



National Park Service
U.S. Department of the Interior

Grand Canyon National Park
Arizona

FINDING OF NO SIGNIFICANT IMPACT

Telecommunications Plan Environmental Assessment

Recommended:

A blue ink signature, appearing to read "E. Keable", is written over a horizontal line.

Edward T. Keable
Superintendent, Grand Canyon National Park

11.10.20

Date

Approved:

Michael T. Reynolds
Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 6, 7 and 8

Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternative actions and environmental impacts associated with a proposed telecommunications plan for developed areas of Grand Canyon National Park (park). Action is needed to (1) comprehensively address telecommunications deficiencies within developed areas of the park that currently inhibit NPS operations as well as the activities of visitors and park partners and (2) ensure that telecommunications infrastructure is designed and located in a manner that minimizes impacts to park resources.

The statements and conclusions reached in this Finding of No Significant Impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file. When necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA, the NPS selected the proposed action, Alternative B, with slight modifications for clarity and accuracy. One of these modifications corrects the impacts analysis presented in the EA. The Errata in Appendix D includes all modifications to this alternative. The description below summarizes the selected alternative; for additional detail refer to the full description of Alternative B on pages 12-21 of the EA.

Under this selected alternative, the NPS will implement a comprehensive telecommunications plan that provides a framework and guidance to inform the processing and review of future right-of-way (ROW) permit applications for telecommunications infrastructure throughout the park. Implementation of this alternative will require site-specific review of future ROW permit applications in compliance with NEPA, the National Historic Preservation Act (NHPA), and other applicable laws and approval in accordance with current NPS policies.

In accordance with the telecommunications plan, the NPS will review and potentially approve telecommunications ROW permit applications that would provide and/or improve telecommunications services—particularly within operational, visitor use, and residential areas—in the North Rim, South Rim, and Desert View developed areas and along the two highway corridors (Hwy 64 and 67).

The NPS will consider permitting the construction, installation, operation, and maintenance of up to five additional commercial telecommunications towers within the North Rim, South Rim, and Desert View developed areas of the park. More specifically, one additional tower could be considered in each of the following five areas on the South and North Rims:

South Rim

- In the vicinity of Hopi Fire Lookout;
- Within or near Grand Canyon Village (outside the National Historic Landmark District (NHLA));
- Near Desert View (outside the historic district) on the South Rim;

North Rim

- In the vicinity of Lindberg Hill; and
- In the vicinity of CC Hill on the North Rim.

In addition, if a new telecommunications tower is constructed within the general area of Grand Canyon Village, the NPS may require the existing South Rim Village Tower to either be removed or relocated to an area near (approximately within 200-600 ft) the new tower. If approved, these new and potentially relocated towers will be permitted, sited, designed, constructed, installed, operated, and maintained in adherence to the *Parameters for All Telecommunications Towers and Associated Infrastructure* (See Appendix A). No commercial telecommunications towers will be permitted below the rim.

In addition to telecommunications towers, the park will also consider allowing the placement of small-cell sites within the Grand Canyon Visitor Center Plaza, Grand Canyon Village, and Market Plaza on the South Rim, and surrounding Grand Canyon Lodge on the North Rim. If approved, these new small-cell sites will be permitted, sited, designed, constructed, installed, operated, and maintained in adherence to the *Parameters for All Small-Cell Sites and Associated Infrastructure* (See Appendix B).

The NPS will also allow for a mixture of microwave antennas on new telecommunications towers and/or, preferably, high capacity fiber optic communications cable, along existing utility lines, roadways, or otherwise developed corridors to and within the South Rim developed area and out toward Hopi Fire Lookout area and the Desert View developed area. If installed, additional fiber would be connected to this system to provide services to park administrative, housing (including Supai Camp), visitor, and concessioner facilities.

Finally, the NPS will consider renewals for existing telecommunications ROW permits on a case-by-case basis, with minor modifications and upgrades anticipated over time.

Under this telecommunications plan, NPS two-way radio communications will continue to be provided via existing NPS radio towers within the park. As additional commercial towers are permitted and constructed, all temporary telecommunications infrastructure will be removed from the park and non-governmental two-way radio communications infrastructure will be removed and/or co-located on new telecommunications towers following the *Parameters for All Telecommunications Towers and Associated Infrastructure* (See Appendix A). Infrastructure owned and operated by other federal (non-NPS), state, and local government entities, or other entities that provide direct communications for emergency services, will also need to co-locate but may be allowed to be sited on NPS radio towers or other infrastructure provided the tower or building has the physical capacity and such infrastructure will not conflict with NPS use.

Rationale

Alternative B was selected because the type of infrastructure considered and the parameters under which it could be installed and operated best meets the plan purpose to identify appropriate types and locations of telecommunications infrastructure and services that would provide sufficient and reliable wireless coverage, data network capacity, and two-way radio communications to meet the needs of visitors, the NPS, and park partners within developed areas of Grand Canyon National Park.

MITIGATION MEASURES

Refer to Appendix C for a complete list of all mitigation measures that will be implemented for the selected alternative.

PUBLIC INVOLVEMENT

A 30-day public scoping period occurred July 22, 2019 through August 20, 2019. During this time, the NPS received a total of 61 responses submitted on the NPS Planning, Environment, and Public Comment website, at a public meeting, or by mail. Two additional responses were received by tribal governments. The NPS made the EA available for a 36-day public review, beginning December 2, 2019 and extending through January 6, 2020 to accommodate for the holiday schedule. In response to the EA, the NPS received a total of 97 responses submitted on the NPS Planning, Environment, and Public Comment website, at a public meeting, or by mail.

AGENCY CONSULTATION

State Historic Preservation Office

In compliance with section 106 of the National Historic Preservation Act (NHPA) (36 Code of Federal Regulations (CFR) Part 800), the NPS initiated consultation with the Arizona State Historic Preservation Officer (SHPO) in July 2019. This initial correspondence and attached determination of effect concluded that the effects on historic properties could not be fully determined because the undertaking is currently in the conceptual phase with general areas identified for implementation and construction, which will occur over the next five to ten years and beyond. For these reasons, the effects on historic properties cannot be fully determined at this time. The SHPO concurred with this determination on August 15, 2019. The NPS also met onsite with the SHPO on September 25 and 26, 2019 to discuss this undertaking, among other projects.

As a result of this determination, a programmatic agreement (PA) was prepared for this undertaking in consultation with SHPO, the traditionally associated tribes, and the Advisory Council on Historic Preservation (ACHP) in accordance with 36 CFR 800.14(b)(1)(ii). The PA records the terms and conditions agreed upon to continue Section 106 consultation for planning and activities within the scope of the Telecommunications Plan/EA. In accordance with the PA, the NPS will seek to avoid adverse effects to historic properties with input from consulting parties. The NPS notified the ACHP of the NPS intent to prepare a PA on December 12, 2019, with receipt acknowledged by the ACHP on December 26, 2019. The ACHP notified the NPS that they would like to participate in the PA on February 20, 2020. The draft PA was sent to the SHPO on December 3, 2019. The next draft of the PA was sent to both the SHPO and ACHP on February 4, 2020. A final draft PA was sent the SHPO and the ACHP on July 13, 2020. The NPS sent a final, signed, PA to the SHPO on August 17, 2020. The SHPO signed the PA on August 18, 2020, and the ACHP signed the PA on November 5, 2020, executing the PA. The PA was sent to the two tribal invited signatures on August 18, 2020, who do not have responsibilities under the PA.

Tribes

Consultation, in compliance with NHPA, was initiated with the 11 associated tribes of the Grand Canyon—including the Havasupai Tribe, the Hopi Tribe, the Hualapai Tribe, the Kaibab Band of Paiute Indians, the Las Vegas Tribe of Paiute Indians, the Moapa Band of Paiute Indians, the Navajo Nation, the Paiute Indian Tribe of Utah, the Pueblo of Zuni, the San Juan Southern Paiute Tribe, and the Yavapai-Apache Nation—in a letter signed July 23, 2019 that included an initial finding of effect and notification of intent to prepare a programmatic agreement (PA). The NPS then emailed each tribe on December 17, 2019, notifying them of the EA and draft PA, and inviting them to be signatories on the PA. The NPS also met with representatives of the Havasupai Tribe in September and October 2019 to better understand the telecommunication needs of the Havasupai Tribe, specifically at Supai Camp which is located within the park.

The NPS received two formal responses: from the Hopi Tribe dated July 31, 2019 and from the Navajo Nation dated August 12, 2019. While the Navajo Nation responded that no additional consultation was necessary as part of this planning effort, the Hopi Tribe requested continuing consultation. The Havasupai Tribe, through conversations with NPS staff, also requested consultation prior to the installation of any telecommunications tower within the park. Considering the responses from tribes, the NPS will include the Hopi Tribe and the Havasupai Tribe as invited signatories to the final PA. As of November 5, 2020, the NPS has not received additional comments on the draft PA from either tribe, and no other tribal comments on the EA, Section 106 consultation, and PA have been received. The NPS will continue to consult with tribes as ROW permit applications for telecommunications infrastructure within the park are received and reviewed.

The U.S. Fish and Wildlife Service (USFWS) also completed consultation with federally recognized tribes as part of their review of this plan in compliance with the Endangered Species Act. USFWS received a formal response from the Colorado River Indian Tribes on February 3, 2020, which was shared with the NPS. Comments and concerns raised by the Colorado River Indian Tribes are addressed within the identified mitigation measures in the EA and this FONSI.

U.S. Fish and Wildlife Service

The NPS initially invited the USFWS to provide comment on the plan via email on July 22, 2019. In compliance with section 7 of the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq), the NPS initiated informal consultation with the USFWS on December 2, 2019, requesting their review and concurrence on the determination that the proposed action may affect, but is not likely to adversely affect the California condor (*Gymnogyps californianus*; threatened) and the Mexican spotted owl (*Stix occidentalis lucida*; threatened). The action will have no effect on critical habitat or other federally-listed species. The NPS also shared information with the USFWS related to impacts to sensitive species that are not federally listed, such as, eagles, migratory birds, and bats. After some communication with the USFWS to clarify scope and mitigations, the USFWS concurred with the NPS's findings in a letter dated January 13, 2020.

FINDING OF NO SIGNIFICANT IMPACT

As described in Chapter 1 of the EA, the following resource topics were carried forward for detailed analysis: scenic resources (expansive views of the Grand Canyon and other important views), cultural resources (historic districts), and visitor use and experience (visitor activities and experiences, visitor information and public safety). The potential for significant adverse impacts on these resources has been analyzed, taking into account context and the relevant consideration from the Council on Environmental Quality regulations at 40 Code of Federal Regulations (CFR) 1508.27(b), ten criteria for determining whether the selected alternative will have a significant effect on the human environment. The NPS reviewed each of these criteria given the environmental impacts described in the EA and determined there will be no significant direct, indirect, or cumulative impacts under any of the criteria.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: archaeological resources, bats, dark skies, historic buildings and structures, migratory birds, threatened and endangered species, vegetation and soils, and wilderness character. Issues related to construction activities on resources carried forward for analysis were also dismissed. In addition, there will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

Scenic Resources - Expansive Views of the Grand Canyon and Other Important views

Scenic Resources are described on pages 25-28 of the Plan/EA. While scenic resources extend throughout the park's 1.2 million acres, those that may be impacted by the selected alternative are concentrated in developed areas on the North and South Rims and Desert View – either in close proximity to potential new or relocated telecommunications infrastructure and/or in higher visitor use areas where visitors are frequently present to experience views of the canyon.

The selected alternative will have long-term impacts on scenic resources within developed areas of the park for the next 10-15 years or more (so long as right-of-way permits are applied for and approved) if the telecommunication infrastructure described in the Plan/EA is constructed and installed.

Under the selected alternative, the continued existence of and modification and/or upgrade to existing telecommunications infrastructure and installation of new minor telecommunications infrastructure—such as new antennas and hung fiber—will adversely impact scenic resources in developed areas of the park by adding human-made infrastructure into some views within a park setting. However, these actions are not expected to have measurable impacts on scenic resources for the following reasons. First, these facilities will be attached to existing infrastructure; so, impacted views are already characterized at least to some extent by human-made infrastructure. Second, these facilities will either be sited out of view or camouflaged (via implementation of mitigation measures) and small enough in comparison to the surrounding infrastructure such that visual contrast levels will be low and this infrastructure will not be visually obtrusive (*visible and conspicuous*). Third, these facilities will not be within typical visitor views or expansive views of the canyon.

In addition, the potential installation of one relocated and up to five new telecommunications towers in developed areas of the park will adversely impact scenic resources within the South Rim, Desert View, and North Rim Developed Areas and along the Hwy 64 and 67 corridors by adding human-made infrastructure that will be visually obtrusive (*visible and conspicuous*) within some views. Because three of these potential towers will be located near existing towers at Desert View, CC Hill, and in the Hopi Fire Lookout area, impacts to scenic resources from these three towers will be similar to existing conditions. These three new towers will range in visibility from *not visible* to *visible but not conspicuous* within most views, but will be *visible and conspicuous* from areas within Desert View (including the upper floors of the Desert View Watchtower) and along a short stretch of West Rim Drive, comparable to the visibility of existing towers. The other potential new towers and one relocated tower, which will range in visibility from *not visible* to *visible but not conspicuous*, will add human-made development within views around Grand Canyon Village and near Lindberg Hill that do not currently contain such infrastructure.

These impacts to scenic resources will be adverse and noticeable but will not diminish the scenic integrity of the park for the following reasons. First, the visibility of these towers will not arise to the degree of *visible and conspicuous* except for a few locations in the park; most views of these towers and associated infrastructure will be intermittent and will require a discerning eye that knows what to look for in order to see a new or potentially relocated tower. Second, for those views from which new towers may be *visible and conspicuous* (upper floors of the Desert View Watchtower and along a short stretch of West Rim Drive), an existing tower is also present such that visual impacts of a new tower will not be substantially more than existing conditions. Third, these potential towers will not impact expansive views of the Canyon. The only exception is that views from the Rim Trail between Lookout Studio and the Yavapai Geology Museum will include both expansive views of the Canyon as well as the potential new tower in the Hopi Fire Lookout area. Given the distance of these areas from the new tower and the presence of an existing tower in this location, the visibility of this tower will not be visually obtrusive, similar to existing conditions, and will not detract from the expansive views of the canyon in these locations.

The selected alternative will also result in the removal of infrastructure from views in and around the Hopi Fire Lookout Area and could result in the visual downsizing or complete removal and/or relocation of an existing tower that is currently visibly obtrusive within some views within the South Rim developed area. These actions will result in permanent beneficial impacts to the scenic resources that currently include this infrastructure within view by reducing the visual footprint of human-made development on the landscape.

Overall, the selected alternative will increase the number of scenic views in the park that include human-made infrastructure. However, none of the new towers will dominate the landscape; expansive views of the Grand Canyon both below and along the rim will remain largely intact. Scenic resources in no more than 5% of the park will be impacted; a large expanse of lands beyond the developed areas of the park will continue to retain a high degree of scenic integrity.

When the effects of the selected alternative are combined with the effects of the past, present, and reasonably foreseeable actions, the total cumulative impacts to scenic resources—particularly expansive views of the Grand Canyon—within developed areas of the park will be adverse, with a noticeable contribution of adverse impacts from the selected alternative. That said, the characteristic, expansive views of the canyon and within the canyon itself will largely remain untouched as demonstrated by the minimal number of views that will include human-

made development and the far greater expanse of lands beyond the developed areas of the park that will continue to retain a high degree of scenic integrity.

Cultural Resources - Historic Districts

Cultural Resources are described on pages 34-39 of the EA. The selected alternative has the potential to affect up to three National Historic Landmark Districts (NHLDs) and up to eight historic districts (HDs) and their contributing resources, as described on pages 40-44. These districts include the following: Grand Canyon Village NHLD, Grand Canyon Railway HD, Stables – Blacksmith Shop HD, M.E.J. (Mary Elizabeth Jane) Colter Buildings NHLD, West Rim Drive HD, Horace M. Albright Training Center HD, Mather Business Zone HD, Desert View Watchtower HD, North Rim Entrance Road Corridor HD, Bright Angel Peninsula HD, Grand Canyon Lodge NHLD.

At least some, if not all, of these 11 NHLDs and HDs will be adversely impacted by the selected alternative for the next 10-15 years or more by the continuing presence, modification to existing, and installation of new, additional telecommunications infrastructure within and/or visible from these districts. Because these modern, non-contributing features did not exist during the districts' periods of significance, their presence changes the visual context of the districts which can ultimately change the districts' setting and feeling, depending on the visibility of the non-contributing features within an individual district. The actions that could be implemented under the selected alternative could be visible within and from the NHLDs and HDs to the following degrees:

- Potential modifications or upgrades to existing infrastructure will continue to range from *not visible* to *visible, but not conspicuous* from and within these districts, similar to existing conditions, because the physical footprint of this infrastructure will either decrease (i.e. decreasing the existing visibility of this infrastructure) or increase only slightly and mitigation measures would be implemented to ensure this infrastructure blends into the surrounding environment.
- New, minor telecommunications infrastructure—such as new antennas installed on existing infrastructure or hung fiber installed on existing utility lines within an NHLD or HD will increase the number of non-contributing features within and/or visible from the NHLDs and HDs. The visibility of this new infrastructure will range from *not visible* to *visible, but not conspicuous* from and within these districts because the infrastructure will be relatively small and will either be sited out of view or camouflaged (via implementation of mitigation measures) and installed on existing infrastructure in a manner such that visual contrast levels will be low.
- Although potential new telecommunications towers will not physically alter NHLDs or HDs, this infrastructure will also introduce a non-contributing feature within views from at least some of these districts. Visibility of potential new towers will range from *not visible* to *visible, but not conspicuous* from and within eight of these districts because the infrastructure will be sited out of view; screened by vegetation, buildings, and/or topography; and/or located at such a distance (a mile or more) that the infrastructure is small on the horizon. One potentially new tower within the Desert View area will be *visible and conspicuous* from the upper floors of the Desert View Watchtower which is part of the M.E.J. Colter Buildings NHLD and the Desert View Watchtower HD; the potential new tower will not be visible from all other locations in these districts. One potentially new tower within the Hopi Fire Lookout Area will be *visible and conspicuous*

from Powell Memorial and the Hopi Point area within West Rim Drive HD, similar to the visibility of the existing NPS radio tower in the area. From all other portions of this district, this tower would range from *not visible* to *visible, but not conspicuous*. Views of these potential new towers from these districts will also include views of other non-contributing features, such as an existing telecommunications towers, such that visual contrast levels will be low.

Despite the potential visibility of this infrastructure, it is not expected to diminish the overall setting and feeling of these 11 NHLDs and HDs, or for that matter, diminish their eligibility for listing on the National Register for the following reasons. First and foremost, this infrastructure will be sited out of view and/or will visually blend into the surrounding built environment (i.e., visual contrast levels will be low) such that any views of these facilities will not rise to the level of *visible and conspicuous* or be visibly obtrusive within eight of the eleven NHLDs or HDs. From the other three NHLDs and HDs, views of this infrastructure will be directed away from the canyon so that the character defining views of these districts are not impacted. Secondly, the areas that could be impacted within any one NHLD or HD will represent a small percentage of the larger district; most of the area within any one NHLD and HD will remain unaffected by these external developments. Finally, no action under the selected alternative will impact the existing historic fabric of these districts.

It is also possible that current adverse impacts to the Grand Canyon Village NHLD, West Rim Drive HD, Grand Canyon Railway HD, and Stables – Blacksmith Shop HD will be reduced by the removal of infrastructure in the Hopi Fire Lookout Area and the potential removal and/or relocation of the South Rim Village Tower. These actions will reduce the amount of modern intrusions in these districts and will reduce the number of locations within these districts from which telecommunications infrastructure will be visible.

Considering the factors above, the parameters and mitigations identified to avoid or minimize potential impacts to historic districts, and future site-specific reviews and consultation with the SHPO and tribes, the NPS will work to minimize, if not avoid entirely, adverse effects to cultural resources, as defined by 36 CFR 800.5, from the implementation of the selected alternative. Any adverse effects on these properties will be resolved through a PA between the NPS, SHPO, and tribes which includes stipulations to avoid, minimize, and/or mitigate adverse effects through consultation and actions such as redesigning project developments.

When the effects of the selected alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts to 11 NHLDs and HDs in the park will be adverse, with a moderate contribution of adverse impacts from the selected alternative given the addition of new infrastructure within views from some locations within NHLDs and HDs. That said, a large portion of these 11 NHLDs and HDs will remain unaffected by the selected alternative; these 11 NHLDs and HDs will retain their character defining features and will remain eligible for listing on the National Register.

Visitor Use and Experience – Visitor Activities and Experiences, Visitor Information, and Public Safety

The selected alternative will have long-term impacts on visitor use and experience that will extend into the future, 10-15 years or more if the telecommunication infrastructure described in the Plan/EA is constructed and installed. Under this alternative, more visitors will be able to

access telecommunications services during their stay in developed areas of the park and access to these services for all visitors will be easier and more reliable; existing visitor dissatisfaction with these services will decrease. While increased access to telecommunications services in developed areas may beneficially enhance the majority of visitors' experiences, some visitors may be adversely impacted by others' use of this technology such that their visitor satisfaction is decreased and/or they choose to pursue their activities in less developed areas of the park which do not have telecommunications services. The selected alternative will not noticeably change visitation levels or visitation patterns to or within Grand Canyon National Park, because access to wireless services is not the reason visitors come to the park.

Enhanced telecommunications within developed areas of the park will also give more visitors in these areas improved access to information about park resources and conditions—such as route finding, trip planning, and reservations—through online venues while they are in the park. Those who utilize this technology and access this information will directly benefit from increased knowledge and understanding of park resources and/or decreased confusion and stress in being able to effectively trip plan in response to changing conditions. These impacts to visitors will largely be beneficial.

The potential enhancements to and expansion of wireless services that could occur under the selected alternative will also give more visitors, across a larger area, more reliable access to communications with emergency services in order to report emergencies or other incidents which could, in turn, increase response times. NPS and NPS-partner staff will be able to more reliably use cell phones in more locations to supplement the NPS radio and land-line telephone systems that also support emergency services. These improvements within emergency response communications will make emergency services more accessible via phone. Similarly, expanded coverage outside of targeted developed areas could also improve backcountry user connectivity with cellular service which will potentially enhance access to 911 and other services in the event of an emergency in these areas. However, backcountry users should not expect to have cellular connectivity once they leave the park developed areas. Overall, these impacts to visitors will largely be beneficial.

While these long-term impacts to visitor use and experience will be primarily concentrated within developed areas of the park, they will likely be most readily apparent within the North Rim developed area, where the current lack of telecommunications services is the most pronounced. Some limited backcountry/wilderness areas could see some added cell phone coverage from spillover which could have an adverse effect on a visitor's sense of solitude should a visitor observe others utilizing personal electronic devices to access cellular (voice and data) services, but the degree or intensity of this impact would largely be subjective, depending on individual preference and would depend on the location of the visitor and their proximity to other visitors. Evidence of impacts is anecdotal, but reported as feelings of annoyance to frustration, or even anger, associated with what some visitors may perceive as intrusive behavior. Personal access to wireless, namely cellular, services could also reduce a visitor's perception of self-reliance within backcountry areas, but this impact would affect only visitors who have access and choose to utilize these services. Visitors could choose not to utilize wireless, namely cellular, services, even if available. A large area of the park will not be impacted by the selected alternative.

When the effects of this alternative are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impacts to visitor experiences under this

alternative would continue to be primarily beneficial in the long-term, with a noticeable and apparent contribution of beneficial impacts from the selected alternative.

CONCLUSION

The selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS) (see Section 1.5.E of the NPS NEPA Handbook). And as described above, the selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

Parameters for All Telecommunications Towers and Associated Infrastructure

Any new or relocated telecommunications towers within Grand Canyon National Park (GRCA) will adhere to the following parameters and criteria. Parameters may be modified or additional criteria may be developed in the future through site-specific analysis and/or as additional information about resources and potential impacts becomes available; the Plan may be updated accordingly.

Location and Siting Requirements

- Telecommunications towers will be constructed in or immediately adjacent to developed and/or previously disturbed areas that have available power in close proximity and are accessible via existing roads.
- Telecommunications towers will not be constructed within residential areas unless no other tower location is feasible in the surrounding area.
- Telecommunications towers will be constructed outside National Historic Landmark District (NHLD) and historic district boundaries, and, to the extent possible, located to minimize impacts to National Register eligible or listed historic properties and visitor use areas.
- Telecommunications towers will be sited away from prominent views or features. A site-specific review of impacts to scenic resources, particularly below the rim, may be required and proposals modified (i.e., proposed tower relocated or height reduced) to minimize visibility of towers to the greatest extent possible.
- Telecommunications towers will be sited at least 500 ft from known bird and bat concentration areas such as areas of breeding, roosting, or foraging (e.g. along the rim of the canyon and wetlands); migratory bird movement routes; and daily movement flyways. Towers would not be sited within 0.5 miles of known Mexican spotted owl or California condor nest or roost areas.
- Telecommunications towers will be sited outside of wetlands.
- Telecommunications towers and associated facilities will be designed, sited, and constructed to avoid or minimize disturbance to and removal of trees.
- All electrical power service, fiber, and other communications lines to new telecommunications towers will generally be buried, except when resource impacts are of particular concern (for example, archeological resources are present and impacts to these resources will be unavoidable if the line is buried), in which case above-ground lines may be approved.
- Telecommunications towers will be located in close proximity to existing NPS radio towers (if present in the general area) as long as the operation of the new tower will not interfere with the existing.
- Towers must be designed to accommodate current and/or future co-locations in order to minimize the number of additional towers that could be proposed by ROW applicants who will otherwise not be accommodated.

Design Requirements

- Telecommunications towers will be no higher than the minimum height necessary to provide telecommunications services to developed areas of the park. Ultimately, towers will be no taller than the height guidelines identified in the EA.
- A site-specific review of complete ROW applications for telecommunications towers may be required to evaluate selection of the proposed location and proposed height, in view of the relative merits of any feasible alternative, to ensure that proposed tower heights are the minimum necessary to provide services within the developed areas of the park and/or are technologically required to meet conditions such as line-of-sight requirements.
- All tower designs must be self-supporting; no guy lines will be permitted.
- Monopoles, lattice towers, and alternative designs, such as mimicked trees (only within forested areas and when not greatly exceeding surrounding vegetation), could be considered for tower design. Final tower design will be determined on a case-by-case basis that considers infrastructure needs and minimizes impacts to resources, including wildlife and scenic views. Monopoles will be preferable to lattice towers at locations within 1,500 ft of the rim unless alternative designs are determined necessary or demonstrate better blending with the environment.
- Telecommunications towers and associated facilities will be sited and designed to blend into the surroundings as much as possible to reduce the impact on National Register eligible or listed historic properties, scenic resources, and other resources.
- Design and materials will be selected to blend with the existing landscape, for example through selection of appropriate colors, surface treatments, and use of non-reflective coatings for structures to reduce color contrast with the surrounding environment.
- All antennas will adhere to the USDOJ-BLM camouflage guidelines to improve aesthetics (for example, two-way radio antennas are often sky blue or white in color to blend in with the skyline). Final colors will be determined on a case-by-case basis as part of permitting, and will be dependent on the location.
- Tower lighting will be considered on a case-by-case basis for safety purposes. If lighting is deemed necessary, the tower will be required to remain unlit except for during emergency situations such as when aircraft are needing to access a nearby helibase at night. For example, lighting could be activated by emergency personnel or technology such as an Aircraft Detection
- Lighting System, or equivalent, could be utilized to keep a tower unlit unless aircraft are detected by radar. Any lighting will be red and flashing when activated.
- Facilities surrounding the tower will remain unlit except when lighting will be required for safety or security purposes. Lighting would be designed to minimize impacts and will be motion- or heat-sensitive, down-shielded, and of a minimum intensity (lumens and color) to reduce nighttime bird attraction and eliminate constant nighttime illumination. External lighting will meet the standards utilized by the International Dark-Sky Association.

Infrastructure Requirements

- Telecommunications towers will promote facility and site sharing by multiple users. All telecommunications equipment including, but not limited to, towers, equipment shelters, outdoor cabinets, radios, backup power, and fuel supply will be co-located within the telecommunications site.
- The NPS will prefer that all service providers share antennas on the tower, but if not feasible, all towers primarily constructed for cellular purposes will have the capacity for multiple carriers.
- A site-specific review of complete ROW applications may be required to evaluate the feasibility of accommodating co-locators and to identify co-location strategies that will minimize the number, size, and height of a proposed co-located site.
- Applications for any co-located infrastructure on a tower near Hopi Fire Lookout will have to demonstrate the importance of and need for operations at this particular site as opposed to other tower locations within the park.
- The generator at each potential tower location will operate only during utility power failures and as required for proper maintenance and testing (per manufacture requirements). The generator will be fitted with a muffler, or equivalent, to reduce noise to a level that does not exceed 60 dBA within 50 ft of the generator. Diesel tanks will be double walled with leak detection.
- All wires will be contained or cleanly attached and colored similarly to blend in.
- To the extent practicable, the NPS will consider technologies to avoid spillover of cellular frequencies into the backcountry. The NPS acknowledges that spillover into the backcountry cannot be entirely avoided and that some unintended coverage in backcountry areas is possible, if not likely, considering available technologies.

Parameters for All Small-Cell Sites and Associated Infrastructure

Any future potential small-cell sites within Grand Canyon National Park (GRCA) will adhere to the following parameters and criteria. Parameters may be modified or additional criteria may be developed in the future through site-specific analysis and/or as additional information about resources and potential impacts becomes available; the Plan may be updated accordingly.

- Small-cell sites will be considered only when there is a demonstrated need for additional capacity on the network.
- GRCA will generally not support single entity occupied standalone infrastructure (e.g., small-cell sites) under this alternative; it is expected that small-cell sites will be able to accommodate multiple wireless telecommunications carriers through the use of combiners or equivalent technology. Should this option become unfeasible due to changes in technologies and frequencies, any applicant seeking to construct standalone small-cell sites will be required to demonstrate, with confirmation by the NPS, this additional infrastructure is needed.
- GRCA will not support a high density of small-cell sites. The determination of whether or not this infrastructure would meet that threshold will be made by the NPS through site-specific review which will specifically factor in impacts to scenic, cultural, and natural resources.
- Small-cell sites will be mounted to existing buildings or fixtures (such as a light pole) and will be sited on these features to reduce its visibility from high visitor use areas as much as possible.
- No small-cell antenna or equipment will be placed on the roofs of historic structures that have no other modern equipment. Should a historic structure have existing, modern, equipment on the roof, small-cell antenna could be placed in close proximity to this other equipment.
- If located within NHLs or historic districts, equipment will be sited out of sight or internally to avoid visual obstructions. Wireless carriers could be required to use various stealthing options to make installations blend with existing architecture or background.
- All small-cell antennas will be backhauled by high capacity fiber, or other technology such as T-1 lines or copper, that will need to be buried in conduit. Any boring or trenching to install fiber and conduit in areas where it does not currently exist will adhere to the description outlined in *Fiber Optic Communications Cable* in the EA.
- Power will be fed from a connected building or facility (such as a light pole). Solar could also be used if installed out of sight and on an existing structure (like a roof).
- All wires will be contained or cleanly attached and colored similarly to blend in. Ideally, wiring and cables will be contained.
- Exterior equipment will be painted to blend into the environment.
- Any exterior support equipment such as cabinets or electronics will be sited close to the ground and adjacent to the antennas unless the equipment is placed on top of a building. Exterior support equipment will need to be sited outside of typical visitor views.

The following mitigation measures will be implemented to minimize the degree or severity of adverse impacts to resources.

Acoustic Environment

- For additional information, see this reference on protecting park soundscapes from National Academy of Engineers and the National Park Service: <https://www.nap.edu/catalog/18336/protecting-national-park-soundscapes>.
- Whenever feasible, permittee(s) will select and utilize construction equipment that has the lowest possible noise emissions. For example, hydraulically or electrically powered impact tools and chainsaws will be used instead of traditional gas-powered equipment when feasible. The use of high efficiency mufflers on construction equipment will be considered.
- Use of equipment such as backhoes, jackhammers, augers, and loaders will be minimized to the greatest extent possible during construction activities.
- All construction equipment will be kept in proper operating condition and the location of stationary, noise emitting equipment will be strategically placed and covered with a noise dampening enclosure when possible to reduce noise emissions.
- Construction equipment will be turned off, rather than allowed to idle, when not in operation.
- Construction and maintenance work will not occur during acoustically sensitive times of day (dawn/dusk).
- Wherever feasible, vehicles requiring backup alarms will be outfitted with broadband backup alarms.
- New generators will utilize the best available (quietest) technology and will be internally sheltered and covered with noise dampening enclosures to protect park resources. For example, acoustical (noise attenuating) louvers and sound absorbing wall treatments could be installed on the building interior.
- Generator noise levels will be measured and compared to NPS thresholds (e.g., 60 dBA at 50 ft or noise which is considered unreasonable (36 CFR 2.12) by a qualified acoustical consultant or certified noise control engineer after generator installation and prior to completion of construction, so that any noise control recommendations can be implemented before on-site construction efforts are completed. The goal of the measurements will be to ensure that generator noise will not interfere with park visitor activities or be objectionable to park visitors or staff working at the site. Grand Canyon National Park will provide a minimum of two (2) on-site observers at the time of measurement to make subjective assessments of noise reasonableness (36 CFR 2.12) and provide input to the acoustical consultant on generator noise with respect to park visitor or interpretive activity that may occur at key measurement locations and other surrounding areas. If noise levels are found to exceed thresholds or are otherwise found by NPS on-site observers to be objectionable, additional noise mitigation options could be considered.
- Generators will be tested for the shortest duration necessary; testing will not occur during acoustically sensitive times of day (5:00pm to 8:00am). Should a generator be in close proximity to another telecommunications tower and associated generator, the

testing of the two generators will be scheduled to occur at different times of the day so that the two are not intentionally operated at the same time.

Cultural Resources

- All mitigation measures developed as part of the Programmatic Agreement with the Arizona State Historic Preservation Officer (SHPO) and Tribes to guide project implementation will be followed in coordination with the park Section 106 Coordinator, Cultural Resources Program Manager, and the park Tribal Program Manager.
- The NPS will seek to avoid adverse effects to all types of historic properties, with input from consulting parties. Avoidance measures for historic properties could include (but will not be limited to) redesigning project elements, fencing sites during construction, monitoring construction near site areas within a buffer zone, or placing infrastructure outside of site boundaries.
- All cultural resources identified during site-specific analysis will be evaluated for eligibility for National Register listing, in consultation with the consulting parties.
- For any activity that involves work in NHLs, historic districts, cultural landscapes, or on or by historic buildings or structures, the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and *Director's Order 28, Cultural Resources Management*, will be followed.
- Areas selected for staging equipment and materials will be expected to be located in existing disturbed areas where there is no potential for archaeological resource disturbance. The park's Cultural Resources Program Manager will be contacted and consulted before creating/utilizing any staging areas not previously addressed or reviewed for this project.
- If not previously surveyed or in areas that have not been previously surveyed to current professional standards, any proposed location for telecommunications infrastructure will be surveyed for archaeological resources before work begins, and project-specific mitigations will be identified to avoid archaeological resources, if present, to the extent possible. If archaeological resources are identified in the immediate project area and could not be entirely avoided during construction, maintenance, and ongoing operations at the site, additional compliance with NHPA and other applicable laws will be required.
- If an adverse effect to archaeological sites is unavoidable, the NPS will minimize or mitigate adverse effects to historic properties through the development and implementation of a Historic Properties Treatment Plan (HPTP), which will be developed in consultation with the parties to the Programmatic Agreement and will specify a program of measures to minimize and/or mitigate adverse effects. The NPS will ensure that the HPTP is consistent with the *Secretary of the Interior's Standards and Guidelines for Archaeological Documentation* (48 FR 44734-44737). A Memorandum of Agreement (MOA) will not be needed.
- NPS, in consultation with SHPO and the Tribes, will prepare a monitoring and discovery plan (MDP) before ground-disturbing activities. The MDP will minimally include all locations and situations when monitoring is required, evaluation criteria for determining the presence of isolated occurrences versus archaeological sites, how to document findings, and how to protect, document, and consult on discoveries of human remains.
- Ground disturbance activities will be monitored by an NPS archaeologist (this will be scheduled with the park's Cultural Resources Program Manager at least two weeks prior to activity) when the disturbance lends itself to detection of archaeological materials,

including excavation or grading. Such work will not proceed without a cultural resource specialist present.

- Per any tribe's request, a tribal resource monitor will be invited to be on-site when ground disturbing work is occurring.
- If previously unrecorded and/or buried cultural resources are discovered during any portion of the project, work at that location will immediately cease, and an assessment made by a qualified cultural resource specialist. The NPS will notify SHPO. If American Indian-associated resources are discovered the Tribes will also be notified. Work in that area will not resume until the resources could be identified and documented, and an appropriate mitigation strategy developed and implemented in consultation with SHPO and, as appropriate, Tribes.
- In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during any portion of the project, provisions outlined in the Native American Graves Protection and Repatriation Act and GRCA's *Memorandum of Agreement Regarding Collections, Inadvertent Discovery, and Intentional Excavation of Native American Human Remains, Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony* (NPS 2007) will be followed.

Vegetation

- Proposed tower locations and conduit alignments will be provided to the park's Vegetation Program Manager for review prior to approval and the area surveyed for sensitive species. Areas of sensitive species, if identified, will be avoided, particularly near the rim.
- Pruning necessary for the project, and for any future periodic maintenance in the area, will adhere to the park's pruning guidelines with the goal of retaining health and integrity of trees and shrubs treated.
- Damage to trees or roots in or adjacent to project areas during construction will be avoided as much as possible. If avoidance is not possible, root pruning guidelines will be followed.
- All vehicular access on non-paved roads will avoid any woody vegetation and brush.
- Care will be taken to avoid operating equipment, staging equipment and supplies, and disturbing soils, biotic crusts, natural surfaces, grasses, forbs, shrubs and other natural materials.
- All construction equipment used will be pressure cleaned and free of weeds, seed, debris, and mud to prevent the introduction and/or spread of exotic, invasive plants.
- Disturbed areas will be rehabilitated and revegetated following construction. Only native and local (when possible) seed stock will be used for all temporary and permanent vegetation establishment. Monitoring for plant reestablishment post treatment will occur.

Soils

- Construction activities on un-paved surfaces will be restricted during saturated soil conditions or severe weather conditions to avoid damage to soils and vegetation.
- If boring is not feasible for the installation of fiber and conduit, a "micro trencher" or equivalent will be utilized to bury the fiber and conduit to minimize the disturbed footprint as much as possible.
- After any ground disturbance is complete, bedding material will be placed and compacted in the trench bottom. Backfilling and compaction will begin immediately after trenching, and the trench surface will be returned to pre-construction contours. All

trenching restoration operations will follow guidelines approved by park staff. Compacted soils will be scarified, and original contours reestablished.

Wildlife

General

- Wildlife will not be fed or approached.
- Biodegradable matting with a large-diameter natural fiber will be used to prevent entrapment of wildlife, if erosion netting is necessary. When used, erosion netting will be removed by contractor at project completion.
- Care will be taken not to disturb any wildlife species (reptiles, migratory birds, raptors, or bats) found nesting, hibernating, estivating, or otherwise living in, or immediately nearby, worksites.
- The park's Wildlife Program will be notified/consulted when any wildlife must be disturbed or handled. They will be available to assist with moving/relocating wildlife, when necessary; and/or to make recommendations for relocating any disturbed animals.
- For any projects involving trenching or digging holes, provisions (generally in the form of ramps; with a slope < 45°) will be made every 20-50 ft to allow for the escape of animals that may fall into these recesses, and/or they will be covered in such a way as to prevent animals from falling in the trench.

Bats

- The park's Wildlife Program will survey areas prior to installation of telecommunications infrastructure. Measures will be implemented to avoid any damage to existing bat roosts and no action will occur that could obstruct access points to existing roosts.
- Measures will be implemented to reduce the possibility of disturbing or harming tree-associated bats, such as timing tree removals for the colder months of the year and/or performing roost surveys and delaying tree removals if bat roosts are present.
- If bats are encountered on buildings, activity will cease, and the park's Wildlife Program will be contacted for assistance and/or advice in removing them safely.

Migratory Birds

- All vegetation removal and maintenance activities should be scheduled outside of the peak bird breeding season (April to August) to reduce impacts to birds.
 - When vegetation removal activities cannot avoid the bird breeding season, nest clearance surveys will be conducted no more than five days prior to the scheduled activity to ensure recently constructed nests are identified.
 - The timing and dimensions of the area to be surveyed vary and will depend on the nature of the project, location, and expected level of vegetation disturbance.
 - If active nests are identified within or in the vicinity of the project site, the site will be avoided until nestlings have fledged or the nest fails. If the activity must occur, a buffer zone will be established around the nest and no activities will occur within that zone until nestlings have fledged. The dimension of the buffer zone will depend on the proposed activity, habitat type, and species present. The buffer should be a distance that does not elicit a flight response by the adult birds; for example, this buffer can be 0.5 – 1 mile for hawks and eagles.

- All wiring on towers and other infrastructure will be securely attached to the structure to reduce the likelihood of birds becoming entangled.
- Bird nest exclusion devices will be installed on any new or relocated towers.
- Anti-perching devices will be installed on any new or relocated towers and any antenna large enough to support the weight of a condor.
- If birds are nesting on communication towers that require maintenance activities, the park's Wildlife Program will be contacted, and if necessary, park personnel will contact the USFWS for permits, recommendations, and requirements.
- Monitoring of mortality strikes at towers may be completed. If it is discovered that bat and bird mortalities are occurring and there are ways in which these can be avoided, modifications to the towers could be made in the future to avoid these impacts.
- Representatives from the NPS, USFWS, or researchers will be allowed access to telecommunications sites to evaluate bird use, conduct dead-bird searches, and conduct other research, as necessary.

Species of Special Concern

- GRCA's Wildlife Program Manager will be contacted a minimum of two weeks prior to project implementation to verify locations of sensitive species.
 - Light and heavy construction will not occur within 0.5 mile of an active condor nest during the active nesting season of February 1- September 30. A park Wildlife Biologist and Section 7 Coordinator may modify the active nesting season dates based on the most current information. For cyclic maintenance projects that will occur within 0.5 miles of condor nesting activity, project staff will contact a GRCA Wildlife Biologist to determine whether the maintenance can occur during the nesting season.
 - For projects within Grand Canyon Village, project staff will not use light or heavy construction equipment within 0.25 miles of Mexican spotted owl Protected Activity Center boundaries during the breeding season (March 1 – August 31).
 - For projects outside Grand Canyon Village, project staff will not use light or heavy construction equipment within 0.5 miles of Mexican spotted owl Protected Activity Center boundaries during the breeding season (March 1 – August 31).
- Project staff will avoid interaction with condors and will immediately contact the park's Wildlife Program or park dispatch if and when a condor(s) visits a project site.
- If condors visit a project site, project activities will cease until the condors leave on their own or until permitted personnel use approved techniques that result in condors leaving the area.
- The project site will be cleaned up at the end of each day the work is being conducted (e.g., trash disposed of/secured appropriately, scrap materials picked up) to minimize the likelihood of condors visiting the site. Park wildlife program staff may conduct periodic spot checks to ensure project staff are implementing adequate project clean-up measures.
- No vegetation will be removed/impacted within Mexican spotted owl critical habitat. Outside of spotted owl critical habitat, removal of trees and snags larger than 18 inches dbh will be minimized; no trees or snags larger than 24 inches dbh will be cut. Should the removal of trees larger than 24 inches dbh be necessary on a case-by-case basis, the park's Wildlife Program Manager and Section 7 Coordinator will be contacted for their review and approval.

Visitor Use and Experience

- To the extent practical, work will be scheduled to avoid construction activity and construction related delays during peak visitation times. No night time work will be allowed. Holiday and weekend work (Saturday and Sunday) will not be allowed unless authorized in writing by the park.
- Any disturbed paved areas will be restored to pre-project conditions.
- In areas where wireless service (particularly cellular—voice and data) may be available, GRCA will provide guidance to visitors on usage of personal electronic devices within the park to minimize impacts from the use of these devices on visitor experiences and to encourage visitors to connect directly with park resources. This guidance could include suggestions such as limiting use of nonessential electronic devices, silencing ringers, avoiding the streaming of music or videos in public, avoiding the use of these devices within the backcountry, and tips for increasing awareness of one's surroundings. This guidance will also remind visitors about the dangers (and legal implications) of distracted driving. This information could be shared via brochures, information on the park's website and/or app, signage within the park, and/or in other ways.

Human Health and Safety

- Wireless telecommunications infrastructure is required to meet all applicable standards related to radio frequency emissions in order to be considered within the park. All telecommunications infrastructure will be constructed in a manner that meets, if not exceeds, the minimum requirements and standards of the Standard Building Code, the National Electrical Code, National Fire Protection Association code, and the Standard Mechanical Code.
- The FCC and NTIA have established electromagnetic field safety standards and extensive domestic and international research has not determined any hazard from wireless telecommunications infrastructure operating at regulated power levels. No single wireless telecommunications facility or combination of wireless telecommunications infrastructure will be permitted that exceed the FCC standards for human exposure at the point of closest public access.
- Signage will be installed where necessary to inform the public and employees of radio frequency exposure near telecommunications towers.
- NPS employees or others who are tasked with working in close proximity to the facilities or for long periods of time will be trained to minimize potential radio frequency exposure and ensure that exposure is within the occupational limits.
- Any ROW permittee(s) will develop site-specific safety plans for any construction.
- NPS Aviation crews will be consulted and notified prior to construction of any telecommunications tower within the park. The NPS will notify all EMS cooperators/flight crews of the specific locations of these towers as they relate to landing zones.

Errata and Response to Public Comments

ERRATA

These errata are to be attached to the Telecommunication Plan / Environmental Assessment dated December 2019 and are intended to correct or clarify statements in the EA and to address substantive comments received on these documents during the public review period.

EA revised or new text is shown as **red text**.

Page 17. Parameters for All Small-Cell Sites and Associated Infrastructure

Revised Text:

- **GRCA will generally not support single entity occupied standalone infrastructure (e.g., small-cell sites) under this alternative; it is expected that small-cell sites will be able to accommodate multiple wireless telecommunications carriers through the use of combiners or equivalent technology. Should this option become unfeasible due to changes in technologies and frequencies, the NPS will consider standalone small cell sites on a case by case basis.**
- **GRCA will not support a high density of small-cell sites. The determination of whether or not this infrastructure would meet that threshold will be made by the NPS through site-specific review which will specifically factor in impacts to scenic, cultural, and natural resources.**

Page 42. Impacts of Alternative B, West Rim Drive Historic District

Revised Text:

A new tower in the Hopi Fire Lookout area would be *not visible* from most of this district due to screening by vegetation and topography, but would likely be *visible, but not conspicuous* from some areas of the district, particularly those within close proximity to the tower location, **and would be visible and conspicuous from the Powell Memorial and portions of the Hopi Point area, similar to the visibility of the existing NPS radio tower.**

Page B-3. Mitigation Measures, Vegetation

Revised Text:

- Disturbed areas will be **rehabilitated and** revegetated following construction. Only native and local (when possible) seed stock will be used for all temporary and permanent vegetation establishment. **Monitoring for plant reestablishment post treatment will occur.**

Page B-4. Mitigation Measures, Migratory Birds

Revised Text:

- All vegetation removal and maintenance activities should be scheduled outside of the peak bird breeding season (April to August) to reduce impacts to birds.

Page B-5. Mitigation Measures, Species of Special Concern

Revised Text:

- GRCA's Wildlife Program Manager will be contacted a minimum of two weeks prior to project implementation to verify locations of sensitive species.
 - Light and heavy construction will not occur within 0.5 mile of an active condor nest during the active nesting season of February 1- September 30. A park Wildlife Biologist and Section 7 Coordinator may modify the active nesting season dates based on the most current information. For cyclic maintenance projects that will occur within 0.5 miles of condor nesting activity, project staff will contact a GRCA Wildlife Biologist to determine whether the maintenance can occur during the nesting season.
 - For projects within Grand Canyon Village, project staff will not use light or heavy construction equipment within 0.25 miles of Mexican spotted owl Protected Activity Center boundaries during the breeding season (March 1 – August 31).
 - For projects outside Grand Canyon Village, project staff will not use light or heavy construction equipment within 0.5 miles of Mexican spotted owl Protected Activity Center boundaries during the breeding season (March 1 – August 31).
- The project site will be cleaned up at the end of each day the work is being conducted (e.g., trash disposed of/secured appropriately, scrap materials picked up) to minimize the likelihood of condors visiting the site. Park wildlife program staff may conduct periodic spot checks to ensure project staff are implementing adequate project clean-up measures.
- No vegetation will be removed/impacted within Mexican spotted owl critical habitat. Outside of spotted owl critical habitat, removal of trees and snags larger than 18 inches ddb will be minimized; no trees or snags larger than 24 inches dbh will be cut. Should the removal of trees larger than 24 inches dbh be necessary on a case-by-case basis, the park's Wildlife Program Manager and Section 7 Coordinator will be contacted owl for their review and approval.

Page B-5. Mitigation Measures, Visitor Use and Experience

Revised Text:

- This information could be shared via brochures, information on the park's website and/or app, signage within the park, and/or in other ways.

RESPONSE TO PUBLIC COMMENTS

The EA was released for public review from December 2, 2019 to January 6, 2020. The public, media, various agencies, and Grand Canyon's eleven traditionally associated tribes were notified of the EA's availability. One public meeting was held at the South Rim of Grand Canyon National Park on December 16, 2019 and one webinar held on December 9, 2019.

Many of the comments addressed issues already adequately covered in the EA. No comments warranted development of an additional alternative or reconsideration of alternatives that were considered but dismissed. Therefore, the alternatives remain as described in the EA and no changes were made in the assessment of environmental consequences other than what is presented in the errata above.

Public comments and responses are summarized as follows.

Concern: Commenter stated that sections were missing from the environmental assessment (EA) including a list of document preparers and summary of public scoping comments.

RESPONSE: The National Park Service (NPS) was the sole preparer of the Telecommunications Plan / Environmental Assessment (Plan/EA) and included all required content in the document (43 CFR 46.310). The Finding of No Significant Impact (FONSI) includes the timing of public scoping and number of comments received; issues that were raised during public scoping were considered during preparation of the Plan/EA.

Concern: Commenter asked about tribes' roles and input as well as the general public's role in development of the programmatic agreement (PA), to fulfill responsibilities under the National Historic Preservation Act.

RESPONSE: Compliance undertaken for this proposed plan was conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Advisory Council on Historic Preservation (ACHP) Regulations, 36 CFR Part 800. Regarding public input, as defined by 36 CFR 800.2(d), the agency may use the agency's procedures for public involvement under the National Environmental Policy Act (NEPA) to fulfill requirements for public consultation under Section 106. NPS made both the EA and draft Programmatic Agreement (PA) available for review during the public comment period, and the final PA is posted on the project website (<https://parkplanning.nps.gov/GCTelecommunications>). A summary of tribal consultation is provided in the FONSI; all feedback from tribes were considered and addressed during preparation of the Plan/EA.

The NPS is responsible for fulfilling the requirements of Section 106 of the NHPA and its implementing regulations. The NHPA and its implementing regulations encourage the NPS to conduct consultation in a manner respectful of tribal sovereignty and to recognize tribal expertise in identifying and evaluating historic properties of religious and cultural significance to them and to be sensitive to a tribe's desire for certain information to be confidential. In this instance, the NPS has chosen not to publish tribal comments gathered through government-to-government consultation.

Concern: Commenters asked about the right of way (ROW) process, including compliance with the Telecommunications Act of 1996, the status of existing ROW applications, and how public involvement will occur in association with the ROW process.

RESPONSE: As stated in the Plan/EA, this plan is not in response to a specific application for a ROW permit in Grand Canyon National Park. NPS will follow all applicable laws, regulations, and policies including, but not limited to, the Telecommunications Act of 1996, 54 U.S.C. § 100902, 36 CFR 14, Director's Order 53, NEPA, and NHPA in the review and processing of future ROW applications.

Concern: Commenters stated that adequate data was not provided in the EA to demonstrate the need for additional telecommunications services and suggested developing maps to overlay existing visitor use with current and future telecommunications coverage. One commenter questioned the use of a visitor survey and its relationship to demonstrating that need.

RESPONSE: It was not necessary to develop overlay maps for understanding the need for action, which was satisfied by understanding visitor use patterns within the park, identifying locations where operations occur (and telecommunications services are therefore required), and experiencing and troubleshooting issues with the quality, or complete lack of, telecommunications services within these areas for NPS operations.

To understand telecommunication needs for operations within the park, NPS held internal meetings with staff in 2013, requested more information from NPS staff and in-park partners in November 2016, and reviewed all visitor comments cards between 2014 and early 2018. The results indicated that Internet connection and improved Internet speeds, cellular coverage, and two-way radio coverage were the primary telecommunication needs of the park and park partners, specifically within developed areas of the park. These developed areas, as shown in Figure 1.2 of the Plan/EA, are defined by the areas of highest visitor use and operations. The need is further described in the Plan/EA on pages 1 through 4.

Although NPS cites a visitor survey within the Plan/EA, this 2016 general visitor survey was not used to determine the need for action but rather to better understand how the alternatives might impact visitor use and experience within the analysis portion of the Plan/EA. The survey report has been added to the project website (<https://parkplanning.nps.gov/GCTelecommunications>).

Concern: Commenter suggested modeling cellular coverage to ensure the Plan/EA would meet the purpose and need.

RESPONSE: Based on preliminary, modelled coverage maps and the professional judgement of NPS telecommunications specialists, implementation of the selected action is expected to address the purpose and need for action outlined in the Plan/EA. More accurate coverage maps cannot be produced at this time because exact locations of telecommunications infrastructure and the specific technology (i.e., antennas, frequencies used, etc.) that would be installed on this infrastructure—information that is required to generate accurate maps—are not known at this time. Propagation maps and other maps showing the service coverage area are also a standard required component of a ROW permit application for wireless telecommunications facilities within units of the national park system.

Concern: Commenter asked about how the Plan/EA may or may not address 5G and wi-fi technologies. Specifically, does the Plan/EA approve the use of 5G technology and why is wi-fi not addressed within the Plan/EA?

RESPONSE: This Plan/EA does not preclude the use of 5G and wi-fi technologies but it also does not automatically approve the use of these technologies. As explained in the Plan/EA on page 1, this Plan is intended to provide a framework under which future proposals for ROW permits will be evaluated. Construction and operation of any new telecommunications infrastructure, such as 5G or wi-fi, would require site-specific review and approval in accordance with current NPS policies.

See the following concern statement and response for more information on the use of wi-fi hotspots under this Plan/EA.

Concern: Commenters suggested limiting public access to wireless/cellular services (i.e. utilize landline pay phones, installing a secure network for employees only, charging a minute or hourly rate, allowing emergency access only) or relying solely on wireless (“wi-fi”) hotspots within lodges, cafeterias, or the visitors center to address telecommunications needs in the park. One commenter suggested installing a wi-fi hotspot at the Grand Canyon Visitor Center.

RESPONSE: NPS considered alternatives related to no cellular or no additional cellular access within the Plan/EA and determined that these alternatives did not meet the purpose and need for action because they would not fulfill the need for reliable telecommunications services within the North and South Rim and Desert View developed areas and along the Highway 64 and Highway 67 corridors in Grand Canyon National Park. It is also unfeasible to provide cellular service within an area and limit it to emergency use only if users have the technology to access that service.

Although the Plan/EA does not preclude the use of wireless hotspots, this technology alone is not considered a viable alternative to cellular service. Wireless hotspots provide a wireless access point for data only (though voice can be utilized through the service) and require a user to be within several hundred feet of the antenna whereas cellular service can provide coverage that can extend to areas such as Highway 64—which has been identified as a priority service area within the Plan/EA. Under this suggested alternative, coverage would continue to be very limited and there would be little improvement in communication services available to visitors, NPS, and park partners.

Wireless hotspots are currently utilized in a number of locations within the park by NPS, in-park partners, and residents, and NPS could consider proposals to install a specific wireless hotspot, such as one at the Grand Canyon Visitors Center, outside the scope of the Plan/EA.

Concern: Commenters suggested that telecommunications services should be provided through other means than towers, including fiber, satellite technology, alternative designs, use of existing infrastructure, or use of future technologies.

RESPONSE: The preferred alternative includes the use of fiber, existing infrastructure to support smaller telecommunications equipment where appropriate, and alternative tower designs. It also assumes ongoing use of satellite and two-way radio antenna to supplement

services. NPS also considered alternatives to telecommunications towers (such as use of buildings instead of towers) and dismissed these alternatives from further consideration within the Plan/EA. See page 22 in the Plan/EA.

Concern: Commenters stated that small-cell sites may be necessary in areas beyond those considered in the preferred alternative and suggested modifications to the alternative such as reducing the requirement to share antennas with other providers, increase the number of locations where small-cell sites could be considered, and identifying parameters related to the density of small-cell sites.

RESPONSE: Implementation of the selected action does not preclude small cell sites from being considered in other areas of the park if there is a demonstrated need and all applicable laws, policies, and regulations are applied.

Based on these comments, NPS clarified in the Plan/EA (through errata) that the park will generally not support single entity occupied standalone small-cell sites; it is expected that small-cell sites will be able to accommodate multiple wireless telecommunications carriers through the use of combiners or equivalent technology. However, should this option become unfeasible due to changes in technologies and frequencies, any applicant seeking to construct standalone small-cell sites will be required to demonstrate, with confirmation by NPS, that additional infrastructure is needed.

NPS also added a parameter to the Plan/EA (through errata) that clarifies that the park will not support a high density of small-cell sites. The determination of whether or not this infrastructure would meet that threshold will be made by NPS through site-specific review which will specifically factor in impacts to scenic, cultural, and natural resources. See errata for modifications made to the *Parameters for All Small-Cell Sites and Associated Infrastructure*.

Concern: Commenters stated they are concerned that radio frequency radiation adversely impacts humans and/or wildlife.

RESPONSE: NPS relies on the regulatory requirement of the Federal Communications Commission (FCC) to determine safe limits of radio frequency radiation (RFR) exposure from cell towers for the public and for employees. Maximum regulatory levels have been set by FCC at exposure levels that are considered protective of human health according to the guidance of health organizations that monitor the extensive body of current public health science on RFR and make recommendations to protect human health. In the United States, electromagnetic field (EMF) exposure limits are set by the FCC (FCC 2016). The FCC consulted with and obtained the support of the Environmental Protection Agency, among several other federal agencies, when adopting the current RF-EMF exposure guidelines (FCC 2016). The FCC states that the current exposure criteria and standards "...were developed by expert scientists and engineers after extensive reviews of the scientific literature related to RF biological effects. The exposure guidelines are based on thresholds for known adverse effects, and they incorporate prudent margins of safety" (FCC 2016). NPS also requires applicants for ROW permits associated with wireless telecommunications facilities to include the following within their ROW application: 1) a study prepared by an independent licensed electrical engineer calculating the non-ionizing electromagnetic radiation (NIER) which will result from the proposed site, 2) the total NIER for co-location sites or the site in combination with nearby sites, and 3) a statement comparing these figures and stating that the proposed facility will meet applicable

NTIA standards for reducing radiation hazard to a harmless level (Director's Order 53 and associated reference manual).

In addition, current scientific understanding on the biological effects of EMF, including effects to flora and fauna, is summarized by the World Health Organization's (WHO) International EMF Project, formed in 1996. Their information sheet "Electromagnetic Fields and Public Health Effects of EMF on the Environment" (WHO 2005) concludes after a review of the scientific literature, international exposure limits (similar to those set by the FCC) for EMF emitting devices are "protective of the [living] environment". It notes studies that show damage to trees due to electric fields occur at levels far above exposure limit safety standards and are generally found only close to conductors of very high voltage power lines.

Concern: Commenters expressed concern that impacts to wilderness character were not fully evaluated within the Plan/EA.

RESPONSE: NPS analyzed impacts to wilderness character during the preparation of the Plan/EA (see pages 9-10), but dismissed this issue from additional analysis within the Plan/EA as NPS does not believe that any of the considerations for determining whether to retain issues for detailed analysis apply to wilderness character (2015 NPS NEPA Handbook).

As identified within the mitigations of this Plan/EA, NPS will educate visitors about use of personal electronic devices and what they can do to minimize impacts to other visitors from the use of these devices both within proposed and proposed potential wilderness areas as well as other backcountry and frontcountry areas in the park.

Concern. Commenters suggested NPS prevent or reduce spillover of wireless signal into backcountry and wilderness areas.

RESPONSE: The intent of this Plan/EA is not to provide telecommunications services to backcountry or proposed wilderness areas of the park. As NPS completes site-specific review of future ROW applications, NPS will consider needs associated with public health and safety and NPS operations with the desire to minimize spillover and associated impacts to backcountry or proposed wilderness areas of the park. For these reasons, NPS has not modified the language in the Plan/EA regarding spillover (see page 16 of the Plan/EA).

Regardless of restrictions applied by NPS, "The NPS acknowledges that spillover into the backcountry cannot be entirely avoided and that some unintended coverage in backcountry areas is possible due to limitations of existing technologies" (page 16).

Concern: Commenter was concerned with potential impacts to historic buildings and structures from the addition of telecommunication infrastructure to those buildings and structures.

RESPONSE: NPS analyzed impacts to historic buildings and structures during the preparation of the Plan/EA (see page 6), but dismissed this issue from additional analysis within the Plan/EA as NPS does not believe that any of the considerations for determining whether to retain issues for detailed analysis apply to historic buildings and structures (2015 NPS NEPA Handbook).

Furthermore, a programmatic agreement (PA) was prepared for this undertaking in consultation with the State Historic Preservation Officer (SHPO), the traditionally associated tribes, and the

Advisory Council on Historic Preservation in accordance with 36 CFR 800.14(b)(1)(ii). The PA records the terms and conditions agreed upon to continue Section 106 consultation for planning and activities within the scope of the Telecommunications Plan/EA. In accordance with the PA, NPS will seek to avoid adverse effects to historic properties with input from consulting parties.

Concern: Commenters stated concerns that increasing cell coverage will increase visitor distraction which will have adverse impacts, including to visitor safety and the visitor experience. One commenter cited recent deaths with in NPS units due to cell phone distraction.

RESPONSE: The Plan/EA addresses the concerns raised about distracted driving (page 51) and overall visitor distraction or disconnection from the resource (page 49).

Cell phone coverage currently exists on several roads within Grand Canyon Village on the South Rim and intermittently east to Desert View, and park management has not established a correlation between cell phone usage and vehicular accidents within Grand Canyon National Park. Driver distraction is also addressed by applicable state law. Effective April 22, 2019, Arizona enacted the Use of Portable Wireless Communication Device While Driving, A.R.S. § 28-914. Under this law, drivers in Arizona are prohibited from any kind of cell phone use while driving, including talking, texting, typing, or browsing internet or social-media sites, unless they are using a hands-free mode.

Concern: Commenter stated that increased access to cellular service could create an unrealistic perception of safety in the backcountry.

RESPONSE: The Plan/EA addresses the potential of the selected alternative reducing visitors' perception of self-reliance within the backcountry and/or proposed or proposed potential wilderness areas (page 10).

The proposed wireless telecommunications infrastructure will be constructed in developed areas and is not intended to target backcountry areas. Cellular service will likely extend into some backcountry areas and may cover a larger area than currently exists. While cellular service could allow for emergency communication in some areas, park information will state that cellular communications are very uncertain in the backcountry and that cell phones should never be relied on in place of proper preparation for backcountry travel.

REFERENCES

- FCC. 2015, November 25. <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>. Accessed February 27, 2020
- World Health Organization (WHO). 2005. Electromagenetic Fields and Public Health, Effects of EMB on the Environment. International EMF Project Information Sheet. https://www.who.int/peh-emf/publications/facts/envimpactemf_infosheet.pdf. Accessed February 27, 2020.

A NON-IMPAIRMENT DETERMINATION

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS *Management Policies 2006*, Section 1.4.4, explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment, the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5).

Fundamental resources and values for Grand Canyon National Park are identified in the enabling legislation for the park, the 1995 General Management Plan and in park's 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values for Grand Canyon National Park come from the park's scenic landscapes, geologic features and processes, biodiversity and natural processes, diverse recreational and experiential opportunities, water resources, and cultural resources and tribal values. Resources that were carried forward for detailed analysis in the EA for which a non-impairment determination is made include: expansive views of the Grand Canyon and other important views and historic districts. Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact topics are not generally considered park resources or values according to the Organic Act.

This non-impairment determination has been prepared for the selected alternative, as described in the Finding of No Significant Impact for the Telecommunications Plan / EA.

Scenic Resources: Expansive Views of Grand Canyon and Other Important Views

Scenic Resources are described on pages 25-28 of the EA. While scenic resources extend throughout the park's 1.2 million acres, those that may be impacted by the selected alternative are concentrated in developed areas on the North and South Rims and Desert View – either in close proximity to potential new or relocated telecommunications infrastructure and/or in higher visitor use areas where visitors are frequently present to experience views of the canyon.

The selected alternative will have long-term impacts on scenic resources within developed areas of the park for the next 10-15 years or more, so long as ROW permits are applied for and approved.

Under the selected alternative, the continued existence of and modification and/or upgrade to existing telecommunications infrastructure and installation of new minor telecommunications infrastructure—such as new antennas and hung fiber—will adversely impact scenic resources in developed areas of the park by adding human-made infrastructure into some views within a park setting. However, these actions are not expected to have measurable impacts on scenic resources for the following reasons. First, these facilities will be attached to existing infrastructure; so, impacted views are already characterized at least to some extent by human-made infrastructure. Second, these facilities will either be sited out of view or camouflaged (via implementation of mitigation measures) and small enough in comparison to the surrounding infrastructure such that visual contrast levels will be low and this infrastructure will not be visually obtrusive (*visible and conspicuous*). Third, these facilities will not be within typical visitor views or expansive views of the canyon.

In addition, the potential installation of one relocated and up to five new telecommunications towers in developed areas of the park will adversely impact scenic resources within the South Rim, Desert View, and North Rim Developed Areas and along the Hwy 64 and 67 corridors by adding human-made infrastructure that will be visually obtrusive (*visible and conspicuous*) within some views. Because three of these potential towers will be located near existing towers at Desert View, CC Hill, and in the Hopi Fire Lookout area, impacts to scenic resources from these three towers will be similar to existing conditions. These three new towers will range in visibility from *not visible* to *visible but not conspicuous* within most views, but will be *visible and conspicuous* from areas within Desert View (including the upper floors of the Desert View Watchtower) and along a short stretch of West Rim Drive, comparable to the visibility of existing towers. The other potential new towers and one relocated tower, which will range in visibility from *not visible* to *visible but not conspicuous*, will add human-made development within views around Grand Canyon Village and near Lindberg Hill that do not currently contain such infrastructure.

These impacts to scenic resources will be adverse and noticeable but will not diminish the scenic integrity of the park for the following reasons. First, the visibility of these towers will not arise to the degree of *visible and conspicuous* except for a few locations in the park; most views of these towers and associated infrastructure will be intermittent and will require a discerning eye that knows what to look for in order to see a new or potentially relocated tower. Second, for those

views from which new towers may be *visible and conspicuous* (upper floors of the Desert View Watchtower and along a short stretch of West Rim Drive), an existing tower is also present such that visual impacts of a new tower will not be substantially more than existing conditions. Third, these potential towers will not impact expansive views of the Canyon. The only exception is that views from the Rim Trail between Lookout Studio and the Yavapai Geology Museum will include both expansive views of the Canyon as well as the potential new tower in the Hopi Fire Lookout area. Given the distance of these areas from the new tower and the presence of an existing tower in this location, the visibility of this tower will not be visually obtrusive, similar to existing conditions, and will not detract from the expansive views of the canyon in these locations.

The selected alternative will also result in the removal of infrastructure from views in and around the Hopi Fire Lookout Area and could result in the visual downsizing or complete removal and/or relocation of an existing tower that is visibly obtrusive within some views within the South Rim developed area. These actions will result in permanent beneficial impacts to the scenic resources that currently include this infrastructure within view by reducing the visual footprint of human-made development on the landscape.

Overall, the selected alternative will increase the number of scenic views in the park that include human-made infrastructure. However, none of the new towers will dominate the landscape; expansive views of the Grand Canyon both below and along the rim will remain largely intact. Scenic resources in no more than 5% of the park will be impacted; a large expanse of lands beyond the developed areas of the park will continue to retain a high degree of scenic integrity.

When the effects of the selected alternative are combined with the effects of the past, present, and reasonably foreseeable actions, the total cumulative impacts to scenic resources—particularly expansive views of the Grand Canyon—within developed areas of the park will be adverse, with a noticeable contribution of adverse impacts from the selected alternative. That said, the characteristic, expansive views of the canyon and within the canyon itself will largely remain untouched as demonstrated by the minimal number of views that will include human-made development and the far greater expanse of lands beyond the developed areas of the park that will continue to retain a high degree of scenic integrity.

When considering the parameters identified in the selected alternative and the mitigation measures that will be implemented (as outlined in the EA and FONSI), the impacts associated with the selected alternative will not impact scenic resources to a point where those specific purposes identified in the park's establishing legislation can no longer be maintained, nor will they inhibit the long-term enjoyment of the park. The selected alternative will not result in an impairment of scenic resources.

Cultural Resources: Historic Districts

Cultural Resources are described on pages 34-39 of the EA. The selected alternative has the potential to affect up to three National Historic Landmark Districts (NHLDs) and up to eight historic districts (HDs) and their contributing resources, as described on pages 40-44. These districts include the following: Grand Canyon Village NHLD, Grand Canyon Railway HD, Stables – Blacksmith Shop HD, M.E.J. (Mary Elizabeth Jane) Colter Buildings NHLD, West Rim Drive HD, Horace M. Albright Training Center HD, Mather Business Zone HD, Desert View Watchtower HD, North Rim Entrance Road Corridor HD, Bright Angel Peninsula HD, Grand Canyon Lodge NHLD.

At least some, if not all, of these 11 NHLDs and HDs will be adversely impacted by the selected alternative for the next 10-15 years or more (so long as right-of-way permits are applied for and approved) by the continuing presence, modification to existing, and installation of new, additional telecommunications infrastructure within and/or visible from these districts. Because these modern, non-contributing features did not exist during the districts' periods of significance, their presence changes the visual context of the districts which can ultimately change the districts' setting and feeling, depending on the visibility of the non-contributing features within an individual district. The actions that could be implemented under the selected alternative could be visible within and from the NHLDs and HDs to the following degrees:

- Potential modifications or upgrades to existing infrastructure will continue to range from *not visible* to *visible, but not conspicuous* from and within these districts, similar to existing conditions, because the physical footprint of this infrastructure will either decrease (i.e. decreasing the existing visibility of this infrastructure) or increase only slightly and mitigation measures would be implemented to ensure this infrastructure blends into the surrounding environment.
- New, minor telecommunications infrastructure—such as new antennas installed on existing infrastructure or hung fiber installed on existing utility lines within an NHLD or HD will increase the number of non-contributing features within and/or visible from the NHLDs and HDs. The visibility of this new infrastructure will range from *not visible* to *visible, but not conspicuous* from and within these districts because the infrastructure will be relatively small and will either be sighted out of view or camouflaged (via implementation of mitigation measures) and installed on existing infrastructure in a manner such that visual contrast levels will be low.
- Although potential new telecommunications towers will not physically alter NHLDs or HDs, this infrastructure will also introduce a non-contributing feature within views from at least some these districts. Visibility of potential new towers will range from *not visible* to *visible, but not conspicuous* from and within eight of these districts because the infrastructure will be sighted out of view; screened by vegetation, buildings, and/or topography; and/or located at such a distance (a mile or more) that the infrastructure is small on the horizon. One potentially new tower within the Desert View area will be *visible and conspicuous* from the upper floors of the Desert View Watchtower which is part of the M.E.J. Colter Buildings NHLD and the Desert View Watchtower HD; the potential new tower will not be visible from all other locations in these districts. One potentially new tower within the Hopi Fire Lookout Area will be *visible and conspicuous* from Powell Memorial and the Hopi Point area within West Rim Drive HD, similar to the visibility of the existing NPS radio tower in the area; from all other portions of this district, this tower would range from *not visible* to *visible, but not conspicuous*. Views of these potential new towers from these districts will also include views of other non-contributing features, such as an existing telecommunications towers, such that visual contrast levels will be low.

Despite the potential visibility of this infrastructure, it is not expected to diminish the overall setting and feeling of these 11 NHLDs and HDs, or for that matter, diminish their eligibility for listing on the National Register for the following reasons. First and foremost, this infrastructure will be sited out of view and/or will visually blend into the surrounding built environment (i.e., visual contrast levels will be low) such that any views of these facilities will not rise to the level of *visible and conspicuous* or be visibly obtrusive within eight of the eleven NHLDs or HDs. From

the other three NHLDs and HDs, views of this infrastructure will be directed away from the canyon so that the character defining views of these districts are not impacted. Secondly, the areas that could be impacted within any one NHLD or HD will represent a small percentage of the larger district; most of the area within any one NHLD and HD will remain unaffected by these external developments. Finally, no action will impact the existing historic fabric of these districts.

It is also possible that current adverse impacts to the Grand Canyon Village NHLD, West Rim Drive HD, Grand Canyon Railway HD, and Stables – Blacksmith Shop HD will be reduced by the removal of infrastructure in the Hopi Fire Lookout Area and the potential removal and/or relocation of the South Rim Village Tower, in which case the percentage of these districts from which telecommunications infrastructure will be visible will decrease.

Considering the factors above, the parameters and mitigations identified to avoid or minimize potential impacts to historic districts, and future site-specific reviews and consultation with the Arizona State Historic Preservation Officer (SHPO) and tribes, the NPS will work to minimize, if not avoid entirely, adverse effects to cultural resources, as defined by 36 CFR 800.5, from the implementation of the selected alternative. Any adverse effects on these properties will be resolved through a Programmatic Agreement (PA) between the NPS, SHPO, and tribes which includes stipulations to avoid, minimize, and/or mitigate adverse effects through consultation and actions such as redesigning project developments.

When the effects of the selected alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts to 11 NHLDs and HDs in the park will be adverse, with a moderate contribution of adverse impacts from the selected alternative given the addition of new infrastructure within views from some locations within NHLDs and HDs. That said, a large portion of these 11 NHLDs and HDs will remain unaffected by the selected alternative; these 11 NHLDs and HDs will retain their character defining features and will remain eligible for listing on the National Register. For these reasons, the selected alternative will not result in an impairment of historic districts within Grand Canyon National Park.

Conclusion

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the selected alternative. The NPS has determined that implementation of the selected alternative will not constitute an impairment of the resources or values of Grand Canyon National Park. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies 2006.