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Technical Report

Regional Economic Impact Analysis for
Yellowstone and Grand Teton National Parks and
John D. Rockefeller, Jr. Memorial Parkway
Winter Use Draft Environmental Impact Statement

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By,

Dr. John Duffield
Chris Neher

The University of Montana
Department of Mathematical Sciences
Missoula, Montana 59812

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EXECUTIVE SUMMARY

This technical report is intended as a stand-alone document providing estimates of regional economic impacts associated with the range of winter use management alternatives for Yellowstone N.P. and Grand Teton and John D. Rockefeller, Jr. Memorial Parkway. These estimates will be incorporated into the forthcoming winter use EIS being developed by National Park Service and cooperating agencies. The estimates presented in this document are based on available data primarily from two winter park user surveys (Duffield and Neher 2000; RTI International 2004), as well as information and data supplied by cooperating counties, municipalities, and non-governmental organizations within the Greater Yellowstone Area (GYA) on current and recent historical winter use and related economic and financial parameters.

In November 2004, the NPS completed a Temporary Winter Use Plan and accompanying rule making to guide snowmobile and snowcoach use in the parks for the next three winters while a new long-term plan and new EIS are prepared. Under the Temporary Plan, a maximum of 720 BAT snowmobiles are allowed in Yellowstone each day. In Grand Teton, 50 BAT snowmobiles are allowed per day on the CDST and Grassy Lake Road and 40 BAT snowmobiles are allowed per day on Jackson Lake. Snowplanes are not allowed on Jackson Lake. All Yellowstone recreational snowmobiles must be commercially guided.

The primary problem analyzed in this report is how winter use management alternatives would likely impact winter recreational use in the Greater Yellowstone Area (GYA), and how impacts to GYA winter use would impact economic activity (expenditures and employment) within the region. Five specific analysis regions are defined for purposes of regional economic modeling: a three-state (Montana, Wyoming, Idaho) economy, a five-county GYA economy including Gallatin and Park in Montana, Teton and Park in Wyoming, and Fremont in Idaho, and the economies of Cody, Jackson, and West Yellowstone. An important issue related to estimating these impacts is to what extent visitors might substitute between winter recreational opportunities within the GYA given changes in policies governing park access. Given the significant growth in these economies and uncertainty in forecasting future recreation trends (for example, visitor use of snowcoaches), the temporal scope of this analysis is the short term.

The remainder of this executive summary is organized as follows. The next section describes recent patterns of visitation in response to the policy changes that have been implemented in the last few years. This summary also describes the observed response of local economies to these changes in park visitation, as well as changes in use on adjacent national forests. Next, the planning alternatives and baselines are described. The following sections characterize the expected impacts of these policies on visitation and local economies. Three estimates are presented. The first estimate is a lower bound, is for the near term, and is based in large part on the observed changes in visitation resulting from current policy. The next estimate is an upper bound based on legal limits. It is possible that in the distant future these legal limits could be reached, depending on

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population growth, marketing and advertising efforts, and preferences for winter recreation. A third estimate (presented in Appendix B to the main report) is based on previous survey-based analysis of winter use policies (Duffield and Neher 2000; RTI International 2004), developed for previous planning efforts in 2000, 2003, and 2004. These estimates tend to fall between the low and high estimates. The policies analyzed in these previous studies differ to varying degrees from the alternatives proposed in the current planning effort and are not further discussed in this summary.

Observed Policy Response: Visitation and Economies. Table ES1 and Figure ES1 show ten years of Yellowstone NP winter visitation data, by type of transportation. Clearly, beginning in the winter of 2002-03 new park winter management rules led to a substantial drop in the number of snowmobile visitors to the park. However, other user groups have seen increases since the management controls were implemented. Particularly notable is the consistent increases in snowcoach visitation between the 2001-02 and 2005-06 winters. Snowcoach visitation to Yellowstone has been growing at an approximate 10 % to 13% rate annually.

Table ES1. Historical Winter Yellowstone NP Visitation, by Type of Access.

Winter Season	Number of Visitors Entering the Park						Total Visitors
	Auto	RV	Bus	Snowmobile	Snowcoach	Skiers	
1996-1997	30,432	129	429	71,759	10,221	485	113,455
1997-1998	35,704	81	305	72,834	9,897	453	119,274
1998-1999	36,450	90	173	76,271	10,779	446	124,209
1999-2000	37,872	140	747	76,571	11,699	351	127,380
2000–2001	43,036	138	3,071	84,473	11,683	389	142,790
2001–2002	47,750	215	417	87,206	11,832	307	144,490
2002–2003	41,666	278	796	60,406	12,154	322	112,741
2003–2004	42,643	181	1,141	30,437	14,823	438	85,984
2004-2005	42,639	138	1153	24,049	17,218	468	83,235
2005-2006	44,136	92	1,288	28,833	19,856	271	88,718

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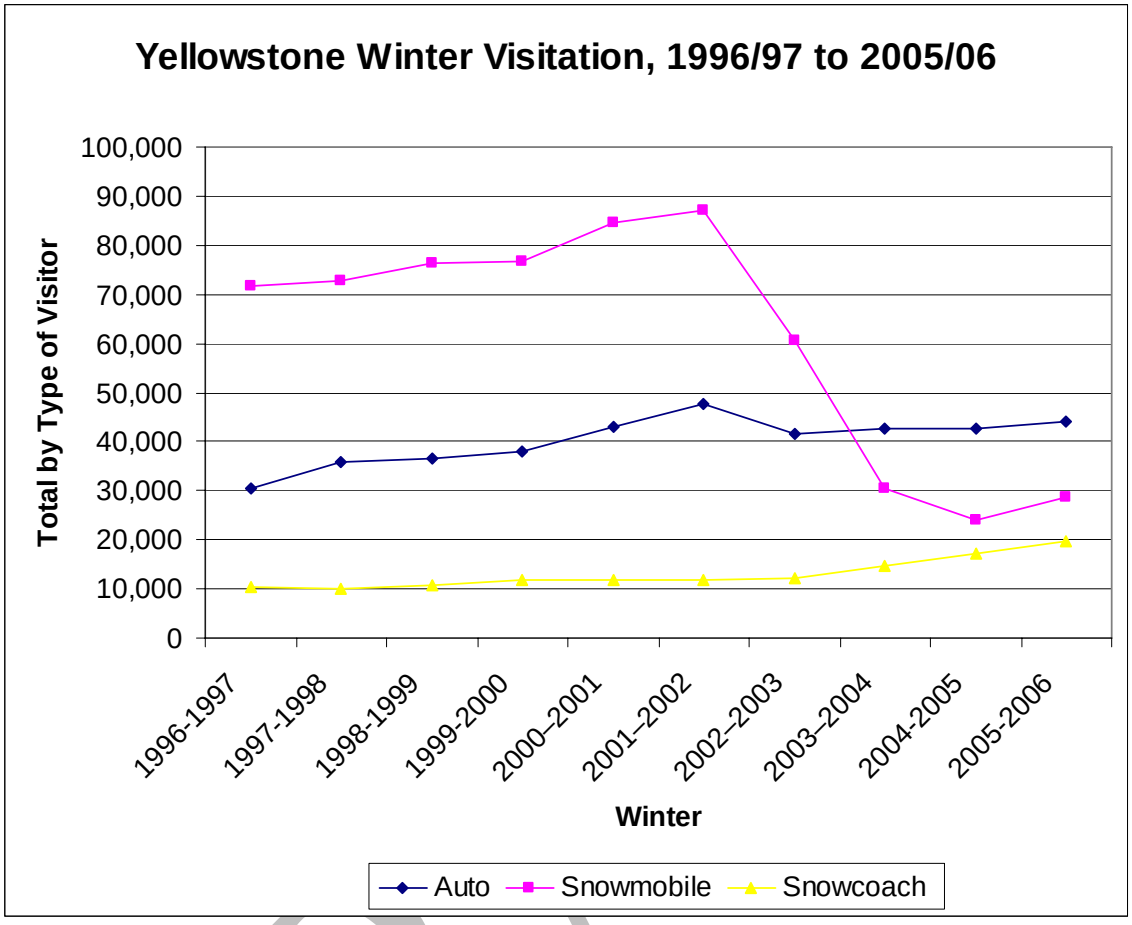

Figure ES1. Yellowstone NP Winter Visitation Trends by Access Type.

Visitation to Grand Teton and the Parkway takes several different forms, as shown in Table ES2. As the table demonstrates, visitation has remained relatively constant, although visitation to the CDST has dropped substantially in the past few winters, while snowplane use has been eliminated due to impairment of Grand Teton's soundscapes. Also evident is the popularity of cross-country skiing in both parks as well as snowmobiling in the Parkway.

Table ES2. Winter use by activity in Grand Teton and the Parkway, 1996–2006.

Winter Season	Parkway Snow-mobile	CDST Snow-mobile	GTNP Snow-mobile	GTNP Snow-plane	Parkway Skiing	GTNP Skiing	Total Recreational Visitors (including visitors in wheeled vehicles)
1996–1997	19,887	1,930	3,643	1,440	1,294	5,962	162,627
1997–1998	19,597	1,857	3,951	1,485	1,185	4,151	176,601
1998–1999	17,160	1,639	3,436	851	1,149	4,242	180,367
1999–2000	23,400	1,329	4,800	1,091	1,581	5,687	223,944
2000–2001	31,011	1,307	2,618	1,148	1,987	4,774	211,700
2001–2002	26,401	2,006[4]	3,421	1,299	1,842	7,346	217,999
2002–2003	23,062	1,752[4]	2,305	0[1]	2,099	7,007	227,964
2003–2004	9,217	139	1,939	0	1,389	8,000[2]	186,871
2004-2005	7,351	11	149	0	1,775	6,751	174,840
2005-2006	10,161	17	268	0	1,456	9,843	174,250
Average	18,725	n/a[3]	2,653	n/a	1,576	6,376	193,716

Source: Data obtained from NPS visitation records.
[1] Snowplanes were prohibited from Grand Teton beginning with this winter season.
[2] Exact count is unavailable; this figure represents a best estimate.
[3] No average given for CDST because use has been highly variable.
[4] Estimate based upon previous average percentage of Parkway users.

There have been significant declines in both snowmobile visits and total winter visitation to the parks in the past four years. An examination of key tourism-targeted tax collections in the GYA counties bordering the parks provides information on the degree to which the economies of these counties and communities are economically dependent on winter park visitation.

Table ES3 shows the relative sizes of the 5 geographic economic analysis areas, based on the most recent IMPLAN regional economic analysis data available (Minnesota IMPLAN Group 2006). The range of total economic outputs among the areas is from $166 billion annually in the three-state region to $167 million in the relatively small and isolated town of West Yellowstone. Clearly, a change in visitor spending that is trivial in the context of the three-state economy, has the potential to be substantial in the case of the much smaller West Yellowstone economy.

Table ES3. Economic Output and Employment for Five Analysis Areas, 2003.

Analysis Area	Total 2003 Economic Output	Total 2003 Full and Part-Time Employment (jobs)
5-County GYA	$9,547,000,000	115,822
3-State region	$166,318,000,000	1,750,137
West Yellowstone, MT	$167,000,000	2,333
Jackson, WY	$1,860,000,000	20,302
Cody, WY	$917,000,000	10,705

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Source: Minnesota IMPLAN group 2003 Data Files.

In general, during the period of time when winter visitation to Yellowstone NP was significantly decreasing (2002-03 through 2005-06), winter lodging tax collections in Fremont County, Idaho were trending upwards in contradiction to the Yellowstone visitation trends. The 2005-06 Fremont County winter lodging tax collections were over double the level seen in the four years prior to the 2002 Yellowstone winter season management changes.

Similar winter lodging tax collections were examined for Park County, Wyoming, on the east side of Yellowstone NP. The main community in Park County is Cody. As in the case for Fremont County, winter lodging tax collections do not follow the significant decreases in YNP winter visitation in 2002-2006.

The recent historical tax data for Fremont and Park counties indicates that declines in snowmobile entries into Yellowstone NP in particular and in winter visitation to the park in general have not detectably impacted the overall winter tourist economy in the counties as measured by monthly lodging tax receipts. This is despite the fact that the economies of these counties are relatively small. Two other adjoining counties, Gallatin County in Montana (including Bozeman) and Teton County in Wyoming (including Jackson) are relatively large economies where even substantial changes in Yellowstone and Grand Teton National Park winter visitation would never be detectable. Similarly, impacts from changes in the parks' winter visitation levels for the three-state economy would of course also never be detectable.

The remaining major gateway community for the Yellowstone-Grand Teton area is West Yellowstone, at the West Entrance to Yellowstone National Park. Winter resort tax receipts for the town of West Yellowstone were compared to winter entries through the West Entrance to Yellowstone NP, and winter snowmobile visits to the Hebgen District of the Gallatin NF. Unlike the cases of Park and Fremont Counties, discussed above, it is clear that in response to significant reductions in winter park visits through the West Entrance in 2002-03 through 2005-06, resort tax collections also fell. It should be noted that the decline was not in proportion to the decrease in West Entrance visits. Specifically, comparing average levels for the four years after management changes (2002-03 through 2005-06) to the four years immediately preceding the changes shows that while park visitation fell 48.5% on average, winter tax collections fell 19.7%.

The Greater Yellowstone Coordinating Committee has been undertaking a winter use monitoring strategy on the six national forests adjoining Yellowstone National Park (Mary Maj, pers. com. 2006). One objective of this work was to answer the question of whether restrictions in snowmobile use in national parks result in changes in snowmobile use on national forests. Currently five year summaries of the findings from monitoring snowmobile use in the GYA are being evaluated. Preliminarily, it appears that in general use on the forests has not increased in response to changes in park policy, but the

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interpretation is complicated by recent drought conditions. However, a major caveat is that winter visitor surveys on the national forests are not extensive. The best monitoring data on the adjacent national forests is for the Hebgen District of the Gallatin National Forest. This district includes many miles of groomed snowmobile trails that are accessed primarily from the West Yellowstone area. What the data shows is that in the last three winters, snowmobile use on this national forest area adjacent to West Yellowstone has declined at the same time park visits through the West Entrance are declining. The decline on the forest was not as great, a drop of 25,000 visits (or 25% decline) for 2001-02 to 2005-06 compared to a 60% drop (42,000 visits) through the West Entrance. This is a short time series and interpretation is complicated by the drought and relatively low snowpack in recent years, including the winter of 2004-05. In any case, this data does suggest that restrictions on snowmobile access at the West Entrance have not lead to increased use on the adjacent national forest.

National forest snowmobile use data was also obtained for the Ashton/Island Park Ranger District of the Caribou-Targhee National Forest in an annual winter monitoring report for 2005-2006 (Davis, Jenkins, and Angell undated). Total use for these counters for the winter seasons of 2002-2003 through 2005-2006 was 29,893, 34,412, 40,993, and 39,781, respectively. This data does show an increase for the most recent two years, but combined with the Hebgen data there is still a substantial decline in total national forest snowmobile use on these two districts. The increase for the Ashton/Island Park District may just be due to better counts of use, and the sense of district staff is that use is actually down (Bill Davis, pers. comm. 2006).

Of the five regional economic planning areas examined in this study, only for the gateway community of West Yellowstone are there detectable impacts on the relevant planning region's economy. These results are consistent with the predicted impacts from the Socioeconomic Impacts section of the FSEIS (Yellowstone National Park, 2002), where the authors noted that measurable impacts from changes in winter use policy in the parks would only be found in the community of West Yellowstone.

Other changes in observed use in response to new policy are as follows. The distribution of use between snowmobiles and snowcoaches has changed substantially in the wake of the temporary rule snowmobile restrictions. Prior to the rule changes, snowmobile visitors made up about 91% of West Entrance visits; currently snowmobile visits comprise 61%. Snowcoach use has increased from 9% of West Entrance use to 38%. In 2004-2005, which was a year with low snowpack in the West Yellowstone and Old Faithful area, snowcoach and snowmobile use were approximately equal.

With reference to Table ES1, it is notable that winter access by autos, recreational vehicles and buses, all of which in a normal winter is through the North Entrance, has been relatively stable[1]. This seems to indicate that visitors are not substantially substituting access between entrances in response to current policy changes. Also, because access through the West, South, and East Entrances to Yellowstone National

[1] This is after correcting for double-counting in recent years' data of visitors arriving by auto who participate in oversnow motorized travel from the North Entrance in Table ES1.

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Park is all oversnow under current and historic policies, there does not seem to be a shift in access modes between cars and oversnow vehicles. Use by skiers has increased in recent years but remains a tiny fraction of total use. To conclude, the main changes with respect to visitor use levels brought about by current management policies are the reduction in total snowmobile use and the substitution within motorized oversnow access from snowmobile use to snowcoach use. The latter has steadily increased the last five winters.

Policy Alternatives. The current legal and management uncertainty associated with the winter use EIS process makes identification of the proper no-action (baseline) alternative against which to compare the impacts of the action alternatives problematic. Due to this uncertainty, four alternatives are being treated as possible no-action baselines for the purpose of this EIS. These four no-action alternatives are as follows. The first no-action alternative is the **snowcoach-only** alternative. This was the no-action alternative in the SEIS (Yellowstone National Park, 2002), and it is incorporated as alternative 2 in this EIS. It was also the alternative selected by the NPS in the 2000 winter use plan and 2001 implementing regulations. A second no action alternative would be to **continue the current temporary plan** for winter use that the NPS is currently operating under. Action alternative 1 in this EIS most closely matches the temporary plan and this no-action alternative. A third no action alternative is to adhere to the 1983 regulations that governed snowmobile use in the parks prior to promulgation of the 2001 regulations. The implied no-action alternative is **historical use** at levels consistent with management in place prior to the 2001-02 winter. For purposes of the analysis in this report, we use the winter of 1997-98. A fourth no action alternative would have neither snowmobiles, nor snowcoach use in the parks, in other words, **no motorized oversnow access** and no plowing. Under the implementing regulations for the current temporary plan, the authorization of snowmobile and snowcoach use in the parks expires at the end of the 2006-2007 winter season. In the absence of any action on the part of the agency, these motorized oversnow means of accessing the park would not be authorized

There are six action alternatives, summarized in Table ES4. Alternative 1 would generally continue the current Temporary Plan into the future with some modifications. BAT requirements for snowcoaches would be implemented, and a daily limit would be imposed on snowcoach access. This alternative would allow 720 snowmobiles per day in Yellowstone and 140 snowmobiles in GTNP and the Parkway, with the requirements that generally all snowmobiles use BAT and all snowmobilers in Yellowstone travel with a commercial guide. There are additionally five options under Alternative 1, primarily differing in whether the East Entrance is open or closed, and whether any lost East Entrance allotment is reallocated or not, and guided or not (Table ES4).

Alternative 2 is similar to full implementation of the snowcoach-only provisions of a previous decision, with some key changes. A daily limit would be placed on snowcoach use, BAT requirements for snowcoaches would be implemented, and the East Entrance road would be closed to through travel. Under the snowcoach only alternative, 120 guided snowcoaches per day would be allowed.

Alternative 3 calls for eliminating road grooming on most of Yellowstone's snow roads and closing them to oversnow vehicle travel. In Yellowstone, the exception would be

South Entrance to Old Faithful, which would remain open to snowmobile and snowcoach travel.

Alternative 4 calls for expanded recreational use of the parks in the winter. It would allow up to 1,025 snowmobiles per day in Yellowstone and 250 in GTNP and the Parkway.

Alternative 5 would allow up to 540 snowmobiles per day in Yellowstone and 75 in GTNP and the Parkway, with the requirement that all snowmobiles meet improved BAT requirements and about 20% of snowmobiles in Yellowstone could travel without a commercial guide.

Alternative 6 calls for a mixture of wheeled vehicle access to Yellowstone's interior in addition to snowmobile and snowcoach use of some of the park's snow roads. The NPS would plow the mid-elevation west-side roads from Mammoth to Old Faithful and West Yellowstone for commercially-guided wheeled vehicles only. Up to 100 commercially guided wheeled vehicles would be allowed to enter the park daily through the Mammoth Terraces or West Entrance.

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Table ES4 Comparison of Yellowstone NP Entrance Limits across Alternatives. By Entrance and Type of Use.

Entrance	Type of use	Alternative 1-A	Alternative 1 -B	Alternative 1 -C	Alternative 1 -D	Alternative 1 -E	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
West Entrance	Com-guided snowmos	400	424	400	400	400		0	450	232	0
	Un-guided Snowmos			20					150	58	0
	Com-guided coach	34	37	34	34	34	55	0	46	34	0
	Un-guided coach										0
	Wheeled										75
South Entrance	Com-guided snowmos	220	256	220	220	220		250	188	116	250
	Un-guided Snowmos			20					62	29	
	Com-guided coach	10	10	13	13	13	25	20	15	10	10
	Un-guided coach										
	Wheeled										0
East Entrance	Com-guided snowmos	40	0	0	0	0		0	75	32	0
	Un-guided Snowmos								25	8	0
	Com-guided coach	3	0	0	0	0	0	0	4	2	0
	Un-guided coach										
	Wheeled										0
North Entrance	Com-guided snowmos	30	20	30	30	30		0	19	32	0
	Un-guided Snowmos								6	8	0
	Com-guided coach	2	2	13	13	13	17	0	16	15	0
	Un-guided coach										
	Wheeled										25
Old Faithful	Com-guided snowmos	30	20	30	30	30		0	38	20	100
	Un-guided Snowmos								12	5	0
	Com-guided coach	29	29	18	18	18	23	0	24	19	30
	Un-guided coach								10		
	Wheeled										0
Totals	**Com-guided snowmos**	**720**	**720**	**680**	**680**	**680**	**0**	**250**	**770**	**432**	**350**
	Un-guided Snowmos	**0**	**0**	**40**	**0**	**0**	**0**	**0**	**255**	**108**	**0**
	Com-guided coach	**78**	**78**	**78**	**78**	**78**	**120**	**20**	**105**	**80**	**40**
	Un-guided coach	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**
	Wheeled	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**

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Estimated Changes in Visitation and Economic Impacts. The lower bound estimate of changes in visitation due to the six alternatives is presented in Table ES5. These are the estimated changes for each of the policies that would likely be observed in the near term (including the next year following the policy change). Table ES6 provides upper bound estimates based on the case where each days use in the winter season would be at the legal maximum allowed under a given policy alternative. It is possible that in the long term such limits could be reached, but there is considerable uncertainty with when or if this would occur. The basis for each of these estimates is presented in the main report. The changes reported are changes in GYA visitation by visitors from outside the GYA relative to each of the four different no-action alternatives. It is these estimated changes in visitation and associated visitor expenditures that are used as the primary put into the IMPLAN regional economic modeling program. Figures ES2 and ES3 provide a graphical comparison of the relative changes from baseline visitation estimated for each alternative.

Table ES5. Comparison of Action Alternatives 1-6 Estimated GYA Visitation Levels to Four Different No-action Alternative Baselines: Lower Bound Estimate.

LOWER BOUND ESTIMATE	Visitation	Historical Baseline	Snowcoach only Baseline	Temporary Rules Baseline	Motorized Ban Baseline
Baseline Visitation		119,274	59,885	88,718	40,029
Alt. 1 A,B,D,E	88,718	(30,556)	28,833	-	48,689
Alt. 1 C	93,138	(26,136)	33,253	4,420	53,109
Alt. 2	59,885	(59,389)	-	(28,833)	19,856
Alt. 3	53,658	(65,616)	(6,227)	(35,060)	13,629
Alt. 4	116,896	(2,378)	57,011	28,178	76,867
Alt. 5	100,652	(18,622)	40,767	11,934	60,623
Alt. 6	77,892	(41,382)	18,007	(10,826)	37,863

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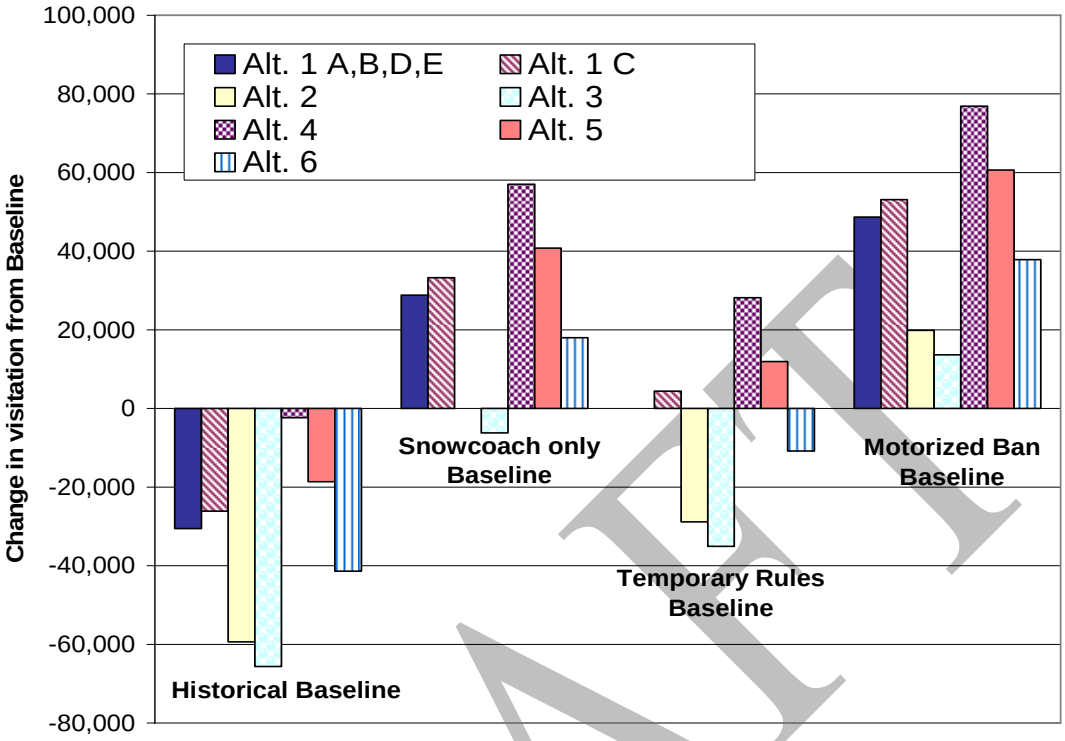

Figure ES2. Comparison of Estimated Visitation Changes Relative to the Baselines Associated with each of the Action Alternatives: Lower Bound Estimates.

Table ES6 Comparison of Action Alternatives 1-6 Estimated GYA Visitation Levels to Four Different No-action Alternative Baselines: Upper Bound Estimate.

UPPER BOUND ESTIMATE	Visitation	Historical Baseline	Snowcoach only Baseline	Temporary Rules Baseline	Motorized Ban Baseline
Baseline Visitation		119,274	59,885	88,718	40,029
Alt. 1 A,B,D,E	172,316	53,042	112,431	-	132,287
Alt. 1 C	176,736	57,462	116,851	88,018	136,707
Alt. 2	125,736	6,462	-	37,018	85,707
Alt. 3	85,361	(33,913)	25,476	(3,357)	45,332
Alt. 4	235,599	116,325	175,714	146,881	195,570
Alt. 5	158,206	38,932	98,321	69,488	118,177
Alt. 6	291,342	172,068	231,457	202,624	251,313

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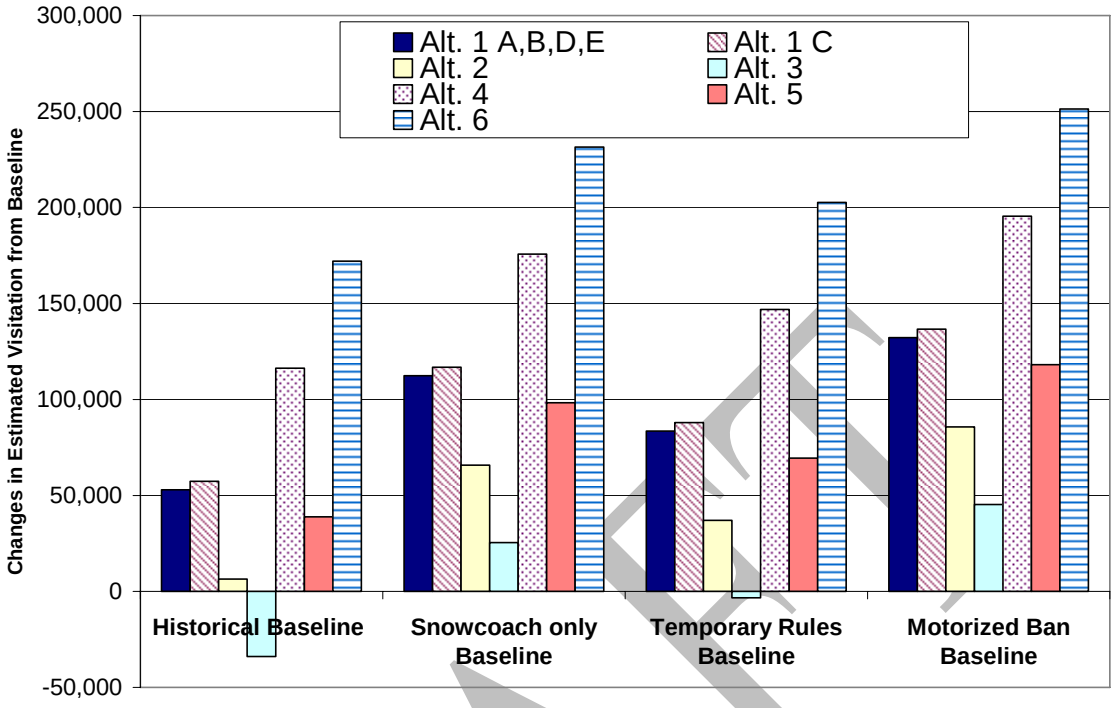

Figure ES3. Comparison of Estimated Visitation Changes Relative to the Baselines Associated with each of the Action Alternatives: Upper Bound Estimates.

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The analysis of economic impacts relies upon IMPLAN modeling. IMPLAN is an input/output model designed by the U.S. Forest Service and is commonly used by state and federal agencies for policy planning and evaluation purposes. There are two important caveats relevant to the interpretation of IMPLAN model estimates, generally, and within the context of this analysis. Principally, the model is static in nature and measures only those effects resulting from a specific change at one point in time. Thus, IMPLAN does not account for adjustments that may occur. For example, a change in NPS policy on snowmobile numbers within the parks may encourage local businesses to diversify or modify their operations and thereby abate reductions in employment and output. In addition, IMPLAN does not acknowledge the re-employment of workers displaced by the original change. In the application below, this caveat simply suggests that t*he long-run net output and employment effects resulting from the modeled changes in winter access policy would likely be smaller than those estimated by the model*. A second caveat to the IMPLAN analyses is related to the model data. The IMPLAN analysis in this document relies upon input/output relationships derived from 2003 data.

The following analysis of impacts associated with the FEIS includes individual IMPLAN impact model results for each of the five analysis areas (3-state region, 5-county GYA, and 3 communities) for each comparison of action and no-action alternatives, and for the lower bound and upper bound impact estimates (approximately 280 models). The complete modeling results are provided below in Appendix A, and the model output is

available in a separate file posted on the Yellowstone National Park website. The results presented are for the five analysis areas and for comparisons to the historical (1997-98) baseline. Many of the estimates differ only marginally, and the large majority of estimated impacts represent a very small percentage change in total economic activity for the analysis areas.

Estimates of per-visit expenditures were estimated using a time series model of West Yellowstone resort tax collections and West Entrance visits. This regression model of winter visitation and tax receipts estimates that for every West Entrance winter visit, $175.33 is spent on taxable goods and services in the community of West Yellowstone. This spending does not represent total trip spending for an individual as they may visit the park more than once on a trip or may visit other areas in the vicinity such as national forest lands. In the case of Alternative 6 (wheeled access on plowed roads) average spending per visit was assumed to be $106.33. This lower estimate allows for the significantly cheaper cost of visiting the park in a wheeled tour bus.

Tables ES7 through ES9 show a comparison of the estimated total output and employment impacts of the action alternatives to the historical (1997-98) baseline level of visitation. The modeling results are shown both for the lower bound and upper bound impact estimates. Overall, as a percentage of total annual economic activity, only in the town of West Yellowstone do the estimated impacts of the winter use policy alternatives represent a significant change in total annual economic activity. Besides the case of West Yellowstone, nowhere does the estimated change in annual output and employment rise to even a 1% change, and in most cases the change is much smaller (especially in the cases of the larger 5-county and 3-state analysis areas).

In the case of the West Yellowstone economy, the largest and second largest short run (Lower Bound) impacts relative to historical visitation levels are seen in the case of the "no grooming" Alternative 3, and "snowcoach only" Alternative 2, respectively. It is estimated that these two alternatives would lead to a 6-7% reduction in annual output and 9-10% reduction in annual employment relative to 1997-98 historical visitation levels. It should be noted that while a 6-7% reduction in annual output seems modest, the reduction would not be spread over the year, but would occur during the relatively short winter season, and thus would disproportionately affect businesses and employees who rely on winter visitors for a large share of their annual income.

The Alternative 1 (A, B, D, E) – West Yellowstone impact cell corresponds to current policy. This IMPLAN model estimate can be compared to actual observed changes in West Yellowstone Tax resort tax revenues between the 1997-98 winter and the 2005-06 winter. The $5.8 million reduction in total output shown in the table would represent about $174,000 in lost tax revenues for the town if all of the output change (including indirect and induced changes) was taxable under the resort tax. Examination of West Yellowstone resort tax records shows that winter season collections actually dropped by about $154,000 in constant dollars between the 1997-98 and 2005-06 winters. The closeness of these estimates provides some "ground-truthing" from available observed data for the IMPLAN modeling results. For example, if about one-half of the indirect

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and induced expenditures are resort-taxable, the model estimated and actual tax receipts are virtually identical.

Just as the lower bound estimates in Table ES7 show reductions in output and employment when comparing the alternatives to historical visitation, the upper bound estimates in Table ES9 generally show that full utilization of entry limits could lead to substantial increases in visitation and associated spending impacts for all alternatives except for Alternative 3.

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Table ES 7. Comparison of IMPLAN Model Estimates of Total Output and Employment Impacts: Lower Bound Estimated Comparison to Historical Baseline (output impacts are in 2003$, and Employment impacts are in full or part time jobs)

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	(5,868,601)	(7,207,453)	(5,825,726)	(1,541,066)	(579,456)
	Employment	(107)	(133)	(100)	(27)	(13)
Alternative 1, (C)	**Output**	(5,019,640)	(6,164,812)	(4,982,969)	(1,318,134)	(495,632)
	Employment	(92)	(114)	(104)	(23)	(11)
Alternative 2	**Output**	(11,406,400)	(14,008,636)	(11,323,068)	(2,995,266)	(1,126,250)
	Employment	(208)	(259)	(235)	(52)	(25)
Alternative 3	**Output**	(12,602,350)	(15,477,422)	(12,510,276)	(3,309,316)	(1,244,335)
	Employment	(230)	(286)	(260)	(57)	(28)
Alternative 4	**Output**	(456,715)	(560,909)	(453,378)	(119,931)	(45,095)
	Employment	(8)	(10)	(9)	(2)	(1)
Alternative 5	**Output**	(3,576,513)	(4,392,452)	(3,544,173)	(939,175)	(353,139)
	Employment	(65)	(81)	(74)	(16)	(8)
Alternative 6	**Output**	(4,819,922)	(5,919,530)	(4,784,709)	(1,265,688)	(475,911)
	Employment	(88)	(109)	(99)	(22)	(11)

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Table ES8. Comparison of IMPLAN Model Estimates of Percentage Change in Total Annual Economic Output and Employment: Lower Bound Estimated Comparison to Historical Baseline

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	-0.06%	0.00%	-3.49%	-0.08%	-0.06%
	Employment	-0.09%	-0.01%	-4.27%	-0.13%	-0.12%
Alternative 1, (C)	**Output**	-0.05%	0.00%	-2.98%	-0.07%	-0.05%
	Employment	-0.08%	-0.01%	-4.44%	-0.11%	-0.10%
Alternative 2	**Output**	-0.12%	-0.01%	-6.78%	-0.16%	-0.12%
	Employment	-0.18%	-0.01%	-10.09%	-0.26%	-0.23%
Alternative 3	**Output**	-0.13%	-0.01%	-7.49%	-0.18%	-0.14%
	Employment	-0.20%	-0.02%	-11.15%	-0.28%	-0.26%
Alternative 4	**Output**	0.00%	0.00%	-0.27%	-0.01%	0.00%
	Employment	-0.01%	0.00%	-0.40%	-0.01%	-0.01%
Alternative 5	**Output**	-0.04%	0.00%	-2.12%	-0.05%	-0.04%
	Employment	-0.06%	0.00%	-3.17%	-0.08%	-0.07%
Alternative 6	**Output**	-0.05%	0.00%	-2.87%	-0.07%	-0.05%
	Employment	-0.08%	-0.01%	-4.26%	-0.11%	-0.10%

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Table ES9. Comparison of IMPLAN Model Estimates of Percentage Change in Total Annual Economic Output and Employment: Upper Bound Estimated Comparison to Historical Baseline

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	0.11%	0.01%	6.06%	0.14%	0.11%
	Employment	0.16%	0.01%	7.41%	0.23%	0.21%
Alternative 1, (C)	**Output**	0.12%	0.01%	6.56%	0.16%	0.12%
	Employment	0.17%	0.01%	9.77%	0.25%	0.23%
Alternative 2	**Output**	0.01%	0.00%	0.74%	0.02%	0.01%
	Employment	0.02%	0.00%	1.10%	0.03%	0.03%
Alternative 3	**Output**	-0.07%	0.00%	-3.87%	-0.09%	-0.07%
	Employment	-0.10%	-0.01%	-5.76%	-0.15%	-0.13%
Alternative 4	**Output**	0.23%	0.02%	13.28%	0.32%	0.24%
	Employment	0.35%	0.03%	19.78%	0.50%	0.46%
Alternative 5	**Output**	0.08%	0.01%	4.44%	0.11%	0.08%
	Employment	0.12%	0.01%	6.62%	0.17%	0.15%
Alternative 6	**Output**	0.21%	0.01%	11.91%	0.28%	0.22%
	Employment	0.32%	0.03%	17.73%	0.45%	0.41%

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1.0 Introduction and Background

This technical report is intended as a stand-alone document providing estimates of regional economic impacts associated with the range of winter use management alternatives for Yellowstone N.P. and Grand Teton and John D. Rockefeller, Jr. Memorial Parkway. The estimates presented in this document are based on available data primarily from two winter park user surveys (Duffield and Neher 2000; RTI International 2004), as well as information and data supplied by cooperating counties, municipalities, and non-governmental organizations within the Greater Yellowstone Area (GYA) on current and recent historical winter use and related economic and financial parameters. The remainder of this section provides the administrative background underlying the current EIS process and analysis, and a description of the structure of this report.

1.1 Administrative Background of Current Planning Effort

Yellowstone and Grand Teton national parks and the John D. Rockefeller, Jr. Memorial Parkway are implementing a managed winter use program for the first time since motorized oversnow use began in the parks in the late 1940s. Winter visitors are accessing the parks via the cleanest and quietest snowmobiles commercially available; they are using commercial guides, and snowmobile numbers are limited. This is in sharp contrast to the largely unmanaged program that existed through the winter of 2002-2003. Past types and levels of snowmobile use created unacceptable air pollution, noise, wildlife harassment, and visitor experience concerns. The managed program is under the auspices of a Temporary Winter Use Plan approved in November 2004.

The Temporary Plan is the latest in a series of winter plans that date back to 1990. By the early 1990s, winter use exceeded 140,000 people in Yellowstone alone, with about 90,000 people using traditional 2-stroke snowmobiles per season. The concerns noted above led the National Park Service (in conjunction with the U.S. Forest Service) to initiate an evaluation of winter use in the parks and the forests of the Greater Yellowstone region.

While this effort was underway, the below average temperatures and above average snowfall during the winter of 1996-1997 contributed to the migration of Yellowstone's bison outside the park's boundaries; about 1,100 animals were killed that winter. In May 1997, the Fund for Animals and other organizations and individuals filed the first of a series of lawsuits against the National Park Service (NPS) in Washington, D.C., District Court, alleging that the NPS had failed to conduct adequate National Environmental Policy Act analysis when developing its 1990 winter use plan for the parks. A new winter use planning process led to a decision in fall 2000 that called for eliminating snowmobile use from the parks and provided access to the parks via snowcoaches. The decision was based on a finding that past snowmobile numbers and types impaired park resources and values.

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The International Snowmobile Manufacturers Association (ISMA), the State of Wyoming, and others filed suit in 2001 to set aside the decision to ban snowmobiles. The NPS prepared a supplemental EIS (SEIS) to look at alternatives that would allow snowmobiling in the parks. The SEIS decision and rule of 2003 allowed snowmobiles to be used in the parks with strict limitations: limits on numbers, requirements for best available technology (BAT) machines, and guided-only snowmobiles were permitted.

During the interim, the NPS published a "delay" rule on November 18, 2002, to postpone the snowmobile ban until the winter of 2003-2004 while the SEIS process was underway.

The Fund for Animals and the Greater Yellowstone Coalition (GYC) sued the Secretary of the Interior again in Washington, D.C., District Court over the 2003 decision; on December 16, 2003 (the evening before the parks were to open), Judge Emmet Sullivan ruled partly in favor of these plaintiffs. His ruling set aside the SEIS and December 2003 rule and directed that the November 18, 2002, rule (the "delay" rule) be in effect. The November 18, 2002, rule allowed slightly more than half the historic daily snowmobile entries (493 per day in Yellowstone), with requirements that all snowmobiles be led by commercial guides. Beginning in December 2004, the regulation would have phased out snowmobile use in the three parks in favor of snowcoaches. Judge Sullivan also ordered the DOI to respond to a 1999 petition by the Blue Water Network asking that snowmobiles be banned nationwide and road grooming cease in all NPS units where it is allowed. The DOI responded to the Blue Water Network by denying this petition on February 17, 2004.

In December 2003, the State of Wyoming and ISMA moved to reopen the December 2000 lawsuit challenging the snowmobile phase-out in Wyoming Federal District Court. The plaintiffs asked Judge Clarence Brimmer to issue a temporary restraining order or preliminary injunction against the NPS to stop implementation of the November 18, 2002, rule. On February 10, 2004, Judge Brimmer issued a preliminary injunction restraining the National Park Service from enforcing the snowcoach rule in the parks. Judge Brimmer also required the National Park Service to implement temporary rules for the remainder of the 2003-2004 season that were "fair and equitable" to all parties. On February 11, 2004, Yellowstone and Grand Teton National Parks' Superintendent's Orders were amended to allow continued managed snowmobile use in the parks. For Yellowstone, 780 snowmobiles were allowed to enter the park per day, all commercially guided. For Grand Teton and the John D. Rockefeller, Jr., Memorial Parkway, 140 snowmobiles were allowed each day. There were no requirements for guides or BAT snowmobiles in these two areas. Snowplanes continued to be prohibited in Grand Teton. The Grand Teton Park Road (the inside park road) remained open to skiing and snowshoeing.

In June 2004, Judge Sullivan issued an order directing the National Park Service to promulgate new regulations for winter use at least 30-days before grooming commenced to prepare for the 2004-2005 winter season. Judge Sullivan's order also relieved the NPS from implementing the January 2001 regulations phasing out snowmobile use. In

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October 2004, Judge Brimmer issued a decision setting aside the 2000 decision and 2001 regulations.

In November 2004, the NPS completed a Temporary Winter Use Plan and accompanying rule making to guide snowmobile and snowcoach use in the parks for the next three winters while a new long-term plan and new EIS are prepared. Under the Temporary Plan, a maximum of 720 BAT snowmobiles are allowed in Yellowstone each day. In Grand Teton, 50 BAT snowmobiles are allowed per day on the CDST and Grassy Lake Road and 40 BAT snowmobiles are allowed per day on Jackson Lake. Snowplanes are not allowed on Jackson Lake. All Yellowstone recreational snowmobiles must be commercially guided.

The Fund for Animals filed suit in Washington, D.C. Federal District Court, alleging the temporary plan did not adequately consider the impacts of road grooming on bison. The court denied the request for summary judgment by both plaintiffs and defendants. The Wyoming Restaurant and Lodging Association (joined by the State of Wyoming) filed suit in Wyoming Federal District Court, alleging that the Temporary Plan should have looked at both a seasonal (versus daily) limit on snowmobiles and at unguided snowmobile access (versus 100% commercially guided snowmobiles). In October 2005, the U.S. District Court for the District of Wyoming ruled in favor of the NPS, but the court retained jurisdiction over the matter.

In March 2005, the group Save Our Snowplanes filed suit in Wyoming Federal District court, alleging the decision to ban snowplanes from Jackson Lake in Grand Teton National Park violated the Administrative Procedure Act. The case has been assigned to Judge Downes and is pending.

As part of separate FY 2005 and 2006 appropriations legislation, Congress directed that the 2004 decision and rule be in effect for the 2005 and 2006 fiscal years, respectively, giving the decision the force of law.

It is within this legal and administrative context that the current analysis is undertaken.

1.2 Organization of Technical Report

The primary problem analyzed in this report is how winter use management alternatives would likely impact winter recreational use in the Greater Yellowstone Area (GYA), and how impacts to GYA winter use would impact economic activity (expenditures and employment) within the region. Five specific analysis regions are defined for purposes of regional economic modeling: a three-state (Montana, Wyoming, Idaho) economy, a five-county GYA economy including Gallatin and Park in Montana, Teton and Park in Wyoming, and Fremont in Idaho, and the economies of Cody, Jackson, and West Yellowstone. An important issue related to estimating these impacts is to what extent visitors might substitute between winter recreational opportunities within the GYA given changes in policies governing park access. Given the significant growth in these

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economies and uncertainty in forecasting future recreation trends (for example, visitor use of snowcoaches), the temporal scope of this analysis is the short term.

This report is organized into six main sections and two appendices:

1. Introduction and Background – Provides historical background and introduction to analysis.
2. Data and Information Sources – Outlines sources of data utilized in the analysis and provides a general discussion of the bounds of estimated impacts.
3. Description of Alternatives – Provides an overview of the primary components of the four no-action and six action alternatives.
4. Impact of Alternatives on Visitor Use – This section provides a two-step analysis, first estimating baseline use levels for the four no-action alternatives, and then analyzing estimated use levels under the six action alternatives.
5. Impact Analysis – Compares estimated use and expenditure levels under each of the 6 action alternatives to the historical no-action alternative. This analysis is developed for both a lower bound and a higher bound estimate. The analysis comparing each action alternative to all baseline, no-action alternatives is presented in Appendix A.
6. Comparison of Results to Other Studies– Provides a comparison and discussion of data and assumptions used and results to other studies focusing on winter use in the GYA.

Appendix A: Full IMPLAN modeling results comparing each action alternative to each of the four no-action baseline alternatives.

Appendix B: Analysis of estimated impacts derived from previous contingent behavior surveys of Yellowstone winter visitors.

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2.0 Data Sources

The impact analysis presented in this report relies on a spectrum of existing data sources, both observed data from states, counties, and communities in the GYA, and from the National Park Service. Additionally, some of the estimates contained here rely on analyses of winter visitor survey data. This second class of information is used when no observable trend data exists. This is primarily the case when a proposed alternative winter management policy differs substantially from any policy actually implemented in the past. In these cases, estimates are based on survey responses by winter park visitors as to how they would change their visitation if some specific management policy were put in place (for instance, if snowcoaches were the only motorized winter transport allowed in the park).

2.1 Historical Yellowstone NP and Grand Teton NP Visitation Trends

The visitation change impact analysis in this report estimates changes in total visits to the GYA by visitors from outside the GYA associated with each alternative. These changes in GYA visitation include visitation impacts to Grand Teton NP and John D. Rockefeller Memorial Parkway as well as to Yellowstone NP. Estimated regional economic impacts discussed in Section 5 consider impacts to the GYA associated with alternative winter management limits, including limits to the parks' snowmobile and snowcoach use.

Previous estimates of changes in GYA visitation in response to significant shifts in winter park management policy relied primarily on winter visitor surveys to predict future policy impacts (Duffield and Neher 2000; RTI 2004). The current analysis, however, benefits from several years of data collected during periods of significant variation in winter park visitation levels. These sources of observed (as opposed to hypothetical) data allow the current analysis to refer to trends in winter economic activity to supplement predictions based on visitor survey responses.

Table 1 and Figure 1 show ten years of Yellowstone NP winter visitation data, by type of transportation. Clearly, beginning in the winter of 2002-03 new park winter management rules led to a substantial drop in the number of snowmobile visitors to the park. However, other user groups have seen increases since the management controls were implemented. Particularly notable is the consistent increases in snowcoach visitation between the 2001-02 and 2005-06 winters. Snowcoach visitation to Yellowstone has been growing at an approximate 10 % to 13% rate annually.

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Table 1. Historical Winter Yellowstone NP Visitation, by Type of Access.

Winter Season	Number of Visitors Entering the Park						Total Visitors
	Auto	RV	Bus	Snowmobile	Snowcoach	Skiers	
1996-1997	30,432	129	429	71,759	10,221	485	113,455
1997-1998	35,704	81	305	72,834	9,897	453	119,274
1998-1999	36,450	90	173	76,271	10,779	446	124,209
1999-2000	37,872	140	747	76,571	11,699	351	127,380
2000–2001	43,036	138	3,071	84,473	11,683	389	142,790
2001–2002	47,750	215	417	87,206	11,832	307	144,490
2002–2003	41,666	278	796	60,406	12,154	322	112,741
2003–2004	42,643	181	1,141	30,437	14,823	438	85,984
2004-2005	42,639	138	1153	24,049	17,218	468	83,235
2005-2006	44,136	92	1,288	28,833	19,856	271	88,718

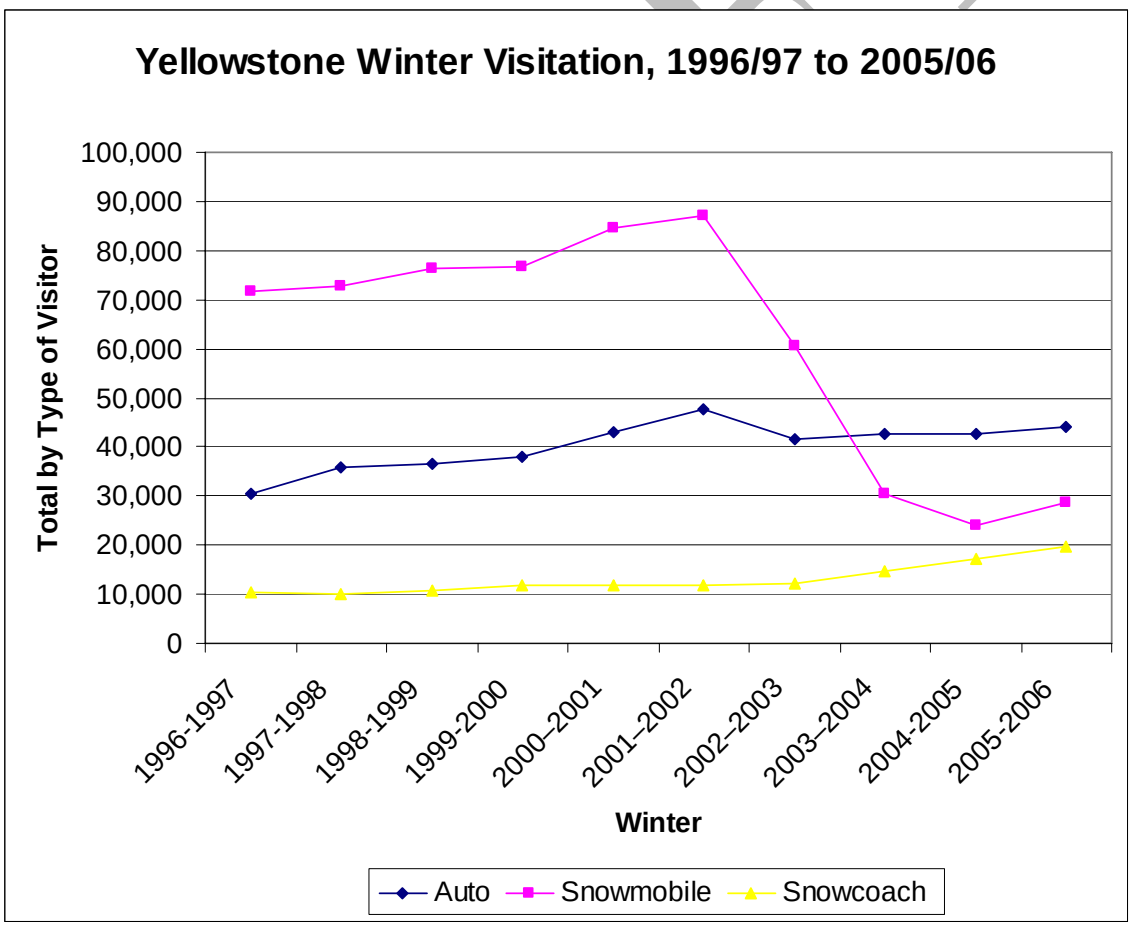

Figure 1. Yellowstone NP Winter Visitation Trends by Access Type.

Visitation to Grand Teton and the Parkway takes several different forms, as shown in Table 2. As the table demonstrates, visitation has remained relatively constant, although visitation to the CDST has dropped substantially in the past few winters, while snowplane use has been eliminated due to impairment of Grand Teton's soundscapes. Also evident is the popularity of cross-country skiing in both parks as well as snowmobiling in the Parkway.

Table 2. Winter use by activity in Grand Teton and the Parkway, 1996–2006.

Winter Season	Parkway Snow-mobile	CDST Snow-mobile	GTNP Snow-mobile	GTNP Snow-plane	Parkway Skiing	GTNP Skiing	Total Recreational Visitors (including visitors in wheeled vehicles)
1996–1997	19,887	1,930	3,643	1,440	1,294	5,962	162,627
1997–1998	19,597	1,857	3,951	1,485	1,185	4,151	176,601
1998–1999	17,160	1,639	3,436	851	1,149	4,242	180,367
1999–2000	23,400	1,329	4,800	1,091	1,581	5,687	223,944
2000–2001	31,011	1,307	2,618	1,148	1,987	4,774	211,700
2001–2002	26,401	2,006[4]	3,421	1,299	1,842	7,346	217,999
2002–2003	23,062	1,752[4]	2,305	0[1]	2,099	7,007	227,964
2003–2004	9,217	139	1,939	0	1,389	8,000[2]	186,871
2004-2005	7,351	11	149	0	1,775	6,751	174,840
2005-2006	10,161	17	268	0	1,456	9,843	174,250
Average	18,725	n/a[3]	2,653	n/a	1,576	6,376	193,716

Source: Data obtained from NPS visitation records.
[1] Snowplanes were prohibited from Grand Teton beginning with this winter season.
[2] Exact count is unavailable; this figure represents a best estimate.
[3] No average given for CDST because use has been highly variable.
[4] Estimate based upon previous average percentage of Parkway users.

The column labeled "Parkway Snowmobile" includes snowmobiles departing Flagg Ranch for the South Entrance of Yellowstone, as well as those using the Grassy Lake Road, although the vast majority of use shown in that column consists of snowmobiles bound for Yellowstone. During the winter seasons of 2004-2005 and 2005-2006, use of the Grassy Lake Road amounted to 241 and 143 snowmobiles respectively (for the entire season), although use in previous years was somewhat higher with an estimated average of 25 or less per day. The next column indicates snowmobile use on the CDST; it can be assumed that most or all of these visitors traveled through both GTNP and the Parkway. The column labeled "GTNP Snowmobile" includes snowmobile use in GTNP, excluding use of the CDST. Prior to the winter season of 2002-2003, this included use of the Teton Park Road and the Potholes area, but currently only includes use of Jackson Lake since the Teton Park Road and Potholes are no longer open for snowmobile use. The last column in the table indicates total recreation visits to the park, such as visitors who are only sightseeing or otherwise not participating in skiing or snowmobiling.

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2.2 Observed Recent GYA Economic Trends

As noted, analyses for previous NPS winter use planning documents related to Yellowstone and Grand Teton National Parks have predicted that restrictions on some types of winter access to the parks (snowmobiles primarily) would be at least partially offset by winter visitors still recreating in the GYA, but utilizing other recreational opportunities outside of the parks. As a general example, it was predicted that restricting access to the parks for some uses, such as snowmobiling, could lead to offsetting increases in use of other GYA recreational opportunities, such as snowmobiling on the national forests.

As shown in Figure 1 and Table 1, there have been significant declines in both snowmobile visits and total winter visitation to the park in the past four years. An examination of key tourism-targeted tax collections in the GYA counties bordering the parks provides information on the degree to which the economies of these counties and communities are economically dependent on winter park visitation.

Table 3. Idaho State Tax Commission Fremont County, Idaho Lodging Sales Tax Collections, Winter Months (tax year dollars)

Winter	Dec	Jan	Feb	Mar	Total Fremont Co., ID Lodging Tax for Winter	YNP total winter visitation
1996-97	31976	42,442	44,183	83,866	$202,467	116,882
1997-98	140402	204,652	34,754	114,365	$494,173	123,225
1998-99	31051	93,591	55,816	180,620	$361,078	128,057
1999-2000	96443	76,263	70,473	112,822	$356,001	134,326
2000-01	74889	80,688	58,952	101,676	$316,205	139,880
2001-02	28009	123,261	76,855	144,869	$372,994	146,425
2002-03	110444	61,374	131,383	239,068	$542,269	115,304
2003-04	35738	246,769	107,345	406,135	$795,987	89,626
2004-05	114589	116,323	4,661	335,441	$571,014	85,224
2005-06	111382	221,627	261,024	236,964	$830,997	94,206

Table 3 and Figure 2 show winter month lodging tax collections for Fremont County, Idaho. In general, during the period of time when winter visitation to Yellowstone NP was significantly decreasing (2002-03 through 2005-06), winter lodging tax collections in Fremont County, Idaho were trending upwards in contradiction to the Yellowstone visitation trends. The 2005-06 Fremont County winter lodging tax collections were over double the level seen in the four years prior to the 2002 Yellowstone winter season management changes.

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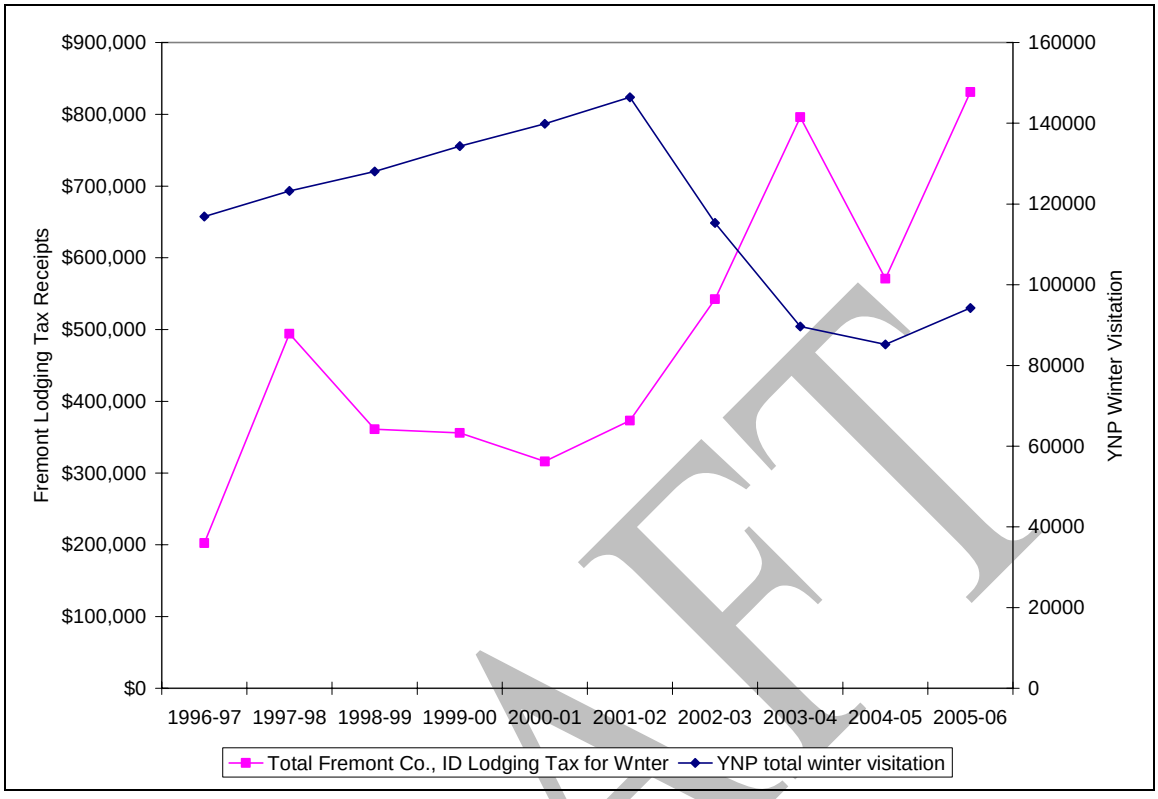

Figure 2. Comparison of Fremont County, Idaho Winter Lodging Tax Receipts and Winter Yellowstone NP Visitation.

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Table 4 and Figure 3 show similar winter lodging tax collections for Park County, Wyoming, on the east side of Yellowstone NP. The main community in Park County is Cody. Again, the table shows both total winter oversnow visitation levels for Yellowstone NP and total winter month lodging tax collections for the county. As in the case for Fremont County, winter lodging tax collections do not follow the significant decreases in YNP winter visitation in 2002-2006.

Table 4. Park County, Wyoming Winter Lodging Tax Collections Compared with Total Winter Yellowstone NP Oversnow Visitation (tax year dollars).

Winter	December	January	February	March	Total Lodging Tax Collected	Total Yellowstone OSV Visitation
1997-98	$33,155	$8,498	$13,458	$12,965	$68,075	82,731
1998-99	$24,258	$9,523	$12,509	$29,218	$75,509	87,050
1999-00	$59,379	$14,971	$10,617	$18,184	$103,151	88,270
2000-01	$20,467	$9,384	$16,200	$13,955	$60,006	96,156
2001-02	$26,971	$9,477	$12,352	$13,072	$61,872	98,038
2002-03	$27,486	$14,217	$10,417	$14,256	$66,376	72,560
2003-04	$28,765	$12,527	$9,455	$18,090	$68,837	45,535
2004-05	$27,841	$13,210	$13,313	$13,556	$67,919	41,291
2005-06	$20,520	$21,382	$20,532	$13,244	$75,679	48,689

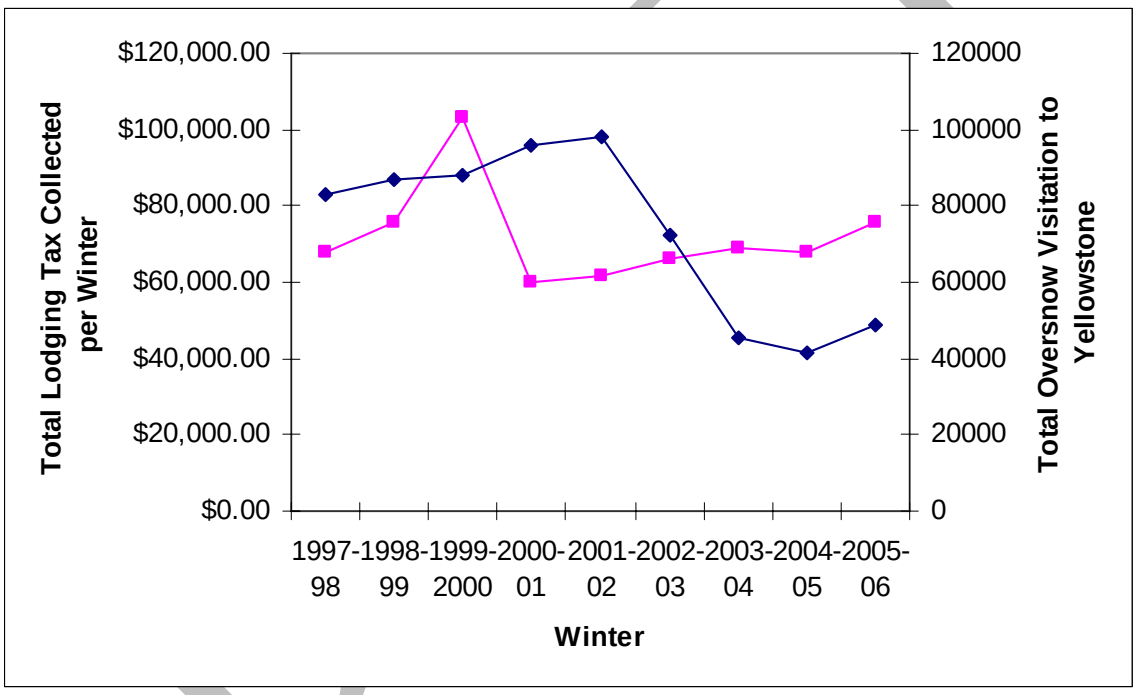

Figure 3. Comparison of Winter Yellowstone NP Oversnow Visitation and Park County, Wyoming Lodging Tax Receipts.

The recent historical tax data for Fremont and Park counties, shown above, indicates that declines in snowmobile entries into Yellowstone NP in particular and in winter visitation to the park in general have not detectably impacted the overall winter tourist economy in the counties as measured by monthly lodging tax receipts. This is despite the fact that the economies of these counties are relatively small. Two other adjoining counties, Gallatin County in Montana (including Bozeman) and Teton County in Wyoming (including Jackson) are relatively large economies where even substantial changes in Yellowstone and Grand Teton National Park winter visitation would never be detectable. For example,

the observed change in visitation at the South Entrance in response to the Temporary Winter Plan might have an expenditure impact on the order of $4 million per year. By comparison the five county GYA economy (largely driven by Gallatin and Teton counties) was on the order of $6 billion in 1999 and in 2003 (the most recent IMPLAN data available) had grown to about $9 billion. Similarly, impacts from changes in the parks' winter visitation levels for the three-state economy would of course also never be detectable. Parenthetically, for the North Entrance gateway of Gardiner, Montana (Park County), almost all winter use is motorized and the Temporary Winter Plan has not had a noticeable effect on visitation through this entrance.

The remaining major gateway community for the Yellowstone-Grand Teton area is West Yellowstone, at the West Entrance to Yellowstone National Park. Table 5 shows time series data for this entrance. Included in the table are winter resort tax receipts for the town of West Yellowstone, winter entries through the West Entrance to Yellowstone NP, and winter snowmobile visits to the Hebgen District of the Gallatin NF. Unlike the cases of Park and Fremont Counties, discussed above, it is clear that in response to significant reductions in winter park visits through the West Entrance in 2002-03 through 2005-06, resort tax collections also fell. It should be noted that the decline was not in proportion to the decrease in West Entrance visits. Specifically, comparing average levels for the four years after management changes (2002-03 through 2005-06) to the four years immediately preceding the changes shows that while park visitation fell 48.5% on average, winter tax collections only fell 19.7%.

Table 5. West Yellowstone Winter Resort Tax Collections, West Entrance Winter Visits, and Hebgen District Snowmobile Use: 1989-2006.

Year	West Yellowstone Winter Tax Receipts	Gallatin NF Hebgen District Snowmobile Use	West Entrance Yellowstone NP Winter Visits
1989-90	$ 275,291	84,800	48,730
1990-91	$ 300,728	69,800	51,729
1991-92	$ 328,163	74,900	55,007
1992-93	$ 378,073	81,500	70,891
1993-94	$ 366,076	75,054	65,768
1994-95	$ 420,023	87,245	66,343
1995-96	$ 447,930	106,713	57,583
1996-97	$ 455,035	105,100	56,212
1997-98	$ 476,508	101,700	54,859
1998-99	$ 500,473	98,326	59,928
1999-00	$ 520,566	98,800	58,154
2000-01	$ 549,182	83,721	66,302
2001-02	$ 536,996	98,595	70,371
2002-03	$ 476,037	95,923	49,703
2003-04	$ 401,664	69,995	28,880
2004-05	$ 388,222	66,889	24,510
2005-06	$ 425,933	73,065	28,243

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The observed data for West Yellowstone resort tax collections and West Entrance visits shown in Table 5 is used to estimate a linear regression model explaining tax levels as a function of West Entrance visits for a time series of the December through March winter months for the 1989-90 through 2005-06 winters.

Table 6 shows that the model, including an annual trend variable, explains a significant proportion (73.2%) of the variation in winter resort tax collections. Additionally, all estimated coefficients are highly significant at the 99% level of confidence or higher. The coefficient on visits indicates a $5.26 increase in tax collections for each West Entrance visit. Since the tax rate is 3%, this implies $175.33 of taxable expenditures in West Yellowstone for each park visit. The estimated intercept of 176,591 is relatively large as a total of tax receipts and implies that in 1989-90, some other factor accounts for a good share of resort tax collections. This could possibly be snowmobile use on the adjacent national forest lands, as discussed below (see Table 10).

Table 6. Regression Model of Change in West Yellowstone Winter Resort Tax Receipts in Response to Changes in West Entrance Visits.

Regression Statistics	
Multiple R	0.875
R Square	0.765
Adjusted R Square	0.732
Standard Error	38,257
Observations	17.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	66840792514	33420396257	22.8349092	3.91393E-05
Residual	14	20489923681	1463565977		
Total	16	87330716195			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	176,591.28	53,880.52	3.28	0.01	61,028.95	292,153.61
West Entrance Visits	5.26	0.78	6.76	0.00	3.59	6.93
Trend	7,639.99	2,206.97	3.46	0.00	2,906.51	12,373.46

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Table 4 and Figure 5 show data for snowmobile use on the Hebgen District of the Gallatin National Forest (Ron Neighbors, pers. com 2002; Claude Coffin, pers com 2006). This district includes many miles of groomed snowmobile trails that are accessed primarily from the West Yellowstone area. What the data shows is that in the last three winters, snowmobile use on this national forest area adjacent to West Yellowstone has declined at the same time park visits through the West Entrance are declining. This is a short time series and interpretation is complicated by the drought and relatively low snowpack in recent years, including the winter of 2004-05. In any case, this data does suggest that restrictions on snowmobile access at the West Entrance have not lead to increased use on the adjacent national forest.

National forest snowmobile use data was also obtained for the Ashton/Island Park Ranger District of the Caribou-Targhee National Forest in an annual winter monitoring report for 2005-2006 (Davis, Jenkins, and Angell undated). Many of the trails on this district are also accessed by visitors staying at West Yellowstone. The most complete data is for counters at Twin Creek, Red Rock, Flagg Ranch, and Big Springs for 2003 to 2006. Total use for these counters for the winter seasons of 2002-2003 through 2005-2006 was 29,893, 34,412, 40,993, and 39,781, respectively. This data does show an increase for the most recent two years, but combined with the Hebgen data there is still a substantial decline in total national forest snowmobile use on these two districts. The increase for the Ashton/Island Park District may just be due to better counts of use, and the sense of district staff is that use is actually down (Bill Davis, Pers. Comm. 2006). The trailheads on the district most used by snowmobilers staying at West Yellowstone are Big Springs and Twin Creeks. Data for these trailheads is summarized in Table 7, and shows an increase in 2004-05 and 2005-06.

Table 7. Ashton/Island Park Ranger District Snowmobile Use for Trailheads Used by West Yellowstone Visitors.

Trailhead	2002-03	2003-04	2004-05	2005-06
Twin Creek	9,991	10,305	14,181	12,093
Big Springs	14,025	11,589	20,313	20,232
Total	24,016	21,894	34,494	32,325

Source: Bill Davis, 2005-2006 Annual Winter Monitoring Report. Ashton/Island Park Ranger District, Caribou-Targee NF.

Data for the selected trailheads in the Bridger-Teton is shown in Table 8. CDST-Togwotee and the Gros Ventre trailheads are most likely to show influences from park management. These data shows no clear trend, but use is either approximately stable or slightly down. The best long-term data for the Bridger-Teton is Grey's River (Susan Marsh, pers. com., 2006). The use at this trailhead is shown in Table 9 for 1993-94 to 2004-05. The trend is up, but this is not likely related to park management, but rather regional population growth, including the Idaho Falls and Salt Lake City areas (Susan Marsh, per. comm. 2006).

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Table 8. Bridget Teton NF Snowmobile Use Monitoring Results.

Winter	CDST-Togwotee	Gros Ventre State R Trail	Total
98-99	186	165	351
99-00	231	122	353
00-01	167	152	319
01-02	165	142	307
02-03	153	118	271
03-04	118	230	348

Source: BTNF Summary of Winter Use Monitoring 1999-2004.

Table 9. Grey's River Alpine Trailhead, Bridger Teton NF, Winter Snowmobile Use: 1993-2005.

Winter	Grey's River Alpine Trailhead Snowmobile Count.
93-94	6,559
94-95	9,200
95-96	9,282
96-97	7,956
97-98	9,025
98-99	8,897
99-00	No data
00-01	8,716
01-02	9,906
02-03	No data
03-04	10,066
04-05	9,230

Source: Susan Marsh, pers. com., 2006

The Greater Yellowstone Coordinating Committee has been undertaking a winter use monitoring strategy on the six national forests adjoining Yellowstone National Park (Mary Maj pers. com 2006). One objective of this work was to answer the question of whether restrictions in snowmobile use in national parks result in changes in snowmobile use on national forests. Currently five year summaries of the findings from monitoring snowmobile use in the GYA are being evaluated. Preliminarily, it appears that in general use on the forests has not increased in response to changes in park policy, but the interpretation is complicated by recent drought conditions. However, a major caveat is that winter visitor surveys on the national forests are not extensive. Additionally, it is possible that changes in park access have led to increases in other types of GYA winter use. Relative to total winter recreation in the GYA, the fraction affected by current park policies is rather small. For example, downhill ski use at Big Sky and Jackson (not to mention Bridger, Red Lodge and Grand Targhee) has both reached record levels in the

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last few years. The use at Jackson reached about 400,000 visits. The hourly lift capacity at the Jackson resort alone is over 12,000 skiers per hour. While the key issue for economics is the change in GYA winter recreation visits (and expenditure) as a function of park policy, it is difficult to collect reliable aggregate data for these statistics. The most relevant and comprehensive data is visitor use in the parks.

The primary result from Table 5 and Figure 4 is that even in West Yellowstone, a community located at a park entrance and with an economy heavily dependent on tourism spending, significant changes in park winter access policies may impact local economic activity but the economy is not wholly dependent on winter park access. Among other activities, snowmobiling on the adjacent national forests is also important for the West Yellowstone economy.

Table 10 summarizes a second model of winter West Yellowstone tax receipts, this time including snowmobile counts on the Hebgen District as an explanatory variable. In this model, both park visits and forest visits are statistically significant factors explaining tax receipts. The intercept is now much smaller and is not significantly different from zero.

Table 10. Regression Model of Change in West Yellowstone Winter Resort Tax Receipts in Response to Changes in West Entrance and Hebgen District NF Visits.

Regression Statistics	
Multiple R	94.8%
R Square	89.9%
Adjusted R Square	87.5%
Standard Error	26070.663
Observations	17

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	78,494,883,181	26,164,961,060	38.50	0.00
Residual	13	8,835,833,013	679,679,462		
Total	16	87,330,716,194			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	65,568.52	45,465.07	1.44	0.17	(32,652.77)	163,789.81
Forest Snowmobiles	2.43	0.59	4.14	0.00	1.16	3.70
West Entrance Visits	3.73	0.65	5.77	0.00	2.33	5.13
Trend	5,477.00	1,592.11	3.44	0.00	2,037.46	8,916.54

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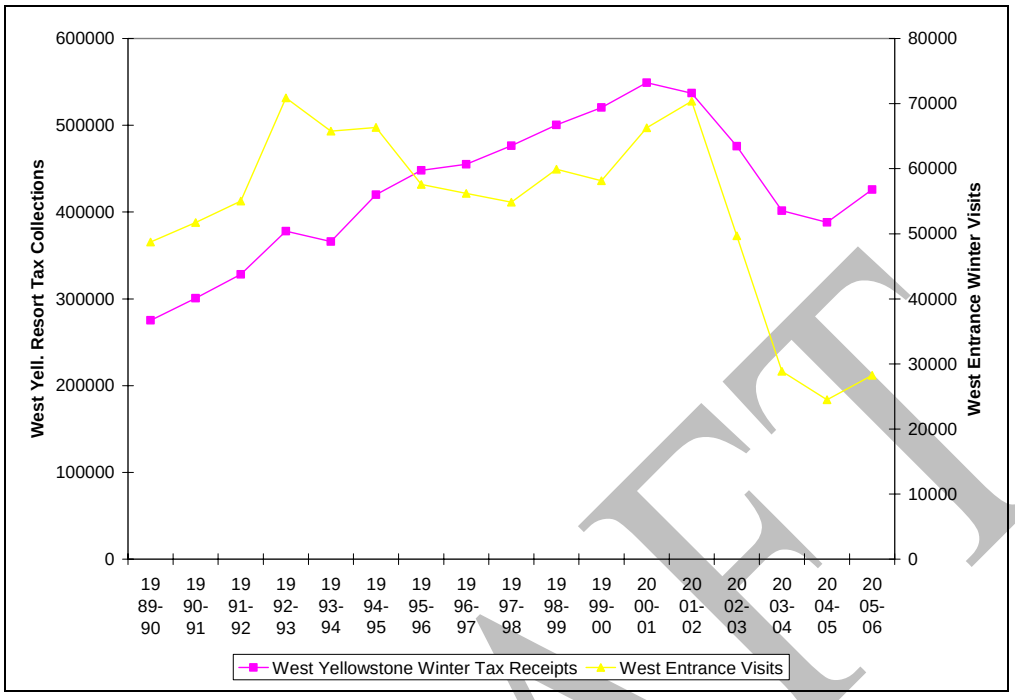

Figure 4. Plot of West Yellowstone Winter Resort Tax Collections and Yellowstone NP West Entrance Winter Visits

Of the five regional economic planning areas examined in this study, only for the gateway community of West Yellowstone are there detectable impacts on the relevant planning region's economy. These results are consistent with the predicted impacts from the Socioeconomic Impacts section of the FSEIS (Yellowstone NP, 2002), where the authors noted that measurable impacts from changes in winter use policy in the parks would only be found in the community of West Yellowstone.

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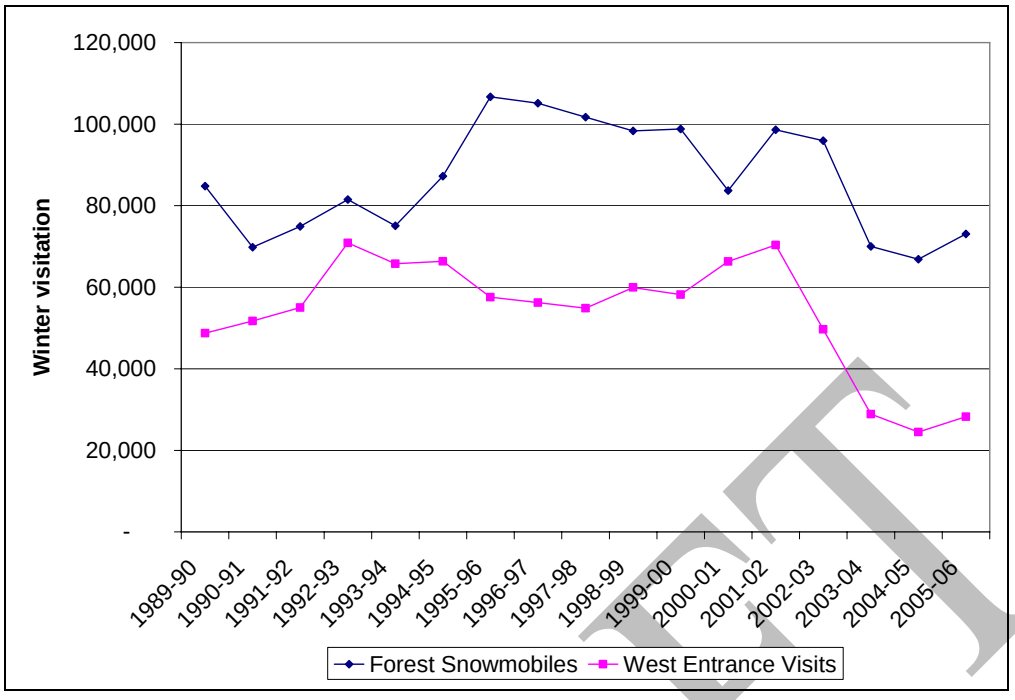

Figure 5. Comparison of Yellowstone NP West Entrance Winter Visitation and Hebgen District National Forest Snowmobile Use.

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Figure 6 shows a comparison of Yellowstone West Entrance use distribution for the winter of 1997-98 (before rule changes), and 2005-06 (after changes). Clearly, the distribution of use between snowmobiles and snowcoaches has changed substantially in the wake of the temporary rule snowmobile restrictions. Prior to the rule changes, snowmobile visitors made up about 91% of West Entrance visits; currently snowmobile visits comprise 61%. Snowcoach use has increased from 9% of West Entrance use to 38%. In 2004-2005, which was a year with low snowpack in the West Yellowstone and Old Faithful area, snowcoach and snowmobile use were approximately equal.

With reference to Table 1, it is notable that winter access by autos, recreational vehicles and buses, all of which in a normal winter is through the North Entrance, has been relatively stable[2]. This seems to indicate that visitors are not substantially substituting access between entrances in response to current policy changes. Also, because access through the West, South, and East Entrances to Yellowstone National Park is all oversnow under current and historic policies, there does not seem to be a shift in access modes between cars and oversnow vehicles. Use by skiers has increased in recent years but remains a tiny fraction of total use. To conclude, the main changes with respect to visitor use levels brought about by current management policies are the reduction in total snowmobile use and the substitution within motorized oversnow access from snowmobile use to snowcoach use. The latter has steadily increased the last five winters.

[2] This is after correcting for double-counting in recent years' data of visitors arriving by auto who participate in oversnow motorized travel from the N. Entry.

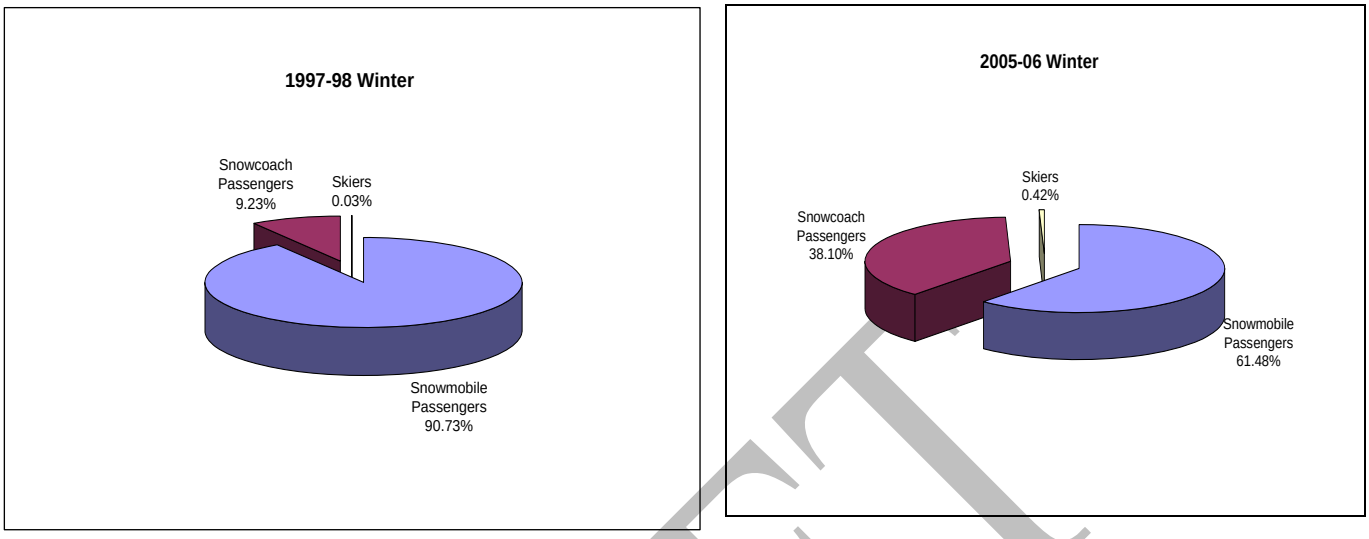

Figure 6. Comparison of West Entrance Use Distribution: 1997-98 v. 2005-06.

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2.3 General Bounds for Estimated Impacts of Winter Use Alternatives

Sections 3, 4, and 5 of this report discuss the alternatives to be presented in the DEIS and estimated regional economic impact associated with each of the alternatives. At the outset of the analysis several observations regarding the final estimated levels of expenditure and employment impacts associated with the alternatives can be made.

From a winter visitor expenditure standpoint, the action alternatives with the largest likely impact are the "snowcoach-only" alternative, and the "eliminate most road grooming" alternative. The expenditure impacts to the GYA of the snowcoach only alternative were previously estimated in the 2002 FSEIS as alternative 1. The results from this analysis provide general indications of the likely bounds for the remaining action alternatives.

Regarding the previously modeled "snowcoach-only" alternative, the authors of the FSEIS estimated that this alternative would lead to a 33.4% reduction in GYA winter visitation by recreationists from outside the 5-county GYA. Additionally, the FSEIS reported that the estimated up to $21 million reduction in total economic output in the 5-counties would be at the lower level of detection in the context of the over $6 billion (in 1999) 5-county economy that was then growing at a 6% rate per year. From the outset,

therefore, we can note with some certainty that all action alternatives analyzed in the following sections will yield regional economic impacts that are either negligible or near negligible in the context of both the 5-county and the 3-state economic analysis areas.

With regards to the three community analysis areas (West Yellowstone, Cody, and Jackson), relatively significant impacts will only be found in the case of the somewhat economically isolated, relatively small, and heavily tourism dependent town of West Yellowstone. This inference is supported by the observed data presented earlier.

Specific estimates for all five analysis areas and all permutations of action and no-action alternatives are developed in the following sections.

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3.0 Description of Alternatives

The basis of the EIS analysis is a comparison of expected outcomes from one or more "action alternatives" to baseline levels of activity under one or more "no-action" alternatives. The "no action" alternative is a required feature in an environmental assessment or environmental impact statement. It is usually described as continuing the present management actions. The no-action alternative helps set a context for determining the relative magnitude and intensity of estimated impacts.

3.1 No-action Alternatives

The current legal and management uncertainty associated with the winter use EIS process makes identification of the proper no-action (baseline) alternative against which to compare the impacts of the action alternatives problematic. Due to this uncertainty, four alternatives are being treated as possible no-action baselines for the purpose of this EIS. These four no-action alternatives are described below:

No-action alternative #1 The first no-action alternative is the **snowcoach-only** alternative. This was the no-action alternative in the SEIS (Yellowstone National Park, 2002), and it is incorporated as alternative 2 in this EIS. It was also the alternative selected by the NPS in the 2000 winter use plan and 2001 implementing regulations.

No-action alternative #2 A second no action alternative would be to **continue the current temporary plan** for winter use that the NPS is currently operating under. Action alternative 1 in this EIS most closely matches the temporary plan and this no-action alternative.

No-action alternative #3 A third no action alternative is to adhere to the 1983 regulations that governed snowmobile use in the parks prior to promulgation of the 2001 regulations. The implied no-action alternative is **historical use** at levels consistent with management in place prior to the 2001-02 winter. For purposes of the analysis in this report, we use the winter of 1997-98. This year had fairly typical use levels for the period. The regulations are supported by the 1990 winter use plan and environmental assessment. They restrict snowmobile use to designated routes in the parks. However, the 1983 regulations describe a type and amount of snowmobile use that was found to constitute impairment of park resources and values in the 2000 EIS and the 2003 SEIS. Comparisons are made throughout the EIS between the action alternatives and the historical conditions represented by the 1983 regulations.

No-action alternative #4 A fourth no action alternative would have neither snowmobiles, nor snowcoach use in the parks, in other words, **no motorized oversnow access** and no plowing. Under the implementing regulations for the current temporary plan, the authorization of snowmobile and snowcoach use in the parks expires at the end

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of the 2006-2007 winter season. In the absence of any action on the part of the agency, these motorized oversnow means of accessing the park would not be authorized.

3.2 Action Alternatives

3.2.1 Alternative 1: Continue Temporary Plan

This alternative would generally continue the current Temporary Plan into the future with some modifications. BAT requirements for snowcoaches would be implemented, and a daily limit would be imposed on snowcoach access. This alternative would allow 720 snowmobiles per day in Yellowstone and 140 snowmobiles in GTNP and the Parkway, with the requirements that generally all snowmobiles use BAT and all snowmobilers in Yellowstone travel with a commercial guide. This alternative would also manage several side-roads with temporal and spatial zoning to facilitate a variety of uses. There are five variants of this alternative, each slightly different in allocation of use among entrances and user groups. Table 11 shows that overall caps on oversnow entries vary only marginally between the five options under Alternative 1. The primary differences between options reflect how Option A East Entrance use is allocated to other entrances and guided and unguided snowmobile users under an East Entrance closure.

Table 11. Alternative 1: Options for Use Limits and Allocation.

Alternative 1 Option	Yellowstone NP			Grand Teton & Pkwy. snowmobiles
	Commercially guided snowmobiles	Unguided snowmobiles	Commercially guided snowcoaches	
Option A: East Entrance open	720	0	78	140
Option B: East Entrance closed	720	0	78	140
Option C: East Entrance closed	680	40	78	140
Option D: East Entrance closed	680	0	78	140
Option E: Gibbon Cyn. & East E. closed	680	0	78	140

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3.2.2 Alternative 2: Snowcoach Only

Alternative 2 is similar to full implementation of the snowcoach-only provisions of a previous decision, with some key changes. A daily limit would be placed on snowcoach use, BAT requirements for snowcoaches would be implemented, and the East Entrance road would be closed to through travel. Under the snowcoach only alternative, 120 guided snowcoaches per day would be allowed. The use would be distributed as 55 entries for the West Entrance, 25 for the South, 17 for the North, and 23 parkwide for Old Faithful.

3.2.3 Alternative 3: Eliminate most Road Grooming

Alternative 3 calls for eliminating road grooming on most of Yellowstone's snow roads and closing them to oversnow vehicle travel. In Yellowstone, the exception would be South Entrance to Old Faithful, which would remain open to snowmobile and snowcoach travel. In Grand Teton, the Grassy Lake Road would remain open for snowmobile travel. The impact on park entries under Alternative 3 would be that only the South Entrance would be allowed motorized entries: 250 guided snowmobiles and 20 guided snowcoaches per day. The Grassy Lake Road would also be allowed 50 snowmobiles per day.

3.2.4 Alternative 4: Expand Recreational Use

This alternative calls for expanded recreational use of the parks in the winter. It would allow up to 1,025 snowmobiles per day in Yellowstone and 250 in GTNP and the Parkway. In Yellowstone, all snowmobiles would be BAT and about 75% of snowmobiles in Yellowstone would travel with a commercial guide. About 25% of the daily snowmobile entries would be allocated for either unguided or non-commercially guided snowmobiles. In Grand Teton and the Parkway, 250 snowmobiles would be allowed, and a portion of those snowmobiles using the CDST would be non-BAT (but 2006 or newer model year) machines.

Under Alternative 4, 770 commercially guided snowmobiles, 255 unguided snowmobiles, 105 guided snowcoaches, and 10 private snowcoaches daily would be allowed into Yellowstone N.P. Additionally, 50 guided and 200 unguided snowmobiles would be allowed within Grand Teton and the Parkway.

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3.2.5 Alternative 5: Provided for Unguided Access

This alternative would allow up to 540 snowmobiles per day in Yellowstone and 75 in GTNP and the Parkway, with the requirement that all snowmobiles meet improved BAT requirements and about 80% of snowmobiles in Yellowstone travel with a commercial guide. About 20% of the daily snowmobile entries would be allocated for unguided snowmobiles, which would be required to enter Yellowstone before 10:30 A.M. each day. Alternative 5 also features a seasonal as well as a daily entry limit for snowmobiles in Yellowstone that is only applicable to commercially guided snowmobiles and snowcoaches.

3.2.6 Alternative 6: Mixed Use

Alternative 6 calls for a mixture of wheeled vehicle access to Yellowstone's interior in addition to snowmobile and snowcoach use of some of the park's snow roads. The NPS would plow the mid-elevation west-side roads from Mammoth to Old Faithful and West Yellowstone for commercially-guided wheeled vehicles only. Up to 100 commercially guided wheeled vehicles would be allowed to enter the park daily through the Mammoth Terraces or West Entrance. Up to 350 BAT and commercially guided snowmobiles would be allowed to use the remainder of Yellowstone's roads, along with 40 commercially guided, BAT snowcoaches. Yellowstone's East Entrance road would be closed to through travel. In Grand Teton, Jackson Lake and the Grassy Lake Road would be open for snowmobiles, but the CDST would be closed.

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Table 12. Comparison of Yellowstone NP Entrance Limits across Alternatives. By Entrance and Type of Use.

Entrance	Type of use	Alternative 1-A	Alternative 1 -B	Alternative 1 -C	Alternative 1 -D	Alternative 1 -E	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
West Entrance	Com-guided snowmos	400	424	400	400	400		0	450	232	0
	Un-guided Snowmos			20					150	58	0
	Com-guided coach	34	37	34	34	34	55	0	46	34	0
	Un-guided coach										0
	Wheeled										75
South Entrance	Com-guided snowmos	220	256	220	220	220		250	188	116	250
	Un-guided Snowmos			20					62	29	
	Com-guided coach	10	10	13	13	13	25	20	15	10	10
	Un-guided coach										
	Wheeled										0
East Entrance	Com-guided snowmos	40	0	0	0	0		0	75	32	0
	Un-guided Snowmos								25	8	0
	Com-guided coach	3	0	0	0	0	0	0	4	2	0
	Un-guided coach										
	Wheeled										0
North Entrance	Com-guided snowmos	30	20	30	30	30		0	19	32	0
	Un-guided Snowmos								6	8	0
	Com-guided coach	2	2	13	13	13	17	0	16	15	0
	Un-guided coach										
	Wheeled										25
Old Faithful	Com-guided snowmos	30	20	30	30	30		0	38	20	100
	Un-guided Snowmos								12	5	0
	Com-guided coach	29	29	18	18	18	23	0	24	19	30
	Un-guided coach								10		
	Wheeled										0
Totals	**Com-guided snowmos**	**720**	**720**	**680**	**680**	**680**	**0**	**250**	**770**	**432**	**350**
	Un-guided Snowmos	**0**	**0**	**40**	**0**	**0**	**0**	**0**	**255**	**108**	**0**
	Com-guided coach	**78**	**78**	**78**	**78**	**78**	**120**	**20**	**105**	**80**	**40**
	Un-guided coach	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**
	Wheeled	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**

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4.0 Analysis of Estimated Use Levels under Alternatives

This section provides estimates of the parks' winter use levels under the 10 alternatives (4 no-action and 6 action alternatives). Section 5, below, provides a comparison of the action and no-action alternatives and develops economic impact estimates. There are two primary types of restrictive policies addressed in this analysis: 1) quantitative restrictions on winter entry levels, and 2) qualitative restrictions such as requirements for BAT technology, or for guided entry.

4.1 Analysis of No-action Alternative Use Levels

As noted above, this analysis develops four different no-action alternatives as possible baselines against which to compare estimated use levels for the action alternatives. The first task is to quantify the non-use baselines.

4.1.1 Estimated Use under No-action alternative #1 (Snowcoach only)

No-action alternative #1 is the "snowcoach-only" alternative. This alternative is also included as action alternative #2. One estimate of use levels under this baseline alternative (discussed in Section 2.3, above) was included in the SEIS (Yellowstone NP, 2002). This estimate was based on survey responses by winter park visitors during the 1998-99 winter season.

Since the publication of the SEIS, several years of observed data on park visitation and national forest visitation under more restrictive winter use policies have become available. This recent use data suggests somewhat less substitution between park and forest snowmobile use than was estimated in the SEIS analysis. For the purposes of defining a baseline level of use under a snowcoach-only rule, it is assumed that baseline would be equal to the current snowcoach use plus North Entrance wheeled visitation (a total of 59,885 visits).

4.1.2 Estimated Use under No-action Alternative #2

No-action alternative #2 would be a continuation of the current management policies in place in the parks. These policies were described in the proposed rule in September of 2004.[3] Table 13 shows the daily oversnow entrance limits laid out in the 2004 proposed rule.

[3] Federal Register Vol. 69, No. 172 pp. 54072-54090.

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As a baseline condition, the limits shown in Table 13 are somewhat misleading. While the table does reflect maximum allowable use under current rules, recent winter use levels are significantly below allowed maximums. In contrast to maximum winter use levels shown in Table 13, actual current winter use levels are detailed in Table 14. Actual use in recent years is at between 33% and 50% of allowable use. Clearly, current limitations are not binding on current and recent winter use demand.

As noted earlier, there is evidence that as current national park winter use policies are becoming more understood, use is shifting from snowmobiles to snowcoaches. Since the winter of 2001-02, snowcoach visitation has increased by 68% (from 11,832 to 19,856). These recent trends, although too short a time period to make definitive projections, suggest that winter use may increase over coming years closer to current use caps. If the current growth rate for snowcoach use continued, in 8 years snowcoach use could grow to about 53,000 visitors and total winter visitation would return to the levels experienced in the 1990's. Needless to say, there is considerable uncertainty associated with projecting future snowcoach use. The main point is that there are ongoing significant changes in the composition of the parks' winter use that could result in substantial growth in visitation under current policies.

While the limitations on park entries are not currently constraining winter use in the parks, clearly other park policies have led to significant reductions in winter use. Specifically, a requirement for guided access to the park has substantially reduced demand for park access. Based on comparisons with historical winter park use, the constraining policies associated with current winter management are the two "qualitative" constraints of BAT snowmobile technology and guided access within Yellowstone NP, with the guided access requirement likely primarily affecting demand.

For purposes of the No-action alternative #2 we use a baseline visitation level consistent with current (2005-06) winter park visitation.

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Table 13. 2004 Proposed Rule Limitations on Oversnow Travel per Day in the Parks.

Entrance	Commercially Guided Snowmobiles	Un-guided Snowmobiles	Commercially Guided Snowcoaches
West Entrance	400		
South Entrance	220		
East Entrance	40		
North Entrance	30		
Old Faithful	30		
Total Yellowstone	**720**		**78[a]**
CDST		50	
Grassy Lake Road		50	
Jackson Lake		40	
Total GT-Parkway		**140**	

[a] At the time of the Proposed Rule, 78 Snowcoaches per day were authorized under existing concession contracts. The proposed rule placed no further restrictions on snowcoach entries.[4]

Table 14. Current Actual Winter Use levels per day in Yellowstone NP and in Grand Teton and the Parkway.

Entrance	Commercially Guided Snowmobiles per day	Un-guided Snowmobiles	Commercially Guided Snowcoaches per day
West Entrance	153		14
South Entrance	89		5
East Entrance	8		1
North Entrance	5		6
Old Faithful	5		3
Total Yellowstone	**260**		**29**
CDST		0	
Grassy Lake Road		20	
Jackson Lake		10	
Total GT-Parkway		**30**	

Source: May 19, 2006 Preliminary Draft of Alternatives-Winter Use Plans. Yellowstone NP.

The impact of the current temporary rules on Park visitation is observable from recent winter visitation statistics. For the baseline associated with continuation of the Temporary Plan, the 2005-06 winter visitation level of 88,718 visits (Table 1) is used.

[4] Federal Register Vol. 69, No. 172 p. 54077

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4.1.3 Estimated Use under No-action Alternative #3

The no-action alternative #3 provides as a baseline winter visitation to the parks under rules that existed prior to the 2001 rule-making. As noted, for this baseline measure, the 1997-98 winter season visitation level of 119,274 visits is used.

4.1.4 Estimated Use under No-action Alternative #4

Under no-action alternative #4 there would be no oversnow motorized access to the parks. Motorized oversnow winter access to YNP historically comprised over 70% of total winter visitation and nearly all visitation from the West, South, and East Entrances. No surveys of visitors have specifically addressed the issue of a total ban of all motorized access to the park during winter months. As described earlier, examination of use distribution since winter policy changes began in 2001 have suggested there is little evidence to date of substitution of use between park gates. Additionally, the existing data on forest snowmobile use in and around the West Entrance suggests that snowmobile use on the forest is possibly a complement to park snowmobiling rather than a direct substitute. For these reasons, under a total motorized ban it is assumed that the only use remaining in the park would be North Entrance wheeled entries and parkwide ski entries totaling 40,029 in 2005-06. Relative to 1997-98, this implies a 66% reduction in GYA visitation associated with YNP winter users under a total motorized ban.

4.2 Analysis of Action Alternative Use level

Estimation of regional economic impacts associated with the EIS alternatives requires developing estimates of the change in visitation to the analysis area under each baseline-action alternative paring.

The following discussion of visitation impacts associated with the six action alternatives presents both a lower bound and an upper bound estimate of impacts. The lower bound estimates are based largely on observed data under current winter access policies. These estimates could be interpreted as “short-term” estimates or estimates of visitation changes in the year following a policy change. Recent increases in snowcoach use in the park show that following a policy change, use patterns and levels evolve over time. The upper bound estimate of impacts acknowledges this adaptive behavior and presents estimates under the assumptions that all access limits are constraining, and that eventually use in the parks would be at the maximum legal limit each day of the winter season.

The following analysis of estimated GYA visitation levels under the action alternatives utilizes the historical park access policies and associated visitation levels (as represented

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by 1997-98 levels) as one baseline point of comparison. Below, in Section 5, the visitation impacts of the alternatives will be additionally compared to the remaining three no-action alternatives.

4.2.1 Alternative 1: Continuation of Temporary Plan

As noted in section 4.1.2, the lower bound expected level of winter Yellowstone park visitation under this alternative is generally equivalent to current (2005-06) winter use levels in the parks. Alternative 1 has five different minor variants, or options. Most of these options (A,B,D, and E) when viewed in light of current demand levels either represent no or only very minor differences in entry constraints, and thus represent no estimable difference between the options. As an example, Options B, D, and E eliminate 40 daily entries from Option A, and either allocate them to other entrances or eliminate them. However, currently the East Entrance only averages 8 snowmobile entries and one snowcoach entry per day and thus closure of the East Entrance represents only a loss of 8, not 40, snowmobiles per day and 1, not 3, snowcoaches. Alternative 1, Option C allows for an increment of 40 unguided snowmobile entries per day. For impact estimation purposes, the similar options A, B, D, and E are treated equally, and option C with 40 unguided snowmobile entries per day is estimated separately. With regard to the addition of unguided access under option C, it is assumed that this allocation will be fully utilized. Under Alternative 1, options A, B, D, and E, the lower bound estimated use is 88,718 (current, 2005-06 visitation), and the upper bound estimated use is 172,316, which assumes full use of daily allocations. For Alternative 1, option C, the lower bound estimate of use is 93,138, and the upper bound, 176,736.

4.2.2 Alternative 2: Snowcoach Only Alternative

Alternative 2, the snowcoach-only alternative is identical to the no-action alternative #1. Under this alternative it is estimated that the lower bound visitation level would be equal to 59,885 (the sum of current snowcoach and North Entrance auto, RV and bus, plus skiers), and the upper bound maximum would be 125,736 visits.

4.2.3 Alternative 3: Eliminate Most Road Grooming

Alternative 3 calls from elimination of motorized access to most of the park, leaving groomed motorized access only available from the South Entrance to Old Faithful and nearby areas. The lower bound use estimate for this alternative assumes a level equal to 2005-06 South Entrance visitation plus North Entrance wheeled visitation or 53,658 visits. Upper bound maximum visitation under this alternative equals 85,361.

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4.2.4 Alternative 4: Expand Recreational Use

The alternative 4 proposal to expand recreational use includes several components. One is the proposal to allow approximately 25% of daily snowmobile use to be either unguided or non-commercially guided. The second is to substantially increase total allowed snowmobile traffic per day over current "Temporary Plan" levels. Current winter park visitation levels indicate that the combination of BAT requirements and guided entry requirements has significantly reduced demand for snowmobile travel within the park. Current snowmobile entry limits (720 per day) are significantly above current average daily use levels (260 per day). Duffield and Neher (2000) found that approximately 42% of (1998-99) winter visitors to Yellowstone NP rented snowmachines, and that the businesses who rent the machines generally purchase new inventory annually and thus can make BAT machines available to the public. Given that current use levels are below what might be expected based on historical rental use only, it is assumed that the provision for guided-only access has a significant impact on demand for winter visitation to the park.

For the lower bound estimate of visitation under this alternative, it is assumed that the guided access requirement is constraining current use, and provision of unguided access would be fully utilized. The lower bound use estimate under Alternative 4 is equal to current (2005-06) use plus any additional unguided capacity, or 116,896 visits. The upper bound, maximum use level under this alternative would be 325,599 visits.

4.2.5 Alternative 5: Provide for Unguided Access

As in the case for alternative 4, alternative 5 provides for a percentage of Yellowstone NP use to be unguided snowmobile use. Also as in the case for alternative 4, this analysis assumes all additional unguided access will be utilized in the lower bound use estimate. Under Alternative 5 it is estimated that the lower bound use level would be 100,652 visits, and the upper bound, maximum level would be 158,206 visits.

4.2.6 Alternative 6: Mixed Use

Alternative 6 provides for mixed use of wheeled and oversnow access to the parks. This alternative calls for plowing of the Terrace Springs to Madison, Madison to Old Faithful, and West Yellowstone to Madison roads for guided wheeled access. Yellowstone's East Entrance would be closed to travel, but most other routes would be open for oversnow travel. There is currently no observed data on the reaction of winter visitors (or would-be visitors) to plowed access to Yellowstone NP in the winter. Winter access in wheeled busses or vans would likely be substantially cheaper than current snowcoach access (pers. comm. John Sacklin, YNP, 2006), thus demand might be substantial. Due to the uncertainty of visitor reaction to winter park road plowing, it is estimated that Alternative 6 lower bound use would be equal to the sum of current South Entrance visitation, North Entrance Visitation, and current snowcoach visitation, or 77,892. There is considerable

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uncertainty regarding this estimate, due to the lack of specific data on public reaction to this type of policy change in the park.

At the upper bound, visitation to the parks under Alternative 6 would be significantly higher than either current or historic levels. At full entrance limits, and assuming an average of 21 visitors per vehicle (pers. comm. John Sacklin, YNP, 2006), visitation would be 291,342 visits over the winter.

4.2.7 Summary Comparison of Estimated Action Alternative Impacts on Winter GYA Visitation.

Sections 4.2.1 through 4.2.6 summarized lower and upper bound estimates of winter visitation levels for each of the six action alternatives. It must be noted that each of the alternatives in the DEIS contains a wide spectrum of varying detail regarding road segments and entrances open or closed, daily gate limits, requirements for oversnow machine technology, and guiding requirements. In estimating likely levels of visitation associated with the alternatives, primary attention was paid to the significant management controls driving visitation: gate limits, BAT requirements, and guiding requirements.

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5.0 Economic Impact Analysis

This analysis is presented in two parts: 1) estimation of the relative change in winter visitation between each baseline, no-action alternative and each action alternative, and 2) estimation of total regional economic impacts associated with each comparison for each of five analysis areas (3-states, 5-counties, and the communities of West Yellowstone, Cody, and Jackson).

The degree of impact can be quantified when a model is used or data are obtainable. This is the case for all alternatives examined here. However, often only qualitative descriptions of impact from specialists or from the scientific literature in similar cases are available. These qualitative descriptions are also useful for summarizing and interpreting the relative importance of quantitatively estimated impacts. As noted earlier, under the following definitions, it is apparent that the only regional economy where impacts may not be "negligible" (at the lower levels of detection) is for West Yellowstone. The following definitions are used to characterize impacts to socioeconomics:

Table 15. Definition of impacts to socioeconomics.

Impact Category	Definition
Negligible	The impact is at the lower levels of detection
Minor	The impact is slight, but detectable
Moderate	The impact is readily apparent and has the potential to become major
Major	The impact is severe, or if beneficial, has exceptional beneficial effects

Table 16 and Table 17 present estimates for changes in GYA visitation by visitors from outside the GYA relative to each of the four different no-action alternatives. It is these estimated changes in visitation and associated visitor expenditures that are used as the primary input into the IMPLAN regional economic modeling program.

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Table 16. Comparison of Action Alternatives 1-6 Estimated GYA Visitation Levels to Four Different No-action Alternative Baselines: Lower Bound Estimated Changes Relative to Baseline.

LOWER BOUND ESTIMATE	Visitation	Historical Baseline	Snowcoach only Baseline	Temporary Rules Baseline	Motorized Ban Baseline
Baseline Visitation		119,274	59,885	88,718	40,029
Alt. 1 A,B,D,E	88,718	(30,556)	28,833	-	48,689
Alt. 1 C	93,138	(26,136)	33,253	4,420	53,109
Alt. 2	59,885	(59,389)	-	(28,833)	19,856
Alt. 3	53,658	(65,616)	(6,227)	(35,060)	13,629
Alt. 4	116,896	(2,378)	57,011	28,178	76,867
Alt. 5	100,652	(18,622)	40,767	11,934	60,623
Alt. 6	77,892	(41,382)	18,007	(10,826)	37,863

Table 17. Comparison of Action Alternatives 1-6 Estimated GYA Visitation Levels to Four Different No-action Alternative Baselines: Upper Bound Estimated Changes Relative to Baseline.

UPPER BOUND ESTIMATE	Visitation	Historical Baseline	Snowcoach only Baseline	Temporary Rules Baseline	Motorized Ban Baseline
Baseline Visitation		119,274	59,885	88,718	40,029
Alt. 1 A,B,D,E	172,316	53,042	112,431	-	132,287
Alt. 1 C	176,736	57,462	116,851	88,018	136,707
Alt. 2	125,736	6,462	-	37,018	85,707
Alt. 3	85,361	(33,913)	25,476	(3,357)	45,332
Alt. 4	235,599	116,325	175,714	146,881	195,570
Alt. 5	158,206	38,932	98,321	69,488	118,177
Alt. 6	291,342	172,068	231,457	202,624	251,313

The analysis below relies upon IMPLAN modeling. IMPLAN is an input/output model designed by the U.S. Forest Service and is commonly used by state and federal agencies for policy planning and evaluation purposes. There are two important caveats relevant to the interpretation of IMPLAN model estimates, generally, and within the context of this analysis. Principally, the model is static in nature and measures only those effects resulting from a specific change at one point in time. Thus, IMPLAN does not account for adjustments that may occur. For example, a change in NPS policy on snowmobile numbers within the parks may encourage local businesses to diversify or modify their operations and thereby abate reductions in employment and output. In addition, IMPLAN does not acknowledge the re-employment of workers displaced by the original change. In the application below, this caveat simply suggests that t*he long-run net output*

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and employment effects resulting from the modeled changes in winter access policy would likely be smaller than those estimated by the model. A second caveat to the IMPLAN analyses is related to the model data. The IMPLAN analysis in this document relies upon input/output relationships derived from 2003 data. Thus, the analyses presented in this report assume that this characterization of the affected county economies is a reasonable approximation of current conditions, and the conditions that will exist in the future when policy changes might actually go into effect. To the extent that significant changes have, or will, occur, the results may be sensitive to this assumption.

5.1 Estimated Alternative Visitor Expenditure Impacts

The modeling of the regional economic impacts associated with changes in visitation (and associated visitor spending) on an economic area requires several types of information. In the case of this analysis, the primary driving impact for the IMPLAN models is changes in the number of visitors from outside an analysis area who decide not to visit the analysis area. In addition to the change in visitation, the average spending per visitor is required. Finally, in order to accurately input the expenditure changes into the IMPLAN regional model, it is necessary to understand the general distribution of non-resident visitor spending across economic sectors (for instance, lodging, restaurants, rental cars, etc.). Using these parameters, total estimated direct changes in non-resident visitor spending due to an action alternative, and relative to one of the no-action alternatives, is input into the IMPLAN impact analysis program. This program estimates indirect and induced impacts arising from the initial direct spending impact, and allocates these impacts across the sectors of the analysis area.

At its most aggregated level, IMPLAN modeling applies expenditure and employment multipliers to initial impacts to arrive at estimated total output and employment impacts. In general, the smaller and less diverse an economic analysis area is, the closer its expenditure multiplier is to 1.0. Conversely, the larger and more diverse an economy, the larger are its multipliers.

The following analysis of impacts associated with the FEIS includes individual IMPLAN impact model results for each of the 5 analysis areas (3-states, 5-counties, and 3 communities) for each comparison of action and no-action alternatives, and for the lower bound and upper bound impact estimates (approximately 280 models). The complete modeling results are provided below in Appendix A. The results presented in Section 5 are for the five analysis areas and for comparisons to the historical (1997-98) baseline. Many of the estimates differ only marginally, and the large majority of estimated impacts represent a very small percentage change in total economic activity for the analysis areas.

Table 18 shows the relative sizes of the 5 geographic economic analysis areas. The range of total economic outputs among the areas is from $166 billion annually in the three-state region to $167 million in the relatively small and isolated town of West Yellowstone. Clearly, a change in visitor spending that is trivial in the context of the three-state

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economy, has the potential to be substantial in the case of the much smaller West Yellowstone economy.

Table 18. Economic Output and Employment for Five Analysis Areas, 2003.

Analysis Area	Total 2003 Economic Output	Total 2003 Full and Part-Time Employment (jobs)
5-County GYA	$9,547,000,000	115,822
3-State region	$166,318,000,000	1,750,137
West Yellowstone, MT	$167,000,000	2,333
Jackson, WY	$1,860,000,000	20,302
Cody, WY	$917,000,000	10,705

Source: Minnesota IMPLAN group 2003 Data Files.

The following sections present upper and lower bound impact estimates for each of the five geographic analysis areas (5-county, 3-state, West Yellowstone, Jackson, and Cody) compared to historic visitation levels. The comparison of visitation under the alternatives to the historic baseline is presented alone in this section to isolate and highlight differences in relative and absolute impacts across alternatives and analysis areas. Appendix A contains detailed comparisons of all action alternatives to all four no-action baselines. The reported impacts represent IMPLAN models of changes in total economic output (the total production of goods and services in the analysis area for a year). This total impact reflects both direct impacts, as well as indirect and induced impacts. Additionally, impacts to employment in the analysis areas are reported.

Estimates of direct impacts are based on the Table 16 and Table 17 estimated changes to the GYA under alternative pairings, as well as estimated average spending per park visit within the GYA. For community-level analysis areas, reductions in visitation to a community were allocated using the actual observed changes in visitation from the comparison of 1997-98 and 2005-06 gate-level visitations. Based on this comparison 74.7 percent of parkwide visitation reductions were seen at the West Entrance, and thus allocated to impacts on West Yellowstone. For the South Entrance, the 18.5 percent reduction is an impact at Jackson, and the 6.7 percent reduction at the East Entrance impacts Cody. One entrance not modeled, the North Entrance, saw an increase in visitation between 1997-98 and 2005-06, which would primarily be an impact on Gardiner. The Northeast Entrance is closed in winter.

As noted earlier, estimates of per-visit expenditures were estimated using a time series model of West Yellowstone resort tax collections and West Entrance visits. This regressions model of winter visitation and tax receipts estimates that for every West Entrance winter visit, $175.33 is spent on taxable goods and services in the community of West Yellowstone. This spending does not represent total trip spending for an individual as they may visit the park more than once on a trip or may visit other areas in the vicinity such as national forest lands. In the case of Alternative 6 (wheeled access on plowed roads) average spending per visit was assumed to be $106.33. This lower estimate allows

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for the significantly cheaper cost of visiting the park in a wheeled tour bus as compared to a tracked snowcoach (based on conversations with park staff, it is estimated that adult travel in a wheeled vehicle would cost about $69 less than in a snowcoach).

5.2 Estimated Impacts Compared to Historical Baseline

Table 19 through Table 22 show a comparison of the estimated total output and employment impacts of the action alternatives to the historical (1997-98) baseline level of visitation. The modeling results are shown both for the lower bound and upper bound impact estimates. Examination of Table 20 and Table 22 show that overall, as a percentage of total annual economic activity, only in the town of West Yellowstone do the estimated impacts of the winter use policy alternatives represent a significant change in total annual economic activity. Besides the case of West Yellowstone, nowhere does the estimated change in annual output and employment rise to even a 1% change, and in most cases the change is much smaller (especially in the cases of the larger 5-county and 3-state analysis areas).

In the case of the West Yellowstone economy, the largest and second largest short run (lower bound) impacts relative to historical visitation levels are seen in the case of the "no grooming" Alternative 3, and "snowcoach only" Alternative 2, respectively. It is estimated that these two alternatives would lead to a 6-7% reduction in annual output and 9-10% reduction in annual employment relative to 1997-98 historical visitation levels. It should be noted that while a 6-7% reduction in annual output seems modest, the reduction would not be spread over the year, but would occur during the relatively short winter season, and thus would disproportionately affect businesses and employees who rely on winter visitors for a large share of their annual income.

The Alternative 1 (A,B, D, E) – West Yellowstone impact cell is highlighted in Table 19. This IMPLAN model estimate can be compared to actual observed changes in West Yellowstone Tax resort tax revenues between the 1997-98 winter and the 2005-06 winter. The 5.8 million reduction in total output shown in the table would represent about $174,000 in lost tax revenues for the town if all of the output was taxable under the resort tax. Examination of West Yellowstone resort tax records shows that winter season collections actually dropped by about $154,000 in constant dollars between the 1997-98 and 2005-06 winters. Including the closeness of these estimates provides some "ground-truthing" from available observed data for the IMPLAN modeling results. For example, if about one-half of the indirect and induced expenditures are resort-taxable, the model estimated and actual tax receipts are virtually identical.

Just as the lower bound estimates in Table 19 show reductions in output and employment when comparing the alternatives to historical visitation, the upper Bound estimates in Table 21 generally show that full utilization of entry limits could lead to substantial increases in visitation and associated spending impacts for all alternatives except for Alternative 3.

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Table 19. Comparison of IMPLAN Model Estimates of Total Output and Employment Impacts: Lower Bound Estimated Comparison to Historical Baseline (output impacts are in 2003$, and Employment impacts are in full or part time jobs)

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	(5,868,601)	(7,207,453)	(5,825,726)	(1,541,066)	(579,456)
	Employment	(107)	(133)	(100)	(27)	(13)
Alternative 1, (C)	**Output**	(5,019,640)	(6,164,812)	(4,982,969)	(1,318,134)	(495,632)
	Employment	(92)	(114)	(104)	(23)	(11)
Alternative 2	**Output**	(11,406,400)	(14,008,636)	(11,323,068)	(2,995,266)	(1,126,250)
	Employment	(208)	(259)	(235)	(52)	(25)
Alternative 3	**Output**	(12,602,350)	(15,477,422)	(12,510,276)	(3,309,316)	(1,244,335)
	Employment	(230)	(286)	(260)	(57)	(28)
Alternative 4	**Output**	(456,715)	(560,909)	(453,378)	(119,931)	(45,095)
	Employment	(8)	(10)	(9)	(2)	(1)
Alternative 5	**Output**	(3,576,513)	(4,392,452)	(3,544,173)	(939,175)	(353,139)
	Employment	(65)	(81)	(74)	(16)	(8)
Alternative 6	**Output**	(4,819,922)	(5,919,530)	(4,784,709)	(1,265,688)	(475,911)
	Employment	(88)	(109)	(99)	(22)	(11)

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Table 20. Comparison of IMPLAN Model Estimates of Percentage Change in Total Annual Economic Output and Employment: Lower Bound Estimated Comparison to Historical Baseline

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	-0.06%	0.00%	-3.49%	-0.08%	-0.06%
	Employment	-0.09%	-0.01%	-4.27%	-0.13%	-0.12%
Alternative 1, (C)	**Output**	-0.05%	0.00%	-2.98%	-0.07%	-0.05%
	Employment	-0.08%	-0.01%	-4.44%	-0.11%	-0.10%
Alternative 2	**Output**	-0.12%	-0.01%	-6.78%	-0.16%	-0.12%
	Employment	-0.18%	-0.01%	-10.09%	-0.26%	-0.23%
Alternative 3	**Output**	-0.13%	-0.01%	-7.49%	-0.18%	-0.14%
	Employment	-0.20%	-0.02%	-11.15%	-0.28%	-0.26%
Alternative 4	**Output**	0.00%	0.00%	-0.27%	-0.01%	0.00%
	Employment	-0.01%	0.00%	-0.40%	-0.01%	-0.01%
Alternative 5	**Output**	-0.04%	0.00%	-2.12%	-0.05%	-0.04%
	Employment	-0.06%	0.00%	-3.17%	-0.08%	-0.07%
Alternative 6	**Output**	-0.05%	0.00%	-2.87%	-0.07%	-0.05%
	Employment	-0.08%	-0.01%	-4.26%	-0.11%	-0.10%

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Table 21. Comparison of IMPLAN Model Estimates of Total Output and Employment Impacts: Upper Bound Estimated Comparison to Historical Baseline (output impacts are in 2003$, and Employment impacts are in full or part time jobs)

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	10,187,274	12,511,381	10,112,847	2,675,129	1,005,875
	Employment	186	231	173	46	22
Alternative 1, (C)	**Output**	11,036,064	13,553,812	10,955,438	2,898,018	1,089,684
	Employment	202	250	228	50	24
Alternative 2	**Output**	1,241,108	1,524,252	1,232,041	325,909	122,545
	Employment	23	28	26	6	3
Alternative 3	**Output**	(6,513,403)	(7,999,357)	(6,465,816)	(1,710,388)	(643,122)
	Employment	(119)	(148)	(134)	(30)	(14)
Alternative 4	**Output**	22,341,201	27,438,085	22,177,985	5,866,694	2,205,936
	Employment	408	507	461	102	49
Alternative 5	**Output**	7,477,220	9,183,061	7,409,608	1,963,483	738,289
	Employment	137	170	154	34	16
Alternative 6	**Output**	20,041,429	24,613,642	19,895,009	5,262,782	1,978,855
	Employment	366	455	414	91	44

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Table 22. Comparison of IMPLAN Model Estimates of Percentage Change in Total Annual Economic Output and Employment: Upper Bound Estimated Comparison to Historical Baseline

		5-county	3-state	West Yellowstone	Jackson	Cody
Alternative 1 (A,B,D,E)	**Output**	0.11%	0.01%	6.06%	0.14%	0.11%
	Employment	0.16%	0.01%	7.41%	0.23%	0.21%
Alternative 1, (C)	**Output**	0.12%	0.01%	6.56%	0.16%	0.12%
	Employment	0.17%	0.01%	9.77%	0.25%	0.23%
Alternative 2	**Output**	0.01%	0.00%	0.74%	0.02%	0.01%
	Employment	0.02%	0.00%	1.10%	0.03%	0.03%
Alternative 3	**Output**	-0.07%	0.00%	-3.87%	-0.09%	-0.07%
	Employment	-0.10%	-0.01%	-5.76%	-0.15%	-0.13%
Alternative 4	**Output**	0.23%	0.02%	13.28%	0.32%	0.24%
	Employment	0.35%	0.03%	19.78%	0.50%	0.46%
Alternative 5	**Output**	0.08%	0.01%	4.44%	0.11%	0.08%
	Employment	0.12%	0.01%	6.62%	0.17%	0.15%
Alternative 6	**Output**	0.21%	0.01%	11.91%	0.28%	0.22%
	Employment	0.32%	0.03%	17.73%	0.45%	0.41%

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5.3 Summary of Economic Impact Analysis Results and Uncertainty

The estimated economic impact results detailed above in Section 5 show a clear pattern. In terms of the level of total impact on an analysis area, two factors are particularly relevant: 1) the size and diversity of the economic analysis area and, 2) the share of total economic impact to the region that is allocated to each analysis area. For four of the analysis areas (5-county, 3-state, Jackson, and Cody) the size of economic impacts relative to the size of the economies combined to make estimated percentage changes in annual output and employment extremely small (generally much less than a 1% change). It should be noted that in these analysis areas, even though the percentage change in total economic activity associated with an alternative might be very small, impacts to specific sectors or individual businesses may be substantially larger.

The one analysis area where substantial impacts are predicted is for the town of West Yellowstone, MT. In this analysis area a small economy that depends heavily upon recreational visitor spending, combined with a large share of GYA impacts associated with changes in winter access management leads to measurable economic impacts. Additionally, the impacts reported are for annual economic activity. Since the impacts will be concentrated in the winter months, the impacts will be felt most acutely by businesses that rely on winter visitor expenditures for a disproportionately large share of their annual business.

As noted, Appendix A to this report provides comparisons of estimated impacts of all action alternatives to all four baseline no-action alternatives for the range (low to high) of estimated impacts. The low estimate is an estimate of the impact expected in the next year following a policy change, and the high is in the indefinite future, should use increase to the legal limit under any given alternative. Additionally, Appendix B provides an alternative method of estimating impacts based on visitor survey data and responses to contingent behavior questions (Duffield and Neher 2000; RTI 2004). The basis for these estimates is described in Appendix B. These estimates can be interpreted as what might actually occur after five or ten years of adjustment to existing policies.

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6.0 Comparison of Estimated Parameters and Results to Other Studies

A number of other studies and documents were evaluated as a basis for alternative estimates or economic parameters for purposes of this report. These include: Snowmobiling in Montana 2002 (Sylvester 2002); 2000-2001 Wyoming Snowmobile Survey (McManus, Coupal, and Taylor 2001); The Economic Impact of Travel & Tourism in Idaho (Global Insight 2005); Recreation Participation Patterns by Montana Residents (Ellard, Nickerson, and McMahon 1999); Niche News: Winter Outdoor Enthusiasts (Institute for Tourism and Recreation Research, 2003); The Montana Trail Users Study (McCool and Harris 1994); and Wyoming Travel Industry 2003 Impact Report (Wyoming Travel and Tourism, undated). With the exception of Sylvester (2002) and McManus et al. (2001), the studies are too general to provide parameters or estimates for application in the analysis at hand (GYA winter use policies). Most of the studies are at the state level, for the entire year, and for all types of recreation.

The Bureau of Business and Economic Research at The University of Montana prepared the report Snowmobiling in Montana 2002 for the Montana Department of Fish, Wildlife & Parks and the Montana Snowmobile Association (Sylvester 2002). The report updated previous evaluations of the economic contribution of snowmobiling in the State of Montana. This report concentrated on snowmobile expenditures in the West Yellowstone area. They estimated that nonresident snowmobilers spend about $225 per activity day, including food, lodging, and often, snowmobile rental costs.

The main focus of Sylvester's study is on a statewide overview of snowmobiling in Montana. However, Sylvester explored the reaction to the NPS proposal to limit snowmobiles in YNP. They asked the West Yellowstone respondents if they would return, even if they could not snowmobile in the park. Over 56% said they would return. Sylvester estimated that about $33 million of the total nonresident expenditures from snowmobiling occur in West Yellowstone. He also estimated that restricting the number of individuals in YNP may result in a decline of nonresident expenditures of between $10 million and $15 million in West Yellowstone. This decline assumed that some of the snowmobilers may be replaced by other winter users. Sylvester estimated that these expenditure estimates translate into losses of between $2 million and $4 million in labor income, affecting winter employment opportunities in West Yellowstone; some full-time jobs may become part-time and some part-time jobs may cease to exist. Based on this study, as many as 150 jobs in West Yellowstone may be affected if the NPS limits snowmobiling in the Park. These results can be compared to the estimates of this report in Table 21. For Alternative 1 (snowcoaches only), the estimate is for a $7 million decline in output. Sylvester's estimate is somewhat higher (even before correcting for inflation) – a loss of $10 to $15 million. The latter estimate is in part based on the total estimated expenditures in West Yellowstone related to snowmobiling of $33 million. But the latter would imply nearly $1 million in winter-month resort tax revenue just from

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snowmobilers. In 1999-2000 the months of December-March actually yielded about $550,000 in tax revenue.

The results from the 2000-2001 Wyoming Snowmobile Survey provide information on trail usage, expenditure information and user satisfaction for snowmobiling in the State of Wyoming. The results represent resident, nonresident, and outfitter client snowmobile use of Wyoming State trails during the season of 2000-2001. Trips to YNP and GTNP trails accounted for 3.1% of resident, 4.6% of nonresident, and 33.2% of outfitter client snowmobile trips during the season. Statewide information contained in the Wyoming survey is not directly comparable to survey data specific to the GYA. Daily per person trip expenditures in Wyoming ranged from $180.27 for outfitter clients to $98.99 for nonresidents and $68.50 for residents. Annual equipment expenditures in Wyoming ranged from $2,306.13 for residents to $329.94 for nonresidents, and $64.11 for outfitter clients.

The preferred solutions for resolving the snowmobile conflict in national parks as indicated in the 2000-2001 Wyoming Snowmobile Survey were presented in greater detail in the visitor experience section. Briefly, the majority of residents (nearly 70%) preferred that there would be no ban on snowmobiles. Half of these preferred a requirement for cleaner and quieter machines, and half wanted no additional requirements. About 20% of resident snowmobilers preferred a solution that limited snowmobile access by day or by season. Over 37% of nonresident respondents preferred no ban and no additional requirements. As a solution, 28% favored cleaner and quieter machines, and almost 30% favored either a partial ban in highly sensitive areas or more limited access by day or by season. Half of resident Wyoming snowmobilers did not see a need for cleaner and quieter snowmobiles but 50% also said they would pay more to use them if these vehicles were available. A minority of nonresidents (28.2%) thought there was a need for cleaner and quieter snowmobiles, but 50.5% of all respondents said they would pay more to use them if these vehicles were available. A majority of outfitter clients (56%) thought there was a need for cleaner and quieter snowmobiles and over 64% said they would be willing to pay a higher price to use them.

The 2000-2001 Wyoming Snowmobile Survey queried respondents (statewide) about behaviors that would result from a ban on snowmobile use in the parks. The study found that over 78% of outfitter clients, 89% of residents and 97.3% of nonresidents indicated that snowmobiling was their primary purpose for traveling to Wyoming during their most recent visit. Trips to YNP and GTNP accounted for 3.1% of resident, 4.6% of nonresident, and 33.2% of outfitter client snowmobile trips during the 2000-2001 season. Outfitter clients would make the most changes of all Wyoming trail users if YNP and GTNP were closed to snowmobile access; nonresidents and residents would also be affected but to a lesser degree. Resident, nonresident and outfitter clients indicated they would decrease their annual overall total number of snowmobiling trips by 2.5%, 11.4%, and 34% respectively. Resident, nonresident and outfitter clients indicated they would decrease their annual snowmobiling trips to Wyoming trails by 5%, 10.4%, and 52.3% respectively. However, the survey results do indicate some substitution to other trails within the region (Montana, Idaho, Colorado, South Dakota, and Utah) with the number

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of resident trips increasing by 52.1% and outfitter client trips increasing by 20.6%. Nonresident snowmobilers indicated their use to other regional trails would decrease by 10.4%. The majority of Wyoming snowmobile trail users (84.6% of outfitter clients, 91.2% of residents, and 93.2% of nonresidents) would not consider going to YNP if their only mechanized access were by snowcoach tours.

The Wyoming study concludes from these data there could be a loss of up to 938 jobs, $11.8 million in labor income, and $1.3 million in government revenue in the state. The estimated job losses in the McManus et al. study just for Wyoming are higher (938 jobs lost) than the estimated job losses for Wyoming, Montana, and Idaho combined in the current report (see Table 18) at 747 jobs. Additionally, the community level analysis in the current report show a much larger loss at West Yellowstone for a snowmobile ban (378 jobs) than at Jackson (144 jobs) and Cody (9 jobs). This is consistent with the distribution of snowmobile visitors at the West, East and South gates. The Wyoming estimates may be high because snowmobilers were surveyed statewide and not all respondents actually would be reducing their use in the GYA in response to a ban.

The Global Insights (2005) study of the tourism industry in Idaho provides county by county estimates of the annual impacts of tourism for all types of activities. There is no specific analysis of winter use or snowmobiling.

The Ellard, Nickerson and McMahon (1999) study is an analysis of participation patterns by Montana residents for all recreation activities and on an annual basis. The study shows that relative to other activities, snowmobiling has relatively low participation, at 7 percent. However, there is no specific analysis of snowmobiling in any specific area (such as Yellowstone), expenditure analysis or policy analysis for this sport.

The one-page Niche News document summarizes some facts about winter recreation in Montana. The facts specific to snowmobiling are that 16 percent of nonresident visitors are attracted to this activity, compared to 59 percent for downhill skiing and 27 percent Yellowstone Park.

The Montana Trail Users Study (1994) examines participation in Montana resident trail use for all kinds of activities including walking for pleasure, backpacking, ATV's and etc. Findings specific to snowmobiling are that 15 percent reported going snowmobiling in the fall-winter sample period and that there is a slight preference for groomed trails.

The Wyoming Travel and Tourism report includes an overview of the economic impact of all types of tourism on an annual basis in the Wyoming. A finding is that hiking creates 32 percent of "marketable trips" compared to 3 percent for snowmobiling.

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7.0 Cumulative Impacts

The appropriate level for viewing cumulative economic impacts is at the aggregate level for the GYA. The counties of the GYA are in a period of general prosperity, characterized by economic growth and low unemployment. This growth is largely fueled by desirable residential and quality of life environments, increasing tourism, and the ability of independent entrepreneurs to be located in desirable working environments some distance from their key markets. This is more than offsetting the decline of the traditional resource extraction industries in the regional economy, although it should be noted that average wages between the two sectors are not equal (with resource industries. being generally higher). During the general trend of growth through the period, it should be noted that annual levels of tourist visitation have been static or decreasing in some places during the past several years. To the extent that the alternatives tend to increase recreational visitation, this is additive to the existing trend. To the extent that the alternatives tend to reduce recreational visitation, the negative impacts are somewhat offset by the positive regional economic trend related to wildlife and natural environment. This is the only cumulative impact identified in this section.

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APPENDIX A: Full IMPLAN Modeling Results

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Lower Bound Estimated Impacts

5-County GYA Analysis Area

Total Output (million) **9,547.327**

Total Employment **115,822**

Alternatives		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	(5,868,601)	5,537,782	-	9,355,650
	Employment	(107)	101	-	171
Alternative 1, (C)	Output	(5,019,640)	6,386,548	848,940	10,159,158
	Employment	(92)	117	16	186
Alternative 2	Output	(11,406,400)	-	(5,537,782)	3,815,316
	Employment	(208)	-	(101)	70
Alternative 3	Output	(12,602,350)	(1,195,981)	(6,733,776)	2,618,817
	Employment	(230)	(22)	(123)	48
Alternative 4	Output	(456,715)	10,949,493	5,412,087	14,703,798
	Employment	(8)	200	99	269
Alternative 5	Output	(3,576,513)	7,829,682	2,292,137	11,596,503
	Employment	(65)	143	42	212
Alternative 6	Output	(4,819,922)	2,097,403	(1,260,936)	4,412,146
	Employment	(88)	38	(23)	81

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Lower Bound Estimated Impacts

5-County GYA Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.06%	0.06%	0.00%	0.10%
	Employment	-0.09%	0.09%	0.00%	0.15%
Alternative 1, (C)	Output	-0.05%	0.07%	0.01%	0.11%
	Employment	-0.08%	0.10%	0.01%	0.16%
Alternative 2	Output	-0.12%	0.00%	-0.06%	0.04%
	Employment	-0.18%	0.00%	-0.09%	0.06%
Alternative 3	Output	-0.13%	-0.01%	-0.07%	0.03%
	Employment	-0.20%	-0.02%	-0.11%	0.04%
Alternative 4	Output	0.00%	0.11%	0.06%	0.15%
	Employment	-0.01%	0.17%	0.09%	0.23%
Alternative 5	Output	-0.04%	0.08%	0.02%	0.12%
	Employment	-0.06%	0.12%	0.04%	0.18%
Alternative 6	Output	-0.05%	0.02%	-0.01%	0.05%
	Employment	-0.08%	0.03%	-0.02%	0.07%

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Upper Bound Estimated Impacts

5-County GYA Analysis Area

Total Output (million) **9,547.327**

Total Employment **115,822**

Alternatives		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	10,187,274	21,593,952	-	25,419,106
	Employment	186	394	-	465
Alternative 1, (C)	Output	11,036,064	22,442,323	16,905,426	26,150,522
	Employment	202	410	309	478
Alternative 2	Output	1,241,108	-	7,109,826	16,468,539
	Employment	23	-	130	301
Alternative 3	Output	(6,513,403)	4,893,014	(644,760)	8,710,560
	Employment	(119)	89	(12)	159
Alternative 4	Output	22,341,201	33,747,510	28,211,114	37,410,356
	Employment	408	616	516	683
Alternative 5	Output	7,477,220	18,883,464	13,346,409	22,605,940
	Employment	137	345	244	413
Alternative 6	Output	20,041,429	26,959,445	23,600,206	29,285,312
	Employment	366	493	431	535

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Upper Bound Estimated Impacts

5-County GYA Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	0.11%	0.23%	0.00%	0.27%
	Employment	0.16%	0.34%	0.00%	0.40%
Alternative 1, (C)	Output	0.12%	0.24%	0.18%	0.27%
	Employment	0.17%	0.35%	0.27%	0.41%
Alternative 2	Output	0.01%	0.00%	0.07%	0.17%
	Employment	0.02%	0.00%	0.11%	0.26%
Alternative 3	Output	-0.07%	0.05%	-0.01%	0.09%
	Employment	-0.10%	0.08%	-0.01%	0.14%
Alternative 4	Output	0.23%	0.35%	0.30%	0.39%
	Employment	0.35%	0.53%	0.45%	0.59%
Alternative 5	Output	0.08%	0.20%	0.14%	0.24%
	Employment	0.12%	0.30%	0.21%	0.36%
Alternative 6	Output	0.21%	0.28%	0.25%	0.31%
	Employment	0.32%	0.43%	0.37%	0.46%

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Lower Bound Estimated Impacts

3-State Analysis Area

Total Output (million)	**166,318.026**
Total Employment	**1,750,137**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(7,207,453)	6,801,162	-	11,484,623
	Employment	(133)	126	-	212
Alternative 1, (C)	**Output**	(6,164,812)	7,843,516	1,042,615	12,470,977
	Employment	(114)	145	19	230
Alternative 2	**Output**	(14,008,636)	-	(6,801,162)	4,683,531
	Employment	(259)	-	(126)	86
Alternative 3	**Output**	(15,477,422)	(1,468,829)	(8,270,007)	3,214,755
	Employment	(286)	(27)	(153)	59
Alternative 4	**Output**	(560,909)	13,447,409	6,646,790	21,333,095
	Employment	(10)	248	123	333
Alternative 5	**Output**	(4,392,452)	9,615,873	2,815,061	14,235,403
	Employment	(81)	178	52	263
Alternative 6	**Output**	(5,919,530)	2,575,901	(1,548,603)	5,416,175
	Employment	(109)	48	(29)	100

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Lower Bound Estimated Impacts

3-State Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	0.00%	0.00%	0.00%	0.01%
	Employment	-0.01%	0.01%	0.00%	0.01%
Alternative 1, (C)	Output	0.00%	0.00%	0.00%	0.01%
	Employment	-0.01%	0.01%	0.00%	0.01%
Alternative 2	Output	-0.01%	0.00%	0.00%	0.00%
	Employment	-0.01%	0.00%	-0.01%	0.00%
Alternative 3	Output	-0.01%	0.00%	0.00%	0.00%
	Employment	-0.02%	0.00%	-0.01%	0.00%
Alternative 4	Output	0.00%	0.01%	0.00%	0.01%
	Employment	0.00%	0.01%	0.01%	0.02%
Alternative 5	Output	0.00%	0.01%	0.00%	0.01%
	Employment	0.00%	0.01%	0.00%	0.02%
Alternative 6	Output	0.00%	0.00%	0.00%	0.00%
	Employment	-0.01%	0.00%	0.00%	0.01%

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Upper Bound Estimated Impacts

3-State Analysis Area

Total Output (million)	**166,318.026**
Total Employment	**1,750,137**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	12,511,381	26,520,357	-	31,203,482
	Employment	231	490	-	576
Alternative 1, (C)	**Output**	13,553,812	27,562,105	20,762,196	32,101,336
	Employment	250	509	383	593
Alternative 2	**Output**	1,524,252	-	8,731,849	20,216,124
	Employment	28	-	161	373
Alternative 3	**Output**	(7,999,357)	6,009,298	(791,854)	10,692,735
	Employment	(148)	111	(15)	198
Alternative 4	**Output**	27,438,085	41,446,353	34,647,141	54,277,042
	Employment	507	765	640	848
Alternative 5	**Output**	9,183,061	23,191,361	16,391,232	27,750,149
	Employment	170	428	303	512
Alternative 6	**Output**	24,613,642	33,109,922	28,984,311	35,949,480
	Employment	455	611	535	664

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Upper Bound Estimated Impacts

3-State Analysis Area

% Change for Economy

		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	0.01%	0.02%	0.00%	0.02%
	Employment	0.01%	0.03%	0.00%	0.03%
Alternative 1, (C)	Output	0.01%	0.02%	0.01%	0.02%
	Employment	0.01%	0.03%	0.02%	0.03%
Alternative 2	Output	0.00%	0.00%	0.01%	0.01%
	Employment	0.00%	0.00%	0.01%	0.02%
Alternative 3	Output	0.00%	0.00%	0.00%	0.01%
	Employment	-0.01%	0.01%	0.00%	0.01%
Alternative 4	Output	0.02%	0.02%	0.02%	0.03%
	Employment	0.03%	0.04%	0.04%	0.05%
Alternative 5	Output	0.01%	0.01%	0.01%	0.02%
	Employment	0.01%	0.02%	0.02%	0.03%
Alternative 6	Output	0.01%	0.02%	0.02%	0.02%
	Employment	0.03%	0.03%	0.03%	0.04%

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Lower Bound Estimated Impacts

West Yellowstone Analysis Area

Total Output (million)	**166.975**
Total Employment	**2,333**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(5,825,726)	2,872,948	-	9,282,929
	Employment	(100)	114	-	193
Alternative 1, (C)	**Output**	(4,982,969)	6,339,851	841,687	10,080,190
	Employment	(104)	132	18	210
Alternative 2	**Output**	(11,323,068)	-	(5,497,324)	3,785,661
	Employment	(235)	-	(114)	79
Alternative 3	**Output**	(12,510,276)	(1,187,243)	(6,684,580)	2,598,461
	Employment	(260)	(25)	(139)	54
Alternative 4	**Output**	(453,378)	10,869,433	5,372,549	14,589,504
	Employment	(9)	226	112	303
Alternative 5	**Output**	(3,544,173)	7,772,433	2,275,392	11,506,361
	Employment	(74)	162	47	239
Alternative 6	**Output**	(4,784,709)	2,082,080	(1,251,724)	4,377,851
	Employment	(99)	43	(26)	91

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Lower Bound Estimated Impacts

West Yellowstone Analysis Area

% Change for Economy

		Baseline Alternative			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	-3.49%	1.72%	0.00%	5.56%
	Employment	-4.27%	4.90%	0.00%	8.27%
Alternative 1, (C)	**Output**	-2.98%	3.80%	0.50%	6.04%
	Employment	-4.44%	5.65%	0.75%	8.98%
Alternative 2	**Output**	-6.78%	0.00%	-3.29%	2.27%
	Employment	-10.09%	0.00%	-4.90%	3.38%
Alternative 3	**Output**	-7.49%	-0.71%	-4.00%	1.56%
	Employment	-11.15%	-1.06%	-5.96%	2.32%
Alternative 4	**Output**	-0.27%	6.51%	3.22%	8.74%
	Employment	-0.40%	9.69%	4.79%	13.00%
Alternative 5	**Output**	-2.12%	4.65%	1.36%	6.89%
	Employment	-3.17%	6.93%	2.03%	10.25%
Alternative 6	**Output**	-2.87%	1.25%	-0.75%	2.62%
	Employment	-4.26%	1.86%	-1.12%	3.90%

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Upper Bound Estimated Impacts

West Yellowstone Analysis Area

Total Output (million)	**166.975**
Total Employment	**2,333**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	10,112,847	11,202,734	-	25,221,525
	Employment	173	446	-	524
Alternative 1, (C)	**Output**	10,955,438	22,278,228	16,761,004	25,947,250
	Employment	228	463	349	539
Alternative 2	**Output**	1,232,041	-	7,057,883	16,340,532
	Employment	26	-	147	340
Alternative 3	**Output**	(6,465,816)	4,857,267	(640,050)	8,642,851
	Employment	(134)	101	(13)	180
Alternative 4	**Output**	22,177,985	33,500,754	28,005,017	37,119,560
	Employment	461	697	583	772
Alternative 5	**Output**	7,409,608	18,745,391	13,248,907	22,430,221
	Employment	154	390	276	466
Alternative 6	**Output**	19,895,009	26,762,484	23,427,788	29,057,678
	Employment	414	557	487	604

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Upper Bound Estimated Impacts

West Yellowstone Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	6.06%	6.71%	0.00%	15.10%
	Employment	7.41%	19.11%	0.00%	22.46%
Alternative 1, (C)	Output	6.56%	13.34%	10.04%	15.54%
	Employment	9.77%	19.86%	14.97%	23.12%
Alternative 2	Output	0.74%	0.00%	4.23%	9.79%
	Employment	1.10%	0.00%	6.29%	14.57%
Alternative 3	Output	-3.87%	2.91%	-0.38%	5.18%
	Employment	-5.76%	4.33%	-0.57%	7.71%
Alternative 4	Output	13.28%	20.06%	16.77%	22.23%
	Employment	19.78%	29.86%	24.99%	33.07%
Alternative 5	Output	4.44%	11.23%	7.93%	13.43%
	Employment	6.62%	16.71%	11.82%	19.99%
Alternative 6	Output	11.91%	16.03%	14.03%	17.40%
	Employment	17.73%	23.85%	20.87%	25.88%

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Lower Bound Estimated Impacts

Jackson, WY Analysis Area

Total Output (million)	**1,860.467**
Total Employment	**20,302**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(1,541,066)	1,454,195	-	2,455,593
	Employment	(27)	25	-	43
Alternative 1, (C)	**Output**	(1,318,134)	1,677,067	222,928	2,666,491
	Employment	(23)	29	4	46
Alternative 2	**Output**	(2,995,266)	-	(1,454,195)	1,001,412
	Employment	(52)	-	(25)	17
Alternative 3	**Output**	(3,309,316)	(314,059)	(1,768,257)	687,365
	Employment	(57)	(5)	(31)	12
Alternative 4	**Output**	(119,931)	2,875,267	1,421,189	3,859,330
	Employment	(2)	50	25	67
Alternative 5	**Output**	(939,175)	2,056,025	601,905	3,043,753
	Employment	(16)	36	10	53
Alternative 6	**Output**	(1,265,688)	550,768	(331,116)	1,158,063
	Employment	(22)	10	(6)	20

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Lower Bound Estimated Impacts

Jackson, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.08%	0.08%	0.00%	0.13%
	Employment	-0.13%	0.12%	0.00%	0.21%
Alternative 1, (C)	Output	-0.07%	0.09%	0.01%	0.14%
	Employment	-0.11%	0.14%	0.02%	0.23%
Alternative 2	Output	-0.16%	0.00%	-0.08%	0.05%
	Employment	-0.26%	0.00%	-0.12%	0.09%
Alternative 3	Output	-0.18%	-0.02%	-0.10%	0.04%
	Employment	-0.28%	-0.03%	-0.15%	0.06%
Alternative 4	Output	-0.01%	0.15%	0.08%	0.21%
	Employment	-0.01%	0.25%	0.12%	0.33%
Alternative 5	Output	-0.05%	0.11%	0.03%	0.16%
	Employment	-0.08%	0.18%	0.05%	0.26%
Alternative 6	Output	-0.07%	0.03%	-0.02%	0.06%
	Employment	-0.11%	0.05%	-0.03%	0.10%

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Upper Bound Estimated Impacts

Jackson, WY Analysis Area

Total Output (million)	**1,860.467**
Total Employment	**20,302**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	2,675,129	5,670,468	-	6,671,794
	Employment	46	98	-	116
Alternative 1, (C)	**Output**	2,898,018	5,893,211	4,439,286	6,863,770
	Employment	50	102	77	119
Alternative 2	**Output**	325,909	-	1,867,006	4,322,525
	Employment	6	-	32	75
Alternative 3	**Output**	(1,710,388)	1,284,883	(169,311)	2,286,274
	Employment	(30)	22	(3)	40
Alternative 4	**Output**	5,866,694	8,861,881	7,408,107	9,819,156
	Employment	102	154	128	170
Alternative 5	**Output**	1,963,483	4,958,677	3,504,705	5,933,417
	Employment	34	86	61	103
Alternative 6	**Output**	5,262,782	7,079,420	6,197,304	7,686,563
	Employment	91	123	107	134

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Upper Bound Estimated Impacts

Jackson, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	0.14%	0.30%	0.00%	0.36%
	Employment	0.23%	0.48%	0.00%	0.57%
Alternative 1, (C)	Output	0.16%	0.32%	0.24%	0.37%
	Employment	0.25%	0.50%	0.38%	0.59%
Alternative 2	Output	0.02%	0.00%	0.10%	0.23%
	Employment	0.03%	0.00%	0.16%	0.37%
Alternative 3	Output	-0.09%	0.07%	-0.01%	0.12%
	Employment	-0.15%	0.11%	-0.01%	0.20%
Alternative 4	Output	0.32%	0.48%	0.40%	0.53%
	Employment	0.50%	0.76%	0.63%	0.84%
Alternative 5	Output	0.11%	0.27%	0.19%	0.32%
	Employment	0.17%	0.42%	0.30%	0.51%
Alternative 6	Output	0.28%	0.38%	0.33%	0.41%
	Employment	0.45%	0.61%	0.53%	0.66%

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Lower Bound Estimated Impacts

Cody, WY Analysis Area

Total Output (million)	**916.535**
Total Employment	**10,705**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(579,456)	546,791	-	923,366
	Employment	(13)	12	-	21
Alternative 1, (C)	**Output**	(495,632)	630,595	83,823	1,002,669
	Employment	(11)	14	2	22
Alternative 2	**Output**	(1,126,250)	-	(546,791)	376,557
	Employment	(25)	-	(12)	8
Alternative 3	**Output**	(1,244,335)	(118,089)	(664,882)	258,467
	Employment	(28)	(3)	(15)	6
Alternative 4	**Output**	(45,095)	1,081,131	534,379	1,451,207
	Employment	(1)	24	12	32
Alternative 5	**Output**	(353,139)	773,087	226,321	1,144,529
	Employment	(8)	17	5	25
Alternative 6	**Output**	(475,911)	207,094	(124,502)	435,443
	Employment	(11)	5	(3)	10

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Lower Bound Estimated Impacts

Cody, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.06%	0.06%	0.00%	0.10%
	Employment	-0.12%	0.11%	0.00%	0.19%
Alternative 1, (C)	Output	-0.05%	0.07%	0.01%	0.11%
	Employment	-0.10%	0.13%	0.02%	0.21%
Alternative 2	Output	-0.12%	0.00%	-0.06%	0.04%
	Employment	-0.23%	0.00%	-0.11%	0.08%
Alternative 3	Output	-0.14%	-0.01%	-0.07%	0.03%
	Employment	-0.26%	-0.02%	-0.14%	0.05%
Alternative 4	Output	0.00%	0.12%	0.06%	0.16%
	Employment	-0.01%	0.22%	0.11%	0.30%
Alternative 5	Output	-0.04%	0.08%	0.02%	0.12%
	Employment	-0.07%	0.16%	0.05%	0.24%
Alternative 6	Output	-0.05%	0.02%	-0.01%	0.05%
	Employment	-0.10%	0.04%	-0.03%	0.09%

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Upper Bound Estimated Impacts

Cody, WY Analysis Area

Total Output (million)	**916.535**
Total Employment	**10,705**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	1,005,875	2,132,151	-	2,508,661
	Employment	22	48	-	56
Alternative 1, (C)	**Output**	1,089,684	2,215,909	1,669,208	2,580,845
	Employment	24	49	38	57
Alternative 2	**Output**	122,545	-	702,012	1,625,312
	Employment	3	-	16	36
Alternative 3	**Output**	(643,122)	483,128	(63,663)	859,661
	Employment	(14)	11	(1)	19
Alternative 4	**Output**	2,205,936	3,332,160	2,785,510	3,692,100
	Employment	49	74	63	81
Alternative 5	**Output**	738,289	1,864,515	1,317,798	2,231,024
	Employment	16	41	30	49
Alternative 6	**Output**	1,978,855	2,661,928	2,330,231	2,890,224
	Employment	44	59	52	64

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Upper Bound Estimated Impacts

Cody, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	0.11%	0.23%	0.00%	0.27%
	Employment	0.21%	0.45%	0.00%	0.52%
Alternative 1, (C)	Output	0.12%	0.24%	0.18%	0.28%
	Employment	0.23%	0.46%	0.35%	0.53%
Alternative 2	Output	0.01%	0.00%	0.08%	0.18%
	Employment	0.03%	0.00%	0.15%	0.33%
Alternative 3	Output	-0.07%	0.05%	-0.01%	0.09%
	Employment	-0.13%	0.10%	-0.01%	0.18%
Alternative 4	Output	0.24%	0.36%	0.30%	0.40%
	Employment	0.46%	0.69%	0.59%	0.76%
Alternative 5	Output	0.08%	0.20%	0.14%	0.24%
	Employment	0.15%	0.39%	0.28%	0.46%
Alternative 6	Output	0.22%	0.29%	0.25%	0.32%
	Employment	0.41%	0.55%	0.48%	0.60%

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APPENDIX B: Impact Estimates Based on Contingent Behavior Surveys of Winter Park Visitors

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A2.0 Analysis of Estimated Use Levels under Alternatives

This section provides estimates of the parks' winter use levels under the 10 alternatives (4 no-action and 6 action alternatives). Section A2.3, below, provides a comparison of the action and no-action alternatives and develops economic impact estimates. There are two primary types of restrictive policies addressed in this analysis: 1) quantitative restrictions on winter entry levels, and 2) qualitative restrictions such as requirements for BAT technology, or for guided entry.

A2.1 Analysis of No-action Alternative Use Levels

As noted above, this analysis develops four different no-action alternatives as possible baselines against which to compare estimated use levels for the action alternatives. The first task is to quantify the non-use baselines.

A2.1.1 Estimated Use under No-action alternative #1 (Snowcoach only)

No-action alternative #1 is the "snowcoach-only" alternative. This alternative is also included as action alternative #2. Estimates of use levels under this baseline alternative were included in the SEIS (Yellowstone NP, 2002). These estimates were based on survey responses by winter park visitors during the 1998-99 winter season.

The 1999 GYA winter visitor survey (Duffield and Neher 2000) asked respondents how their visitation would be affected if both YNP and GTNP were open only to snowcoach, skiing, and snowshoeing. Based on the responses to this survey question, visitation to the GYA by winter visitors to the parks who live outside of the 5-county area would be reduced by 33.4% over baseline historical levels if winter travel were restricted to either snowcoach or nonmotorized travel. This estimated reduction in visitation is a net change that takes into consideration the responses of those current winter visitors who said they would visit more often if the change occurred. Also considered in the calculation were those respondents who said they would visit the same, but would shift their use to other areas of the GYA (for example from park lands to national forest lands). Table A2.1 shows that for the largest classes of winter user groups (snowmobilers, skiers, and snowcoach riders) anticipated changes in visitation under alternative 1a changes vary dramatically. While 59.6% of those who snowmobiled on their trip said that they would visit less frequently under this management plan, only 12% of skiers and 14.1% of snowcoach riders said they would visit less frequently. Conversely, while only 5.6% of snowmobilers said they would visit more frequently, 33.7% of skiers and 22.8% of snowcoach riders said they would increase their visitation. The estimate of a 33.4% decrease in visitation to the five-county area takes into consideration the anticipated changes in visitation by these diverse groups of winter park users.

The estimated total winter season visitation under no-action alternative #1 is for a 33.4% reduction from historical levels (pre-2002).

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Table A2.1. 1999 Winter Visitors Survey Responses to Policy of only Snowcoach and Non-motorized Use of the Parks.

If YNP were open only to snowcoach, skiing, and snowshoeing, the visitor would:			
Response	**Snowmobile User**	**Cross-country Skier**	**Snowcoach Rider**
Not change visitation	17.8%	37.2%	42.5%
Visit less frequently	59.6%	12.0%	14.1%
Visit more frequently	5.6%	33.7%	22.8%
Visit the same amount	4.2%	6.5%	7.8%
Not Sure	12.8%	10.7%	12.8%
Sample Size	792	247	106

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A2.1.2 Estimated Use under No-action Alternative #2

No-action alternative #2 would be a continuation of the current management policies in place in the parks. These policies were described in the proposed rule in September of 2004.[5] Table 13 shows the daily oversnow entrance limits laid out in the 2004 proposed rule.

As a baseline condition, the limits shown in Table A2.2 are somewhat misleading. While the table does reflect maximum allowable use under current rules, recent winter use levels are significantly below allowed maximums. In contrast to maximum winter use levels shown in Table A2.2, actual current winter use levels are detailed in Table A2.3. Actual use in recent years is at between 33% and 50% of allowable use. Clearly, current limitations are not binding on current and recent winter use demand.

As noted earlier, there is evidence that as current national park winter use policies are becoming more understood, use is shifting from snowmobiles to snowcoaches. Since the winter of 2001-02, snowcoach visitation has increased by 68% (from 11,832 to 19,856). These recent trends, although too short a time period to make definitive projections, suggest that winter use may increase over coming years closer to current use caps. If the current growth rate for snowcoach use continued, in 8 years snowcoach use could grow to about 53,000 visitors and total winter visitation would return to the levels experienced in the 1990's. Needless to say, there is considerable uncertainty associated with projecting future snowcoach use. The main point is that there are ongoing significant changes in the composition of the parks' winter use that could result in substantial growth in visitation under current policies.

[5] Federal Register Vol. 69, No. 172 pp. 54072-54090.

While the limitations on park entries are not currently constraining winter use in the parks, clearly other park policies have led to significant reductions in winter use. Specifically, requirements for BAT technology and guided access to the park have substantially reduced demand for park access. Based on comparisons with historical winter park use, the constraining policies associated with current winter management are the two "qualitative" constraints of BAT snowmobile technology and guided access within Yellowstone NP.

It is therefore estimated that No-action alternative #2 has a baseline visitation level consistent with current (2005-06) winter park visitation.

Table A2.2. 2004 Proposed Rule Limitations on Oversnow Travel per Day in the Parks.

Entrance	Commercially Guided Snowmobiles	Un-guided Snowmobiles	Commercially Guided Snowcoaches
West Entrance	400		
South Entrance	220		
East Entrance	40		
North Entrance	30		
Old Faithful	30		
Total Yellowstone	**720**		**78**[a]
CDST		50	
Grassy Lake Road		50	
Jackson Lake		40	
Total GT-Parkway		**140**	

[a] At the time of the Proposed Rule, 78 Snowcoaches per day were authorized under existing concession contracts. The proposed rule placed no further restrictions on snowcoach entries.[6]

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[6] Federal Register Vol. 69, No. 172 p. 54077

Table A2.3. Current Actual Winter Use levels per day in Yellowstone NP and in Grand Teton and the Parkway.

Entrance	Commercially Guided Snowmobiles per day	Un-guided Snowmobiles	Commercially Guided Snowcoaches per day
West Entrance	153		14
South Entrance	89		5
East Entrance	8		1
North Entrance	5		6
Old Faithful	5		3
Total Yellowstone	**260**		**29**
CDST		0	
Grassy Lake Road		20	
Jackson Lake		10	
Total GT-Parkway		**30**	

Source: May 19, 2006 Preliminary Draft of Alternatives-Winter Use Plans. Yellowstone NP.

While the impact of the current temporary rules on Park visitation is observable from recent winter visitation statistics, the impact of the rules on overall winter visitation to the GYA is less obvious. This is because reductions in winter visitation in the parks may lead to partially offsetting increases in visitation elsewhere in the GYA, as noted earlier. For example, reductions in entries through the West Entrance to Yellowstone may be somewhat offset by visitors recreating on the wide range of National Forest lands surrounding the community. The impact of no-action alternative #2 compared to historical baseline visitation to the GYA was estimated by RTI (2004) as their analysis of then-alternative 2. The RTI report estimated that current historical snowmobiler visits to the GYA would decrease by 24.6% under the temporary plan restrictions. Considering the share of total historic Yellowstone visitation comprised by snowmobiles, RTI estimated that the Alternative 1 rules would lead to an approximately 14.6% reduction in winter visits to the GYA by non-GYA residents.

Although current winter Yellowstone NP visitation statistics would suggest that the estimated14.6% reduction understates the impact on local economic activity of the Temporary Rules, West Yellowstone Winter resort tax collections lend support to the estimate. A comparison of average West Yellowstone Winter (December-March) resort tax receipts for the 4 years prior to rule changes 1998-99 through 2001-02 and the most recent 4 years, 2002-03 through 2005-06, shows that although West Entrance visits have fallen about 48%, resort tax collections have only fallen 19.7%. This differential lends support to the Duffield and Neher (2000) and RTI (2004) findings that restrictions on park entry do not automatically translate into equivalent lost visitation to the GYA, due to substitution to recreational areas and activities outside the parks.

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A2.1.3 Estimated Use under No-action Alternative #3

The no-action alternative #3 provides as a baseline winter visitation to the parks under rules that existed prior to the 2001 rule-making. As noted, for this baseline measure, the 1997-98 winter season visitation level of 119,274 visits is used.

A2.1.4 Estimated Use under No-action Alternative #4

Under no-action alternative #4 there would be no oversnow motorized access to the parks. Motorized oversnow winter access to YNP historically comprised over 70% of total winter visitation and nearly all visitation from the West, South, and East Entrances. No surveys of visitors have specifically addressed the issue of a total ban of all motorized access to the park during winter months. As described earlier, examination of use distribution since winter policy changes began in 2001 have suggested there is little evidence to date of substitution of use between park gates. Additionally, the existing data on forest snowmobile use in and around the West Entrance suggests that snowmobile use on the forest is possibly a complement to park snowmobiling rather than a direct substitute. For these reasons, under a total motorized ban it is assumed that the only use remaining in the park would be North Entrance wheeled entries and parkwide ski entries totaling 40,029 in 2005-06. Relative to 1997-98, this implies a 66% reduction in GYA visitation associated with YNP winter users under a total motorized ban.

A2.2 Analysis of Action Alternative Use level

Estimation of regional economic impacts associated with the EIS alternatives requires developing estimates of the change in visitation to the analysis area under each baseline-action alternative paring. It must be noted that the change in visitation to the analysis area (defined as the 3-state region, the 5-county GYA, or the individual communities of West Yellowstone, Cody, or Jackson) is distinct from the estimated change in visitation to the parks. As noted in previous winter use studies of park visitation (RTI 2004; Duffield and Neher 2000), restrictive access to Yellowstone NP might lead to a relatively larger decrease in park visitation than in visitation to the GYA. A sizable share of current winter visitors indicated in both the Duffield and RTI surveys that even if winter access to the park is limited they would likely still come to the GYA and recreate on lands outside of the parks. At present, there is not sufficient data at hand to test this hypothesis.

The following discussion of visitation impacts associated with the six action alternatives presents estimates of GYA visitation levels. For regional economic impacts, it is the estimated GYA visitation level that is relevant.

The following analysis of estimated GYA visitation levels under the action alternatives utilizes the historical park access policies and associated visitation levels (1997-98 use levels) as one baseline point of comparison. Below, in Section 5, the visitation impacts of the alternatives will be additionally compared to the remaining three no-action alternatives.

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A2.2.1 Alternative 1: Continuation of Temporary Plan

Alternative 1 is most similar to no-action alternative #2. As noted in section 4.1.2, the expected level of winter Yellowstone park visitation under this alternative is equivalent to current (2005-06) winter use levels in the parks.

The relevant estimated impact of Alternative 1 compared to historical baseline visitation to the GYA was estimated by RTI (2004) as their analysis of then-alternative 2. The RTI report estimated that current historical snowmobiler visits to the GYA would decrease by 24.6% under the temporary plan restrictions. Considering the share of total historic Yellowstone visitation comprised by snowmobiles, it is estimated that the Alternative 1 rules would lead to an approximately 14.6% reduction in winter visits to the GYA by non-GYA residents.

Alternative 1 has five different minor variants, or options. Most of these options (A,B,D, and E) when viewed in light of current demand levels either represent no or only very minor differences in entry constraints, and thus represent no estimable difference between the options. As an example, Options B, D, and E eliminate 40 daily entries from Option A and either allocate them to other entrances or eliminate them. However, currently the East Entrance only averages 8 snowmobile entries and one snowcoach entry per day and thus closure of the East Entrance represents only a loss of 8, not 40, snowmobiles per day and 1, not 3, snowcoaches. Alternative 1, Option C allows for an increment of 40 unguided snowmobile entries per day. Because of this addition of unguided access the same estimate as is used under Alternative 5, below, relative to estimated 2005-06 historical use (-11.4%) is used.

A2.2.2 Alternative 2: Snowcoach Only Alternative

Alternative 2, the snowcoach-only alternative is identical to the no-action alternative #1. Under this alternative it is estimated (based on the analysis for alternative G in the FEIS (2000)) that winter visitation levels to the GYA by visitors from outside the GYA would represent a 33.4% decrease over projected 2006-07 baseline historical levels.

A2.2.3 Alternative 3: Eliminate Most Road Grooming

Alternative 3 calls from elimination of motorized access to most of the park, leaving groomed motorized access only available from the South Entrance to Old Faithful and nearby areas. There have been no winter visitor surveys that have addressed this particular road closure alternative. The estimate for this alternative assumes a level equal to 2005-06 South Entrance visitation plus North Entrance wheeled visitation or 53,658 visits. This change represents a 55% decrease in total winter visitation.

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A2.2.4 Alternative 4: Expand Recreational Use

The alternative 4 proposal to expand recreational use includes several components. One is the proposal to allow approximately 25% of daily snowmobile use to be either unguided or non-commercially guided. The second is to substantially increase total allowed snowmobile traffic per day over current "Temporary Plan" levels. Current winter park visitation levels indicate that the combination of BAT requirements and guided entry requirements has significantly reduced demand for snowmobile travel within the park. Current snowmobile entry limits (720 per day) are significantly above current average daily use levels (260 per day). Duffield and Neher (2000) found that approximately 42% of (1998-99) winter visitors to Yellowstone NP rented snowmachines, and that the businesses who rent the machines generally purchase new inventory annually and thus can make BAT machines available to the public. Given that current use levels are below what might be expected based on historical rental use only, it is assumed that the provision for guided-only access has a significant impact on demand for winter visitation to the park.

RTI (2004) provided an analysis of an alternative nearly identical to the current alternative 4. The RTI analysis estimated that under the current alternative 3 restrictions winter visitation to the GYA by park snowmobilers would decease by about 19.2%. Given the share of total historical use of snowmachines within Yellowstone NP, this decrease in snowmobiler visits leads to an estimated 11.4% decrease in GYA visitation over all Yellowstone park winter visitors.

A2.2.5 Alternative 5: Provide for Unguided Access

As in the case for alternative 4, alternative 5 provides for a percentage of Yellowstone NP use to be unguided snowmobile use. Also as in the case for alternative 4, RTI (2004) analyzed an alternative with entry limits very close to the current alternative 5 limits. As in the case for alternative 4, above, the RTI study estimated that under these limits winter visitation to the GYA would decrease by approximately 11.4%.

A2.2.6 Alternative 6: Mixed Use

Alternative 6 provides for mixed use of wheeled and oversnow access to the parks. This alternative calls for plowing of the Terrace Springs to Madison, Madison to Old Faithful, and West Yellowstone to Madison roads for guided wheeled access. Yellowstone's East Entrance would be closed to travel, but most other routes would be open for oversnow travel. The reaction of Yellowstone and Grand Teton winter visitors to the idea of winter road plowing in Yellowstone was surveyed in 1998-99 (Duffield and Neher 2000). The 1998-99 survey asked visitors how their winter GYA visitation would change if the road from West Yellowstone to Old Faithful were plowed for car access. The survey found that winter visitation to the GYA from visitors living outside the GYA would decrease by 18.4% if wheeled access were allowed.

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The degree of plowing and wheeled access in the current alternative is more extensive than that proposed in the 1998-99 survey and analysis. However, the current alternative limits daily wheeled entries (100 commercially guided vehicles) whereas the 98-99 survey implied no limit on winter wheeled access from West to Old Faithful. For this alternative, the Duffield and Neher estimate of an 18.4% decrease in GYA visitation by visitors from outside the GYA is used.

A2.2.7 Summary Comparison of Estimated Action Alternative Impacts on Winter GYA Visitation.

Sections A2.2.1 through A2.2.6 present estimates of changes in visitation to the GYA relative to a historical baseline level of visitation under rules in place prior to 2000. The estimation of changes in GYA visitation presented in Table A2.4 is based on available data and existing studies. It must be noted that each of the alternatives in the DEIS contains a wide spectrum of varying detail regarding road segments and entrances open or closed, daily gate limits, requirements for oversnow machine technology, and guiding requirements. In selecting existing studies and estimates to predict likely levels of visitation change associated with the alternatives, primary attention was paid to the primary management controls driving visitation: gate limits, BAT requirements, and guiding requirements. The estimates presented represent the authors' estimated "best fit" from existing data and visitor survey results. Where the match between the most closely associated scenarios estimated in past studies differs substantially from the current alternative, the specific differences and the likely direction of bias are noted.

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Table A2.4. Comparison of Action Alternatives to Estimated Historical Baseline Use: Percentage Change in Visitation to GYA.

Action Alternative	Estimated Change in GYA Visitation from Historical Use Baseline	Basis of Estimate
Alternative 1 – Continuation of temporary plan (Options A, B, D, E)	-14.6%[g]	Based on RTI (2004) estimates[a]
Alternative 1 – Continuation of temporary plan (Option C)	-11.4%	Based on RTI (2004) estimates[d]
Alternative 2 – Snowcoach only	-33.4%	Based on Duffield and Neher (2000)
Alternative 3 – Eliminate Most Road Grooming	-55.0%	Based on current and historic visitation levels.
Alternative 4 – Expand Recreational Use	-11.4%[e]	Based on RTI (2004) estimates[c]
Alternative 5 – Provide for Unguided Access	-11.4%[e]	Based on RTI (2004) estimates[d]
Alternative 6 – Mixed Use	-18.4%	Based on Duffield and Neher (2000)[f]

[a] Estimated as the percentage change in visitation under RTI (2004) Alternative 1 (Table 3-5), impacts on non-snowmobile users assumed invariant.
[b] As this level of road closure has not been modeled by previous studies, estimate is based on the change between historic use and current South Entrance plus North Entrance Wheeled use.
[c] Based on RTI (2004) Table 3-5, alternative 5. Estimated as for footnote (a) above.
[d] Based on RTI (2004) Table 3-5, alternative 3. Estimated as for footnote (a) above.
[e] Alternative 5 and 6 estimates are the same in part because non-entry limit rules (BAT, guided tours) constrain demand beyond the varying entry limits of the two alternatives.
[f] The alternative analyzed by Duffield only specified plowing of West Yellowstone to Old Faithful (rather than Mammoth and West Yellowstone to Old Faithful on the West side of the park). Alternative 6, however, calls for entrance limits not included in the Duffield analysis.
[g] Given current use levels being significantly below entrance limits, Options A, B, D, and E under Alternative 1 provide only very minor differences in visitation opportunity. Alternative 1-Option C with its allocation to unguided use would likely result in the highest level of visitation among the 5 alternative 1 options.

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A2.3 Economic Impact Analysis

This analysis is presented in two parts: 1) estimation of the relative change in winter visitation between each baseline, no-action alternative and each action alternative, and 2) estimation of total regional economic impacts associated with each comparison for each of five analysis areas (3-states, 5-counties, and the communities of West Yellowstone, Cody, and Jackson).

Table A2.5 presents estimates for changes in GYA visitation by visitors from outside the GYA relative to each of the four different no-action alternatives. It is these estimated changes in visitation and associated visitor expenditures that are used as the primary input into the IMPLAN regional economic modeling program.

Table A2.5. Comparison of Action Alternatives 1-6 Estimated GYA Visitation Levels to Four Different No-action Alternative Baselines (Estimated Changes from Baseline Levels).

	Alternative Visitation	Historical Baseline 1997-98	Snowcoach only Baseline	Temporary Rules Baseline	Motorized Ban Baseline
Baseline Visitation		119,274	59,885	88,718	40,029
Alt. 1 (a,b,d,e)	101,860	(17,414)	41,975	13,142	61,831
Alt. 1 (c)	105,677	(13,597)	45,792	16,959	65,648
Alt. 2	79,436	(39,838)	19,551	(9,282)	39,407
Alt. 3	53,658	(65,616)	(6,227)	(35,060)	13,629
Alt. 4	105,677	(13,597)	45,792	16,959	65,648
Alt. 5	105,677	(13,597)	45,792	16,959	65,648
Alt. 6	97,328	(21,946)	37,443	8,610	57,299

[a] The assumed historical baseline is from actual 1997-98 vitiation levels. The remaining numerical cells in the table represent estimated numbers of trips to the GYA, and thus incorporate substitution behavior.

The analysis below relies upon IMPLAN modeling. IMPLAN is an input/output model designed by the U.S. Forest Service and is commonly used by state and federal agencies for policy planning and evaluation purposes. There are two important caveats relevant to the interpretation of IMPLAN model estimates, generally, and within the context of this analysis. Principally, the model is static in nature and measures only those effects resulting from a specific change at one point in time. Thus, IMPLAN does not account for adjustments that may occur. For example, a change in NPS policy on snowmobile numbers within the parks may encourage local businesses to diversify or modify their operations and thereby abate reductions in employment and output. In addition, IMPLAN does not acknowledge the re-employment of workers displaced by the original change. In the application below, this caveat simply suggests that t*he long-run net output and employment effects resulting from the modeled changes in winter access policy would likely be smaller than those estimated by the model*. As a result, this estimate should be considered the upper bound of a range of value. A second caveat to the IMPLAN analyses is related to the model data. The IMPLAN analysis in this document relies upon input/output relationships derived from 2003 data. Thus, the analyses presented in this report assume that this characterization of the affected county economies

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is a reasonable approximation of current conditions, and the conditions that will exist in the future when policy changes might actually go into effect. To the extent that significant changes have, or will, occur, the results may be sensitive to this assumption.

A2.3.1 Estimated Alternative Visitor Expenditure Impacts

The modeling of the regional economic impacts associated with changes in visitation (and associated visitor spending) on an economic area requires several types of information. In the case of this analysis, the primary driving impact for the IMPLAN models is changes in the number of visitors from outside an analysis area who decide not to visit the analysis area. In addition to the change in visitation, the average spending per visitor is required. Finally, in order to accurately input the expenditure changes into the IMPLAN regional model, it is necessary to understand the general distribution of non-resident visitor spending across economic sectors (for instance, lodging, restaurants, rental cars, etc.). Using these parameters, total estimated direct changes in non-resident visitor spending due to an action alternative, and relative to one of the no-action alternatives, is input into the IMPLAN impact analysis program. This program estimates indirect and induced impacts arising from the initial direct spending impact, and allocates these impacts across the sectors of the analysis area.

At its most aggregated level, IMPLAN modeling applies expenditure and employment multipliers to initial impacts to arrive at estimated total output and employment impacts. In general, the smaller and less diverse an economic analysis area is, the closer its expenditure multiplier is to 1.0. Conversely, the larger and more diverse an economy, the larger are its multipliers.

The following analysis of impacts associated with the FEIS includes individual IMPLAN impact model results for each of the 5 analysis areas (3-states, 5-counties, and 3 communities) for each comparison of action and no-action alternatives (approximately 140 models). Many of the estimates differ only marginally, and the large majority of estimated impacts represent a very small percentage change in total economic activity for the analysis areas. The reported impacts represent IMPLAN models of changes in total economic output (the total production of goods and services in the analysis area for a year). This total impact reflects both direct impacts, as well as indirect and induced impacts.

Estimates of direct impacts are based on the Table A2.5 estimated changes to the GYA under alternative pairings, as well as estimated average spending within the GYA per winter visitor from outside the GYA (Duffield and Neher 2000) update to 2005 price levels. For community-level analysis areas, total average GYA spending was allocated using RTI (2004) results on where in the GYA winter visitors lodged (RTI 2004, Table 5-7, p.5-16). Based on the RTI results, 44.6% of changes due to winter policies were allocated to West Yellowstone, 20.8% to Jackson, and 2% to Cody.

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Contingent Behavior Model-Based Impact Estimates

5-County GYA Analysis Area

Total Output (million) **9,547.327**

Total Employment **115,822**

Alternatives		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	(12,688,572)	30,585,299	-	45,073,924
	Employment	(232)	559	-	824
Alternative 1, (C)	Output	(9,907,409)	33,365,586	12,357,335	47,641,515
	Employment	(181)	610	226	870
Alternative 2	Output	(29,027,581)	-	(6,763,025)	28,727,214
	Employment	(530)	-	(124)	525
Alternative 3	Output	(47,810,968)	(4,537,328)	(25,546,691)	9,935,305
	Employment	(873)	(83)	(467)	181
Alternative 4	Output	(9,907,409)	33,365,586	12,357,335	47,641,515
	Employment	(181)	610	226	870
Alternative 5	Output	(9,907,409)	33,365,586	12,357,335	47,641,515
	Employment	(181)	610	226	870
Alternative 6	Output	(15,991,044)	27,282,934	6,273,237	41,769,899
	Employment	(292)	498	115	763

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Contingent Behavior Model-Based Impact Estimates

5-County GYA Analysis Area

% Change for Economy

		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.13%	0.32%	0.00%	0.47%
	Employment	-0.20%	0.48%	0.00%	0.71%
Alternative 1, (C)	Output	-0.10%	0.35%	0.13%	0.50%
	Employment	-0.16%	0.53%	0.20%	0.75%
Alternative 2	Output	-0.30%	0.00%	-0.07%	0.30%
	Employment	-0.46%	0.00%	-0.11%	0.45%
Alternative 3	Output	-0.50%	-0.05%	-0.27%	0.10%
	Employment	-0.75%	-0.07%	-0.40%	0.16%
Alternative 4	Output	-0.10%	0.35%	0.13%	0.50%
	Employment	-0.16%	0.53%	0.20%	0.75%
Alternative 5	Output	-0.10%	0.35%	0.13%	0.50%
	Employment	-0.16%	0.53%	0.20%	0.75%
Alternative 6	Output	-0.17%	0.29%	0.07%	0.44%
	Employment	-0.25%	0.43%	0.10%	0.66%

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Contingent Behavior Model-Based Impact Estimates

3-State Analysis Area

Total Output (million)	**166,318.026**
Total Employment	**1,750,137**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(15,583,320)	37,562,973	-	55,330,952
	Employment	(288)	694	-	1,022
Alternative 1, (C)	**Output**	(12,167,669)	40,977,300	15,176,513	58,482,820
	Employment	(225)	757	280	1,080
Alternative 2	**Output**	(35,649,881)	-	(8,305,929)	35,264,385
	Employment	(658)	-	(153)	651
Alternative 3	**Output**	(58,718,457)	(5,572,465)	(31,374,865)	12,196,183
	Employment	(1,084)	(103)	(579)	225
Alternative 4	**Output**	(12,167,669)	40,977,300	15,176,513	69,120,979
	Employment	(225)	757	280	1,080
Alternative 5	**Output**	(12,167,669)	40,977,300	15,176,513	58,482,820
	Employment	(225)	757	280	1,080
Alternative 6	**Output**	(19,639,210)	33,507,212	7,704,402	51,275,062
	Employment	(363)	619	142	947

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Contingent Behavior Model-Based Impact Estimates

3-State Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.01%	0.02%	0.00%	0.03%
	Employment	-0.02%	0.04%	0.00%	0.06%
Alternative 1, (C)	Output	-0.01%	0.02%	0.01%	0.04%
	Employment	-0.01%	0.04%	0.02%	0.06%
Alternative 2	Output	-0.02%	0.00%	0.00%	0.02%
	Employment	-0.04%	0.00%	-0.01%	0.04%
Alternative 3	Output	-0.04%	0.00%	-0.02%	0.01%
	Employment	-0.06%	-0.01%	-0.03%	0.01%
Alternative 4	Output	-0.01%	0.02%	0.01%	0.04%
	Employment	-0.01%	0.04%	0.02%	0.06%
Alternative 5	Output	-0.01%	0.02%	0.01%	0.04%
	Employment	-0.01%	0.04%	0.02%	0.06%
Alternative 6	Output	-0.01%	0.02%	0.00%	0.03%
	Employment	-0.02%	0.04%	0.01%	0.05%

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Contingent Behavior Model-Based Impact Estimates

West Yellowstone Analysis Area

Total Output (million)	**166.975**
Total Employment	**2,333**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(6,449,829)	8,125,024	-	22,901,104
	Employment	(110)	323	-	476
Alternative 1, (C)	**Output**	(5,036,115)	16,960,224	6,273,628	24,205,638
	Employment	(105)	353	131	503
Alternative 2	**Output**	(14,755,242)	-	(3,437,767)	14,595,690
	Employment	(307)	-	(71)	304
Alternative 3	**Output**	(24,303,168)	(2,306,405)	(12,985,843)	5,047,916
	Employment	(505)	(48)	(270)	105
Alternative 4	**Output**	(5,036,115)	16,960,224	6,281,458	24,205,638
	Employment	(105)	353	131	503
Alternative 5	**Output**	(5,027,304)	16,960,224	6,281,458	24,205,638
	Employment	(105)	353	131	503
Alternative 6	**Output**	(8,128,535)	13,868,406	3,188,799	21,222,399
	Employment	(169)	288	66	441

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Contingent Behavior Model-Based Impact Estimates

West Yellowstone Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-3.86%	4.87%	0.00%	13.72%
	Employment	-4.73%	13.86%	0.00%	20.39%
Alternative 1, (C)	Output	-3.02%	10.16%	3.76%	14.50%
	Employment	-4.49%	15.12%	5.60%	21.57%
Alternative 2	Output	-8.84%	0.00%	-2.06%	8.74%
	Employment	-13.15%	0.00%	-3.06%	13.02%
Alternative 3	Output	-14.55%	-1.38%	-7.78%	3.02%
	Employment	-21.66%	-2.06%	-11.57%	4.50%
Alternative 4	Output	-3.02%	10.16%	3.76%	14.50%
	Employment	-4.49%	15.12%	5.60%	21.57%
Alternative 5	Output	-3.01%	10.16%	3.76%	14.50%
	Employment	-4.49%	15.12%	5.60%	21.57%
Alternative 6	Output	-4.87%	8.31%	1.91%	12.71%
	Employment	-7.24%	12.36%	2.84%	18.90%

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Contingent Behavior Model-Based Impact Estimates

Jackson, WY Analysis Area

Total Output (million)	**1,860.467**
Total Employment	**20,302**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(3,203,805)	7,722,647	-	11,375,601
	Employment	(56)	134	-	198
Alternative 1, (C)	**Output**	(2,501,576)	8,424,606	3,120,172	12,023,601
	Employment	(43)	146	54	209
Alternative 2	**Output**	(7,329,330)	-	(1,707,633)	7,250,077
	Employment	(127)	-	(30)	126
Alternative 3	**Output**	(12,072,047)	(1,145,655)	(6,450,420)	2,507,437
	Employment	(210)	(20)	(112)	44
Alternative 4	**Output**	(2,501,576)	8,424,606	3,120,172	12,023,601
	Employment	(43)	146	54	209
Alternative 5	**Output**	(2,501,576)	8,424,606	3,120,172	12,023,601
	Employment	(43)	146	54	209
Alternative 6	**Output**	(4,037,664)	6,888,814	1,583,964	10,541,743
	Employment	(70)	120	27	183

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Contingent Behavior Model-Based Impact Estimates

Jackson, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.17%	0.42%	0.00%	0.61%
	Employment	-0.27%	0.66%	0.00%	0.98%
Alternative 1, (C)	Output	-0.13%	0.45%	0.17%	0.65%
	Employment	-0.21%	0.72%	0.27%	1.03%
Alternative 2	Output	-0.39%	0.00%	-0.09%	0.39%
	Employment	-0.63%	0.00%	-0.15%	0.62%
Alternative 3	Output	-0.65%	-0.06%	-0.35%	0.13%
	Employment	-1.03%	-0.10%	-0.55%	0.21%
Alternative 4	Output	-0.13%	0.45%	0.17%	0.65%
	Employment	-0.21%	0.72%	0.27%	1.03%
Alternative 5	Output	-0.13%	0.45%	0.17%	0.65%
	Employment	-0.21%	0.72%	0.27%	1.03%
Alternative 6	Output	-0.22%	0.37%	0.09%	0.57%
	Employment	-0.35%	0.59%	0.14%	0.90%

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Contingent Behavior Model-Based Impact Estimates

Cody, WY Analysis Area

Total Output (million)	**916.535**
Total Employment	**10,705**

Alternatives		**Baseline Alternative**			
		Historical	**Snowcoach only**	**Temporary Rules**	**Motorized Ban**
Alternative 1 (A,B,D,E)	**Output**	(321,243)	774,344	-	1,140,624
	Employment	(7)	17	-	26
Alternative 1, (C)	**Output**	(250,831)	844,731	312,856	1,205,598
	Employment	(6)	19	7	27
Alternative 2	**Output**	(734,907)	-	(171,223)	726,960
	Employment	(16)	-	(4)	16
Alternative 3	**Output**	(1,210,455)	(114,874)	(646,779)	251,419
	Employment	(27)	(3)	(14)	6
Alternative 4	**Output**	(250,831)	844,731	312,856	1,205,598
	Employment	(6)	19	7	27
Alternative 5	**Output**	(250,831)	844,731	312,856	1,205,598
	Employment	(6)	19	7	27
Alternative 6	**Output**	(404,853)	690,736	158,822	1,057,013
	Employment	(9)	15	4	23

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Contingent Behavior Model-Based Impact Estimates

Cody, WY Analysis Area

% Change for Economy		Baseline Alternative			
		Historical	Snowcoach only	Temporary Rules	Motorized Ban
Alternative 1 (A,B,D,E)	Output	-0.04%	0.08%	0.00%	0.12%
	Employment	-0.07%	0.16%	0.00%	0.24%
Alternative 1, (C)	Output	-0.03%	0.09%	0.03%	0.13%
	Employment	-0.05%	0.18%	0.07%	0.25%
Alternative 2	Output	-0.08%	0.00%	-0.02%	0.08%
	Employment	-0.15%	0.00%	-0.04%	0.15%
Alternative 3	Output	-0.13%	-0.01%	-0.07%	0.03%
	Employment	-0.25%	-0.02%	-0.14%	0.05%
Alternative 4	Output	-0.03%	0.09%	0.03%	0.13%
	Employment	-0.05%	0.18%	0.07%	0.25%
Alternative 5	Output	-0.03%	0.09%	0.03%	0.13%
	Employment	-0.05%	0.18%	0.07%	0.25%
Alternative 6	Output	-0.04%	0.08%	0.02%	0.12%
	Employment	-0.08%	0.14%	0.03%	0.22%

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