

Appendix F

Financial Analysis

Introduction

As mentioned in Section 5 of the TAP report document, part of the 2005 Travel Management Rule, at 36 CFR 212.5(b)(1), requires each national forest to identify the minimum road system that is needed to:

1. Meet resource and other management objectives adopted in the relevant land and resource management plan;
2. Meet applicable statutory and regulatory requirements;
3. *Reflect long-term funding expectations;*
4. Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

The purpose of the Financial Analysis section of this report is to address bullet number 3 above, and identify opportunities for how the road system could be managed in the future to better reflect long-term funding expectations. This information will be used by the Responsible Official, along with other information regarding the risks and benefits of the road system, to strike the best balance between the four items above. The official decision and “identification” of what will constitute that future road system will be made following subsequent NEPA analyses at various scales.

Background

Forest Service road budgets have been steadily declining for the past 20 plus years. Region-wide, the amount of funding for road work including both appropriated funding and work contributed by commercial users is less than 20 percent of what it was 20 years ago. Appropriated road funds to the Intermountain Region (Region 4) have been reduced 25% since 2009. Current levels of funding for road work on the Payette National Forest are shown in figure 1 below.

Figure 1: 5 year average road funding

Payette NF - 5 Year Average Budget								
BLI	Forest Operational Budget (x1000)					5 Year Average	Average % to Road Mtc	Average Mtc Budget
	2010	2011	2012	2013	2014			
CFLN	0	0	2,450	2,553	2,231	1,447	14%	\$203
CMLG	1,367	262	10	0	0	328	0%	\$0
CMRD	1,281	991	1,199	1,750	1,461	1,336	47%	\$628
CWF2	124	29	40	110	86	78	100%	\$78
NFRR	0	0	3,196	4,710	4,548	2,491	7%	\$174
Purchaser Mtnc	204	35	123	103	178	129	100%	\$129
Total								\$1,212
5YR Ave Mtc Budget	Range		Amount from appropriated funds:					\$1,083
	-20%	+20%						\$129
\$1,212	\$970	\$1454						

With funding below what is necessary to keep the road system maintained to standard, some roads do not get the maintenance treatments they need on schedule. In other cases deferred maintenance is accumulating and road conditions are falling below standard.

Deferred Maintenance is defined as “maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value”, (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998).

Annual Maintenance is defined as “work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur”, (Financial Health - Common Definitions for Maintenance and Construction Terms, July 22, 1998).

Since 1999, the Forest Service has been tracking the amount of the deferred maintenance backlog. Figure 2 shows what the accumulated totals are for deferred maintenance (DM) and the annual maintenance (AM) needs that would be required to keep the road system fully maintained to standard.

Figure 2: R6 Annual and Deferred Maintenance Needs

National Forest	Road Miles	Total Maintenance Need ¹	
		DM	AM
Ashley	1542	\$9,772,315	\$3,117,675
Boise	4602	\$2,528,068	\$3,403,401
Bridger-Teton	2155	\$35,329,857	\$2,519,015
Caribou-Targhee	2763	\$92,574,370	\$14,099,115
Dixie	3153	\$21,958,671	\$6,749,354
Fishlake	1850	\$14,048,512	\$282,412
Humboldt-Toiyabe	5182	\$3,690,058	\$5,663,613
Manti-La Sal	2189	\$25,209,293	\$1,884,377
Payette	2947	\$15,745,883	\$2,680,550
Salmon-Challis	3859	\$30,634,978	\$3,197,390
Sawtooth	1910	\$2,703,405	\$536,802
Uinta-Wasatch-Cache	2517	\$12,083,070	\$5,426,672
	34,669	\$266,278,480	\$49,560,376

This chart shows that it would take approximately \$266 million dollars to bring the entire road system in Region 4 back up to standard (all roads in a like new condition), and then it would take approximately \$50 million dollars per year to keep all roads perfectly maintained to standard. For the Payette National Forest, it would take approximately \$16 million dollars to bring their entire road system back up to standard, and about \$2.7 million dollars per year to keep it that way. Please note that the unit costs used to arrive at the figures above are made up of national averages to restore and maintain the road system in a like new

¹ These costs are derived from average National Unit Costs and include a burden rate of approximately 40% to cover planning, contracting, and all other overhead costs associated with returning the road system components to an original “like new” condition.

condition. They also include the cyclical items necessary to replace gravel surfacing, pavement overlays, bridges/structures, and major culverts on schedule.

Using Regional unit costs, and without the national burden rate, a more conservative estimate for annual maintenance needs to keep the existing Payette National Forest road system fully maintained to standard would be about \$1.6 million dollars per year. Figure 1 shows that, on average, the Payette National Forest only receives about \$1.2 million dollars in appropriated funds per year that can be applied toward road maintenance work, that is only about 75% of the funding necessary to address the estimated annual maintenance needs to fully maintain the road system.

Financial Analysis Process

The goal of the financial analysis step in the overall Travel Analysis Process is to identify opportunities to help move the road system to a more affordable state.

Based on the figures in the previous section, if the Payette National Forest were to focus their available appropriated funds on a given set of roads to fully maintain to standard, they would be able to maintain approximately 380 miles of roads if they were paved, or about 790 miles of roads if they were gravel surfaced, or about 2230 miles of roads if they were only native surfaced. That size of road system would not meet the needs of the forest or the public, and does not meet the requirements of the first two bullets in the opening paragraph of this section regarding the requirements of a minimum road system as it would not allow the forest to meet resource management objectives in the Forest Plan and would not allow the forest to meet statutory and regulatory requirements.

Given the gap between available appropriated funding for road work and the cost to maintain the road system fully to standard, Region 6 recognized that it would not be possible to balance the size of the road system with the cost of maintaining all roads fully to standard and still be able to meet resource management needs or the needs of the public. Since the requirement to “reflect long-term funding expectations” was not defined in regulation or policy, Region 6 defined it in the *R6 Guidance for Preparing a Travel Analysis Report* document to mean that “average annual funding” is reasonably in balance with the “average annual cost of routine road maintenance”, where:

Average annual funding is defined as the average amount of funding available for each NFS unit for routine annual maintenance from appropriations, collection accounts, commercial users, cooperators, and other partners during the 2008-2012 timeframe, plus or minus 20%. It does not include funding from the American Recovery and Reinvestment Act (ARRA) or the Capital Improvement Program (CIP). Only the modest amounts specified for “routine maintenance” in Legacy Roads and Trails funding allocations are included.

Average annual cost of routine road maintenance is defined as the average yearly need for basic road maintenance. This includes log out, drainage maintenance, erosion control, blading, brushing, traffic signs, etc. It does not include cyclical replacement costs (such as bridge replacement every 50 years, asphalt overlays, etc.), which are covered by funding beyond the individual NFS unit budgets (e.g., Regional Capital Investment Program).

The Payette National Forest utilized the *Region 6 Financial Analysis Template*, which is based on the definitions above, to perform the financial analysis (adjusting the Average annual funding to the 2010-2014 timeframe.) This template is an excel spreadsheet workbook that allows users to input budget information and calculate unit costs for a variety of road maintenance work activities for different maintenance intensities on different standards of road. This allows the user to compare the cost of maintaining the current system of roads with a variety of scenarios for different potential future road systems. The user is

able to alter the overall size of the road system, the composition of different maintenance standards, and the intensity or frequency of maintenance work on different types of roads.

Financial Analysis Steps:

1. Estimate 5 year average funding available for road maintenance work
2. Identify local Unit Rates used for routine annual road maintenance work
3. Use work item unit rates to build unit rates for different road standards and maintenance intensities
4. Calculate cost to maintain current road system at current maintenance intensity
5. Develop different scenarios for future road systems that show what size and composition of road networks can be maintained within range of average annual funds.

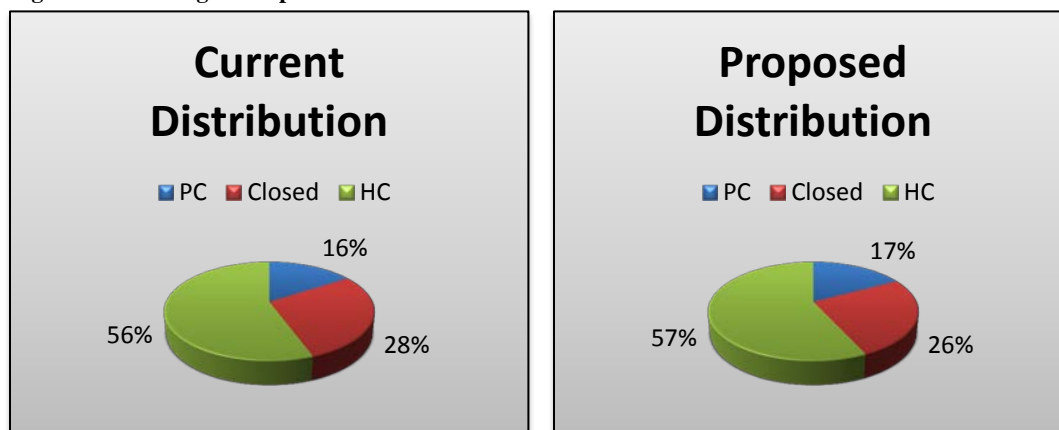
Results

One scenario that reflects the opportunities for change identified in Step 4 of the Payette Travel Analysis Report is shown in Figures 3 and 4 below. (The Rest of the calculation sheets used to arrive at these summaries are included in the attached excel file “PNF_MRS_financial_analysis.xlsx”)

Figure 3: Comparison of existing and proposed annual maintenance needs

OPML	Current				Proposed		
	Miles	% of sys	Cost		Miles	% of sys	Cost
5	4	0%	\$15,947		4	0%	\$15,947
4	36	1%	\$106,116		35	1%	\$100,881
3	430	14%	\$541,763		428	16%	\$594,695
2	1,651	56%	\$670,547		1,550	57%	\$500,159
1	847	29%	\$581		707	26%	\$828
	2,968	100%	\$1,334,954		2,724	100%	\$1,212,510

Figure 4: Existing vs Proposed distribution of maintenance levels



This scenario shows that by using the Payette National Forest’s current road maintenance costs for routine annual maintenance items (which does not include things like replacing gravel surfacing, replacing pavements, or replacing bridges and structures), the current cost of keeping up the existing road system would be about \$1.3 million dollars per year. By making some adjustments to the current road system in terms of reducing the total miles of roads on the system (decommissioning), closing some roads that are

currently open, and changing the maintenance intensities on other roads, the overall cost can be reduced to somewhere around \$1.2 million dollars per year. This amount is within the 20% range of the 5 year average annual amount available as shown in Figure 1.

A quick summary of what the changes in this scenario would look like are shown in Figure 5:

Figure 5: Potential changes to road system based on Financial Analysis Scenario

Category	Road Miles		
	Before	After	Diff
Roads Maintained for Passenger Cars (ML 3-5)	470	467	-3
Roads Maintained for High Clearance Vehicles only (ML2)	1,651	1,550	-101
Overall Open Road System (ML 2-5)	2,121	2,017	-104
Closed Intermittent Service Project Roads (ML1)	847	707	-140
Overall size of transportation system (open and closed roads)	2,968	2,724	-244
Roads to be further considered for Decommissioning		244	244

This example would result in a road system that is 244 miles smaller, overall, than the existing road system. The amount of roads maintained for passenger car traffic would be reduced slightly in terms of mileage, but the standard is expected to stay the same over the long-term. The amount of roads maintained for high clearance vehicles would be reduced by 101 miles. Of these, 61 miles would remain on the official transportation system as intermittent use project roads (ML 1), and the remaining 50 miles would be considered for decommissioning or conversion to other uses.

The results of this scenario show one example of a future road system that reflects long-term funding expectations according to Region 6 guidelines. Many other scenarios are possible by adjusting road mileages across maintenance levels and adjusting maintenance intensities within maintenance levels.

Capital Investments

The section above only considers road maintenance needs and costs, but there are also costs associated with any proposed road decommissioning, road closures, and road improvements necessary to address risks and environmental concerns that are identified in the TAP report. These costs are not included in the balancing of road maintenance funds because funding for these activities is not appropriated along with the normal road maintenance funds used in the calculations. Funding for this type of work generally comes through other programs such as capital investment programs, Legacy Roads and Trails funding, Federal Highway programs, partnerships with outside groups and agencies, etc. But the scale of the need for these types of funds certainly needs addressed here. The estimated costs from the example above are:

Figure 6: Estimated capital costs of improvement and decommissioning work

Category	Miles	Cost / Mile	Total Cost
Estimated Cost to put roads in storage	61	7,500	\$457,500
Estimated Cost to decommission roads	244	12,000	\$2,928,000
Estimated Cost for improvement work (Maintain or Improve) ²	1,598	5,400	\$8,629,200

² The estimate for the improvement work is based on the number of miles of road that were recommended as Maintain, Maintain or Improve, or Improve.

\$12,014,700

In the example above, the cost to prepare the 61 miles of road for storage as ML 1 roads is estimated to be around \$458 thousand dollars. The cost to decommission 244 miles of road would be about \$2.9 million dollars and the cost to perform a variety of road improvement work to mitigate concerns identified in the risk rating matrix of the TAP report would cost somewhere in the neighborhood of \$8 to \$9 million dollars. These investments could save the forest approximately \$120 thousand dollars annually in maintenance.

Conclusions

The results of the Financial Analysis show that the opportunities identified from the risk/benefit section of the Payette National Forest Travel Analysis Report are in line with the R6 guidelines for identifying a future system of roads where “average annual funding” is reasonably in balance with the “average annual cost of routine road maintenance”.

This balance addresses routine annual maintenance work needed to keep roads open and safe for use, and addresses critical resource concerns such as maintaining ditches and culverts for proper drainage. This work is accomplished by both the Forest Service, using appropriated road funds, and through commercial users who are required to maintain roads commensurate with their project uses.

Given the current trend in reduced funding for road maintenance work, and the gap between current funding and need, it does not appear possible to identify a future road system where the entire cost of annual maintenance work necessary to fully maintain the roads to standard would be in balance with available funding, (i.e., to include annual maintenance items and cyclic capital costs for replacement of gravel surfacing, pavements, structures, bridges, etc.). Because the Payette National Forest will only have enough funding available to keep the proposed road system annual maintenance work accomplished, we can expect the deferred maintenance backlog to continue to grow, road surface material and structure replacement to fall behind schedule, and we will see a decline in the overall serviceability of our road system.

Due to the need to meet resource and other management objectives identified in the Forest Plan we can't alter the road system so much as to be fully affordable and sustainable within today's budget levels. However, we can certainly take steps to move it in a better direction. By utilizing the opportunities identified from the Payette Travel Analysis Process, we can certainly move the Payette National Forest road system to a much more affordable and sustainable state.

Recommendations

By utilizing the priorities identified in Step 4 of the TAP report, the forest can focus limited road maintenance resources, and any potential capital funds, to the most important roads necessary for management and enjoyment of the National Forest, and to the roads with the highest need for mitigation work associated with environmental risks. The Forest should consider the following:

- Focus available maintenance funding and resources on the highest priority roads identified in TAP report, (address issues related to user safety first, then on repair/prevention of resource issues)
- Focus any available capital funds toward improvement work on high use roads with high environmental risks identified in the TAP report
- Prioritize funding for roads to be closed or decommissioned based on those with the highest environmental risks identified in the TAP report
- Ensure that commercial users perform, or deposit funds, for road maintenance work commensurate with their use
- Seek additional funding for road maintenance through regular appropriations
- Seek new and additional funding sources for road maintenance and improvements through any available funding programs such as Capital Investment Programs, Legacy Roads and Trails, Forest Highway Programs, etc.
- Seek partnership opportunities to help leverage funds with outside sources
- Seek opportunities to transfer jurisdiction of FS roads to other agencies
- Continue to look for ways to reduce maintenance costs, and overhead costs related to Forest Service road programs, so as to direct more funds directly to road maintenance and improvement work