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THE GENUINE PROGRESS INDICATOR 2006

EXECUTIVE SUMMARY

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In October of 1995, the Atlantic Monthly published “If the GDP is Up, Why is America Down?,” a seminal piece exposing the paradox of economic growth in America. Despite the chorus of upbeat economic assessments made by economists at that time, most Americans were feeling left behind, worse off, and troubled by their future prospects. The piece introduced readers to the Genuine Progress Indicator (GPI), a more holistic measure of the nation’s welfare that took into account the costs of environmental degradation, inequality, insecurity, and social breakdown. Measuring economic welfare using the GPI rather than GDP painted a far less rosy portrait of the American economy, but one that was much more reflective of the experiences of American citizens.

Redefining Progress has now released the first significant update to the GPI since that time. The full report, which incorporates data through 2004, can be viewed online at www.rprogress.org. As in 1995, we have been hearing a lot about how well our economy is doing. At the same time, we are all too aware of the increasing toll associated with global warming, poverty, urban sprawl, exported jobs, and war. The GPI 2006 update addresses these and other aspects of our well being that fail to register in GDP figures and other common measures of economic progress. The results of this new study are alarming—while per capita GDP has risen dramatically—from \$11,672 in 1950 to well over \$36,595 today, per capita GPI has stagnated in the \$14,000-\$15,000 range since the late 1970s. Figure 1 illustrates these trends.

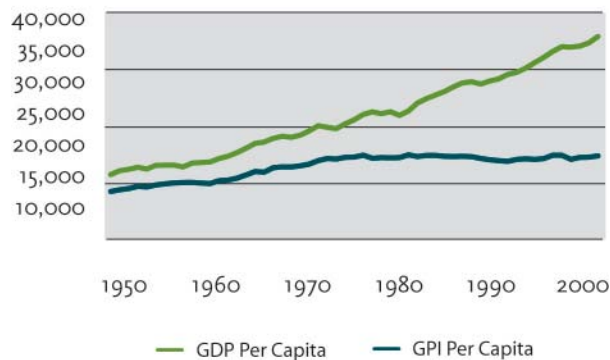
What is the Genuine Progress Indicator?

During World War II gross domestic product (GDP) accounts were introduced to measure wartime production

capacity (Cobb et al., 1995). Since then, GDP has become the world’s most ubiquitous indicator of economic progress. It is widely used by policymakers, economists, international agencies and the media as the primary scorecard of a nation’s economic health and well-being. Yet, as we know from its creator Simon Kuznets the GDP was never intended for this role (Kuznets, 1934). It is merely a gross tally of products and services bought and sold, with no distinctions between transactions that enhance well being and those that diminish it. Instead of distinguishing costs from benefits, productive activities from destructive ones, or sustainable ones from unsustainable ones the GDP simply assumes that every monetary transaction adds to social well-being by definition. In this way, needless expenditures triggered by crime, accidents, toxic waste contamination, preventable natural disasters, prisons and corporate fraud count the same as socially productive investments in housing, education, healthcare, sanitation, or mass transportation. It is as if a business tried to assess its financial condition by simply adding up all “business activity,” thereby lumping together income and expenses, assets and liabilities.

Beginning with the seminal work of Daly and Cobb (1989) there have been several attempts to develop alternative national income accounting systems that address these deficiencies. Collectively, these systems measure what is

FIGURE 1: Real GDP and GPI Per Capita 1950-2004
in \$2000



commonly referred to as “green” GDP. Major objectives of these green GDP accounting systems are to provide a more accurate measure of welfare and to gauge whether or not an economy is on a sustainable time path (Hanley, 2000). Two of the most popular green GDP systems are the Index of Sustainable Economic Welfare (ISEW) and the Genuine Progress Indicator (GPI).

While methodologies differ somewhat, the ISEW, GPI, and other green GDP accounting systems all involve three basic steps (Stockhammer et al., 1997; Neumayer, 2000). Computation usually begins with estimates of personal consumption expenditures, which are weighted by an index of inequality in the distribution of income to reflect the social costs of inequality and diminishing returns to income received by the wealthy. Additions are made to account for the non-market benefits associated with volunteer time, housework, parenting, and other socially productive time uses as well as services from both household capital and public infrastructure. Deductions are then made to account for purely defensive expenditures such as pollution related costs or the costs of automobile accidents as well as costs that reflect the undesirable side effects of economic progress. Deductions for costs associated with degradation and depletion of natural capital incurred by existing and future generations are also made at this stage. Table 1 (page 3) provides a line by line summary of these adjustments in 2004, the latest year for which data are available.

By making these adjustments, the GPI corrects the deficiencies of GDP by incorporating aspects of the non-monetized or non-market economy, separating welfare enhancing benefits from welfare detracting costs, correcting for the unequal distribution of income, and distinguishing between sustainable and unsustainable forms of consumption.

What Improvements Were Made in 2006?

The GPI 2006 Update makes a number of improvements and additions to the basic GPI methodology first developed in the late 1990s. These improvements can be grouped under two broad headings: new data sources and new calculations. Examples of new data sources include the Bureau of Labor Statistics’ American Time Use Surveys (ATUS) in 2003 and 2004. The new ATUS data was used to improve our calculations of the value of housework, parenting, and volunteering. As another example, we incorporated new research from the U.S. Forest Service on logging related erosion and deforestation. We also used new data as well as new valuation studies to assign costs to farmland, wetland, and forest losses.

The GPI 2006 update also includes calculations that did not appear in our previous GPI publications. One calculation is the non-market benefits associated with higher education—benefits that amount to \$16,000 per year per college educated worker. We expanded our deforestation estimates to include economic damages associated with loss of roadless areas, ancient forests in the Pacific Northwest and Alaska, and loss of loblolly pine forests in the Southeast. We also added carbon emissions damage to reflect the ever-increasing costs of global warming. A complete explanation of these improvements appears in the full report.

Key Results from the 2006 Update

Table 2 (page 5) provides detailed column by column GPI accounts for the 1950-2004 period. The results are alarming. While per capita GDP has risen dramatically—from \$11,672 in 1950 to well over \$36,595 today, per capita GPI has stagnated in the \$14,000-\$15,000 range since the late 1970s. This implies that since the late 1970s, the benefits of economic growth have been entirely offset by rising inequality, deteriorating environmental conditions, and a decline in the quality of our lives. Key findings of our 2006 update include:

- Drought, floods, sea level rise, and severe storms exacerbated by global warming are taking their toll on the U.S. economy. Conservatively, we estimate the costs of our carbon emissions on existing and future generations to be just over \$1 trillion per year. The losses from hurricanes like Katrina represent the “cashing out” of environmental debt that is properly accrued in the GPI.
- Income inequality is at its greatest level since 1950. The income distribution index—which measures income inequality—increased by 20% since 1968, the year the nation’s income was distributed most equitably. When growth is concentrated in the wealthiest income brackets it counts less towards improving overall economic welfare because the social benefits of increases in conspicuous consumption by the wealthy are less beneficial than increases in spending by those least well off. So a dollar of economic growth today counts far less than it did when our income distribution was more equitable.
- Urban sprawl gobbles up prime farmland, increases commute times, exacerbates urban air, water, and noise pollution, and increases accident rates. We estimate the costs of urban sprawl to be over \$1.1 trillion each year.
- Globalization has exported America’s vast manufacturing infrastructure overseas and with it

a source of productive investments. As a result, an increasing share of foreign investment in the U.S. today is used to finance consumer debt and government spending for tax breaks and the wars in Iraq and Afghanistan. This puts us in the position of being a net borrower. Net borrowing today is a record \$254 billion, a cost overlooked by GDP.

- The GDP counts all \$600 billion plus spent on wars each year as a benefit—despite the fact that over half of all Americans disapprove of the war and decry its daily toll on American families, our long term security, the environment, Iraqi and Afghanistan societies, and our international reputation. The GPI recognizes that this spending is defensive—at best it helps maintain the status quo, at worst, it is a liability on our future. In any case, it should not be counted towards progress.
- The increase in the number of college graduates in the population is increasingly paying off in the form of many non-market benefits such as increases in the stock of knowledge, worker productivity, civic participation, job market efficiency, savings, research and development activities, charitable giving, and health. These benefits amount to roughly \$828 billion each year.
- Volunteerism is on the rise, and represents some of the most valuable work performed in our country. The GPI estimates the value of volunteer work in America to be over \$130 billion. On a per capita basis, the value of work performed by churches and synagogues, civic associations, neighborhood groups, and non-profits rose from \$202 in 1950 to \$447 today, implying that over the past few decades, Americans have become more generous with their time and that this time is of much greater worth.

Policy Implications

Anielski (2001) asserts that GPI accounts “provide vital information for holistic and integrated policy decision making, covering virtually every area of government policy.” In the GPI 2006 Update, we demonstrate the usefulness of GPI accounts to public policy by examining the effects of globalization, tax cuts, and urban sprawl on GPI growth. By using GPI in the framework of standard economic growth models, we demonstrate the fallacies of relying exclusively on GDP growth as a guide to public policy.

Globalization (economic openness)

The vast majority of economic growth models used today demonstrate that greater economic openness (globalization) has a strongly positive effect on economic growth. However, those models rely on GDP growth,

TABLE 1: GPI Contributions and Deductions (2004)

		Amount (billions)
Contributions		
Personal consumption expenditures		\$7,588.60
Weighted personal consumption expenditures (adjusted for inequality)	+	6,318.41
Value of housework and parenting	+	2,542.16
Value of higher education	+	827.98
Value of volunteer work	+	131.30
Services of consumer durables	+	743.72
Services of streets and highways	+	111.55
Net capital investment (positive in 2004, so included in contributions)	+	388.80
<i>Total positive contributions to the GPI</i>		<i>\$11,063.92</i>
Deductions		
Cost of crime	–	\$34.22
Loss of leisure time	–	401.92
Costs of unemployment and under-employment	–	176.96
Cost of consumer durable purchases	–	1,089.91
Cost of commuting	–	522.61
Cost of household pollution abatement	–	21.26
Cost of auto accidents	–	175.18
Cost of water pollution	–	119.72
Cost of air pollution	–	40.05
Cost of noise pollution	–	18.21
Loss of wetlands	–	53.26
Loss of farmland	–	263.86
Loss of primary forest cover	–	50.64
Depletion of non-renewable resources	–	1,761.27
Carbon dioxide emissions damage	–	1,182.82
Cost of ozone depletion	–	478.92
Net foreign borrowing (positive in 2004, so included in deductions)	–	176.96
<i>Total negative deductions to the GPI</i>		<i>\$6,644.83</i>
Genuine Progress Indicator 2004		\$4,419.09

not growth in true economic welfare. In the GPI 2006 update, we refine a model used first by Talberth and Bohara (2006) testing the relationship between globalization and growth in GPI. Our modeling suggests a significant negative non-linear correlation between growth in the U.S. GPI and economic openness. In other words, while openness indeed enhances the GPI up to a certain point, once that threshold is surpassed, GPI growth begins to decline. The results provide some empirical support for the burgeoning literature associating greater openness with environmental degradation, income inequality, and an increase in economic activity that may be self canceling from a welfare perspective. They also suggest a cautionary approach to trade liberalization policy that is cognizant of the fact that liberalization may be counterproductive past a particular threshold.

Tax cuts

Tax cuts have been one of the most visible economic policy debates since the Bush Administration took office in 2001. The issue has been a bone of contention in both policy and academic circles. In the context of standard growth theory, tax cuts can stimulate long term economic growth by encouraging productivity-enhancing investments, stimulating research and development, increasing consumer spending, and removing market distortions. On the other hand, tax cuts can harm economic growth if not matched by a commensurate decrease in government spending; otherwise, they will raise deficits and interest rates. If tax cuts disproportionately benefit the wealthy, the resulting “windfall gains” on asset holders may undermine incentives for new investments (Gale and Orszag, 2005).

To shed light on this debate, we modeled the effects of per capita tax collections on GPI growth (lagged). We found a strong positive correlation between the change in per capita tax collections and growth of the GPI. This finding is consistent with the historical relationship between higher taxes and high economic growth (as measured by GDP) noted by Hashemzadeh and Wayne (2004). A full investigation of these findings to determine the exact channel by which changes in taxes influence GPI growth is beyond the scope of our GPI 2006 Update. Nonetheless, as with openness, we demonstrated the potential usefulness of GPI data to inform the debate over tax cuts and other adjustments to tax policy.

Sprawl

In the GPI 2006 Update, we examined how the degree of urbanization affected the GDP – GPI gap. By looking at the

gap, we can simultaneously consider changes in economic growth (GDP) and welfare (GPI). In years when the gap is widening, the costs of economic growth are more than offset by the deleterious social and environmental welfare costs of that growth. In years when the gap is closing, positive contributions to GPI overshadow these costs and economic growth is welfare enhancing. The urbanization variable included in our model is a good proxy for urban sprawl since it measures the amount of urban land per person.

There is little dispute that public policy has a direct influence on the extent of urban sprawl. According to the Environmental Protection Agency (EPA), a number of federal urban growth and development programs “intentionally or unintentionally accelerated the spread of low density development and businesses at greater distances from towns and cities” (EPA, 2006). The question is whether or not urban sprawl enhances or detracts from welfare by causing the GDP – GPI gap to widen or close since more urban land area per capita has both beneficial (i.e. more public infrastructure services) and adverse (i.e. lost farmland) effects on the GPI. Our model found a strong positive relationship between growth in urban land area per capita and the gap. This suggests that on balance, the personal consumption, time savings, and public infrastructure benefits from sprawl are more than offset by the costs associated with traffic congestion, auto-accidents, carbon emissions, and lost farmland.

Future GPI Updates

This year, Redefining Progress is planning to launch an invigorated campaign to discredit GDP as a basis for economic performance monitoring and policy making and spotlight the importance of alternatives such as the GPI. To this end, we are planning to issue more regular updates to the GPI to coincide with quarterly and annual releases of GDP figures. At the same time, we will be recruiting a top notch team of economists to help bolster the GPI’s accuracy by conducting original non-market valuation studies and otherwise improving the data on which the GPI is based. We will also be advocating for increased use of the GPI in policy settings at the federal, state, and local level. Finally, as we have done so successfully with the Ecological Footprint, we are planning to integrate the GPI into formal education at both the K-12 and college levels. We are looking for non-profit partners, donors, and experts to help with this effort. Please contact Redefining Progress to find out how you can help.

TABLE 2
GENUINE PROGRESS INDICATOR 1950-2004,
COLUMN BY COLUMN ANALYSIS

Year	Column A	Column B +	Column C +/-	Column D +	Column E +	Column F +	Column G +	Column H +	Column I +	Column J -	Column K -	Column L -	Column M -	Column N -	Column O -
	Personal consumption	Income distribution index	Weighted personal consumption	Value of household and parenting	Value of higher education	Value of volunteer work	Services of consumer durables	Services of highways	Costs of crime	Loss of leisure time	Costs of under-employment	Cost of consumer durables	Cost of commuting	Cost of household pollution abatement	
1950	1,162.80	107.97	1,067.73	749.48	84.35	30.72	133.85	32.01	8.82	12.07	15.88	77.08	141.84	0.02	
1951	1,171.20	103.59	1,130.56	771.11	91.12	30.82	134.50	33.76	9.18	11.39	16.97	70.40	141.96	0.03	
1952	1,208.20	105.04	1,150.21	797.89	97.89	30.93	144.39	34.85	9.49	10.76	18.14	68.34	141.08	0.05	
1953	1,265.70	102.53	1,234.42	816.26	101.26	31.03	151.87	31.77	9.77	10.26	19.39	76.89	145.63	0.07	
1954	1,291.40	106.08	1,217.39	839.82	104.63	31.14	154.24	32.55	10.09	9.70	20.72	76.69	142.09	0.10	
1955	1,385.50	103.84	1,334.26	864.05	108.01	31.24	164.69	34.70	10.37	9.23	22.14	93.63	151.36	0.14	
1956	1,425.40	102.43	1,391.59	888.99	111.38	31.35	174.37	37.72	10.68	8.76	23.66	89.75	152.23	0.20	
1957	1,460.70	100.47	1,453.94	914.65	114.75	31.46	179.30	37.21	11.07	8.12	25.29	90.74	153.62	0.29	
1958	1,472.30	101.33	1,452.96	941.05	119.25	31.57	179.18	39.15	11.47	7.52	27.02	83.26	148.60	0.41	
1959	1,554.60	103.38	1,503.84	968.21	123.74	31.67	184.34	39.19	11.80	6.90	28.88	93.51	155.05	0.58	
1960	1,597.40	104.24	1,532.40	996.15	121.87	31.78	186.35	40.40	12.20	6.31	30.86	95.28	158.31	0.83	
1961	1,630.30	107.19	1,521.00	1,024.90	132.95	31.89	187.21	42.23	12.62	5.67	32.98	91.77	156.69	1.18	
1962	1,711.10	103.85	1,647.60	1,054.48	144.03	32.00	191.17	44.87	13.03	4.97	35.25	102.50	161.89	1.69	
1963	1,781.60	103.85	1,715.49	1,084.91	146.78	32.11	199.35	47.40	13.49	4.32	37.67	112.38	166.77	1.88	
1964	1,888.40	103.57	1,823.34	1,116.22	149.52	32.22	206.76	48.68	13.94	3.66	40.26	122.88	171.55	2.09	
1965	2,007.70	102.15	1,965.38	1,148.43	155.87	32.33	215.30	52.02	14.44	2.98	43.02	138.45	178.77	2.32	
1966	2,121.80	100.18	2,117.92	1,181.58	163.39	32.20	229.75	55.53	14.96	2.27	45.98	150.05	182.99	2.59	
1967	2,185.00	102.84	2,124.76	1,215.68	168.80	42.80	244.98	58.41	15.53	1.54	49.14	152.29	185.63	2.89	
1968	2,310.50	100.00	2,210.50	1,250.76	178.74	49.25	262.07	62.07	16.09	0.78	52.51	169.22	193.74	3.22	
1969	2,366.40	100.77	2,378.01	1,286.86	184.56	56.66	273.60	63.85	16.75	0.00	56.12	175.07	199.51	3.61	
1970	2,451.90	101.55	2,414.56	1,324.00	192.99	65.20	286.62	68.89	17.44	0.00	59.73	169.50	198.85	4.05	
1971	2,545.50	102.06	2,494.08	1,362.21	201.79	75.02	290.66	68.30	18.08	0.00	63.57	186.44	206.72	4.50	
1972	2,701.30	103.35	2,613.73	1,401.53	213.82	86.32	300.26	68.97	18.69	0.00	67.65	210.16	217.71	4.73	
1973	2,833.80	102.32	2,769.56	1,441.98	227.65	99.33	314.97	75.77	19.47	11.86	72.00	231.70	226.00	6.21	
1974	2,812.30	101.80	2,762.46	1,483.59	244.80	114.29	328.85	91.40	20.26	12.04	76.63	219.17	215.79	7.02	
1975	2,876.90	102.32	2,811.68	1,526.41	259.90	114.68	334.42	82.46	21.10	12.13	81.56	215.67	218.37	9.03	
1976	3,035.50	102.58	2,959.23	1,570.46	279.94	115.07	347.09	76.44	21.88	12.29	86.80	243.42	233.50	10.03	
1977	3,164.10	103.61	3,053.91	1,615.79	298.03	115.46	362.08	72.50	22.67	12.50	92.38	263.92	247.63	10.75	
1978	3,303.10	103.61	3,188.07	1,662.42	309.31	115.85	383.21	71.99	23.57	12.75	98.32	279.99	260.71	11.21	
1979	3,383.40	104.12	3,249.40	1,710.40	329.26	116.24	394.31	76.76	24.82	13.86	104.64	279.06	262.32	11.73	
1980	3,374.10	103.87	3,248.51	1,759.76	355.09	116.64	393.25	83.46	26.18	14.64	111.36	257.21	255.24	12.78	
1981	3,422.20	104.64	3,270.48	1,810.55	362.78	117.03	388.08	86.99	26.35	15.63	118.52	260.24	259.79	14.45	
1982	3,470.30	106.19	3,268.15	1,837.46	384.80	117.43	383.21	85.06	26.87	15.78	126.14	260.07	262.76	13.96	
1983	3,668.60	106.70	3,438.20	1,864.78	414.64	117.83	392.41	78.86	27.13	16.30	134.25	298.15	276.91	15.64	
1984	3,863.30	106.96	3,611.95	1,892.50	429.79	118.23	410.07	74.92	27.84	16.86	142.88	341.71	298.28	17.04	
1985	4,064.00	107.99	3,763.32	1,920.63	444.93	118.63	431.91	76.15	28.64	17.51	152.06	376.22	314.66	18.17	
1986	4,228.90	109.54	3,860.74	1,949.18	455.82	119.04	466.81	80.76	29.08	18.30	161.83	412.55	334.02	18.50	
1987	4,369.80	109.79	3,960.01	1,978.16	474.19	119.44	489.28	83.49	29.81	19.07	172.24	419.75	343.25	15.98	
1988	4,546.90	110.05	4,131.61	2,007.56	492.59	119.85	511.38	82.91	30.48	18.31	183.31	445.05	358.47	16.93	
1989	4,675.00	111.08	4,208.58	2,037.40	521.04	120.25	524.73	83.47	31.52	210.86	195.09	454.89	367.76	14.41	
1990	4,770.30	110.31	4,324.48	2,067.69	532.66	118.56	530.85	84.67	32.21	220.28	189.23	453.52	372.45	11.59	
1991	4,778.40	110.31	4,331.82	2,098.43	544.42	116.87	531.99	83.56	32.69	229.11	182.70	427.88	365.51	8.90	
1992	4,934.80	111.86	4,411.76	2,129.62	549.39	115.07	535.89	83.45	33.07	240.23	177.58	453.00	376.51	9.20	
1993	5,099.80	117.01	4,358.42	2,161.28	569.44	116.26	550.66	84.22	33.68	250.39	171.26	488.41	389.74	9.51	
1994	5,290.70	117.53	4,501.74	2,193.41	584.70	117.83	569.59	87.56	35.97	271.52	167.14	529.38	406.98	10.88	
1995	5,433.50	115.98	4,684.88	2,226.01	611.62	120.66	582.47	91.17	34.70	284.80	157.85	552.62	416.64	11.64	
1996	5,619.40	117.27	4,791.93	2,259.10	634.69	120.66	593.68	93.44	33.73	297.98	154.71	595.94	429.03	12.44	
1997	5,831.80	118.30	4,929.71	2,292.68	651.15	120.92	605.93	98.58	35.35	314.50	145.96	646.97	446.95	13.30	
1998	6,125.80	117.53	5,212.30	2,326.77	671.57	121.19	628.95	100.69	34.00	329.61	134.00	720.29	467.88	14.23	
1999	6,438.60	118.04	5,454.53	2,361.35	700.85	123.15	653.73	104.38	33.16	344.65	127.37	804.52	484.54	15.21	
2000	6,739.40	119.07	5,659.93	2,396.46	717.52	125.10	678.35	107.80	31.04	363.30	124.48	863.30	495.19	16.26	
2001	6,910.40	120.10	5,753.72	2,432.08	755.65	126.70	692.93	109.74	32.49	370.90	145.13	900.69	504.53	17.39	
2002	7,099.30	119.07	5,962.18	2,468.23	779.14	128.20	721.40	111.50	34.64	376.93	171.83	964.75	512.03	18.60	
2003	7,306.60	119.59	6,109.83	2,504.92	806.13	129.70	721.40	110.34	35.05	388.05	184.07	1,028.56	518.32	19.88	
2004	7,588.60	120.10	6,318.41	2,542.16	827.98	131.30	743.72	111.55	34.22	401.92	176.96	1,089.91	522.61	21.26	

TABLE 2 (CONTINUED)

Column P -	Column Q -	Column R -	Column S -	Column T -	Column U -	Column V -	Column W -	Column X -	Column Y -	Column Z +/-	Column AA +/-	Column AB	Column AC	Column AD
Cost of auto accidents	Cost of water pollution	Cost of air pollution	Cost of noise pollution	Loss of wetlands	Loss of farmland	Loss of primary forests	Resource depletion	Carbon dioxide emissions damage	Cost of ozone depletion	Net capital investment	Net foreign borrowing	Genuine Progress Indicator	GPI per capita (\$2000)	GDP per capita (\$2000)
135.37	45.82	71.47	6.78	38.56	25.80	35.10	174.82		8.63	11.25	0.01	1,311.33	8,611.81	11,671.95
137.69	46.17	72.20	6.99	38.98	29.60	35.52	198.10		10.43	10.92	0.51	1,381.69	8,921.13	12,364.57
140.06	46.65	72.93	7.20	39.41	33.41	35.95	199.57		12.45	23.66	0.00	1,439.80	9,138.54	12,619.88
142.40	47.13	73.66	7.43	39.83	37.25	36.38	207.94		14.99	29.10	0.00	1,526.71	9,530.97	12,981.95
144.93	47.59	74.41	7.65	40.25	41.12	36.81	204.75		17.78	30.81	0.13	1,536.03	9,421.99	12,669.14
147.51	48.25	75.16	7.89	40.67	45.02	37.25	233.59		21.63	30.48	0.11	1,623.68	9,785.29	13,335.66
150.16	48.90	75.92	8.14	41.10	48.93	37.66	256.33		26.16	28.07	1.44	1,686.33	9,984.03	13,555.59
152.89	51.31	76.68	8.39	41.52	52.90	38.08	266.67		30.97	21.88	1.39	1,746.04	10,152.34	13,379.73
155.47	51.69	77.46	8.65	41.94	56.92	38.50	254.94		35.58	22.41	1.35	1,787.48	10,221.04	13,032.79
158.09	52.74	78.24	8.91	42.36	60.55	38.93	275.75		40.99	23.58	1.34	1,822.62	10,249.25	13,728.28
160.62	52.90	79.03	9.19	42.79	64.59	39.35	290.30		46.83	10.40	1.32	1,831.28	10,135.99	13,847.27
163.30	53.48	79.83	9.47	43.21	68.72	39.68	302.67		53.24	17.73	1.55	1,844.94	10,043.69	13,936.45
165.83	54.30	81.79	9.77	43.63	72.89	40.02	323.11		61.20	25.98	1.66	1,969.93	10,560.46	14,555.75
168.24	55.16	83.80	10.07	44.05	77.00	40.35	351.58		69.66	27.30	1.66	2,018.53	10,666.40	14,975.53
170.59	56.04	85.86	10.38	44.48	80.85	40.68	376.87	0.00	78.55	34.47	1.63	2,114.14	11,017.49	15,626.74
172.74	57.16	87.98	10.70	44.90	84.81	41.02	400.82	0.10	88.91	50.45	1.59	2,252.26	11,591.51	16,423.32
174.74	58.14	90.14	11.03	45.32	88.91	41.30	437.87	0.51	99.57	65.78	-3.71	2,401.05	12,215.34	17,292.94
176.66	58.89	92.36	11.37	45.75	93.93	41.57	474.72	1.34	111.01	67.59	-3.65	2,404.76	12,101.74	17,535.93
178.43	60.14	94.63	11.73	46.17	98.94	41.84	505.77	2.91	123.29	79.88	-3.60	2,588.27	12,895.85	18,199.26
180.18	61.12	96.95	12.09	46.59	103.80	42.12	540.48	5.55	137.29	84.34	-3.53	2,647.13	13,060.85	18,578.33
182.29	62.13	99.34	12.46	47.01	108.21	42.39	586.68	9.66	153.07	82.46	-3.45	2,672.68	13,034.16	18,394.85
184.61	63.07	96.36	12.85	47.44	112.64	42.72	594.94	14.96	169.42	76.67	2.75	2,749.16	13,238.71	18,773.87
186.60	64.36	93.47	13.25	47.86	116.92	43.06	624.54	21.87	187.83	76.56	2.56	2,845.05	13,554.58	19,557.30
188.39	65.46	90.66	13.65	48.28	121.03	43.40	639.85	30.85	208.10	90.16	2.49	3,005.25	14,181.81	20,487.57
190.12	66.22	87.94	13.51	48.70	124.98	43.75	642.37	40.48	228.44	124.52	2.30	3,125.25	14,565.00	20,198.83
189.20	66.62	80.31	13.65	49.13	134.94	44.09	651.09	50.55	244.94	76.14	2.12	3,125.25	14,470.55	19,961.75
191.89	68.47	82.48	13.78	49.55	139.43	44.43	673.61	63.39	260.98	68.14	2.53	3,222.96	14,781.85	20,826.47
195.60	69.96	79.95	13.92	49.82	144.23	44.77	706.27	78.14	275.16	64.00	-7.15	3,265.89	14,828.86	21,569.75
199.79	71.60	76.95	14.06	50.09	148.05	45.11	731.84	94.90	288.15	53.08	-0.52	3,375.03	15,162.67	22,530.72
201.93	73.29	69.61	14.20	50.36	151.81	45.45	789.32	114.47	299.71	35.40	5.58	3,284.80	14,595.54	22,987.27
192.95	74.17	66.65	14.34	50.62	155.68	45.85	826.66	134.22	311.57	99.48	2.57	3,354.46	14,730.24	22,666.27
196.00	75.26	64.26	14.49	50.89	160.04	46.25	849.33	153.58	324.40	99.89	7.12	3,376.43	14,682.31	23,010.79
192.41	76.97	57.96	14.63	51.16	164.93	46.63	862.11	172.81	335.03	85.15	80.32	3,418.34	14,722.31	22,349.56
195.85	80.61	59.23	14.92	51.70	173.67	47.01	845.20	193.15	347.37	97.31	77.45	3,568.86	15,231.57	23,148.26
197.09	81.92	58.28	15.07	51.97	178.26	47.78	960.58	241.79	375.21	98.27	23.54	3,606.54	15,123.92	25,386.01
190.62	84.06	55.88	15.22	52.24	183.15	48.05	979.70	269.44	390.66	98.41	16.48	3,639.17	15,122.17	26,027.73
192.32	85.58	55.96	15.38	52.29	187.61	48.32	1,025.99	300.17	405.72	110.31	-61.41	3,632.41	14,960.25	26,668.01
192.29	87.05	56.61	15.53	52.35	191.98	48.60	1,084.05	335.40	424.82	105.44	-76.17	3,654.19	14,913.77	27,518.87
184.72	88.40	55.94	15.69	52.41	196.24	48.88	1,109.68	373.22	440.73	98.43	-51.59	3,702.06	14,967.38	28,225.70
191.67	89.70	52.29	15.84	52.47	200.46	49.16	1,171.29	412.34	450.65	99.72	-68.10	3,725.17	14,892.80	28,434.99
187.13	91.22	52.15	16.00	52.52	204.59	49.45	1,199.31	453.66	459.20	89.75	-90.05	3,694.66	14,575.01	28,010.64
188.42	92.40	48.88	16.16	52.58	209.62	49.74	1,231.78	495.73	466.79	118.54	-118.50	3,689.31	14,342.57	28,568.86
189.38	93.85	47.99	16.32	52.64	214.61	50.03	1,230.66	541.52	473.13	136.55	-35.41	3,689.31	14,175.75	28,943.54
195.43	95.81	48.56	16.49	52.69	219.57	50.16	1,318.57	590.73	477.01	151.71	-18.01	3,701.64	14,051.40	29,743.47
205.88	97.92	44.36	16.65	52.75	224.52	50.22	1,355.38	643.22	478.74	178.32	-26.09	3,840.85	14,409.10	30,131.27
206.98	99.79	43.76	16.82	52.81	229.62	50.27	1,414.48	699.34	478.77	250.39	3,912.45	14,508.46	14,508.46	30,885.87
200.63	101.87	42.60	16.99	52.87	234.73	50.33	1,456.64	761.08	478.81	301.02	-67.76	3,932.67	14,410.04	31,891.23
192.81	104.18	42.22	17.16	52.92	238.74	50.39	1,521.39	824.47	478.82	369.35	-189.34	4,018.36	14,553.23	32,837.40
195.09	106.60	42.06	17.33	52.98	245.91	50.44	1,539.69	889.51	478.84	446.63	-182.04	4,234.69	15,162.06	33,907.88
193.14	109.09	40.58	17.50	53.04	251.69	50.48	1,585.89	960.07	478.87	475.60	-249.80	4,277.03	15,145.93	34,764.23
186.14	111.21	40.40	17.68	53.09	256.26	50.52	1,669.58	1,033.53	478.89	490.29	-380.20	4,113.48	14,417.04	34,665.17
182.01	113.82	40.22	17.85	53.15	258.10	50.56	1,677.57	1,110.76	478.90	455.49	-298.81	4,255.44	14,765.33	34,866.85
180.15	116.57	40.05	18.03	53.21	260.97	50.60	1,701.30	1,146.79	478.91	372.14	-224.33	4,309.61	14,807.16	35,460.01
175.18	119.72	40.05	18.21	53.26	263.86	50.64	1,761.27	1,182.82	478.92	388.80	-254.02	4,419.08	15,035.65	36,595.59

References (in order of citation)

Cobb, Clifford, Ted Halstead, and Jonathan Rowe. 1995. "If the GDP is up, why is America down," *Atlantic Monthly*: October, 1995.

Kuznets, Simon. 1934. National Income, 1929-1932. Senate document no. 124, 73d Congress, 2d session, 1934.

Daly, Herman and John B. Cobb. 1989. *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future*. Boston: Beacon Press.

Hanley, Nick. 2000. "Macroeconomic measures of sustainability." *Journal of Economic Surveys* 14 (1): 1– 30.

Stockhammer, E., H. Hochreiter, B. Obermayr and K. Steiner, K. 1997. "The index of sustainable economic welfare (ISEW) as an alter-native to GDP in measuring economic welfare: the results of the Austrian (revised) ISEW calculation 1955–1992." *Ecological Economics* 21 (1997): 19– 34.

Neumayer, Eric. 2000. "On the methodology of ISEW, GPI and related measures: some constructive suggestions and some doubt on the 'threshold' hypothesis." *Ecological Economics* 34: 347–361.

Anielski, Mark. 2001. *Measuring the Sustainability of Nations: The Genuine Progress Indicator System of Sustainable Well Being Accounts*. Edmonton, Canada: Pembina Institute for Appropriate Development.

Talberth, John and Alok Bohara. 2006. "Economic openness and green GDP." *Ecological Economics* 58: 743-758.

Gale, William G. and Peter R. Orszag. 2005. "Economic effects of making the 2001 and 2003 tax cuts permanent." *International Tax and Public Finance* 12(2): 193-232.

Hashemzadeh, Nozar and Wayne Saubert. 2004. "The effects of Bush's tax cuts on income distribution and economic growth in the United States." *Problems and Perspectives in Management* 0(3): 111-120.

Environmental Protection Agency (EPA, 2006). *About Smartgrowth*. Published on-line at: http://www.epa.gov/smartgrowth/about_sg.htm#fedrole

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