

East Bay Broadband Report Card

Prepared for the East Bay Broadband Consortium
28 January 2013



East Bay Broadband Consortium study objectives

- Gather information about broadband availability, infrastructure and adoption in Alameda, Contra Costa and Solano Counties.
 - Including residential, business, anchor institution and mobile services.
- Do tabular and mapping analysis of the data to determine availability patterns at a regional, county and city level.
- Determine broadband service benchmarks.
- Evaluate availability against benchmarks.

Broadband availability data gathered by CPUC

- Three kinds of technology - wireline, fixed wireless and mobile.
- Three very different segments: mobile, commercial and residential.
- Reports from carriers, plus CPUC does mobile field testing.
 - Reporting methods vary: by census block, street address, map blobs.
- Carriers report advertised, not actual, speeds.
- Quality varies from "fair enough" to "aspirational".
- Reported service provides a reasonably consistent basis for making relative comparisons.

Mobile broadband coverage widespread

- Six carriers report mobile broadband service availability in region:

AT&T

Clearwire

Metro PCS

Sprint

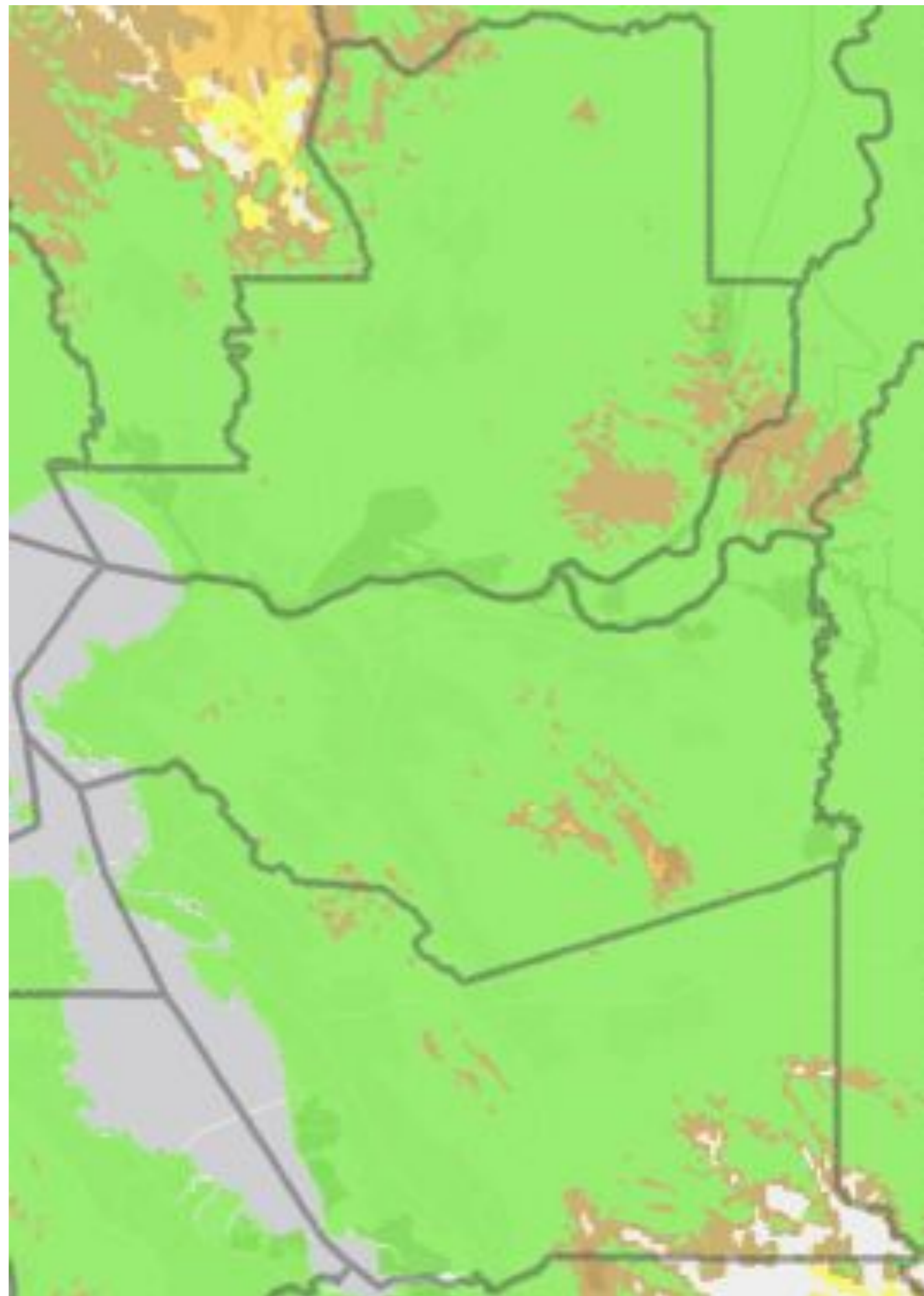
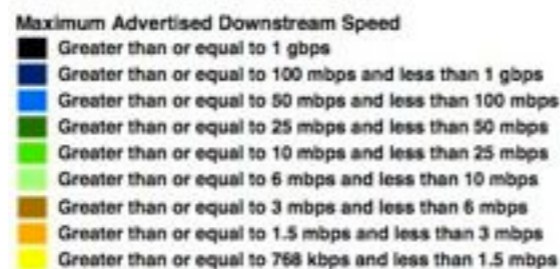
T-Mobile

Verizon

- Some level of service available outdoors nearly everywhere.
- Dead spots occur for individual carriers, but build-outs continue.
 - Tower permits, fiber connectivity can be problematic.
- Spectrum auctions planned for 2014 could bring major improvements, including in-building access.

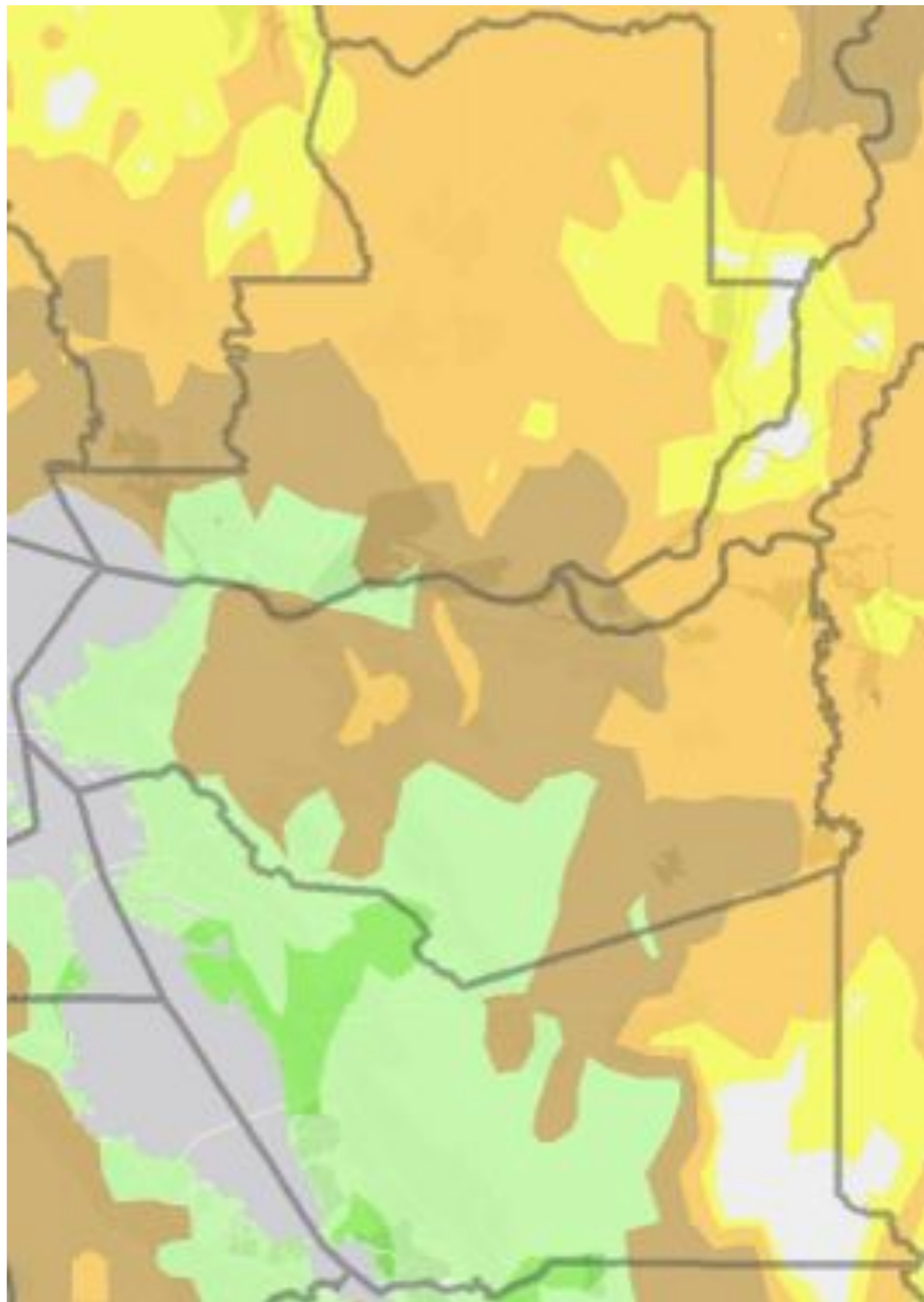
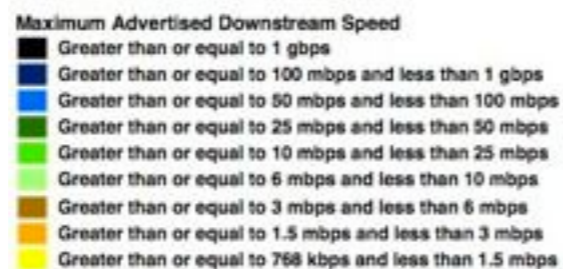
Mobile carriers report excellent broadband service, mostly 10 Mbps or better

- Verizon, T-Mobile say 10+ Mbps, pretty much everywhere.
- AT&T is more granular, reporting lower speeds in outlying areas.
- Sprint, Clearwire report lower speeds, in 3 to 6 Mbps range.
- Bandwidth shared, so personal results will vary.



CPUC's field test results say "not so fast"

- Nimitz corridor between Bay and San Mateo bridges matches claims, more or less.
- 6 Mbps along Eastshore corridor, San Ramon and Livermore valleys.
- 1.5 to 3+ Mbps elsewhere.

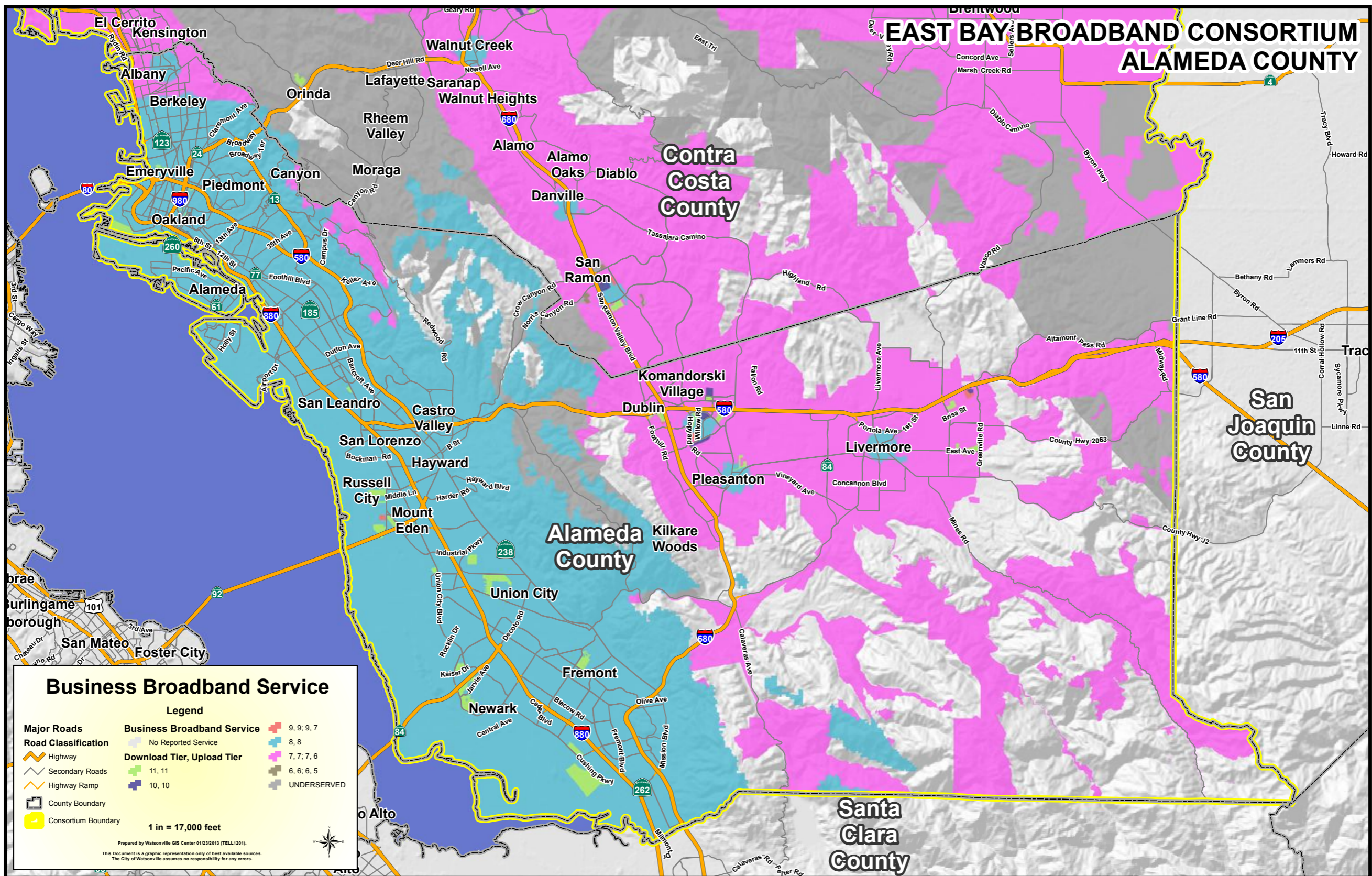


Commercial/industrial broadband is different

- Ten specialized business broadband companies offer various levels of service via copper, fiber, fixed wireless:

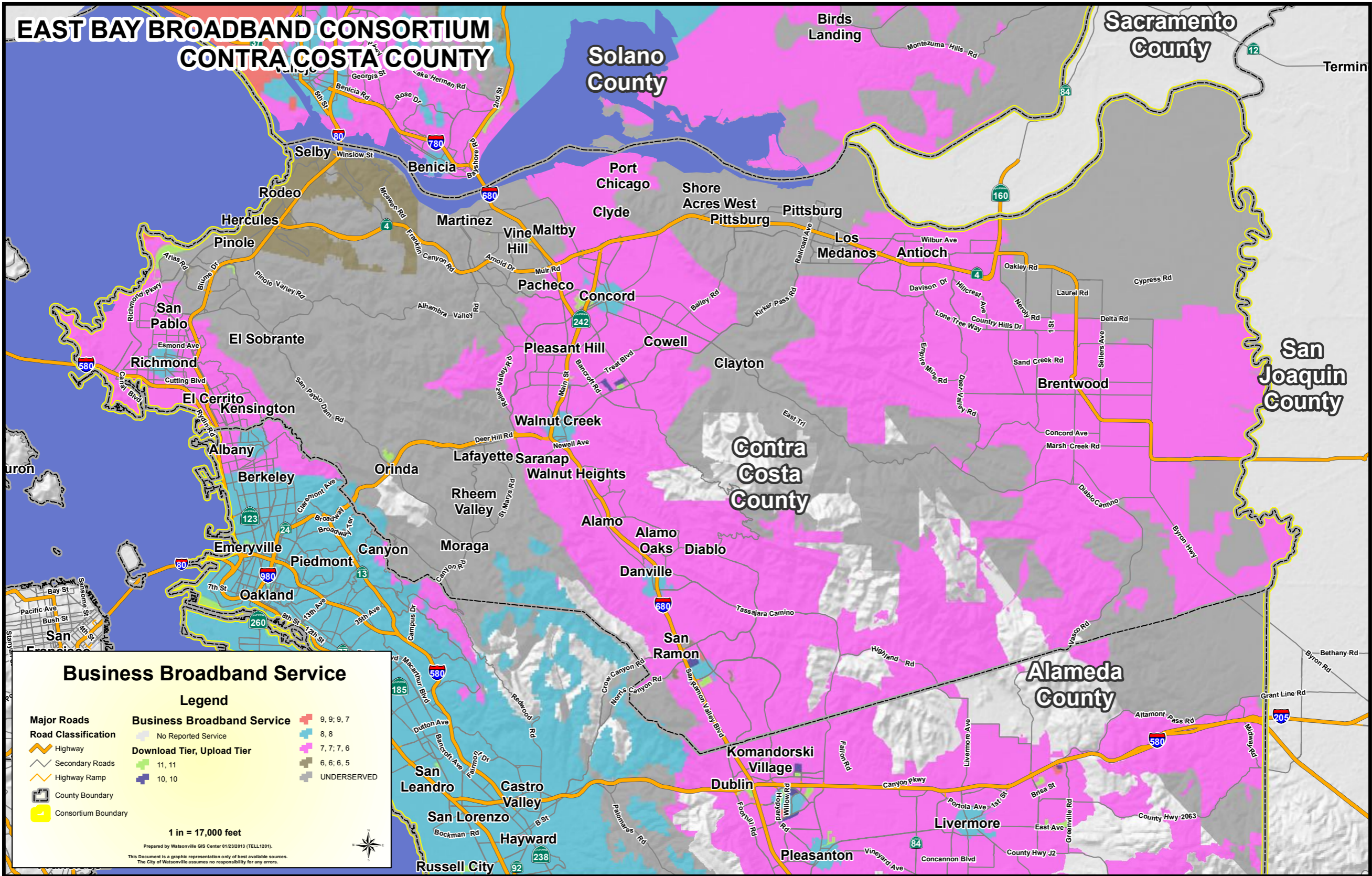
DigitalPath
Ethern Networks
Level 3 Communications
MegaPath
New Edge Networks
PAETEC Communications
TW Telecom
Valley Internet
Verizon
Vista Broadband Networks

- Claimed service area is often aspirational: sometimes it just means they'll come out to see if they can actually provide service.
- Even if available, often requires significant installation costs and/or delay.
- For economic development and commercial real estate purposes, block by block, even parcel by parcel, verification is necessary.



Business providers generally advertise 25 to 50 Mbps in western Alameda County and 10 to 25 Mbps in the east.

EAST BAY BROADBAND CONSORTIUM CONTRA COSTA COUNTY



Business Broadband Service

Legend

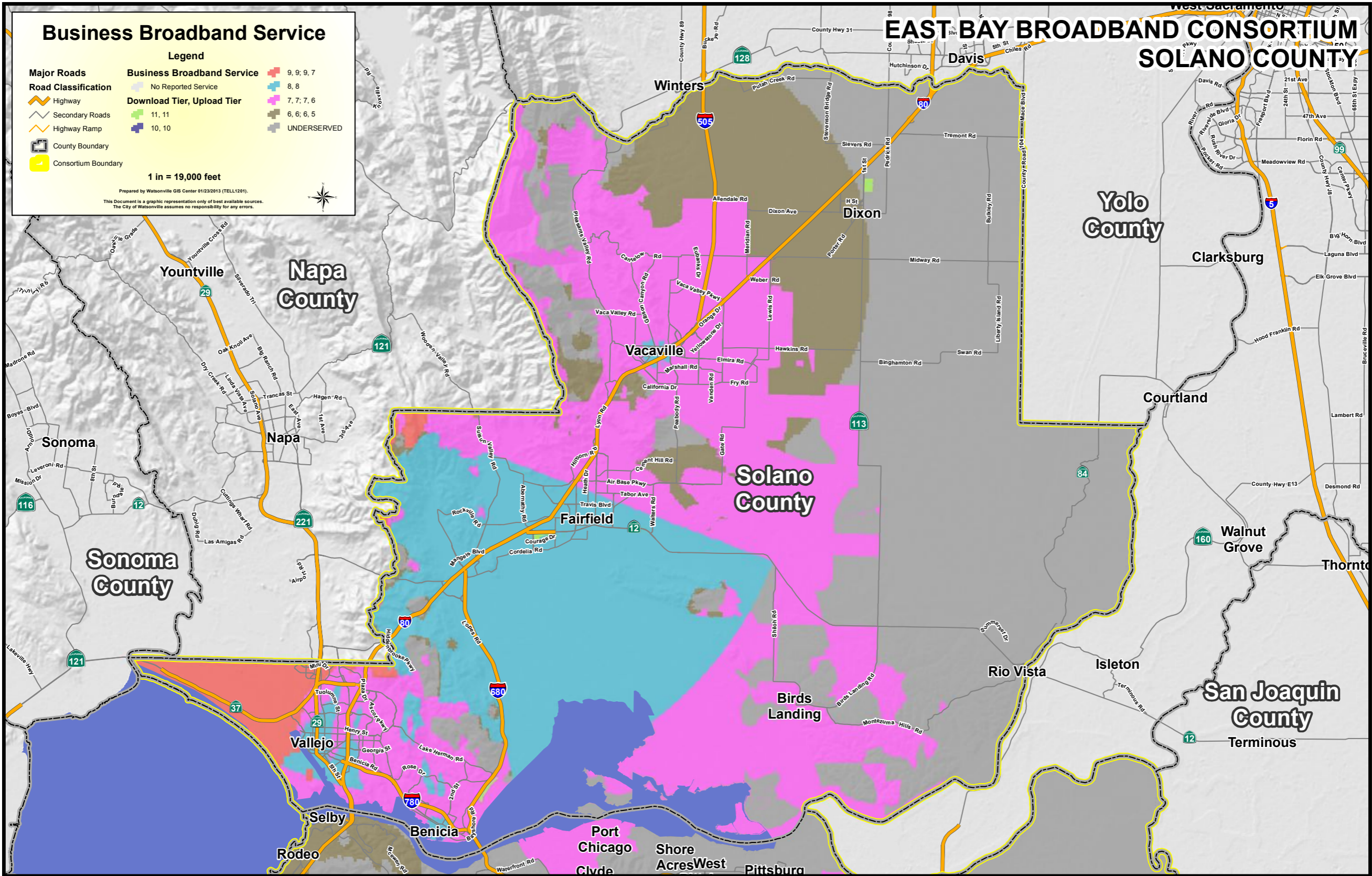
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|----------------------------|-----------------------------------|-------------|
| Major Roads | Business Broadband Service | 9, 9; 9, 7 |
| Road Classification | No Reported Service | 8, 8 |
| Highway | Download Tier, Upload Tier | 7, 7; 7, 6 |
| Secondary Roads | 11, 11 | 6, 6; 6, 5 |
| Highway Ramp | 10, 10 | UNDERSERVED |
| County Boundary | | |
| Consortium Boundary | | |

1 in = 17,000 feet

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Central business districts in Contra Costa County have advertised speeds in the 25 to 50 Mbps range, mostly 10 to 25 Mbps elsewhere.



Business broadband providers advertise 25 to 50 Mbps in Fairfield/
Cordelia area, but generally lower speeds further away from that center.

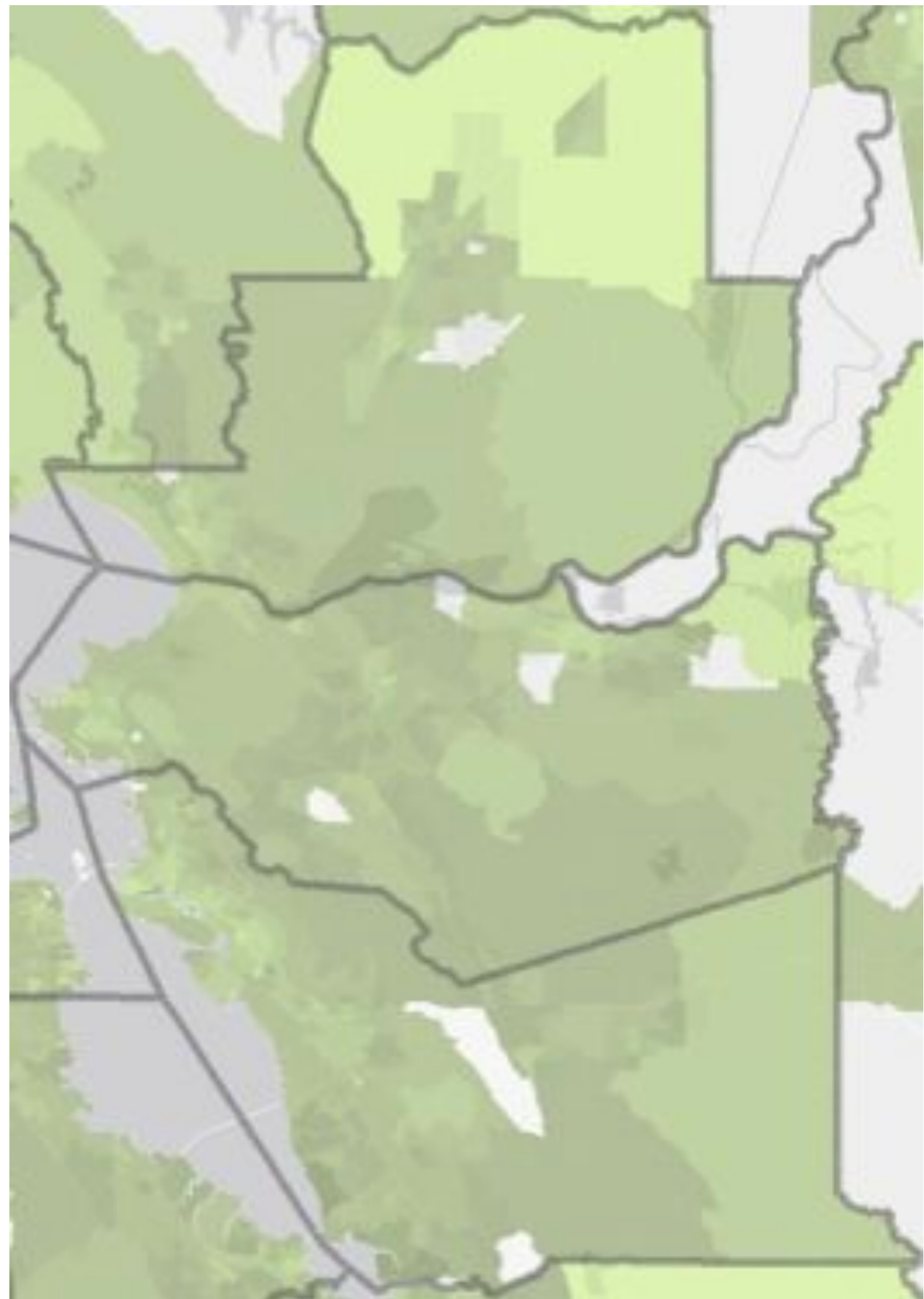
Residential broadband analysis

- Consumer broadband infrastructure is a generally reliable indicator of all types of service availability and core infrastructure. Most AT&T and Comcast construction to date is based on expected revenue from consumers.
- Evaluation is based on grading according to advertised download and upload speeds, which provides a relative comparison even when ground truth differs.
- Comcast and AT&T are the dominant residential broadband providers in the region.
- Astound and Sonic offer competitive service in limited urban and suburban areas.
- Frontier, Wave and Winters Broadband serve rural Solano County areas.
- Adoption data is limited, but shows a pattern of greater adoption in generally suburban areas than generally urban or rural areas.

Adoption rates beat statewide average, suburbs skew higher

Alameda County	78%
Contra Costa County	87%
Solano County	78%
EBBC	81%
California	75%

*Darker areas have higher
and lighter areas have
lower residential adoption*



Lower adoption rates in urban areas west of the hills.

Alameda County	78%
Contra Costa County	87%
Solano County	78%
EBBC	81%
California	75%

Darker areas have higher and lighter areas have lower residential adoption



Residential broadband grading criteria

A

Two competing providers, both advertising maximum download speeds of at least 25 Mbps and maximum uploads speeds of 6 Mbps, or 3 or more competing providers offering that standard of service in combination.

B

Competing providers, both advertising maximum download speeds of at least 10 Mbps and maximum uploads speeds of 6 Mbps.

C

Competing providers, one advertising max down/up speeds of at least 10/6 Mbps and the remainder meeting CPUC's minimum 6 down/1.5 up standard.

D

At least one provider advertising speeds that meet the CPUC's minimum standards of 6 Mbps down and 1.5 Mbps up.

F

At least one provider offers service, but no service is available that meets the CPUC's minimum standard of 6 Mbps down and 1.5 Mbps up (underserved). Or no service at all (unserved).

Examples

A

Astound (or Sonic) and/or Comcast and/or AT&T offering their best levels of service.

B

Comcast Xfinity cable modem service and mid-level AT&T Uverse DSL.

C

AT&T DSL and Comcast cable modem service.

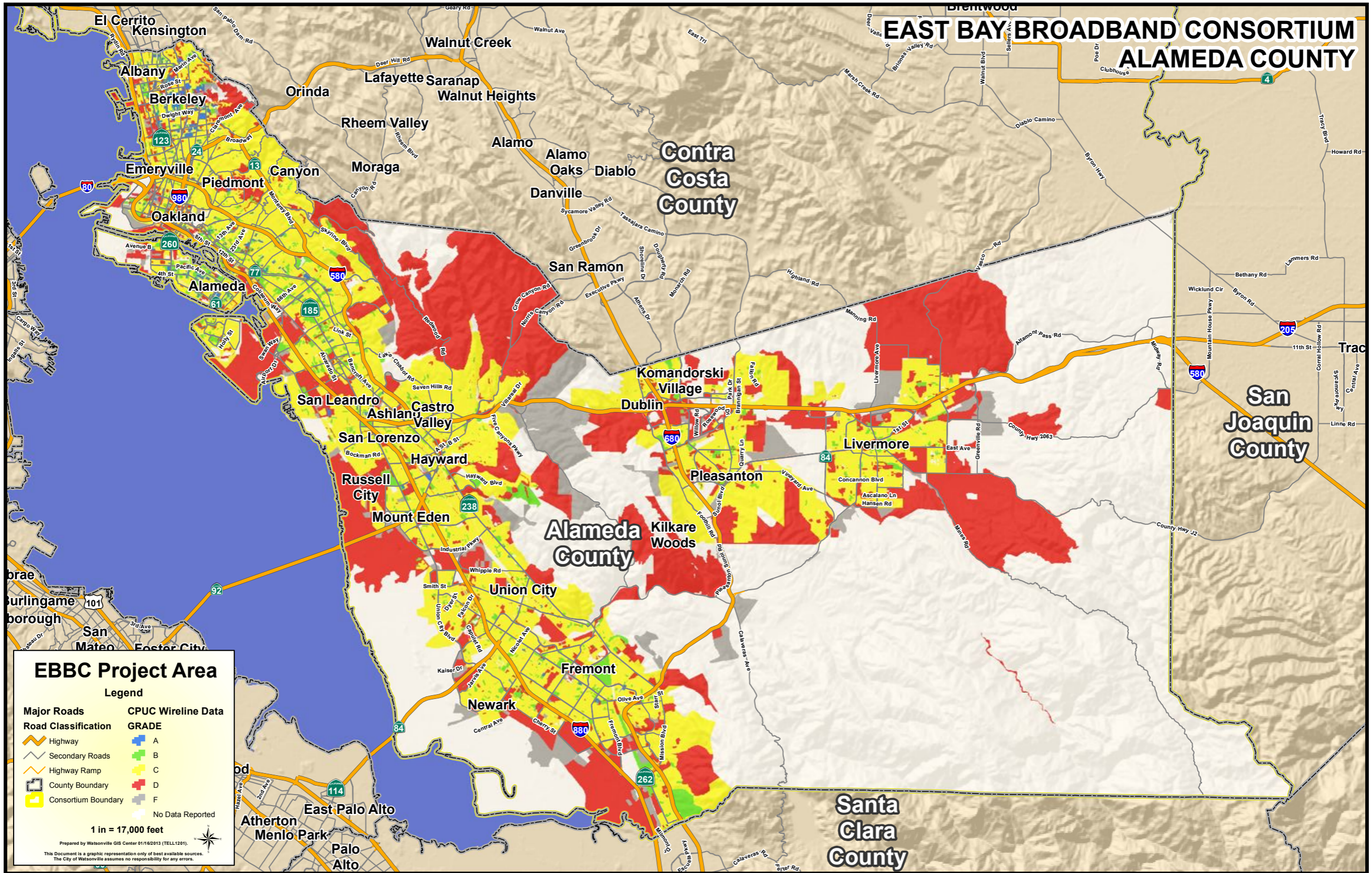
D

Only one provider, e.g. AT&T or Comcast or Winters Broadband, meets spec.

F

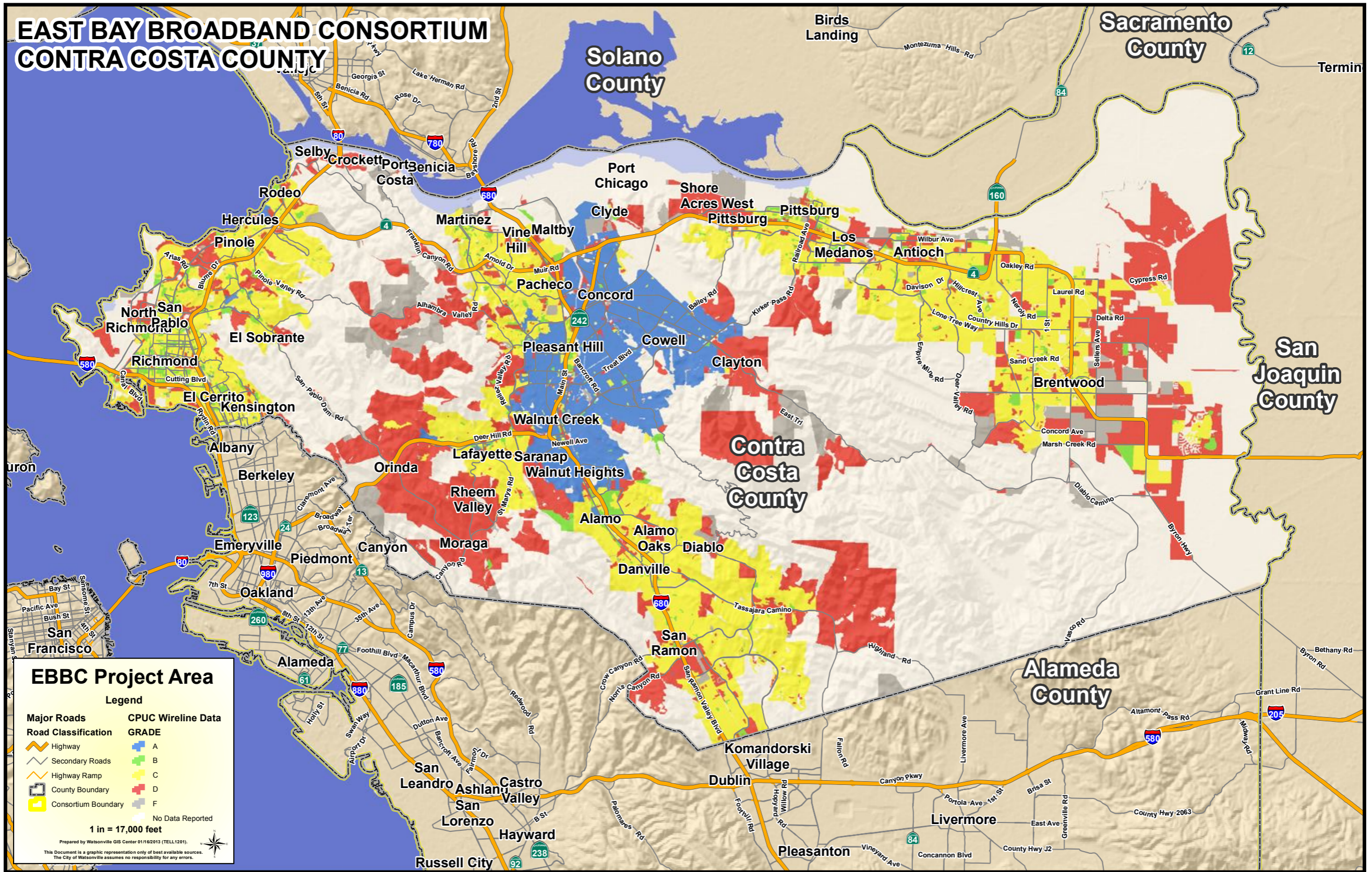
Service via outdated DSL equipment or nothing at all.

EAST BAY BROADBAND CONSORTIUM ALAMEDA COUNTY

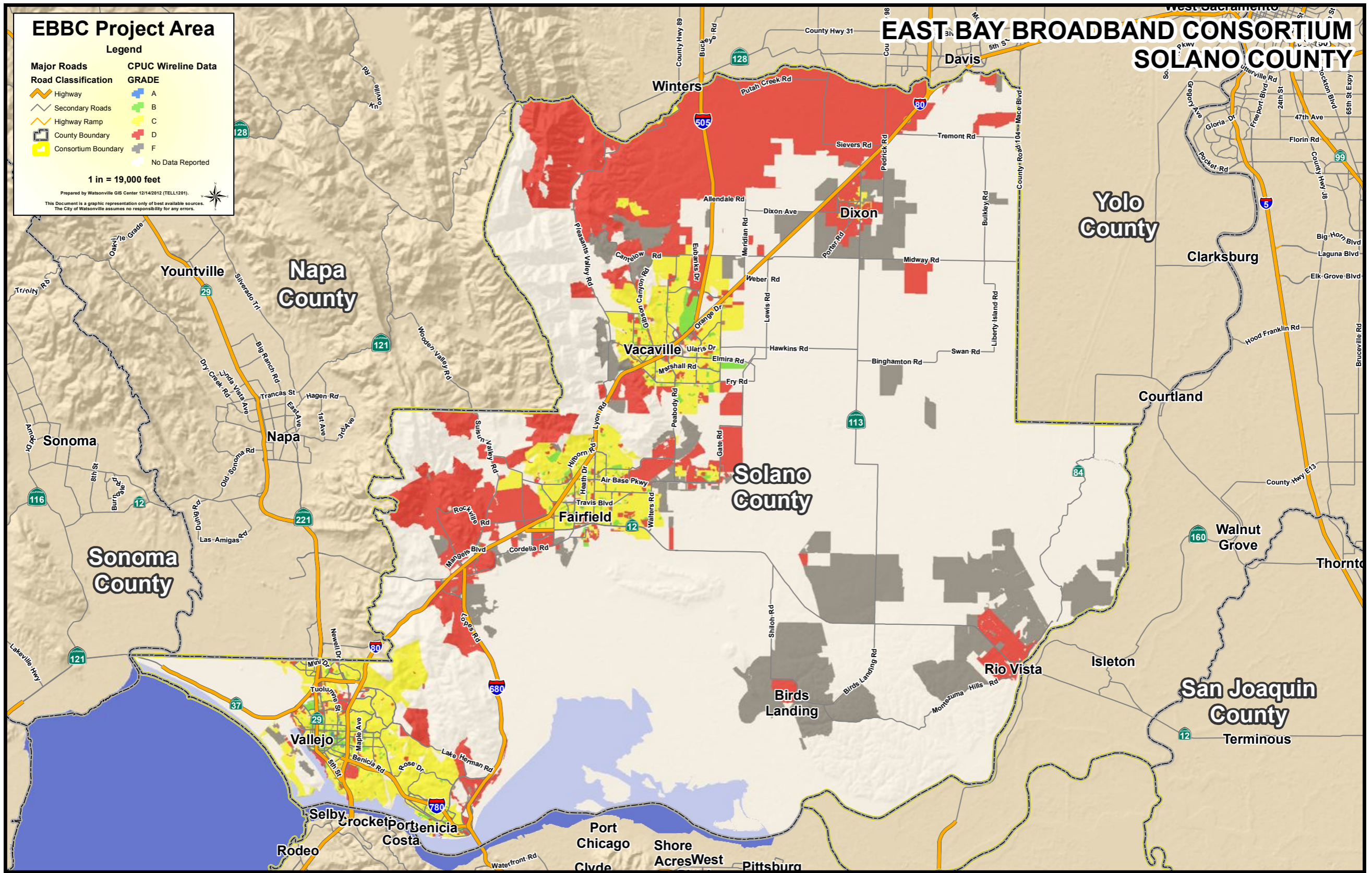


Residential broadband availability grading by census block (unweighted)

EAST BAY BROADBAND CONSORTIUM CONTRA COSTA COUNTY



Residential broadband availability grading by census block (unweighted)



Residential broadband availability grading by census block (unweighted)

Alameda County

C

2.0

Contra Costa County

C+

2.3

Solano County

C-

1.8

East Bay Region

C

2.1

Spread of grades around
statewide average

Grades for fixed residential
service, weighted by households

Alameda County

Residential broadband availability is reasonably consistent and generally around the statewide average.

Berkeley	C+	2.4
Alameda	C	2.2
Albany	C	2.2
Oakland	C	2.1
Emeryville	C	2.1
San Leandro	C	2.1
Newark	C	2.0
Fremont	C	2.0
Hayward	C-	1.9
Union City	C-	1.9
Livermore	C-	1.9
Dublin	C-	1.8
Pleasanton	C-	1.8
Piedmont	D+	1.5

Contra Costa County

Central county includes best and some of worst consumer broadband availability in region.

Concord	A-	3.8
Walnut Creek	B+	3.4
Pleasant Hill	B-	2.9
San Pablo	C	2.2
El Cerrito	C	2.2
Richmond	C	2.1
Pinole	C	2.0
Martinez	C	2.0
Lafayette	C	2.0
Brentwood	C	2.0
Oakley	C	2.0
Danville	C-	1.9
Hercules	C-	1.9
Pittsburg	C-	1.9
Antioch	C-	1.9
Unincorporated	C-	1.8
San Ramon	C-	1.8
Clayton	D	1.0
Orinda	D	1.0
Moraga	D	1.0

Solano County

Rural broadband availability does not keep pace with urban/suburban areas.

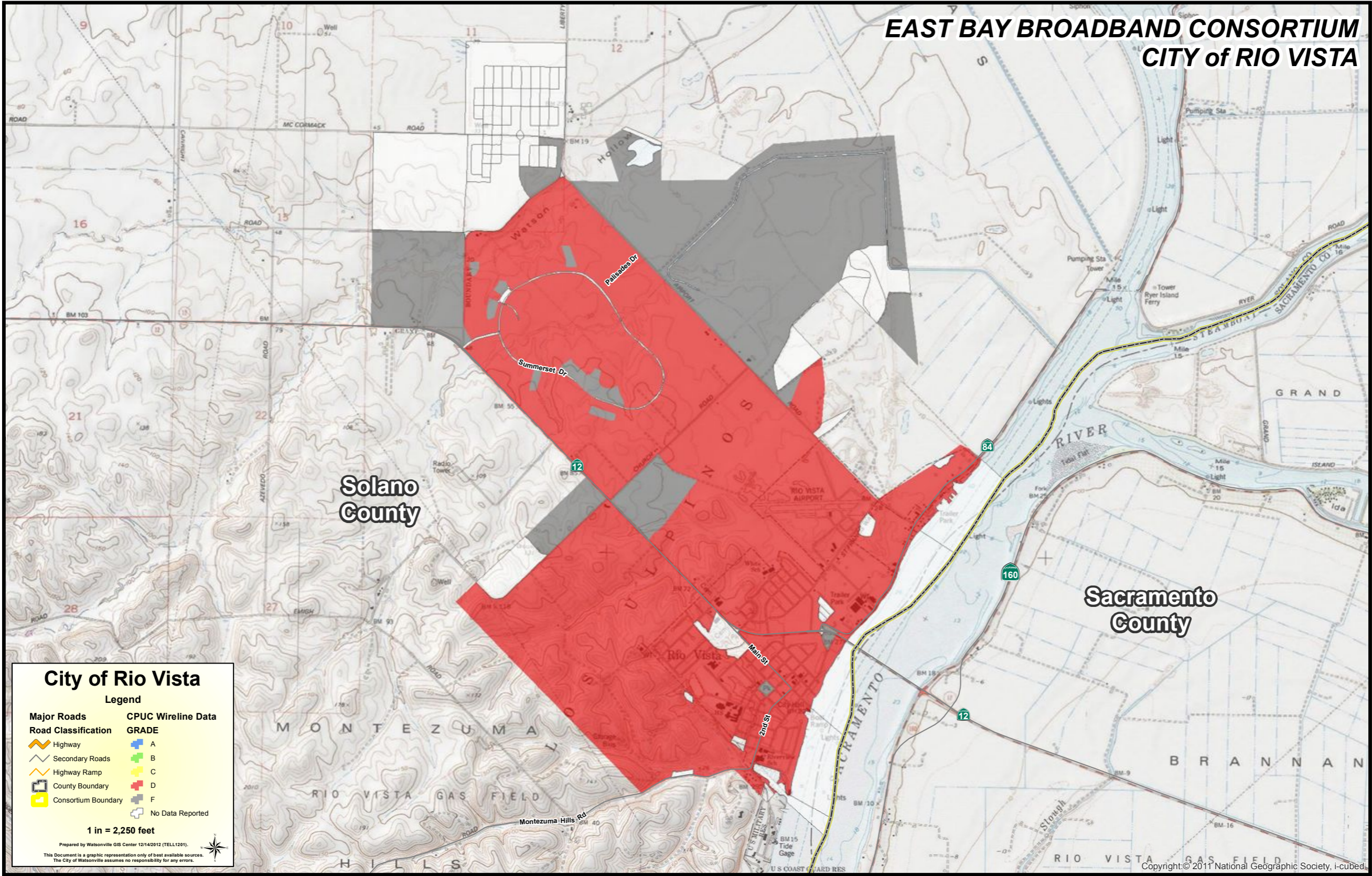
Vallejo	C	2.0
Benicia	C	2.0
Suisun City	C-	1.9
Vacaville	C-	1.9
Fairfield	C-	1.8
Dixon	D	1.1
Rio Vista	D-	0.9

Top and bottom five for residential broadband

Most cities in the region are right around the statewide average. Competitive carriers make a difference; rural characteristics and difficult terrain factors push rankings lower.

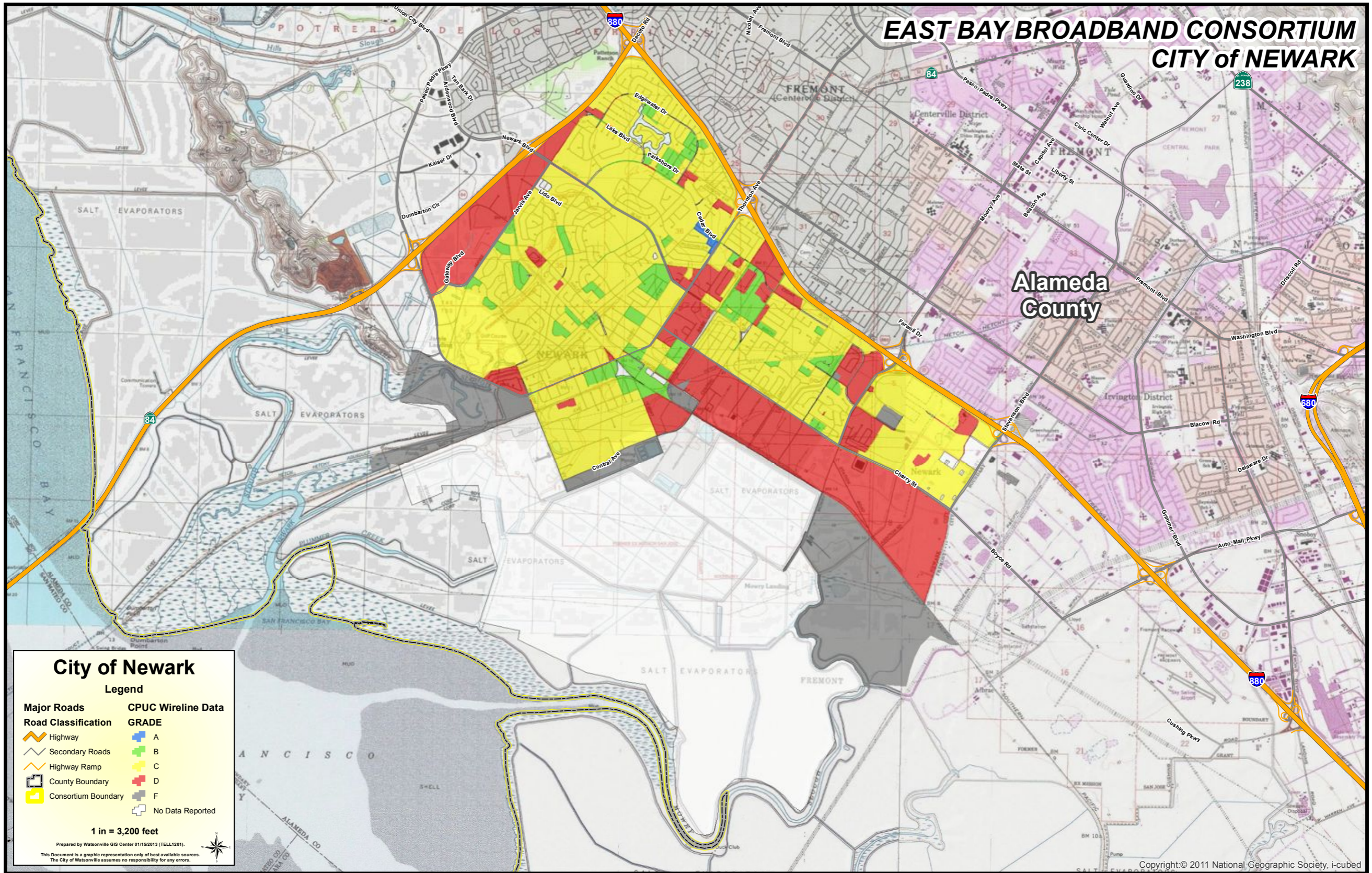
Concord	A-	3.8
Walnut Creek	B+	3.4
Pleasant Hill	B-	2.9
Berkeley	C+	2.4
Alameda	C	2.2
<hr/>		
Dixon	D	1.1
Clayton	D	1.0
Orinda	D	1.0
Moraga	D	1.0
Rio Vista	D-	0.9

**EAST BAY BROADBAND CONSORTIUM
CITY of RIO VISTA**



- Some Comcast cable modem service and legacy Frontier DSL in Rio Vista.
- Similar pattern in other cities, e.g. Piedmont

EAST BAY BROADBAND CONSORTIUM CITY OF NEWARK



City of Newark

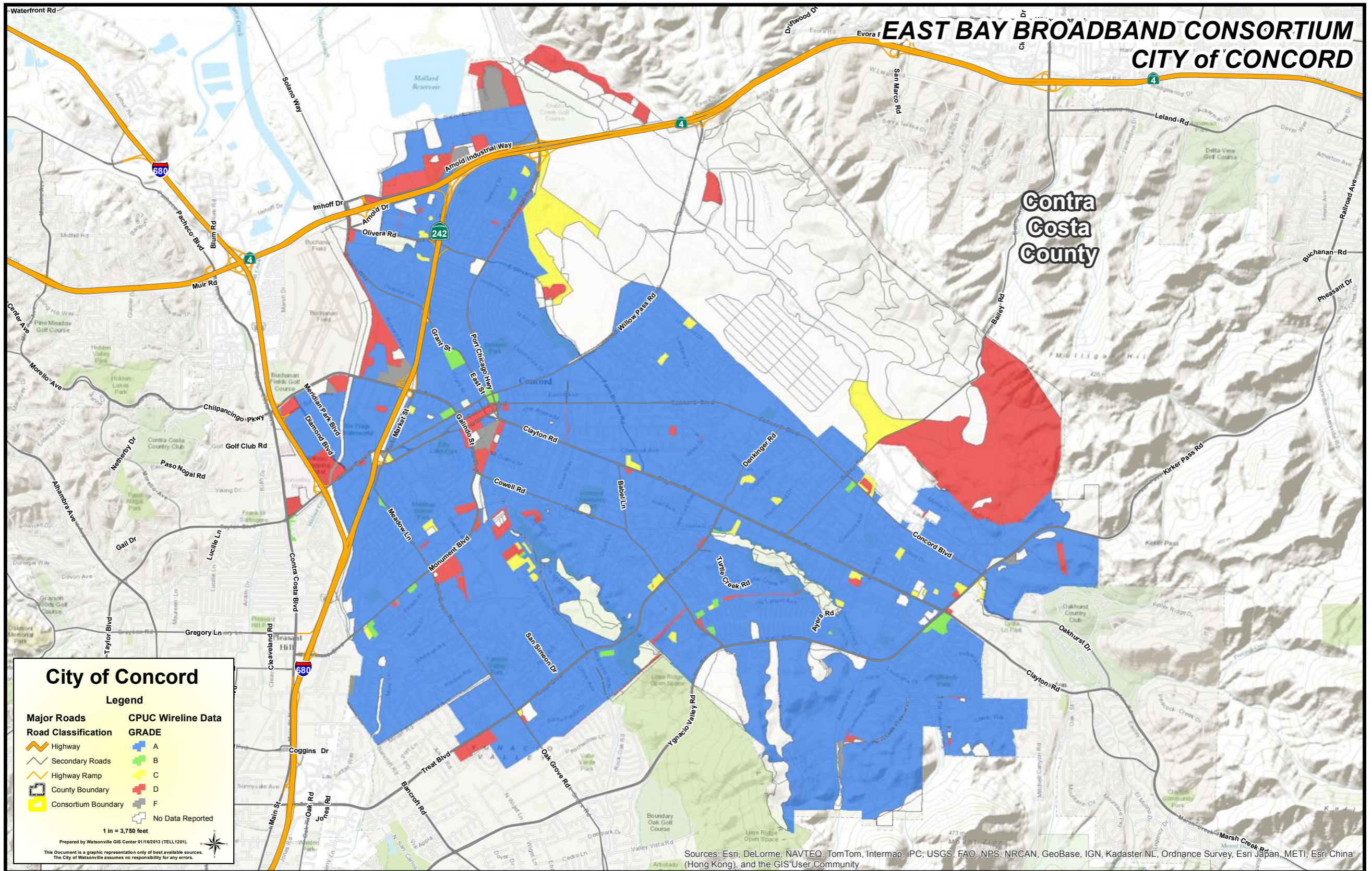
Legend

Major Roads	CPUC Wireline Data
Road Classification	GRADE
Highway	A
Secondary Roads	B
Highway Ramp	C
County Boundary	D
Consortium Boundary	F
	No Data Reported

1 in = 3,200 feet

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- Newark is a solid, and typical, C.
- Some patches of better and worse service, but generally good availability.



- Astound, AT&T and Comcast all offer top end services in most places in Concord.
- Other top 5 cities – Walnut Creek, Pleasant Hill, Berkeley, Alameda – have a history of three-way residential broadband competition.

Conclusions

- On the whole, the region meets or beats statewide averages for residential broadband availability and, consequently, core network infrastructure.
 - Rural areas lag behind.
 - Gaps exist in urban coverage and adoption rates.
- Room for improvement in mobile coverage, areas with denser populations and higher traffic have more bandwidth, but also more usage.
- Competition improves broadband availability.
 - Areas that have (or had) three wireline competitors have the best service.
 - Up to six mobile competitors, carriers still investing in infrastructure.
 - Commercial/industrial service very competitive, except when it's not.
- Cities with high grades prove that excellent broadband is possible for all.

Questions?



Back-up slides

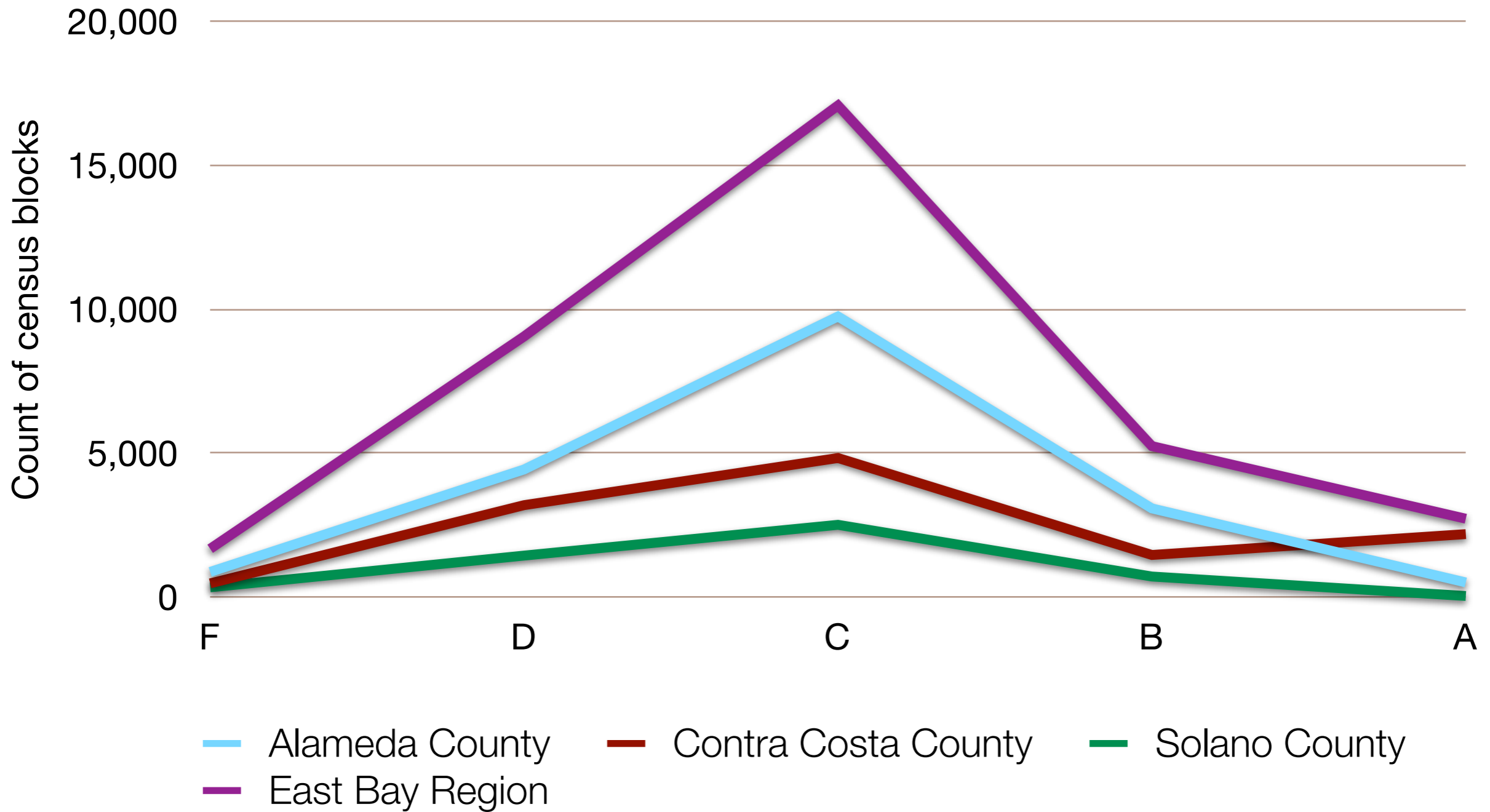


Methodology

- Separated residential service providers from business.
- Weeded out fixed wireless Internet service providers that were either out of the region or submitted low quality data.
- Handled mobile coverage separately.
 - Different usage case, and carrier's service reporting not comparable to wireline reporting. Apples and oranges.
- Considered both upload and download speeds.
- For simplicity's sake, will be mostly talking about download speeds today.

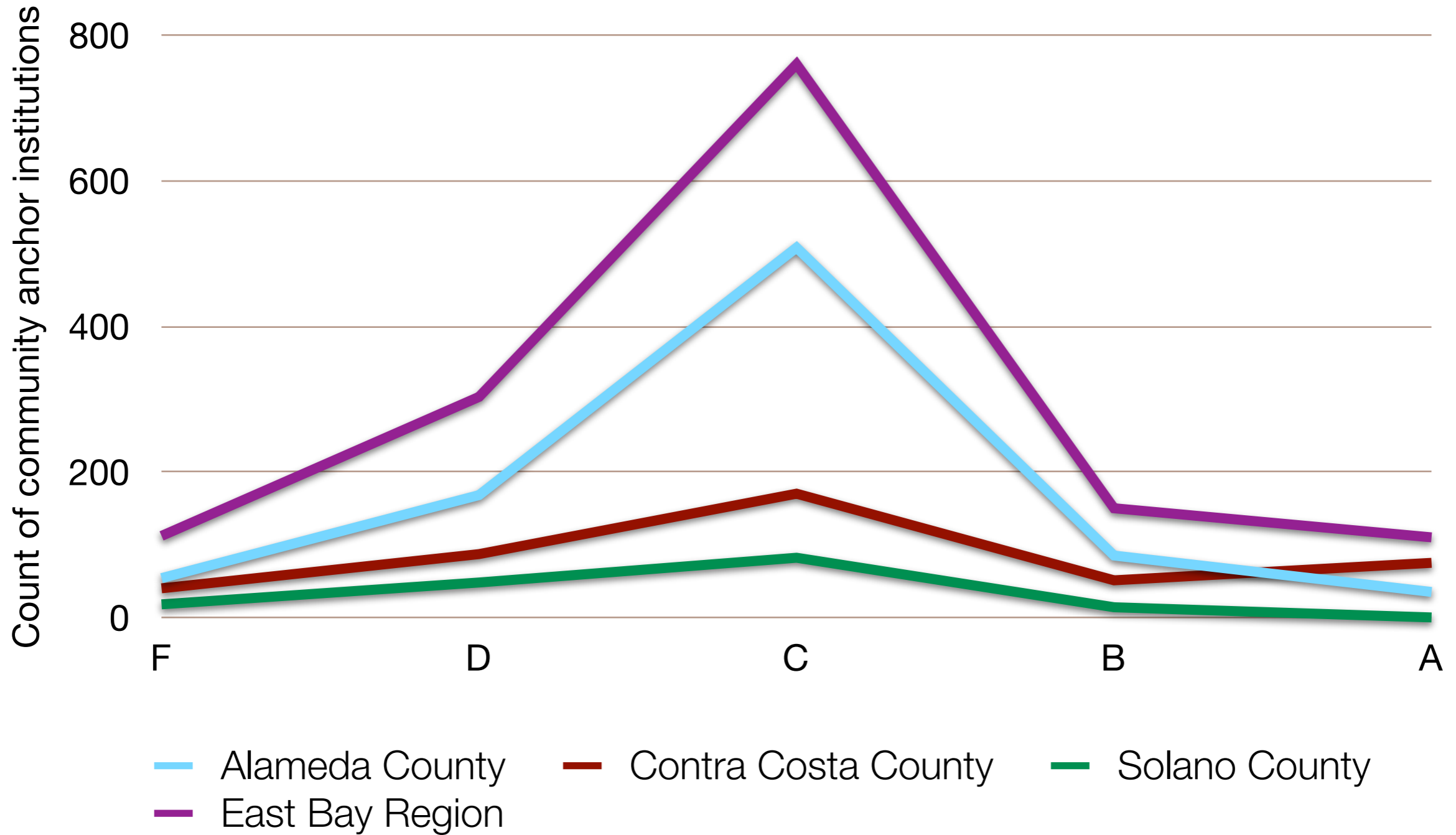
Developing the grading criteria

- Reporting and grading is by census block. Regional, county and city grade point averages are weighted by number of households.
- CPUC has set a minimum service benchmark of one provider offering 6 Mbps down and 1.5 Mbps up. That's a barely passing grade, a D.
- If an area doesn't have at least that, it flunks, an F.
- County, regional and statewide service average is consistent, on a mean, median and mode basis: two competing wireline service providers, both meeting the CPUC's minimum service benchmark and at least one claiming to offer better than 10 Mbps down and 6 up. That's a C.
- Areas with better infrastructure have better claimed speeds, with 10 Mbps and 25 Mbps reasonably consistent benchmark levels. Those service levels set the A and B benchmarks.



Grade distribution

Suburban, some urban
availability above average.



Community anchor institution availability

Generally tracks with overall distribution of grades.

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