

4 Cumulative Impacts

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

Cumulative effects could result from individually minor, but collectively significant actions that take place over time. Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events. The first step in assessing cumulative effects therefore, involves identifying and defining the scope of other actions and determining their interrelationship with the Proposed Action. The scope must consider whether other projects coincide with the location and timetable of the Proposed Action and other actions. Past, present, and reasonably foreseeable future actions are examined, including both military actions in the region as well as other federal and non-federal actions to determine if they interact with the Proposed Action Alternative. After examining these actions, the analysis determined the nature of the interaction. An analysis of how the impacts of the defined actions might affect or be affected by those resulting from the action, are discussed in this Environmental Assessment (EA).

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the geographic extent of the effects includes the areas underlying the footprint of the noise contours and exposed to air pollutants. This limited study area is justified because only minor modifications and/or improvements at and adjacent to the flight line on Naval Air Station (NAS) Oceana are proposed. No construction or improvements are proposed at Naval Auxiliary Landing Field (NALF) Fentress. The only activity that would interact with other past, present, or reasonably foreseeable actions would be aircraft operations, which generate noise and air emissions at and near NAS Oceana and NALF Fentress.

4.1 Past, Present, and Reasonably Foreseeable Actions

Based on a review of past, present, and reasonably foreseeable future actions within the study area of the Action Alternative, it was determined that several actions should be considered when analyzing the potential cumulative impacts of these actions along with the Proposed Action. These past, present, and reasonably foreseeable future actions are described below.

4.1.1 Past Actions

The following past actions are relevant to the cumulative impact analysis in the vicinity of NAS Oceana; there are no past actions relevant to NALF Fentress

- **Record of Categorical Exclusion for a Strike Fighter Squadron Transition at Naval Air Station Oceana** (Department of the Navy, 2014a) – The Record of Categorical Exclusion for the transition of one squadron of F/A-18C/D Hornets to one squadron of new production F/A-18E/F Super Hornets at NAS Oceana was signed in August 2014. This one-squadron aircraft transition occurred in 2015 and was required to support operational requirements associated with the mitigation of shortfalls in strike fighter capability due to the age of the F/A-18C/D Hornet aircraft and the lag in Joint Strike Fighter deliveries. There was no requirement for new facilities or additional personnel. No changes in training were expected at NAS Oceana and NALF Fentress as the training requirements for the F/A-18C/D Hornet and F/A-18E/F Super Hornet are similar.
- **Environmental Assessment for Strike Fighter Realignment at Naval Air Station Lemoore, California** (Department of the Navy, 2011) – The Finding of No Significant Impact (FONSI) for the Strike Fighter Realignment at NAS Lemoore was signed in October 2011. The EA addressed, as part of the overall proposed action, the relocation of two F/A-18E/F Super Hornet squadrons from NAS Oceana to NAS Lemoore. In August 2016, one squadron at NAS Oceana transitioned to NAS Lemoore and in May 2017, the other squadron was deactivated.

4.1.2 Present and Reasonably Foreseeable Actions

The following present and reasonably foreseeable actions are relevant to the cumulative impact analysis in the vicinity of NAS Oceana and NALF Fentress.

- **NAS Oceana Airfield Obstructions Management Plan** (Department of the Navy, 2013) – The FONSI for implementing an airfield obstructions management plan at NAS Oceana was signed on December 20, 2013. The EA evaluated the potential environmental impacts of implementing ongoing management activities outlined in the Airfield Obstructions Management Plan, which eliminates vegetative height obstructions and reduces safety risks to aircraft operations. Over 5 years, 238 acres of primary obstructions and approximately 53 acres of secondary obstructions to air navigation within installation boundaries are being removed. Additionally, dead vegetation that serves as perches for birds and periodic vegetation maintenance within installation boundaries are being undertaken. No significant impacts were identified for implementing the plan.
- **Solar Photovoltaic System at NAS Oceana** (Department of the Navy, 2016) – The FONSI for the lease of property to support construction and operation of a solar photovoltaic system at NAS Oceana was signed on February 17, 2016. The EA evaluated the reasonably foreseeable environmental consequences of the Navy's proposal to enter into a lease agreement with an independently operated, commercial power utility company to develop a solar photovoltaic system at NAS Oceana. The Navy would lease approximately 94 acres near the southwest boundary of the installation, at the intersection of Dam Neck Road and Hornet Drive/London Bridge Road. The power utility company, or possibly a third-party solar developer, would construct and operate the solar photovoltaic system. The Navy would lease the land to the power utility company for an estimated 37 years, including 2 years for construction, 25 years of operation, and two 5-year options. The solar photovoltaic system would assist the Navy in

meeting the Secretary of the Navy's renewable energy standards and goals. No significant impacts would result from the proposed action.

- **Airfield Lighting Modernization at NAS Oceana** (Department of the Navy, 2015c) – This project involves modernization and replacement of all airfield lighting equipment, systems (wiring and controls), and fixtures associated with NAS Oceana runways, taxiways, and aprons. Project implementation is scheduled to begin in Fiscal Year (FY) 2018 and end in FY 2019.
- **Transition from C-2A to Navy V-22 Aircraft at Fleet Logistics Centers** – The Navy is proposing to replace the C-2A Greyhound with the new CMV-22B Osprey, herein referred to as “Navy V-22”, at existing logistics support centers NAS North Island, California and Naval Station Norfolk, Virginia. Under the proposed action, the Navy plans to replace the 27 legacy C-2A aircraft with 38 Navy V-22 aircraft operated by existing fleet logistics support squadrons; establish a Navy V-22 training squadron for pilots and aircrew; establish a maintenance school for maintenance personnel; construct and renovate facilities to accommodate Navy V-22 squadron aircraft and personnel; and make adjustments to personnel levels (increases or decreases) associated with the Navy V-22 training squadron and the maintenance school. The fleet logistics centers provide logistics, supply, and support services to fleet units and shore commands.

The EA is in the preparation stage and is analyzing implementation of the proposed action over a 10-year period beginning in 2018. Facility renovations and some personnel actions would begin as early as 2018 at both NAS North Island and NS Norfolk. The transition of logistics support squadrons from C-2A to Navy V-22 would begin with small detachments of Navy V-22 aircrews and maintenance personnel initially training and operating at the existing United States (U.S.) Marine Corps MV-22B training squadron and maintenance school at Marine Corps Air Station New River, North Carolina, before returning to their home base location. Eventually, the Navy training squadron and maintenance school would be established, on either the West Coast or the East Coast, to fully support Navy training requirements. The transition is expected to be complete in the 2028 timeframe.

- **NALF Fentress Airfield Obstructions Management Plan** (Department of the Navy, 2012a) – The FONSI for implementing an airfield obstructions management plan at NALF Fentress was signed on April 25, 2012. The EA evaluated the potential environmental impacts of implementing ongoing management activities outlined in the Airfield Obstructions Management Plan, which eliminates vegetative height obstructions and reduces safety risks to aircraft operations. Over 5 years, approximately 218 acres of primary obstructions and approximately 59 acres of secondary obstructions to air navigation within installation boundaries are being removed. Additionally, dead vegetation that serves as perches for birds and periodic vegetation maintenance within installation boundaries are being undertaken. No significant impacts were identified for implementing the plan.
- **Readiness and Environmental Protection Integration (REPI) Program** – This program seeks to acquire easements in the areas surrounding NAS Oceana and NALF Fentress in order to protect these installations from residential and other non-compatible land uses encroachment. To date, the ongoing REPI program has preserved 2,448 acres surrounding NAS Oceana and NALF Fentress.
- **Preservation of the Cavalier Hotel** (Gold Key PHR, 2016) – This project involves the restoration of the Cavalier Hotel and the redevelopment of adjacent oceanfront property by a private hotel and resort development and management company. Built in 1927 on Pacific Avenue in Virginia Beach,

the Cavalier Hotel was listed in both the National Register of Historic Places (NRHP) and the Virginia Landmarks Register in 2014 for its local significance to early-twentieth century recreation and social history of Virginia Beach, and as a representative example of a pre-World War II urban beachfront hotel with a Classical Revival style (Pollard, 2013). The redevelopment project also includes demolition of the contemporary Cavalier Oceanfront hotel for construction of a new upscale hotel and an 82-home residential development.

4.2 Resource Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA.

4.2.1 Noise

The squadron transition actions addressed in the Categorical Exclusion for a Strike Fighter Squadron Transition at Naval Air Station Oceana and the Environmental Assessment for Strike Fighter Realignment at Naval Air Station Lemoore, California were considered in the number of operations assessed in the baseline and Proposed Action, and are represented in the cumulative analysis for this EA. The cumulative noise impacts from the recent squadron transition actions would have a marginal reduction in overall noise levels in the study area. The Navy's proposed transition to V-22s at NS Norfolk is not expected to change the noise contours generated at NALF Fentress because of the higher noise levels and higher operational tempo of strike fighter aircraft. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would continue to result in noise impacts.

4.2.2 Air Quality

The Action Alternative would result in increases in the air pollutant emissions (with the exception of volatile organic compounds [VOCs]) associated with air operations at NAS Oceana and NALF Fentress. The recent strike fighter squadron transition actions at NAS Oceana and NAS Lemoore are not included in the total aircraft emissions calculations for the EA analysis; these actions are expected to result in a marginal reduction in air emissions. The Navy's proposed transition to V-22s at NS Norfolk is expected to result in a negligible increase in emissions. The area where these emissions would take place is in attainment for all criteria pollutants. The overall anticipated increases in air emissions, which in the worst case (Nitrogen Oxides [NO_x] emissions) represent less than 2 percent of the current emission inventory for this pollutant in Virginia Beach, are not anticipated to result in significant cumulative impacts on regional air quality that could bring the area into nonattainment status when considered with emissions from past, present, and foreseeable future actions.

With regard to the increase in Greenhouse Gases (GHG) emissions that would result from the Action Alternative, it would incrementally contribute to climate change when considered with GHG emissions from past, present, and foreseeable future actions. This contribution would be very small, however, and not sufficient to noticeably aggravate or accelerate climate change and its anticipated effects. For these reasons, the Action Alternative when considered along with past, present, and future foreseeable actions, is not anticipated to result in significant cumulative impacts on regional air quality or climate change.

4.2.3 Public Health and Safety

Cumulative public health and safety impacts from past, present, and future actions within the study area would be less than significant. Implementation of the Airfield Obstructions Management Plans would remove obstacles to air navigation and reduce or modify the wildlife habitat surrounding the runways to increase flight safety and reduce the number of birds and other wildlife using the area. The obstruction management plan for each airfield outlines a course of action for maintaining vegetation height to avoid future obstruction issues. This allows NAS Oceana and NALF Fentress to remain fully operational and ultimately making a safer environment for aircraft navigation and the public, which is a beneficial impact. Airfield Lighting Modernization, including new systems, fixtures, wiring, and controls for all NAS Oceana runways, taxiways and aprons, coupled with additional airfield signage, would improve ground safety at the installation. Airfield lighting modernization meets all Navy requirements for visibility and safety, which would result in beneficial safety impacts at NAS Oceana. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects would not result in significant adverse cumulative impacts.

4.2.4 Land Use

Of the past, present, or reasonably foreseeable projects, the Solar Photovoltaic System at NAS Oceana and the REPI Program will result in changes to land use. The Solar Photovoltaic System at NAS Oceana would change approximately 94 acres of agriculture, open space, and forested land into a 13.4 megawatt ground-mounted solar photovoltaic facility. While this would result in a change to land uses, these changes are consistent with Navy policies for on-station land use at NAS Oceana (Department of the Navy, 2016). As a passive land use, this project would have no long-term impacts on adjacent land uses. The REPI Program would protect areas adjacent to the installations so that their land uses remain compatible with noise generated from the airfields and the accident potential and clear zones. No adverse land use incompatibilities would be introduced when the Proposed Action is considered along with past, present, and reasonably foreseeable projects. The past and present actions were included in the affected environment. The Proposed Action introduced negligible impacts to land use compatibilities. When considered with the reasonably foreseeable action of converting C-2s to V-22s, it is not anticipated that the noise environment would noticeably change (and thus the potential for incompatible land uses). The cumulative noise impacts from the recent squadron transition actions would have a marginal reduction in overall noise levels in the study area. The Navy's proposed transition to V-22s at NS Norfolk is not expected to change the noise contours generated at NALF Fentress. Therefore, no significant impacts to land use compatibilities due to noise. In terms of Clear Zones and Accident Potential Zones (APZs), none of the past, present, or reasonably foreseeable actions would require changes to these zones. Therefore, no land use incompatibilities in terms of Clear Zones and APZs. In summary, the Proposed Action combined with the past, present, and reasonably foreseeable future projects would not result in significant cumulative land use impacts.

4.2.5 Environmental Justice

The cumulative noise impacts from the recent squadron transition actions would have a marginal reduction in overall noise levels in the study area. The Navy's proposed transition to V-22s at NS Norfolk is not expected to change the noise contours generated at NALF Fentress. The cumulative noise impacts from the Proposed Action, which would introduce no disproportionately high or adverse impacts to environmental justice communities, there would be no significant impacts generated by other past, present, or reasonably foreseeable projects. Therefore, implementation of the Proposed Action

combined with the past, present, and reasonably foreseeable future projects, would not result in disproportionately high or adverse impacts to environmental justice communities.

4.2.6 Biological Resources

Noise would represent the only potential cumulative biological resource impact when considering the Proposed Action with past, present, and reasonably foreseeable projects. The cumulative noise impacts from the recent squadron transition actions would have a marginal reduction in overall noise levels in the study area. The Navy's proposed transition to V-22s at NS Norfolk is not expected to change the noise contours generated at NALF Fentress. In terms of terrestrial wildlife, there would be little land disturbance and no removal of any critical habitat. Noise generated during construction would be localized, short term, and not long in duration. Therefore, would not introduce significant effects to wildlife when considered with past, present, and reasonably foreseeable projects. In terms of long-term noise effects, increases in noise levels associated with the Proposed Action would not adversely impact wildlife. This is because terrestrial wildlife have presumably become habituated to the high level of noise from aircraft operations, as has been reported for some mammals in other areas of repeated exposure (Efroymson, Rose, Nemeth, & Suter, 2000). Cumulative biological resource impacts from past, present, and future actions within the study area would be less than significant because noise exposure and bird/animal aircraft strike hazard (BASH) potential would not result in significant additive noise disturbances that could affect terrestrial wildlife. Neither special status species nor migratory birds would be impacted by Proposed Action noise levels when considered with other past, present, and reasonably foreseeable projects. Therefore, implementation of the Proposed Action would not result in significant biological resources impacts.

4.2.7 Cultural Resources

When considered with the Proposed Action, the Cavalier Hotel preservation project has the potential to affect cultural resources when considered cumulatively with the Proposed Action. Noise levels for the historic Cavalier Hotel under the Action Alternative would remain nearly the same. The Preservation of the Cavalier Hotel project involves the rehabilitation of the historic Cavalier Hotel and preservation of key elements of its historic landscape in Virginia Beach (Virginia Beach Department of Economic Development, 2015), which is a beneficial impact. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects would not result in significant impacts.