

**Benefit and Cost Calculation** Discount rate 7% per year

Year	Costs										
	Base Case				Project						Net Project Costs (Discounted)
	Capital		Maintenance		Capital		Maintenance		Total		
	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Discounted	Discounted	
2012	0		\$500,000	\$500,000	\$500,000	\$15,300,000	\$15,300,000	\$500,000	\$500,000	\$15,800,000	\$15,800,000
2013	1		\$500,000	\$467,290	\$467,290	\$16,100,000	\$15,046,729	\$450,000	\$420,561	\$15,467,290	\$15,467,290
2014	2		\$500,000	\$436,719	\$436,719	\$14,300,000	\$12,490,174	\$450,000	\$393,047	\$12,883,221	\$12,883,221
2015	3		\$500,000	\$408,149	\$408,149	\$400,000	\$326,519	\$250,000	\$204,074	\$530,594	\$530,594
2016	4		\$500,000	\$381,448	\$381,448	\$0	\$0	\$250,000	\$190,724	\$190,724	\$190,724
2017	5		\$500,000	\$356,493	\$356,493	\$0	\$0	\$250,000	\$178,247	\$178,247	\$178,247
2018	6		\$500,000	\$333,171	\$333,171	\$0	\$0	\$250,000	\$166,586	\$166,586	\$166,586
2019	7		\$500,000	\$311,375	\$311,375	\$0	\$0	\$250,000	\$155,687	\$155,687	\$155,687
2020	8		\$500,000	\$291,005	\$291,005	\$0	\$0	\$250,000	\$145,502	\$145,502	\$145,502
2021	9		\$500,000	\$271,967	\$271,967	\$0	\$0	\$250,000	\$135,983	\$135,983	\$135,983
2022	10		\$500,000	\$254,175	\$254,175	\$0	\$0	\$250,000	\$127,087	\$127,087	\$127,087
2023	11		\$500,000	\$237,546	\$237,546	\$0	\$0	\$250,000	\$118,773	\$118,773	\$118,773
2024	12		\$500,000	\$222,006	\$222,006	\$0	\$0	\$250,000	\$111,003	\$111,003	\$111,003
2025	13		\$500,000	\$207,482	\$207,482	\$0	\$0	\$250,000	\$103,741	\$103,741	\$103,741
2026	14		\$500,000	\$193,909	\$193,909	\$0	\$0	\$250,000	\$96,954	\$96,954	\$96,954
2027	15		\$500,000	\$181,223	\$181,223	\$0	\$0	\$250,000	\$90,612	\$90,612	\$90,612
2028	16		\$500,000	\$169,367	\$169,367	\$0	\$0	\$250,000	\$84,684	\$84,684	\$84,684
2029	17		\$500,000	\$158,287	\$158,287	\$0	\$0	\$250,000	\$79,144	\$79,144	\$79,144
2030	18		\$500,000	\$147,932	\$147,932	\$0	\$0	\$250,000	\$73,966	\$73,966	\$73,966
2031	19		\$500,000	\$138,254	\$138,254	\$0	\$0	\$250,000	\$69,127	\$69,127	\$69,127
2032	20		\$500,000	\$129,210	\$129,210	\$0	\$0	\$250,000	\$64,605	\$64,605	\$64,605
2033	21										

Year	Benefits													
	Maintenance Cost Savings		Time Savings		Fuel Savings		Accident Savings		Job Savings		Residual Value		Total Savings (Discounted)	
	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted		
	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted		
2012	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
2013	1	\$50,000	\$46,729	\$15,751	\$14,721	\$5,071	\$4,739	\$12,911	\$12,066	\$0	\$0	\$0	\$78,255	
2014	2	\$50,000	\$43,672	\$15,751	\$13,758	\$5,071	\$4,429	\$25,821	\$22,553	\$0	\$0	\$0	\$84,412	
2015	3	\$250,000	\$204,074	\$78,756	\$64,288	\$25,353	\$20,696	\$39,123	\$31,936	\$8,936,805	\$7,295,095	\$0	\$7,616,090	
2016	4	\$250,000	\$190,724	\$78,756	\$60,082	\$25,353	\$19,342	\$39,123	\$29,847	\$8,936,805	\$6,817,846	\$0	\$7,117,841	
2017	5	\$250,000	\$178,247	\$78,756	\$56,152	\$25,353	\$18,076	\$39,123	\$27,894	\$8,936,805	\$6,371,819	\$0	\$6,652,188	
2018	6	\$250,000	\$166,586	\$78,756	\$52,478	\$25,353	\$16,894	\$39,123	\$26,070	\$8,936,805	\$5,954,971	\$0	\$6,216,998	
2019	7	\$250,000	\$155,687	\$78,756	\$49,045	\$25,353	\$15,789	\$39,123	\$24,364	\$8,936,805	\$5,565,393	\$0	\$5,810,278	
2020	8	\$250,000	\$145,502	\$78,756	\$45,837	\$25,353	\$14,756	\$39,123	\$22,770	\$8,936,805	\$5,201,302	\$0	\$5,430,167	
2021	9	\$250,000	\$135,983	\$78,756	\$42,838	\$25,353	\$13,790	\$39,123	\$21,280	\$8,936,805	\$4,861,030	\$0	\$5,074,922	
2022	10	\$250,000	\$127,087	\$78,756	\$40,035	\$25,353	\$12,888	\$39,123	\$19,888	\$8,936,805	\$4,543,019	\$0	\$4,742,918	
2023	11	\$250,000	\$118,773	\$78,756	\$37,416	\$25,353	\$12,045	\$39,123	\$18,587	\$8,936,805	\$4,245,812	\$0	\$4,432,634	
2024	12	\$250,000	\$111,003	\$78,756	\$34,969	\$25,353	\$11,257	\$39,123	\$17,371	\$8,936,805	\$3,968,048	\$0	\$4,142,648	
2025	13	\$250,000	\$103,741	\$78,756	\$32,681	\$25,353	\$10,521	\$39,123	\$16,235	\$8,936,805	\$3,708,456	\$0	\$3,871,634	
2026	14	\$250,000	\$96,954	\$78,756	\$30,543	\$25,353	\$9,832	\$39,123	\$15,173	\$8,936,805	\$3,465,847	\$0	\$3,618,349	
2027	15	\$250,000	\$90,612	\$78,756	\$28,545	\$25,353	\$9,189	\$39,123	\$14,180	\$8,936,805	\$3,239,109	\$0	\$3,381,635	
2028	16	\$250,000	\$84,684	\$78,756	\$26,677	\$25,353	\$8,588	\$39,123	\$13,252	\$8,936,805	\$3,027,205	\$0	\$3,160,406	
2029	17	\$250,000	\$79,144	\$78,756	\$24,932	\$25,353	\$8,026	\$39,123	\$12,385	\$8,936,805	\$2,829,164	\$0	\$2,953,651	
2030	18	\$250,000	\$73,966	\$78,756	\$23,301	\$25,353	\$7,501	\$39,123	\$11,575	\$8,936,805	\$2,644,078	\$0	\$2,760,421	
2031	19	\$250,000	\$69,127	\$78,756	\$21,777	\$25,353	\$7,010	\$39,123	\$10,818	\$8,936,805	\$2,471,101	\$0	\$2,579,833	
2032	20	\$250,000	\$64,605	\$78,756	\$20,352	\$25,353	\$6,552	\$39,123	\$10,110	\$8,936,805	\$2,309,440	\$0	\$2,411,059	
2033	21												\$2,411,059	

Total (undis)	\$0	\$10,500,000	\$10,500,000	\$46,100,000	\$46,100,000	\$5,900,000	\$5,900,000	\$4,600,000	\$4,600,000	\$1,449,108	\$1,449,108	\$466,497	\$466,497	\$160,862,494	\$160,862,494	\$86,383,768
Discounted present	\$0	\$5,797,007	\$5,797,007	\$43,163,422	\$43,163,422	\$3,510,107	\$3,510,107	\$46,673,529	\$46,673,529	\$2,286,900	\$2,286,900	\$720,427	\$720,427	\$78,518,736	\$78,518,736	\$86,383,768

B/C =	1.85
based on present value	

\*Assumes residual value at the end of 20 years as calculated in "Revised Benefits" sheet.  
 Net and total costs are equal because the maintenance cost savings are claimed under benefits.  
 This analysis also uses 7% discount rate. Since the primary funding is assumed to be the TIGER grant, which would go to other projects if not this one, than a 3% discount rate can be considered, which would increase the B/C ratio by 55%.

**Benefit and Cost Calculation** Discount rate

3% per year

		Costs									
		Base Case			Project						Net Project Costs (Discounted)
		Capital	Maintenance		Capital		Maintenance		Total		
Year		Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Discounted	
2012	0			\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$15,800,000	
2013	1			\$500,000	\$485,437	\$485,437	\$16,100,000	\$15,631,068	\$450,000	\$436,893	\$16,067,961
2014	2			\$500,000	\$471,298	\$471,298	\$14,300,000	\$13,479,122	\$450,000	\$424,168	\$13,903,290
2015	3			\$500,000	\$457,571	\$457,571	\$400,000	\$366,057	\$250,000	\$228,785	\$594,842
2016	4			\$500,000	\$444,244	\$444,244	\$0	\$0	\$250,000	\$222,122	\$222,122
2017	5			\$500,000	\$431,304	\$431,304	\$0	\$0	\$250,000	\$215,652	\$215,652
2018	6			\$500,000	\$418,742	\$418,742	\$0	\$0	\$250,000	\$209,371	\$209,371
2019	7			\$500,000	\$406,546	\$406,546	\$0	\$0	\$250,000	\$203,273	\$203,273
2020	8			\$500,000	\$394,705	\$394,705	\$0	\$0	\$250,000	\$197,352	\$197,352
2021	9			\$500,000	\$383,208	\$383,208	\$0	\$0	\$250,000	\$191,604	\$191,604
2022	10			\$500,000	\$372,047	\$372,047	\$0	\$0	\$250,000	\$186,023	\$186,023
2023	11			\$500,000	\$361,211	\$361,211	\$0	\$0	\$250,000	\$180,605	\$180,605
2024	12			\$500,000	\$350,690	\$350,690	\$0	\$0	\$250,000	\$175,345	\$175,345
2025	13			\$500,000	\$340,476	\$340,476	\$0	\$0	\$250,000	\$170,238	\$170,238
2026	14			\$500,000	\$330,559	\$330,559	\$0	\$0	\$250,000	\$165,279	\$165,279
2027	15			\$500,000	\$320,931	\$320,931	\$0	\$0	\$250,000	\$160,465	\$160,465
2028	16			\$500,000	\$311,583	\$311,583	\$0	\$0	\$250,000	\$155,792	\$155,792
2029	17			\$500,000	\$302,508	\$302,508	\$0	\$0	\$250,000	\$151,254	\$151,254
2030	18			\$500,000	\$293,697	\$293,697	\$0	\$0	\$250,000	\$146,849	\$146,849
2031	19			\$500,000	\$285,143	\$285,143	\$0	\$0	\$250,000	\$142,572	\$142,572
2032	20			\$500,000	\$276,838	\$276,838	\$0	\$0	\$250,000	\$138,419	\$138,419
2033	21										
Total (undis)		\$0		\$10,500,000		\$46,100,000		\$5,900,000			
Discounted present		\$0		\$7,938,737		\$7,938,737		\$44,776,246		\$4,602,063	\$49,378,309

Benefits																	
Maintenance Cost Savings		Time Savings		Fuel Savings		Accident Savings		Job Savings		Residual Value		Total Savings					
Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	Actual	Discounted	(Discounted)					
	\$0		\$0		\$0		\$0		\$0		\$0	\$0					
	\$50,000		\$48,544		\$15,751		\$15,292		\$5,071		\$4,923	\$12,911	\$12,535	\$0	\$0	\$81,294	
	\$50,000		\$47,130		\$15,751		\$14,847		\$5,071		\$4,780	\$25,821	\$24,339	\$0	\$0	\$91,095	
	\$250,000		\$228,785		\$78,756		\$72,073		\$25,353		\$23,202	\$39,123	\$35,803	\$8,936,805	\$8,178,443	\$8,538,306	
	\$250,000		\$222,122		\$78,756		\$69,974		\$25,353		\$22,526	\$39,123	\$34,761	\$8,936,805	\$7,940,236	\$8,289,617	
	\$250,000		\$215,652		\$78,756		\$67,935		\$25,353		\$21,870	\$39,123	\$33,748	\$8,936,805	\$7,708,967	\$8,048,172	
	\$250,000		\$209,371		\$78,756		\$65,957		\$25,353		\$21,233	\$39,123	\$32,765	\$8,936,805	\$7,484,434	\$7,813,760	
	\$250,000		\$203,273		\$78,756		\$64,036		\$25,353		\$20,614	\$39,123	\$31,811	\$8,936,805	\$7,266,440	\$7,586,174	
	\$250,000		\$197,352		\$78,756		\$62,171		\$25,353		\$20,014	\$39,123	\$30,884	\$8,936,805	\$7,054,797	\$7,365,218	
	\$250,000		\$191,604		\$78,756		\$60,360		\$25,353		\$19,431	\$39,123	\$29,985	\$8,936,805	\$6,849,317	\$7,150,697	
	\$250,000		\$186,023		\$78,756		\$58,602		\$25,353		\$18,865	\$39,123	\$29,111	\$8,936,805	\$6,649,822	\$6,942,424	
	\$250,000		\$180,605		\$78,756		\$56,895		\$25,353		\$18,316	\$39,123	\$28,264	\$8,936,805	\$6,456,138	\$6,740,218	
	\$250,000		\$175,345		\$78,756		\$55,238		\$25,353		\$17,782	\$39,123	\$27,440	\$8,936,805	\$6,268,095	\$6,543,901	
	\$250,000		\$170,238		\$78,756		\$53,629		\$25,353		\$17,264	\$39,123	\$26,641	\$8,936,805	\$6,085,529	\$6,353,302	
	\$250,000		\$165,279		\$78,756		\$52,067		\$25,353		\$16,761	\$39,123	\$25,865	\$8,936,805	\$5,908,281	\$6,168,254	
	\$250,000		\$160,465		\$78,756		\$50,550		\$25,353		\$16,273	\$39,123	\$25,112	\$8,936,805	\$5,736,195	\$5,988,596	
	\$250,000		\$155,792		\$78,756		\$49,078		\$25,353		\$15,799	\$39,123	\$24,380	\$8,936,805	\$5,569,122	\$5,814,171	
	\$250,000		\$151,254		\$78,756		\$47,649		\$25,353		\$15,339	\$39,123	\$23,670	\$8,936,805	\$5,406,914	\$5,644,826	
	\$250,000		\$146,849		\$78,756		\$46,261		\$25,353		\$14,892	\$39,123	\$22,981	\$8,936,805	\$5,249,431	\$5,480,414	
	\$250,000		\$142,572		\$78,756		\$44,913		\$25,353		\$14,459	\$39,123	\$22,311	\$8,936,805	\$5,096,535	\$5,320,790	
	\$250,000		\$138,419		\$78,756		\$43,605		\$25,353		\$14,037	\$39,123	\$21,662	\$8,936,805	\$4,948,092	\$5,165,816	
												\$17,586,742	\$9,453,740			\$9,453,740	
Total (undis)		\$0		\$10,500,000		\$46,100,000		\$5,900,000		\$4,600,000		\$1,449,108		\$466,497		\$160,862,494	
Discounted present		\$0		\$7,938,737		\$7,938,737		\$44,776,246		\$3,336,675		\$1,051,131		\$338,380		\$544,069	\$115,856,789

B/C =	2.64
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based on present value

\*Assumes residual value at the end of 20 years as calculated in "Revised Benefits" sheet.

Net and total costs are equal because the maintenance cost savings are claimed under benefits.

This alternative case analysis uses 3% discount rate since the primary funding is assumed to be the TIGER grant, which would go to other public projects if not this one.

## Residual Value

Residual Value after 20 Years

<b>Component</b>	<b>Value</b>	<b>% Life Left</b>	<b>Residual</b>	<b>Notes</b>
Right-of-way	\$0	100%	\$0	No ROW was needed
Earthwork	\$10,072,852	80%	\$8,058,282	Estimated as fraction of total cost
Structures	\$15,880,767	60%	\$9,528,460	Estimated as fraction of total cost
<b>Total</b>	<b>\$25,953,619</b>		<b>\$17,586,742</b>	Claim as benefit at beginning of 2033

Earthwork on Beartooth cost \$10,072,851.85

Structures on Beartooth cost \$15,880,767.00

No ROW, value of land is all Forest Service land outside of Yellowstone but we are within the easement.

## Beartooth Construction Costs

	Spending	
Q1 2012	\$ -	January - March
Q2 2012	\$ 2,500,000	April - June
Q3 2012	\$ 3,500,000	July-September
Q4 2012	\$ 9,300,000	October - December
Q1 2013	\$ 400,000	January - March
Q2 2013	\$ 2,900,000	April - June
Q3 2013	\$ 3,500,000	July-September
Q4 2013	\$ 9,300,000	October - December
Q1 2014	\$ 400,000	January - March
Q2 2014	\$ 2,900,000	April - June
Q3 2014	\$ 3,000,000	July-September
Q4 2014	\$ 8,000,000	October - December
Q1 2015	\$ 400,000	January - March
	\$ 46,100,000	

## Estimate of Annual Benefits

### Final

4.71 miles  
1.016 CPI inflator from 2011 to mid point of 2012 (half of 2011 inflation)  
1578 vpd, effectively constant because of low growth  
146 days per year of benefits  
42 mph  
47 mph  
\$28.65 per hour, assume 1.5 wage earners per car; occupancy ~2.6  
\$0.48 per minute of time savings  
\$19.10 Use \$18 from TIGER BENEFIT-COST ANALYSIS (BCA) RESOURCE GUIDE, p. 4, inflated from 2008 to midpoint o

6.728571429 min initial travel time  
6.012765957 min after travel time  
0.715805471 savings (min)  
0.011930091 savings (hours per vehicle)  
2,749 hours per year 18.8 hrs/day  
\$78,756 per year  
20 life without overlays  
\$1,575,117 20-yr time cost savings  
0.0084 fuel gallon savings per vehicle  
1,932 total fuel savings per year  
\$25,353 fuel cost savings per year  
39,728 lb of GHG/yr, based on 5% diesel (22.2 lb CO2/gal) and 95% gasoline (19.4 lb CO2/gal) , with 5% added to CO2 to account for other GHG.  
20 tons of GHG saved/yr <http://www.epa.gov/otaq/climate/420f05001.htm>  
397 tons of GHG saved/20 years (no value assigned) <http://www.epa.gov/OMS/climate/420f05004.htm>

\$250,000 Estimated annual maintenance cost savings  
\$250,000 per year adjusting for no overlay costs

\$354,109 Total annual benefits of maintenance savings, time, and fuel savings

0.95 acc/mvm (assumed "before" rate)  
0.5415 acc/mvm (assumed "after" rate)  
1.08512748 annual mvm  
0.44 accidents saved per year 27.0712571  
\$88,260 Cost per accident (see accident cost tab--**assumes no fatalities**)  
\$39,123 Annual accident cost savings  
\$39,123 Average accident savings between now and future  
\$393,232 Total annual benefits of maintenance savings, time, fuel, and accident savings

\$8,936,805 Job loss avoidance (see "Carbon County Tourist Jobs" tab)

\$9,330,037 Total annual project benefit

## Valuation of accident data

### KABCO - AIS Conversion

#### KABCO codes

0 = No Injury	3 = Incapacitating Injury
1 = Possible Injury	4 = Fatal
2 = Non-Incapacitating Injury	

Codes =            0                    1                    2                    3

#### KABCO-AIS Conversion Table (Excluding Fatalities in Non-Fatal Injury Codes)

	O	C	B	A	K	Injured	Unknown
	No Injury	Poss Inj	Non-Incapacitating	Incapacitating	Killed	Severity Unknown	If Injured
<b>AIS 0</b>	0.92534	0.23437	0.08347	0.03437	0	0.21538	0.43676
<b>AIS 1</b>	0.07257	0.68946	0.76843	0.55449	0	0.62728	0.41739
<b>AIS 2</b>	0.00198	0.06391	0.10898	0.20908	0	0.104	0.08872
<b>AIS 3</b>	0.00008	0.01071	0.03191	0.14437	0	0.03858	0.04817
<b>AIS 4</b>	0	0.00142	0.0062	0.03986	0	0.00442	0.00617
<b>AIS 5</b>	0.00003	0.00013	0.00101	0.01783	0	0.01034	0.00279
<b>Fatality</b>	0	0	0	0	1	0	0

Source: NHTSA, July 2011.

from p. 50308 Federal Register / Vol. 76, No. 156 / Friday, August 12, 2011 / Notices

#### Relative Disability Factors by Injury Severity Level (AIS)

For Use with 3% or 7% Discount Rate

AIS Level	Severity	Fraction of VSL
AIS 1	Minor	0.003
AIS 2	Moderate	0.047
AIS 3	Serious	0.105
AIS 4	Severe	0.266
AIS 5	Critical	0.593
AIS 6	Unsurvivable	1

Notice of Funding Availability for the Department of Transportation's National Infrastructure Investments Under the Full-Year Continuing Appropriations, 2011; and Request for Comments

Treatment of the Economic Value of a Statistical Life in Departmental Analyses – 2011 Interim Adjustment

2011 \$                    2012 \$  
**Gives VSL = \$6.2 million                    \$6,297,852** million from p. 2 of T

MEMORANDUM TO: SECRETARIAL OFFICERS [SIGNED July 29, 2011]

MODAL ADMINISTRATORS

From: Polly Trottenberg, Assistant Secretary for Transportation Policy

p.3

value-of-life-guidance.pdf

from:

<http://ostpxweb.dot.gov/policy/reports.htm>

Accessed: 9/30/11

#### PDO Valuation

**\$3,442** from p. 2 of TIGER BCA guidance, inflated from 2011 to mid point 2012 by 50% of 2011 CPI change for all urban consumers.

**Don't know breakdown for Bear Tooth so assume unknown if injured for sample accident based on PDO and VSL values above:**

1	Fraction VSL	Value	Total
For unknown if inj			
0.43676	N/A	\$3,442	\$1,503
0.41739	0.003	\$18,894	\$7,886
0.08872	0.047	\$295,999	\$26,261
0.04817	0.105	\$661,275	\$31,854
0.00617	0.266	\$1,675,229	\$10,336
0.00279	0.593	\$3,734,626	\$10,420
0	1	\$6,297,852	\$0
			\$88,260

Note: this assumes no fatalities

# Carbon County, Montana, Jobs for Estimation of Income Effects of Reduced Tourist Access

Sources of 2009 Update:

	<u>2000 Census</u>	<u>2009 Update</u>	
Household data	9,552 people	2009 9,756	T1. Population Estimates [11] Data Set: 2009 Population Estimates <a href="http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=PEP_2009_EST&amp;-mt_name=PEP_2009_EST_G2009_T0">http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=PEP_2009_EST&amp;-mt_name=PEP_2009_EST_G2009_T0</a>
	4,065 households	3,974	ACS 2009 <a href="http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=ACS_2009_5YR_G00_&amp;-mt_name=ACS_2009_5YR_G20">http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=ACS_2009_5YR_G00_&amp;-mt_name=ACS_2009_5YR_G20</a>
	\$32,139 median income per household	\$50,676	median income per household, 2009 \$ B19013. MEDIAN HOUSEHOLD INCOME IN THE PAST 12 MONTHS (IN 2009 INFLATION-ADJUSTED DOLLARS) - Universe: HOUSEHOLDS Data Set: 2005-2009 American Community Survey 5-Year Estimates Survey: American Community Survey
			B11001. HOUSEHOLD TYPE (INCLUDING LIVING ALONE) - Universe: HOUSEHOLDS Data Set: 2005-2009 American Community Survey 5-Year Estimates Survey: American Community Survey <a href="http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=ACS_2009_5YR_G00_&amp;-mt_name=ACS_2009_5YR_G2000_B11001&amp;-CO">http://factfinder.census.gov/servlet/DTTable?_bm=y&amp;-context=dt&amp;-ds_name=ACS_2009_5YR_G00_&amp;-mt_name=ACS_2009_5YR_G2000_B11001&amp;-CO</a>

Based on DEIS, about 1/3 of Carbon County jobs are based on tourism.  
Assume that 1/3 of Carbon County jobs supplies income to 1/3 of households  
With multiplier, up to 50% of households could be affected.

	2009	2012	CPI
Adjusting the 2009 median income to 2012 \$ via CPI =	\$53,972		1.065 Inflatior 2009 - 2012 from annual unadjusted CPI for all urban consumers, assuming mid point 2012 (updated 2/28/12)
Do it in both 2000 and 2012 \$			214.537 2009 224.939 2011
2000 \$		2012 \$	
\$43,548,345 Annual income of 33% of households		\$71,494,442	
\$65,322,518 Annual income of 50% of households		\$107,241,663	

So income from jobs are dependent on the highway is \$70 to \$105 million per year in 2012 \$

Assume 10% loss of average (mid point) of range = \$8,936,805

This assumes that there is a 10% loss in income from the tourist dependent jobs if the highway continues to deteriorate due to larger vehicles using other routes and lower overall traffic for smaller vehicles.  
Assumption is conservative: Mariposa, CA, lost more like 1/3 of income from SR 140 vehicle restriction with temporary bridge.

## Income Data for Consideration of Economic Distress

ACS not accurate for small area due to large sample error, use 2000 Census data:

Zone	2009 \$		1999 \$		adj for inflation 2009 \$	Souce (from P53 table) 9/15/2011 <a href="http://factfinder.census.gov/servlet">http://factfinder.census.gov/servlet</a>
	ACS 2009	% of US	2000 Census	% of US		
CT 9953	\$51,203	102%	\$40,008	79.9%	\$51,520	<a href="http://factfinder.census.gov/servlet">http://factfinder.census.gov/servlet</a>
CT 9951	\$52,601	105%	\$43,674	87%	\$56,241	
CT 9953 remainder of Cody CDP	\$51,386	102%	\$40,302	80.5%	\$51,898	9/15/2011
CT 9953 Block group 2	N/A		\$39,350	78.6%	\$50,672	<a href="http://factfinder.census.gov/servlet">http://factfinder.census.gov/servlet</a>
Zip 82435	N/A		\$41,609	83%	\$53,581	
Zip 82414	N/A		\$41,691	83%	\$53,687	
US	\$50,221	100%	\$50,046	100%	\$64,446	
					2009 CPI	214.537 1.287737
					1999 CPI	166.6

[P53. MEDIAN HOUSEHOLD INCOME IN 1999 \(DOLLARS\) \[1\] - Universe: Households](#)  
[Data Set: Census 2000 Summary](#)  
[File 3 \(SF 3\) - Sample Data](#)

[NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf3.htm>.](#)

Block Group 2, Census Tract 9953, Park County, Wyoming	
Median household income in 1999	39,350

U.S. Census Bureau  
Census 2000



## Fuel Efficiency

p. 5-12 AASHTO, *User Benefit Analysis for Highways*, August 2003.

mph	Gallons per Mile		Average with 5% trucks	Over 4.71 miles	Cost/mi	Updated 2/27/12	
	Autos	Trucks				Total Cost	
40	0.044	0.176					
42	0.0432	0.1736 interpolation	0.04972	0.234181	\$0.17	\$3.09	
45	0.042	0.17					
47	0.0416	0.1684 interpolation	0.04794	0.225797	\$0.16	\$2.98	
50	0.041	0.166					
				0.008384 gal per vehicle saved			
			average	\$0.027 cost savings per vehicl		\$0.110	to account for different gas and diesel prices

Use 2/27/12 gasoline and diesel cost from <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>  
 Energy Information Administration  
 for Rocky Mountain Region  
 \$3.20 for regular gas  
 \$3.92 for diesel