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Comments:

The Telephone Gap Integrated Resource Project is based on the February 2006 Land and Management Plan, the Forest Plan. The plan states that "The forest will reach desired vegetative conditions through natural ecological processes." and that "to the extent practical, timber management will be used to emulate naturally occurring disturbances." To do so, the openings would be smaller than 1.25 acres, and occur at approximately 20 to 30 percent of the forest at most.

The natural disturbance dynamics of eastern North America is described by D'Amato, Raymond and Frazer in chapter 6 of Ecology and Recovery of Eastern Old Growth Forests, 2018. Natural stand replacing disturbances of northeastern forests are rare. In natural forest stands, numbers and sizes of gaps are more variable and irregular than in managed stands. Decades of traditional management has resulted in the loss of species diversity (Hanson and Lorimer, 2007) Disturbance in northern hardwood forests is rarely the size of stand replacement, and windstorm or fire events are typically at the least, a 1000 to 3000 year occurrence. Disturbance regime is usually frequent, light and moderate disturbances, resulting in a natural state of old growth, with its characteristic uneven age structure. Forest opening sizes are 10 to 5000 square meters (0.0025 to 1.24 acres). Gap dynamics with frequent gap replacement of less than 200 years results in establishment of sugar maple, beech and hemlock in smaller gaps and yellow birch, basswood and ash in the larger gaps. Overall, the natural disturbance regime is now known to be very different from what has been guiding silviculture in this region. Historic windstorm disturbances reviewed in 2002 show typical gap sizes of even smaller, 24 to 126 square meters, or less than three tenths of an acre. There is a low level of complete stand replacing disturbance in these northeastern forests. The pre-Euro-American settlement forest was most likely at least 70 to 80 percent old growth. The current knowledge of the amount, benefits, and support of old growth forests, much of which has been realized, researched and reported after 2006, is necessary to address and revise the silvicultural methods of the TGIRP and the Forest Plan that it is based on. A high degree of spatial variability is within the natural forest, and to maintain forest health and integrity of habitat, what is necessary is attention to the integral importance of moderate severity canopy disturbance and not stand replacing disturbance. In other words, maintaining tolerant and mid tolerant tree species with infrequent, small gap size canopy removal of no larger than an acre and a quarter. Biodiversity is increased in old growth forests, and is critical habitat to endangered northeastern forest species, including the endangered Northern Long-eared Bat. Natural disturbance regimes are necessary to restore appropriate amounts of old growth forest (70 to 80 percent, minimum) which are now known to be critical to combating climate change and loss of biodiversity, and was also called out as necessary by last year's Earth Day Executive Order regarding old and mature forests.

In 2.1, Forest Habitat: The amount of disturbance planned for is much too high. The percentages of young versus old forest will not maintain a healthy forest. It should be approximately 20 percent young and 80 percent old growth. Goal 2, maintaining and restoring habitats to sustain populations, is becoming a reality and will continue to do so without intervention. Part of Goal 2 should be amended. At this time of critical losses in biodiversity, there should be no encouragement whatsoever, or any maintenance at all of non-native plants and animals. There should be no vegetation management except removal of non-native species, especially in remote habitat. There is already an abundance of early successional habitat and perpetually open clearings. There is a need for old growth forest. Very little of old growth forest exists. To leave the existing older forests that are maturing, and at the least, put them onto the extended rotation age schedule of 200 to 300 years, would allow the older forests to become old growth.

From the Forest Plan, Chapter 2, p.12 Protect critical and key habitat for endangered species. Maintain and enhance rare species and natural communities. P. 13. Maintain viable reproducing populations for all native plant and animal species and... forest will contribute to maintaining or improving viability where possible. Old growth forest is a critical habitat and a key habitat. It is also an endangered habitat. It supports key native plant and

animal species including rare and endangered. Two examples of many: old growth forests and large old mature trees within forests, support at least a hundred more lichen species that are not found in younger forests, which support 20 to 40 lichen species. Old growth forests are imperative and critical habitat for the endangered *Myotis septentrionalis*, the Northern Long-eared Bat.

Goal 3: Maintain or restore natural ecological functions of the soil. Fact: Any logging negatively impacts soil health, including the many species in the soil layers. Any logging activity decreases carbon storage in the soil, and releases it to the atmosphere.

Goal 13: Objective: Increase congressionally wilderness acres. With this as an objective, there should not be any activity whatsoever in the roadless areas. The Roadless Area Conservation Rule was adopted by the U.S. Forest Service on January 12, 2001 to conserve wildlands, watersheds and wildlife habitat within national forest lands by preventing development within areas that had not been touched by road building and logging. There should be nothing at all happening in the roadless area.

The goals and objectives and desired future conditions of the Green Mountain National Forest and the TGIRP are based on a management plan from 2006, which is outdated. The Forest Plan is out of date and much of it is no longer valid or relevant to the issues at hand. Because of that, the main source to be commented on is the Forest Plan itself. It states that it is to be revised every 10 to 15 years, a span which has been exceeded. Many things have changed and been discovered and realized during that time that have direct bearing on the management of forests and all ecosystems, especially knowledge of what "enhances forest health and diversity." The state of climate change and biodiversity loss is unprecedented and it was not realized that they would have accelerated so drastically in 2006. There has been a change in public interest, and in land resource conditions, as well as analysis and research showing that the 2006 plan is in error. Also, physical, biological and social conditions have changed. As stated at the end of Chapter 1, Forest Plan Amendments, this means that the plan requires an amendment.

Thank you,
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