

**Economic Impacts of Going-to-the-Sun Road
Reconstruction:
Montana and “Glacier Area” Impacts**

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Economic Impacts of Going-to-the-Sun Road Reconstruction: Montana and “Glacier Area” Impacts

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EXECUTIVE SUMMARY

Glacier National Park (GNP) is investigating the possibility of accelerating the process of reconstructing the Going-to-the-Sun Road in the Park which is typically open sometime in June through the third week of October. Two alternative reconstruction ideas are being considered by GNP.

Accelerated Reconstruction Alternative A would take 9-10 years at a cost of \$90-105 million. This alternative would provide access to the pass from both sides of the park on a one-lane road with hour-long delays for passing traffic during June through August, with full closure of both sides of Logan Pass after Labor Day.

Fast-Track Reconstruction Alternative B would take 4-6 years at a cost of \$70-85 million. This alternative would provide access to the pass from one side of the Park only (either from the west side while the east is being reconstructed or from the east side while the west is being reconstructed).

Either Alternative would have substantial negative economic impacts due to losses in tourism.

Accelerated Reconstruction Alternative A:

- \$161 million dollars in direct tourism dollar loss to the state.
- \$258 million in total losses to the state.
- \$125 million dollars in direct tourism dollar loss to the Glacier area.
- \$225 million net direct loss to the state accounting for construction gains.
- Statewide, the lodging industry would lose \$30 million, retail would lose \$39 million, restaurant & bar would lose \$28 million, gasoline and oil losses would be \$33 million, and all other losses would be \$31 million.

Fast-Track Reconstruction Alternative B (4-year completion scenario):

- \$81-\$84 million in direct tourism dollar loss to the state.
- \$129-\$135 million in total losses to the state.
- \$63-65 million in direct tourism dollar loss to the Glacier area.
- \$99-\$105 million net direct loss to the state accounting for construction gains.
- Statewide, the lodging industry would lose \$15-\$16 million, retail would lose \$20-\$21 million, restaurant & bar would lose \$14 million, gasoline and oil losses would be \$16-17 million and other losses would be \$15-\$16 million.

Fast Track Reconstruction Alternative B (6-year completion scenario):

- \$126-\$129 million in direct tourism dollar loss to the state.
- \$202-\$207 million in total losses to the state.
- \$98-\$101 million in direct tourism dollar loss to the Glacier area.
- \$173-\$179 million net direct loss to the state accounting for construction gains.
- Statewide, the lodging industry would lose \$24 million, retail would lose \$31-\$32 million, restaurant & bar would lose \$22 million, gasoline and oil losses would be \$26-\$27 million and other losses would be \$24-\$25 million.

It is not expected that additional studies to further define the economic impact to the state and the Glacier area would produce a substantial change in the numbers. Therefore, an additional study with primary data collection is not needed. Instead, it is recommended that a team of interested individuals cooperate to design and implement a Reconstruction Survival Marketing Plan. The survival plan should provide ideas and implementation procedures to decrease the potential impact of visitor loss to the Glacier Area and the State of Montana if either Alternative A or B is chosen for reconstruction.

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INTRODUCTION

At the June 1998 Tourism Advisory Council meeting, the Institute for Tourism and Recreation Research (ITRR) was asked to postpone one approved project and replace it with a project dealing with the economic impact of road construction on the Going-to-the-Sun road (GTTS) in Glacier National Park.

Using information ITRR has available through nonresident visitor studies, reports provided by Glacier National Park (GNP), letters by the U.S. Department of Transportation Federal Highway Administration (FHA), and discussions with GNP personnel, the following document highlights the economic impact of the reconstruction project. This report provides a full analysis based on secondary data. The basis of this report came from the following studies:

1. **Duffield, J. (undated). “Estimated Economic Impacts of the Going to the Sun Road Closure and Reconstruction,” Missoula, MT: Bioeconomics, Inc.** This report was an analysis of the anticipated economic effects of Going-to-the-Sun reconstruction alternatives as of October 1997. The report concluded that the net regional economic impacts associated with either of the Going-to-the-Sun road reconstruction alternatives were likely to be relatively minor.
2. **Robert Peccia & Associates, (1997). “Vehicle Movement and Traffic Study Glacier National Park,” Helena, MT: Robert Peccia & Associates.** This report contains two technical memoranda that evaluate traffic and vehicle movement data collected at Glacier National Park from August 14 through August 17, 1997. These findings were intended to provide information for evaluation of the road construction alternatives for Going-to-the-Sun road.
3. **Miller, T. A. & McCool, S. F. (1994). “The Glacier National Park Visitor Use Study,” Missoula, MT: The University of Montana School of Forestry.** This report documents the characteristics, preferences, motivations and expectations of visitors to Glacier National Park.
4. **Parrish, J., Nickerson, N., & McMahan, K. (1997). “Nonresident Summer Travelers to Montana: Profiles and Characteristics,” Missoula, MT: Institute for Tourism and Recreation Research, The University of Montana School of Forestry.** This report details the characteristics and profiles of nonresident summer travelers to the State of Montana. Included in the study is a comparison of first-time and repeat visitors, primary reasons for visiting, and travel group comparisons.
5. Nonresident Summer Travelers to Montana attracted to Glacier National Park. This was a separate analysis conducted using the data from “**Nonresident Summer Travelers to Montana: Profiles and Characteristics**” (#4 above). Visitors who indicated they were attracted to Glacier National Park were grouped and analyzed for this study.

BACKGROUND

The GTTS is deteriorating at an alarming rate. The yearly maintenance of the road has not kept up with the rate of deterioration, thus GNP is looking into accelerated methods of repairing the roadway. GNP and the FHA have presented two possible alternatives to the status quo alternative.

Accelerated Reconstruction Alternative A

This alternative provides for a 9-10 year construction scenario at a cost of \$90-105 million. Associated with this alternative are a variety of road closures, including night closures, daytime continuous alternating traffic flow in one lane around construction work sites, full closure after Labor Day, and limited short-term daytime closures (of approximately 15 minutes) for critical construction operations. Logan Pass will be accessible June through August to visitors with hour-long delays to be expected. Essential to this alternative are the following:

- Full road closures at night all season (9:00 pm to 6:00 am).
- Full road closure after Labor Day.
- 15 minute maximum construction closures during the day.
- Continuous alternating traffic flow in one lane at the work site.

Fast-Track Reconstruction Alternative B

This alternative provides for a 4 or 6 year construction scenario at a cost of \$70-85 million. Associated with this alternative is closure from Avalanche Creek to the Pass (west side), and Siyeh Bend to the Pass (east side). The scenario options used in this report refer to the four-year construction period as either 2/2 (two-year closure on the west and two-year closure on the east) or 3/1 (three-year closure on the west and one-year closure on the east). The six-year scenario options provided in this analysis include 3/3 (three-year closure on the west followed by three-year closure on the east) and 4/2 (four-year closure on the west followed by two-year closure on the east). The Pass will be accessible to visitors at all times (discussion with Larry Frederick, GNP Chief Interpreter, 18, June 1998) . Essential to this alternative are the following:

- Access to Logan Pass from the east while the west side is closed.
- Access to Logan Pass from the west while the east side is closed.

No Action/Status Quo Alternative C

If neither alternative A or B is acceptable, or funding does not become available, the No Action/Status Quo Alternative C would be continued on a piecemeal basis for the next 50 years at a cost of over \$200 million for the entire road system. This alternative does not meet Glacier's needs for preserving the integrity of the GTTS. Additionally, this alternative greatly increases the possibility of immediate road closure for a year or more due to such happenings as a sudden road slump or wall deterioration, which would make the road inaccessible until extensive repairs could be made.

ANALYSIS APPROACH

In a simple explanation, methods used to estimate the economic impact of the two reconstruction alternatives include the following:

1. Computing the June-September expected visitation counts using a line-of-best-fit (linear regression) and a re-entry figure (Schedule 3).
2. Applying the percent of nonresident GNP visitors to total Park visitation to generate nonresident visitation within the Park.
3. Reducing visitation numbers to “visitor” numbers by dividing visitation number by the re-entry number.
4. Multiplying expected visitor numbers by the percent drop in visitors depending on reconstruction scenarios.
5. Computing per-year and total expenditure losses for the Glacier area and for the state. (Schedule 2).
6. Adding economic “gains” from construction to the expenditure losses (Schedule 2).
7. Importing expenditure losses into IMPLAN to produce statewide economic impacts (Schedule 4).

Definitions

Visitation:	A head count of visitors to the Park without regard to repeated entry by the same person or group.
Visitors:	Refers to individuals visiting the Park by eliminating multiple entries during a trip (visitor = visitation/reentry).
Re-entries:	The average number of times a visitor enters the Park during a single trip.
Park nonresidents:	Visitors to the Park who reside out-of-state or out-of-country.
Primary attraction:	Nonresidents to the Park who are in Montana primarily because of the Park (80.65% of all nonresidents in the Park).
Secondary attraction:	Nonresidents to the Park who are in the Park as a secondary reason for their visit to Montana (19.35% of all nonresidents in the Park).
Glacier Area:	Includes St. Mary, Essex, Columbia Falls, Whitefish, East Glacier, West Glacier, Kalispell, and Waterton.

Assumptions and Decisions

For the analysis of the Accelerated and Fast Track Alternatives, numerous assumptions and decisions had to be made about the data and time line. This report is based on the following assumptions or limitations (see schedules 1-6 in Appendix for detailed calculations of visitation reductions and economic impacts).

Assumptions and Decisions Common to both Alternatives A and B:

1. Overall Park visitation would have grown at historical averages of approximately one percent per year without reconstruction interference.
2. This study provides an analysis of the economic impact to the state and the Glacier area provided by *nonresidents* who visit the Park. The decision to include only nonresidents was made for three reasons:
 - The Peccia (1997) report states that 80.5 percent of visitors to the Park are nonresidents.
 - The 20 percent of remaining Park visitors are local residents (10%) or Montana residents (10%) who spend less time in the Park (2.2 days) and therefore provide a significantly

less impact on the local economies. In addition, it is assumed that Montana residents are more likely to still visit the Park and the area because of their knowledge of other aspects of the Park not affected by the GTTS reconstruction.

- Current expenditure data of nonresident visitors who go to Glacier National Park are available from the Institute for Tourism and Recreation Research at The University of Montana and length of stay of nonresident visitors to the Park is available from the Peccia (1997) study.
3. 80.65 percent of all nonresidents to the Park are in Montana primarily because of the Park and 19.35 percent of all nonresidents to the Park are in the Park as a secondary reason for their visit to Montana (Parrish, Nickerson, & McMahon, 1997)
 4. The Peccia (1997) study is the basis for reduction in visitation due to road construction.
 5. Re-entry of visitors to the Park is 4.03 times per trip (Schedule 3).
 6. Nonresident visitors to the Park stay an average of 3.2 days in the Glacier area (Peccia, 1997).
 7. Based on the ITRR data set for nonresidents visiting Montana primarily for GNP, the length of stay in the state is 5.1 days. With Peccia (1997) reporting average GNP stay for nonresidents of 3.2 days, it is assumed that nonresidents spend an average of 3.2 days in the park area and 1.9 days elsewhere in Montana.
 8. The negative economic impact due to construction will only be felt during the months of June through September when Logan Pass is typically accessible.
 9. Road construction will begin in 2001. Analysis for this report will continue forward for the entire time of each alternative. However, GNP has stated that construction will cease or slow down during the Lewis and Clark Bicentennial Commemoration to reduce impacts to visitors.
 10. Actual construction costs will be at the high end of the estimate.
 11. Alternatives A and B actually produce annual savings in terms of NPS funds spent on the reconstruction. Currently, \$2 million from the GNP budget is put into road construction on GTTS. Under these alternatives, this \$2 million would be considered the Status Quo and only the increases associated with the Alternatives would be considered when measuring the economic impacts. In short, a \$10 million project would actually only cost \$8 million in additional funds.
 12. The FHA escalated reconstruction costs to the actual construction years (Letter to Glacier NPS Superintendent from FHA, Carol Jacoby, dated April 6, 1998).
 13. Inflation rate is 3 percent per year during the construction years. This is consistent with FHA inflation used to compute construction costs.
 14. Dollar figures are rounded to the nearest thousand.
 15. Trip expenditure dollars are rounded to whole dollars.
 16. All figures in this document are reported in dollars for the year stated (then-year \$), unless otherwise indicated.

Assumptions and Decisions for Accelerated Reconstruction Alternative A:

1. This alternative will take 10 years.
2. Logan Pass is always accessible from both sides of the park during the summer months and closed after Labor Day.
3. Visitation reduction during the months of June - August is 16.53% (See Schedule 3).

4. Visitation reduction for total closure in September is 37.22% (See Schedule 3).
5. Construction costs are straight-lined (evenly distributed) over the 10-year period.
6. Length of delay to the traveler does not exceed one hour due to construction or changes in traffic movement.

Assumptions and Decisions for Fast-Track Reconstruction Alternative B:

1. This alternative will take 4 or 6 years.
2. Logan Pass is always accessible (closed on one side while open on the other).
3. Park visitation reduction per year during west side closure is 30.28% (See Schedule 3).
4. Park visitation reduction for the east side closure is 23.47% (See Schedule 3).
5. Construction costs are straight-lined (evenly distributed) across 4 or 6 years.

METHODS AND RESULTS

This section provides the discussion of where the numbers were found and how the numbers were calculated to determine the impacts of the reconstruction project under each alternative.

Estimating Loss in GNP Visitors Due to Reconstruction

To estimate expected losses in summer visitor numbers, three steps were taken. First, historical visitation from the last 13 years was analyzed in order to predict (estimate) future visitation. Second, re-entry rate of visitors was calculated and applied to visitation rates in order to convert visitation numbers into visitors. Finally, to estimate loss in visitors, results from the Peccia (1997) questions were incorporated.

Estimating Future Visitation

Summer visitation (June through September) has always represented the largest visitation numbers to GNP. Historically, summer visitation averages 87.8 percent of annual GNP visitation based upon the 13-year history, which was provided in the Bioeconomics report. From the visitation data for the years 1985 through 1997, a line-of-best-fit using regression analysis was found. From this line, visitation for each year through 2010 was estimated using the predicted increase of one percent annually (Table 1). The Peccia study found that, historically, 80.5 percent of this visitation originates from outside of Montana.

**Table 1
GNP Projected Visitation Numbers Based on Regression Analysis (Without Construction)**

<u>Year</u>	<u>Total Visitation</u>	<u>Year</u>	<u>Total Visitation</u>
2001	2,083,151	2006	2,189,317
2002	2,104,384	2007	2,210,550
2003	2,125,617	2008	2,231,783
2004	2,146,850	2009	2,253,017
2005	2,168,084	2010	2,274,250

Converting 'Visitation' to 'Visitors'

A reentry factor of 4.03 for the summer months of June through September was computed using data in the Miller and McCool (1994) study. Table 2 provides the calculation. No data was available to determine differences in the re-entry behavior of residents and nonresidents, therefore the re-entry number used is based on all summer visitors.

Table 2
Re-Entry Calculations

<u>1993</u>	<u>Visitation</u>	<u>Seasonal</u> <u>Factor*</u>	<u>Visitors</u>	<u>Summer</u> <u>Reentries</u>
June	340,288	4.6	73,976	
July	626,668	4.6	136,232	
Aug.	624,559	4.6	135,774	
Sept.	<u>288,356</u>	2.4	<u>120,148</u>	
Total	<u>1,879,871</u>		<u>466,130</u>	<u>4.03</u>

*Miller & McCool (1994)

Estimating Losses in Visitors

The loss in visitors per year during reconstruction was computed by using the survey results (Peccia, 1997) of various questions asked of visitors about their anticipated behavior with the GTTS under construction. The questions used for calculation are presented in Table 3.

Table 3
Glacier National Park - Vehicle Movement Study (Peccia, 1997)*

Q7. If there was a one hour road construction delay in getting across or to Logan Pass, would you still visit the Park?

No 139 (16.53%) (83.47% will come to the park under this scenario)
Total 841

Q8. If Logan Pass was closed due to road construction would you still visit the park?

No 313 (37.22%) (62.78% will come to the park under this scenario)
Total 841

Q9. If road construction prevented you from traveling across the Pass, but allowed access to the Pass, would you still visit the Park?

No 157 (18.67%) (81.33% will come to the park under this scenario)
Total 841

*Based on nonresident responses

Accelerated Alternative A (10-year scenario) requires one-hour delays from either side of the Park from June through August, and September closure of the GTTS. Based on the Peccia study (1997, Q7), 83.47 percent of nonresidents will still come to the park if there was a one-hour delay. For the September closure, only 62.78 percent of nonresidents will come to the Park if the pass is closed (Peccia, 1997, Q8). See Schedule 3 for a detailed description of visitor reduction calculations.

Fast Track Alternative B (4 and 6 year scenarios) allows access to the Pass from one side only. Based on the Peccia (1997, Q8) study, when the west side is closed, 69.72 percent of nonresident visitors will still come to the park. When the east side is closed, 74.39 percent of nonresident visitors will come to the park (Schedule 3).

While concerns have been raised that some people do not use the GTTS and should not be included in the total number of visitors, no data is available to support this belief, particularly for the nonresident population. The Peccia (1997) study indicates that 86.4 percent of nonresidents (Q6) drove 'over' Logan Pass. Miller & McCool (1994) concluded that 83.1 percent of all visitors to the Park (resident and nonresident) drove 'over' Logan Pass. This indicates, at a minimum, that 83 to 86 percent of visitors use the GTTS. It does not include those who drove "to" Logan Pass, but not "over" the Pass. In addition, the Peccia study (1997), which is the basis for visitor reduction calculations, never asked the question needed to determine the extent to which nonresidents would not come to the Park if they had to take a two-hour detour one way and a two-hour detour back in order to go to the Pass. Therefore, the calculation used for one side of closure in this study is based on the Peccia (1997) question 8, "If Logan Pass was closed due to road construction, would you still visit the park?" Being the "Crown Jewel of the National Parks," nonresidents come to GNP to drive the highway. If the Pass is closed from their side, they will perceive the Pass as closed or inaccessible (Bioeconomics, p.8) and many will decide not to come to the Park.

Nonresident Visitor Expenditures and Potential Loss

Expenditures of nonresident visitors to Montana are estimated annually by the Institute for Tourism and Recreation Research. A separate analysis was conducted on the nonresidents who visit Montana because of GNP. The separation of Glacier visitors from all nonresident visitors provided more detailed information on the characteristics of Glacier visitors, including length of stay, expenditures, and group size.

To determine trip expenditures of those nonresident visitors who stated GNP was their primary attraction to Montana, length of stay (n=1637), visitor group size (n=1660), and daily expenditure averages (n=1582) for these specific visitors were extracted from ITRR's nonresident visitor data set. The average length of stay was 5.1 days and average daily expenditures per visitor group were \$108.33 (1996 dollars). Average visitor group size was 2.75. Using the inflation factor of 2.3 percent from 1996 to 1997, a per-visitor expenditure of \$206 per trip ($1.023 \times \$108.33 \times 5.1 \div 2.75$) was computed. In 1997 dollars, nonresident GNP visitors spent \$206 per visitor per trip or \$566.50 per group per trip in the State of Montana.

Nonresident visitor reduction to the Park ranges from 71,630 in the first year to 78,200 in the 10th year for Alternative A. In Alternative B, visitor reduction, depending on the length of closure for each side, would range from 95,288 in one year to a high of 113,789 in another year (Schedule 3).

After visitation numbers were calculated, direct dollars lost were computed by multiplying visitor losses by the \$206 per trip per visitor expenditure figure. The potential direct loss in tourism dollars to Montana due to reconstruction of the road ranges from \$81 million to \$160 million depending on the alternative and the years of reconstruction. The dollars were inflated (3%) to represent losses in the years represented (Schedule 2).

Example: visitor expenditure per trip x visitor loss in a given year = direct economic loss in that year
 Alt. A year 2001: \$206 per visitor per trip x 57,766 loss in visitation = \$11,900,000 (1997 \$)

For Accelerated Alternative A, the direct loss in visitor expenditures is \$161 million over 10 years. Individual business sector impacts are \$30 million in lodging, \$33 million in gasoline and oil, \$28 million in restaurant and bar, \$39 million in retail, and \$31 million in other sectors (Schedule 1).

In the Fast-Track Alternative B, the direct loss in visitor expenditures range from \$81 million to \$129 million depending on reconstruction years and side of closure. Individual business sector impacts are \$15 to \$24 million in lodging, \$14 to \$22 million in restaurant and bar, \$17 to \$27 million in gasoline and oil, \$20 to \$32 million in retail sales, and \$15 to \$25 million in other sectors (Schedules 1 & 2).

Nonresident Statewide Potential Economic Impact

Using nonresident visitor numbers, reduction in visitation due to reconstruction, length of stay in the state, and expenditures per trip, the total impacts were calculated using the IMPLAN input-output economic model for each alternative. Potential total tourism dollar losses to the state range from \$129 million to \$258 million (Schedule 2).

Accelerated Reconstruction Alternative A shows total losses of \$199 million in output, \$63 million in personal income, and 388 jobs lost over the 10-year reconstruction time period in 1997 dollars (Schedule 4). Total impact refers to the direct, indirect, and induced impacts.

Fast-Track Reconstruction Alternative B shows total losses ranging from \$110 to \$171 million in output, \$35 to \$54 million in personal income, and 478 to 487 jobs during the four or six-year reconstruction time period in 1997 dollars (Schedule 4). Once, again, total impact refers to the direct, indirect, and induced impacts.

Estimating Potential Reconstruction Benefits

Measuring the State's economic benefit from additional reconstruction efforts above those which are already being experienced is full of uncertainties. The major unknown is to what extent Montana-owned construction businesses will succeed in winning contracts. A more complete analysis would contain:

- Information identifying the streams of payments on an annual basis.
- Probabilities related to Montana construction participation.
- Probabilities of shortened or extended performance.
- Probabilities of under-run or overrun budgets.
- A determination of whether the newly completed road will draw more visitors to GNP upon its completion.

In essence, the analysis should consider more economic variables than heretofore considered. However, many of those figures would not be available until the alternative had already been chosen and underway. Therefore, while all data is not currently available, this analysis is conducted with the best available information and assumptions on construction benefits.

A 25 percent Montana construction share was used for this analysis. While historically 100 percent of the construction was awarded to Montana companies, specialized rock wall masonry skills might require out-of-state contracts (Bioeconomics, Inc., p.iii). Additionally, it can be argued that the benefit gained will not be in the Glacier area since the Montana construction companies used in the past have been from Missoula or Billings.

Considering this 25 percent share of construction awarded to Montana companies, the economic gain to Montana would range from \$18 million to \$21 million depending on the alternative and length of construction. With a construction multiplier of 1.57 (Bioeconomics, Inc.), the total economic gain to the Montana economy would range from \$28 million to \$33 million (Schedule 2).

Losses and Gains Combined for the Total Economic Impact

Even with construction gains to offset losses related to tourism, there will still be a net economic loss for the state of Montana (Schedule 2, Table 5). In addition, the "winners" and "losers" during the reconstruction efforts are not likely to be the same people. In other words, the economic gains in construction will be felt in a different place by different people than the economic losses associated with the downturn in tourism.

With the realistic assumption that Montana-owned construction contractors will obtain 25 percent of the planned effort, the net total economic impact is as follows:

Table 5
Total Economic Impact (Output) to Montana (Construction Gain, Tourism Loss)*

Reconstruction Accelerated Alternative A

Construction Industry Output Gains	\$ 33,050,000
Tourism Industry Output Losses	<u>(257,778,000)</u>
Net Gain (Loss) from Reconstruction	<u>\$(224,728,000)</u>

Reconstruction Fast Track Alternative B

4 year construction period:	<u>2/2 scenario</u>	<u>3/1 scenario</u>
Construction Industry Output	\$ 29,940,000	\$ 29,940,000
Tourism Industry Output Losses	<u>(29,226,000)</u>	<u>\$(134,747,000)</u>
Net Gain (Loss) from Reconstruction	<u>\$(99,286,000)</u>	<u>\$(104,807,000)</u>
6 year construction period:	<u>3/3 scenario</u>	<u>4/2 scenario</u>
Construction Industry Output	\$ 28,386,000	\$ 28,386,000
Tourism Industry Output Losses	<u>(201,571,000)</u>	<u>(207,316,000)</u>
Net Gain (Loss) from Reconstruction	<u>\$(173,185,000)</u>	<u>\$(178,930,000)</u>

*Dollars for the year stated (then-year \$) (Schedule 2)

Discounting Cash Flows

Discounting cash flows is a process used in investment decision making. Discounting refers to the condition where a dollar in the future has less value than a dollar today. The process involves expressing cash flows to a single value at a specific time in order to compare varying cash flows over varying periods of time. The discount assumption used was 7 percent per year. This is the number recommended for government expenditures by the Office of Management and Budget (OMB). This discount assumption is likely not to be the same as the internal rate of return used by the businesses affected by this decision.

Considering the discounting process, Accelerated Reconstruction Alternative A is expected to have a negative net present value of \$165 million in the year 2001 compared to \$225 million if not discounted. Fast-Track Alternative B is expected to have a negative net present value ranging from \$90 million to \$152 million compared to \$99 million and \$179 million if not discounted. The discounting process narrows the margin between the investment alternatives. In other words, without discounting, Alternative A is \$46 million more expensive than Fast-Track Alternative B 4/2 scenario, but only \$13 million more expensive when discounting is considered (Schedule 2).

Looking only at discounted figures in making investment decisions is risky, as it does not consider cash flow requirements on an annual basis. While discounting is useful to the National Park Service in the decision process for reconstruction alternatives, these numbers do not show

the connection of local businesses to their cash flow concerns. In other words, discounting is important in the Park investment, but not necessarily for the local businesses.

Glacier Area Potential Direct Tourism Dollar Loss.

The Glacier area refers to St. Mary, Essex, Columbia Falls, Whitefish, East and West Glacier, Kalispell and Waterton as reported in Peccia, 1997, Q2. To compute the potential loss to *just* the Glacier area, the following calculation was made:

$ \begin{aligned} & \text{nonresident visitor loss}^* \\ & \quad \times \\ & \text{visitor expenditure per trip} \\ & \quad \times \\ & (\text{length of stay in Glacier area/ divided by length of stay in Montana})^{**} \\ & = \text{Glacier area economic loss} \end{aligned} $ <p>Example - Alternative A, year 2001: 71,630 x \$206 x 3.2/5.1 = \$9,258,529 (1997 dollars)</p>
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* The nonresident visitor loss figures used for the Glacier area consider both ‘primary’ and ‘secondary’ visitors since all the Park visitors are in the Glacier area. This differs from statewide loss figures since the ‘secondary’ visitors would still come to Montana.

**Because the length of stay in Glacier is shorter than the length of stay in Montana, the visitors’ percent of time in the area needs to be incorporated into the equation.

The direct tourism dollar loss to the Glacier area, using the calculation above for each year and each alternative, is estimated to be \$63 million to \$125 million (Table 4) (Schedule 2). This analysis assumes no direct positive impact from construction on the Glacier area.

Table 4
Potential Direct Tourism Dollar Loss to the Glacier Area

	<u>current year (then-year \$)*</u>
Accelerated Alternative A (9-10) year scenario	\$125
Fast Track Alternative B	
4 years: west side closed 2 years, east side closed 2 years	\$ 63
4 years: west side closed 3 years, east side closed 1 year	\$ 65
6 years: west side closed 3 years, east side closed 3 years	\$ 98
6 years: west side closed 4 years, east side closed 2 years	\$101

*millions of dollars

Final Observation

It is estimated (FHA letter by Jacoby to GNP Superintendent dated April 6, 1998) that No Action/Status Quo Alternative C would take 47 years and up to \$215 million. If it is reasonable to assume that no road repair will occur on GTTS for the 40 year period following completion under Alternative B, then the Park will realize a \$130 million savings by doing the fast-track alternative rather than Alternative C. If it was performed under the option 2/2 scenario, then this \$130 million savings that the Park would realize is actually borne by the local businesses and the

State of Montana in the amount of \$81 million or 62 percent of the Park savings. In other words, while the Park may save \$130 million, the local and state economy loses \$81 million. This consideration, however, does not estimate the potential gain to be realized by businesses after the reconstruction is completed.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This section provides a brief summary followed by conclusions based on the data provided. The recommendations are the same for Alternative A or B in the case that one of those Alternatives is chosen for the reconstruction effort.

Summary

Reconstruction alternatives A and B carry potential net losses to the State's economy in amounts ranging from \$99 million to \$225 million including construction gains. Total output (direct, indirect, and induced impacts related to tourism) nonresident tourism dollars lost to the state range from \$129 million to \$258 million.

Annual visitation declines of 17 to 36 percent will be experienced under reconstruction alternative A and declines of 23 to 29 percent will be experienced under reconstruction alternative B. These declines reach nearly double the highest single-year decline experienced over the past 13 years of Park visitation. The sustained decline in Park visitation that will be experienced under either alternative has no parallel in GNP's recent history and probably unparalleled since its establishment as a national park.

The majority of these potential direct losses will be felt by the local communities. The Glacier area direct tourism loss will range from \$63 million to \$125 million over the reconstruction time periods. From a cash flow standpoint, many businesses will experience difficulties and some may be unable to survive without a plan to offset or minimize the loss.

Conclusions

This analysis of secondary data, including data that were not available when the first economic impact report was produced (Bioeconomics, Inc.), provides further understanding of the local and statewide impacts. It was performed to determine whether additional GNP visitor studies should be conducted to clarify the economic impact of the GTTS reconstruction alternatives being contemplated. While additional studies might refine the findings of this study, it is unlikely that different conclusions regarding the significance of the economic impact will be materially changed by another study. While this study does not get down to the county level, it is believed, based on the enormous impact demonstrated here to the Glacier area, that further detail at the county level is not necessary. Therefore, based on this analysis, it is recommended that further primary data collection is not necessary.

In comparing the Alternatives being considered for the reconstruction effort, a number of observations can be made about the economic impacts.

1. Annual losses between the Alternatives would point to Alternative A since these are lower than the annual losses in Alternative B.
2. The duration of losses would suggest that Alternative B is a better choice simply because the impact is over a shorter time period.
3. From the standpoint of pure “bottom-line” impact, Alternative B, 2/2 scenario provides the least total loss to the Montana and Glacier Area economy when alternative C is not considered.
4. Alternative C, “status quo,” appears to have no economic impact, but the ‘risk’ associated with this Alternative may ultimately result in a higher economic cost.
5. The potential to mitigate the economic impact through marketing opportunities under Alternatives A and B could substantially reduce the impact predicted in this report.

The above discussion involves only the economic consideration of reconstruction of the GTTS. While this study was not meant to look at the social side of the issue, it is important to note that social concerns or opportunities could assist in the decision process. For example, with discounting added into the decision process, Alternative A is marginally more expensive than Alternative B 4/2 but provides a greater opportunity for mitigating the losses, i.e. through marketing the experience of the reconstruction to the potential Park visitor. In Alternative A, the visitor still has the opportunity to see and experience the reconstruction by driving the entire road. On the other hand, the shortened length of reconstruction time in Alternative B, may be less of an overall impact on the visitor. Finally, Alternative C may have negative impact on visitation over time when there is perpetual construction occurring in the Park.

Both reconstruction Alternatives A and B will have a significant cost impact on Montana’s economy with the majority of the impact being borne by the local communities who have supported GNP visitor needs in the past. The No Action/Status Quo Alternative, while always an option to consider, is risky since unexpected closure due to road failures could occur at anytime. Alternatives A and B hopefully provide enough lead-time for businesses to plan, rather than risking a financial burden or failure.

It is concluded, therefore, that no *one* individual should make the choice of reconstruction alternatives for the GTTS. This analysis only provides the economic picture. The Park needs to look at the impact to the businesses, the visitors, and the environment.

Recommendations

If either Alternative A or B become the reconstruction choice, it is recommended that a team of local business people and Park personnel start a process of investigating what should be done to minimize the impact. In order to be successful, this process might need a facilitator to guide the discussion and assist the group in moving forward. The group should be responsible for looking at all possible options. No potential option should be left out of the discussion! Some of the following ideas could be looked into as possibilities:

- Identify the “Greater Glacier Park Area” as the place to see rather than just the Park.

- Improve the infrastructure of other Park areas which may be impacted with increased visitation during construction.
- Hire a reputable public relations firm for direction and present a unified message of the Park
- Create an awareness of other areas in and around the Park.
- Use the construction as an historical event that people should come see - slogan could be “See history being made - Again!” For example: Provide bus tours or walking interpretive tours that can view the construction site and discuss a comparison of the road being built initially and the reconstruction process being taken now.

Some of these ideas and others to be generated may provide a start for dealing with the reconstruction time period. If the Park and the Glacier area businesses work together on a proactive approach to decreasing the potential loss in visitation, the actual economic loss could be minimized. In fact, could it be possible that more people want to come to see the Park at a unique time in history?

While ideas can be discussed individually, it is of the utmost importance that Park personnel and business people agree on the plans. For example, too many visitors to a new area in the Park could be a devastating impact. All plans would need in-depth review to determine positive and negative impacts.

Therefore, it is recommended that a Reconstruction Survival Marketing Plan be designed and implemented to overcome the potential economic loss. The plan needs to be the result of a cooperative effort of Glacier National Park personnel and representatives from all possible agencies and affected businesses in the Glacier area as well as the state. This cooperative effort needs to commence immediately.

If the No Action/Status Quo Alternative is the alternative of choice, no further action is needed. However, businesses and agencies within the tourism industry sector need to be prepared for continual construction in the Park and the possibility of a major immediate closure.

APPENDIX A - SCHEDULE WORKSHEETS

Schedule 1 - Nonresident Direct Expenditure Losses: Allocation to Business Sectors

Schedule 2 - Losses and Gains

Schedule 3 - Visitation Losses

**Schedule 4 - Decreases to Direct, Indirect and Induced, and Output due to Tourism
Economic Losses**

Schedule 5 - Increases to Output due to Construction Economic Gains

Schedule 6 - Factors and Values for Measurement of Economic Impacts

**SCHEDULE OF NONRESIDENT DIRECT EXPENDITURE LOSSES
ALLOCATION TO BUSINESS SECTORS (note 1)
GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD**

(Amounts rounded to nearest thousand in then-year dollars)

<u>Year</u> <u>(note 2)</u>	<u>Hotel, Lodge, & B&B</u> <u>(note 3)</u>	<u>Gasoline & Oil</u> <u>(note 3)</u>	<u>Restaurant & Bar</u> <u>(note 3)</u>	<u>Retail Sales</u> <u>(note 3)</u>	<u>Other</u> <u>(note 3)</u>	<u>Total Direct Losses</u> <u>(Schedule 2)</u>
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ALTERNATIVE A: ACCELERATED PROJECT LOSSES

2001	\$2,505,000	\$2,759,000	\$2,304,000	\$3,268,000	\$2,558,000	\$13,394,000
2002	2,606,000	2,871,000	2,397,000	3,400,000	2,662,000	13,936,000
2003	2,711,000	2,987,000	2,494,000	3,538,000	2,769,000	14,499,000
2004	2,820,000	3,107,000	2,594,000	3,680,000	2,881,000	15,082,000
2005	2,934,000	3,232,000	2,699,000	3,828,000	2,997,000	15,690,000
2006	3,051,000	3,361,000	2,807,000	3,981,000	3,117,000	16,317,000
2007	3,173,000	3,496,000	2,919,000	4,141,000	3,241,000	16,970,000
2008	3,300,000	3,635,000	3,035,000	4,306,000	3,371,000	17,647,000
2009	3,431,000	3,780,000	3,156,000	4,477,000	3,505,000	18,349,000
2010	3,568,000	3,930,000	3,281,000	4,655,000	3,644,000	19,078,000
	<u>\$30,099,000</u>	<u>\$33,158,000</u>	<u>\$27,686,000</u>	<u>\$39,274,000</u>	<u>\$30,745,000</u>	<u>\$160,962,000</u>

ALTERNATIVE B: FAST-TRACK OPTION 2/2 LOSSES (note 1)

2001	\$3,861,000	\$4,253,000	\$3,551,000	\$5,037,000	\$3,943,000	\$20,645,000
2002	4,017,000	4,425,000	3,695,000	5,241,000	4,103,000	21,481,000
2003	3,535,000	3,894,000	3,251,000	4,612,000	3,610,000	18,902,000
2004	3,677,000	4,051,000	3,382,000	4,798,000	3,756,000	19,664,000
	<u>\$15,090,000</u>	<u>\$16,623,000</u>	<u>\$13,879,000</u>	<u>\$19,688,000</u>	<u>\$15,412,000</u>	<u>\$80,692,000</u>

ALTERNATIVE B: FAST-TRACK OPTION 3/1 LOSSES (note 1)

2001	\$3,861,000	\$4,253,000	\$3,551,000	\$5,037,000	\$3,943,000	\$20,645,000
2002	4,017,000	4,425,000	3,695,000	5,241,000	4,103,000	21,481,000
2003	4,179,000	4,604,000	3,844,000	5,453,000	4,269,000	22,349,000
2004	3,677,000	4,051,000	3,382,000	4,798,000	3,756,000	19,664,000
	<u>\$15,734,000</u>	<u>\$17,333,000</u>	<u>\$14,472,000</u>	<u>\$20,529,000</u>	<u>\$16,071,000</u>	<u>\$84,139,000</u>

ALTERNATIVE B: FAST-TRACK OPTION 3/3 LOSSES (note 1)

2001	\$3,861,000	\$4,253,000	\$3,551,000	\$5,037,000	\$3,943,000	\$20,645,000
2002	4,017,000	4,425,000	3,695,000	5,241,000	4,103,000	21,481,000
2003	4,179,000	4,604,000	3,844,000	5,453,000	4,269,000	22,349,000
2004	3,677,000	4,051,000	3,382,000	4,798,000	3,756,000	19,664,000
2005	3,825,000	4,213,000	3,518,000	4,991,000	3,907,000	20,454,000
2006	3,978,000	4,382,000	3,659,000	5,191,000	4,063,000	21,273,000
	<u>\$23,537,000</u>	<u>\$25,928,000</u>	<u>\$21,649,000</u>	<u>\$30,711,000</u>	<u>\$24,041,000</u>	<u>\$125,866,000</u>

ALTERNATIVE B: FAST-TRACK OPTION 4/2 LOSSES (note 1)

2001	\$3,861,000	\$4,253,000	\$3,551,000	\$5,037,000	\$3,943,000	\$20,645,000
2002	4,017,000	4,425,000	3,695,000	5,241,000	4,103,000	21,481,000
2003	4,179,000	4,604,000	3,844,000	5,453,000	4,269,000	22,349,000
2004	4,348,000	4,790,000	3,999,000	5,673,000	4,441,000	23,251,000
2005	3,825,000	4,213,000	3,518,000	4,991,000	3,907,000	20,454,000
2006	3,978,000	4,382,000	3,659,000	5,191,000	4,063,000	21,273,000
	<u>\$24,208,000</u>	<u>\$26,667,000</u>	<u>\$22,266,000</u>	<u>\$31,586,000</u>	<u>\$24,726,000</u>	<u>\$129,453,000</u>

EXPLANATORY NOTES:

1. Amounts are presented in “then-year” dollars for each alternative and for the options in Alternative B. “Then-year” is defined as the year in which the costs are expected to be incurred. The options for Alternative B are denoted as 2/2, 3/1, 3/3, and 4/2. The first number in each of these pairs is the number of years in which the construction is performed on the west side of Logan Pass. The second number refers to the construction years of performance on the east side of Logan Pass.
2. As requested by NPS, years of performance are presented in consecutive years. NPS has indicated that the reconstruction effort will be delayed during the celebration of the Lewis & Clark Expedition bicentennial. Computations to then-year dollars and discounting to 1997 dollars would be affected if the delay in performance was known. However, the relative dollar impacts between tourism losses and construction gains should not be significantly affected.
3. Allocation of direct expenditure losses to business sectors were determined from ITRR’s nonresident traveler survey (1997) data. In our survey, we found that Hotel, Lodge, and Bed & Breakfasts receive 18.7 percent, Gasoline and Oil related businesses receive 20.6 percent, Restaurant and Bar businesses receive 17.2 percent, Retail Sale businesses receive 24.4 percent, and all Other businesses receive 19.1 percent of the nonresident traveler expenditures. Businesses represented in Other include, among others, campgrounds, R.V. parks, auto rental, transportation, and grocery stores.

SCHEDULE OF LOSSES AND GAINS
GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD

LOSSES IN TOURISM DOLLARS

(amounts are in then-year dollars)

<u>Year</u>	<u>Nonres. Visitor Loss (Schedule 3)</u>	<u>Glacier Area Losses</u>		<u>Primary Nonres. Visitor Loss (note 3)</u>	<u>Montana Direct Losses</u>		<u>Montana Total Impact (Then-Year \$) (note 6)</u>
		<u>(97 Dollars) (note 1)</u>	<u>(Then-Year \$) (note 2)</u>		<u>(97 Dollars) (note 4)</u>	<u>(Then-Year \$) (note 5)</u>	
ALTERNATIVE A: ACCELERATED PROJECT LOSSES							
2001	71,630	\$9,259,000	\$10,421,000	57,766	\$11,900,000	\$13,394,000	\$21,450,000
2002	72,360	9,353,000	10,843,000	58,355	12,021,000	13,936,000	22,318,000
2003	73,089	9,447,000	11,280,000	58,943	12,142,000	14,498,000	23,218,000
2004	73,819	9,541,000	11,734,000	59,531	12,263,000	15,082,000	24,154,000
2005	74,549	9,636,000	12,207,000	60,120	12,385,000	15,689,000	25,126,000
2006	75,280	9,730,000	12,695,000	60,710	12,506,000	16,317,000	26,132,000
2007	76,010	9,825,000	13,204,000	61,298	12,627,000	16,970,000	27,177,000
2008	76,740	9,919,000	13,730,000	61,887	12,749,000	17,648,000	28,263,000
2009	77,470	10,013,000	14,276,000	62,476	12,870,000	18,350,000	29,387,000
2010	78,200	10,108,000	14,844,000	63,065	12,991,000	19,078,000	30,553,000
		<u>\$96,831,000</u>	<u>\$125,234,000</u>		<u>\$124,454,000</u>	<u>\$160,962,000</u>	<u>\$257,778,000</u>
ALTERNATIVE B: FAST-TRACK OPTION 2/2 LOSSES							
2001	110,413	\$14,271,000	\$16,062,000	89,043	\$18,343,000	\$20,645,000	\$33,063,000
2002	111,538	14,417,000	16,713,000	89,950	18,530,000	21,481,000	34,402,000
2003	95,288	12,316,000	14,706,000	76,845	15,830,000	18,902,000	30,271,000
2004	96,240	12,439,000	15,298,000	77,613	15,988,000	19,663,000	31,490,000
		<u>\$53,443,000</u>	<u>\$62,779,000</u>		<u>\$68,691,000</u>	<u>\$80,691,000</u>	<u>\$129,226,000</u>
ALTERNATIVE B: FAST-TRACK OPTION 3/1 LOSSES							
2001	110,413	\$14,271,000	\$16,062,000	89,043	\$18,343,000	\$20,645,000	\$33,063,000
2002	111,538	14,417,000	16,713,000	89,950	18,530,000	21,481,000	34,402,000
2003	112,664	14,562,000	17,388,000	90,858	18,717,000	22,349,000	35,792,000
2004	96,240	12,439,000	15,298,000	77,613	15,988,000	19,663,000	31,490,000
		<u>\$55,689,000</u>	<u>\$65,461,000</u>		<u>\$71,578,000</u>	<u>\$84,138,000</u>	<u>\$134,747,000</u>
ALTERNATIVE B: FAST-TRACK OPTION 3/3 LOSSES							
2001	110,413	\$14,271,000	\$16,062,000	89,043	\$18,343,000	\$20,645,000	\$33,063,000
2002	111,538	14,417,000	16,713,000	89,950	18,530,000	21,481,000	34,402,000
2003	112,664	14,562,000	17,388,000	90,858	18,717,000	22,349,000	35,792,000
2004	96,240	12,439,000	15,298,000	77,613	15,988,000	19,663,000	31,490,000
2005	97,192	12,563,000	15,914,000	78,381	16,146,000	20,453,000	32,755,000
2006	98,143	12,685,000	16,551,000	79,148	16,304,000	21,273,000	34,069,000
		<u>\$80,937,000</u>	<u>\$97,926,000</u>		<u>\$104,028,000</u>	<u>\$125,864,000</u>	<u>\$201,571,000</u>
ALTERNATIVE B: FAST-TRACK OPTION 4/2 LOSSES							
2001	110,413	\$14,271,000	\$16,062,000	89,043	\$18,343,000	\$20,645,000	\$33,063,000
2002	111,538	14,417,000	16,713,000	89,950	18,530,000	21,481,000	34,402,000
2003	112,664	14,562,000	17,388,000	90,858	18,717,000	22,349,000	35,792,000
2004	113,789	14,708,000	18,089,000	91,765	18,904,000	23,250,000	37,235,000
2005	97,192	12,563,000	15,914,000	78,381	16,146,000	20,453,000	32,755,000
2006	98,143	12,685,000	16,551,000	79,148	16,304,000	21,273,000	34,069,000
		<u>\$83,206,000</u>	<u>\$100,717,000</u>		<u>\$106,944,000</u>	<u>\$129,451,000</u>	<u>\$207,316,000</u>

SCHEDULE OF LOSSES AND GAINS

GAINS IN CONSTRUCTION PROJECT DOLLARS

(amounts are in then-year dollars)

Annual Expenditures (note 7)	Montana's Share % (note 8)	Montana's Share Dollars (note 9)	Total Economic Impact (note 10)	NET GAIN/(LOSS)	
				Then-Year \$ (note 11)	Discounted \$ to Yr. 2001 (note 12)
ALTERNATIVE A: ACCELERATED PROJECT					
\$8,500,000	25%	\$2,125,000	\$3,305,000	(\$18,145,000)	(18,145,000)
8,500,000	25%	2,125,000	3,305,000	(19,013,000)	(17,769,000)
8,500,000	25%	2,125,000	3,305,000	(19,913,000)	(17,393,000)
8,500,000	25%	2,125,000	3,305,000	(20,849,000)	(17,019,000)
8,500,000	25%	2,125,000	3,305,000	(21,821,000)	(16,647,000)
8,500,000	25%	2,125,000	3,305,000	(22,827,000)	(16,275,000)
8,500,000	25%	2,125,000	3,305,000	(23,872,000)	(15,907,000)
8,500,000	25%	2,125,000	3,305,000	(24,958,000)	(15,543,000)
8,500,000	25%	2,125,000	3,305,000	(26,082,000)	(15,180,000)
8,500,000	25%	2,125,000	3,305,000	(27,248,000)	(14,821,000)
<u>\$85,000,000</u>		<u>\$21,250,000</u>	<u>\$33,050,000</u>	<u>(\$224,728,000)</u>	<u>(\$164,699,000)</u>
ALTERNATIVE B: FAST-TRACK OPTION 2/2					
\$19,250,000	25%	\$4,813,000	\$7,485,000	(\$25,578,000)	(\$25,578,000)
19,250,000	25%	4,813,000	7,485,000	(26,917,000)	(25,156,000)
19,250,000	25%	4,813,000	7,485,000	(22,786,000)	(19,902,000)
19,250,000	25%	4,813,000	7,485,000	(24,005,000)	(19,595,000)
<u>\$77,000,000</u>		<u>\$19,252,000</u>	<u>\$29,940,000</u>	<u>(\$99,286,000)</u>	<u>(\$90,231,000)</u>
ALTERNATIVE B: FAST-TRACK OPTION 3/1					
\$19,250,000	25%	\$4,813,000	\$7,485,000	(\$25,578,000)	(\$25,578,000)
19,250,000	25%	4,813,000	7,485,000	(26,917,000)	(25,156,000)
19,250,000	25%	4,813,000	7,485,000	(28,307,000)	(24,724,000)
19,250,000	25%	4,813,000	7,485,000	(24,005,000)	(19,595,000)
<u>\$77,000,000</u>		<u>\$19,252,000</u>	<u>\$29,940,000</u>	<u>(\$104,807,000)</u>	<u>(\$95,053,000)</u>
ALTERNATIVE B: FAST-TRACK OPTION 3/3					
\$12,167,000	25%	\$3,042,000	\$4,731,000	(\$28,332,000)	(\$28,332,000)
12,167,000	25%	3,042,000	4,731,000	(29,671,000)	(27,730,000)
12,167,000	25%	3,042,000	4,731,000	(31,061,000)	(27,130,000)
12,167,000	25%	3,042,000	4,731,000	(26,759,000)	(21,843,000)
12,167,000	25%	3,042,000	4,731,000	(28,024,000)	(21,379,000)
12,167,000	25%	3,042,000	4,731,000	(29,338,000)	(20,918,000)
<u>\$73,002,000</u>		<u>\$18,252,000</u>	<u>\$28,386,000</u>	<u>(\$173,185,000)</u>	<u>(\$147,332,000)</u>
ALTERNATIVE B: FAST-TRACK OPTION 4/2					
\$12,167,000	25%	\$3,042,000	\$4,731,000	(\$28,332,000)	(\$28,332,000)
12,167,000	25%	3,042,000	4,731,000	(29,671,000)	(27,730,000)
12,167,000	25%	3,042,000	4,731,000	(31,061,000)	(27,130,000)
12,167,000	25%	3,042,000	4,731,000	(32,504,000)	(26,533,000)
12,167,000	25%	3,042,000	4,731,000	(28,024,000)	(21,379,000)
12,167,000	25%	3,042,000	4,731,000	(29,338,000)	(20,918,000)
<u>\$73,002,000</u>		<u>\$18,252,000</u>	<u>\$28,386,000</u>	<u>(\$178,930,000)</u>	<u>(\$152,022,000)</u>

EXPLANATORY NOTES:

1. **Glacier Area Direct Losses (1997 dollars)**

Losses to the Glacier area were measured by multiplying the nonresident visitor loss by the visitor expenditures per trip and then multiplying this product by the ratio of the days in Glacier to the days in Montana. For nonresidents who visit Glacier, the average per visitor expenditures are \$206 per trip (1997 dollars) and the average length of stay in Montana is 5.1 days. These amounts were calculated from the data in ITRR's nonresident traveler study (Parrish, Nickerson, and McMahon, 1997). According to the Peccia (1997) study, nonresidents spend an average of 3.2 days in the Glacier area. The ratio of days in Glacier to days in Montana represents the portion of the Glacier trip which impacts Glacier area businesses.

$$\text{Example (Alt. A, year 2001): } 71,630 \times \$206 \times \frac{3.2}{5.1} = \$9,258,529$$

2. **Glacier Area Direct Losses (Then-Year Dollars)**

Amounts represent 1997 dollars escalated to performance year dollars using an inflation rate assumption of three percent per year.

3. **Primary Nonresident Visitor Losses**

Of all nonresident visitors to Glacier, 80.65 percent are in Montana primarily to visit Glacier. These visitors are the ones most likely not to come to Montana at all when the Going-to-the-Sun road is closed or contains delays while under construction. The other nonresident visitors to Glacier (19.35 percent) will not visit the park under these conditions but will still visit Montana since they were "primarily" attracted to Montana by something other than Glacier even though they visited the park during their trip. These latter visitors represent an economic loss to the Glacier area businesses but would not likely represent a loss to the State of Montana as a whole (also see note 1 above).

The factor of 80.65 percent was computed by dividing the percent of nonresident visitors who identified Glacier as their primary attraction (25% of vacationers) by the percent of nonresident visitors who identified Glacier as one of their attractions, but not their primary, to Montana (31% of vacationers). These percentages were determined from ITRR's nonresident traveler study (Parrish, Nickerson, and McMahon, 1997).

4. **Montana Direct Losses (1997 Dollars)**

Amounts represent the average per-visitor trip expenditure multiplied by the loss in primary nonresident visitors.

Example (Alt. A year 2001): $\$206/\text{trip} \times 57,766 = \$11,899,796$

5. **Montana Direct Losses (Then-Year Dollars)**

Amounts represent 1997 dollars escalated to performance year dollars using an inflation rate assumption of three percent per year.

6. **Montana Total Impacts**

Amounts represent the total economic loss to the State of Montana as a result of the drop in nonresident expenditures. For every \$100,000 in sales in travel related industries, the IMPLAN model for Montana shows another \$60,000 in indirect and induced sales across the Montana economy.

7. **Annual Expenditures**

Construction annual expenditures were determined by dividing the high end of the expected total reconstruction costs by the number of years of performance and then subtracting the current program spending level of \$2 million. The Federal Highway Administration estimated construction expenditures at \$90 to \$105 million for Alternative A and \$70 to \$85 million for Alternative B. Annual expenditures are in then-year dollars according to NPS documents.

Current spending levels of \$2 million are subtracted from the annual project costs to determine the net increase in construction costs due to the accelerated and fast-track alternatives. This subtraction is necessary so that the investment decision reflects only the changes to the current program. A more complete cost impact analysis would consider additional savings to the fast-track alternative through the remaining years of completion under the accelerated alternative. These estimates were not available due to the time constraints of this report. It is anticipated that such savings would increase the acceptance of the fast-track alternative over the accelerated alternative from the viewpoint of the National Park Service. It is also anticipated that these same savings would not alter the viewpoint of the tourism business owners regarding the acceptance of the alternatives.

Example: (Alt. A) $\$105,000,000 / 10 - \$2,000,000 = \$8,500,000$

8. **Montana's Share Percentage**

A conservative perspective was adopted regarding the percentage of contracts (25 percent) awarded to Montana-owned construction companies. The Bioeconomics report was utilized as a source for this assumption.

9. **Montana's Share Dollars**

Amounts are annual expenditures multiplied by the participation percentage of 25 percent.

10. **Output Multiplier**

Amounts represent the total economic gain to the State of Montana as a result of the increase in construction expenditures in the State during the periods of performance. The multiplier is from the IMPLAN modeling program as reported in the Bioeconomics report.

11. **Net Gain / (Loss)**

Amounts represent the difference between the output gains and output losses due the investment decisions in the accelerated and fast-track alternatives.

12. **Discounted Dollars to 2001**

In order to compare the value of these investment decisions having cash streams of varying levels over differing periods of time, discounting the cash streams is necessary. Amounts were discounted to the year 2001 since this is the initial year of performance under each alternative. The discounting assumption is 7 percent based upon that used in the Bioeconomics report and used in Government modeling as identified in OMB Circular 94-A. This discount assumption is not necessarily the same as the internal rate of return used by businesses affected by the reconstruction decisions.

SCHEDULE OF VISITATION LOSSES
GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD

ALTERNATIVE A: ACCELERATED PROJECT

<u>Year</u>	<u>Remaining Visitation</u>		<u>Visitation without Construction</u>				<u>Visitation Loss from Construction</u>			<u>Total Visitor Loss</u>	<u>Nonres. Visitor Loss</u>
	<u>Jun-Aug</u>	<u>Sept</u>	<u>Annual</u>	<u>Jun-Sept</u>	<u>Jun-Aug</u>	<u>September</u>	<u>Jun-Aug</u>	<u>September</u>	<u>Total</u>	<u>Loss</u>	<u>Loss</u>
	<u>(note 1)</u>	<u>(note 1)</u>	<u>(note 2)</u>	<u>(note 3)</u>	<u>(note 3)</u>	<u>(note 3)</u>	<u>(note 4)</u>	<u>(note 4)</u>	<u>(note 4)</u>	<u>(note 5)</u>	<u>(note 6)</u>
2001	83.47%	62.78%	2,083,151	1,825,465	1,550,733	274,732	256,336	102,255	358,591	88,981	71,630
2002	83.47%	62.78%	2,104,384	1,844,072	1,566,539	277,533	258,949	103,298	362,247	89,888	72,360
2003	83.47%	62.78%	2,125,617	1,862,678	1,582,345	280,333	261,562	104,340	365,902	90,794	73,089
2004	83.47%	62.78%	2,146,850	1,881,285	1,598,152	283,133	264,175	105,382	369,557	91,701	73,819
2005	83.47%	62.78%	2,168,084	1,899,892	1,613,958	285,934	266,787	106,425	373,212	92,608	74,549
2006	83.47%	62.78%	2,189,317	1,918,498	1,629,764	288,734	269,400	107,467	376,867	93,515	75,280
2007	83.47%	62.78%	2,210,550	1,937,105	1,645,571	291,534	272,013	108,509	380,522	94,422	76,010
2008	83.47%	62.78%	2,231,783	1,955,712	1,661,377	294,335	274,626	109,551	384,177	95,329	76,740
2009	83.47%	62.78%	2,253,017	1,974,318	1,677,183	297,135	277,238	110,594	387,832	96,236	77,470
2010	83.47%	62.78%	2,274,250	1,992,925	1,692,990	299,935	279,851	111,636	391,487	97,143	78,200

ALTERNATIVE B: FAST-TRACK PROJECT

<u>Year</u>	<u>Visitors Willing to Visit by Entrance</u>		<u>Entrance Percentage of Total</u>		<u>Remaining Visitation</u>	<u>Jun-Sept Visitation</u>	<u>Jun-Sept Visitation</u>	<u>Visitor Loss</u>	<u>Nonres. Visitor Loss</u>
	<u>West</u>	<u>East</u>	<u>West</u>	<u>East</u>	<u>% of Total</u>	<u>Bef. Const.</u>	<u>Losses</u>	<u>Loss</u>	<u>Loss</u>
	<u>(note 7)</u>	<u>(note 7)</u>	<u>(note 8)</u>	<u>(note 8)</u>	<u>(note 9)</u>	<u>(note 3)</u>	<u>(note 4)</u>	<u>(note 5)</u>	<u>(note 6)</u>

OPTION 2/2

2001	62.78%	81.33%	62.59%	37.41%	69.72%	1,825,465	552,751	137,159	110,413
2002	62.78%	81.33%	62.59%	37.41%	69.72%	1,844,072	558,385	138,557	111,538
2003	81.33%	62.78%	62.59%	37.41%	74.39%	1,862,678	477,032	118,370	95,288
2004	81.33%	62.78%	62.59%	37.41%	74.39%	1,881,285	481,797	119,553	96,240

OPTION 3/1

2001	62.78%	81.33%	62.59%	37.41%	69.72%	1,825,465	552,751	137,159	110,413
2002	62.78%	81.33%	62.59%	37.41%	69.72%	1,844,072	558,385	138,557	111,538
2003	62.78%	81.33%	62.59%	37.41%	69.72%	1,862,678	564,019	139,955	112,664
2004	81.33%	62.78%	62.59%	37.41%	74.39%	1,881,285	481,797	119,553	96,240

OPTION 3/3

2001	62.78%	81.33%	62.59%	37.41%	69.72%	1,825,465	552,751	137,159	110,413
2002	62.78%	81.33%	62.59%	37.41%	69.72%	1,844,072	558,385	138,557	111,538
2003	62.78%	81.33%	62.59%	37.41%	69.72%	1,862,678	564,019	139,955	112,664
2004	81.33%	62.78%	62.59%	37.41%	74.39%	1,881,285	481,797	119,553	96,240
2005	81.33%	62.78%	62.59%	37.41%	74.39%	1,899,892	486,562	120,735	97,192
2006	81.33%	62.78%	62.59%	37.41%	74.39%	1,918,498	491,327	121,917	98,143

OPTION 4/2

2001	62.78%	81.33%	62.59%	37.41%	69.72%	1,825,465	552,751	137,159	110,413
2002	62.78%	81.33%	62.59%	37.41%	69.72%	1,844,072	558,385	138,557	111,538
2003	62.78%	81.33%	62.59%	37.41%	69.72%	1,862,678	564,019	139,955	112,664
2004	62.78%	81.33%	62.59%	37.41%	69.72%	1,881,285	569,653	141,353	113,789
2005	81.33%	62.78%	62.59%	37.41%	74.39%	1,899,892	486,562	120,735	97,192
2006	81.33%	62.78%	62.59%	37.41%	74.39%	1,918,498	491,327	121,917	98,143

EXPLANATORY NOTES:

1. **Remaining Visitation**

June through August and September visitation percentages represent the percentage of nonresident visitors who will or may visit Glacier if road construction delays occur (83.47%) or if Logan Pass is closed (62.78%). These percentages were developed from nonresidents responses to the Peccia survey question no. 7 and 8, respectively. The following table presents the results of the Peccia survey for nonresident negative responses. Percentages in the schedule are the complement of the negative responses, i.e. (100.00% - 16.53% = 83.47%) and (100.00% - 37.22% = 62.78%).

Question no. 7:

If there was a one hour road construction delay in getting across or to Logan Pass, would you still visit the Park?

<u>Response</u>	<u>Other US</u>	<u>Local Canadian</u>	<u>Other non-US</u>	<u>Totals</u>
No	93	35	11	139
Total	652	118	71	841
Percent No	14.3%	29.7%	15.5%	16.53%

Question no. 8:

If Logan Pass was closed due to road construction, would you still visit the Park?

<u>Response</u>	<u>Other US</u>	<u>Local Canadian</u>	<u>Other non-US</u>	<u>Totals</u>
No	241	52	20	313
Total	652	118	71	841
Percent No	37.0%	44.1%	28.2%	37.22%

2. **Annual Visitation without Construction**

Amounts represent the expected annual visitation based upon a line-of-best-fit regression analysis applied to the actual visitation numbers for the years 1985 through 1997. The analysis shows an approximate increase in visitation of one percent per year. Historical visitation numbers were taken from the Bioeconomics report.

3. **Period Visitation before Construction**

Amounts represent the 13-year historical percentage of visitation during the years 1985 through 1997 for the seasonal periods indicated in the schedule and applied to the annual visitation numbers discussed in note 2 above.

4. **Visitation Loss from Construction**

Amounts are extended from the results discussed in notes 1 and 3.

5. **Total Visitor Loss**

Total visitor loss is visitation loss divided by the average number of reentries for visitors during the months June through September. Reentries were determined from Miller and McCool (1994) as follows.

<u>Month</u>	<u>1993 Visitation</u>	<u>Reentries per Trip</u>	<u>Visitors</u>	<u>Average Summer Reentries</u>
June	340,288	4.6	73,976	
July	626,668	4.6	136,232	
August	624,559	4.6	135,774	
September	<u>288,356</u>	2.4	<u>120,148</u>	
Totals	1,879,871		466,130	4.03

6. **Nonresident Visitor Loss**

Amounts are 80.5 percent of total visitor loss (see note 5 above). Nonresidents represent approximately 80.5 percent of all visitors to Glacier during the summer months (Peccia, 1997). Montana residents are excluded from the measurement of the cost impact as discussed under the assumptions of this report.

7. **Visitors Willing to Visit by Entrance**

Under the fast-track options, one side of Logan Pass will be always be closed during each year of road reconstruction. Since not all visitors can stay on the open side of the road, we distributed the closed-side and open-side visitors according to the direction from which they would enter Glacier. Those who would enter from the closed side are less likely to come (62.78% - see note 1 above) than those who would enter from the open side (81.33 %). The open-side visitor percentages were determined in manner consistent with that discussed in note 1 above as follows.

Question no. 9:

If road construction prevented you from traveling across [Logan] Pass, but allowed access to the Pass, would you still visit the Park?

<u>Response</u>	<u>Other US</u>	<u>Local Canadian</u>	<u>Other non-US</u>	<u>Totals</u>
No	114	34	9	157
Total	652	118	71	841
Percent No	17.5%	28.8%	12.7%	18.67%

Visitors willing to come are: $100.00\% - 18.67\% = 81.33\%$.

8. **Entrance Percentage of Total**

These percentages were determined from nonresident responses based upon the Peccia study in manner consistent with that discussed in notes 1 and 7 above.

9. **Remaining Visitation Percentage of Total**

Amounts are extensions of Visitors Willing to Visit by Entrance (note 7) and Entrance Percentage of total (note 8).

Example (Alt. B, opt. 2/2, 2001): $(62.78\% \times 62.59\%) + (81.33\% \times 37.41\%) = 69.72\%$

**SCHEDULE OF DECREASES TO DIRECT, INDIRECT AND INDUCED, AND OUTPUT
DUE TO TOURISM ECONOMIC LOSSES (note 1)**

**GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD**

(Amounts in 1997 dollars and jobs)

Year (note 2)	Direct Impacts			Indirect and Induced Impacts			Output Impact		
	1997 Spending (note 3)	Personal Income (note 4)	Annual Job Losses (note 5)	1997 Spending (note 3)	Personal Income (note 4)	Annual Job Losses (note 5)	1997 Spending (note 3)	Personal Income (note 4)	Annual Job Losses (note 5)
ALTERNATIVE A: ACCELERATED PROJECT LOSSES									
1	\$11,900,000	\$3,732,000	246	\$7,158,000	\$2,336,000	109	\$19,058,000	\$6,068,000	356
2	12,021,000	3,770,000	3	7,231,000	2,360,000	1	19,252,000	6,130,000	4
3	12,142,000	3,808,000	3	7,303,000	2,384,000	1	19,445,000	6,192,000	4
4	12,263,000	3,846,000	3	7,376,000	2,408,000	1	19,639,000	6,254,000	4
5	12,385,000	3,884,000	3	7,449,000	2,432,000	1	19,834,000	6,316,000	4
6	12,506,000	3,922,000	3	7,522,000	2,456,000	1	20,028,000	6,378,000	4
7	12,627,000	3,960,000	3	7,595,000	2,479,000	1	20,222,000	6,439,000	4
8	12,749,000	3,998,000	3	7,668,000	2,503,000	1	20,417,000	6,501,000	4
9	12,870,000	4,036,000	3	7,741,000	2,527,000	1	20,611,000	6,563,000	4
10	12,991,000	4,074,000	3	7,814,000	2,551,000	1	20,805,000	6,625,000	4
Losses	<u>\$124,454,000</u>	<u>\$39,030,000</u>		<u>\$74,857,000</u>	<u>\$24,436,000</u>		<u>\$199,311,000</u>	<u>\$63,466,000</u>	
ALTERNATIVE B: FAST-TRACK OPTION 2/2 PROJECT LOSSES									
1	\$18,343,000	\$5,753,000	380	\$11,033,000	\$3,601,000	169	\$29,376,000	\$9,354,000	548
2	18,530,000	5,812,000	4	11,146,000	3,638,000	2	29,676,000	9,450,000	6
3	15,830,000	4,965,000	-56	9,522,000	3,108,000	-25	25,352,000	8,073,000	-81
4	15,988,000	5,014,000	3	9,617,000	3,139,000	1	25,605,000	8,153,000	5
Losses	<u>\$68,691,000</u>	<u>\$21,544,000</u>		<u>\$41,318,000</u>	<u>\$13,486,000</u>		<u>\$110,009,000</u>	<u>\$35,030,000</u>	
ALTERNATIVE B: FAST-TRACK OPTION 3/1 PROJECT LOSSES									
1	\$18,343,000	\$5,753,000	380	\$11,033,000	\$3,601,000	169	\$29,376,000	\$9,354,000	548
2	18,530,000	5,812,000	4	11,146,000	3,638,000	2	29,676,000	9,450,000	6
3	18,717,000	5,870,000	4	11,258,000	3,675,000	2	29,975,000	9,545,000	6
4	15,988,000	5,014,000	-56	9,617,000	3,139,000	-25	25,605,000	8,153,000	-82
Losses	<u>\$71,578,000</u>	<u>\$22,449,000</u>		<u>\$43,054,000</u>	<u>\$14,053,000</u>		<u>\$114,632,000</u>	<u>\$36,502,000</u>	
ALTERNATIVE B: FAST-TRACK OPTION 3/3 PROJECT LOSSES									
1	\$18,343,000	\$5,753,000	380	\$11,033,000	\$3,601,000	168	\$29,376,000	\$9,354,000	548
2	18,530,000	5,812,000	4	11,146,000	3,638,000	2	29,676,000	9,450,000	6
3	18,717,000	5,870,000	4	11,258,000	3,675,000	1	29,975,000	9,545,000	5
4	15,988,000	5,014,000	-56	9,617,000	3,139,000	-25	25,605,000	8,153,000	-81
5	16,146,000	5,064,000	3	9,712,000	3,170,000	2	25,858,000	8,234,000	5
6	16,304,000	5,113,000	3	9,807,000	3,201,000	1	26,111,000	8,314,000	4
Losses	<u>\$104,028,000</u>	<u>\$32,626,000</u>		<u>\$62,573,000</u>	<u>\$20,424,000</u>		<u>\$166,601,000</u>	<u>\$53,050,000</u>	
ALTERNATIVE B: FAST-TRACK OPTION 4/2 PROJECT LOSSES									
1	\$18,343,000	\$5,753,000	380	\$11,033,000	\$3,601,000	168	\$29,376,000	\$9,354,000	548
2	18,530,000	5,812,000	4	11,146,000	3,638,000	2	29,676,000	9,450,000	6
3	18,717,000	5,870,000	4	11,258,000	3,675,000	1	29,975,000	9,545,000	5
4	18,904,000	5,929,000	4	11,371,000	3,711,000	2	30,275,000	9,640,000	6
5	16,146,000	5,064,000	-57	9,712,000	3,170,000	-25	25,858,000	8,234,000	-82
6	16,304,000	5,113,000	3	9,807,000	3,201,000	1	26,111,000	8,314,000	4
Losses	<u>\$106,944,000</u>	<u>\$33,541,000</u>		<u>\$64,327,000</u>	<u>\$20,996,000</u>		<u>\$171,271,000</u>	<u>\$54,537,000</u>	

EXPLANATORY NOTES:

1. Amounts in this schedule are in 1997 dollars and 1997 jobs to assure comparability with current market conditions. Determining job losses from then-year values may result in an overstatement of the impact on jobs since inflation is built into then-year spending.

IMPLAN modeling was utilized in these determinations.

2. **Year**

Since values are maintained in 1997 dollars and jobs, we reported the impact by year of contract performance rather than indicating a specific calendar year.

3. **Spending**

Spending dollars represent total amounts spent by consumers. Direct spending are amounts spent by the initial consumer which in this case is the traveler. Indirect and induced spending are amounts spent by recipients of the direct spending for items such as salaries and supplies and the spending of those salaries. Output spending is the total of direct, indirect and induced spending.

4. **Personal Income**

Personal income represents the employee compensation and proprietor's income for direct and indirect and induced economic impacts.

5. **Annual Job Losses**

Job loss amounts represent the annual incremental decrease (increase) in jobs due to the reduced spending by nonresident visitors (i.e. in year 1 of fast-track alternative option 2/2, total job losses of 548 occurs and in year 3, total job recovery of 81 positions occurs). Job losses in the first year of reconstruction are continued into subsequent years unless indicated by a job recovery value; i.e., a negative value such as -81.

**SCHEDULE OF INCREASES TO OUTPUT
DUE TO CONSTRUCTION ECONOMIC GAINS (note 1)
GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD**

(Amounts in 1997 dollars and jobs)

<u>Year</u>	<u>Then-Year Spending (Schedule 2)</u>	<u>1997</u>		<u>Annual Job Gains (note 2)</u>
		<u>Spending (note 2)</u>	<u>Personal Income (note 2)</u>	
ALTERNATIVE A: ACCELERATED PROJECT LOSSES				
1	\$3,305,000	\$2,936,000	\$975,000	46
2	3,305,000	\$2,851,000	947,000	-
3	3,305,000	\$2,768,000	920,000	-
4	3,305,000	\$2,687,000	893,000	-
5	3,305,000	\$2,609,000	867,000	-
6	3,305,000	\$2,533,000	841,000	-
7	3,305,000	\$2,459,000	817,000	-
8	3,305,000	\$2,388,000	793,000	-
9	3,305,000	\$2,318,000	770,000	-
10	3,305,000	\$2,251,000	748,000	-
Gains	<u>\$33,050,000</u>	<u>\$25,800,000</u>	<u>\$8,571,000</u>	<u>46</u>

ALTERNATIVE B: FAST-TRACK OPTION 2/2				
1	\$7,485,000	\$6,650,000	\$2,209,000	103
2	7,485,000	6,457,000	2,145,000	-
3	7,485,000	6,269,000	2,083,000	-
4	7,485,000	6,086,000	2,022,000	-
Gains	<u>\$29,940,000</u>	<u>\$25,462,000</u>	<u>\$8,459,000</u>	<u>103</u>

ALTERNATIVE B: FAST-TRACK OPTION 3/1				
1	\$7,485,000	\$6,650,000	\$2,209,000	103
2	7,485,000	6,457,000	2,145,000	-
3	7,485,000	6,269,000	2,083,000	-
4	7,485,000	6,086,000	2,022,000	-
Gains	<u>\$29,940,000</u>	<u>\$25,462,000</u>	<u>\$8,459,000</u>	<u>103</u>

ALTERNATIVE B: FAST-TRACK OPTION 3/3				
1	\$4,731,000	\$4,203,000	\$1,396,000	65
2	4,731,000	4,081,000	1,356,000	-
3	4,731,000	3,962,000	1,316,000	-
4	4,731,000	3,847,000	1,278,000	-
5	4,731,000	3,735,000	1,241,000	-
6	4,731,000	3,626,000	1,205,000	-
Gains	<u>\$28,386,000</u>	<u>\$23,454,000</u>	<u>\$7,792,000</u>	<u>65</u>

ALTERNATIVE B: FAST-TRACK OPTION 4/2				
1	\$4,731,000	\$4,203,000	\$1,396,000	65
2	4,731,000	4,081,000	1,356,000	-
3	4,731,000	3,962,000	1,316,000	-
4	4,731,000	3,847,000	1,278,000	-
5	4,731,000	3,735,000	1,241,000	-
6	4,731,000	3,626,000	1,205,000	-
Gains	<u>\$28,386,000</u>	<u>\$23,454,000</u>	<u>\$7,792,000</u>	<u>65</u>

EXPLANATORY NOTES:

1. Amounts in this schedule are in 1997 dollars and 1997 jobs to assure comparability with current market conditions. Determining job losses from then-year values may result in an overstatement of the impact on jobs since inflation is built into then-year spending. Construction economic gains in 1997 dollars were determined by de-escalating the then-year amounts by three percent per year.

IMPLAN modeling was utilized in these determinations.

2. Amounts were determined using the same multipliers as those in Bioeconomics report. Refer to Schedule 4, notes 3, 4, and 5 for discussion of spending, personal income, and jobs.

SCHEDULE OF FACTORS AND VALUES
for MEASUREMENT OF ECONOMIC IMPACTS
GLACIER NATIONAL PARK RECONSTRUCTION PROJECT ALTERNATIVES
for GOING-TO-THE-SUN ROAD

<u>Description and Cross-reference of Factors and Values</u>	<u>Factors & Values</u>	<u>Sources & Notes</u>
Initial Year of Construction	2001	1
Alt. A Construction expenditures - total project	\$105,000,000	2
Alt. B Construction expenditures - total project	\$85,000,000	2
Alt. A Construction period	10	1
Alt. B Construction period for options 3/3 and 4/2	6	1
Alt. B Construction period for options 2/2 and 3/1	4	1
Alt. A Construction expenditures - annual costs	\$10,500,000	3
Alt. B Construction expenditures - annual costs in 6 years	\$14,166,667	3
Alt. B Construction expenditures - annual costs in 4 years	\$21,250,000	3
Current program expenditures	\$2,000,000	1, 2
Alt. A Net increase in construction expenditures	\$8,500,000	4
Alt. B Net increase in construction expenditures	\$12,166,667	4
Alt. B Net increase in construction expenditures	\$19,250,000	4
Montana's share of reconstruction	25.00%	5
Inflation rate	3.00%	2
Discount rate	7.00%	5
Summer (Jun-Sep) visitation factor of annual	87.63%	5
Number of reentries per visitor trip	4.03	6
Nonresident average length of stay in Montana for Glacier visitor	5.1	7
Nonresident average group size of Glacier visitor	2.75	7
Visitor group daily expenditure (statewide nonresident Glacier visitors: 1996)	\$108.33	7
Visitor group daily expenditure (Statewide Nonresidents: 1997 dollars)	\$110.82	8
Per-visitor trip expenditure (Statewide Nonresidents: 1997 dollars)	\$206.00	9
Statewide nonresident vacationers primarily attracted to Montana because of Glacier	25.00%	7
Statewide nonresident vacationers attracted to Montana because of Glacier	31.00%	7
Nonresident average length of stay in Glacier Area for Glacier visitor	3.2	10
GNP visitors who are nonresidents of Montana (Peccia Q1)	80.50%	10
West entrance % of total (Peccia Q4)	62.59%	10
Visitors willing to take a one hour delay to the Logan Pass (Peccia Q7)	83.47%	10
Visitors willing to come to Glacier with Logan Pass inaccessible (Peccia Q8)	62.78%	10
Visitors willing to come if Logan Pass is accessible (Peccia Q9)	81.33%	10
Hotel, Lodge, and B&B	18.70%	7
Gasoline and oil	20.60%	7
Restaurant and bar	17.20%	7
Retail sales	24.40%	7
Other	19.10%	7

EXPLANATORY NOTES:

1. Source: discussions with Larry Frederick of Glacier National Park.
2. Source: Federal Highway Administration letter, dated April 6, 1998, by Carol H. Jacoby, Division Engineer, including attachments.
3. Computations:
$$\begin{aligned} \$105,000,000 / 10 &= \$10,500,000 \\ \$ 85,000,000 / 6 &= \$14,166,667 \\ \$ 85,000,000 / 4 &= \$21,250,000 \end{aligned}$$
4. Results from note 3 above less \$2,000,000 in current program spending.
5. Source: Bioeconomics, Inc.'s report (Duffield, undated).
6. Source: The Glacier National Park Visitor Use Study (Miller and McCool, 1994)
7. Source: Nonresident Summer Traveler to Montana (Parrish, Nickerson, and McMahon, 1997)
8. Computation: $1997 \text{ CPI} / 1996 \text{ CPI} * \$108.33 = 110.82$.
9. Computation: $\$110.82 \times 5.1 \div 2.75 = \205.52 ; rounded to \$206.
10. Source: Peccia (1997) modified to represent nonresident responses only.

APPENDIX B – PECCIA (1997) SURVEY RESULTS

To obtain a copy of the survey results from
Vehicle Movement and Traffic Study, Glacier National Park, Montana

(Robert Peccia & Associates, 1997) please send an email request to

kmcmahon@forestry.umt.edu.

Thank you!