



Environmental Assessment
Central Valley Independent Network
Fiber Optic Communications Network Project

Prepared for:



United States Department of Commerce
National Telecommunications and
Information Administration
Washington, DC

AECOM

September 2011

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Contact:

Frank J. Monteferrante, Ph.D.
Environmental Compliance Specialist
202/482-4208

Prepared by:

AECOM

AECOM
2020 L Street, Suite 400
Sacramento, CA 95811

Contact:

Francine Dunn
Project Manager
916/414-5800

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AB 32 Scoping Plan	<i>Climate Change Scoping Plan</i>
ADRP	archeological data recovery program
AMP	archaeological monitoring plan
APCD	Air Pollution Control District
APE	area of potential effect
ARB	California Air Resources Board
ARRA	American Recovery and Reinvestment Act
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BNLL	Blunt-nosed Leopard Lizard
BTOP	Broadband Technology Opportunities Program
CAAQS	California ambient air quality standards
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CENIC	Corporation for Education Network Initiatives in California
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH ₄	methane
CHRIS	California Historical Resources Information System
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CBOC	California Burrowing Owl Consortium
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent
COE	County Office of Education
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSLC	California State Lands Commission
CSU	California State University
CTS	California Tiger Salamander
CVIN	Central Valley Independent Network
CWA	Clean Water Act
dBA	A-weighted decibel
Delta	Sacramento–San Joaquin Delta

DFG	California Department of Fish and Game
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
LOS	level of service
ESA	environmentally sensitive area
FRM	Federal Reference Method
GAP	California Gap Analysis Project
GE	Gigabit Ethernet
GGG	giant garter snake
GHG	greenhouse gas
GWP	global warming potential
HAP	federal parlance, hazardous air pollutant
HFC	hydrofluorocarbons
IS	Initial Study
L_{dn}	day-night average sound level
MBTA	Migratory Bird Treaty Act
MMT	million metric tons
MRP	Monitoring and Reporting Plan
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NAIP	National Agriculture Imagery Program
ND	Negative Declaration
NDDDB	Natural Diversity Data Base
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Natural Resources Conservation Service.
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
O&M	operations and maintenance
OHP	California State Office of Historic Preservation
PFC	perfluorocarbons

PM ₁₀	respirable particulate matter
PM _{2.5}	fine particulate matter
Porter-Cologne Act	California Porter-Cologne Water Quality Control Act of 1969
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
SF ₆	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SJKF	San Joaquin Kit Fox
SJVAB	San Joaquin Valley Air Basin
SO ₂	sulfur dioxide
SR	State Route
SVAB	Sacramento Valley Air Basin
SWHA TAC	Swainson's Hawk Technical Advisory Committee
SWPPP	storm water pollution prevention plans
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TKR	Tipton Kangaroo Rat
UCMP	University of California, Berkeley Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VDE	visible dust emissions
VELB	Valley Elderberry Longhorn Beetle
WEAP	Worker Environmental Awareness Program

ES EXECUTIVE SUMMARY

ES 1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to fulfill the requirements of Broadband Technology Opportunities Program (BTOP) Grant Award No. NT10BIX5570126, “The Central Valley Next Generation Broadband Infrastructure Project.” The grant was awarded by the National Telecommunications and Information Administration (NTIA) during Round 2 of the American Recovery and Reinvestment Act (ARRA) Broadband Stimulus Funding. The purpose of this EA is to disclose the potential environmental effects of implementing the Proposed Action. Because the Proposed Action would use federal funds, it is subject to environmental review under the National Environmental Policy Act (NEPA). The NTIA, as the lead federal agency for compliance with NEPA, must comply with the environmental review process in accordance with regulations published by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508).

ES 2 DESCRIPTION OF PROPOSED ACTION

The Central Valley Independent Network (CVIN), in partnership with the Corporation for Education Network Initiatives in California (CENIC), has applied to the NTIA for ARRA funding to plan and install a fiber optic communications network in California’s Central Valley. The Proposed Action, which is the subject of this EA, is the construction and implementation of a proposed fiber optic communications project. The proposed network would cross 17 California counties, in portions of the northern Sacramento Valley, Sierra Nevada foothills, and the northern and southern San Joaquin Valleys. The Proposed Action involves developing approximately 817 miles of fiber-based infrastructure. Approximately 723 miles of the proposed route would require new construction; for the remainder of the route, approximately 94 miles of new fiber optic cable would be installed in existing conduits. Connections to anchor and client institutions would be provided at up to 60 locations by installing cabinets on the outside of institution buildings and connecting the cabinets to the primary fiber line. In addition, connections would be made to several existing cellular towers in rural portions of Fresno, Tulare, Kings, and Kern Counties. Portions of the proposed route cross sensitive or regulated features such as rivers, canals, and other waterways. The Proposed Action would avoid direct and indirect effects to waterways by conducting directional drilling under the waterways or hanging conduit on existing bridge structures where permissible.

ES 3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to provide robust broadband infrastructure to unserved and underserved rural areas and to directly connect various primary anchor and client institutions to the fiber infrastructure network in California’s Central Valley. The Proposed Action would support regional emergency services networks, the interconnection of major public safety answering points, and connection of health facilities. In addition to serving these anchor institutions, the proposed action would serve 1,973 communities including businesses, residences, and governmental agencies. Specific objectives of the Proposed Action are to:

- ▶ directly connect numerous underserved primary anchor institutions to the high-speed broadband infrastructure;
- ▶ provide upgradable and expandable high-speed broadband capacity in the proposed service areas with speeds of 1 Gigabit Ethernet (GE) to 10 GE, upgradable to 40 GE in the near future;
- ▶ provide wireless broadband network in unserved and underserved rural areas of Fresno, Tulare, Kings, and Kern Counties;
- ▶ enable an increased use of “telecommuting” with resulting decrease in vehicle use;

- ▶ provide broadband infrastructure to support future Statewide interconnection of major Public Safety Answering Points and to support a future Statewide public safety network; and
- ▶ enable California Telehealth Network connection of health facilities in the 17-county service area.

The Proposed Action is needed to address four primary deficiencies in the broadband service to the Proposed Action's service areas and to the primary anchor and client institutions. These deficiencies are limited network speeds, lack of cost-effective high-speed broadband Internet capabilities in the proposed service areas, lack of wireless broadband network capabilities in rural portions of Fresno, Tulare, Kings, and Kern Counties, California, and unserved and underserved areas. In addition to the general service area communities and businesses, these deficiencies apply to numerous anchor and client institutions that would be served by the Proposed Action including county offices, community colleges, California State Universities, libraries, hospitals, public safety institutions, and other facilities.

ES 4 ALTERNATIVES

This EA analyzes two possible actions: the No-Action Alternative, required under NEPA, and the Proposed Action. The No-Action Alternative reflects anticipated future conditions without the Proposed Action and serves as a basis of comparison for analyzing potential effects to the environment that would result from implementation of the Proposed Action.

PROPOSED ACTION

The Proposed Action is the construction and implementation of a proposed fiber optic communications project. The proposed network would cross 17 California counties, in portions of the northern Sacramento Valley, Sierra Nevada foothills, and the northern and southern San Joaquin Valleys. The Proposed Action involves developing approximately 817 miles of fiber-based infrastructure. Approximately 723 miles of the proposed route would require new construction; for the remainder of the route, approximately 94 miles of new fiber optic cable would be installed in existing conduits. Connections to anchor and client institutions would be provided at up to 60 locations by installing cabinets on the outside of institution buildings and connecting the cabinets to the primary fiber line. In addition, connections would be made to several existing cellular towers in rural portions of Fresno, Tulare, Kings, and Kern Counties.

The Proposed Action has been identified as the preferred alternative. The Proposed Action would increase broadband speeds and capacity in the proposed service areas and for key anchor and client institutions, provide wireless broadband service to several rural areas, would directly connect numerous unserved and underserved primary anchor and client institutions with high-speed broadband service, provide infrastructure for a Statewide interconnection of public safety institutions and health service facilities, and would enable telecommuting opportunities for large numbers of people in the proposed service areas. The Proposed Action is feasible to construct and provides an efficient route for connection of key institutions, service points, and existing cellular towers. Therefore, the Proposed Action would meet the purpose and need of the project.

The Proposed Action was developed using several criteria which included factors directly tied to the project purpose and objectives, to route requirements needed to serve individual institutions, construction feasibility, avoidance of sensitive environmental resources, and preferences identified by various jurisdictions. The proposed route is largely determined by the necessities of efficient connections between identified points of service such as county offices of education, community colleges, California State Universities, libraries, hospitals, public safety institutions, education institutions, and existing cellular towers. Within those efficiency parameters, existing road rights-of-way (as opposed to cross-country routes) were selected because access and construction easements would be more easily obtained; because road rights-of-way generally have a higher level of existing disturbance and are less likely to contain sensitive environmental resources; and because construction access is much greater along existing roads. Specific roads were selected or rejected based on construction feasibility, cost effectiveness,

environmental constraints, and ease of construction, with narrow roads or roads without shoulder or adjacent right-of-way having a lower preference.

Within urban areas, the proposed route was selected based on the preferences of the local jurisdiction and the ease of or requirements to access points of service.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, NTIA would not fund the Proposed Action. Because construction of the Proposed Action would be infeasible without federal funding, it is likely that the proposed fiber optic network would not be constructed and operated in the near future. Certain rural areas of Fresno, Tulare, Kings, and Kern Counties would continue to be unserved or underserved by a wireless broadband network. Other communities and anchor institutions that would be served by the Proposed Action would likely continue to be unserved or underserved by high-speed broadband. Future Statewide interconnection of major Public Safety Answering Points, a future Statewide public safety network, and a future California Telehealth Network connection of health facilities in the Proposed Action's 17-county service area would likely not be possible.

ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM FURTHER CONSIDERATION

The following alternatives were considered, but eliminated from further consideration due to the reasons identified below.

WIRELESS ONLY ALTERNATIVE

This alternative would use cellular towers only to provide wireless broadband connectivity to needed areas. During the development of the project design, CVIN determined that the most advanced wireless technology provides less than one tenth of one percent of the capacity of a single fiber. In addition, CVIN determined that wireless installations are prone to foreign objects in the microwave path and by other companies working on the facilities. Power interruptions can also cause faults in service delivery. Because the proposed fiber infrastructure network is intended to be the communications backbone for entire multiple county areas, carry information from medical centers, and provide vital public safety messaging, CVIN determined that a wireless-only alternative would not meet the purpose and need of the project, because it would not provide the capacity and the security needed for the essential services the installation is intended to supply.

AERIAL ONLY ALTERNATIVE

This alternative would use only aboveground cable installations rather than a combination buried fiber, aerial crossings of waterways where permissible, and wireless technology used in the Proposed Action. During the development of the project design, CVIN determined that aerial installations require frequent maintenance and the use of heavy-duty vehicles and are less than 10% as reliable as underground installations and would provide ground-disturbance frequently with the use of heavy-duty trucks. CVIN determined that failure on an aerial installation is often caused by weather and repair is often also dependent on allowable weather conditions. Because the proposed fiber infrastructure network is intended to be the communications backbone for entire multiple county areas, carry information from medical centers, and provide vital public safety messaging, CVIN determined that a aerial-only alternative would not meet the purpose and need of the project because it would not provide the capacity and the security needed for the essential services the installation is intended to supply.

ES 5 AFFECTED ENVIRONMENT

Chapter 3, "Affected Environment," of this EA provides an overview of the baseline physical environmental conditions of the Proposed Action study area, including surrounding areas as appropriate, in accordance with NEPA regulations (40 CFR 1502.10). The environmental topics addressed in this EA include noise, air quality,

greenhouse gas emissions, geology and soils, water resources, biological resources, historic and cultural resources, aesthetic and visual resources, land use, infrastructure, socioeconomic resources, and human health and safety. The appropriate study area for each resource topic is variable depending on the nature of the environmental topic and is defined in the discussion of each topic.

ES 6 ANALYSIS OF ENVIRONMENTAL EFFECTS

Chapter 4, “Analysis of Environmental Effects,” of this EA identifies the effects of the Proposed Action and the No-Action Alternative on the existing human and natural environment in accordance with NEPA regulations (40 CFR 1502.16). The effects analysis covers each of the resource topics included in Chapter 3, “Affected Environment.” This chapter also includes an analysis of cumulative impacts associated with the Proposed Action and the No-Action Alternative, which is presented at the end of the chapter. Where applicable, the analysis identifies environmental protection measures (which are described in detail in Chapter 2, “Description of the Proposed Action and Alternatives”) to ensure the Proposed Action would result in no adverse effects on the human and natural environment. CVIN would implement all of the environmental protection measures described in this document. With implementation of all the environmental protection measures identified in Chapter 2 of this EA, the Proposed Action would result in no adverse effects on the human and natural environment. Table ES 1 provides a summary of environmental effects by issue area for the Proposed Action and the No-Action Alternative

**Table ES 1
Environmental Effects by Issue Area for the Proposed Action and the No-Action Alternative**

Issue Area	Proposed Action	No Action Alternative
4.2 Noise	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.3 Air Quality/Greenhouse Gases	No adverse effects with implementation of environmental protection measures	Continued absence of broadband Internet access would lead to increased vehicle miles traveled and increased greenhouse gas emissions, compared to the Proposed Action and would potentially contribute to cumulative climate change effects to a greater degree than the Proposed Action
4.4 Geology and Soils	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.5 Water Resources	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.6 Biological Resources	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.7 Historic and Cultural Resources	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.8 Aesthetic and Visual Resources	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.9 Land Use	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.10 Infrastructure	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.11 Socioeconomic Resources	No adverse effects with implementation of environmental protection measures	Certain rural areas and anchor institutions would continue to be unserved or underserved by a wireless broadband network
4.12 Human Health and Safety	No adverse effects with implementation of environmental protection measures	No Proposed-Action-related adverse effects
4.13 Cumulative Effects	No adverse effects with implementation of environmental protection measures	Potential contribution to cumulative climate change effects to a greater degree than the Proposed Action
Source: AECOM 2011		