

**National Park Service  
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***Cost-Benefit and Regulatory Flexibility Analyses:  
Proposed Regulations for Trail Management in  
Lake Meredith National Recreation Area***

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## **Introduction**

This report presents the cost-benefit and regulatory flexibility analyses of the proposed regulatory action to construct a twenty-two mile multi-use trail designated for hiking and bicycling pursuant to the Lake Meredith National Recreation Area Multi-Use Trail Environmental Assessment. Quantitative analyses were not conducted due to lack of available data, and because the additional cost of conducting quantitative analyses was not considered to be reasonably related to the expected increase in the quantity and/or quality of relevant information. Nevertheless, the National Park Service (NPS) believes that these analyses provide an adequate assessment of all relevant costs and benefits associated with the regulatory action.

The results of the cost-benefit analysis indicate that the costs of the proposed regulatory action are justified by the associated benefits. Additionally, this proposed regulatory action will not have an annual economic effect of \$100 million, and will not adversely affect an economic sector, productivity, jobs, the environment, or other units of government.

The results of the regulatory flexibility analysis indicate no adverse impacts for any sector of the economy or unit of government, including small entities. Given those findings, the proposed regulatory action will not impose a significant economic impact on a substantial number of small entities.

Alternative B (NPS preferred alternative) involves construction of the multi-use trail as well as installing interpretive signs, kiosks, bike racks and trash receptacles. The new trail would help address the lack of land-based recreational opportunities in the region; increase the availability of interpretive resources in the recreation area; improve access for emergency response personnel; and provide a firebreak at the urban-wildland interface.

## **Cost-Benefit Analysis**

### ***Statement of Need for the Proposed Plan***

Executive Order 12866 (58 FR 51735) directs Federal agencies to demonstrate the need for the regulations they promulgate. In general, regulations should be promulgated only when a “market failure” exists that cannot be resolved effectively through other means. A market failure exists when private markets fail to allocate resources in an economically efficient manner. A significant cause of market failure is an “externality,” which occurs when the actions of one individual impose uncompensated impacts on others. For example, bicyclists and motorized vehicles within the park can impose costs associated with congestion and health and safety risks if both groups are required to use the same roads. Because these costs are not compensated through private markets, both groups have little incentive to change their behavior accordingly. The result is an inefficient allocation of park resources.

## **Alternatives Considered in the Current Analysis**

Complete descriptions of the alternatives are in the Environmental Assessment (NPS 2010).

### ***NPS Preferred Alternative***

Alternative B: This alternative will establish a new twenty-two mile multi-use trail permitting hiking and bicycle use only. The multi-use trail would consist of five contiguous sections that would be constructed in five phases.

### ***Other Alternative Considered***

Alternative A: A No-Action Alternative is required by the National Environmental Policy Act for the purposes of providing comparison to alternatives considered.

## **Baseline Conditions**

The costs and benefits of an action alternative are measured with respect to its baseline conditions. Baseline describes conditions that would exist without the regulatory action. Therefore, all costs and benefits included in this analysis are incremental to the baseline conditions. That is, any future impacts that would occur without the proposed alternative, as well as any past impacts that have already occurred, are not included in this analysis. For this regulatory action, the baseline conditions are described in Alternative A in the Comprehensive Trail Management Plan (NPS 2010).

## **Costs and Benefits**

### ***Benefits Transfer Meta Analysis***

The action alternative will generate benefits in the form of enhanced visitor experience and safety for all park visitors. Economists term such benefits as ***consumer surplus***<sup>1</sup>, which can be measured through benefits transfer meta analysis. A benefits transfer meta analysis combines information from existing valuation studies in the economics literature and statistically estimates the relationships between the consumer surplus estimated in those studies and important characteristics of the studies such as type of activity, type of resource, and type of valuation methodology used (Rosenberger and Loomis 2001). These estimated relationships then allow the analyst to calculate a consumer surplus value that is specific to the activity and resource under consideration. The results of the meta analysis for bicycling and hiking are presented in Table 1.

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<sup>1</sup> Consumer surplus equals the maximum willingness to pay for an activity minus the costs involved to participate in that activity.

<b>Table 1</b> <b>Benefits Transfer Meta Analysis of Consumer Surplus per Visitor-Day for Bicycling and Hiking</b>		
<b>Activity</b>	<b>---Consumer Surplus per Visitor-Day---</b>	
	<b>(1996 dollars)<sup>a</sup></b>	<b>(December 2011 dollars)<sup>b</sup></b>
Bicycling	\$8.32	\$11.97
Hiking	\$22.63	\$32.55
<b>Average</b>	<b>-</b>	<b>\$22.26</b>

<sup>a</sup> Source: Rosenberger and Loomis (2001)

<sup>b</sup> Indexed using the Consumer Price Index for all urban consumers (BLS 2012)

This meta analysis indicates that one visitor-day will generate \$11.97 in consumer surplus for bicycling and \$32.55 for hiking. Those values apply to new visitors that are drawn to the park by implementing the proposed alternative. Current visitors, on the other hand, would experience a marginal increase in the consumer surplus they derive from their hiking and bicycle use. For example, current bicyclists might experience an increase in consumer surplus equal to half the visitor-day value calculated above (\$5.99). To estimate the total consumer surplus generated by an action alternative, the resulting number of new visitors and the marginal increase in value experience by current visitors would have to be estimated. However, the information required to estimate those factors is not available and NPS was not able to estimate the total consumer surplus generated by the action alternative. Nevertheless, positive benefits would be generated.

### *Cost Effectiveness Analysis*

To determine whether the proposed alternative would reasonably generate positive *net benefits*<sup>2</sup> a cost effectiveness analysis was conducted. This analysis determined the number of new visitors that are needed to generate sufficient benefits each year to offset construction costs associated with the proposed alternative. The cost to NPS of the proposed alternative will be \$418,000 (NPS 2012). The cost effectiveness analysis determined the park will need to attract at least 564 new visitors annually in order to generate positive net benefits. This number was determined by calculating the amount of annual new visitors that the proposed alternative would need to attract in order to generate a present value of total consumer surplus that offsets the total construction costs. In that calculation, new visitor days were valued by the average of the 2011 consumer surplus values in Table 1 (\$22.26). Present value was determined by using a 3 percent discount rate. The Office of Management and Budget Circular A-4 recommends a 3 percent discount rate when analyzing the impacts to private consumption.

NPS believes it is reasonable to expect an annual increase of 564 visitors since public comments generally are in favor of developing additional land based recreational activities in the park. Declining water levels at Lake Meredith have reduced the amount

<sup>2</sup> Net benefits equal the total benefits received from the action, minus any associated costs.

of public access to the reservoir, resulting in an overall reduction in the availability of recreational opportunities for visitors. The demand for recreational uses such as hiking and mountain biking continue to increase both regionally and nationally. In addition, this action does not involve additional measures that would increase costs to visitors, businesses, or local communities. Therefore, it is reasonable to believe that local economies will experience increases in economic activity from the proposed alternative, and that the net benefits of the proposed alternative will be positive.

### **Uncertainty**

The number of new visitors and the marginal increase in value experienced by current visitors resulting from implementing the proposed alternative is unknown. Therefore, the total benefits generated by this action cannot be estimated. Nevertheless, positive net benefits are likely to be generated as illustrated in the cost effectiveness analysis. Any uncertainty involved in this analysis is associated only with the magnitude of those benefits. NPS is not aware of any other sources of uncertainty.

### **Conclusion**

The results of this cost-benefit analysis indicate that net benefits will likely be generated by implementing the proposed alternative. Given that, NPS concludes that the benefits associated with implementing the proposed alternative justify the associated costs. Further, the proposed alternative is not expected to have an annual economic effect of \$100 million, or to adversely affect an economic sector, productivity, jobs, the environment, or other units of government. The proposed alternative will improve economic efficiency.

### **Regulatory Flexibility Analysis**

The Regulatory Flexibility Act of 1980, as amended in 1996 requires agencies to analyze impacts of regulatory actions on small entities (businesses, non-profit organizations, and governments), and to consider alternatives that minimize such impacts while achieving regulatory objectives. Agencies must first conduct a threshold analysis to determine whether regulatory actions are expected to have significant economic impact on a substantial number of small entities. If the threshold analysis indicates a significant economic impact on a substantial number of small entities, an initial regulatory flexibility analysis must be produced and made available for public review and comment along with the proposed regulatory action. A final regulatory flexibility analysis that considers public comments must then be produced and made publicly available with the final regulatory action. Agencies must publish a certification of no significant impact on a substantial number of small entities if the threshold analysis does not indicate such impacts.

This threshold analysis relies on the cost-benefit analysis, which concludes that the proposed alternative will likely generate positive benefits and no costs to visitors, businesses, or local communities. In addition, this action will not impose restrictions on

local businesses in the form of fees, training, record keeping, or other measures that would increase costs. Rather, this action is expected to increase park visitation and thereby generate benefits for businesses, including small entities, through increased visitor spending. Given those findings, the proposed alternative will not impose a significant economic impact on a substantial number of small entities.

## **References**

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