

Nationwide Public Safety Broadband Network

Final Programmatic Environmental Impact Statement

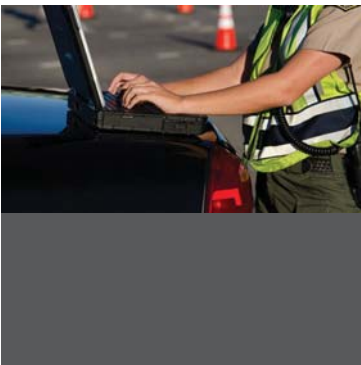
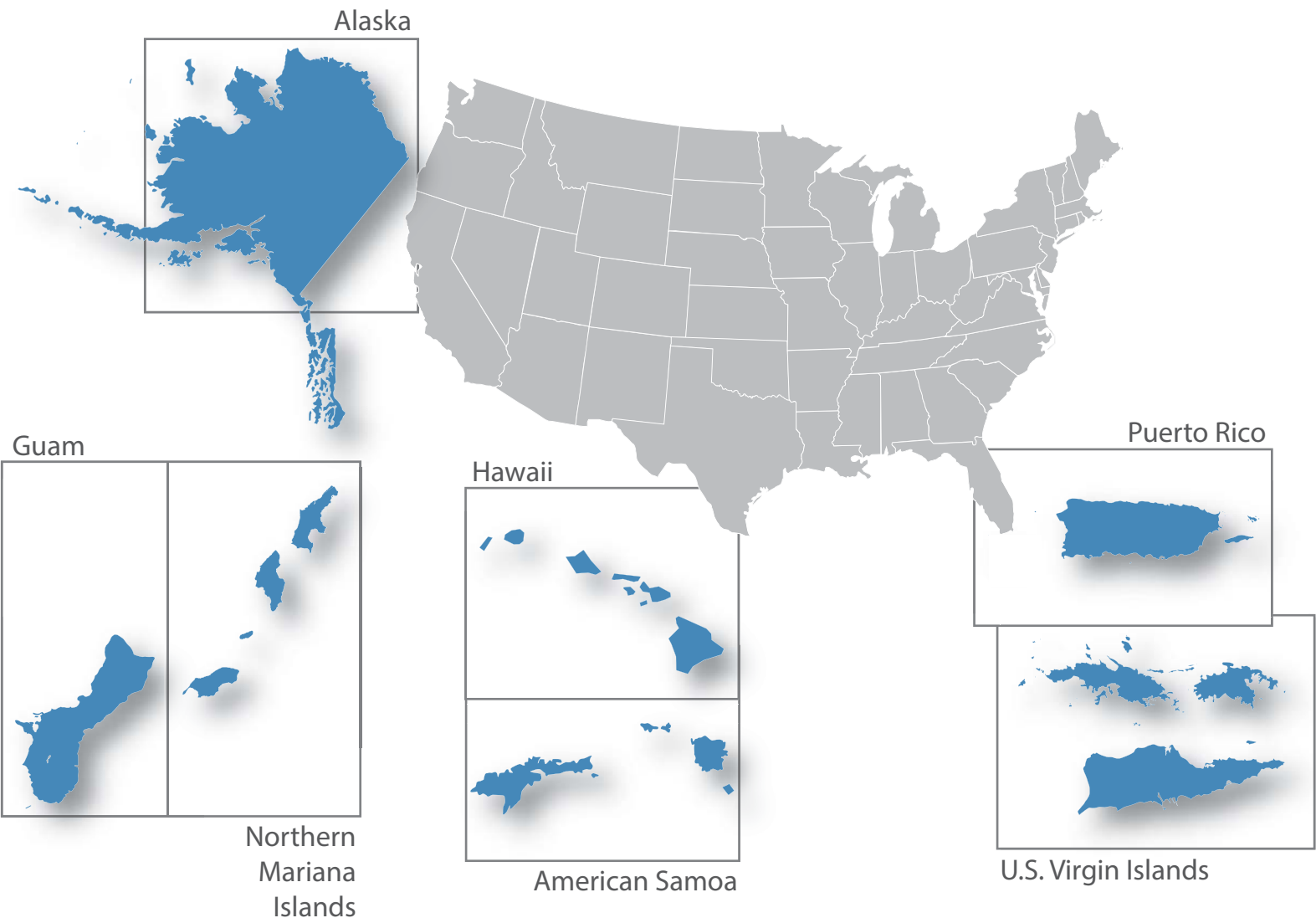
for the Non-Contiguous United States



First Responder Network Authority

Volume 8 - Chapters 10-18 & Appendices

- Alaska
- Hawaii
- American Samoa
- Guam
- Northern Mariana Islands
- Puerto Rico
- U.S. Virgin Islands



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First Responder Network Authority



Nationwide Public Safety Broadband Network Final Programmatic Environmental Impact Statement for the Non-Contiguous United States

Volume 8

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Cooperating Agencies

Federal Communications Commission
General Services Administration
U.S. Department of Agriculture—Natural Resource Conservation Service
U.S. Department of Agriculture—Rural Utilities Service
U.S. Department of Agriculture—U.S. Forest Service
U.S. Department of Commerce—National Telecommunications and
Information Administration
U.S. Department of Defense—Department of the Air Force
U.S. Department of Energy
U.S. Department of Homeland Security

May 2017

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ACRONYMS AND ABBREVIATIONS

°F	degree Fahrenheit	ASPA	American Samoa Power Authority
°N	degrees north	ATO	Air Traffic Organization
µg/m ³	microgram(s) per cubic meter	ATWC	Alaska Tsunami Warning Center
µPa	micro Pascal	AURORA	Alaska Uniform Response Online Reporting Access
%	percent	BACT	best available control technology
A	attained	BCE	before Common Era
AAC	Alaska Administrative Code	BCR	Bird Conservation Regions
AAFIS	Alaska Public Safety Identification System	BGEPA	Bald and Golden Eagle Protection Act
AAQS	Ambient Air Quality Standards	BLM	Bureau of Land Management
ACHP	Advisory Council on Historic Preservation	BLS	U.S. Bureau of Labor Statistics
ACS	American Community Survey (U.S. Census Bureau)	BMP	best management practice
ADEC	Alaska Department of Environmental Conservation	BRFSS	Behavioral Risk Factor Surveillance System
ADFG	Alaska Department of Fish and Game	BSAI	Bering Sea/Aleutian Island
AGL	above ground level	BWG	BioInitiative Working Group
AIRFA	American Indian Religious Freedom Act	CAA	Clean Air Act
AJRCCM	American Journal of Respiratory and Critical Care Medicine	CAB	Clean Air Branch
AKNHP	Alaska National Heritage Program	CARB	California Air Resources Board
AKOSH	Alaska Occupational Safety and Health	CBIA	Coastal Barrier Improvement Act of 1990
AKWAS	Alaska Warning System	CBRA	Coastal Barrier Resources Act of 1982
ALMR	Alaska Land Mobile Radio	CCP	Comprehensive Conservation Plan
ANCSA	Alaska Native Claims Settlement Act	CDC	Center for Disease Control
ANFIRS	Alaska Fire Incident Reporting System	CDLNR	Commonwealth Department of Lands and Natural Resources
ANSI	American National Standards Institute	CE	Common Era
APE	Area of Potential Effect	CELCP	Coastal and Estuarine Land Conservation Program
APLIC	Avian Power Line Interaction Committee	CEPD	Caribbean Environmental Protection Division
APSIN	Alaska Public Safety Information Network	CEQ	Council on Environmental Quality
AQCR	air quality control region	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
ARFF	Aircraft Rescue and Firefighting	CFMC	Caribbean Fisheries Management Council
ARMS	Alaska Records Management System	CFR	Code of Federal Regulations
ARPA	Archaeological Resources Protection Act of 1979	cfs	cubic feet per second
AS	Alaska Statute	CH ₄	methane
ASAC	American Samoa Administrative Code	CHC	Commonwealth Health Center
ASCA	American Samoa Code Annotated	CIA	Central Intelligence Agency
ASCMP	American Samoa Coastal Management Program	CMIP3	Coupled Model Intercomparison Project phase 3
ASDHS	American Samoa Department of Homeland Security	CNMI	Commonwealth of Northern Mariana Islands
ASDMWR	American Samoa Department of Marine and Wildlife Resources	CNMIAC	Commonwealth of Northern Mariana Islands Administrative Code
ASEPA	American Samoa Environmental Protection Agency	CO	carbon monoxide
ASHPO	American Samoa Historic Preservation Office	CO ₂	carbon dioxide
		CO ₂ e	carbon dioxide equivalents
		COMAR	Committee on Man and Radiation

CPA	Commonwealth Ports Authority	FirstNet	First Responder Network Authority
CRMP	Coastal Resources Management Program	FMP	Fishery Management Plan
CSP	Central South Pacific	FPPA	Farmland Protection Policy Act of 1981
CUC	Commonwealth Utilities Corporation	FR	Federal Register
CWA	Clean Water Act	ft	feet
CZMA	Coastal Zone Management Act	g/hp-hr	grams per horsepower-hour
CZMP	Coastal Zone Management Program	g/mi	grams per mile
DACA	Deployable Airborne Communications Architecture	GAP	Gap Analysis Program
DAR	Division of Aquatic Resources (Hawaii)	GCA	Guam Code Annotated
DAWR	Division of Aquatic and Wildlife Resources (Guam)	GDA	Guam Department of Agriculture
dB	decibel(s)	GEPA	Guam Environmental Protection Agency
dba	A-weighted decibel(s)	GHG	greenhouse gas
DBCP	1,2-dibromo-3-chloropropane	GIS	geographic information system
dBZ	Z-weighted decibel(s)	GMP	General Management Plan
DCP	1,2-dichloropropane	GOA	Gulf of Alaska
DEC	Department of Environmental Conservation	GRHP	Guam Register of Historic Places
DHHL	Department of Hawaiian Homelands	GWP	global warming potential
DLNR	Department of Land and Natural Resources (Hawaii)	H ₂ S	hydrogen sulfide
DMA	Disaster Mitigation Act of 2000	HDOH	Hawaii Department of Health
DNER	Department of Natural and Environmental Resources of Puerto Rico	HEI	Health Effects Institute
DOA	Department of Agriculture	HHCA	Hawaiian Homes Commission Act of 1920
DOD	Department of Defense	HI-EMA	Hawaii Emergency Management Agency
DOE	U.S. Department of Energy	HIANG	Hawaii Air National Guard
DOH	Department of Health	HIARNG	Hawaii Army National Guard
DOH-CAB	Hawaii Department of Health, Clean Air Branch	HIHWNMS	Hawaiian Islands Humpback Whale National Marine Sanctuary
DOT	U.S. Department of Transportation	HIOSH	Hawaii Occupational Safety and Health Division
DPNR	Department of Planning and Natural Resources (U.S. Virgin Islands)	hp	horsepower
DPS	Department of Public Safety	HRD	(Guam) Historic Resources Division
EA	Environmental Assessment	HRHP	Hawaii Register of Historic Places
EAS	Emergency Alert System	HRS	Hawaii Administrative Rules, Revised Statute
EBS	Emergency Broadcast System	HTA	Hawai'i Tourism Authority
EDB	ethylene dibromide	HUC	hydrologic unit code
EFH	essential fish habitat	I/M	Inspection/Maintenance
EMS	emergency medical services	IARC	International Agency for Research on Cancer
ENSO	El Niño/Southern Oscillation	IBA	Important Bird Area
EO	Executive Order	IEEE	Institute of Electrical and Electronics Engineers
EPCRA	Emergency Planning and Community Right-to-Know Act	IFC	International Finance Corporation
ERP	effective radiated power	in	inches
ESA	Endangered Species Act	IPCC	Intergovernmental Panel on Climate Change
ESI	Environmental Sensitivity Index	IR	ionizing radiation
FAA	Federal Aviation Administration	ITCZ	Intertropical Convergence Zone
FAD	Fish Aggregating Device	IUCN	International Union for Conservation of Nature
FCC	Federal Communications Commission	kg/gal	kilograms per gallon
FEMA	Federal Emergency Management Agency	KIRC	Kaho'olawe Island Reserve Commission

LAER	lowest achievable emission rate	NOAA	National Oceanic and Atmospheric Administration
lb/day	pounds per day	NOx	nitrogen oxides
lb/hp-hr	pounds per horsepower-hour	NP	National Park
LBJ	Lyndon B. Johnson	NPDES	National Pollutant Discharge Elimination System
Ldn	day-night average sound level	NPL	National Priorities List
Leq	equivalent noise levels	NPS	National Park Service
LNG	liquefied natural gas	NPSBN	nationwide public safety broadband network
LTE	Long Term Evolution	NRCS	Natural Resources Conservation Service
µg/m ³	microgram(s) per cubic meter	NRHP	National Register of Historic Places
µPa	micro Pascal	NSPS	New Source Performance Standards
m/s	meter per second	NTIA	National Telecommunications and Information Administration
MBTA	Migratory Bird Treaty Act	NVSR	National Vital Statistics Report
mg/m ³	Milligram(s) per cubic meter	NWI	National Wetland Inventory
mgd	million gallons per day	NWR	National Wildlife Refuge
MHz	megahertz	NWWS	National Weather Wire Satellite System
MLRA	Major Land Resource Area	OHA	Office of History and Archaeology
mm/s	millimeters per second	OIA	Office of Insular Affairs (USDI)
MMPA	Marine Mammal Protection Act	OSHA	Occupational Safety and Health Administration
MOA	Memorandum of Agreement	PA	Programmatic Agreement
MPA	Marine Protected Area	PAG	Port Authority of Guam
mph	miles per hour	PAHO	Pan American Health Organization
MSA	Magnuson-Stevens Fishery Conservation and Management Act	PCB	polychlorinated biphenyl
MTR	Military Training Route	PCP	pentachlorophenol
MUID	Map Unit Identification Data	PCS	Personal Communications Service
MW	megawatt	PDO	Pacific Decadal Oscillation
mW/cm ²	milliwatts per centimeter squared	PEIS	Programmatic Environmental Impact Statement
N	north; not attained	PL	Public Law
N ₂ O	nitrous oxide	PM	particulate matter
NA	not applicable; not assessed	PM ₁₀	particulate matter up to 10 micrometers in diameter
NAAQS	National Ambient Air Quality Standards	PM _{2.5}	particulate matter up to 2.5 micrometers in diameter
NAGPRA	Native American Graves Protection and Repatriation Act	POPs	points of presence
NANSR	Nonattainment New Source Review	ppm	parts per million
NAWAS	National Warning System	PRDNER	Puerto Rico Department of Natural and Environmental Resources
NCA	National Climate Assessment	PREQB	Puerto Rico Environmental Quality Board
NCD	non-communicable disease	PR OSHA	The Puerto Rico Occupational Safety and Health Administration
NCDC	National Climatic Data Center	PRASA	Puerto Rico Aqueduct and Sewer Authority
NCN	no common name	PREPA	Puerto Rico Electric Power Authority
NCRP	National Council on Radiation Protection and Measurements	PRSHPO	Puerto Rico State Historic Preservation Office
ND	no data	PSD	Prevention of Significant Deterioration
NE	northeast	PUAG	Public Utility Agency of Guam
NEPA	National Environmental Policy Act	Pub. L.	Public Law
NESHAP	National Emission Standards for Hazardous Air Pollutants		
NFIP	National Flood Insurance Program		
NFIRS	National Fire Incident Reporting System		
NHPA	National Historic Preservation Act		
NIR	non-ionizing radiation		
NMFS	National Marine Fisheries Service		
NMHC	non-methane hydrocarbon compounds		
NMOG	non-methane organic compounds		
NNE	north-northeast		

PV	photovoltaic	UVA	University of Virginia
RAN	radio access network	VdB	vibration decibel(s)
RCP	Representative Concentration Pathway	VIC	Virgin Islands Code
RCRA	Resource Conservation and Recovery Act	VIPA	Virgin Islands Port Authority
RF	radio frequency	VISHPO	Virgin Islands State Historic Preservation Office
RIN	Regulation Identification Number	VOC	volatile organic compound
rms	root mean square	vog	volcanic smog
ROW	right-of-way	VRM	Visual Resource Management
SAAQS	State Air Quality Standards	W	watt(s)
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users	W/m ²	watts per meters squared
SARA	Superfund Amendments and Reauthorization Act of 1986	WAPA	Water and Power Authority
SE	Standard of Error	WHO	World Health Organization
SHPO	State Historic Preservation Office	WIMARCS	West Indies Marine Animal Research and Conservation Science
SIP	State Implementation Plan	WNP	Western North Pacific
SLR	sea level rise	WNW	west-northwest
SMA	Special Management Area	WPC	watts per channel
SMS	Scenery Management System	WPRFMC	Western Pacific Regional Fishery Management Council
SO ₂	sulfur dioxide		
SO _x	sulfur oxides		
SPCC	Spill Prevention, Control, and Countermeasure		
SPCZ	South Pacific Convergence Zone		
SPOC	State Single Point of Contact		
SRES	Special Report on Emission Scenarios		
SSA	sole source aquifer		
STATSGO2	State Soil Geographic [Database]		
SW	southwest		
TAAQS	Territory Ambient Air Quality Standards		
TCP	traditional cultural property		
TEMCO	Territorial Emergency Management Coordinating Office		
TMDL	Total Maximum Daily Load		
TOC	total organic compound		
tpy	tons per year		
TRI	Toxic Release Inventory		
TSCA	Toxic Substances Control Act		
U.S.	United States		
UAMES	University of Alaska Museum Earth Sciences		
USACE	U.S. Army Corps of Engineers		
USC	United States Code		
USDA	U.S. Department of Agriculture		
USDI	U.S. Department of the Interior		
USEPA	U.S. Environmental Protection Agency		
USFWS	U.S. Fish and Wildlife Service		
USGCRP	U.S. Global Climate Change Research Program		
USGS	U.S. Geological Survey		
USVIDOH	U.S. Virgin Islands Department of Health		
USVIPD	U.S. Virgin Islands Police Department		

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10. CUMULATIVE EFFECTS

National Environmental Policy Act (NEPA) regulations (*40 CFR §§ 1500-1508*), as issued by the Council on Environmental Quality, require addressing the incremental impact of a federal agency's action (in this case, FirstNet's Proposed Action) when added to other past, present, and reasonably foreseeable future actions no matter which agency (federal or non-federal) or person undertakes such other actions. These incremental impacts are referred to as cumulative impacts. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time by various agencies or individuals (*40 CFR § 1508.7*).

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur, as well as a description of what resources could potentially be cumulatively affected. When applying the concept of cumulative impacts to a programmatic analysis such as this Final Programmatic Environmental Impact Statement (Final PEIS), additional consideration must be given to existing uncertainty associated with specific project locations that will be selected in the future. The design, construction, and operation of the Nationwide Public Safety Broadband Network (NPSBN) would occur throughout the non-contiguous region of the United States, and specific project sites have not yet been identified. Furthermore, there is currently a wide range of technologies that FirstNet and/or their partners may use to implement and deploy the NPSBN, ranging from new and existing fixed assets to mobile, deployable infrastructure. The range of technologies to be implemented and/or deployed for the NPSBN would consist of individual components at specific locations that are relatively small in size, would likely result in being fairly dispersed in their distribution, and would cover large geographies to achieve the connectivity of the program. As such, it is not possible to quantify the cumulative effects of these projects when combined with other potential projects. Therefore, this Final PEIS addresses cumulative impacts qualitatively.

A cumulative impact results from the additive effect of all projects in the same geographical area. Generally, an impact can be considered cumulative if: 1) effects of several actions occur in the same location, 2) effects on a particular resource are the same in nature, and 3) effects are long-term in nature. The common key factor to cumulative assessment is identifying any potential temporally and/or spatially overlapping or successive effects that may significantly affect resources occurring in the analysis areas (*CEQ 1997; USEPA 1999*).

In evaluating the cumulative impacts of an action, an agency considers the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource, no matter what entity (federal, non-federal, or private) is taking the action. Cumulative impacts involve the combined, incremental effects of human activity (*USEPA 1999*). In accordance with NEPA and to the extent reasonable and practical, this Final PEIS considers the combined effects of the No Action Alternative, Preferred Alternative, and Deployable Technologies Alternative at the programmatic level with other past, present, and reasonably foreseeable actions that may affect the resources identified.

The geographic extent of the Proposed Action considered for the cumulative impact analysis includes the area under the jurisdiction of the FirstNet program, specifically the non-contiguous region that is the subject of this Final PEIS. The timeframe considered for this analysis is 50 years.

At the programmatic level, it is not practical to include a list of all possible infrastructure projects in the non-contiguous region. Instead, this cumulative impacts analysis describes projects similar to the Proposed Action with common potential impacts that could have additive effects. States and territories within the non-contiguous region have continued to develop their broadband infrastructure in recent years, with several having completed projects funded through the Broadband Technology Opportunities Program (*BroadbandUSA 2015*). Additional broadband infrastructure projects are underway or have been proposed. Examples of such projects are provided in Table 10-1 below.

Table 10-1: Additional Broadband Infrastructure Projects

Name	Location	Sponsor	Brief Description	Completion Year
Public Safety Interoperable Communications (PSIC) Grant Program	Nationwide	Department of Commerce (DOC) National Telecommunications and Information Agency (NTIA) and Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA)	\$1 billion grant program to U.S. states and territories for the acquisition of, deployment of, or training for the use of interoperable communications systems that use (or enable interoperability with communications systems that use) reallocated public safety spectrum in the 764-776 megahertz (MHz) and 794-806 MHz bands. Grants were awarded for 6,750 projects, including the installation of 133 new freestanding and 11 new guyed towers, collocation of equipment at 2,710 existing towers and 2,710 existing facilities, 112.9 miles of fiber optic cable, more than 350 training events, and acquisition of over 75,000 radios. (<i>NITA 2016</i>)	Concluded in 2012
TERRA	Alaska	General Communication, Inc.	Development of a broadband communications network across the state, including remote regions. Projects have been completed in the Southwest and more recently in the Northwest Arctic with additional construction in 2014 in the Northwest and along the Yukon River (<i>CGI 2015</i>).	2011-2014
Broadband Linking the American Samoa Territory (BLAST) Project	American Samoa	American Samoa TeleCommunications Authority	The BLAST project includes build-out of a land-based fiber network combined with a 350 kilometers interisland submarine cable network connecting Fogagogo, Tu'tuila, Ofu, Luma, Ta'u and Aunu'u Islands (<i>WFN Strategies 2016</i>).	Largely completed 2015
Gigabit Island Plan	Puerto Rico	Puerto Rico Broadband Taskforce (a public-private partnership)	Establishes strategic goals to further expand high speed broadband networks island-wide across Puerto Rico, involving new infrastructure as a component (<i>PRBT 2015</i>).	2020

Name	Location	Sponsor	Brief Description	Completion Year
Measuring Broadband Hawaii	Hawaii	State of Hawaii Department of Commerce and Consumer Affairs (DCCA)	In collaboration with the Federal Communications Commission's (FCC) Measuring Broadband America, the goal of this project is to "better inform Hawaii consumers about their Internet service performance and to collect broadband performance data that DCCA can use in its efforts to improve access to broadband service across the State." DCCA activities include supporting public-private efforts to develop broadband infrastructure. (DCCA 2016)	Ongoing

The analysis herein considered the alternatives discussed in Chapter 2, Description of the Proposed Action and Alternatives, and other programmatic-scale actions. Cumulative effects analysis of individual projects and other past, present, and reasonably foreseeable future actions relevant at the local level can be addressed as part of future project-specific NEPA reviews. Project-specific analysis may be required depending on the site conditions, the type of deployment, or any other permits or permissions necessary to perform the work.

The potential impacts associated with the Proposed Action would result from the collocation on existing infrastructure; construction of new infrastructure and/or accessory components; use of existing fiber facilities; installation of new conduit; deployment of satellite phones and/or satellite technology; installation of microwave facilities; and utilization of deployable technologies. As described in Chapters 3 through 9, the effects as a result of the Proposed Action would not result in potentially significant impacts at the programmatic level based on the impact significance criteria and ratings presented in this Final PEIS. Impacts could occur as a result of other ongoing telecommunications infrastructure development, including those projects described above as well as others in the future; however, when combined with the potential impacts associated with the Proposed Action, incremental impacts to the natural and human environment¹ are not expected to be significant at the programmatic level. The project types that involve new construction and/or ground-disturbing activities would tend to be limited by their nature in the extent and duration of their effects, and these projects would typically implement appropriate best management practices and/or mitigation measures to further reduce the already limited potential impacts. Similarly, effects associated with project operations are not expected to be significant at the programmatic level. Taken together, these projects are not expected to result in significant incremental cumulative impacts to either human health or the environment.

¹ The human environment is the natural and physical (e.g., structures) environment, and the association of people and their activities to those environments.

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