

Compatibility Assessment

Compatibility, in relation to military readiness, can be defined as the balance or compromise between community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both community and military entities communicate, coordinate, and implement mutually supportive actions that allow both to achieve their respective objectives.

A number of factors assist in determining whether community and military plans, programs, and activities are compatible or in conflict with joint land uses such as community activities and military installations. For this Joint Land Use Study (JLUS), 25 compatibility factors were used to identify, determine, and establish a set of key JLUS compatibility issues. These compatibility factors are listed below.

Methodology and Evaluation

The methodology for the Fort Drum JLUS consisted of a comprehensive and inclusive discovery process to identify key stakeholder issues associated with the compatibility factors. At the initial Steering Committee (SC) and Technical Working Group (TWG) workshops and public meetings, as well as through stakeholder interviews with the communities surrounding Fort Drum and other regional organizations, stakeholders were asked to identify the location and type of issue in conjunction with compatibility factors they thought existed today or could occur in the future. As a part of the evaluation phase, the SC, TWG, and the public examined and prioritized the extent of existing and potential future compatibility issues that could impact land within or near the JLUS Study Area. This was conducted through a group exercise at a scheduled TWG meeting, and at the second public open house workshop. At the public workshop, attendees were given a set of stickers to identify the importance of each compatibility factor to them. The results of the public workshop issues importance exercise are included in the JLUS Appendix. Other factors and associated issues were analyzed based on available information and similarity with other community JLUS experiences around the country. The results of these prioritization efforts helped to guide the timeframe for when the recommended strategies in the JLUS Implementation Plan should be started to address issues that were of greater concern among stakeholders. The development of strategies to address compatibility is directly and indirectly affected by the evaluation of issues.

COMPATIBILITY FACTORS			
AQ	Air Quality	LU	Land Use
AT	Anti-Terrorism / Force Protection	LEG	Legislative Initiatives
BIO	Biological Resources	LG	Light and Glare
COM	Coordination / Communication	MAR	Marine Environments
CR	Cultural Resources	NOI	Noise
DSS	Dust / Smoke / Steam	PS	Public Services
ED	Energy Development	PT	Public Trespassing
FSC	Frequency Spectrum Capacity	RC	Roadway Capacity
FSI	Frequency Spectrum Impedance / Interference	SA	Safety Zones
HA	Housing Availability	SNR	Scarce Natural Resources
IE	Infrastructure Extensions	VO	Vertical Obstructions
LAS	Land / Air / Sea Spaces	V	Vibration
		WQQ	Water Quality / Quantity



When reviewing the assessment information in this chapter, it is important to note the following:

- This chapter provides a technical background on the factors and issues discussed based on available information. The intent is to provide an adequate context for awareness, education, and development of JLUS recommendations. It is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the JLUS Study Area.
- Of the 25 compatibility factors considered, seven were determined to be inapplicable to this JLUS:
 - Air Quality
 - Anti-Terrorism / Force Protection
 - Frequency Spectrum Capacity
 - Frequency Spectrum Impedance / Interference (Note: Issues associated with wind turbine impacts to radar functionality are discussed under the Energy Development issues, and no additional frequency spectrum impedance / interference issues were identified through this JLUS process.)
 - Marine Environments
 - Scarce Natural Resources
 - Water Quality / Quantity

Organization of the Compatibility Issues Identified

Chapter 5 is organized into two main sections: Awareness Items and Compatibility Issues.

The Compatibility Issues section identifies the more important issues for the Fort Drum JLUS and as such is organized by compatibility factor.

A more detailed assessment and analysis of each of the Awareness Items and Compatibility Issues can be found in Chapter 5, Compatibility Assessment in the JLUS Supporting Information document.

Fort Drum JLUS Awareness Items

The Awareness Items are issues that were originally identified, but through assessment and further review by the JLUS Technical Working Group and Steering Committee, were determined to either no longer be issues, or are adequately managed through existing processes. However, these are items that should be monitored in the future to ensure they do not become issues down the road. These items are separated from the set of compatibility issues, and the Awareness Items do not have strategies associated with them in the JLUS Implementation Plan.

- **Jefferson County nonattainment for ozone standard**

Jefferson County was historically in nonattainment for the 8-hour Ozone air quality. As of the preparation of this JLUS, it is in attainment for the 2015 Ozone standard. Regional air quality nonattainment can impact the operations at Fort Drum by limiting types of activities that affect air quality, such as certain aircraft operations. Fort Drum and the surrounding communities often have little control over air quality as wind patterns over Lake Ontario may bring poorer quality air from the Midwest over the region.
- **Obtaining response from Fort Drum on development application review**

Communities send certain types of development applications to Fort Drum for review, but do not always receive a formal response from the installation on compatibility concerns with the proposed development potentially impacting or being impacted by Fort Drum operations.

- **Public users have different regulations that apply to on- and off-installation activities**

Users find rules for public activities and use of land, such as hunting and recreation, are different on-installation versus off-installation. This is due to external policies and requirements that dictate regulations on how the installation manages these Federal / DOD resources.
- **Management of Native American cultural sites on-installation**

There are numerous Native American cultural sites on Fort Drum that require coordination between Fort Drum and Native American community members for tribal members to access the sites.
- **Basic Allowance for Housing (BAH) rate causes fluctuation on local rental market**

There is public concern that some local rental markets may be affected by BAH rates, driving up housing rates and making it more expensive than lower income civilian residents can afford.
- **Difficulty for military personnel to sell homes**

The local community real estate market is cyclical. Rentals and homes can be easy and hard to find, during some cycles homes can be hard to sell. Soldiers who are stationed at Fort Drum and buy a home may have trouble selling it if / when they are stationed somewhere else due to the transient nature of their assignments, causing houses to remain vacant depending on the cycle.
- **Fort Drum operational lighting encroaching on Native American ceremonies**

Light pollution occurs from Fort Drum's runway lights on a nearby archeological site used for night sky rituals / ceremonies by Native Americans.
- **Low-level flights over rivers**

There are concerns that low-level aircraft flights over rivers and other sensitive areas may impact quality of life of residents or affect wildlife.
- **Trauma center services location from Fort Drum**

The closest Level I trauma center hospital to Fort Drum is in Syracuse, which is more than an hour's drive away. This can cause delay in getting needed medical support, especially during high-trauma events where time is of the essence.
- **Roadway congestion along Route 26**

Route 26 can back up during peak traffic, especially when it is shut down for Fort Drum convoys.
- **Emergency communication towers siting throughout Jefferson County**

Jefferson County is planning on installing 12 emergency communication towers for 911 calls throughout the county by 2019. Four of the antennas are planned to be taller than 199 feet above ground level. Depending on their locations, these could pose vertical obstructions for aircraft if siting is uncoordinated.
- **Military and civilian use of airspace in the region**

There are concerns that the competition for airspace may create limitations in the region between military and non-military aircraft. An increase in commercial and general aviation would need to be properly coordinated with military aircraft operations at Fort Drum and within its surrounding special use airspace, and an increase in military aircraft operations could impact aviation expansion opportunities at Watertown International Airport.
- **Fort Drum's use of frequency spectrum**

Fort Drum, like all DOD installations, has access to a specific range of the frequency spectrum for use in communications. Civilian use of these frequencies may experience interference.

Fort Drum JLUS Compatibility Issues by Factor

Compatibility issues are any action undertaken by either the military or community that minimizes, hinders or presents an obstacle to the action of the other. Following is a list of each compatibility issue identified in the Fort Drum JLUS grouped by the associated compatibility factor.

Biological Resources (BIO)

Biological resources include federal and state listed species (threatened and endangered species) and their habitats. These resources may also include areas such as wetlands and migratory corridors that are critical to the overall health and productivity of an ecosystem. The presence of sensitive biological resources may require special development considerations and should be included early in the planning process. The following Biological Resources issues were identified:

- **Presence of threatened and endangered species in the region**

There are currently two federally listed species (the endangered Indiana Bat and the threatened Northern Long-Eared Bat) that are found on or around Fort Drum. Their presence and requirements to preserve their habitat can impact operational capabilities of the installation. There is the potential that additional species in the region could become federally listed as threatened or endangered as well.

- **Public misperception of amount of wood required to produce energy at the biomass facility on Fort Drum**

There are concerns in the local community that the biomass facility located at Fort Drum requires excessive amounts of wood to produce energy, and it may create an incentive to cut down forests that would otherwise be uneconomical to harvest.

Communication / Coordination (COM)

This discussion refers to the programs and plans that promote interagency communication and coordination. Interagency communication serves the general welfare by promoting a more comprehensive planning process inclusive of all affected stakeholders. Interagency coordination also seeks to develop and include mutually beneficial policies for both communities and the military in local planning documents, such as comprehensive plans. The following Communication / Coordination issues were identified:

- **Formal channels of communication between Fort Drum and local communities**

Official established information sharing and communication between Fort Drum and local planning officials and municipal staff is limited.



Indiana bats drinking from water condensation on a cave wall

Photo Credit: USFWS; Andrew King, Source: www.fws.gov/midwest/

Cultural Resources (CR)

Cultural resources are an aspect of past / current human activity that is valued by or significantly representative of a culture or contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as artifacts, records, districts, pre-contact archaeological sites, historic archaeological sites, buildings, structures, and objects. Historic properties are cultural resources that are eligible or listed on the National Register of Historic Places. Cultural resources may prevent development, require development constraints, or require special access by Native American tribal governments or other authorities. The following Cultural Resources issues were identified:

- **Opportunity for improved access for cemeteries on-installation**

There are historic cemeteries on Fort Drum that existed before the installation was established. These are important to the local communities and residents with ancestors buried there who sometimes want to visit the sites. Sometimes visiting the cemeteries can be difficult for off-installation visitors.



Image of Lewisburg Cemetery at Fort Drum

Source: *Digitizing the Historic Cemeteries of Fort Drum, NY*

Photo Credit: Michael Sprowles

Dust / Smoke / Steam (DSS)

Dust results from the suspension of particulate matter in the air. Dust and smoke can be created by fire (controlled or prescribed burns, agricultural burning, and artillery exercises), ground disturbance (agricultural activities, military operations, grading), industrial activities, or other similar processes. Dust, smoke and steam are compatibility issues if sufficient in quantity to impact flight operations (such as reduced visibility or cause equipment damage). The following Dust / Smoke / Steam issue was identified:

- **Smoke originating from Fort Drum may impact the community**

Smoke from range fires and forest fires on Fort Drum, particularly in summer months, sometimes drifts off-installation and impacts local communities. Factors such as wind and the fire burn time (e.g., when left to burn for prolonged times to reduce fire fuel) may increase the impact.

Energy Development (ED)

Development of energy sources, including alternative energy sources (such as solar, wind, geothermal, or biofuels) could pose compatibility issues related to glare (solar energy), or vertical obstruction and radar operations (wind generation). It is in both the installation’s interests as well as the community to support alternative energy development for both energy security and economic reasons respectively.

During the development of the Fort Drum JLUS, existing and potential future wind energy development impacts to Fort Drum’s Digital Airport Surveillance Radar at Wheeler-Sack Army Airfield and KTYX Weather Surveillance Radar in Montague were identified as the most important compatibility issues to assess and work to mitigate. At the time the JLUS was written, there were existing impacts from current wind energy development that have some mitigation options, but they are not 100% solutions. No 100% solutions have been identified to address existing issues. There are seven proposed industrial wind energy projects within 30 miles of the two radar sites that may cause additional impacts. Mission impacts from wind energy development should be evaluated both on a case-by-case basis and a cumulative basis.



Industrial wind turbines from the Maple Ridge Wind Farm

Source: EDP Renewables

The following Energy Development issues were identified:

- **Industrial wind energy development compatibility with Fort Drum mission**

There are existing wind turbines near Fort Drum that are currently managed to a degree, but not entirely mitigated, in terms of mission impacts. There are currently seven other proposed industrial wind energy development projects in the JLUS Study Area that have the potential to hinder existing and future mission capabilities at Fort Drum. Additional future industrial wind turbine development if not properly mitigated could have an adverse impact on military readiness, including flight operations, testing and evaluation, and training that is likely to impair or degrade the ability of units to perform their warfighting missions. Any additional wind energy development may potentially increase the existing impacts in a cumulative way.

- **Wind turbine development compatibility with weather radar**

Existing wind turbines in the line-of-sight of the 18th Weather Squadron Doppler radar impact the functionality of the equipment. Future wind development close to the radar could further impact the Weather Squadron's mission.

- **Future industrial solar development siting compatibility with military operations**

Some communities have plans of developing / approving fixed-panel solar energy development that could create glare for Fort Drum pilots. Future solar development in the region may also cause impacts depending on siting locations.

Housing Availability (HA)

Housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel, and the supply of military family housing provided by the installation. The following Housing Availability issues were identified:

- **Surplus multi-family housing**

There is public concern that there is a surplus of multi-family housing in the local communities that was originally built to support Fort Drum during a buildup in the number of personnel stationed there, and some of the housing is now vacant.

Infrastructure Extensions (IE)

Infrastructure extensions refers to public facilities and services such as sewers, water, electric, and roadways that are required to support development (existing and proposed).

Public facilities and services should be appropriate for the type of urban or rural development they serve, but also limited to the existing and planned needs and requirements of the area. For example, the provision of a safe transportation system, including all modes of transportation (automobile, mass transit, railway, highway, bicycle, pedestrian, air, water, etc.), is an important infrastructure component. Adequate transportation infrastructure contributes to local, regional, and state accessibility. The following Infrastructure Extensions issue was identified:

- **Desire for enhanced public transportation services to Fort Drum and surrounding communities**

There is a desire among Fort Drum personnel and members of the surrounding community to have enhanced public transportation services between Fort Drum and amenities outside the installation such as shopping, restaurants, entertainment, and businesses.

Land / Air / Sea Space Competition (LAS)

The military manages and uses land, air, and sea space to accomplish testing, training, and operational missions. These resources must be available and of a sufficient size, cohesiveness, and quality to accommodate effective training and testing. Military and civilian land, air, and sea operations can compete for limited land, air, and sea space, especially when the usage areas are in close proximity to each other. Use of these shared resources can impact future development and operations for all users. While this JLUS assesses land and airspace competition, due to Fort Drum's location, there is no sea space competition. The following Land / Air / Sea Space Competition issues were identified:

- **MQ-9 Reaper Hellfire ordnance training**
The weapon danger zone for MQ-9 Reaper Hellfire ordnance is too large to be contained within the boundaries of Fort Drum, requiring this type of weapon training to be conducted at other facilities.
- **Inadequate amount of maneuver space on the Fort Drum installation**
Fort Drum does not have adequate maneuver space capacity to accommodate the increased training to support the Army's new Sustainable Readiness Model. This is partially due to the requirement of maintaining wetlands on-installation, which reduces the amount of land available for certain activities such as grading, paving, and other activities that would impact wetlands.



The 174th Fighter Wing prepares an MQ-9 Reaper for takeoff at Wheeler-Sack Army Airfield

Source: US Air Force

Photo Credit: Staff Sgt. Ricky Best

Land Use (LU)

The basis of land use planning and regulation relates to the government's role in protecting the public's health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for preventing or resolving land use compatibility issues. These tools ensure the separation of land uses that differ significantly in character. Land use separation also applies to properties where the use of one property may adversely impact the use of another. For instance, industrial uses are often separated from residential uses to avoid impacts from noise, odors, and lighting. The following Land Use issues were identified:

- **Incompatible development encroachment around Fort Drum**
There is some existing development around Fort Drum that has caused encroachment concerns. There is a potential for future development to occur if appropriate land use regulations are not put in place by communities to limit growth around the installation in areas that may impact Fort Drum's ability to carry out its missions or put the installation at risk for future operations.
- **Limiting land uses would impact economic development in local communities**
Restricting certain land uses such as residential and commercial around Fort Drum could negatively impact economic development and residential character for neighboring communities.

- **Landowner concerns of ACUB designation impacting property values**

There are some landowners of parcels that have been identified as ACUB priority areas that are concerned about the ACUB process and how it will affect their property values. Some owners who do not wish to sell their development rights may misunderstand that the ACUB process only works with willing property owners.

- **Potential new missile mission assigned to Fort Drum**

There is a potential that Fort Drum could gain 60 missile silos as part of a new Missile Defense Agency mission. The community is concerned about impacts to nearby property values and the closure of Route 3A through Fort Drum.

Legislative Initiatives (LEG)

Legislative initiatives are proposed changes in relevant policies, laws, regulations or programs which could potentially have a significant impact on one or more substantive areas of concern to both the installation and to the stakeholder communities. The focus of this compatibility issue is on initiatives with general and broad implications. The following Legislative Initiatives issue was identified:

- **Power NY Act (Article 10) state legislation**

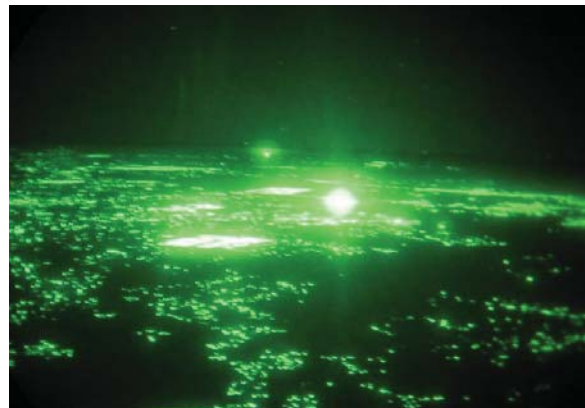
New York's Article 10 legislation changed the processes and procedures in New York for permitting energy generation facilities and requires a state-level Siting Board play a role along with municipalities in the development.

Light and Glare (LG)

This factor refers to man-made lighting (street lights, airfield lighting, building lights) and glare (direct or reflected light) that disrupts vision. Light sources from commercial, industrial, recreational, and residential uses at night can cause excessive glare and illumination, impacting the use of military night vision devices and air operations. Conversely, high intensity light sources generated from a military area (such as ramp lighting) may have a negative impact on the adjacent community. The following Light and Glare issues were identified:

- **Light encroachment from regional development on Fort Drum training**

Large sources of light in the region, such as commercial lots like car dealerships, can produce a lot of ambient light that can impact night training at Fort Drum.



Example of light impacts to night vision training

Source: Fort Drum, Greater Fort Drum Region
Encroachment Prevention Tools PowerPoint Presentation

Noise (NOI)

Sound that reaches unwanted levels is referred to as noise. The central issue with noise is the impact, or perceived impact, on people, animals (wild and domestic), and general land use compatibility. Exposure to high noise levels can have a significant impact on human activity, health, and safety. The decibel (dB) scale is used to quantify sound intensity. To help understand the relevance of decibels, a normal conversation often occurs at 60 dB, while an ambulance siren from 100 feet away is about 100 dB. Noise associated with military operations (arrival / departure of military aircraft, firing of weapons, etc.) may create noises in higher dB ranges. The following Noise issues were identified:



Small arms weapon firing training at Fort Drum

- **Noise encroachment on quality of life**

Military operations at Fort Drum, such as weapons firing, aircraft overflight, and ordnance detonations, cause noise that is heard off-installation in the local communities.

Public Services (PS)

Public services include the assurance that adequate services such as police, fire, emergency services, parks and recreation, and water / wastewater / stormwater infrastructure are of good quality and available for use by the installation and surrounding communities as the area develops. The supply and demand of these public services in the event of emergency situations is also considered. The following Public Services issues were identified:

- **Department of Motor Vehicles services relocated from Fort Drum**

Jefferson County used to operate a Department of Motor Vehicles (DMV) office on-installation for Fort Drum personnel, but it was closed due to low usage. It is harder for Fort Drum personnel to get time to leave the installation for DMV services.

Public Trespassing (PT)

This factor addresses public trespassing, either purposeful or unintentional, onto a military installation. The potential for trespassing increases when public use areas are in close proximity to an installation. The following Public Trespassing issue was identified:

- **Fort Drum personnel trespassing onto private property**

Soldiers training at Fort Drum occasionally trespass onto private property.

Roadway Capacity (RC)

Roadway capacity relates to the ability of existing freeways, highways, arterials, and other local roads to provide adequate mobility and access between military installations and their surrounding communities. The following Roadway Capacity issues were identified:

- **Maintenance of shared roads**

Two public roadways through and around Fort Drum are used by the military and civilians and are costly to maintain.

Safety (SA)

Safety zones are areas in which development should be more restrictive, regarding use and concentrations of people, due to the higher risks to public safety. Issues to consider include aircraft accident potential zones. The following Safety issues were identified:

- **Wheeler-Sack Army Airfield accident potential zones extend outside the installation boundary**
The accident potential zones associated with Wheeler-Sack Army Airfield extend beyond the boundaries of Fort Drum over neighboring communities. These pose safety concerns for the communities in the unlikely event that an aircraft mishap was to occur.
- **Fuel truck transport and incident response**
All fuel to Fort Drum is brought in by truck. If an accident were to occur, it could cause environmental damage or cause hazards to personnel or civilians.
- **Doppler weather radar no-build zone compatibility**
The 18th Weather Squadron Doppler radar has a four-kilometer (2.5 mile) radius no-build zone around it to protect the safety of personnel that work on the radar, but the no-build zone is not enforceable by NOAA or DOD.

Vertical Obstructions (VO)

Vertical obstructions are created by buildings, trees, structures, or other features that may encroach into the navigable airspace or impede line-of-sight radar signals used by the military. These obstructions can be a safety hazard to both the public and military personnel and potentially impact military readiness. The following Vertical Obstructions issues were identified:

- **Cell tower compatibility and future siting**
There are existing cell towers south of Wheeler-Sack Army Airfield that pose vertical obstructions for aircraft. Uncoordinated construction of future cell towers could cause additional impacts.
- **Wind turbines impacting flight paths**
Growth in the wind energy development industry in the region could cause vertical obstructions in low level military training routes. Six currently proposed industrial wind energy developments are in low-level flight training routes.
- **Lack of zoning height limits impacts to flight operations**
Some local communities around Fort Drum do not have height limits in their zoning codes. This may impact flight operations if future development results in obstructions.

Vibration (V)

Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment. Vibration may be caused by military and / or civilian activities. The following Vibration issue was identified:

- **Vibration felt outside Fort Drum’s boundaries**
Helicopter flights and artillery firing at Fort Drum cause vibration impacts outside the installation. Some residents have stated that they have experienced structural damage to their property as a result of activities at Fort Drum.



500-pound Mark 82 bomb exploding at Range 48

Source: US Army.

Photo Credit: Mrs. Michelle Kennedy