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

FirstNet®

First Responder Network Authority

Volume 8 - Chapters 10-18 & Appendices

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Puerto Rico
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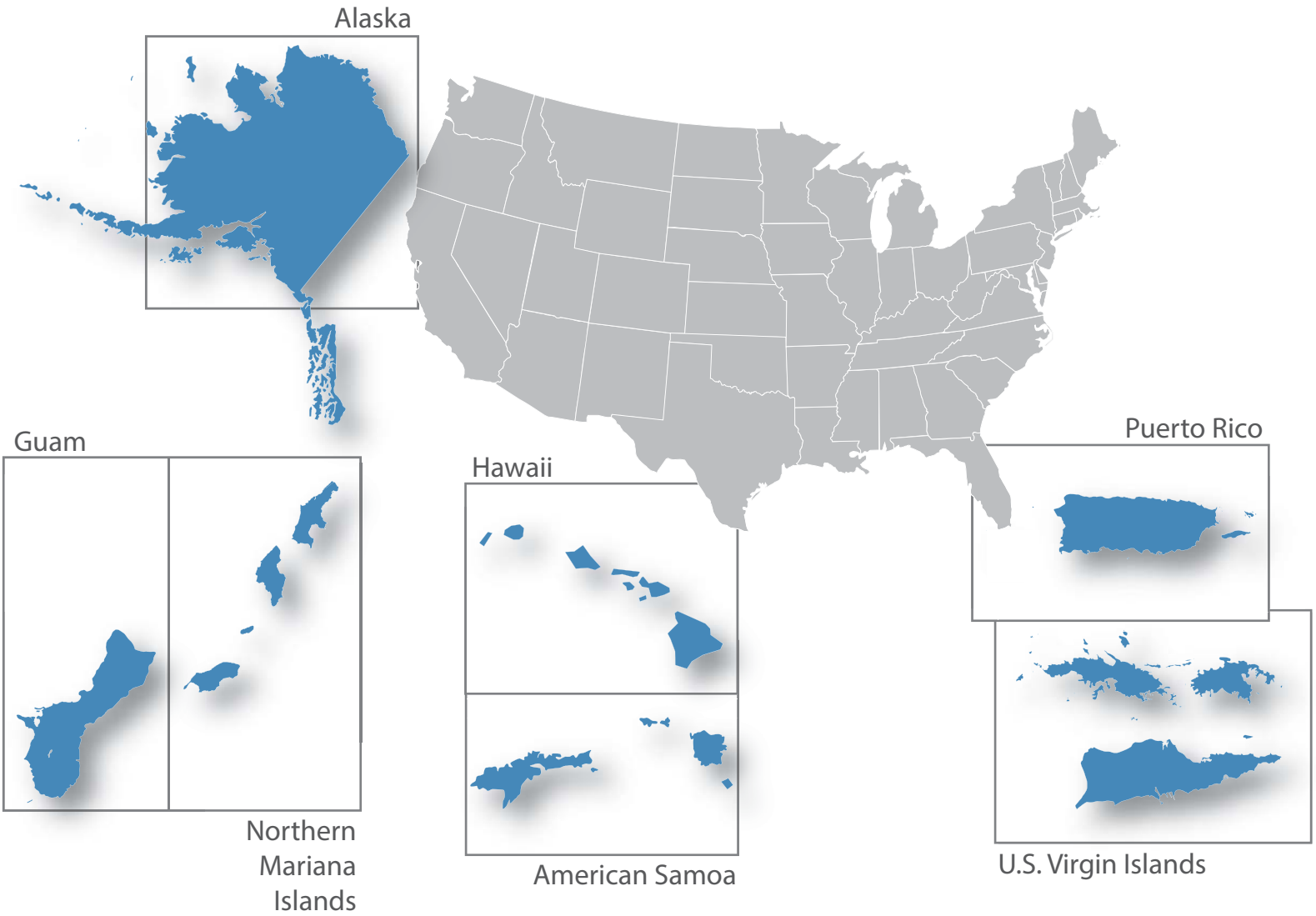

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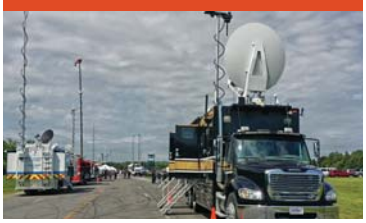

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First Responder Network Authority

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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
°N	degrees north
µg/m^3	microgram(s) per cubic meter
µPa	micro Pascal
%	percent
A	attained
AAC	Alaska Administrative Code
AAFIS	Alaska Public Safety Identification System
AAQS	Ambient Air Quality Standards
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey (U.S. Census Bureau)
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
AGL	above ground level
AIRFA	American Indian Religious Freedom Act
AJRCCM	American Journal of Respiratory and Critical Care Medicine
AKNHP	Alaska National Heritage Program
AKOSH	Alaska Occupational Safety and Health
AKWAS	Alaska Warning System
ALMR	Alaska Land Mobile Radio
ANCSA	Alaska Native Claims Settlement Act
ANFIRS	Alaska Fire Incident Reporting System
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
APSIN	Alaska Public Safety Information Network
AQCR	air quality control region
ARFF	Aircraft Rescue and Firefighting
ARMS	Alaska Records Management System
ARPA	Archaeological Resources Protection Act of 1979
AS	Alaska Statute
ASAC	American Samoa Administrative Code
ASCA	American Samoa Code Annotated
ASCMP	American Samoa Coastal Management Program
ASDHS	American Samoa Department of Homeland Security
ASDMWR	American Samoa Department of Marine and Wildlife Resources
ASEPA	American Samoa Environmental Protection Agency
ASHPO	American Samoa Historic Preservation Office
ASPA	American Samoa Power Authority
ATO	Air Traffic Organization
ATWC	Alaska Tsunami Warning Center
AURORA	Alaska Uniform Response Online Reporting Access
BACT	best available control technology
BCE	before Common Era
BCR	Bird Conservation Regions
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BLS	U.S. Bureau of Labor Statistics
BMP	best management practice
BRFSS	Behavioral Risk Factor Surveillance System
BSAI	Bering Sea/Aleutian Island
BWG	BioInitiative Working Group
CAA	Clean Air Act
CAB	Clean Air Branch
CARB	California Air Resources Board
CBIA	Coastal Barrier Improvement Act of 1990
CBRA	Coastal Barrier Resources Act of 1982
CCP	Comprehensive Conservation Plan
CDC	Center for Disease Control
CDLNR	Commonwealth Department of Lands and Natural Resources
CE	Common Era
CELCP	Coastal and Estuarine Land Conservation Program
CEPD	Caribbean Environmental Protection Division
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFMC	Caribbean Fisheries Management Council
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHC	Commonwealth Health Center
CIA	Central Intelligence Agency
CMIP3	Coupled Model Intercomparison Project phase 3
CNMI	Commonwealth of Northern Mariana Islands
CNMIAC	Commonwealth of Northern Mariana Islands Administrative Code
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
COMAR	Committee on Man and Radiation

CPA	Commonwealth Ports Authority
CRMP	Coastal Resources Management Program
CSP	Central South Pacific
CUC	Commonwealth Utilities Corporation
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DACA	Deployable Airborne Communications Architecture
DAR	Division of Aquatic Resources (Hawaii)
DAWR	Division of Aquatic and Wildlife Resources (Guam)
dB	decibel(s)
dBA	A-weighted decibel(s)
DBCP	1,2-dibromo-3-chloropropane
dBZ	Z-weighted decibel(s)
DCP	1,2-dichloropropane
DEC	Department of Environmental Conservation
DHHL	Department of Hawaiian Homelands
DLNR	Department of Land and Natural Resources (Hawaii)
DMA	Disaster Mitigation Act of 2000
DNER	Department of Natural and Environmental Resources of Puerto Rico
DOA	Department of Agriculture
DOD	Department of Defense
DOE	U.S. Department of Energy
DOH	Department of Health
DOH-CAB	Hawaii Department of Health, Clean Air Branch
DOT	U.S. Department of Transportation
DPNR	Department of Planning and Natural Resources (U.S. Virgin Islands)
DPS	Department of Public Safety
EA	Environmental Assessment
EAS	Emergency Alert System
EBS	Emergency Broadcast System
EDB	ethylene dibromide
EFH	essential fish habitat
EMS	emergency medical services
ENSO	El Niño/Southern Oscillation
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	effective radiated power
ESA	Endangered Species Act
ESI	Environmental Sensitivity Index
FAA	Federal Aviation Administration
FAD	Fish Aggregating Device
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FirstNet	First Responder Network Authority
FMP	Fishery Management Plan
FPPA	Farmland Protection Policy Act of 1981
FR	Federal Register
ft	feet
g/hp-hr	grams per horsepower-hour
g/mi	grams per mile
GAP	Gap Analysis Program
GCA	Guam Code Annotated
GDA	Guam Department of Agriculture
GEPA	Guam Environmental Protection Agency
GHG	greenhouse gas
GIS	geographic information system
GMP	General Management Plan
GOA	Gulf of Alaska
GRHP	Guam Register of Historic Places
GWP	global warming potential
H_2S	hydrogen sulfide
HDOH	Hawaii Department of Health
HEI	Health Effects Institute
HHCA	Hawaiian Homes Commission Act of 1920
HI-EMA	Hawaii Emergency Management Agency
HIANG	Hawaii Air National Guard
HIARNG	Hawaii Army National Guard
HIHWNMS	Hawaiian Islands Humpback Whale National Marine Sanctuary
HIOSH	Hawaii Occupational Safety and Health Division
hp	horsepower
HRD	(Guam) Historic Resources Division
HRHP	Hawaii Register of Historic Places
HRS	Hawaii Administrative Rules, Revised Statute
HTA	Hawai'i Tourism Authority
HUC	hydrologic unit code
I/M	Inspection/Maintenance
IARC	International Agency for Research on Cancer
IBA	Important Bird Area
IEEE	Institute of Electrical and Electronics Engineers
IFC	International Finance Corporation
in	inches
IPCC	Intergovernmental Panel on Climate Change
IR	ionizing radiation
ITCZ	Intertropical Convergence Zone
IUCN	International Union for Conservation of Nature
kg/gal	kilograms per gallon
KIRC	Kaho'olawe Island Reserve Commission

LAER	lowest achievable emission rate
lb/day	pounds per day
lb/hp-hr	pounds per horsepower-hour
LBJ	Lyndon B. Johnson
Ldn	day-night average sound level
Leq	equivalent noise levels
LNG	liquefied natural gas
LTE	Long Term Evolution
$\mu g/m^3$	microgram(s) per cubic meter
µPa	micro Pascal
m/s	meter per second
MBTA	Migratory Bird Treaty Act
mg/m^3	Milligram(s) per cubic meter
mgd	million gallons per day
MHz	megahertz
MLRA	Major Land Resource Area
mm/s	millimeters per second
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MPA	Marine Protected Area
mph	miles per hour
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MTR	Military Training Route
MUID	Map Unit Identification Data
MW	megawatt
mW/cm^2	milliwatts per centimeter squared
N	north; not attained
N_2O	nitrous oxide
NA	not applicable; not assessed
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NANSR	Nonattainment New Source Review
NAWAS	National Warning System
NCA	National Climate Assessment
NCD	non-communicable disease
NCDC	National Climatic Data Center
NCN	no common name
NCRP	National Council on Radiation Protection and Measurements
ND	no data
NE	northeast
NEPA	National Environmental Policy Act
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
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NP	National Park
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NPSBN	nationwide public safety broadband network
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NTIA	National Telecommunications and Information Administration
NVSR	National Vital Statistics Report
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
NWWS	National Weather Wire Satellite System
OHA	Office of History and Archaeology
OIA	Office of Insular Affairs (USDI)
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAG	Port Authority of Guam
PAHO	Pan American Health Organization
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PCS	Personal Communications Service
PDO	Pacific Decadal Oscillation
PEIS	Programmatic Environmental Impact Statement
PL	Public Law
PM	particulate matter
PM_{10}	particulate matter up to 10 micrometers in diameter
$PM_{2.5}$	particulate matter up to 2.5 micrometers in diameter
POPs	points of presence
ppm	parts per million
PRDNER	Puerto Rico Department of Natural and Environmental Resources
PREQB	Puerto Rico Environmental Quality Board
PR OSHA	The Puerto Rico Occupational Safety and Health Administration
PRASA	Puerto Rico Aqueduct and Sew Authority
PREPA	Puerto Rico Electric Power Authority
PRSHPO	Puerto Rico State Historic Preservation Office
PSD	Prevention of Significant Deterioration
PUAG	Public Utility Agency of Guam
Pub. L.	Public Law

PV	photovoltaic
RAN	radio access network
RCP	Representative Concentration Pathway
RCRA	Resource Conservation and Recovery Act
RF	radio frequency
RIN	Regulation Identification Number
rms	root mean square
ROW	right-of-way
SAAQS	State Air Quality Standards
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act:A Legacy for Users
SARA	Superfund Amendments and Reauthorization Act of 1986
SE	Standard of Error
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLR	sea level rise
SMA	Special Management Area
SMS	Scenery Management System
SO_2	sulfur dioxide
SOx	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
UVA	University of Virginia
VdB	vibration decibel(s)
VIC	Virgin Islands Code
VIPA	Virgin Islands Port Authority
VISHPO	Virgin Islands State Historic Preservation Office
VOC	volatile organic compound
vog	volcanic smog
VRM	Visual Resource Management
W	watt(s)
W/m^2	watts per meters squared
WAPA	Water and Power Authority
WHO	World Health Organization
WIMARCS	West Indies Marine Animal Research and Conservation Science
WNP	Western North Pacific
WNW	west-northwest
WPC	watts per channel
WPRFMC	Western Pacific Regional Fishery Management Council

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12. COMPARISON OF ALTERNATIVES

12.1. INTRODUCTION

This chapter presents, in summary form, impact ratings for the Preferred Alternative, as well as each of the remaining alternatives outlined in Section 2.2, Description of Alternatives.

Under the Preferred Alternative, FirstNet and/or their partners would construct a nationwide broadband LTE network using a combination of the wired, wireless, deployable, and satellite technologies. There is currently a wide range of technologies that FirstNet may use to implement and deploy the Nationwide Public Safety Broadband Network (NPSBN). Full descriptions of wired, wireless and deployable projects that FirstNet may consider are explained in Section 2.1.2, Proposed Action Infrastructure.

Under the Deployable Technologies Alternative, FirstNet and/or their partners would procure, deploy, and maintain a nationwide fleet of mobile communications systems, including ground-based and aerial deployable technologies, to provide temporary coverage in areas not covered by existing, usable infrastructure. There would be no collocation of equipment and no new construction associated with wired or wireless projects discussed above under the Preferred Alternative. Some limited construction could be associated with implementation such as land clearing or paving for parking or staging areas. Generally, these units would be deployed at times of an incident to the affected area for either planned or unplanned incidents or events. Equipment would be stationed in every state and territory, often at multiple locations in each state or territory, to facilitate suitable response. These mobile communication units would be temporarily installed and may use existing satellite, microwave, or radio systems for backhaul.

Under the No Action Alternative, the NPSBN would not be constructed; there would be no nationwide, coordinated system dedicated to public safety interoperable communications. The existing multiplicity of communications networks would remain in place, as would the current, known limitations and problems of existing communication networks during times of emergency or disaster. This alternative would require an act of Congress to revise the Act, which currently requires the NPSBN.

This Final Programmatic Environmental Impact Statement contains seven stand-alone chapters devoted to each of the seven states or territories in the Non-Contiguous U.S. region (see Chapters 3 through 9). Each of these chapters discusses fifteen separate resource areas, such as biological resources, land use, air quality, etc. and discusses the potential impacts of (or to) the Proposed Action in an Environmental Consequences section.

Through the programmatic approach, FirstNet has identified four categories of potential impacts at the programmatic level to these resources:

1. *Potentially significant*
2. *Less than significant with best management practices (BMPs) and mitigation measures incorporated*
3. *Less than significant*
4. *No impact*

Two exceptions exist to this categorization of potential impacts based on applicable, resource-specific regulations. For threatened and endangered species and species of conservation concern, categories of potential impacts are defined as: *may affect, likely to adversely affect; may affect, not likely to adversely affect;* and *no effect*. These impact categories are comparable to those defined in the *Endangered Species Consultation Handbook* (*USFWS and NMFS 1998*). In Table 12.2-1, the following numeric values have been assigned for the purpose of equivalency:

1. *May affect, likely to adversely affect*[1]
2. *May affect, not likely to adversely affect*
4. *No effect*

For cultural resources, categories of potential impacts are defined as an *adverse effect; mitigated adverse effect; effect, but not adverse; and no effect*. These impact categories are comparable to those defined in *36 CFR § 800*, *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (*NPS 1983*), and the U.S. National Park Service's *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (*NPS 2002*). In Table 12.2-1, the following numeric values have been assigned for the purpose of equivalency:

1. *Adverse effect*
2. *Mitigated adverse effect*
3. *Effect, but not adverse*
4. *No effect*

12.2. COMPARISON OF ALTERNATIVES

Table 12.2-1 below presents impact ratings at the programmatic level of the preferred and remaining alternatives in summary form. Numerical ratings represent whole number averages of ratings across states and territories, rounded conservatively to err on the side of greater potential impact significance.

[1] For all impact ratings where a potential affect is found, full and effective implementation of mitigation is assumed.

Evaluation of potential impacts was determined by the nature of both the deployment and operation of the infrastructure associated with each project alternative considered, the Preferred Alternative and the Deployable Technologies Alternative. The specific infrastructure associated with the Deployable Technologies Alternative would be the same as the deployable technologies implemented as part of the Preferred Alternative but would likely be implemented in greater numbers, over a larger geographic extent, and used with greater frequency and duration. It would not include fixed infrastructure such as towers or buried or aerial fiber.

As a result, potential impacts associated with the two project alternatives are generally similar. For most resources, impact ratings are identical, although some differences exist for some resource areas. For example, the Preferred Alternative would have somewhat greater potential impacts than the Deployable Technologies Alternative to water resources, wildlife, and visual resources. Conversely, the Deployable Technologies Alternative would have somewhat greater potential impacts than the Preferred Alternative to air resources.

The No Action Alternative would have no impacts, since by definition no system would be deployed and existing conditions would not change. As required by the National Environmental Policy Act, this alternative is used as a baseline against which the potential impacts of the action alternatives are compared. However, the No Action Alternative would not achieve the Proposed Action's stated purpose or meet the project need as required by the Middle Class Tax Relief and Job Creation Act of 2012 (*Pub. L. No. 112-96, Title VI, 126 Stat. 156 codified at 47 USC § 1401 et seq.*), and as such it would require an act of Congress in order for the No Action Alternative to take place.

Although Table 12.2-1 below focuses primarily on potential adverse impacts at the programmatic level, it is important to note that the ultimate outcome of the NPSBN would provide first responders with the tools they need to do their jobs more effectively and minimize the loss of life in the event of any future natural or manmade emergencies or disasters. In addition, likely substantial beneficial impacts associated with the NPSBN could occur as a result of the creation of direct, indirect, and induced employment. This could occur through new jobs associated with Proposed Action (direct), its contractors and subcontractors (indirect), and other business that serve the Proposed Action employees, contractors, or subcontractors (induced). The Proposed Action could also positively affect economic conditions through equipment purchases and changes in tax revenue, wages, and spending.

Table 12.2-1: Comparison of Alternatives by Resource Area and Type of Effect[2]

Resource Area/Type of Effect	Preferred Alternative		Deployable Technologies Alternative		No Action Alternative
	Deployment	Operations	Deployment	Operations	
Infrastructure					
Transportation system capacity and safety	3	3	3	3	4
Strain on capacity of local health, public safety, and emergency response services	3	3	3	3	4
Modifies existing public safety response telecommunication practices, physical infrastructure, or level of service in a manner that directly affects public safety communication capabilities and response times	3	3	3	3	4
Effects to commercial telecommunication systems, communications, or level of service	3	3	3	3	4
Effects to utilities, including electric power transmission facilities and water and sewer facilities	3	3	3	3	4
Soils					
Soil erosion	3	3	3	3	4
Topsoil mixing	3	3	3	3	4
Soil compaction and rutting	3	3	3	3	4
Geology					
Potential Impacts of the Project					
Surface geology, bedrock, topography, physiography, and geomorphology	3	3	3	3	4
Mineral and fossil fuel resource impacts	3	3	3	3	4
Paleontological resources impacts	3	3	3	3	4

[2] While the analysis indicates that certain locations could have higher or lower impact ratings, this table is evaluating the potential regional impacts (not state- or territory-specific) associated with the Proposed Action. Site-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.

Resource Area/Type of Effect	Preferred Alternative		Deployable Technologies Alternative		No Action Alternative
	Deployment	Operations	Deployment	Operations	
Potential Impacts to the Project					
Seismic hazard	3	3	3	3	4
Volcanic activity	3	3	3	3	4
Landslide	3	3	3	3	4
Land subsidence	3	3	3	3	4
Water Resources					
Water Quality (groundwater and surface water) - sedimentation, pollutants, water temperature	3	3	3	3	4
Floodplain degradation[a]	3	3	3	4	4
Drainage pattern alteration	3	3	3	4	4
Flow alteration	4	4	4	4	4
Changes in groundwater or aquifer characteristics	3	3	3	4	4
Wetlands[3]					
Direct wetland loss (fill or conversion to non-wetland), other direct and indirect effects[b]	3	3	3	3	4
Biological Resources					
Vegetation					
Vegetation and habitat loss, alteration, or fragmentation	3	3	3	3	4
Invasive species effects	3	3	3	3	4
Wildlife					
Amphibians and reptiles	3	3	3	3	4
Terrestrial mammals	3	3	3	3	4
Marine mammals	3	3	3	3	4
Bats (radio frequency emissions)	3	2	3	3	4
Birds (radio frequency emissions, tower collisions)	3	2	3	3	4
Terrestrial invertebrates	3	3	3	3	4

[3] Potential wetland impacts in American Samoa would be *less that significant with BMPs and mitigation measures incorporated* since wetlands comprise less than 1 percent of the area on American Samoa and are a rare habitat type.

Resource Area/Type of Effect	Preferred Alternative		Deployable Technologies Alternative		No Action Alternative
	Deployment	Operations	Deployment	Operations	
Fisheries					
Direct injury/mortality	3	3	3	3	4
Vegetation and habitat loss	3	3	3	3	4
Indirect injury	3	3	3	3	4
Migration effects	3	3	3	3	4
Reproductive effects	3	3	3	3	4
Effects of invasive species	3	3	3	3	4
Threatened and Endangered Species and Species of Conservation Concern[4]					
Marine mammals	2	2	2	2	4
Terrestrial mammals	2	2	2	2	4
Birds	2	2	2	2	4
Reptiles	2	2	2	2	4
Fish	2	2	2	2	4
Invertebrates	2	2	2	2	4
Plants	2	2	2	2	4
Land Use, Airspace, and Recreation					
Direct land use change (site of FirstNet facility installation or deployable base)	3	3	4	3	4
Indirect land use change (site of FirstNet facility installation or deployable base)	3	3	4	3	4
Use of airspace (at and near site of FirstNet facility installation or deployable base)	3	3	3	3	4
Loss of access to public or private recreation land	3	3	4	3	4
Loss of enjoyment of public or private recreation land (due to visual, noise, or other impacts that make recreational activity less desirable)	3	3	4	3	4

[4] Categories of impacts are defined as: *may affect, likely to adversely affect; may affect, not likely to adversely affect;* and *no effect*. These impact categories are comparable to those defined in the *Endangered Species Consultation Handbook* (*USFWS and NMFS 1998*).

Resource Area/Type of Effect	Preferred Alternative		Deployable Technologies Alternative		No Action Alternative
	Deployment	Operations	Deployment	Operations	
Visual Resources					
Adverse change in aesthetic character	3	3[5]	3	3	4
Nighttime lighting (overall)	3	3	3	3	4
Nighttime lighting (isolated rural areas or if sited near a national park)	3	2	3	3	4
Socioeconomics					
Potential impacts to real estate	3	3	4	3	4
Potential economic benefits or adverse impacts related to changes in tax revenues, wages, or direct spending (could be beneficial or adverse)	3	3	3	3	4
Employment	3	3	3	3	4
Increased pressure on existing public services	3	3	4	4	4
Diminished social cohesion/disruption related to influx	3	3	4	4	4
Reduced opportunities for subsistence practices	3	3	4	3	4
Environmental Justice					
Effects associated with other resource areas (e.g., cultural resources) that have environmental justice implications due to the affected parties (as defined by EO 12898).	3[6]	3	3	3	4

[5] Additional BMPs and mitigation measures may be implemented for towers.

[6] Since environmental justice impacts occur at the site-specific level, site-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. BMPs and mitigation measures may be required to address potential impacts to environmental justice communities at the site-specific level.

Resource Area/Type of Effect	Preferred Alternative		Deployable Technologies Alternative		No Action Alternative
	Deployment	Operations	Deployment	Operations	
Cultural Resources[7]					
Direct effects to historic properties[c]	3	3	3	3	4
Indirect effects to historic properties (i.e. visual, noise, vibration, atmospheric)	3	3	3	3	4
Loss of access to historic properties	3	3	3	3	4
Air Quality					
Increased air emissions	3	3	3	3	4
Noise and Vibrations					
Increased noise and vibration levels	3	3	3	3	4
Climate Change					
Contribution to climate change through GHG emissions	3	3	3	3	4
Effect of climate change on Proposed Action-related impacts	4	1-2	4	4	4
Human Health and Safety					
Potential exposure to hazardous materials	3	3	3	4	4
Accidents and Injuries	3	3	3	3	4
Exposure to Noise	3	3	3	3	4
Communicable Disease	3	3	3	3	4

EO = Executive Order; GHG = greenhouse gas

Note: Impact ratings and colors are as follows:
1. (Red) *Potentially significant*
1-2. (White) Range of *potentially significant* to *less than significant with BMPs and mitigations measures incorporated*
2. (Orange) *Less than significant with BMPs and mitigations measures incorporated*
3. (Yellow) *Less than significant*
4. (Green) *No impact*

Note: The impact ratings used for the evaluation of Threatened and Endangered Species and Species of Conservation Concern are as follows:
1. (Red) *May affect, likely to adversely affect*
2. (Orange) *May affect, not likely to adversely affect*
4. (Green) *No effect*

[7] Categories of impacts defined as an *adverse effect; mitigated adverse effect; effect, but not adverse;* and *no effect* are comparable to those defined in *36 CFR § 800*, *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (*NPS 1983*), and the U.S. National Park Service's *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (*NPS 2002*).

Note: Impact ratings for the evaluation of cultural resources are as follows:

1. (Red) *Adverse effect*
2. (Orange) *Mitigated adverse effect*
3. (Yellow) *Effect, but not adverse*
4. (Green) *No effect*

[a] Because public safety infrastructure is considered a critical facility, Proposed Action activities should avoid the 500-year floodplain wherever practicable per the Executive Orders on Floodplain Management (*EO 11988 and EO 13690*).

[b] Indirect effects are those resulting from direct effects, but they occur elsewhere in space and/or time.

[c] Per the National Historic Preservation Act, an historic property is defined as any district, archaeological site, building, structure, or object that is either listed or eligible for listing in the National Register of Historic Places (NRHP). Cultural resources present within an individual project's Area of Potential Effect are not historic properties if they do not meet the eligibility requirements for listing in the NRHP. Sites of religious and/or cultural significance refer to areas of concern to Indian tribes and other consulting parties that, in consultation with the respective party or parties, may or may not be eligible for listing in the NRHP. These sites may also be considered traditional cultural property (TCP). Therefore, by definition, these significance criteria only apply to cultural resources that are historic properties, significant sites of religious and/or cultural significance, or TCPs. For the purposes of brevity, the term "historic property" is used here to refer to either historic properties, significant sites of religious and/or cultural significance, or TCPs.

12.3. REFERENCES

NPS (U.S. National Park Service). 1983. *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated]* Accessed: September 24, 2015. Retrieved from: http://www.nps.gov/history/local-law/arch_stnds_0.htm

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USFWS and NMFS (U.S. Fish and Wildlife Service and National Marine Fisheries Service). 1998. *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act.* March 1998. Retrieved from: https://www.fws.gov/ENDANGERED/esa-library/pdf/esa_section7_handbook.pdf