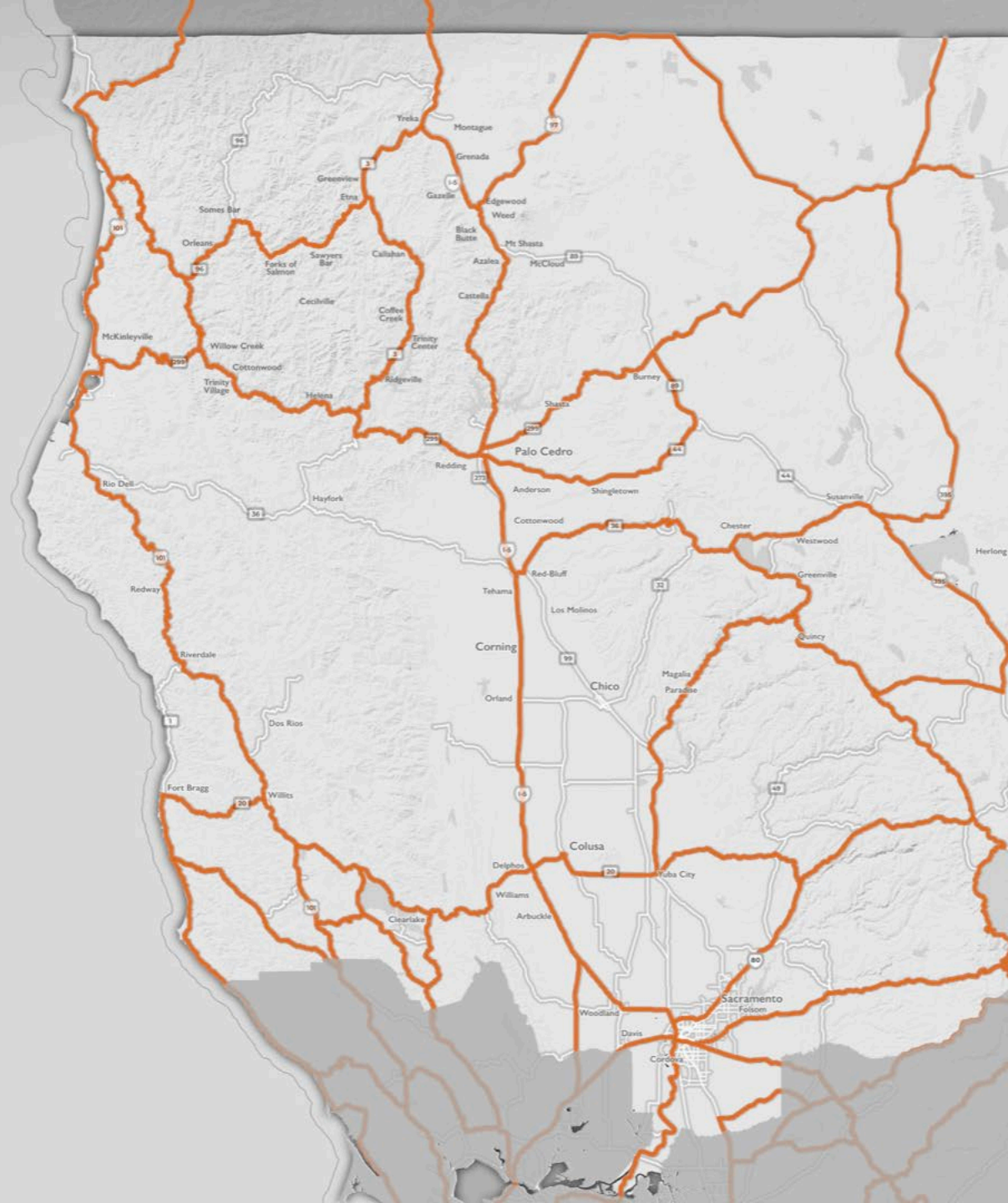
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REGION 1: KEY HIGHLIGHTS

Geographic/Environmental:

- Vastly underserved area of the state
- Prone to catastrophic outages, fire hazard zone

Population:

- Includes California's two largest Tribal Nations: Hoopa Valley Tribe and Yurok Tribe

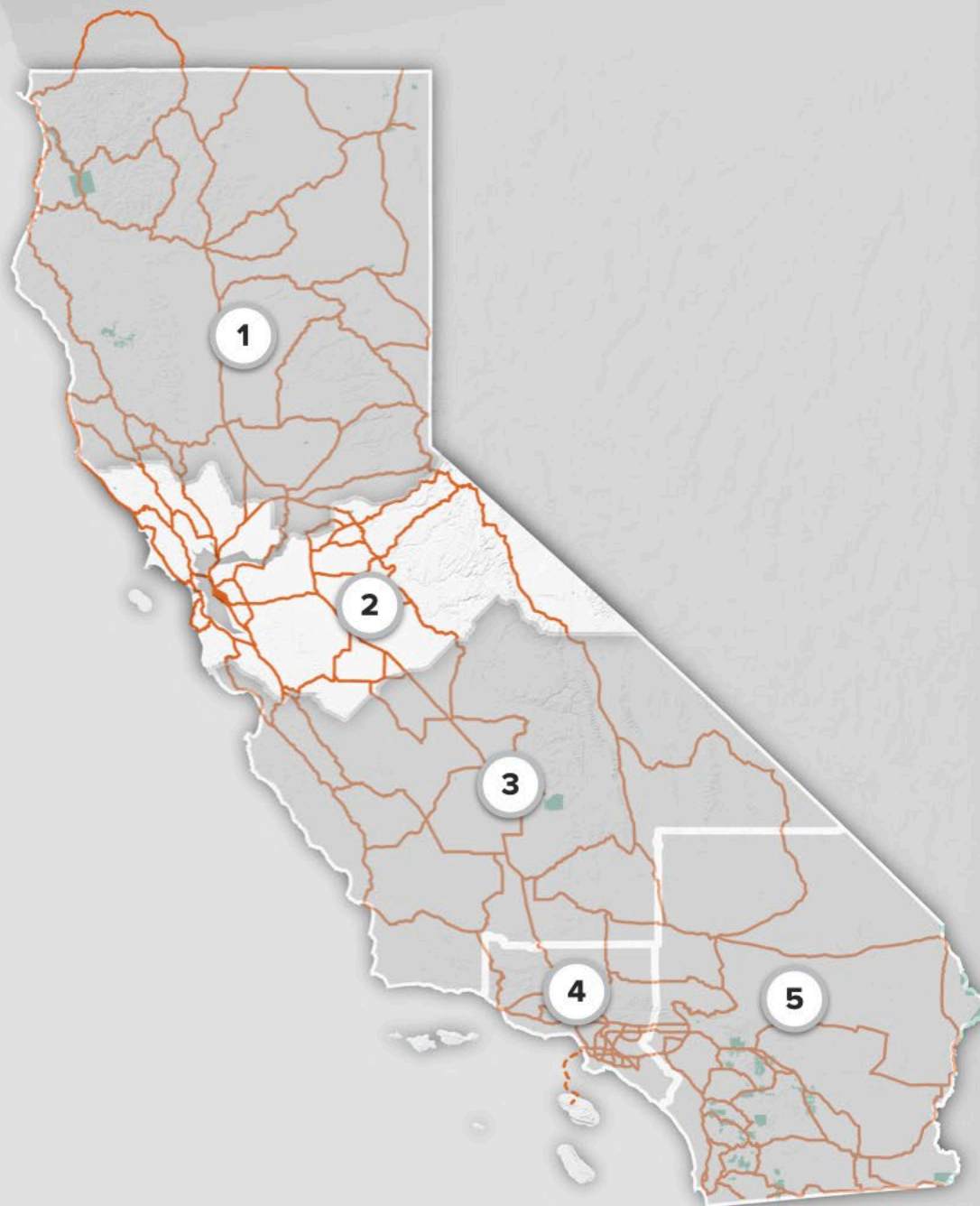
Technical/Business-related:

- First collaborative effort with a small local exchange carrier - Siskiyou Telephone
- Opportunity for cooperation and collaboration with Tribal Nations to build resiliency and connectivity within the region.
- Minimal availability of existing fiber to support IRUs.

REGION 2

REGION 2 OVERVIEW MAP

- Regions 1 - 5
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LEGEND

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REGION 2

- State & National Highways
- Tribal Nations
- Caltrans Districts



3-MARYSVILLE

10-STOCKTON









4-OAKLAND

9-BISHOP

6-FRESNO

5-SAN LUIS
OBISPO

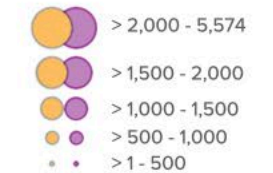
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REGION 2

- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

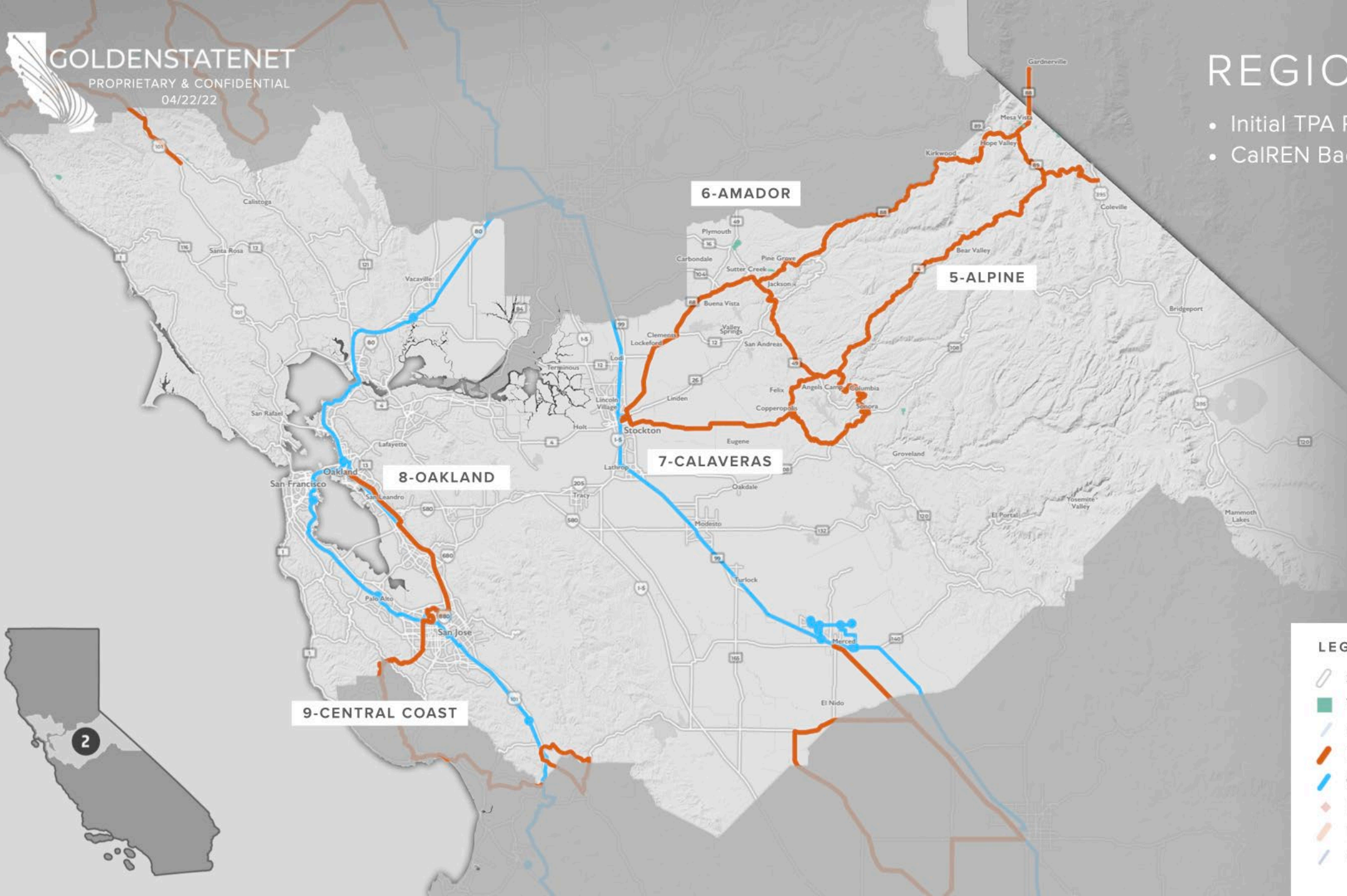
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REGION 2

- Initial TPA Projects - 1/31/22
- CalREN Backbone



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REGION 2

• TPA Proposed Network



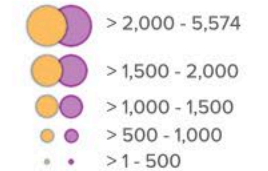
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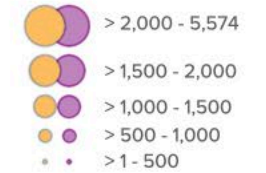
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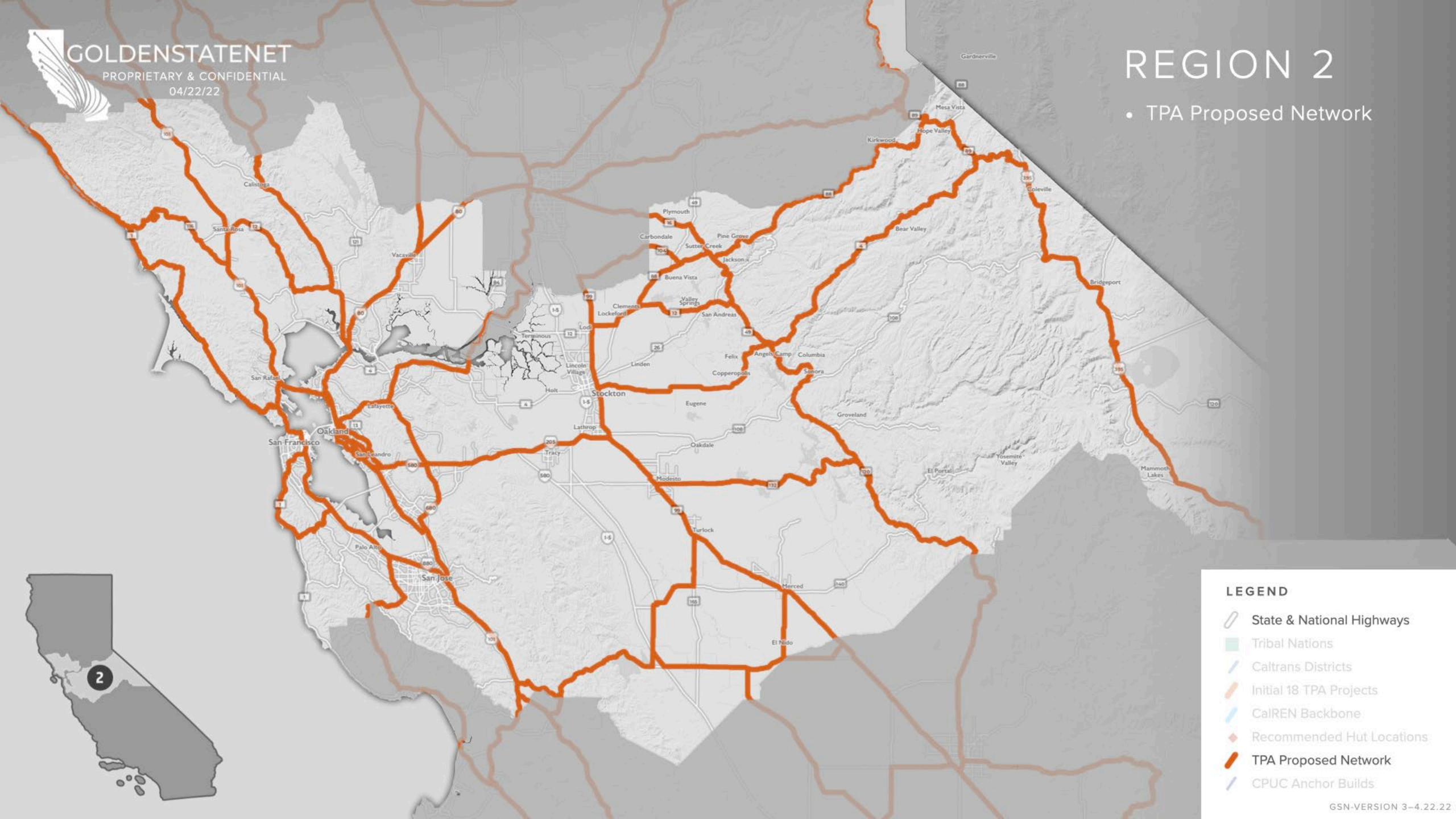
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REGION 2

• TPA Proposed Network



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REGION 2: KEY HIGHLIGHTS

Geographic/Environmental:

- Includes densely populated urban areas and sparsely populated mountainous regions.
- Certain areas considered high risk fire hazard zones.

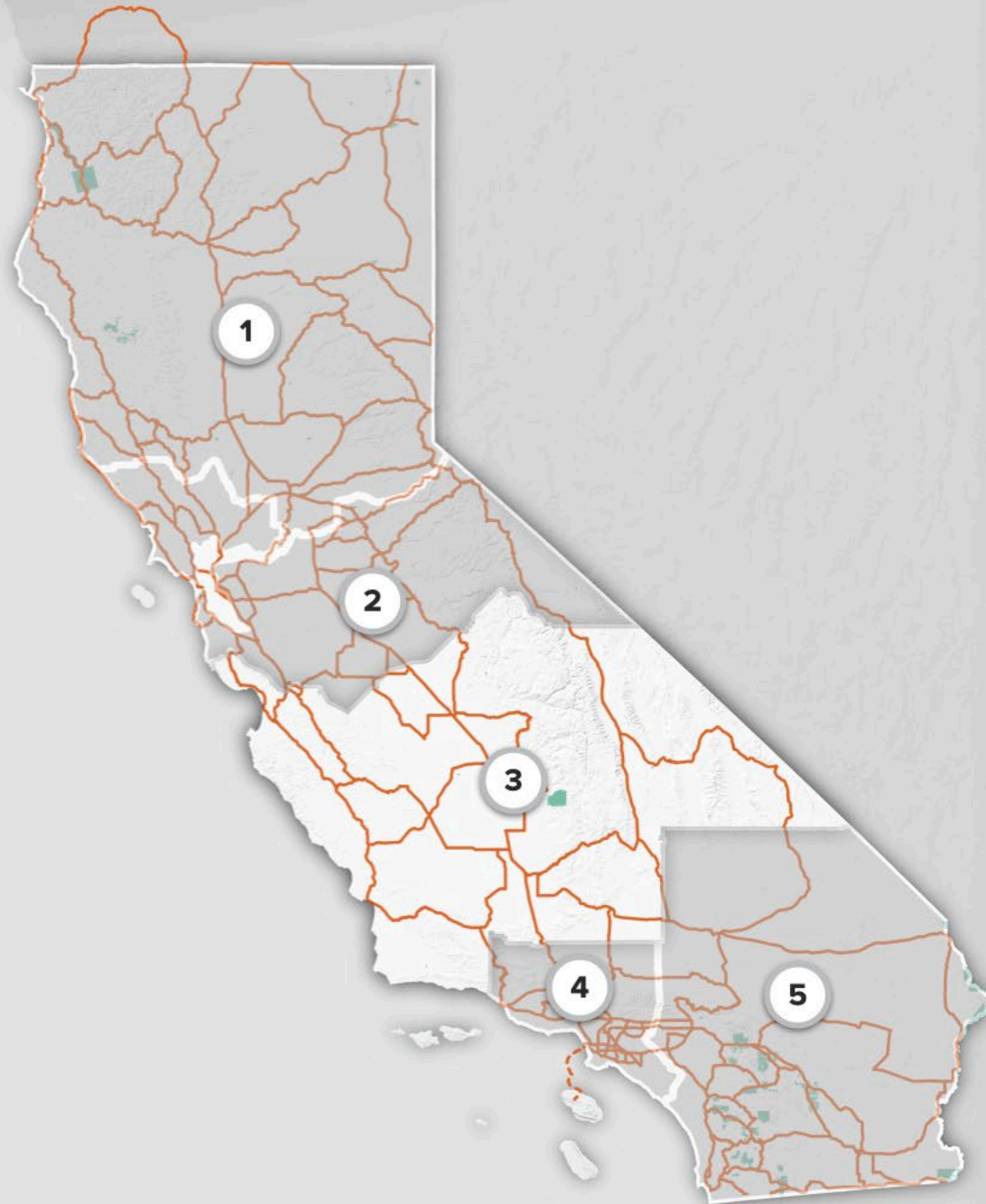
Population:

- Service affordability will be key due to socioeconomic factors in parts of the region.

Technical/Business-related:

- Significant joint build opportunities.
- May require further analysis with federal partners on some routes.
- Varies from CPUC recommendations in a few locations.
- Eastern parts of the region lack Caltrans ROW and may require further evaluation.









REGION 3



REGION 3 OVERVIEW MAP

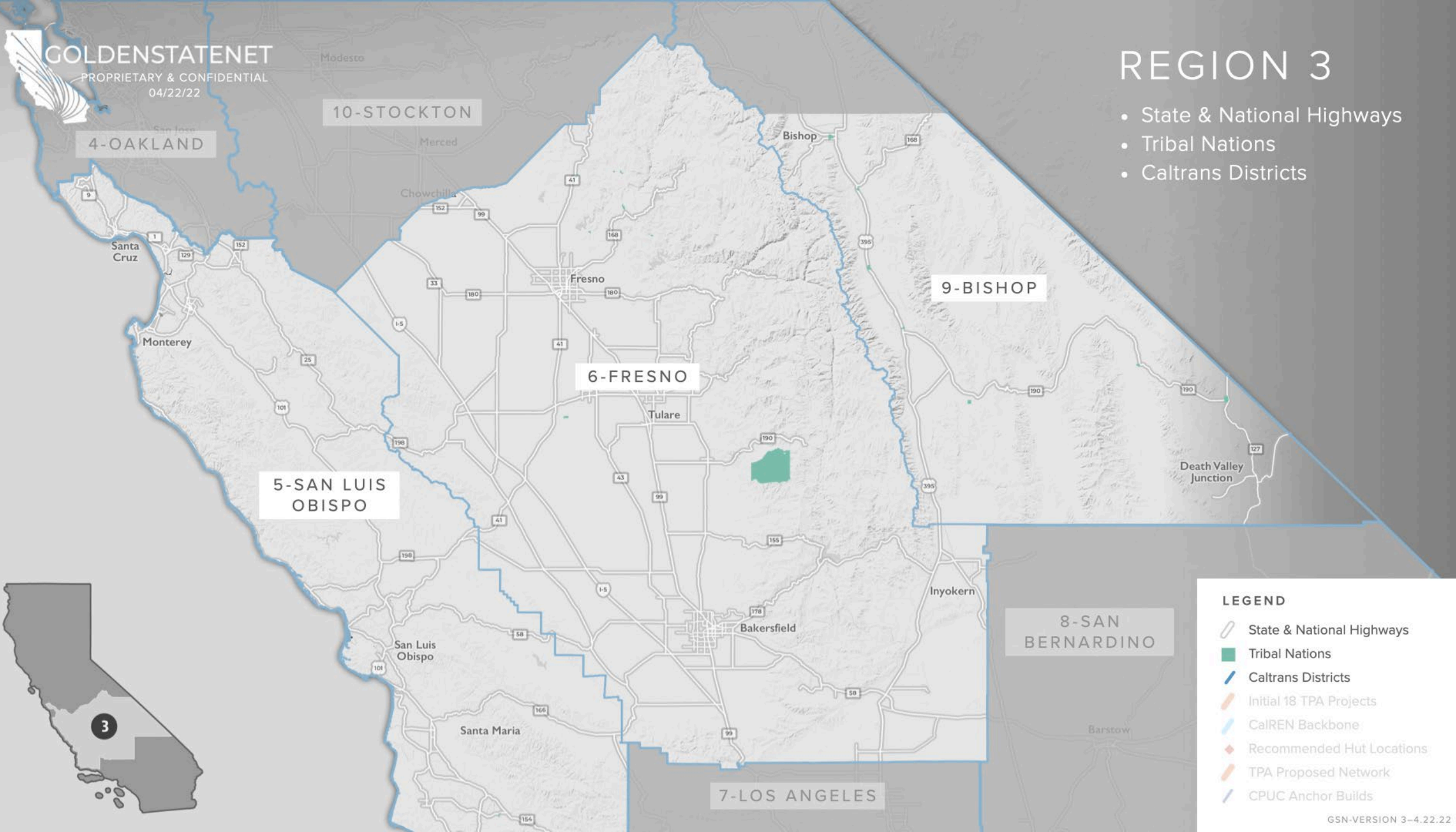
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LEGEND

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REGION 3

- State & National Highways
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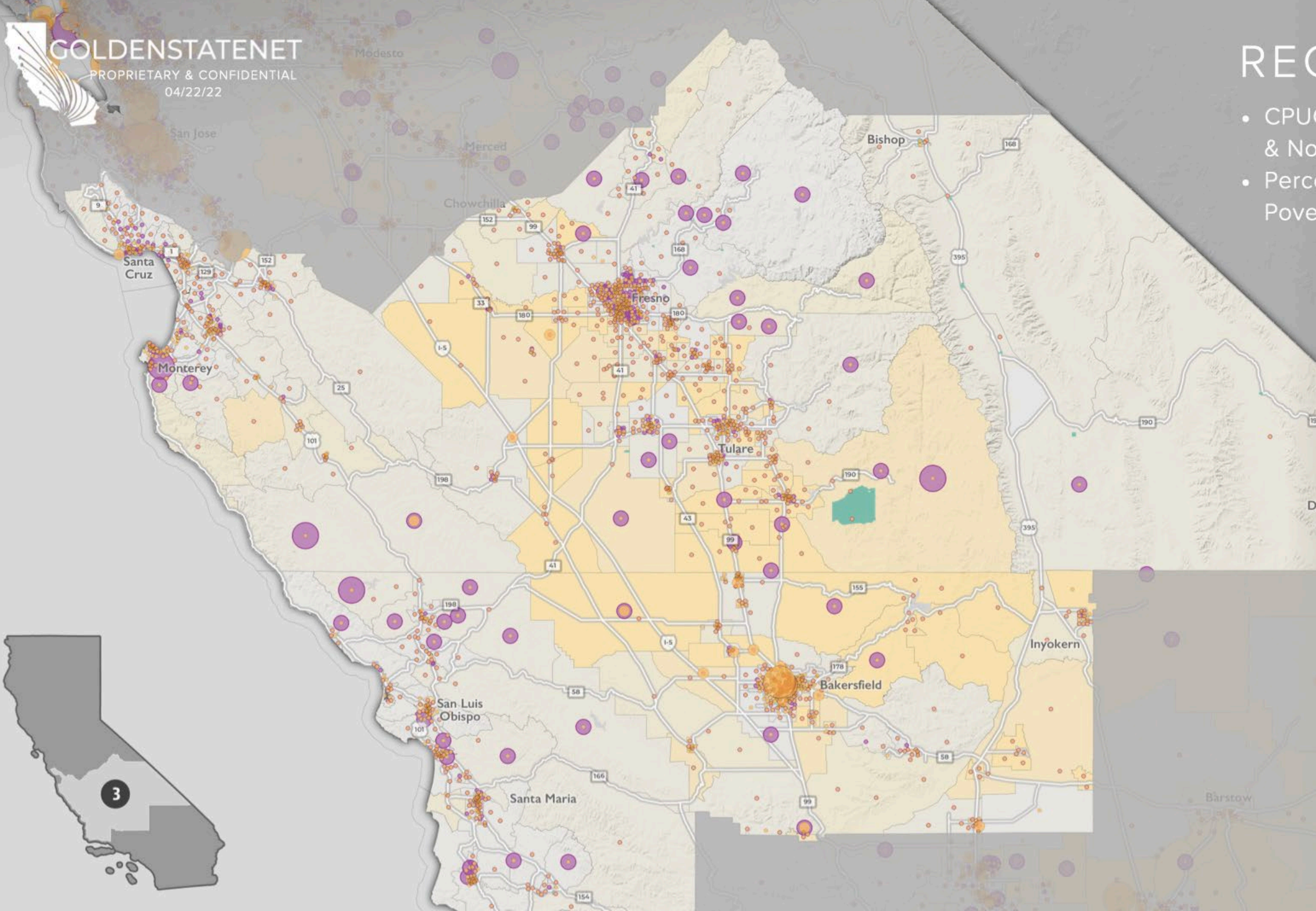


LEGEND

- State & National Highways
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REGION 3

- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line



Unserved Residential & Unserved Non-Residential

- > 2,000 - 5,574
- > 1,500 - 2,000
- > 1,000 - 1,500
- > 500 - 1,000
- > 1 - 500



Percent Households Below Poverty Line

Census tract data from U.S. Census Bureau's American Community Survey (ACS) - 2015-2019 5-year estimates

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REGION 3

- Initial TPA Projects - 1/31/22
- CalREN Backbone

9-CENTRAL COAST

10-WEST FRESNO

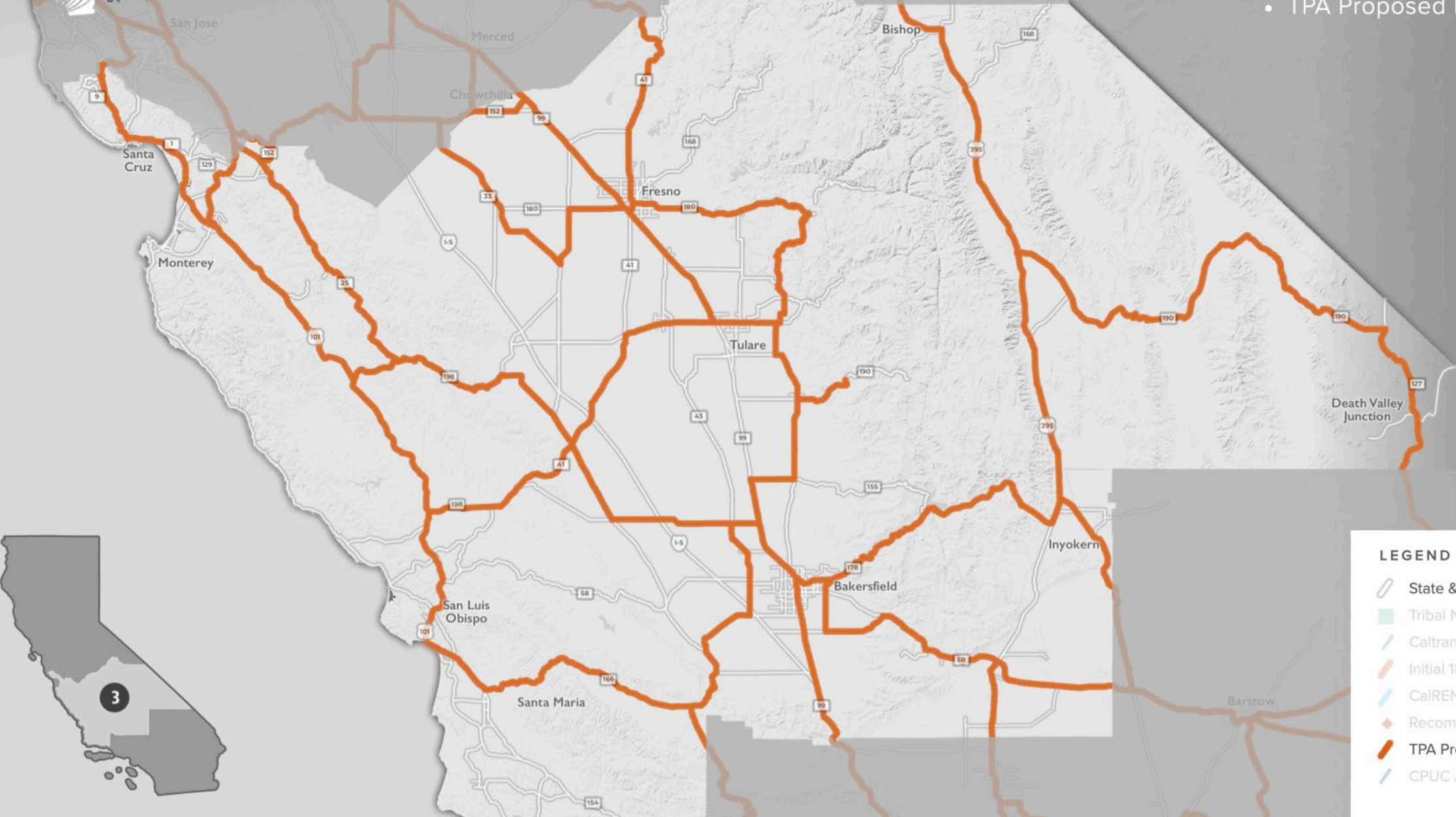
11-INYO

12-KERN

13-SAN LUIS OBISPO/KERN

LEGEND

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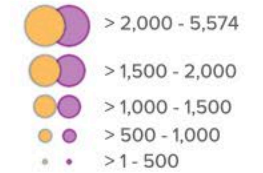
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REGION 3

- TPA Proposed Network
- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

Census tract data from U.S. Census Bureau's American Community Survey (ACS) - 2015-2019 5-year estimates

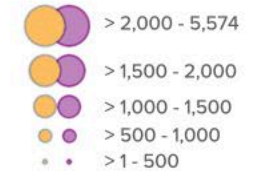
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REGION 3

- CPUC Anchor Builds
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Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

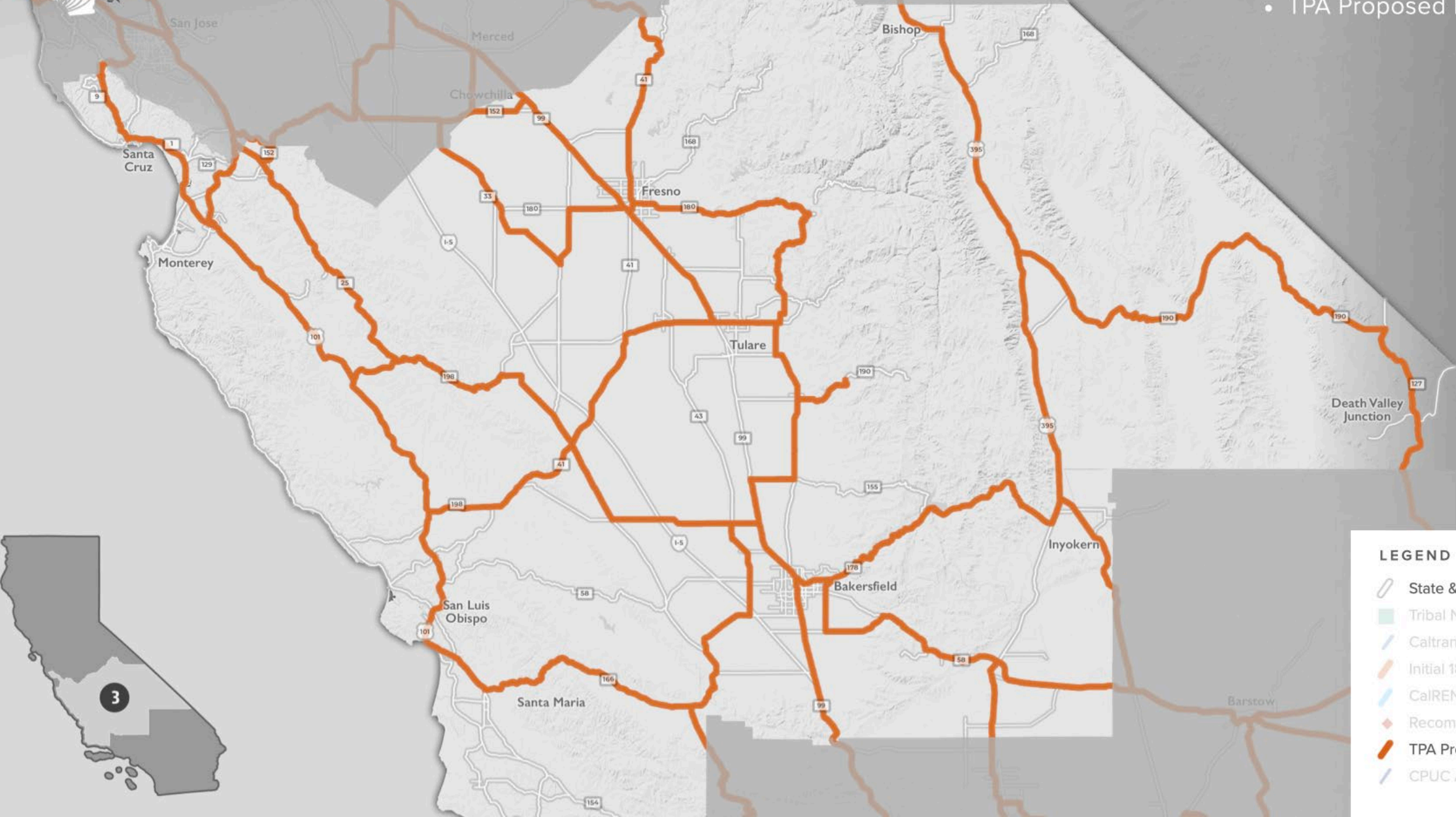
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REGION 3

• TPA Proposed Network



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REGION 3: KEY HIGHLIGHTS

Geographic/Environmental:

- Includes densely populated urban areas and sparsely populated mountainous regions.
- Certain areas considered high risk fire hazard zones.

Population:

- Forthcoming opportunities for Tule River Tribal Nation with ongoing engagement.
- Service affordability will be key due to socioeconomic factors in parts of the region.

Technical/Business-related:

- Significant joint build opportunities.
- Existing commercial infrastructure for IRU potential solutions.
- Eastern parts of the region lack Caltrans ROW and may require further evaluation.

REGION 4



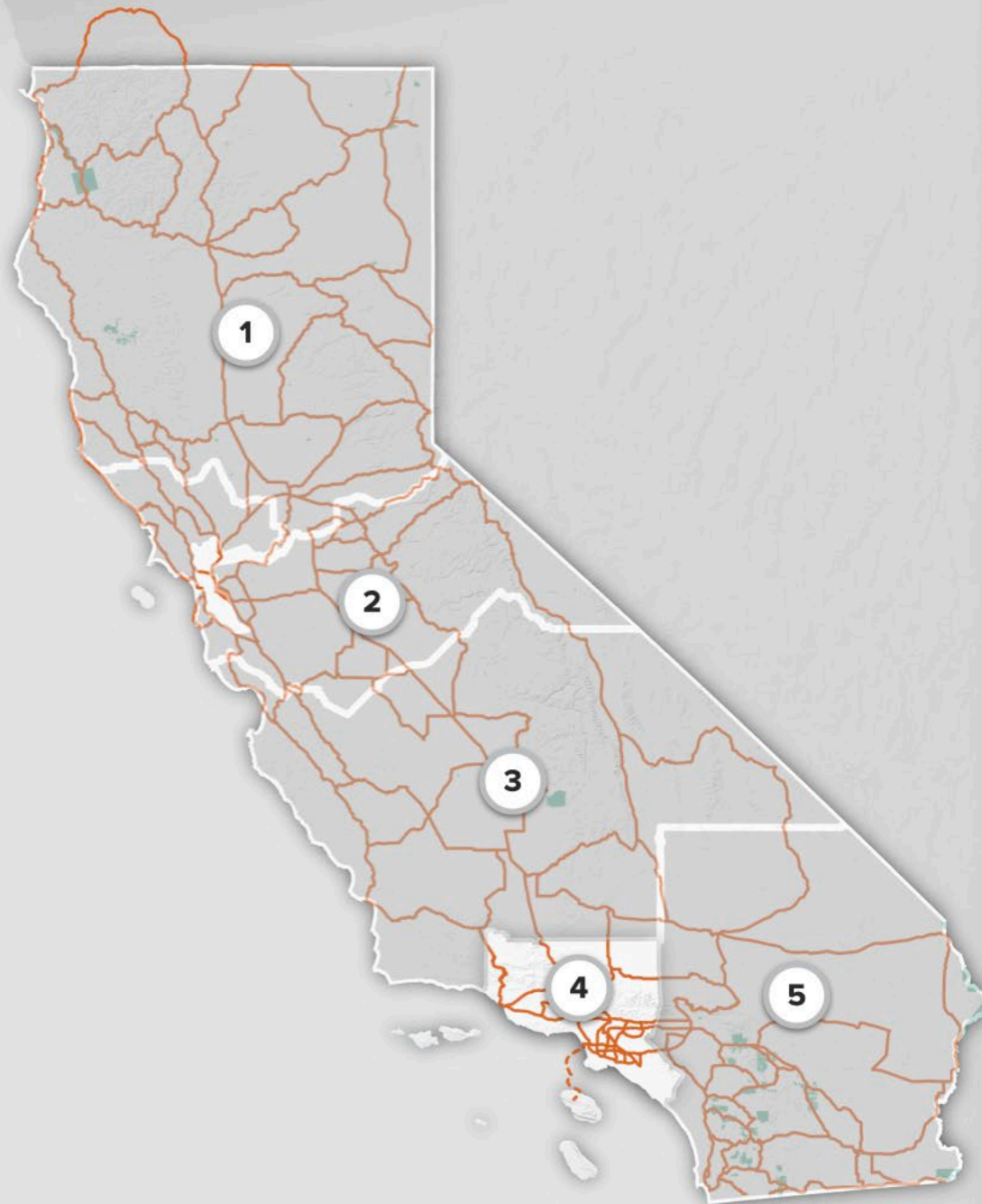
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REGION 4 OVERVIEW MAP

- Regions 1 - 5
- TPA Proposed Network
- Tribal Nations



LEGEND

- State & National Highways
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5-SAN LUIS
OBISPO

6-FRESNO

REGION 4

- State & National Highways
- Tribal Nations
- Caltrans Districts









7-LOS ANGELES

8-SAN BERNARDINO

12-IRVINE

11-SAN DIEGO

LEGEND

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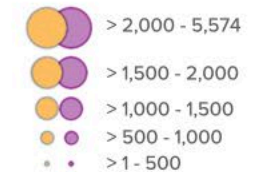
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REGION 4

- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

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REGION 4

- Initial TPA Projects - 1/31/22
- CalREN Backbone

15-LOS ANGELES

16-ORANGE

LEGEND

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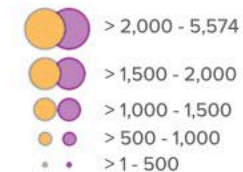
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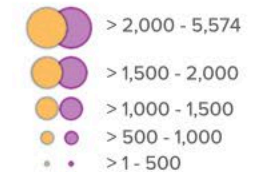
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REGION 4

- CPUC Anchor Builds
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Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

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REGION 4: KEY HIGHLIGHTS

Geographic/Environmental:

- Portions of region are densely populated urban areas.
- Further analysis required for Catalina Island.

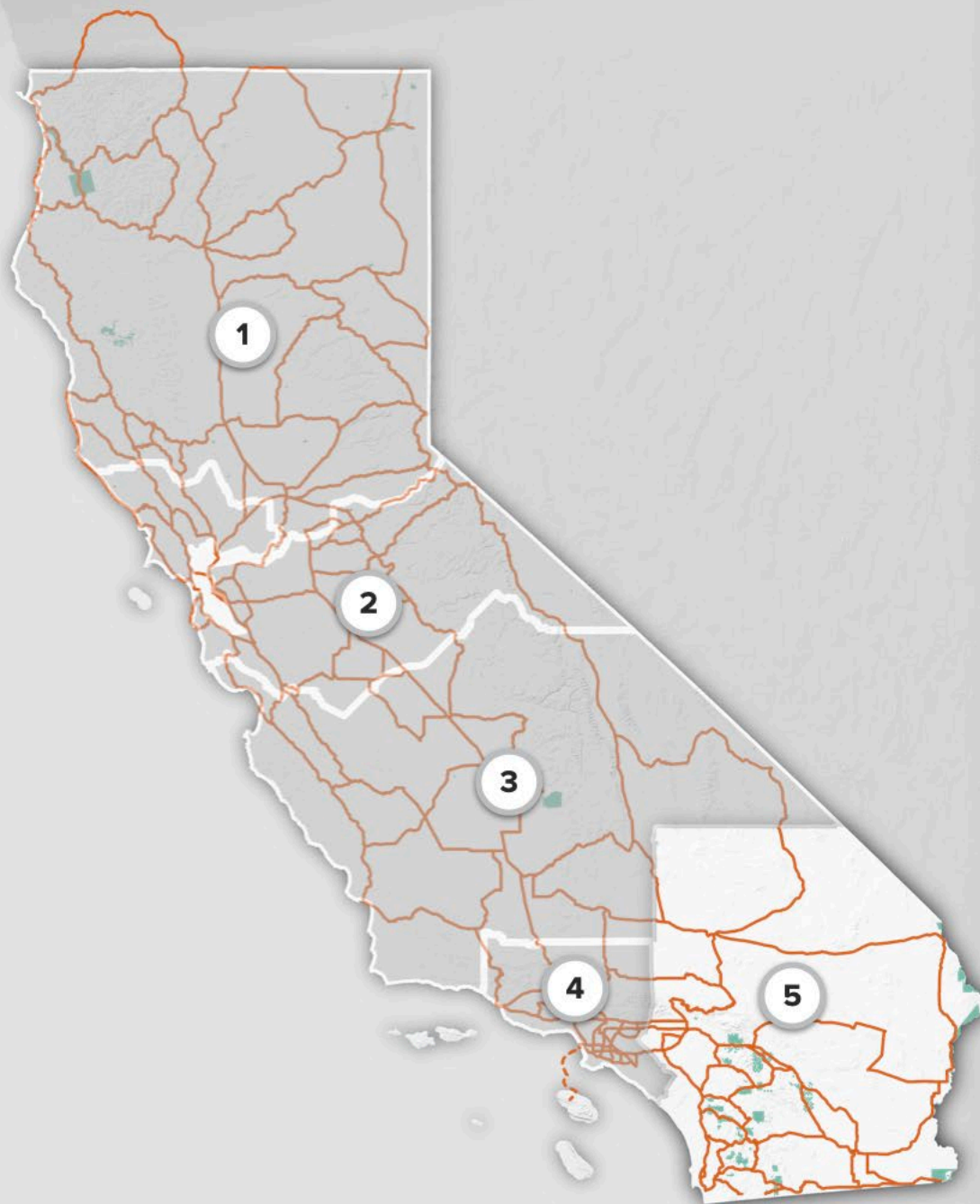
Population:

- Service affordability will be key due to socioeconomic factors in parts of the region.

Technical/Business-related:

- Significant joint build opportunities.
- Multiple telecom carriers and considerable existing fiber in some areas create opportunities for IRU alternatives.
- Northeast area of the region lacks Caltrans ROW and may require further evaluation.

REGION 5



REGION 5

OVERVIEW MAP

- Regions 1 - 5
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LEGEND

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GOLDENSTATENET

PROPRIETARY & CONFIDENTIAL
04/22/22

9-BISHOP

6-FRESNO

7-LOS ANGELES

12-IRVINE









8-SAN BERNARDINO

11-SAN DIEGO

REGION 5

- State & National Highways
- Tribal Nations
- Caltrans Districts

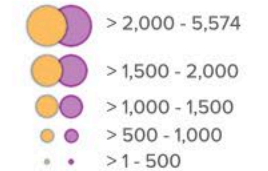
LEGEND

-  State & National Highways
-  Tribal Nations
-  Caltrans Districts
-  Initial 18 TPA Projects
-  CalREN Backbone
-  Recommended Hut Locations
-  TPA Proposed Network
-  CPUC Anchor Builds

REGION 5

- CPUC Unserved Residential & Non-Residential
- Percent Households Below Poverty Line

Unserved Residential & Unserved Non-Residential



Percent Households Below Poverty Line

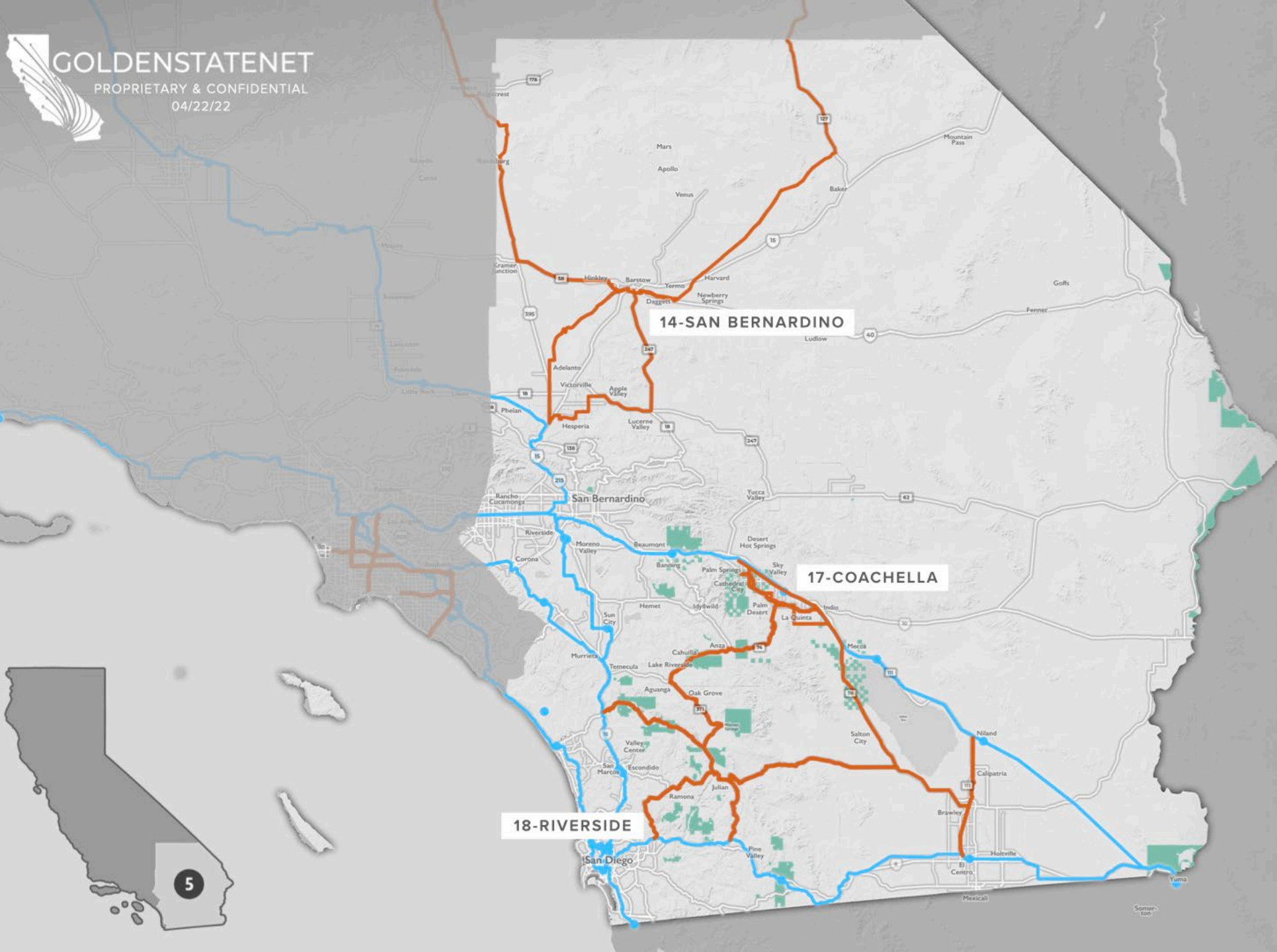
Census tract data from U.S. Census Bureau's American Community Survey (ACS) - 2015-2019 5-year estimates

LEGEND

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REGION 5

- Initial TPA Projects - 1/31/22
- CalREN Backbone



LEGEND

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GOLDENSTATENET

PROPRIETARY & CONFIDENTIAL

04/22/22

REGION 5

- TPA Proposed Network



5

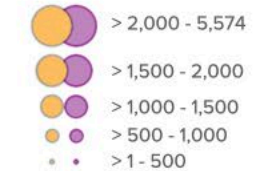
LEGEND

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Percent Households Below Poverty Line

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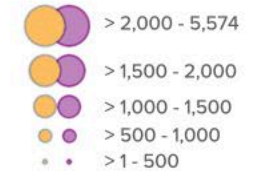
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GOLDENSTATENET

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04/22/22

REGION 5

- TPA Proposed Network



5

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REGION 5: KEY HIGHLIGHTS

Geographic/Environmental:

- Includes densely populated urban areas as well as desert regions prone to extreme heat.

Population:

- Significant number of Tribal Nations in the region will be positively impacted by suggested routes.
- Service affordability will be key due to socioeconomic factors in parts of the region.

Technical/Business-related:

- Significant opportunities to connect to other major Internet hubs in the West.
- Multiple telecom carriers and considerable existing fiber in some areas create opportunities for IRU alternatives.



GOLDENSTATENET

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OVERVIEW MAP

- TPA Proposed Network

Many Thanks to MMBI Partners

CALIFORNIA
ALL



CENIC



Mark Monroe

**Deputy Director, Middle-Mile Broadband Initiative
California Department of Technology**

Caltrans Report

Important Next Step

- CDT plans to complete its review and analysis of this map.
- CDT will provide a final initial “build” map to Caltrans to begin its systemwide preconstruction work.

Benefits:

- Caltrans can start the clock on the 18-24 months of preconstruction work needed before construction can begin.
- Caltrans can develop and refine its cost estimates to inform build and lease decisions.

Going forward:

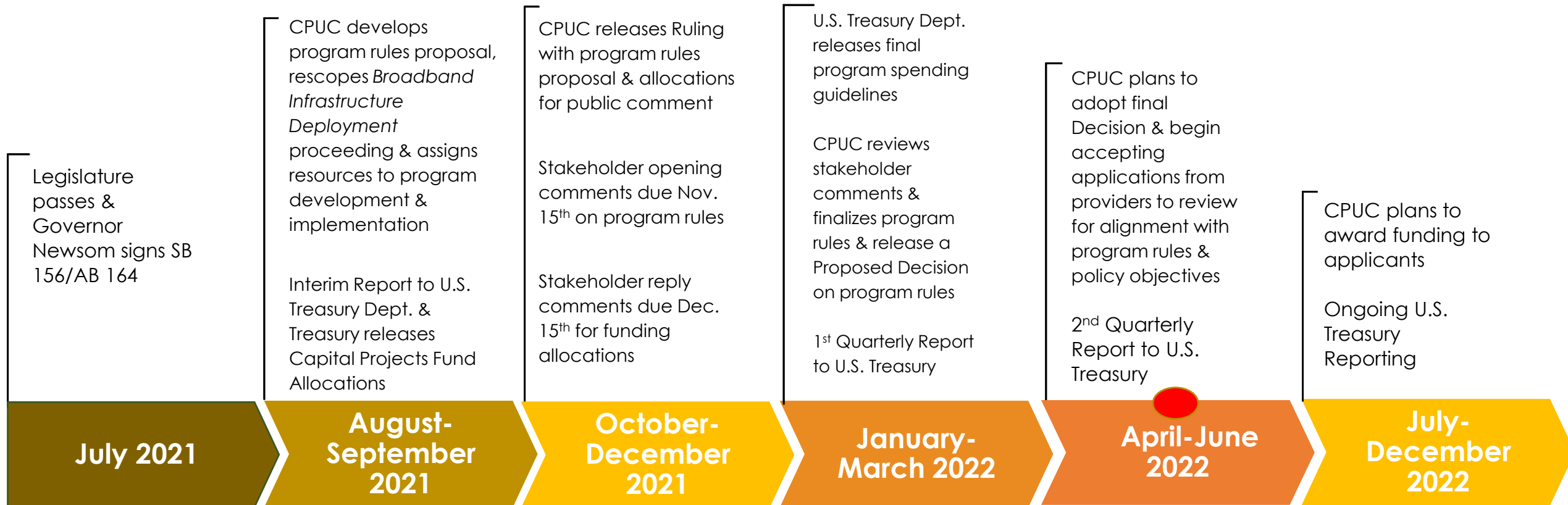
- GSN will continue developing a map of existing infrastructure that can be leased using IRUs.
- CDT will determine how much the state can afford to build and how much will need to be leased.

California Public Utilities Commission

Robert Osborn

**Director, Communications Division
California Public Utilities Commission**

Federal Funding Account Timeline



CPUC *Broadband Infrastructure Deployment Proceeding* (R. 20-09-001)

- Formal public process and venue for developing and updating middle-mile mapping analysis and data
- Also serves as the public forum for developing rules for the last-mile program

Local Agency Technical Assistance Timeline



CPUC California Advanced Services Fund (CASF) Proceeding (R. 20-08-021)

- Formal public process and venue for CASF Public Housing, Infrastructure, Consortia, and Adoption Accounts as well as Technical Assistance and Loan Loss Reserve Account.

Loan Loss Reserve Timeline



CPUC California Advanced Services Fund (CASF) Proceeding (R. 20-08-021)

- Formal public process and venue for CASF Public Housing, Infrastructure, Consortia, and Adoption Accounts as well as Technical Assistance and Loan Loss Reserve Account.

California Advanced Service Fund Timeline

Legislature passes & Governor Newsom signs SB 156/AB 164, AB 14 & SB 4

CPUC acts on all pending May 2020 CASF Infrastructure Applications

CPUC develops draft program rules, proposal for legacy CASF subaccounts, develops subaccount allocations assigns resources to program development & implementation

CPUC plans to adopt final program rules & subaccount allocations

CPUC plans to open new funding rounds of both Adoption & Public Housing

July-October 2021

December 2021

January-February 2021

March 2022

April-June 2022

July 2022

CPUC California Advanced Services Fund (CASF) Proceeding (R. 20-08-021)

- Formal public process and venue for CASF Public Housing, Infrastructure, Consortia, and Adoption Accounts as well as Technical Assistance and Loan Loss Reserve Account.

California Department of Transportation

Hardeep Takhar

**Broadband Middle-Mile Network Director
California Department of Transportation**

Caltrans Update

INITIAL 18 LOCATIONS

- Environmental Clearance
- Subsurface Utilities Investigations
- Field Reviews
- Project Design

POTENTIALLY VIABLE PROJECTS

- 74 project opportunities under evaluation

STATUS

- Environmental Clearance - Studies initiated to identify Biological and Cultural Resources impacts
- Subsurface utilities investigation- Identifying existing underground Utilities
- Field reviews - Conducting site reviews to determine constructability
- Project Design –
 - Developed plan and details for placement of Conduit, Vaults and Fiber
 - Modified Design and Encroachment Policy to accommodate Middle-Mile Network Infrastructure within the State Highway System right of way

PUBLIC COMMENT



THANK YOU!



**BROADBAND
FOR ALL**