ERRATA [Updated as of January 19, 2010.]

Errata for the Lassen National Forest - Motorized Travel Management - Final Environmental Impact Statement include the following:

In the Transportation Facilities Section, 3.2 of the FEIS

- The 2009 MOU between the FS and the FHWA mentioned on page 64 of the FEIS has not been finalized. Instead we refer to an October 14, 1975 MOU.
- Corrections to the Annual Maintenance Costs for Operational Maintenance Level 4 in Table 15
- Corrections to the mileages for Alternative 5 and Modified 5 on line 3 of Table 19
- Addition of a footnote that Annual Maintenance Needs for Roads values on line 4 of Table 19 were calculated with monetary values to two digits, so results vary slightly from values that might be calculated from Tables 13 & 15
- Addition of a footnote that 5 year Deferred Road Maintenance Costs listed on line 5 of Table 19 include a 7% annual inflation factor, but the Deferred Trail Maintenance values on line 8 of Table 19 does not. Also, corrected the Current Deferred Road Maintenance value listed in the text on page 78 of the FEIS from $111, 695, 499 to $111,695,400.
- Added Trail maintenance costs to Table 19
- Added total NFTS maintenance costs (roads and trails) and increases or decreases by Alternative to Table 19
- Changed values in the text under Effects Analysis for each alternative to reflect the total deferred maintenance costs for both roads and trails in the NFTS.
- Adjusted Table 21 to reflect new maintenance cost values from Table 19.

In the Recreation Section,

- In Tables 37 and 38 (page 142 of the FEIS) we added Modified Alternative 5 to the Tables.
- In the same two Tables, we changed the numbers from a raking system (best to worst) to a relative rating system (how good they were for the resource or opportunity)
- We carried these ratings into Summary Table 2 on page xxv.

3.2 Transportation Facilities

Changes between the FEIS and this Errata

Annual and deferred maintenance calculations were corrected. Values for motorized trail maintenance were added to reflect changes in maintenance costs for the entire National Forest Transportation System including both roads and motorized trails. Table 19 was enlarged and corrected to reflect these changes.

Changes Between DEIS and FEIS

Safety analyses for proposed mixed use segments of ML3 and ML4 roads were completed and are incorporated into the FEIS. The section was restructured to better mirror the regional template for transportation and engineering. In addition, clarifying language was added throughout the section to better explain concepts and proposals. Finally, maintenance and other costs are restructured to better portray the effect on these for each of the alternatives.

Introduction

The National Forest Transportation System (**NFTS**) consists of roads, trails, and airfields. The NFTS provides for protection, development, management, and utilization of resources on the national forests. There are other roads and trails existing on the Forest that are not currently part of the NFTS Changes to NFTS must take into account the need to provide for both adequate public safety and adequate maintenance of any roads and trails that will be designated for wheeled motor vehicle use. The analysis in this section focuses primarily on these two features of the NFTS.

The goal of the NFTS is to provide public and administrative access to Lassen N. F. by providing a safe, economical, and efficient system of roads and trails, while minimizing effects to the local environment. Planning and providing for well-designed access enhances opportunities for public use and enjoyment of the forest.

The NFTS that currently serves motor vehicle users on Lassen NF consists of approximately 3,278 miles of NFS roads and approximately 57 miles of motorized NFS trails. An additional 1,060 miles of unauthorized routes exist upon the landscape. These routes are currently open and available for public use under a temporary forest order prohibiting cross-country travel and travel outside of existing, identified routes. This section primarily addresses the road network and access. See Chapter 3: Recreation Resources, for a detailed discussion of trails.

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

Travel Management Rule

On November 9, 2005, the Forest Service published a new regulation entitled, *Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule* (**Travel Management Rule**), which modified motor vehicle use direction for NFS lands under 36 CFR Sections 212, 251, 261, and eliminated 36 CFR Section 295. The rule provides guidance to the Forest Service on designation and management of motor vehicle use on NFS lands, and requires formal designation of roads, trails, and areas open to motor vehicle use on each national forest and grassland (USDA FS 2005h).

Other Regulations

Other direction directly influencing road management includes Federal and State laws, the 1966 Memorandum of Understanding (**MOU**) between Federal Highways Administration (**FHWA**) and the Forest Service, Forest Service manuals and handbooks in the 7000 series, and Forest Plan direction.

Forest Service Manual Sections 2350 and 7700 contains agency policy for management of the National Forest Transportation System. Agency policy requires the development of trail management objectives (TMO's) and road management objectives (RMO's). The TMO's and RMO's document the purpose for each trail or road and follow the direction in Forest Service Handbook (**FSH**) 2309.18, Trails Management Handbook (FSH 1991b), when developing, reconstructing, or maintaining trails.

The purpose for the trail or road sets the parameters for maintenance standards needed to meet user needs, resource protection and public safety. Forest Service Handbook 7709.59 describe the maintenance management system the Forest Service uses and the maintenance standards needed to meet road management objectives (RMO's) for the road system, with emphasis on public safety (FSH 2009b, 2009a). The California Vehicle Code (CVC) regulates the use of motor vehicles in California, including motor vehicles used on the national forests. The CVC sets safety standards for motor vehicles and vehicle operators. It defines the safety equipment needed for highway-legal and non-highway-legal vehicles. It also defines the roads and trails where non-highway-legal motor vehicles may be operated.

Regional Forester's letters, file code 7700/2350, dated 08/26/06, 06/20/07, 1/13/09, and 2/13/09 contain procedures national forests in the Pacific Southwest Region will use to evaluate safety aspects of public travel on roads when proposed changes to the NFTS will allow both highway-legal and non-highway-legal traffic on a road (MMU - motorized mixed use).

In the October 14, 1975 Memorandum of Understanding (MOU) with the FHWA, the Forest Service agreed to manage a subset of NFTS roads defined as "public roads"

(maintained for four wheel passenger car vehicles) as directed in FSM 7730.5 with a definition of “safety requirements” as directed in FSM 7733. These roads are maintained with a Forest Service schedule and frequency assigned as ML 3, 4, and 5. These roads are managed as highways in accordance with the CVC. The Forest Service and FHWA agree that while these NFTS roads are not “public roads” per se, as for example a deeded interstate highway is, most are “open to public travel.” “Open to public travel” defines a NFTS road as available for use by the public, except during scheduled periods, extreme weather, or emergency conditions, and passable by four-wheeled standard passenger cars.

Within the context of annual funding (affordability), resource management activity, and priorities established by Congress and the Administration, the Forest Service endeavors to provide a safe experience for users traveling on NFS roads and trails. It is always the ultimate responsibility of users to drive safely and follow all applicable laws. The following publications specifically address the design of NFS roads and NFS trails:

AASHTO: Geometric Design of Very Low-Volume Local Roads (AASHTO 2001)

USDA Forest Service EM-7100-15: Sign and Poster Guidelines (USDA FS 2005d)

USDA Forest Service Forest Service Manual (**FSM**) 7700: Transportation System (FSM 2009b)

USDA Forest Service Forest Service Handbook (**FSH**) 7709.55: Transportation Planning Handbook (FSH 1992)

USDA Forest Service FSH 7709.56: Road Preconstruction Handbook (FSH 2003)

USDA Forest Service FSH 2309.18: Trails Management Handbook (FSH 1991b)

Effects Analysis Methodology

Transportation Specific Assumptions:

Any motor vehicle use authorized by State law is occurring on the NFTS unless there are forest-specific prohibitions.

Motor vehicle use by special use permit or other permitted activities are outside the scope of this proposal (fuel wood gathering, dispersed camping, motorized OHV events, recreation residences, mining activities, grazing, timber sales, etc.)

High-clearance vehicles (4WD, etc.), ATV and motorcycles represent the vehicle classes most likely to use motorized trails. Low clearance, highway-legal vehicles are not prohibited on motorized trails but are not as likely to use them.

Some maintenance costs will be incurred by the Forest Service for any route open to motor vehicle use by the public.

State laws pertaining to motor vehicle operators set the safety standards for drivers and other users of the NFTS.

Public Safety - 36CFR212.55 requires public safety be considered when designating roads, trails and areas for motor vehicle use. The proposed additions and changes to the NFTS have been evaluated for the effects on public safety

Transportation System Affordability - 36CFR212.55 requires consideration of the need for maintenance and administration of the designated NFTS. Costs for the NFTS address needed maintenance work that has not been completed for various reasons (deferred maintenance) and maintenance that should be performed routinely to maintain the facility at its current standard and serviceability (annual maintenance). In addition there may be additional costs associated with proposed changes to the NFTS (implementation costs). These may include costs for improvements to unauthorized routes added to the NFTS, costs associated with addressing public safety when altering the use pattern on existing roads, and costs for seasonally closing routes to restrict motor vehicle use.

Specific Methodology

Approximately 4,400 segments comprising 1,089 miles of unauthorized routes currently exist on Lassen NF. During public feedback on the NOI, the public commented specifically on segments totaling 768 miles of unauthorized routes. These routes were analyzed for possible addition to the FTS in a separate Travel Analysis Process (TAP). An interdisciplinary team examined these route segments for resource risks and recreation opportunities. Team members reviewed the condition of each route and assessed its conformance with the standard and guideline indicators associated with their area of expertise. Resource area specialists used field investigation, GIS data review, and resource area road-logs/field reports to determine their recommendation for each route. Ultimately the forest inventory of unauthorized routes will be reduced by designating some routes as NFTS roads or NFTS motorized trails and decommissioning/rehabilitating the routes that are not selected for designation. The Route Designation process is the first step in accomplishing this goal.

A main consideration when designing and maintaining road systems is safety. Considerations for road use and design are based on modes of travel, amount and variety of use, geography, topography, soils, and weather conditions. Signs, gates, turnouts, surfacing, road widening, road realignment, speed limits, clearing, parallel routes for different modes of travel, and allowing only certain modes of travel (e.g., highway-legal vehicles, OHVs, non-motorized travel) are all ways to mitigate for safety.

The following safety sideboards have been developed to aid in determining feasibility of changing use on specific NFS roads, NFS trails, and Unauthorized Routes on the Lassen NF:

Changing roads managed and maintained for passenger cars to roads managed and maintained for high-clearance vehicles (i.e. ML3→ML2): This change may reduce the

likelihood of speed-caused accidents between vehicles; however, it may include hazards to drivers from roadway rocks, wind-thrown trees and danger trees, access and travel time to and from medical treatment facilities, etc.

Roads managed and maintained for high-clearance vehicles changed to managed and maintained for passenger cars (i.e. ML2→ML3): Changes might affect public safety such as increased speeds, ensuring compliant MUTCD road signing, and educating drivers.

Roads changed to Motorized Trails: The use of non-highway-legal vehicles must consistent with the current Forest Plan and the Recreational Opportunity Spectrum (ROS) classification for the area.

Adding unauthorized routes to the NFTS: The route or system of routes added should provide for a quality recreational riding experience, be compatible with Forest Plan direction, and either add to or enhance the opportunities for motorized recreation use on the forest.

Motorized Mixed Use: The California Vehicle Code (CVC) requires that motor vehicles operated on public highways be highway-legal and be operated by licensed drivers. The CVC allows the operation of non highway-legal vehicles operated by unlicensed drivers on roughly graded forest roads and logging roads. The Lassen NF considers roads maintained for high-clearance vehicles (Forest Service maintenance schedule/level of ML 2) to be roughly graded. Operation of OHV's on these roads is consistent with State law. Roads maintained for passenger cars are managed more aggressively to achieve a higher road standard. Forest Service maintenance schedules of ML 3, ML 4, and ML 5 apply to these roads and they are not considered to be "roughly graded" or logging roads. Thus, roads managed in this fashion are considered highways in accordance with the State definition. Motorized mixed use is allowed on short (<3 mile in length) segments on these types of roads provided an engineering safety analysis supports mixed use.

Motorized Mixed Use

In the Travel Management Rule supplementary information, the agency acknowledged the potential need to mix highway-legal and non-highway-legal traffic on some Forest Service ML 3 and ML 4 roads, and directed evaluation of safety and engineering considerations for motorized mixed use. Engineering analyses reports are used to display consequences of these potential designations. The publication, Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads (USDA FS 2005a) and the Forest Service Handbook (FSH 1992:Chapter 30) outline safety risk analysis procedures when considering authorizing motorized mixed use.

The Lassen NF conducted engineering analyses for motorized mixed use on certain Forest Service ML 3 and 4 road segments. Table G-3 in Appendix G – "Proposed

Passenger Car Roads Analyzed for Motorized Mixed Use" is a record of the roads currently managed to high standard that were analyzed in this project to assess the feasibility of allowing use by both highway-legal and non highway-legal vehicles.
Often, these segments are on arterial and collector roads, and thus the main public access routes to the forest. Engineering analyses evaluated the probability of a crash and the severity of a crash.

The crash potential ratings were based on roadway factors, (e.g., driving speeds, closing speeds, emergency situation vehicle maneuvering zones - road shoulders-adjacent areas to road shoulders), surface type and condition, sight distance and vegetation encroachment, road alignment (horizontal and vertical curves), traffic volume and type, and whether operators are required to be licensed or certified.

Crash severity ratings were based on items such as roadside conditions (e.g., natural ground slopes, slope and height of embankments, and large unyielding roadside features), speed, and traffic types (i.e., the larger the differences in vehicle sizes, the greater the crash severity).

Lassen NF conducted engineering field review for motorized mixed use on approximately 85 miles of Forest Service ML 3-4 roads currently open to highway-legal vehicles. These analyses are documented as engineering reports, and will be used to inform Forest Supervisor decisions involving motorized mixed use.

Affected Environment and Environmental Consequences

Affected Environment

Development History and Current Need

The grade of terrain and its influence on ease of travel has affected the choice of travel paths historically and continues to be a primary influence today. The gentlest grades occur along rivers and streams with an average gradient of approximately two percent. Grade is the historical reason that game trails followed rivers and streams, which became indigenous peoples' trade trails and routes, which then became immigrant trails and wagon roads, and later became modern transportation routes such as railroad grades and forest roads. In the latter half of the 20th century, heavy construction and snow removal equipment were designed and built. This enabled the construction and maintenance of cut-and-fill roads, away from the gentle river grades and up the sides and ridges of the Cascade and Sierra Nevada Mountains.

Historical road access needs, such as for gold mining, livestock grazing and production, farm products transport, and timber transport, from forest areas ultimately to metropolitan centers, were the impetus for construction of the present forest, county, and state transportation systems that exist today. Recent surveys (2000-2005) conducted by Lassen NF indicate that the current primary use of the NFTS is to facilitate the economic extraction

of timber products, which reduces concentrations of hazardous forest fuels, as directed by the Herger-Feinstein Quincy Library Group Forest Recovery Act (**HFQLG**). The secondary use of the NFTS is recreation activity participation, discussed in Chapter 3: Recreation Resources. The tertiary NFTS use is resource area management access and fire protection and suppression activities.

Access

The reduction of hazardous forest fuels under HFQLG, as discussed in Chapter 3: Forest Vegetation, requires an efficient road network for forest ingress, access, and egress (USDA FS 2003). Roads for direct project access may exist on either a short- or long-term basis, depending on immediate project needs and future administrative needs. Many terminal-type project roads are temporary and are decommissioned and rehabilitated once management activities are completed.

Livestock movement and access to forest products such as firewood similarly require an efficient road network, though on a much smaller scale. National Forest System Roads provide access to private in-holdings and research and development areas, including the three experimental forests on or adjacent to Lassen NF (e.g., Blacks and Swain Mountain, managed by the Pacific Southwest Research Station, and LaTour State Forest managed by the California Department of Forestry). In some instances permits are sometimes issued to individuals and companies for NFS road use to provide access to their approved activities. Finally, the Forest Service and other agencies, such as the California Department of Forestry and Fire Protection, Bureau of Land Management, California Department of Fish and Game, and the counties of Lassen, Shasta, Plumas, Modoc, Siskiyou, Butte, and Tehama, use NFTS roads administratively.

During project initiation (e.g., timber, livestock, or energy), the benefiting commercial operator may construct and maintain the roads needed to access the affected project area. This cooperative arrangement applies only during the construction and operational phases of the project. Many users are authorized to maintain or upgrade NFTS roads in this manner to accommodate their specific needs.

Recreation

This document section considers public access to recreational facilities and general forest areas for highway-legal motor vehicles. Forest access is critical for accommodating recreational uses. The NFTS serves two main types of recreation. One type is destination recreation; the roads provide access to a drop-off point where the recreational activity occurs, begins or becomes accessible by foot (such as a trailhead, scenic view, or fishing, picnic, or camping site). The other type is road-based recreation; when visitors use roads for hiking, biking, horseback riding, pleasure driving in highway-legal vehicles, motorcycling, ATV riding, snowmobiling, and cross-country skiing on groomed trails.

Within the realm of destination recreation access, another aspect of the road network that the Forest is working through with private timberland owners is that of road easement agreements. The NFTS road system is a seamless transportation network across the Forest landscape which encompasses public and private property. Road use agreements and easements are common, are utilized by both forest service and private timberland parties, and are beneficial in a myriad of ways including motorized recreation access. As the initial MVUM – motor vehicle use map is created, and as future iterations are developed, the forest service, private companies, and the public will continue to develop a cooperative and comprehensive plan of OHV forest use that respects private land owners and their associated easement agreements.

A second analysis component of forest access is whether to authorize mixed vehicle classes of highway- and non-highway-legal vehicles to share certain NFTS roads open to public travel and maintained for passenger car traffic. California Vehicle Code prohibits non-highway-legal motor vehicle use on public roadways maintained for passenger cars, such as Forest Service ML 3–5 roads open to public travel.

Certain NFTS roads have seasonal or year-long use restrictions to protect resources. Some restrictions are directed at protecting the road infrastructure. Un-surfaced roads with soils prone to erosion can be damaged during spring precipitation events, and are prone to rutting during early fall snows. Other road access restrictions to specific geographical portions of the Forest provide an annual safe-zone for wildlife during mating-season/birthing season. Other biologically sensitive areas may be restricted during critical time-periods such as extreme fire danger during fire season.

The MVUM will identify legal motor vehicle uses on Lassen NF, addressing seasonal or yearlong resource protection motor vehicle restrictions. If needed, the Forest Supervisor may issue emergency or temporary forest orders restricting access to protect users and/or resources. As discussed above, such restrictions are commonly implemented to respond to high fire danger and fire suppression, high water, extreme weather conditions, and during eradication of forest pests.

According to Lassen Forest Recreation Use Surveys in 2000 and 2005 (USDA FS 2001a, 2006b), the demographics of drivers on mountain roads in Lassen NF have changed during the last 20 years. Today, many forest drivers are from urban and metropolitan areas, are unfamiliar with mountainous roads, and are therefore less aware of the risks common on different types of forest roads.

Technological advancements in the capabilities of vehicles used to travel forest roads have resulted in increases in the number and variety of vehicles on NFS roads. With these changes come associated safety concerns. Advancements in OHVs allow visitors to travel to more challenging areas with less operating skill than needed in the past. Today visitors driving standard passenger cars may encounter full-size four-wheel-drive vehicles, ATVs, motorcycles, mountain bikes, and/or large commercial trucks, all on the same road.

As described in preceding sections, the NFTS was developed primarily for timber removal, mining access, livestock grazing, and inter-community or intra-regional travel. The existing road network is an inherited system that was physically designed for industrial use by large and slow commercial vehicles. The recreational vehicles in use today did not exist when the roads were constructed. Therefore, some segments of the road network are being force-fitted to accept vehicles and uses they were not designed for (FSH 2003). In essence, much of the road system was not originally designed to safely accommodate the many types of motor vehicles that are used today to access and travel through Lassen NF.

The mission of the agency has evolved during the past 25 years to include an increasing emphasis in motorized recreation. With this change in use of the transportation system, safety of the motoring public is a priority. The challenge is to keep users of the road system safe when they are no longer driving--for example--dual-sport 90cc motorcycles and surplus military Jeep 4x4 trucks, but are now riding motorcycles with 125 horsepower/1.5 feet of suspension and sport utility trucks that can drive off-road at 60+ MPH. Safety must be a principal factor to consider when deciding what types of motorized use to authorize, and where to authorize the various types of motorized use.

Seasonal of Use

Roughly surfaced roads located in soils prone to erosion can be damaged during wet weather, increasing the potential for rutting, deterioration of the road bed and sedimentation. Therefore, certain NFTS roads have seasonal restrictions to protect soil and water resources and the road infrastructure. Other restrictions limit disturbances to wildlife and other sensitive areas during critical nesting or migration periods.

The MVUM will identify legal motor vehicle uses on Lassen NF, including seasonal restrictions. If needed, the Forest Supervisor may also issue emergency forest orders restricting access to protect users and/or resources. Such restrictions are commonly imposed in response to high fire danger, ongoing fire suppression efforts, high water levels, and extreme weather conditions.

Road Network

Access to Lassen NF begins with two-lane state highways and interconnecting county two-lane roads. There are no U.S. or interstate highways within Lassen NF. State Highways 36, 44, and 299 are the primary east–west routes across Lassen NF. State Highways 89 and 32 are the primary north–south routes across Lassen NF. Due to the ease of access and overall demographic changes, such as population increases in the Sacramento, San Francisco Bay, and Reno areas, several resort-type seasonal-influx communities have grown rapidly along the Highway 36 corridor and along forest roads that connect to Highways 36, 44, and 89. These routes serve the local population for daily commutes and

forest access, and are continually upgraded by the State (CALTRANS) to meet the increasing demand.

Numerous county roads are connected to the state highways. Many of these roads have been on the landscape since first constructed by European settlers. Some county roads lead directly into Lassen NF. Roads under county jurisdiction are usually designed to accommodate passenger cars, but may not always be graveled or hard-surfaced. Roads crossing NFS lands may fall under several jurisdictions. The roads located within the national forest are predominately under Forest Service jurisdiction (NFTS roads). However, as noted above, the forest also contains interconnected county, state, and private roads. To keep track of the myriad of jurisdictional responsibilities, the forest maintains an Access Management/INFRA database inventory of all roads that cross the forest and their jurisdiction and maintenance responsibilities. National Forest Transportation System roads are necessary for the administration, utilization, and management of NFS lands. The counties, State, United States Department of Interior (**USDI**) Bureau of Land Management (**BLM**), and private landowners have received rights-of-way, or in some cases obtained jurisdiction, over some of the roads or road segments on NFS lands. Formal agreements of this nature are not affected by this project.

Functional Class

The NFTS roads are divided into three classes by function. These classes are arterials, collectors, and local roads. The road network can be compared to the structure of a tree. The arterial is akin to the trunk of a tree, the collectors are similar to the intermediate branches leading from the trunk, and the more numerous and less-developed local roads are similar in concept to the smallest branches of the tree.

Arterials are the main trunk roads, designed to handle higher volumes of traffic (ADT – average daily traffic for the NFTS as defined by FSM/FSH are much lower than FHWA low-volume traffic definition of under 400 vehicles per day) and to provide access to key areas of the forest. Some may connect a State highway, a forest community or major watershed drainage system to another. These roads are generally held to higher maintenance standards. Collectors are intermediate branch roads that collect traffic from local roads and connect local roads to arterials. Collectors vary in both volume of traffic and maintenance standard. Local roads are often terminal facilities and were established to service end-of-road needs such as camping, trailhead access and general forest access. Local roads are generally held to lower maintenance standards and receive the lowest volume of traffic. The bulk of the NFTS road network is comprised of local class roads followed by collectors and then arterials.

Administrative Roads

Administrative roads are, by definition, managed for administrative access to the forest by the agency. Maintenance levels for these roads may range from Forest Service ML 2–5, depending on operational needs. These roads may have specified access-related easements or reservations across private lands for Forest Service needs. Administrative roads may also be used by timber purchasers and for access to private land when expressly authorized by the agency. Administrative roads are generally not open to the public.

Unauthorized Routes

Referred to as “unauthorized” or “unclassified”, unauthorized routes are non-permitted roads and trails on NFS lands that are neither managed nor recognized by the Forest Service as part of the NFTS. Field observations indicate that off-road recreation, including woodcutting and hunting/fishing access, has generated only a small portion of the unauthorized routes on Lassen NF. The majority of these unauthorized routes were originally established by the Forest Service to serve a short-term land management objective which was to be followed by an immediate or scheduled decommissioning of the road. This did not always occur as planned. Examples are former timber sale temporary roads, grazing allotment access routes, mining access routes, and land exchange areas that had previously been roaded and used by private owners.

Temporary timber sale roads are generally used for one season, and do not adhere to NFTS road engineering standards (grade, density compaction, drainage requirements). Temporary roads which were not decommissioned with the timber sale or associated vegetation management project become unauthorized routes and tend to be problematic as annual producers of sediment and agents of resource damage. These routes are commonly single- and two-track travel ways, nine feet wide or less, relatively short – perhaps less than one-quarter mile long – and/or overgrown with vegetation. Over the years, Ranger District efforts have worked through project NEPA protocol to decommission or rehabilitate many of these routes, especially in places of identified resource damage or sedimentation into impaired watersheds or anadromous fisheries.

Unauthorized routes are neither NFTS roads nor NFTS trails, and are not included in the forest transportation atlas. According to the current Lassen NF inventory and Unauthorized Route Travel Analysis (USDA FS PSW Region 2008c), there are currently 1,089 miles of unauthorized routes across the Lassen National Forest.

Access to private property in holdings may be served by duplicate roads/routes, including existing unauthorized routes. These routes may not be added and/or designated as reasonable access may already be provided over the designated NFTS system roads or permitted non-system routes. Commercial road-use permits are utilized for commercial use of a NFTS road and special-use permits may be used for the use of an unauthorized route. During the special-use period the route would not be considered “unauthorized”.

Maintenance of NFTS Roads - Maintenance Levels (ML)

NFS roads are planned, designed and constructed for different modes of travel. These planned modes of travel require an associated maintenance schedule and maintenance intensity which is determined by the planned use, (e.g. fuel reduction projects, recreation residence access), the road management objectives, and road design components, (e.g., design speeds, inter-visible turnouts), for each specific road.

The NFTS road system receives annual and scheduled maintenance with associated internal Forest Service Maintenance Level (ML) designations listed numerically as one through five (1–5) as shown in Table 12. Roads have an Objective ML, which indicates the long-term planned maintenance strategy for that road, and an Operational ML, which is the current physical condition of the road. Operational and objective maintenance levels may or may not be the same for a given road. In this FEIS, maintenance levels listed for roads are their assigned Objective ML unless otherwise noted. A summary of road miles in each maintenance level is presented in Table 13.

The Lassen NF is relatively dry (basin and range) and flat (volcanic) topography that dominates the Eagle Lake and Hat Creek Ranger Districts with the exception of the Hat Creek Rim (strike-slip fault) and the Pit River channel. Roads on these Districts that receive annual maintenance and/or project pre-haul road maintenance tend to weather-out less and at a slower-rate of erosion and are typically at a higher operational level. This fact is reflected in a higher numerical operational road maintenance level than their assigned planned objective maintenance level.

On the Almanor Ranger District, the topography is quite varied, as is the geology (the confluence of the Cascade volcanic range with the Sierra granitic range). The associated mountainous terrain and terrenes are vertically variable with an associated increase in precipitation (snow and rain) and road weathering. The operational and objective maintenance levels are usually in agreement (e.g., an ML 2 looks like an ML 2, and an ML 3 will require regular maintenance to remain an ML 3).

Currently, NFTS roads are designed by Forest Service engineers and often constructed with the private capital of independent contractors. Just as in cities across this country, private developers use their capital to construct the city streets to enable access to home subdivisions and commercial sites/factories. Once the contractor builds the streets to designed engineering standards, cities are willing to take public ownership to maintain these streets, all of which allows the city to grow and prosper. The same public/private methodology is utilized to construct many roads on National Forests.

Maintenance Level 1 roads are managed for intermittent use and can be allowed to deteriorate and return to a more natural vegetative state. These roads can be put into service by being brought to an ML 2–5 standard during a timber sale or other intermittent project need, then later taken out of service and put back into long term “storage” and ML 1 status. The roads are kept in storage until a subsequent need arises. While in storage, they

are an ML 1 category, which allows no motor vehicle access. Non-motorized access, such as horseback riding, bicycling and hiking, may occur on ML 1 roads while they are in storage, however, the Forest Service will generally not maintain these ML 1 roads for such uses.

Maintenance Level 2 roads are generally local and managed for relatively slow rates of speed with low speed design features (5-15 mph) and advised for travel by high-clearance vehicles only. Maintenance Level 2 roads are considered single-purpose roads. Traffic is normally light, usually consisting of administrative, permitted, dispersed recreation, or other specialized uses. These roads provide for the greatest extent of dispersed recreation access on the forest and account for 2,568 miles, or 72 percent of the existing Lassen NFTS road network. Lassen NF completed a Travel Analysis on its ML 1-2 road system in April 2008.

Maintenance Level 3, 4, and 5 roads account for 710 miles of road on Lassen NF. These roads form the backbone arterial and collector system that enables relatively fast (25–55 mph) efficient transportation across the forest. The Forest completed a Roads Analysis on its ML 3–5 road system in July 2006 and it was accepted and signed by the Forest Supervisor in January 2007.

Table 12 National Forest System Road Maintenance Level (ML) Attributes on Lassen NF

Maintenance Level	Attributes
5	Subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD). Navigable/Passable by passenger car. Highest traffic volume and/or speeds. Typically connect to state and county roads. Bridges/Culverts provide drainage. Usually arterial and collector. May include some developed recreation roads. Usually paved or chip-sealed.
4	Subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD). Moderate traffic volume and speeds. Navigable/Passable by passenger car. Typically connect to county/state roads. Bridges/Culverts provide drainage. Usually collector or arterial. May include some developed recreation roads. Usually provide crushed-rock or volcanic cinder road surfacing.
3	Subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD). Moderate/low traffic volume. Navigable/Passable by passenger car. Typically connect to arterial and collector roads. A combination of dips and culverts provide drainage May include some dispersed recreation roads. Potholing or wash-boarding may occur. May provide various road surfacing to include native soil, crushed rock, cinder.

Maintenance Level	Attributes
2	Not subject to the requirements of the Highway Safety Act. Low traffic volume and moderate to low speeds. Navigable/Passable by high-clearance vehicles. Not maintained for passenger cars. Typically local roads. Typically connect to collectors and other local roads. Dips are the preferred drainage treatment, culverts common Surface smoothness is not a consideration.
1	Not subject to the requirements of the Highway Safety Act. Motor vehicle traffic is restricted, including administrative traffic. Physically blocked or entrance is disguised. Maintenance conducted to minimize resource impacts. Aside from a condition survey, no maintenance may be required if there is no likelihood of resource damage.

Source: USDA FS 2005b.

Annual and Deferred Maintenance Costs: Roads

Annual maintenance involves the regular, cyclical maintenance required to keep a road functioning in accordance with the assigned maintenance level. Annual maintenance needs for ML 2 roads average $2,094 per mile. Maintenance for these low standard roads typically involves addressing resource concerns, including drainage. User-comfort is not a consideration.

Table 13 Current Miles of National Forest System Roads

Maintenance Level	Miles
5	17
4	149
3	544
2	2,568
1	280

Source: Current INFRA database inventory. Note: Includes roads where right-of-way may cross non-NFS lands.

Annual maintenance needs for ML 3 roads average $12,806 per mile, and ML 4 roads average $15,915 per mile. Costs are higher because these roads tend to be wider, require a higher standard of maintenance (road number signing, sight-distance vegetation clearing, cleaning road drainage culverts, cleaning drainage catch basins, cleaning culvert outlets, road traffic signing, cleaning drainage ditches, surface blading and road shaping, aggregate replacement), and usually have smooth aggregate surfacing for passenger car vehicle use and comfort. Lassen NF completes an average of approximately 318 miles of ML 3+ road maintenance per year.

Deferred maintenance tasks are the cumulative total of all annual maintenance tasks that are not accomplished as needed or scheduled. Deferred maintenance costs for ML 3 and 4 roads currently average $45,738 to $82,957 per mile. If annual maintenance funds and accomplishments do not keep up with the required tasks, deferred maintenance backlogs

continue to grow. Smaller tasks not accomplished over time may result in major reconstruction needs.

Annual and deferred maintenance costs reflect necessary expenditures to keep roads at the Road Management Objective (RMO) standard. Improvement costs are also necessary when Lassen NF needs to upgrade or enhance a road. These improvements include informational, regulatory or warning signs; aggregate surfacing or hardening of the road surface; adding turnouts; replacing old culverts with arch culverts to enhance fisheries; road widening; road realignments; and adding safety features such as guardrails, etc. Lassen NF also monitors road conditions and safety by conducting engineering analyses and road condition surveys.

Additional Maintenance of NFTS Roads/Access to – NFRTA (forest roads and trails act), Cooperative Road Rights of Way, Construction and Use Agreements, and In holdings.

The Forest Service implements the authority found in the NFRTA – National Forest Roads and Trails Act of October 13, 1964 as amended (16 USC 532-538, Pub. L. 88-657) and FSM 7705/7732 which provides that commercial users perform maintenance of roads and a variety of easements made necessary by their use.

Some NFS roads are cooperatively planned, designed and constructed for different modes of commercial and public travel. These planned modes of travel require an associated set of regional agreements with private landholders, implementation of an associated set of the CFR – Code of Federal Regulations, and an associated set of FSM - Forest Service Manuals and FSH - Forest Service Handbooks. These agreements are exempt from the MVUM – Motor Vehicle Use Map requirements.

A substantial amount of Lassen NFTS road maintenance (between 2001 – 2005 the Forest had prepared road maintenance sale packages on 575 miles of ML 3-5 roads) is accomplished annually in this manner.

Costs for Trail Maintenance

Fifty-seven miles of motorized NFS trails are included in the project area. Most of these trails are located on the Almanor RD. Motorized trails are typically managed in a “rougher is better” condition to provide users with a challenging 4x4 driving experience. Maintenance is therefore typically limited to addressing emerging or ongoing resource concerns. The only other basic maintenance on these trails is roadside brushing to accommodate planned vehicle traffic.

General costs for various types of motorized trail maintenance were derived from national USDA Forest Service Enterprise Team data for motorized trail maintenance, and the resulting costs per mile are listed below:

Light maintenance	$2,500/mile

Heavy maintenance	$6,000/mile
New construction	$6,000 – $25,000/mile

Maintenance of the motorized trail system is only one cost associated with the trails program. Other costs include planning, trail system design and construction, management, and volunteer program coordination, tracking, and reporting.

The annual forest budget includes an allocation specifically for the maintenance and operation of forest trails. Motorized NFS trails, however, are a very small component of the entire Lassen NF trail system. Table 14 shows the recent budget allocations received by the forest to accomplish work on all types of forest trails.

Table 14 Funding allocated to Lassen NF for trails construction and maintenance (CMTL) (all trails – motorized and non-motorized)

Fiscal Year	Amount Allocated
2007	$59,000
2008	$133,000
2009	$141,000

Source: Lassen National Forest Work Plan.

Unauthorized Routes

After the scoping period for this project, scoping comments went through a formal content analysis and the resulting report was utilized for a GIS-based roads analysis of the 768 miles of unauthorized routes for which the public provided specific comments. These routes were important components of the Forest ML 1-2 TAP and the associated data and recommendations can be found in the TAP document, which is included in the project analysis, file/planning record.

The rating data for Lassen NF unauthorized routes, was documented and includes interdisciplinary analyses and recommendations for specific route segments. Unauthorized routes considered for addition to the NFTS were examined on the ground and reviewed to ensure were needed, and are in good enough condition to be added to the NFTS as either an ML 2 road or a motorized NFTS trail. Table 13 shows the current miles of Lassen National Forest Transportation System roads by programmatic maintenance level. Although only ML 2 roads are available for OHV use, these currently represent 72% of the system's mileage.

Current projected deferred maintenance for roads on the Lassen National Forest for FY 2009 is $111,695,400. This figure can be used as an indicator of maintenance needs for the existing road system and how proposed changes would affect the deferred maintenance backlog.

Forestwide annual average maintenance costs per-mile by operational maintenance level (ML) were estimated as inTable 4. These costs estimates were applied across the NFTS to calculate the total maintenance expense associated with each alternative.

Table 15 Current Operational Maintenance Levels and Associated Annual Maintenance Costs/Mile

Operational Maintenance Level	Annual Maintenance Cost per Mile
1	$500
2	$2,094
3	$12,806
4	$15,912
5	$7,691
Motorized Trail	$2,600 - $6,000

Source: Current INFRA database inventory. Note: Includes roads where right-of-way may cross non-NFS lands.

Direct Costs

Each year, Lassen NF is responsible for maintaining its NFTS roads. Table 16 displays number of miles accomplished of ML 3+ for 2002–2006. Roads require various levels of maintenance and investment to remain functional. These roads have annual maintenance such as surface grading, ditch cleaning, culvert cleaning, dust abatement, gravel replacement, and roadside brushing/clearing. The NFTS roads also have deferred maintenance expenses, the amortized regular-maintenance which was not completed. If a road is scheduled for substantial road maintenance, or if it is delinquent, it is listed in the Forest Service infrastructure database known as INFRA, as a deferred maintenance item. Forest road maintenance tracking determines listing as planned or overdue.

Table 16 Road work accomplishments by year

Year	Road Maintenance ML 3+ (miles)
2002	483
2003	368
2004	325
2005	141
2006	275
5 Year Total	**1,592**
5 Year Average	**318**

Source: USDA FS PSW Region 2006d.

Lassen NF receives funding each year to cover costs of maintaining the NFTS, and for program support, such as transportation planning, transportation system design and construction, transportation management and operation, coordination with local counties, tracking, and reporting. Table 17 reflects the funding levels for the past five years in this

funding category (CMRD). These allocations for 2008 are slightly higher than in 2007. Because the funding increase is offset by increased operating costs, the increase in 2008 is negligible. A flat to slightly decreasing funding trend is anticipated to continue at least through Fiscal Year 2012.

Table 17 CMRD funding – annual construction and maintenance of roads

Fiscal Year	Amount Allocated
2004	$938,000
2005	$1,255,000
2006	$870,100
2007	$889,800
2008	$1,089,000
5 Year Average	**$1,008,400**

Source: Lassen National Forest Financial Management Department.

Lassen NF has Road Use Agreements with each of the counties within its boundary. These agreements allow Lassen NF and counties to cooperatively share in maintenance and reconstruction of NFS roads and county roads. A limited amount of additional funding comes from commercial road use permits and deposit accounts from road users.

Other roads are maintained/funded under project work such as in hazardous forest fuels reduction treatments and timber sales. The type, location, and amount of project work varies from year to year. Certain roads are managed under the special use permit program, which can place maintenance responsibilities on the holder of the special use permit.

In addition to the above-mentioned long-term costs, there would also be an immediate implementation cost associated with the ML 3+ roads designated for motorized mixed use in this alternative. These motorized mixed use segments would cost approximately $3500-$5000 per segment for signage. Adding unauthorized routes to the system would also have a cost. Accounting for route identification signing, Forest transportation atlas updates, and obtaining necessary agreements for those routes within public road rights-of-way managed by other jurisdictions, an estimated implementation cost of approximately $3000 per mile would be associated with these additional routes. Once added to the system, these routes would also require maintenance and therefore contribute to the applicable annual and deferred maintenance expenses.

Environmental Consequences

Direct and Indirect Effects

Alternative 1– No action

Measurement Indicator 1 – Public Safety

The current Forest transportation system was designed to provide for administrative and public access to NFS lands. It was not specifically designed to provide non-highway-legal

vehicle opportunities. If no action is taken, 2,568 miles of NFS roads remain available for non-highway-legal vehicles; however, the situation does not address improving safe access for these types of vehicles across the Forest. In addition, the unauthorized routes would not be managed or addressed, and any existing safety concerns with these routes and impacts to the adjacent managed system would continue to exist. Continued use of unmanaged routes would also likely have resource impacts requiring future rehabilitation efforts.

Measurement Indicator 2 – Transportation System Affordability

By not adding routes to the system, nor making any changes to the existing FTS, no additional costs would be incurred associated with implementation and increasing maintenance responsibilities. The costs associated with repairing resource damage associated with unmanaged use under Alternative 1 can be anticipated but not quantified.

No Forest-wide tool would exist to display where motor vehicles can be legally operated on NFS roads and NFS trails.

Alternative 2 – Proposed Action

Measurement Indicator 1 – Public Safety

Road Maintenance Expense: This alternative proposes the addition of unauthorized routes as either motorized trails or ML 2 roads. None of the routes added to the system would have safety concerns because the roughly graded condition of ML 2 roads and motorized trials accommodates OHV use in a safe manner. However, changes to improve and accommodate current uses and needs would improve safe public motorized opportunities on the Forest. In general, providing connector opportunities by adding unauthorized routes to the system would improve access and safety. Safety concerns along the designated system would be managed when appropriate, and use on those unauthorized routes not being managed by the Forest would be prohibited.

Motorized Mixed Use: Thirteen miles of motorized mixed use is being proposed under this alternative. Allowing motorized mixed use on higher standard passenger car roads (ML 3+) would increase the risk of crashes – both crash probability and crash severity. Of the 13 road segments proposed for mixed use, ten exhibit moderate crash probability and eleven exhibit a high probability of a severe crash if one were to happen. It will be important for the Responsible Official to weigh the increased risk with the associated benefit of improved non-highway-legal vehicle access when making changes to allow motorized mixed use on the Forest.

Changing Objective Maintenance Levels: There are no roads being proposed for objective maintenance level changes under this alternative.

Seasonal Closures: There are no roads being proposed for seasonal closures under this alternative.

Measurement Indicator 2 – Transportation System Affordability

Changes to the Forest transportation system would have an associated implementation cost as well as a long-term maintenance responsibility. Compared to baseline (Alternative 1), costs for maintenance of the entire NFTS (Roads and Trails) under Alternative 2 change as follows:

Annual maintenance needs:	+ $46,498
Projected deferred maintenance (need) in 2013:	+ $309,124

Annual maintenance not funded or accomplished with the annual Forest roads allocation becomes deferred maintenance; backlogs continue to grow each year and a projection for 2013 is included above. Adding unauthorized routes to the system would also have an implementation cost. Accounting for route identification signing, Forest transportation atlas updates, and obtaining necessary agreements for those routes within public road rights-of-way managed by other jurisdictions, an estimated implementation cost of approximately $3,000 per mile would be associated with these additional routes. For this alternative, that would result in an implementation cost of approximately $63,000 to cover these tasks. Once added to the system, these routes would also require maintenance and therefore contribute to the applicable annual and deferred maintenance expenses. Additional expenses, although unquantifiable at this time, would arise from implementing resource mitigation measures prior to adding the unauthorized routes to the NFTS. Also factored into these changes in costs is the expense of additional motorized trails (See Table 19).

Motorized Mixed Use: In addition to the above-mentioned long-term costs, there would also be an implementation cost associated with the motorized mixed use designated on ML 3+ roads in this alternative. These motorized mixed use segments would cost approximately $3,500-$5,000 per segment for warning signing. With 13 proposed MMU segments, this would result in an approximate implementation cost of $65,000 for signing and labor.

Changing Objective Maintenance Levels: There are no roads being proposed for objective maintenance level changes under this alternative.

Seasonal Closures: There are no roads being proposed for seasonal closures under this alternative.

Alternative 3

Measurement Indicator 1 – Public Safety

Adding Unauthorized Routes to the FTS: No new routes would be added to the FTS under this alternative, therefore there are no safety concerns. Motorized travel would be prohibited on unauthorized routes and any existing safety concerns with these routes and impacts to the adjacent managed system would be minimized under this alternative.

Motorized Mixed Use: No motorized mixed is proposed under this alternative.

Changing Objective Maintenance Levels: There are no roads being proposed for objective maintenance level changes under this alternative.

Seasonal Closures: There are no roads being proposed for seasonal closures under this alternative.

Alternative 3 provides the safest riding conditions of all alternatives as cross-country travel is prohibited and no mixed use is proposed. Vehicles would be limited to those roads safely accommodating their particular class.

Measurement Indicator 2 – Transportation System Affordability

Road Maintenance Expense: By not adding routes to the system, nor making any changes to the existing FTS, no additional costs would be incurred associated with implementation and increasing maintenance responsibilities.

Minimal implementation costs would occur with the production of the MVUM and any annual changes occurring to that map.

Alternative 4

Measurement Indicator 1 – Public Safety

Adding Unauthorized Routes to the NFTS: This alternative proposes the addition of unauthorized routes as ML 2 roads. None of the routes added to the system would have safety concerns as the roughly graded condition of ML 2 roads and motorized trials accommodates OHV use in a safe manner. However, changes to improve and accommodate current uses and needs would provide for safer public motorized opportunities on the Forest. In general, providing connector opportunities by adding unauthorized routes to the system would improve access and safety. Safety concerns along the designated system would be managed when appropriate, and use on those unauthorized routes not being managed by the Forest would be prohibited.

Motorized Mixed Use: No motorized mixed is proposed under this alternative.

Changing Objective Maintenance Levels: Under Alternative 4, 79 miles of ML 3 and ML 4 roads are proposed for changing to objective ML 2 roads. Changing objective maintenance levels would be a step towards allowing non-highway-legal vehicle of current operational maintenance level 3 roads. Through “weathering” over time and through specific downgrading activities analyzed and implemented during subsequent projects, these roads could be converted to high-clearance vehicle roads that would more safely allow shared use involving both highway-legal and non-highway-legal vehicles.

Seasonal Closures: Seasonal closures are proposed on a number of roads under this alternative. There are no safety concerns with seasonal closures. Since most closures are related to keeping motorized vehicles off roads during seasons when they may be slick or icy and therefore increasing the risk of vehicle accident, these would have the effect of providing added safety for the public.

Measurement Indicator 2 – Transportation System Affordability

Road Maintenance Expense: Changes to the Forest transportation system would have an associated implementation cost as well as a long-term maintenance responsibility. Compared to baseline (Alternative 1), costs for maintenance of the entire NFTS (Roads and Trails) under Alternative 4 change as follows:

Annual maintenance needs:	- $825,353
Projected deferred maintenance (need) in 2013:	- $5,903,987

Annual maintenance not funded nor accomplished with annual Forest roads allocation becomes deferred maintenance; backlogs continue to grow each year and a projection for 2013 is included above. Adding unauthorized routes to the system would also have an implementation cost. Accounting for route identification signing, Forest transportation atlas updates, and obtaining necessary agreements for those routes within public road rights-of-way managed by other jurisdictions, an estimated implementation cost of approximately $3,000 per mile would be associated with these additional routes. For this alternative, that would result in an implementation cost of approximately $30,000 to cover these tasks. Once added to the system, these routes would also require maintenance and therefore contribute to the applicable annual and deferred maintenance expenses. Additional expenses, although unquantifiable at this time, would arise from implementing resource mitigation measures prior to adding the unauthorized routes to the NFTS. Also factored into these changes in costs is the expense of additional motorized trails (See Table 19).

Alternative 4 is the most economical for the annual maintenance of the ML 3-5 road system, the cyclical maintenance of the ML 2 road system, the deferred maintenance of the ML1-5 system, and meets national engineering and ecosystem standards and guidelines. Current and projected annual budgets do not cover current annual road maintenance costs and the backlog of deferred maintenance continues to increase. Although it does not solve this problem, Alternative 4 costs less than the current NFTS due to the proposed lowering of maintenance levels on 79 miles of ML 3 roads (changed to ML 2) and six miles of ML 2 (changed to motorized trails). The advantages are increased access miles for motorized recreation enthusiasts, a reduction of $825,353 in NFTS annual maintenance needs and a subsequent substantial annual reduction in deferred maintenance needs.

Motorized Mixed Use: No motorized mixed is proposed under this alternative.

Changing Objective Maintenance Levels: Seventy-nine miles of roads are being proposed for objective maintenance level changes from ML 3 to ML 2 under this alternative. This change will lower maintenance costs, resulting in a reduction of approximately $825,000 in annual maintenance needs over the No Action Alternative (see summary discussion above and Table 19).

Seasonal Closures: Seasonal closures are proposed under this alternative. It is assumed the MVUM will be sufficient to effectively close these roads to public motorized travel. Should other measures be required, Implementation costs could include potential signing and/or gating of road segments seasonally closed.

Minimal implementation costs would occur with the production of the MVUM and any annual changes occurring to that map.

Alternative 5

Measurement Indicator 1 – Public Safety

Adding Unauthorized Routes to the FTS: This alternative proposes the addition of unauthorized routes as either ML 2 roads or motorized trails. None of the routes added to the system would have safety concerns as the roughly graded condition of ML 2 roads and motorized trails accommodates OHV use in a safe manner. However, changes to improve and accommodate current uses and needs would provide for safer public motorized opportunities on the Forest. In general, providing connector opportunities by adding unauthorized routes to the system would improve access and safety. Safety concerns along the designated system would be managed when appropriate, and use on those unauthorized routes not being managed by the Forest would be prohibited.

Motorized Mixed Use: Fifty-one miles of motorized mixed use are being proposed under this alternative. Allowing motorized mixed use on higher standard passenger car roads (ML 3+) would increase the risk of crashes – both crash probability and crash severity (Appendix G, Table G-3). Of forty-seven road segments proposed for mixed use, twenty three exhibit a moderate probability (after mitigation) of a vehicle collision. All proposed mixed use road segments exhibit either moderate (9 segments) or high (38 segments) severity of a crash, should it occur. It will be important for the Responsible Official to weigh the increased risk with the associated benefit of improved non-highway-legal vehicle access when making changes to allow motorized mixed use on the Forest.

Changing Objective Maintenance Levels: Under Alternative 5, 79 miles of ML 3 and ML 4 roads are proposed for changing to objective ML 2 roads. Changing objective maintenance levels would be a step towards allowing non-highway-legal vehicle of current operational maintenance level 3 roads. Through “weathering” over time and through specific downgrading activities analyzed and implemented during subsequent projects, these roads could be converted to high-clearance vehicle roads that would more safely allow shared use involving both highway-legal and non-highway-legal vehicles.

Seasonal Closures: Seasonal closures are proposed on a number of roads under this alternative. There are no safety concerns with seasonal closures. Since most closures are related to keeping motorized vehicles off roads during seasons when they may be slick or icy and therefore increasing the risk of vehicle accident, these would have the effect of providing added safety for the public.

Measurement Indicator 2 – Transportation System Affordability

Road Maintenance Costs: Changes to the Forest transportation system would have an associated implementation cost as well as a long-term maintenance responsibility. Compared to baseline (Alternative 1), needs for maintenance of the entire NFTS (Roads and Trails) under Alternative 5 change as follows:

Annual maintenance needs:	- $688,391
Projected deferred maintenance (need) in 2013:	-$5,154,488

Annual maintenance not funded nor accomplished with annual Forest roads allocation becomes deferred maintenance; backlogs continue to grow each year and a projection for 2013 is included above. Adding unauthorized routes to the system would also have a implementation cost. Accounting for route identification signing, Forest transportation atlas updates, and obtaining necessary agreements for those routes within public road rights-of-way managed by other jurisdictions, an estimated implementation cost of approximately $3,000 per mile would be associated with these additional routes. For this alternative, that would result in an implementation cost of approximately $159,000 to cover these tasks. Once added to the system, these routes would also require maintenance and therefore contribute to the applicable annual and deferred maintenance expenses. Additional expenses, although unquantifiable at this time, would arise from implementing resource mitigation measures prior to adding the unauthorized routes to the NFTS. Also factored into these changes in costs is the expense of additional motorized trails (See Table 19).

Current and projected annual budgets do not cover current annual road maintenance costs and the backlog of deferred maintenance continues to increase. Although it does not solve this problem, Alternative 5 costs less than the current NFTS due to the proposed lowering of maintenance levels on 79 miles of ML 3 roads (changed to ML 2) and six miles of ML 2 (changed to motorized trails). The advantages are increased access miles for motorized recreation enthusiasts, a reduction of $688,391 in NFTS annual maintenance needs and a subsequent substantial annual reduction in deferred maintenance needs.

Motorized Mixed Use: In addition to the above-mentioned long-term costs, there would also be an implementation cost associated with the motorized mixed use designated on ML 3+ roads in this alternative. These Motorized mixed use segments would cost approximately $3,500-$5,000 per segment for warning signing. With 47 proposed MMU segments, this would result in an approximate implementation cost of $235,000 for signing and labor.

Changing Objective Maintenance Levels: Seventy-nine miles of roads are being proposed for objective maintenance level changes from ML 3 to ML 2 under this alternative. This change will require fewer maintenance costs resulting in a reduction of approximately $699,391 in annual maintenance needs over the No Action Alternative (see summary discussion above and Table 10).

Seasonal Closures: Seasonal closures are proposed under this alternative. It is assumed the MVUM will be sufficient to effectively close these roads to public motorized travel. Should other measures be required, Implementation costs could include potential signing and/or gating of road segments seasonally closed.

Minimal implementation costs would occur with the production of the MVUM and any annual changes occurring to that map.

Modified Alternative 5

Measurement Indicator 1 – Public Safety

Adding Unauthorized Routes to the FTS: Modified Alternative 5 was designed to enhance and improve motorized recreation across the Lassen NF, responding to the need for providing diverse riding opportunities without compromising safety. This alternative proposes the addition of unauthorized routes as either ML 2 roads or motorized trails. None of the routes added to the system would have safety concerns as the roughly graded condition of ML 2 roads and motorized trails accommodates OHV use in a safe manner. However, changes to improve and accommodate current uses and needs would provide for safer public motorized opportunities on the Forest. In general, providing connector opportunities by adding unauthorized routes to the system would improve access and safety. Safety concerns along the designated system would be managed when appropriate, and use on those unauthorized routes not being managed by the Forest would be prohibited.

Motorized Mixed Use: The mixed use safety analysis demonstrated that all of the NFTS road segments proposed for mixed use exhibit either moderate or high probability of a severe crash (Appendix G, Table G-3). The routes with moderate probability of high severity crash are analyzed in this alternative and the high probability routes are dropped.

As we looked for ways to create the riding loops people told us they wanted; we identified 9 and 3 tenths miles of lesser-used ML 3 road segments where mixed use could be designated and 79.6 miles where ML 3 objective maintenance levels could be reduced to ML 2, this is an increase of 0.6 miles over Alternative 5. It was discovered in the process of conducting the mixed use safety analysis on routes in Alternative 5 that one of the segments, 0.6 miles of 28N70, proposed in that alternative had already operationally changed from a ML 3 to a ML 2. Over time, all 79.6 miles of these ML2 roads will be made available for non-street-legal vehicles and link currently disconnected ML 2 road segments to form continuous OHV circuits.

Changing Objective Maintenance Levels: Under Modified Alternative 5, 79.6 miles of ML 3 and ML 4 roads are proposed for changing to objective ML 2 roads. Changing objective maintenance levels would be a step towards allowing non-highway-legal vehicle of current operational maintenance level 3 roads. Through “weathering” over time and through specific downgrading activities analyzed and implemented during subsequent projects,

these roads could be converted to high-clearance vehicle roads that would more safely allow shared use involving both highway-legal and non-highway-legal vehicles.

Seasonal Closures: Seasonal closures are proposed on a number of roads under this alternative. There are no safety concerns with seasonal closures. Since most closures are related to keeping motorized vehicles off roads during seasons when they may be slick or icy and therefore increasing the risk of vehicle accident, these would have the effect of providing added safety for the public.

Measurement Indicator 2 – Transportation System Affordability

Road Maintenance Costs: Changes to the Forest transportation system under Modified Alternative 5 would primarily be realized in decreased implementation costs, discussed below, as well as a long-term maintenance responsibility. Compared to baseline (Alternative 1), costs for actual maintenance of the entire NFTS (Roads and Trails) under Modified Alternative 5 change negligibly from Alternative 5, and are as follows:

Annual maintenance needs:	- $702,181
Projected deferred maintenance (need) in 2013:	-$5,262,524

Annual maintenance not funded nor accomplished with annual Forest roads allocation becomes deferred maintenance; backlogs continue to grow each year and a projection for 2013 is included above. Adding unauthorized routes to the system would also have a implementation cost. Accounting for route identification signing, Forest transportation atlas updates, and obtaining necessary agreements for those routes within public road rights-of-way managed by other jurisdictions, an estimated implementation cost of approximately $3,000 per mile would be associated with these additional routes. For this alternative, that would result in an implementation cost of approximately $167,100 to cover these tasks. Once added to the system, these routes would also require maintenance and therefore contribute to the applicable annual and deferred maintenance expenses. Additional expenses, although unquantifiable at this time, would arise from implementing resource mitigation measures prior to adding the unauthorized routes to the NFTS. Also factored into these changes in costs are the expense of additional motorized trails (See Table 19).

Current and projected annual budgets do not cover current annual road maintenance costs and the backlog of deferred maintenance continues to increase. Although it does not solve this problem, Modified Alternative 5 costs less than the current NFTS due to the proposed lowering of maintenance levels on 79 miles of ML 3 roads (changed to ML 2), 6 miles of ML 1 (changed to motorized trails), and proposing motorized-mixed-use on 9.3 miles of current ML 3-4 roads. The immediate, first-year advantages are increased access miles for motorized recreation enthusiasts, an immediate reduction of $702,181 in NFTS annual maintenance needs and a subsequent substantial annual reduction in deferred maintenance needs.

Although Alternative 4 is the least costly alternative because it does not add any unauthorized routes as motorized trails, the motorized trails added in Alternatives 5 and Modified 5 are a small fraction of the entire NFTS. Alternative 5 and Modified 5 are also very similar in cost savings to Alternative 4 as a result of the significant savings from Maintenance Level changes to 79 miles of ML 3 roads in all three of these alternatives.

Motorized Mixed Use: In addition to the above-mentioned long-term costs, there would also be an implementation cost associated with the motorized mixed use designated on ML 3+ roads in this alternative. These Motorized mixed use segments would cost approximately $3,500-$5,000 per segment for warning signing. With 7 proposed MMU segments, this would result in an approximate implementation cost of $35,000 for signing and labor.

Changing Objective Maintenance Levels: Seventy-nine miles of roads are being proposed for objective maintenance level changes from ML 3 to ML 2 under this alternative. This change will require fewer maintenance costs resulting in a reduction of approximately $702,181 in annual maintenance needs over the No Action Alternative (see summary discussion above and Table 10).

Seasonal Closures: Seasonal closures are proposed under this alternative. It is assumed the MVUM will be sufficient to effectively close these roads to public motorized travel. Should other measures be required, Implementation costs could include potential signing and/or gating of road segments seasonally closed.

Minimal implementation costs would occur with the production of the MVUM and any annual changes occurring to that map.

Cumulative Effects

Alternative 1– No action

Measurement Indicator 1 – Public Safety

The No-action Alternative does not address improving safe and efficient access for non-highway-legal vehicles across the Forest. In addition, the unauthorized routes would not be managed or addressed, and any existing safety concerns with these routes and impacts to the adjacent managed system would continue to exist. Continued use of unmanaged routes would also likely have resource impacts requiring future rehabilitation efforts. Future public use would not be restricted to a designated and managed system, increasing the risk of users encountering unmitigated hazards.

Transportation System Affordability

By not adding routes to the system, no additional costs would be incurred associated with implementation and increasing maintenance responsibilities.

Action Alternatives – Alternatives 2, 3, 4, 5, Modified 5

Measurement Indicator 1 – Public Safety

In general, changes to improve and accommodate current uses and needs would improve safe public motorized opportunities on the Forest. Providing connector opportunities by

adding unauthorized routes to the system would improve access and safety when designated. Safety concerns along the designated system would be managed when appropriate, and use on those unauthorized routes not being managed by the Forest would be prohibited.

Allowing motorized mixed use on higher standard passenger car roads (ML 3+) would increase the risk of crashes – both crash probability and crash severity. Under these conditions OHV users will share the routes with a variety of vehicles of different sizes: from other OHVs to commercial log trucks and chip vans. It will be important for the Responsible Official to weigh the increased risk with the associated benefit of improved non-highway-legal vehicle access when making changes to allow motorized mixed use on the Forest. In addition, other projects taking place on the Forest and adjacent lands often use these higher standard roads as primary access and major haul routes. This would translate to an increasing frequency of encounters with large, commercial vehicles as well as significant passenger and high-clearance vehicles accessing the forest for a variety of recreation purposes. There would be an increased exposure to high severity crashes associated with these uses.

Measurement Indicator 2 – Transportation System Affordability

Changes to the Forest transportation system would have an associated implementation cost as well as a long-term maintenance responsibility. Costs associated with changes to the Forest transportation system would be incurred associated with implementation and increasing maintenance responsibilities. Depending on the changes being made, there may either be an increase to long-term management costs (additions to the system, increased safety mitigations) or a savings (downgrading of roads).

Summary of Effects Analysis Across All Alternatives

Public Safety Summary

The goal of motorized travel management is to create a safe, affordable and sustainable National Forest Transportation System. The potential changes in public safety from each alternative are not definitive, but can be discussed in qualitative terms based on the results of engineering safety analysis conducted for each route where motorized mixed use is being considered under one or more alternatives. The information needed to provide this qualitative, comparative assessment is provided in Table 18. This table lists the number of miles for which changes to the operational road maintenance objectives are proposed under each alternative by category of change. In particular, and of greatest concerns are the changes in authorized use patterns that will result from permitting mixed use on ML 3 roads and from changing the operational maintenance levels for some ML 3 roads to ML 2. In either case, an engineering safety analysis provides additional information from which the public safety implications of the proposed changes can be assessed.

Adding unauthorized routes to the FTS: Most of the routes added to the system would not have safety concerns due to low design speeds, rough surfaces and infrequent use. If safety concerns arise during project implementation, corrections can be made during trail maintenance work.

Motorized Mixed Use: The Travel Management Rule (TM), 36 CFR 212, 251, 261, and 295, supersedes past practices and enforcement of OHV use on the National Forests. In consideration of public safety and to best comply with State traffic laws, as required by 36 CFR 212.5a, the Pacific Southwest Region, R5,equates Forest Service roads maintained for passenger vehicle use (ML 3, 4, and 5) to roads defined as “highways” under the California Vehicle Code (CVC). In making this determination, the Forest Service has aligned OHV use on ML 3, 4 and 5 roads to CVC restrictions and requirements for OHV use on highways. This policy was further clarified by the Regional Forester by letter, dated January 13, 2009, entitled Motorized Mixed Use on National Forest Roads in the Pacific Southwest Region. Travel Management on the Lassen NF is consistent with this direction.

Table 18 Miles of roads/trails/unauthorized routes changing maintenance levels

Maintenance Level Change Recommendations	Alt. 1 (miles)	Alt. 2 (miles)	Alt. 3 (miles)	Alt. 4 (miles)	Alt. 5 (miles)	Alt. 5 and Mod 5 (miles)
ML 1 miles to be added as motorized NFS trails	0	0	0	0	6	6
Unauthorized routes to be added as ML 2 roads	0	16	0	10	10	10
Unauthorized routes to be added as motorized NFS trails	0	5	0	0	43	46
ML 2 miles to be changed to ML 1 miles	0	0	0	0	0	0
Motorized Mixed Use, ML 2 miles	2,568	2,584	2,568	2,657	2,657	2,657
ML 3-4 miles to be Changed to ML 2 miles	0	0	0	79	79	79
ML 3-4 miles to be Changed to motorized mixed-use	0	13	0	0	51	9

Source: Lassen National Forest, GIS data.

Motorized mixed use (MMU) on high clearance roads (ML 2): All of the high clearance roads currently open to the public on the Lassen National Forest were determined to have minimal safety concerns and will be designated as open to all vehicles.

Motorized mixed use (MMU) on passenger car roads (ML 3+): depending upon the alternative, 9 to 51 miles of passenger car roads have been proposed for mixed use. Appendix G, Table G-3 presents the results of the engineering analyses conducted to assess crash risk, including both crash probability and crash severity, for those segments of passenger car roads proposed for motorized mixed use in the various alternatives. The table displays the risk without mitigation and the risk after mitigation measures take place. Mitigation measures include warning signs to assist road users in identifying when entering a designated motorized mixed use section of operational maintenance level 3+ roads.

Crash probabilities represent the likelihood of a crash occurring. Crash severities document the potential damage that would occur in the event of a crash. Because non-highway-legal operators often are more exposed than operators protected in a cab with a seatbelt, crash severities are naturally higher for these vehicle types. Low severities indicate situations where little vehicle damage or bodily injury is expected. High severities represent expected major vehicle damage and serious bodily injury or death in the event of a crash.

Changing Objective Maintenance Levels: Under Alternative 4, 5, and Modified 5, 79 miles of ML3 and ML4 roads are proposed for changing to objective ML 2 roads. Changing objective maintenance levels would be a step towards safely allowing non-highway-legal vehicle of current operational ML 3 roads. Through "weathering" over time and through specific downgrading activities analyzed and implemented during subsequent projects, these roads could be converted to high-clearance vehicle roads that would more safely allow shared use involving both highway-legal and non-highway-legal vehicles.

Seasonal Closures: There are no safety concerns with seasonal closures. Since most closures are related to keeping motorized vehicles off roads during seasons when they may be slick or icy and therefore increasing the risk of vehicle accident, these would have the effect of providing added safety for the public.

Affordability Summary

Table 19 identifies the relative affordability of FTS roads and trails under each alternative. Alternatives 1 and 3 reflect the current NFTS and associated maintenance costs. Alternative 2 cost more because it adds 5 miles of trails and 16 miles of roads. Alternatives 4, 5, and Modified 5 all save about 5% in annual maintenance costs because they would convert 79 miles of ML3 roads to ML2 roads which are maintained less frequently. Slight differences in costs among these three alternatives reflect the number of miles and trails that are proposed for addition. Alternatives 5 and modified 5 also differ from alternative 4 in that 6 miles of current ML 1 roads are changed to motorized trails.

The Forest may incur significant implementation costs to physically manage routes consistently with the Motor Vehicle Use Map, (such as installing road/route signage in accordance with the Manual on Uniform Traffic Control Devices as implemented by the Forest Service in EM 7100-15 December 2005 Sign and Poster Guidelines for the Forest Service and the Federal Highway Administration Manual on Uniform Traffic Control Devices-2003 Edition), physically altering road entrance treatments, and managing roadside vegetation.

In addition to the above-mentioned long-term costs associated with each alternative, Table 20 summarizes the estimated one-time implementation costs for each alternative. These estimates include the costs of additional signing, agreement facilitation, and atlas data management that are associated with the proposed changes to the transportation system.

Over time and as funding permits, RAP/TAP recommendations may provide the travel management program with a strategic transportation plan. With publication of the MVUM, the public will be able to clearly identify the modes of travel permitted on specific NFTS roads and NFTS trails.

Table 19 Measurement Indicator 2 - Affordability

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 5 Mod
NFTS Road Miles open to all motorized use	3,278 miles	3,294 miles	3,278 miles	3,288 miles	3,288 miles	3,288 miles
NFTS Road Miles open to Highway Legal Vehicles	710 miles	697 miles	710 miles	631 miles	631 miles	631 miles
NFTS Road Miles open to Non-Highway Legal Vehicles	2,568 miles	2,597 miles	2,568 miles	2,657 miles	2,663 miles	2,657.6 miles
Annual Maintenance Needs for Roads, current[1]	$14,984,719	$15,018,217	$14,984,719	$14,159,366	$14,168,928	$14,149,938
Deferred Maintenance Needs for roads at 5 years[2]	$182,331,377	$182,571,001	$182,331,377	$176,427,390	$176,495,789	$176,359,953
NFTS Trail Miles open to Motorized Use	57	62	57	57	106	108
Annual Maintenance Needs for Motorized Trails, current	$148,200	$161,200	$148,200	$148,200	$275,600	$280,800
Deferred Maintenance Needs for Motorized Trails at 5 years[2]	$692,300	$761,800	$692,300	$692,300	$1,373,400	$1,401,200
Total Annual Maintenance Needs for the NFTS (Roads & Trails), current	$15,132,919	$15,179,417	$15,132,919	$14,307,566	$14,444,528	$14,430,738
Total Annual Maintenance Needs for the NFTS (Roads & Trails) at 5 years	$183,023,677	$183,332,801	$183,023,677	$177,119,690	$177,869,189	$177,761,153
Annual increase or decrease from current NFTS	N.A.	$46,498	N.A.	-$825,353	-$688,391	-$702,181
% Change from Current NFTS	N.A.	0.31	N.A.	-5.45	-4.55	-4.64
Deferred increase or decrease from current NFTS	N.A.	$309,124	N.A.	-5,903,987.00	-5,154,488.00	-5,262,524.00
% Change from Current NFTS at 5 years	N.A.	0.17	N.A.	-3.23	-2.82	-2.88

Footnotes:

1. These values were calculated with a spreadsheet that used $ amounts to two digits, so results do not exactly match calculations based on values provided in Tables 13 & 15

2. Five year deferred maintenance values for roads include a 7% per annum cumulative inflation factor. Deferred trail maintenance costs were not adjusted for inflation.

Assumptions:

1. Annual maintenance needs for motorized NFS Trails = $2,600/mile/year
2. $20,000 per year of motorized trail annual maintenance is accomplished with allocated funds. Additional funds are allocated to maintaining non-motorized trails (Table 14).
3. Current deferred maintenance for motorized trails = $900/mile

Table 20 Estimated Implementation Costs for Agreements, Signing & Data Management

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 5 Modified
Cost ($)	$0	$128,000	$0	$30,000	$394,000	$202,000

Through subsequent planning efforts, Lassen NF will continue to evaluate the NFTS in order to provide a safe, economically sustainable, and environmentally sound transportation system that provides multiple users with a quality experience.

Table 21 Summary Comparison of Alternatives by Environmental Effects for Facilities

Indicators – Facilities Resources	Ratings of Alternatives for Each Indicator1					
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. Mod 5
Public Safety	1	2	5	4	3	4
Transportation System Affordability	2	3	2	4	4	4
Average for Facilities Resources	2	3	4	4	4	4

[1] A score of 5 indicates the alternative is the best for facilities resources related to the indicator; A score of 1 indicates the alternative is the worst for facilitiesl resources related to the indicator

Compliance with the Forest Plan and Other Direction

All alternatives comply with the Lassen National Forest Land and Resource Management Plan and other regulatory directions.

Summary of Effects Analysis across All Alternatives

Table 2 and Table 3 provide a summary of the effects analysis for each alternative as it relates to non-motorized recreational activities (Table 2) and motorized recreational activities (Table 3). An indicator core of 5 indicates the most beneficial for recreation resources and an indicator score of 1 indicates the least beneficial to recreation resources.

FEIS Page 142

Table 2 Non-motorized Recreation Summary

Indicators – Recreation Resources	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Modified Alt 5
Non-motorized recreation opportunity	1	4	5	4	4	4
Impact of proposed changes to the NFTS on neighboring private and Federal lands (dust, noise, use conflicts)	1	4	5	4	4	4
Average rating for non-motorized Values	1	4	5	4	4	4

Table 3 Motorized Recreation and Access Summary

Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Modified Alt 5
Motorized recreation opportunity	5	3	3	4	4	4
Type of motorized access to dispersed recreation	5	3	3	4	4	4
Average rating for motorized values	5	3	3	4	4	4

Cross-country travel currently includes 1,072,488 acres, including 1089 miles of unauthorized routes;
Currently there are 271 miles of winter recreation closures

FEIS Page xxv

Summary of Environmental Consequences

Table 4 Comparison of Alternatives with regards to Purpose and Need for Action, the Issues raised in Public Scoping, and route designation criteria in Subpart B of the Travel Management Rule.

Resource Area	Ratings for Alternatives, averaged across indicators					
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Mod Alt 5
Purpose and Need/Issue Measures						
Prohibition on Cross-Country Travel[PN1]	1	5	5	5	5	5
Motorized Dispersed Recreation Access[PN2a]	5	3	3	4	4	4
Diversity of Motorized Recreation Opportunities[PN2b]	5	3	3	4	4	4
Need for maintenance and administration of roads, trails and areas that would arise if the uses under consideration are designated.[PN2c, I2, TR(a)6,]	1	2	1	3	5	5
Motorized recreation opportunity[TR(a)2]	5	3	3	4	4	4
Conflicts between motor vehicles and existing or proposed recreational uses of NFS lands or neighboring Federal lands. (Non-motorized Recreation)[TR(b)3]	1	3	5	4	2	2
Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.[TR(b)5]	1	3	5	4	2	2
Provide Public Safety[TR(a)2]	1	2	5	4	3	4
Effects to Resources						
Cultural Resources[TR(a)1]	1	4	5	4	3	3
Botanical Resources[TR(b)1]	3	4	5	4	4	4
Soil Resources[TR(b)1]	2	4	5	4	4	4
Hydrologic Resources[TR(b)1]	2	4	4	5	4	4
Noxious Weeds[TR(b)1]	1	4	5	4	4	4
Aquatic Biota[TR(b)2]	1	4	5	4	4	4
Wildlife Resources[TR(b)2]	1	4	5	4	4	4
Visual Resources	1	4	5	4	4	4
Air Quality	1	5	5	5	5	5
Overall Rating	**2**	**4**	**4**	**4**	**4**	**4**