The U.S. National Park System

An Economic Asset at Risk

Hardner & Gullison

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Executive Summary

The U.S. National Park System is an economic asset at risk. The park system generates at least four dollars in value to the public for every tax dollar invested in its annual budget. Yet, every year the parks suffer an operating shortfall of $800 million, in addition to a massive multi-billion dollar maintenance backlog. As a result, the fiscal crisis confronting the national parks continues to deepen and important park functions go without, park infrastructure decays, natural ecosystems are overrun with exotic species, historical treasures are inadequately preserved, and public safety is jeopardized.

The U.S. Congress established and maintains the National Park System to conserve our nation's most significant lands and landmarks. Yet, the U.S. Congress is jeopardizing this valuable asset by not adequately funding the National Park Service. Although the full value of the park system evades quantification, this report presents hard economic evidence that national parks generate tremendous value to the public.

- National parks generate more than four dollars in value to the public for every tax dollar invested.
- National parks support $13.3 billion of local private-sector economic activity and 267,000 private-sector jobs.
- National parks attract businesses and individuals to the local area, resulting in economic growth in areas near parks that is an average of 1 percent per year greater than statewide rates over the past three decades.
- The benefits of national parks are many and extend well beyond economic values.

In developing the study we conducted an extensive literature review and interviewed 30 experts from academia, the National Park Service and other governmental agencies, non-governmental organizations, and the private sector to gain their perspective on the economic role of the National Park System. We determined that capturing the economic importance of national parks requires using three different approaches, each of which illuminates a different perspective. The results are not additive, but rather provide a view on the significance of parks to national, regional, and local stakeholders.

First we use cost-benefit analysis to examine the national economic benefits of the park system relative to its cost to taxpayers. Second, we analyze the economic impact of national parks to the communities that surround them. And finally, we measure economic growth in the regions around parks. All analyses point to the same conclusion, the U.S. National Park System is an asset of tremendous economic value at the national, regional, and local level. Failure to properly manage our parks puts this public asset in jeopardy.

Cost-Benefit Analysis

The National Park System generates at *least* four dollars in value to the public for every tax dollar appropriated for its budget. This report uses cost-benefit analysis to measure the economic value generated by national parks, and to compare that value with the cost of running the National Park Service.

Cost-benefit analysis is a standard approach used by the Federal Government, institutionalized by an executive order under President Ronald Reagan in 1981, to assess whether a government regulation or expenditure generates value for U.S. citizens. According to public finance theory, government should raise the funds necessary to invest in projects that generate value in excess of their cost.

For this analysis we draw upon a database of approximately one thousand estimates of the economic value derived from visitation to national parks and wilderness areas in the United States (Kaval and Loomis 2003). The analysis shows that the National Park System generates approximately four times the value ($10.1 billion) of its cost to taxpayers ($2.6 billion). We also perform a series of 12 case studies of individual parks within the system and find that sites such as Acadia National Park and Point Reyes National Seashore generate over 14 times the economic value to the public compared to their annual budgets. In none of our case studies do annual budgetary expenditures exceed the economic benefits generated for the public.

And these value estimates are conservative – because of limitations in valuation methods and data, we only consider the benefits derived from direct recreational use by park visitors. Parks generate a wide range of other values not quantified in this report. They include *use values* such as: ecosystem services like provision of clean air and water; biodiversity conservation; scientific research; education; and cultural and spiritual values. They also include *passive-use values* such as the comfort of knowledge that our nation's natural and historical treasures are conserved for public enjoyment today and for

COST-BENEFIT RATIO OF NPS			
NPS Economic Benefits	*NPS Budget*	*Cost-Benefit Ratio*	*Justified Public Expenditure (Benefits/Cost > 1)?*
>$10.1 Billion	$2.6 Billion	>3.9	YES

TABLE 7: NPS SYSTEM-WIDE LOCAL ECONOMIC IMPACT ESTIMATES				
Total annual visitor spending ($billion)	*Sales ($billion)*	*Personal income ($billion)*	*Jobs*	*Value Added ($billion)*
11.3*	13.3	4.8	267,000	7.5

* Public sector (NPS) spending adds $2-3 billion to this estimate for a total of about $14 billion in annual direct spending.
Source: Stynes and Sun 2003
Note: All figures adjusted to 2004 dollars.

future generations. **Considering the entire suite of economic benefits generated by our national parks, the National Park System generates value likely many times greater than this estimate.**

Economic Impact Analysis

The park system is responsible for $13.3 billion of local *private-sector* economic activity, supporting 267,000 *private-sector* jobs. This reflects the *local* economic impacts of park-related tourism.

Economic impact analysis provides an estimate of the level of economic activity in terms of sales, jobs, wages and profits attributable to a public investment. In the case of national parks, visitors spend money on travel, lodging, food, and other goods and services, all of which can be quantified in an impact analysis. In fact, not only are these direct transactions quantifiable, so are the indirect impacts as tourist expenditures ripple through the economy. In other words, income earned in the tourism sector is spent locally on other goods and services, generating more sales, jobs, income and profits.

This report summarizes analyses performed by researchers at Michigan State University for the National Park Service using the *Money Generation Model 2 (MGM2)*. According to this work, national park visitors spend $11.3 billion in areas local to national parks, resulting in $13.3 billion in economic activity, 267,000 jobs, and $7.5 billion in wages and profits.

The economic impacts estimated by MGM2 are conservative. They exclude expenditures made outside of a 50-100 mile radius of national parks, including among other things airfare and other modes of travel from afar as well as equipment and other goods purchased for visits to parks. **Considering all spending for visits to national parks could increase impact estimates by two to four times those provided by MGM2.**

Economic Growth Analysis

National parks play a major role in attracting businesses and individuals to the local area resulting in economic growth that outpaces areas without parks. This report compares various indices of economic growth in areas near parks to all other areas.

Economic growth shows the cumulative impact of economic activity, and can be measured in a variety of ways, including changes in population, number of jobs, per capita income, and earnings per job. Comparing these indices for areas near parks and areas far from parks allows us to draw conclusions about the role of parks as engines of economic growth.

Case analyses of park areas conducted for this report indicate population, employment, and per capita income have exceeded statewide rates by an average of 1 percent per year over the past three decades. What's even more compelling is that this growth can only partly be explained by tourism–the majority is driven by individuals and companies unrelated to the tourism sector that are likely drawn to the area because of its natural amenities.

In order to conduct this analysis, we rely on a database developed by the Sonoran Institute for the US Bureau of Land Management. The database, called the *Economic Profile System (EPS),* provides county-level economic and demographic data from multiple public sources spanning the last thirty years.

The data clearly show that growth rates in counties around parks outpace statewide averages. This is further proof that national parks are of economic significance, if not engines of economic growth. Yet, failure to properly manage parks could result in the deterioration of the very amenities that drive this growth. Parks must be fully funded to conserve the natural attributes the National Park Service is mandated to protect.

Conclusions

The estimated required budget of the National Park System is $3.4 billion per year, plus the investment required to eliminate the maintenance backlog estimated at between $4.5 and $9.7 billion. Annual appropriations of $2.6 billion for national parks fall short by $800 million, before considering the maintenance backlog. Budget shortfalls are undermining the park system, a valuable economic asset and national treasure. Given the economic analysis, **cutting park budgets cannot be described as prudent fiscal belt-tightening. Instead, it is undermining a public economic asset that will result in negative economic repercussions for U.S. citizens.**

This report provides a clear exposition on the economic value, impact, and growth effects of the National Park System. The estimates in this report are intentionally conservative to ensure that advocates and critics alike are presented with reliable and concrete data for informed public policy debate.

Lastly, it is important to emphasize that this report provides an economic perspective only. The merits of the National Park System and the reasons to properly fund it are myriad and transcend a strictly numerical analysis. This report provides just one approach to examining its importance.

Chapter 1: Introduction

The U.S National Park System protects our country's natural and historic treasures, conserving and managing key sites of our nation's heritage such as Yellowstone National Park and Gettysburg National Military Park. It is managed by the National Park Service (NPS), which was created by an act of congress in 1916 "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Today's park system includes 390 units covering more than 83 million acres.

This report examines the economic significance of the park system, including the *economic benefits* generated by the parks, the *economic impacts* of park visitation, and the *economic growth* patterns associated with parks. Many researchers and government analysts have studied various aspects of the system's role in the economy, but here we attempt to synthesize those approaches into a unified portrait. Different analytic approaches allow us to examine the economic significance of the national park system from perspectives relevant to a range of stakeholders (Table 1).

- *Economic Benefit* is a national concern – it measures the total value that people derive from the national park system through direct and passive use.

- *Economic Impact* is a local concern – it measures park visitors' spending and the effects it has on a town or county's output, employment, and income.

- *Economic Growth* is a local and regional concern – it highlights trends occurring as a result of economic activity associated with proximity to parks. Such economic activity extends beyond tourism to include all economic activity attracted to an area by the natural amenities provided by the park.

The three measures of economic significance are not directly comparable, nor can one sum them to generate a single number that represents the economic importance of the park system. Instead, we need to evaluate each independently, as we do in the following chapters of this report.

Our analysis demonstrates that each measure of economic significance reflects quite positively on the national park system. Adjusting all figures to the year 2004:

- The economic benefits of the park system are at least $10.1 billion per year, and likely much greater;

- The total economic impact of visitor spending in areas surrounding parks was $13.3 billion in sales, creating 267,000 jobs and $7.5 billion in value added (wages, rents, and business profits); and,

- Economic growth in counties around national parks is generally faster than other counties in the same states.

We also show that federal spending on national parks generates a fourfold increase in value for the nation, and that proposed budget increases for the system clearly satisfy economic scrutiny. In fact, current threats to national parks resulting from budgetary shortfalls may likely cause significant losses in economic benefits to the nation.

In order to illustrate these points more fully, we present 12 site-level case studies, representing a diversity of geographic locations, types of sites, levels of visitation, proximity to population centers, and levels of funding. The cases are:

- Acadia National Park
- Apostle Islands National Lakeshore
- Biscayne National Park
- Denali National Park and Preserve
- Fort Sumter National Monument
- Gettysburg National Military Park
- Joshua Tree National Park
- Point Reyes National Seashore
- Rocky Mountain National Park
- Sequoia and Kings Canyon National Parks

Table 1:
Measures of Economic SIGNIFICANCE oF the U.S. National Park System

Analytic Approach	*Indicators*	*Geographic Concern*
Economic Benefits	Value derived from *direct use*, such as recreation, or *passive use*, such as the value of knowing national treasures are protected and will be passed on to future generations	National
Economic Impact	Sales, jobs, personal income, and value added generated from visitor spending	Local
Economic Growth	Trends in population, per capita income, employment, wages, housing costs, and the distributional effects throughout the economy	Local and Regional

- Shenandoah National Park
- Zion National Park

For each of the twelve cases, we analyze economic benefits, impacts, and growth patterns. Results of the case studies appear throughout the report, and are summarized on a site-by-site basis in Chapter 5.

The report attempts to pull together a broad body of economic research and analysis that has been conducted over the years. Many of the researchers behind that work have provided input to shape this report. Building on this expansive base of expertise, our synthesis of the economic importance of the national park system demonstrates quite clearly that the parks, seashores, historic and other sites in the system are national assets of tremendous value, and merit the budgetary consideration necessary to protect and maintain them.

Chapter 2: Cost-Benefit Analysis of National Parks

"Although cost-benefit analysis is surely an imperfect tool, it is the only analytic framework available for making consistent decisions. Forbidding cost-benefit analysis amounts to outlawing sensible decision making."

Harvey Rosen, Ph.D. in *Public Finance* (1988)
Professor of Economics and Business Policy, Princeton University
Member & Chairman, President's Council of Economic Advisers (2003-2005)

Social cost-benefit analysis is an analytic approach used by governments to determine whether the net economic benefits to society of a public-sector program are greater than the costs. Cost-benefit analysis became a standard tool for decision making in the U.S. Government during the Johnson administration, entitled the *Planning Programming Budget System*. It was further institutionalized in 1981 when President Reagan issued an executive order that all new federal regulations needed to pass a cost-benefit test. As a result cost-benefit analysis has become a standard analysis in the U.S. Government, with regular guidance provided by the White House Office of Management and Budget (see Box A).

In the case of the national parks, cost-benefit analysis can show whether the cost of maintaining the system is merited by the value it generates for the U.S. public. Fundamentally, most U.S. citizens view the management of sites like the Statue of Liberty and Yellowstone as an unquestionable responsibility of the federal government. Discussion of cost-benefit analysis is typically stopped short by the assertion that such national treasures are "priceless" and analysis of their economic value is misguided.

Nevertheless, NPS finds itself short of funding to perform the management functions necessary to maintain its sites, suggesting the federal government has underestimated their public value. Of course, the political challenge to acquiring funding needed by NPS is complex, so in an effort to place these budget needs into a clear analytic framework for public decision makers we provide a cost-benefit analysis that quantifies the economic implications of budgetary spending on the national park system. Such an approach puts budget allocation decisions to the same test as many other federal projects, programs, and regulations ensuring fair consideration of NPS needs in budgetary debates.

Economic Benefits of National Parks

The types of economic benefits associated with national parks have been studied extensively. Economists have categorized the benefits flowing from parks into two broad categories: *use* and *passive-use* (Table 2). Use benefits include the value visitors place on recreation, scientific and educational uses, ecological services such as the provision of clean water to communities and habitat for a number of species that may have economic effects (e.g. reproduction of species hunted offsite, insects necessary for pollination, etc.), conservation of biodiversity for its genetic and intrinsic value, as well as the cultural and spiritual values of many sites. Passive-use benefits include the value individuals place on the option to use a site in the future, or the mere knowledge that a site is protected (*existence value*) and will be so for generations to come (*bequest value*).

Consumer surplus is the technical term used for the difference between the value an individual places on an economic benefit and the cost they incur to enjoy it. In other words, a visitor may pay $70 to travel to Acadia National Park, but enjoys $100 in perceived value (also known as *willingness-to-pay*) from the experience of birdwatching while in the park. The consumer surplus for that visit is $30. It is possible to add up the consumer surplus of all visitors to a park to determine the total consumer surplus derived from public visitation. This is also known as *social economic benefit*.

TABLE 2:
ECONOMIC BENEFITS OF NATIONAL PARKS

Use Values	Recreation
	Subsistence (Alaskan parks only)
	Offsite Benefits (hunting, scenic viewsheds)
	Ecosystem services (water quality, habitat)
	Biodiversity (intrinsic value, genetic value)
	Science
	Education
	Cultural
	Spiritual
Passive-Use Values	Option
	Existence
	Bequest

Box A: Guidance for Cost-Benefit Analysis from White House Office of Management and Budget (OMB)

The White House Office of Management and Budget (OMB) provides updated guidance on the use of cost-benefit analysis in OMB Circular A-4, September 17, 2003. Following is an excerpt from the circular.

The Need for Analysis of Proposed Regulatory Actions

A good regulatory analysis is designed to inform the public and other parts of the Government (as well as the agency conducting the analysis) of the effects of alternative actions. Regulatory analysis sometimes will show that a proposed action is misguided, but it can also demonstrate that well-conceived actions are reasonable and justified.

Benefit-cost analysis is a primary tool used for regulatory analysis. Where all benefits and costs can be quantified and expressed in monetary units, benefit-cost analysis provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects). This is useful information for decision makers and the public to receive, even when economic efficiency is not the only or the overriding public policy objective.

It will not always be possible to express in monetary units all of the important benefits and costs. When it is not, the most efficient alternative will not necessarily be the one with the largest quantified and monetized net-benefit estimate. In such cases, you should exercise professional judgment in determining how important the non-quantified benefits or costs may be in the context of the overall analysis. If the non-quantified benefits or costs are likely to be important, you should carry out a "threshold" analysis to evaluate their significance. Threshold or "break-even" analysis answers the question, "How small could the value of the non-quantified benefits be (or how large would the value of the non-quantified costs need to be) before the rule would yield zero net benefits?" In addition to threshold analysis you should indicate, where possible, which non-quantified effects are most important and why.

Key Elements of a Regulatory Analysis

A good regulatory analysis should include the following three basic elements: (1) a statement of the need for the proposed action, (2) an examination of alternative approaches, and (3) an evaluation of the benefits and costs – quantitative and qualitative – of the proposed action and the main alternatives identified by the analysis.

To evaluate properly the benefits and costs of regulations and their alternatives, you will need to do the following:

- Explain how the actions required by the rule are linked to the expected benefits. For example, indicate how additional safety equipment will reduce safety risks. A similar analysis should be done for each of the alternatives.

- Identify a baseline. Benefits and costs are defined in comparison with a clearly stated alternative. This normally will be a "no action" baseline: what the world will be like if the proposed rule is not adopted. Comparisons to a "next best" alternative are also especially useful.

- Identify the expected undesirable side-effects and ancillary benefits of the proposed regulatory action and the alternatives. These should be added to the direct benefits and costs as appropriate.

With this information, you should be able to assess quantitatively the benefits and costs of the proposed rule and its alternatives. A complete regulatory analysis includes a discussion of non-quantified as well as quantified benefits and costs.

In theory, consumer surplus could be calculated by summing all of the use and passive-use benefits enumerated in Table 3 however in practice it is very difficult to quantify many of them. In some cases the methods exist, only resources are scarce to implement them. For example, we know that protected natural habitat, especially forest, provides important watershed functions. USDA Forest Service made an attempt to quantify the value of this watershed function in terms of clean water provided to downstream users by the 186 million acres of forest service lands (Sedell et al 2000). Their method generated a value estimate of $4.06 billion per year. Applying this same method to the 83.6 million acres in the park system could generate a significant, albeit smaller,[1] estimate. In the case of passive use values, estimates for NPS sites range from billions of dollars to "priceless," but more precise figures are not yet available. The only conclusive statement that can be made on the topic at this point in time is that it is an error not to acknowledge a positive value for passive-use.[2]

Fortunately, a great deal of research has been conducted on the estimation of consumer surplus from recreation. The methods to determine consumer surplus from recreation include specialized surveys of visitors and using travel costs to trace out a demand curve for recreation at specific sites. A variety of U.S. Government departments and agencies use these methods such as the Department of Justice in assessing natural resource damage from oil spills, and the Environmental Protection Agency in estimating the benefits of regulations that protect natural ecosystems. A drawback of the methods for estimating consumer surplus from recreation is that they are data intensive and costly to implement. As a result, the U.S. Government allows estimates to be made based on extrapolations from existing studies (OMB Circular A-4).

NPS recently commissioned an updated summary of consumer surplus estimates relevant to national parks (Kaval and Loomis 2003) that included 1,239 estimates from 593 independent studies conducted at NPS sites and other wilderness areas in the U.S. The database includes estimates for a wide range of activities including hiking, backpacking, camping, bird watching and wildlife viewing, bicycling, fishing, and a host of others. The average consumer surplus from a single recreational visit to an NPS site was $50.94,[3] adjusted for inflation.[4] That is, an average park visitor enjoys approximately $51 of value beyond all the costs he or she incurs to visit a park.

Table 3:
Economic benefits of *RECREATION* AT NPS SITES

NPS Sites	*Visitors*	*Consumer Surplus*	*Social Benefit*
Historic/Memorial	95,549,392	$9.06	$865,778,479
Natural Resource-Based	181,358,945	$50.94	$9,239,239,174
All NPS Sites	276,908,337	--	$10,105,017,652

The NPS study does not include estimates of consumer surplus from visits to historic sites, and indeed very little research has been conducted in this area. Only one peer-reviewed academic paper (Leggett et al 2003) examines a historic site in NPS, and provides an average consumer surplus value of $9.06, adjusted for inflation. Some reasons why this value is so low compared to natural resource-based parks is its location in an urban area where there are many substitute recreational activities, and the limited time spent by visitors at the site. Since there is only one study, we use this value only to illustrate our point – further study is required to develop and refine consumer surplus estimates for historic sites.

Given individual surplus values, we can compute the social economic benefit from recreation at NPS sites – that is, the total of all visitors' surplus values – by simply multiplying by the number of visitors. In 2004, the national park system received 276,908,337 visitors, and of them 35 percent visited historic sites. The economic benefit of recreational park visitation in 2004 was therefore $10.1 billion (see Table 3).

It is important to note that these estimates are subject to error generated by extrapolating from existing studies. Using an average value for park visits masks a great deal of the variation in the quality of experience across parks with very different attributes. In addition, the number of studies examining each activity conducted in parks varies and the

[1] It is important to note NPS lands are not only smaller in extension than USDA Forest Service, they also include vast areas of non-forested lands, as well as extensive areas in Alaska where there are few or no (human) downstream water users. Given that, the value estimate would likely not exceed $1 billion.

[2] While we are not able to include a precise passive use estimate, the Federal Government does support its consideration in administrative and judicial decision making (see Arrow, K., R. Solow, P.Portney, E. Leamer, R. Radner and H. Schuman. 1993. Report of the NOAA Panel on Contingent Valuation. Federal Register 58(10):4602-4614)

[3] Kaval and Loomis provide an average recreational surplus estimate of $52.08 from studies conducted solely at NPS sites. We chose to include a larger sample of studies (n=947 vs. n=49 for just NPS sites) that includes comparable wilderness areas and activities that occur at NPS sites, which provides an average value of $50.94. While a more conservative estimate, it is more robust given the larger sample size.

[4] All dollar figures adjusted for inflation through 2004 per CPI, Economic Report to the President.

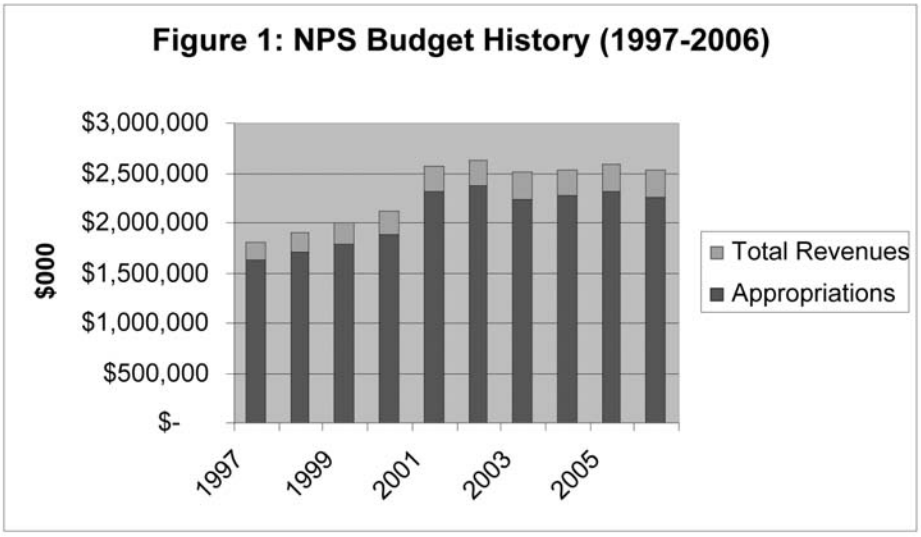
statistical variation in their results can be large. Also, the average value is based on a composition of studies on specific activities that may not represent the array of activities available at all parks. Lastly, for historic recreation, far more primary field research must be conducted at additional sites, many of which are materially different from Fort Sumter from which we derive the value in Table 3. We are able to resolve several of these issues in our treatment of case studies later in this chapter.

It is important to re-iterate that this estimate of $10.1 billion is conservative. One consideration is the rate at which consumer surplus for recreational visits to parks may increase over time. Since NPS sites are limited in area and access to wilderness areas continues to diminish, but population continues to increase, the value of a visit to an NPS site is likely to increase reflecting diminishing supply relative to demand. We must also restate that the benefits of the national park system extend well beyond that of recreation. If all use and passive-use values presented in Table 2 were quantified, the total social economic benefits of the national park system would likely be multiples of the recreational value of $10.1 billion. Passive use value for example of the Statue of Liberty, Mount Rushmore, Old Faithful, the Grand Canyon, Yosemite Valley, and many other sites in the system are likely to be priceless. Add to this ecosystem services and the intrinsic values of biodiversity protected at NPS sites and $10.1 billion may begin to seem a quite modest number.

Costs of National Park Service

The cost of NPS is simply the money spent in a given year to manage the system.[5] According to US Department of the Interior's Budget Justification for NPS, also known as the "Greenbook," federal appropriations in 2004, 2005, and 2006 were $2.3 billion, and were complemented by $0.3 billion in revenues, for a total budget of $2.6 billion (Figure 1).

In 1998, NPS with the assistance of National Parks Conservation Association, and more recently the Student Conservation Association, began a series of rigorous financial analyses of its sites called the Business Plan Initiative (BPI). These business plans provide an understanding of the current use of funding as well as the required budget to achieve a minimum standard of management.



Management functions include maintaining infrastructure, accommodating visitation, conservation for future generations, as well as research and study of the sites to improve management over time. According to recent calculations based on NPS business plans, the park system requires additional funding of $0.8 billion per year to achieve a basic level of management (this calculation focuses on the additional funds required for park operations and makes no allowance for additional investment in operating funds for regional or national NPS offices). That is, in order to continue providing the economic benefits of the parks in terms of current visitor satisfaction today and prevention of deterioration of the parks over the long term, the NPS budget must increase to about $3.4 billion per year.

Cost-Benefit Comparison

According to public finance theory, when the social economic benefits generated by a government project or program exceed the costs to implement it, there is a clear justification for government spending (Rosen 1988). The relationship between benefits and costs is often expressed as a ratio: such as, "the benefit-cost ratio of the project is 1.5," meaning the benefits to society are one and a half times the cost of the project – a favorable result. Some economists prefer to merely subtract costs from benefits to determine if the *net* social benefit is positive, again a signal for government to invest.

In the case of the national park system, we estimate the benefit-cost ratio by dividing annual social economic benefits, estimated to be greater than $10.1 billion by the annual NPS budget of $2.6 billion. The benefit-cost ratio is therefore greater than 3.9, and the net social benefit is greater than $7.5 billion – an admirable result for any public sector investment (Table 4). Considering only the estimable benefits presented here, NPS is generating economic benefits well in excess of the cost of maintaining the system. *In fact, the public enjoys at least*

[5]OMB recommends consideration of opportunity cost, which in this case is the commercial value of exploiting natural resources at NPS sites. Because this analysis does not consider changing the protected status of NPS sites, but only improved management, we do not estimate that opportunity cost here.

TABLE 4: COST-BENEFIT RATIO OF NPS			
NPS Economic Benefits	*NPS Budget*	*Cost-Benefit Ratio*	*Justified Public Expenditure (Benefits/Cost > 1)?*
>$10.1 Billion	$2.6 Billion	>3.9	YES

TABLE 5: ECONOMIC SURPLUS FROM RECREATION AT NPS CASE STUDY SITES

NPS Sites	*Visitation*[1]	*Recreational Value per Activity Day*[2]	*Recreational Benefits*[3] *($mil)*	*Budget*[4] *($mil)*	*Benefit to Cost Ratio*
Acadia	2,207,847	$45.47	$100.4	$7.1	14.1
Apostle Islands	151,881[5]	$45.08	$6.8	$2.6	2.6
Biscayne	478,304	$39.83	$19.1	$3.4	5.5
Denali	404,236	$49.49	$20.0	$14.1	1.4
Fort Sumter	781,239	$9.06	$7.1	$1.8	4.0
Gettysburg	1,724,420	$9.06	$15.6	$7.0	2.2
Joshua Tree	1,243,659	$38.49	$47.9	$6.4	7.5
Point Reyes	1,960,055	$62.05	$121.6	$8.6	14.1
Rocky Mountain	2,781,899	$47.65	$132.6	$15.8	8.4
Sequoia & Kings Canyon	1,525,212	$38.43	$58.6	$23.1	2.5
Shenandoah	1,261,000	$55.48	$70.0	$15.7	4.4
Zion	2,677,342	$36.82	$98.6	$9.4	10.5

[1] Visitation indicates number of visits to NPS site. Source: National Park Service Statistical Abstract 2004.
[2] Estimates of recreational value are based on NPS visitor studies indicating most common recreational activities and corresponding values for these activities drawn from a database of 947 recreational estimates per activity day (Kaval and Loomis 2003). For historic sites (Fort Sumter and Gettysburg), a consumer surplus estimate developed for Fort Sumter by Leggett et al (2003) is applied to both sites.
[3] Economic benefit estimates only reflect recreational values. A range of other potential site values (e.g., ecosystem services, science/education, passive use) are not reflected here (see Table 3). Therefore, these estimates should be viewed as conservative.
[4] In order to capture total funding (i.e., base funding plus other funding), we have drawn budget information from each park's most recent business plan. Where budget information is from fiscal years other than FY2004, it has been adjusted for inflation to 2004 dollars. No business plans were available for Biscayne and Fort Sumter; budget estimates for these sites reflect their base funding in FY2004.
Note: All figures adjusted to 2004 dollars.
[5] Visitation number believed to be an underestimate due to multiple unmonitored entry points to site.

four times the value of each dollar spent by the federal government.

We perform the same analysis for each of our twelve NPS case study sites (Table 5). The sites with the highest benefit to cost ratio are Acadia, Point Reyes, and Zion. The sites with the lowest ratios are Denali, Gettysburg, Sequoia & Kings Canyon, and Apostle Islands. Low ratios are the result of the remoteness and low visitation of Denali and Apostle Islands, and the potentially conservative surplus estimate for historic sites applied to Gettysburg. Nonetheless, all the case study sites show a benefit to cost ratio in excess of 1.

Cost-Benefit Analysis of the NPS Budget Shortfall

What about the budgetary shortfall for NPS – how do we determine if additional funding should be allocated to the system? According to OMB, this assessment should include three elements: 1) a statement of the need for the proposed action; (2) an examination of alternative approaches; and, 3) an evaluation of the benefits and costs – quantitative and qualitative – of the proposed action and the main alternatives identified by the analysis.

Statement of Need for the Proposed Action

The *National Park System Organic Act* mandates that the National Park Service conserve, in an unimpaired state, the natural and historic amenities of the park system for present and future generations. But according to NPS business plans, the current NPS budget falls short of allowing the system to fully achieve this purpose. A recent study by the U.S. Government Accountability Office (2006) draws similar conclusions, noting that funding for daily operations has declined in inflation-adjusted terms from 2001-2005. As a result, parks are cutting services:

> *"All park units we visited received project-related allocations but most park units experienced declines in inflation-adjusted terms in their allocations for daily operations. Each of the 12 park units reported their daily operations allocations were not sufficient to address increases in operating costs, such as salaries and new Park Service requirements. In response, officials reported that they either eliminated or reduced services, or relied on other authorized sources to pay operating expenses that have historically been paid with allocations for daily operations" (US GAO 2006).*

Evidence of a decline in management is documented in a series of reports by National Parks Conservation Association (NPCA), entitled *State of the Parks and Faded Glory: Top Ten Reasons to Reinvest in America's National Park Heritage* (www.npca.org). According to NPCA, some of the main issues threatening NPS' ability to fulfill its purpose include:

- *Law enforcement* – NPS suffers from inadequate resources for law enforcement. In one park alone, Sequoia and Kings Canyon, park officials seized $176 million worth of marijuana plants in 2004. In 2002, NPS recorded 11,000 violations of the Archaeological Resources Protection Act of 1979. In its fiscal 2005 budget, NPS identified illegal removal of wildlife as a factor in the decline of at least 29 species of wildlife, and could cause extirpation of 19 species from parks. Illegal fishing and coral poaching are causing degradation of Virgin Islands National Park and Biscayne National Park. In addition, NPS needs resources

to meet demands of Homeland Security requirements.

- *Invasive species* – Approximately 2.6 million acres of parkland host non-native invasive species, changing the structure and function of the ecosystems NPS is charged to conserve. Plants, fish, and insects from as far away as South America and Asia are replacing native species in many parks. For example, in Theodore Roosevelt National Park in North Dakota, more than 60 non-native species have found their way into the park – including leafy spurge that invades native grasslands that wild bison and elk depend on for food. Joshua Tree National Park is overrun by non-native grasses such as cheatgrass and red brome, which spur wildfire and compete with native species for water.

- *Historic preservation* – Inadequate resources have resulted in insufficient care and preservation of historic artifacts, buildings, and other structures. More than half of the 100 million items in NPS collections have yet to be catalogued or shared with visitors. Two thirds of historic buildings and structures in the national parks are in need of repair.

- *Infrastructure* – Backlogged road and bridge repair at NPS sites exceeds $3 billion. In addition, damages caused by natural events such as hurricanes add a significant burden to repair budgets.

To some extent, NPS attempts to measure its effectiveness through periodic visitor surveys. The survey asks visitors to rate their experience at various NPS sites based on measures such as the quality of facilities, educational resources and ranger accessibility. However, solid marks on the visitor survey do not tell the entire story. Many of the issues identified above are not covered in the survey nor can many of these issues be immediately detected during a typical recreational visit.

Examination of Alternative Approaches

Cost-benefit analysis generally tests the difference between one or more alternatives. Often, the test is between the current situation ("baseline") and a proposed change. In this case we evaluate two alternatives: a) leave the budget unaltered; or b) allocate an additional $800 million to NPS in annual funding.

We must also look at the issue from one of two perspectives. Some contend that NPS sites are in a state of decline and that the proposed increase in budget is required to maintain basic operations. Others may contend that the national park system is maintained in suitable condition and any increase in budget would only be justified by marked improvement in NPS sites. We examine both positions.

Evaluation of Benefits and Costs

We assess the merits of the two alternatives by comparing the costs and benefits of the proposed change in the NPS budget, allowing us to determine which of the two alternatives produces the greater economic return to society. The cost implications of the two alternatives are clear. In the first scenario, costs remain as currently budgeted at $2.6 billion per year. In the second scenario, costs rise by $800 million per year, to a total annual budget for NPS of approximately $3.4 billion. The benefits are more difficult to quantify. Given the available data, it is not possible to estimate accurately the difference in benefits between the two scenarios.

However, we can perform a threshold analysis that tells us the degree of change in the quality of NPS sites that would justify an increase in spending, keeping in mind that such an increase may either just prevent further degradation of NPS sites or might improve them. In the simplest[6] form of this analysis we consider the NPS budget shortfall ($800 million) as a percentage of national park system-wide economic benefits (>$10 billion) – a threshold figure of about eight percent. This suggests funding the NPS budget shortfall is justified where it would increase park benefits, or prevent the loss of park benefits, by eight percent.

The next question is: how likely is it that funding the budget shortfall would generate an eight percent change in economic benefits (increase, or prevention of loss)? One way of answering that question is to examine recreational benefits, where the potential change in *quantity* of park visitors or the *quality* of the visitor experience, both of which are factors in the total economic value of recreation at national parks. Because it is easiest to measure changes in park visitation, we will use only that variable for this example, but it is important to note that changes in visitor experience are equally as important in generating economic benefits estimates (e.g. an increase in the quality of a visitor's experience may increase total economic value by as much or more than additional visitation). So, examining only changes in visitation, we assume a change in park quality would affect visitation over time, and we ask whether an eight percent change in visitation (which translates into an eight percent change in recreational benefits, all other things being equal) seems likely relative to normal variability of park visitation. Over the past ten years the difference between the lowest visitation year and highest was eight percent (U.S. Department of Interior 2006). In this context, our conclusion is that indeed, an overall change in economic benefits of eight percent due

[6]This analysis does not account for inter-temporal effects of budgetary changes. Impacts such as invasive species may not be perceived immediately, but may have costly long-term impacts. A more sophisticated modeling approach is necessary to fully account for the temporal nature of such impacts, and to calculate net present value of future costs and benefits accordingly.

TABLE 6:
ANALYSIS OF ESTIMATED BUDGET SHORTFALLS AND THRESHOLD ANALYSIS FOR NPS SITES

NPS Sites	*Economic Benefits -- Recreation ($mil)*	*Budget ($mil)*	*Estimated Total Budget Needs[1] ($mil)*	*Budget Shortfall ($mil)*	*% Funding Increase Required to Meet Budget Needs*	*Budget Shortfall as % of Economic Benefits*
Acadia	$100.4	$7.1	$15.1	$8.0	112%	8.0%
Apostle Islands	$6.8	$2.6	$6.4	$3.7	141%	54.4%
Biscayne	$19.1	$3.4	$4.2	$0.8	22%	3.9%
Denali	$20.0	$14.1	$18.0	$3.9	28%	19.6%
Fort Sumter	$7.1	$1.8	NA	NA	NA	NA
Gettysburg	$15.6	$7.0	$10.8	$3.8	54%	24.3%
Joshua Tree	$47.9	$6.4	$9.2	$2.8	44%	5.9%
Point Reyes	$121.6	$8.6	$13.9	$5.2	61%	4.3%
Rocky Mountain	$132.6	$15.8	$19.3	$3.5	22%	2.7%
Sequoia & Kings Canyon	$58.6	$23.1	$38.0	$14.8	64%	25.3%
Shenandoah	$70.0	$15.7	$23.8	$8.0	51%	11.5%
Zion	$98.6	$9.4	$14.3	$4.8	52%	4.9%

[1] Estimates of total budget needs are based on each site's business plan. Where business plans are not from 2004, budget needs are adjusted for inflation to 2004 dollars. No business plans were available for Biscayne and Fort Sumter; estimates of budget needs for Biscayne are based on National Parks Conservation Association, State of the Parks: Biscayne National Park 2006. No estimates of budget needs are available for Fort Sumter.
Note: All figures adjusted to 2004 dollars.

to changes in visitation alone is well within the realm of possibility. Now, considering that an improvement in the quality of the visitor experience also increases recreational benefits, you may conclude that *less* than an eight percent increase in visitation could generate sufficient economic benefits to justify the proposed increase in park budgets.

From this analysis it is readily seen that the threshold is quite low for justifying the proposed budget increase for NPS in terms of just recreational benefits. It is important to mention that a number of economic benefits enumerated earlier in this section have not been quantified in this analysis – most of which do not rely on increased visitation. If we had included those benefits in the threshold analysis, the results would be even more convincing. In other words, the proposed budget increase is an economically justifiable public policy decision.

We performed a similar analysis for our 12 case study sites to illustrate the application of this methodology at a site level (Table 6). As expected the threshold to justify proposed budget increases varies, falling both above and below the national figure of eight percent. NPS sites with lower thresholds are Rocky Mountain, Biscayne, Point Reyes, Zion, and Joshua Tree. The most remote and least visited, Apostle Islands, has the highest threshold necessary to justify proposed budgetary increases. Again, we re-iterate that we estimate economic benefits for recreation alone, which is a function of visitation and quality of the visitor experience. Because remote parks such as Apostle Islands have low visitation, their recreational benefits are commensurately low, but the other non-quantified benefits (e.g. passive use) may still be great.

Conclusion

Despite limitations to quantifying economic benefits of the national park system, available data are sufficient to demonstrate clearly the justification for funding NPS. More important, failure to address budget shortfalls by fully funding needs delineated in NPS site-level business plans may cause a decline in economic benefits generated by parks. Such a decline, involving the deterioration of natural and man-made assets of the system, could result in long-term economic losses to society far in excess of the short-term budgetary savings from failing to fully fund the NPS budget.

This analysis is carried by quantitative estimates for consumer surplus from recreation at NPS sites. This however is only the beginning of the economic value generated by NPS sites – most values have yet to be quantified. Once considered, the full range of use and passive-use values would make an already decisive analysis even more convincing.

Chapter 3: Economic Impacts of National Parks

TABLE 7:
NPS SYSTEM-WIDE LOCAL ECONOMIC IMPACT ESTIMATES

Annual visitor spending ($billion)	*Sales ($billion)*	*Personal income ($billion)*	*Jobs*	*Value Added ($billion)*
11.3*	13.3	4.8	267,000	7.5

* Public sector (NPS) spending adds $2-3 billion to this estimate for a total of about $14 billion in annual direct spending.
Source: Stynes and Sun 2003
Note: All figures adjusted to 2004 dollars.

Economic impact analysis is an approach used by policymakers, industry, and others to assess how flows of economic activity affect local output, employment, and income. Such flows may range from tourism spending to the opening of a new manufacturing plant. Unlike cost-benefit analysis (Chapter 2), which estimates net *benefits to society,* economic impact analysis measures *economic activity* for specific regions or economic sectors.

National parks and surrounding communities have a shared interest in understanding the economic impacts of parks on the local economy. In response to these needs, the National Park Service (NPS) developed the *Money Generation Model* (MGM) in 1990 to estimate park visitor spending in the local area and the impacts of this spending on a number of economic indicators, including sales, personal income, jobs, and value added.[7] The model was updated in 2000 as MGM2, with estimates developed for the overall national park system, as well as specific parks (Stynes and Sun 2003). New and updated estimates continue to be made available at http://web4.canr.msu.edu/MGM2/.

In simplified form, MGM2 estimates economic impacts by multiplying the number of park visitors by average spending per visitor and regional economic multipliers. The initial impact of visitor spending (e.g., park, restaurant, lodging, and retail spending) are the "direct effects." Then multipliers capture the "secondary effects" of visitor spending as it re-circulates through the local economy.[8] The MGM2 approach involves segmenting visitors by local residents, non-local visitors on day trips, and overnight visitors (motel or camping), and applying different spending estimates to each segment. Key visitor spending categories omitted from the MGM2 model include airfares and transportation expenses outside the local region, as well as durable goods purchases and other at-home expenses. Impacts of park operations and construction activity are estimated in a separate model (Stynes, personal communication, 4/13/06).

Economic Impact Estimates: System-Wide and Case Study Sites

According to MGM2 estimates, national park visitors spent $11.3 billion in areas local to parks in 2004.[9] The direct effects of this spending supported $9.2 billion in sales and 212,000 jobs at local tourism-related businesses, generated $3.3 billion in personal income, and provided $4.9 billion in value added.[10] When multiplier effects are taken into account, the total economic impact of visitor spending in areas surrounding parks was $13.3 billion in sales, 267,000 jobs, $4.8 billion in personal income, and $7.5 billion in value added (Table 7). However, as noted by Stynes and Sun (2003), these represent conservative estimates due to the assumptions of the MGM2 model. They speculate that "estimates counting all visitor spending would be 2-4 times greater than the figures reported here."

Moreover, it should be noted that MGM2 spending estimates for local park regions do not reflect public sector spending by NPS on operations, projects, and so forth. System-wide, this would add approximately $2-3 billion to direct spending estimates – for a total of about $14 billion (Stynes, personal communication, 1/10/06).

In addition to system-wide estimates, we examine economic impacts for our 12 NPS case study sites. Table 8 presents estimates for each park produced by the MGM2 model in 2003 (adjusted to 2004 dollars). The sites with the highest total visitor spending are Rocky Mountain and Acadia, reflecting their high visitation levels and park

[7]"Sales" (or output) is the dollar value of goods or services produced or sold. "Personal income" includes wages, salaries, and payroll benefits. "Jobs" reflects the number of jobs required to produce a given volume of sales/production. "Value added" represents the contribution to gross regional/local product. It includes personal income, profits and rents of private firms, and indirect business taxes accruing to regional/local government.

[8]Capturing secondary effects generally requires the use of input-output models. MGM2 relies on IMPLAN, a software and database package for estimating 528 sector-specific input-output models for any region consisting of one or more counties.

[9]Economic impacts reflect the most recent MGM2 estimates for national park system-wide local economic impacts (2001), adjusted for inflation to 2004 dollars.

[10]The difference between visitor spending ($11.3 billion) and direct sales ($9.2 billion) of $2 billion occurs because this spending is for goods and services provided outside of the local economy.

area spending opportunities. In the local areas of the two parks, this spending supports about $400 million in sales, close to 9,000 jobs, and more than $200 million in value added. While Zion receives a similar number of visitors as Rocky Mountain and Acadia, total visitor spending for Zion is only about half as much as these parks due to more limited spending opportunities in Zion's local area. Visitor spending was lowest for Apostle Islands. Due to the park's remote location, it receives fewer visitors and spending opportunities in the surrounding area are limited.

Opportunities for Refining and Extending Impact Estimates

Developing a model for estimating the economic impacts of each park and historic site within the national park system is no easy task. System-wide, there are a great diversity of sites and visitors, but limited data on visitation patterns and spending. In addressing such problems, MGM2 sets forth a range of modeling parameters and assumptions as a basis for estimating park-specific and system-wide economic impacts. The model incorporates park-specific visitor survey data where available, and where it is not, favors conservative assumptions as a means of ensuring estimates (at least as a lower bound) are defensible.

With system-wide visitor spending around parks of about $11 billion, generating $13.3 billion in sales and supporting 267,000 jobs, the MGM2 model provides clear evidence that the local economic impacts of national parks are substantial. While we support the MGM2 model's approach to estimation, our analysis of case study sites suggests there may be opportunities for refinements that could contribute to improved park-specific estimates, as well as a better understanding of park economic impacts beyond local areas. Below we explore these opportunities, highlighting factors for consideration.

Incorporating park-specific information to improve visitor spending estimates. Each national park is unique, but general spending averages embedded in the MGM2 model do not capture spending variations associated with these unique characteristics. As visitor surveys are conducted, these characteristics can better be taken into account in spending profiles. But presently, visitor survey information is only available for a small number of parks. For other parks MGM2 applies an assumption of "high," "medium," or "low" spending based on an evaluation of spending opportunities and other factors (e.g., local retail activity). However, even without visitor survey data, there may be park-specific information available that, if taken into account, could contribute to improvements in the precision of spending estimates. For example:

- *Fort Sumter National Monument* – According to MGM2, Fort Sumter received 840,000 visits in 2003 and overall visitor spending was $17.3 million, or about $20 per visitor. However, accounting for visitor spending on the ferry ride to Fort Sumter alone would add about 50 percent to this total. The ferry charges $12 for adults, $11 for seniors, and $6 for children ages 6-11, so a rough average of $10 per visitor would equal about $8.4 million in visitor spending.

- *Denali National Park and Preserve* – Numerous businesses provide services within the park, from lodging and food, to supporting hiking, mountaineering, and rafting trips, to providing air taxi and flightseeing services. Denali's contracts with these businesses provide a source of information on visitor spending, as nearly all gross receipts of these businesses reflect visitor spending. In 2002, gross receipts of these businesses were over $15 million, with the major park concession to ARAMARK for lodging, campgrounds, food, and tours accounting for about 75 percent of the total.

Adjusting the definition of "local" area, where appropriate. MGM2 estimates only capture a subset of visitor spending, within 50-100 miles of national parks. This approach is taken to ensure spending can be attributed to the park visited. For some parks, gateway communities are located outside the 50-100 mile radius applied by MGM2. Where challenges of attribution can be surmounted, adjustments to account for spending in these gateway areas would improve impact estimates. For example:

TABLE 8:
LOCAL ECONOMIC IMPACT ESTIMATES FOR NPS CASE STUDY SITES

NPS Sites	*Total annual visitor spending ($mil)*	*Sales ($mil)*	*Personal income ($mil)*	*Jobs*	*Value Added ($mil)*
Acadia	$137.1	$172.8	$61.7	3,556	$97.0
Apostle Islands	$7.5	$7.9	$2.7	195	$4.3
Biscayne	$24.0	$28.9	$11.3	425	$17.7
Denali[1]	$22.7	$27.1	$9.7	562	$15.4
Fort Sumter	$17.8	$20.0	$7.6	391	$12.0
Gettysburg	$95.2	$112.3	$37.5	2,851	$59.7
Joshua Tree	$49.3	$62.3	$23.2	1,152	$36.6
Point Reyes	$89.0	$111.0	$41.5	2,065	$65.4
Rocky Mountain	$193.6	$209.3	$71.1	5,178	$112.6
Sequoia & Kings Canyon	$73.9	$102.2	$39.5	1,882	$61.3
Shenandoah	$43.9	$55.1	$20.5	1,010	$32.3
Zion	$83.1	$95.4	$34.7	2,013	$54.7

[1] MGM2 spending profiles do not apply well to Denali or other Alaskan parks. Spending averages are based on surveys of visitors to parks in the lower 48 states; they do not reflect a range of spending common for visitors to Alaskan parks. The MGM2 definition of region (50-100 miles from the park) and visitor segments also do not apply well (Stynes, personal communication, 4/13/06).
Source: National Park Service Money Generation Model 2, see http://web4.canr.msu.edu/MGM2/
Note: All figures adjusted to 2004 dollars.

- *Denali National Park and Preserve* – Nearly all visitors to Denali travel through Anchorage, either arriving there by air or via a cruise ship. On their way to Denali, these visitors may spend money on lodging in Anchorage, as well as food, retail, and transportation. While the MGM2 model captures visitor spending within Denali's small gateway community of Glitter Gulch, a great proportion of visitor spending occurs outside this community, in Anchorage and on travel to and from the park. For illustration, Alaska visitor expenditure studies indicate that the average vacation/pleasure visitor spent $119/night in 2001 (Northern Economics 2002). If one additional night of visitor spending were attributed to Denali visitors (e.g., spending in Anchorage or elsewhere outside the park and Glitter Gulch), this would add about $50 million to park visitor spending. Consider that MGM2 estimates visitors to Denali spent only $22 million in 2003, and it is clear that assumptions about the inclusion and attribution of visitor spending can substantially affect overall spending and impact estimates.

Estimating impacts at the state level, where appropriate. Where park impacts are substantial and extend well beyond local areas, conducting an additional impact analysis at the state level may provide a more complete picture of a park's economic impacts. For example:

- *Acadia National Park* – Nearly all visitors to Acadia travel there by car (Littlejohn 1999), following a travel corridor of more than 200 miles through the state of Maine. Traveling to and from the park, many of these visitors spend money shopping at retail outlets, and for food and lodging. Acadia is the primary destination of many of Maine's tourists. A recent study of travel and tourism found that 21 percent of overnight visitors to Maine in 2004 visited Acadia/Bar Harbor, and 18 percent of overnight visitors indicated that visiting the Acadia/Downeast region was their primary reason for travel to Maine (Longwoods International 2005).

Estimating economic impacts of international visitors to national parks. Little is known about the role national parks play in attracting international visitors to the United States. For example, a recent visitor study of Joshua Tree National Park (Le et al 2004) indicates international visitors comprised eight percent of total visitation, equal to about 100,000 international visitors. About 30 percent of visitors were from Canada, 40 percent from England and Germany, and the remainder from 15 other countries. A study might aim to estimate the number of international visitors at each park, the importance of national parks in generating trips to the U.S., and the spending of these visitors.

Conclusion

Conservatively estimated, visitors to national parks spend over $11 billion annually in the local regions of the parks, supporting $13.3 billion in sales, 267,000 jobs, and 7.5 billion in value added. If all visitor spending were taken into account (e.g., spending outside the local area), estimates might be 2-4 times greater. Clearly, national parks play an important role in the economies of their surrounding communities, as well as in the national tourism economy.

In considering the economic significance of national parks, however, caution should be taken in lending too much weight to local economic impacts. As noted by Stynes and Sun (2003), much of the value parks provide society is not reflected in economic impacts:

> *"The values that most people associate with National Parks are very different from those captured in an economic impact analysis. From an economic impact standpoint, the most valuable park visitors are likely 'windshield tourists', who make a quick tour of the park and head for souvenir shops, restaurants and other commercial attractions, usually in the gateway communities outside the park. Park visitors do not spend money while in the backcountry or engaged in activities such as hiking, fishing, observing nature, or learning about history within the park."*

Impacts represent an important measure of the role of national parks in local economies. But to develop a more complete picture of parks' economic significance, a broader set of indicators needs to be considered that includes economic benefits, impacts, and growth.

Chapter 4: Economic Growth and National Parks

Another aspect of the economic importance of the national park system is its role in local economic growth. Since the creation of the country's first national park, Yellowstone in 1872, communities have debated over the potential economic impact of parks. Debate most often focused on the conservation of natural resources that might otherwise be used for economic purposes, such as timber and minerals, as well restrictions on the development of tourism facilities in areas of public interest slated to become protected. Contemporary analysis of economic growth patterns around parks and other wilderness areas in the U.S. suggest that protected lands actually correlate more with greater economic growth than do lands utilized for natural resource exploitation. Indeed, some analysts today view NPS sites as engines for rural economic development, especially in an era of rapidly improving telecommunications and transportation infrastructure that allows professionals to locate close to the natural amenities that national parks provide. Today, debate is shifting from *whether* growth will happen, to how to manage it. NPS and neighboring communities may need to work together to ensure that the increasing jobs, income, and population do not threaten the natural amenities that serve as the engine of this growth.

Measuring Economic Growth

Economists measure growth of an economy in a variety of ways. Many people are familiar with the term *Gross Domestic Product* (GDP), for example, which measures the total activity in an economy. Other measures include changes in population, jobs, per capita income, and earnings per job, among others. All of these measures tell us how the economy, in aggregate, is doing. Further examination of growth also includes measuring the distribution of wealth and affordability of basic necessities, such as housing, to discern how economic circumstances are changing for different segments of the population. It is necessary to look at this wide variety of measures to have a complete picture of economic growth.

Amenity-Driven Economic Growth

In recent years geographers have turned their attention to the phenomenon of rapid growth rates in rural areas of the U.S. Most explain this as *amenity-driven growth*, where individuals choose to live near wilderness areas where quality of life is considered high due to outdoor recreation opportunities, small town characteristics, and scenic beauty. In a recent series of studies edited by Green et al (2005), geographers examine the importance of natural amenities versus other drivers of migration. They conclude that rural areas in the U.S. with protected lands and other natural amenities (wilderness areas) are growing faster than other rural areas, and since 1970 faster than metropolitan areas (Table 9), and that natural amenities are one important factor in determining growth, as are infrastructure and accessibility. USDA Forest Service (2004) published a review of approximately 80 studies of amenity-driven growth and arrived at much the same conclusions.

A facet of this analysis is referred to as "Old West" versus "New West," where amenity-driven growth in western U.S. states is compared to growth driven by natural resource exploitation, such as logging and mining. A common complaint of placing lands under protection is the consequent loss of jobs in these industries. However, multiple analyses indicate that there is no loss in economic growth in areas with protected lands, and in some cases growth exceeds that of similar nearby areas that rely on natural resource exploitation. In a 1998 study Duffy-Deno found there to be no difference in growth between counties in the eight states of the inter-mountain west that relied on logging and mining and those that had protected lands. In a 2000 study, Lorah found that counties with protected lands are developing new and more diverse economic activities that in fact counterbalance the economic decline of natural resource industries. Economic diversification also tends to be complemented by migration of retirees to areas rich in natural amenities (McGranahan, 1999). Lorah and Southwick (2003) go on to find that growth in areas adjacent to protected areas is faster than other rural areas throughout the western U.S. All of these findings are corroborated by further evidence from a series of empirical studies conducted by Sonoran Institute (2004).[11] As more studies are completed, the trend appears to show that natural resource industries are declining in the U.S. relative to the types of economic activity that occur in ameni-

TABLE 9:
Percent County Population Change

Decade	*Metropolitan*	*All Non-Metropolitan*	*[Proximate to] Wilderness*
1960-1970	17.1%	4.3%	12.8%
1970-1980	10.6%	14.3%	31.4%
1980-1990	11.6%	3.9%	12.0%
1990-2000	13.9%	10.2%	29.9%

Source: Dearien et al 2005, as adapted from Rudzitis, 1996

ty-rich areas, which attract not only tourism but also retirees and knowledge-based businesses that need only good telecommunications and air travel infrastructure ("modem cowboys").

The eastern U.S. states have not enjoyed the same level of attention from researchers of this phenomenon. Some possible reasons are that the political debate over resource exploitation versus conservation has not been as dramatic, or that sprawling development patterns of the more urbanized east coast produce less focused examples of amenity-driven growth than the geography of western states permits. The latter point raises a broader question regarding how much large urban areas may be impacted by varying degrees of proximity to natural amenities. Schmidt and Courant (2005) examined 90 metropolitan areas in all regions of the U.S. and determined that those cities with relatively easier access to national parks, national seashores, and national lakefronts served to draw labor, as measured by a willingness to accept measurably lower compensation. This demonstrates that natural amenities may have a further reach in terms of economic growth than previous researchers identified.

While economies are growing and diversifying in rural areas rich in natural amenities, the benefits are not always shared equally across all social classes. Rasker (2004) documents three concerning patterns that have emerged. First, per-capita income is rising without a commensurate increase in earnings per job. This reflects the increasing number of in-migrants, especially retirees, who have high levels of investment income. Second, the polarization of wealth is increasing. This relates to the disparity between those that rely on earned vs. investment income as well as new migrants with higher compensation that work in knowledge-based industries. Third, with more wealth entering small rural economies, housing costs tend to rise. When housing costs rise and earned income does not keep pace, housing affordability falls. In those communities with a large tourism industry dependent on service workers, these stresses can become acute.

Economic Growth and National Parks

Specific studies of economic growth around NPS sites follow the findings of the more generalized analyses of amenity-driven growth near wilderness areas. In this section we summarize several case studies found in the literature, and then present an analysis of economic growth data for our 12 case study NPS sites.

The greater Yellowstone area surrounding Yellowstone National Park and Grand Teton National Park has shown remarkable economic growth. A study performed by Rasker and Hansen (2000) documents the shift in the regional economy from extractive industries to service occupations, retirement, and investment income. Rasker and Alexander (2003) show that the area's population grew by 61 percent over the last thirty years (compared to 38 percent nationally). In large part, the establishment of new small companies has driven economic growth since 1990, some of which include high-wage professional services (engineering, finance, legal, insurance, real estate). Personal income growth in the greater Yellowstone area has outpaced state averages for Idaho, Montana, and Wyoming. Like many other areas with amenity-driven growth, however, non-labor income represents a significant portion of personal income and earnings among wage laborers have actually declined.

Flathead County, next to Glacier National Park, presents another story of strong economic growth. National Parks Conservation Association (2003) compiled three studies by researchers at University of Montana that present perspectives on growth in the county. The studies show that the economy of Flathead County is vibrant, diverse, and growing. All indicators studied (population, workforce, employment, personal income, total labor earnings, and wage & salary earning) all exceed growth rates for Montana, western U.S. states, and the nation.[12] Interviews with visitors, new residents, and lifelong residents of Flathead County indicate recognition that the main driver of growth is the natural environment and that Glacier National Park is the anchor for Flathead County's robust economy. There is also a recognition that the natural amenities of the region are at risk from economic growth and that the county must plan to manage the risks of growth to its natural amenities.

In an edited volume entitled *National Parks and Rural Development* (Machlis and Field, 2000), contributing author Miles provides a counter-balance to the growth story seen around many other national parks. The three national parks of the Pacific Northwest, Mt. Rainier National Park, Olympic National Park, and North Cascades National Park, have all shown remarkably little growth in neighboring communities. The study shows that three factors are at play: proximity to urban areas allowing for convenient day visits; high seasonality due to poor winter weather conditions; and development restrictions in surrounding areas. What the case study does not consider is the growth benefit enjoyed by Seattle, from which most day visits originate. Seattle is often cited as an example of a city with

[11] Responding to a burgeoning interest in economic growth adjacent to wilderness areas, the U.S. Bureau of Land Management partnered with the non-governmental organization, Sonoran Institute, to develop a database program that allows rapid assessment of growth patterns in the U.S. According to Sonoran Institute, the system is now widely used by additional government agencies such as U.S. Forest Service, National Park Service, as well as county planners.

[12] The study cites data from U.S. Bureau of Labor Statistics, U.S. Department of Commerce.

amenity-driven growth, and Schmidt and Courant (2005) show that proximity to national parks is a factor.

We examined economic growth patterns around our 12 NPS case study sites over the period 1970 through 2003 (Table 10). Population, employment (with the single exception of Shenandoah National Park), and personal income growth all outpaced the state in which the sites are located. On an annual average, these indices were one percent greater, which over a period of years compounds to very large differences in growth. However, earnings per job grew more slowly across the sites. We did not find a pattern of declining housing affordability, and more generally housing affordability followed trends similar to state-wide indices. In several cases we did not analyze growth patterns due to parks' close proximity to urban areas increasing the potential to confound park-led growth with other factors (Biscayne, Fort Sumter, Joshua Tree, and Point Reyes). In the case of Denali, economic data are not sufficient to perform the analysis.

Smart Growth

Growth is a "double-edged sword" in that it generates jobs and income but it also can create stress on the natural amenities in a region. Development sprawl is a major issue near those NPS sites where growth is most aggressive. The phenomenon of growth near parks has received national attention, as exemplified by USA Today running an article entitled "Developers covet areas surrounding national parks" on March 21, 2006. Sprawl can result in a reduction in important wildlife habitat (and subsequent human-wildlife conflicts), environmental pollution, congestion and loss of the natural aesthetic of a wilderness area. It is possible to relegate these impacts as necessary costs of economic growth, but it is important to recognize the magnitude of that cost and to determine whether new jobs and income justify it.

In cases where growth threatens the natural amenities of NPS sites, there is a cost incurred by society. That cost can be readily quantified in terms of diminished visitor experience and a subsequent reduction in visitation. As we describe in other chapters of this report, the national-level economic benefits in terms of consumer surplus for recreation generated by NPS sites is at least $10.1 billion per year. Add to this the other sources of consumer surplus generated by parks and the number may increase by multiples. We also describe in this report the economic impact of tourist spending at NPS sites. Total annual spending is in the range of $11 billion, generating added value (wages, rents, and business profits) of $7.5 billion. The source of these benefits lays in the physical condition of NPS sites – the natural amenities that attract visitors. Congestion, pollution, ecological deterioration, diminished wildlife viewing or human-wildlife conflicts all may cause a deterioration of the benefits accruing to visitors (as well as non-visitors).

It is important to emphasize two policy implications of threats posed by rapid growth near national parks. First, to the extent that policy makers justify government spending on NPS in strict terms of stimulating local economic growth, they may be losing sight of the larger and potentially more significant economic importance of NPS sites. Economic benefits accruing to park visitors, and spending associated with those visits, is threatened by degradation of NPS sites caused by rapid development. Second, in order to man-

TABLE 10:
ECONOMIC GROWTH IN NPS SITE AREAS COMPARED TO STATE, 1970 TO 2003[1]

NPS Sites	Area: Local[2] vs. State	Annual Population Growth 1970-2003 (%)	Annual Employment Growth 1970-2003 (%)	Annual Personal Income Growth 1970-2003 (%)	Median Earnings per Job 2003 ($'000)	Housing Affordability: Index and Affordability Trend 1990-2000[3] 1990-2000	Trend
Acadia	Local	1.3	2.9	3.2	27.3	103 to 141	More
	State	0.8	1.8	2.6	33.5	110 to 162	More
	Difference	0.5	1.1	0.6	-6.1		Same
Apostle Islands	Local	0.8	2.1	2.6	19.3	163 to 163	Same
	State	0.6	1.7	2.1	37.6	167 to 167	Same
	Difference	0.2	0.4	0.5	-18.3		Same
Biscayne[4]	NA						
Denali[5]	NA						
Fort Sumter[4]	NA						
Gettysburg	Local	1.6	2.2	2.9	27.9	128 to 157	More
	State	0.1	0.9	1.7	41.9	150 to 179	More
	Difference	1.5	1.3	1.2	-14.0		Same
Joshua Tree[6]	NA						
Point Reyes[4]	NA						
Rocky Mountain	Local	3.3	4.9	5.6	37.0	130 to 121	Less
	State	2.2	3.2	4.0	43.6	129 to 119	Less
	Difference	1.1	1.7	1.6	-6.7		Same
Sequoia & Kings Canyon	Local	2.2	2.6	3.0	34.9	107 to 132	More
	State	1.7	2.4	2.9	47.5	62 to 89	More
	Difference	0.5	0.2	0.1	-12.6		Same
Shenandoah	Local	1.9	2.1	3.6	25.5	131 to 151	More
	State	1.4	2.4	3.4	43.9	125 to 153	More
	Difference	0.5	-0.3	0.2	-18.3		Same
Zion	Local	5.2	6.2	6.5	25.7	112 to 109	Less
	State	2.4	3.5	3.9	35.0	143 to 124	Less
	Difference	2.8	2.7	2.6	-9.3		Same
Total	Local	2.3	3.3	3.9	28.2	125 to 139	More
	State	1.3	2.3	2.9	40.4	127 to 142	More
	Difference	1.0	1.0	1.0	-12.2		Same

[1] All estimates calculated using the Bureau of Land Management and Sonoran Institute Economic Profile System 2003 version.
[2] A park's local area is defined as the county or counties surrounding the park or located at the gateway to the park.
[3] A housing affordability index estimate of 100 or above indicates that the median family can afford the median house. Higher estimates reflect greater affordability.
[4] Growth trends are not analyzed because the park's close proximity to an urban area creates a high potential for confounding park-led growth with other factors.
[5] Insufficient data for analysis. However, Denali amenity values are unlikely to be a major factor in growth trends due to the effect of other factors (e.g., climate, remoteness/proximity to markets). And any local growth would be small in absolute terms, as the population of Denali borough is less than 2,000.
[6] Joshua Tree is located in the largest county (San Bernardino) in the contiguous United States. A county-level growth analysis would have high potential for confounding park-led growth with other factors.

age the growth that is occurring, local, state, and federal government will need to work together to develop smart growth plans. The overlap of these three government jurisdictions around NPS sites creates a challenge for planning that will likely need to be tackled head on in the very near future. Failing to embrace these two policy imperatives could easily result in economic loss.

Conclusion

Both the peer-reviewed academic literature and our selected case studies demonstrate that economic growth near national parks outpaces other areas that lack similar natural amenities. While growth also depends on other factors, such as infrastructure and accessibility, the case is becoming clear that national parks play an important role in stimulating regional economies. Indeed, arguments that protected areas inhibit growth by making valuable natural resources unavailable to extractive industries such as mining and forestry have proven unfounded. Growth is often higher near protected areas, and the diversity and quality of business growth may be greater especially with regard to knowledge-based jobs.

Growth also brings challenges. Some communities near parks suffer from increasing wealth polarization and falling housing affordability. In other communities, growth is beginning to impinge on the natural amenities that first attracted most in-migrants. An important lesson is that an exclusive focus on economic growth as the main economic contribution of NPS sites loses sight of the other economic benefits they generate and that must be protected. To the extent that growth diminishes these benefits, a real cost is incurred by our nation. It is easy to see that a slight deterioration in visitor experience can generate very large social costs. For this reason, growth should be considered one element of the economic importance of NPS sites that must be balanced among the others, and its potentially negative effects must be managed.

Chapter 5: Case Study Sites

TABLE 11:
OVERVIEW OF NPS SITES SELECTED FOR CASE STUDY

NPS Sites	*Site Type*	*Region*	*State*	*Location*	*Visitation 2004*[1]	*Base Funding FY2004*[2] *($mil)*
Acadia	National Park	Northeast	ME	Rural	2,207,847	$6.3
Apostle Islands	National Lakeshore	Midwest	WI	Remote	151,881[3]	$2.4
Biscayne	National Park	Southeast	FL	Rural	478,304	$3.4
Denali	National Park	Alaska	AK	Rural	404,236	$10.7
Fort Sumter	National Monument	Southeast	SC	Outlying Metropolitan	781,239	$1.8
Gettysburg	National Military Park	Mid-Atlantic	PA	Outlying Metropolitan	1,724,420	$5.2
Joshua Tree	National Park	Southwest	CA	Rural	1,243,659	$4.1
Point Reyes	National Seashore	Pacific West	CA	Outlying Metropolitan	1,960,055	$4.9
Rocky Mountain	National Park	Mountain West	CO	Outlying Metropolitan	2,781,899	$10.3
Sequoia & Kings Canyon	National Park	Pacific West	CA	Rural	1,525,212	$12.9
Shenandoah	National Park	Mid-Atlantic	VA	Rural	1,261,000	$10.2
Zion	National Park	Southwest	UT	Rural	2,677,342	$6.0
Total	*8 NP, NL, NS NM, NMP*	*Nearly all regions represented*	*10 different states*	*8 rural, 4 outlying metropolitan*	*150,000 to 2.8 million*	*5 sites: < $5mil 3 sites: $5-10mil 4 sites: >$10mil*

[1] Visitation indicates number of visits to NPS site. Source: National Park Service Statistical Abstract 2004.
[2] Reflects base funding for the operation of the NPS site; total park funding may be higher. Source: U.S. Department of the Interior, Budget Justifications and Performance Information FY2006, National Park Service ("Greenbook").
[3] Visitation number believed to be an underestimate due to multiple unmonitored entry points to site.

To illustrate the economic significance of national parks, we selected 12 NPS sites for case-level analysis. These sites represent a diversity of geographic locations, types of sites (resource-based and historic), annual visitation levels, proximity to population centers, and levels of funding. This section provides a one-page summary of each site's economic benefits, impacts, growth trends, budget shortfalls, and priority needs, as well as assesses each site's benefit to cost ratio and threshold at which funding the budget shortfall is justified. Table 11 describes the sites selected for case-level analysis.

Key terms and concepts applied in assessing the economic significance of each NPS site are described below.

- *Economic Benefits* refer to total value people derive from national parks through direct and passive use. This study only captures economic benefits of recreation. Other values (e.g., ecosystem services, education/science, passive use) could not be estimated due to a variety of challenges. Therefore, park benefit estimates should be viewed as conservative. Across the 12 sites, annual recreational benefits range from $7 million (Apostle Islands and Fort Sumter) to over $100 million (Acadia, Point Reyes, and Rocky Mountain).

- *Benefit to Cost Ratio* reflects the degree to which a park's (recreational) benefits exceed expenditures to maintain the site. Across the sites, benefit to cost ratios are all greater than 1, ranging from 1.4 (Denali) to 14.1 (Acadia and Point Reyes).

- *Economic Impacts* measure park visitor spending and its effects on sales/output, employment, income, and value-added in the surrounding area. Visitor spending and the corresponding impacts are greater for sites with higher visitation levels and park area spending opportunities (Rocky Mountain and Acadia).

- *Economic Growth* refers to trends occurring due to economic activity associated with proximity to parks. That is, for some sites, park amenities may contribute to attracting new businesses and residents (and retaining old ones). Indicators for assessing growth trends in areas surrounding parks include changes in population, employment, personal income, earnings per job, and housing affordability. For the seven sites for which data allow economic growth analysis (1970-2003), annual average growth in population, employment, and personal income outpace averages for the states in which the sites are located. Earnings per job increase more slowly across the sites, while housing affordability in most cases does not decline, and more generally follows state-wide trends.

- *Budget Shortfalls and Park Needs* are identified in the most recent business plans of each park, developed under the NPS's *Business Plan Initiative*. The average annual budget shortfall is just over $5 million per park, ranging from a low of about $1 million (Biscayne) to a high of $15 million (Sequoia & Kings Canyon). In general, the parks need this funding to address priorities in resource protection, facility maintenance, and visitor services and safety.

- *Threshold Analysis* indicates the degree of change in park quality

that would justify an increase in spending, keeping in mind that such an increase may either prevent degradation of the park or might improve overall conditions. This threshold reflects a park's budget shortfall as a percentage of the park's economic (recreational) benefits. Across 12 sites, the threshold to justify proposed budget increases varies from a low of 2.7 percent (Rocky Mountain) to a high of 54 percent (Apostle Islands).

Acadia National Park

Located along the coast of Maine, Acadia National Park comprises approximately 35,000 acres, most of which are located on Mount Desert Island. Scenic highlights of the park include its rocky coast, mountains, lakes, and glaciated valleys. Over two million people visited the park in 2004. Recreational activities include hiking, picnicking, mountain biking, bird watching, rock climbing, camping, boating, canoeing, and kayaking. Highlights of the park's economic importance include:

- $100 million in annual recreational benefits, providing a park benefit to cost ratio of more than 14 to 1.
- $137 million in annual visitor spending, supporting more than 3,500 local jobs (not including park staff).
- Amenity values contributing to annual population, employment, and personal income growth rates 0.5% to 1% higher than the state average.

Acadia's most recent business plan (FY2000) indicates an annual budget shortfall of $8.0 million (adjusted to 2004 dollars). This funding is needed for upgrading utilities and campgrounds, rehabilitating bridges and trails, completing boundary surveys and carrying capacity studies, and restoring disturbed habitats. Applying a threshold analysis, Acadia's budget shortfall represents 8.0% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 6 to 1.

Acadia National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	2,207,847	$100.4	Not quantified	$7.1	>14.1 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$137.1	$172.8	$61.7	3,556	$97.0	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	1.3	2.9	3.2	$27.3	103 to 141	More
State	0.8	1.8	2.6	$33.5	110 to 162	More
Difference	0.5	1.1	0.6	-$6.1		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Apostle Islands National Lakeshore

Located at the northernmost tip of Wisconsin, Apostle Islands National Lakeshore encompasses over 750 square miles of Lake Superior and its shoreline. The park includes a 21 island archipelago, as well as 12 miles of mainland shoreline and adjacent lake waters. More than 150,000 people visited the park in 2004. Recreational activities include walking beaches, swimming, kayaking, and boating. Highlights of the park's economic importance include:

- $6.8 million in annual recreational benefits, providing a park benefit to cost ratio of at least 2.6 to 1.
- More than $7 million in annual visitor spending, supporting nearly 200 local jobs (not including park staff).
- Amenity values contributing to population, employment, and personal income growth higher than the state average.

Apostle Islands' most recent business plan (FY2001) shows an annual budget shortfall of $3.7 million (adjusted to 2004 dollars). This funding is needed to address maintenance, safety and security, habitat restoration, control of non-native species, cultural resource planning, and archeological research. Applying a threshold analysis, Apostle Islands' budget shortfall represents 54% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 1 to 1.

Apostle Islands National Lakeshore – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	151,881[2]	$6.8	Not quantified	$2.6	>2.6 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$7.5	$7.9	$2.7	195	$4.3	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	0.8	2.1	2.6	$19.3	163 to 163	Same
State	0.6	1.7	2.1	$37.6	167 to 167	Same
Difference	0.2	0.4	0.5	-$18.3		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.
[2] Visitation number believed to be an underestimate due to multiple unmonitored entry points to site.

Biscayne National Park

Biscayne National Park is located in the southeastern region of the Florida peninsula and encompasses much of Biscayne Bay, making it the largest marine park in the National Park System. The park protects part of the third-largest coral reef system in the world and the longest stretch of mangrove forest remaining on Florida's east coast. Nearly 500,000 people visited the park in 2004. Recreational activities include nature viewing, walking and hiking, fishing, boating, swimming, diving and snorkeling, picnicking, and camping. Highlights of the park's economic importance include:

- $19 million in annual recreational benefits, providing a park benefit to cost ratio of more than 5 to 1.
- $24 million in annual visitor spending, supporting 425 local jobs (not including park staff).

State of the Parks: Biscayne National Park (2006) indicates an annual budget shortfall of approximately $0.8 million. Funding is needed to maintain core staffing and visitor service levels, support essential operating needs, restore law enforcement and maintenance capabilities, and ensure resource protection. Applying a threshold analysis, Biscayne's budget shortfall represents 3.9% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 4 to 1.

Biscayne National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	478,304	$19.1	Not quantified	$3.4	>5.5 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$24.0	$28.9	$11.3	425	$17.7	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
NA	Growth trends are not analyzed because the park's close proximity to an urban area (Miami) creates a high potential for confounding park-led growth with other factors.					

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Denali National Park and Preserve

Encompassing six million acres of sub-arctic Alaska, Denali National Park and Preserve is larger than the state of Massachusetts. And with only one 92-mile road, wilderness is the park's defining experience. Denali (Athabaskan name) or Mount McKinley is the park's most famous feature. At 20,320 feet, it is the highest peak in North America and the centerpiece of the Alaska Range. The park's main recreational activities are wildlife viewing, hiking, and camping. Highlights of the park's economic importance include:

- $20.0 million in annual recreational benefits, providing a park benefit to cost ratio greater than 1.4 to 1.
- About $23 million in annual visitor spending, supporting over 500 jobs (not including park staff). However, this spending estimate appears to be quite conservative. Adjustments to the analysis of visitor spending suggest total spending by Denali visitors may be well over $100 million (Chapter 3).

Denali's 2004 business plan indicates an annual budget shortfall of $3.9 million. This funding is needed to address resource protection priorities, visitor safety services, facility operations and maintenance, and support education and interpretation programs. Applying a threshold analysis, Denali's budget shortfall represents 19.6% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 1.1 to 1.

Denali National Park and Preserve – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	404,236	$20.0	Not quantified	$14.1	>1.4 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$22.7	$27.1	$9.7	562	$15.4	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
NA	Insufficient data. Park amenity values are unlikely to be a major factor in growth trends.					

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Fort Sumter National Monument

Located on a small island near the city of Charleston, South Carolina, Fort Sumter is the place where the Civil War began on April 12, 1861. The site contains more than 40 historic structures including Fort Sumter, Fort Moultrie, the Major Robert Anderson monument, and Battery Huger. Nearly 800,000 people visited this historic site in 2004. Highlights of the park's economic importance include:

- Over $7 million in annual recreational benefits, providing a park benefit to cost ratio greater than 4 to 1.
- About $18 million in annual visitor spending, supporting nearly 400 jobs (not including park staff).

A business plan for Fort Sumter was not available for this analysis. According to park management plans, a chief concern for the park is historic/cultural asset management, to minimize the loss or degradation of culturally significant material. However, we did not identify any specific information on budget shortfalls or investment needs.

Fort Sumter National Monument – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	781,239	$7.1	Not quantified	$1.8	>4.0 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$17.8	$20.0	$7.6	391	$12.0	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
NA	Growth trends are not analyzed because the park's close proximity to an urban area (Charleston) creates a high potential for confounding park-led growth with other factors.					

[1] Other park benefits not quantified include passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Gettysburg National Military Park

Gettysburg National Military Park preserves and commemorates the historically significant site of the Battle of Gettysburg, the largest and most costly in human lives to occur in North America. The park encompasses 6,000 acres in south central Pennsylvania and preserves more than 1,300 monuments. Over 1.7 million people visited the park in 2004. Highlights of Gettysburg's economic importance include:

- Over $15 million in annual recreational benefits, providing a park benefit to cost ratio greater than 2.2 to 1.
- More than $95 million in annual visitor spending, supporting close to 3,000 jobs (not including park staff).
- Amenity values contributing to annual population, employment, and personal income growth rates more than one percent higher than the state average.

Gettysburg's most recent business plan (FY2001) shows an annual budget shortfall of $3.8 million (adjusted to 2004 dollars). This funding is needed for preserving archival and museum collections, historic structures, and historic landscapes, meeting demand for interpretation and education programs, and improving services. Applying a threshold analysis, Gettysburg's budget shortfall represents 24% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 1.4 to 1.

Gettysburg National Military Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	1,724,420	$15.6	Not quantified	$7.0	>2.2 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$95.2	$112.3	$37.5	2,851	$59.7	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	1.6	2.2	2.9	$27.9	128 to 157	More
State	0.1	0.9	1.7	$41.9	150 to 179	More
Difference	1.5	1.3	1.2	-$14.0		Same

[1] Other park benefits not quantified include passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Joshua Tree National Park

Located 140 miles east of Los Angeles and comprising nearly 800,000 acres, Joshua Tree National Park includes two important desert ecosystems, the Colorado and Mojave Deserts. More than 1.2 million people visited the park in 2004. Recreational activities include hiking and walking self-guided nature trails, camping, bouldering, stargazing/viewing the night sky, and visiting historical and archeological sites. Highlights of the park's economic importance include:

- $48 million in annual recreational benefits, providing a park benefit to cost ratio of at least 7.5 to 1.
- Annual visitor spending of $49 million, supporting over 1,100 local jobs (not including park staff).

The most recent business plan for Joshua Tree (FY2001) shows an annual budget shortfall of $2.8 million (adjusted to 2004 dollars). This funding is needed to address resource preservation and management needs, visitor access, safety, and services, and external challenges pertaining to urban encroachment. These include development of groundwater storage projects, mega-landfills, hydroelectric- and gas-fired power plants, and mining operations adjacent to the park. Applying a threshold analysis, Joshua Tree's budget shortfall represents 5.9% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 5 to 1.

Joshua Tree National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	1,243,659	$47.9	Not quantified	$6.4	>7.5 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$49.3	$62.3	$23.2	1,152	$36.6	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
NA	Park is located in the largest county (San Bernardino) in the contiguous U.S. A county-level growth analysis would have high potential for confounding park-led growth with other factors.					

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Point Reyes National Seashore

Point Reyes National Seashore encompasses over 71,000 acres, including 33,000 acres of wilderness area and 80 miles of undeveloped coastline. The park provides an important link in a chain of protected areas, which combined constitute one of the few remaining biologically diverse Mediterranean climate regions on earth. Located about one hour's drive from the San Francisco Bay Area, the park received about two million visitors in 2004. Recreational opportunities include 147 miles of hiking trails, four back country campgrounds, and numerous beaches. Highlights of the park's economic importance include:

- More than $120 million in annual recreational benefits, providing a park benefit to cost ratio greater than 14 to 1.
- Annual visitor spending of $89 million, supporting over 2,000 local jobs (not including park staff).

The most recent business plan for Point Reyes (FY2002) indicates an annual budget shortfall of $5.2 million (adjusted to 2004 dollars). This funding is needed to address maintenance of facilities and trails, enhancement of visitor services, control of non-native species, protection of endangered species, and reduction of threats to cultural resources. Applying a threshold analysis, Point Reyes' budget shortfall represents 4.3% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 8.8 to 1.

Point Reyes National Seashore – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	1,960,055	$121.6	Not quantified	$8.6	>14.1 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$89.0	$111.0	$41.5	2,065	$65.4	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
NA	Growth trends are not analyzed because the park's close proximity to an urban area (San Francisco) creates a high potential for confounding park-led growth with other factors.					

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Rocky Mountain National Park

Located in north central Colorado, Rocky Mountain National Park preserves 416 square miles of alpine environment, including 114 peaks over 10,000 feet and scenic features including canyons, glaciers, and the headwaters of the Colorado River. Recreational activities include hiking, wildlife viewing, fishing, scenic drives, and camping. Highlights of the park's economic importance include:

- More than $130 million in annual recreational benefits, providing a park benefit to cost ratio greater than 8.4 to 1.
- $194 million in annual visitor spending, supporting over 5,000 local jobs (not including park staff).
- Amenity values contributing to annual population, employment, and personal income growth more than one percent higher than the state average.

Rocky Mountain's most recent business plan (FY1998) shows a budget shortfall of $3.5 million (adjusted to 2004 dollars). Likewise, State of the Parks: Rocky Mountain National Park (2002) estimates a budget shortfall for FY 2000 of about $3 million (2004 dollars). This funding is needed for facility maintenance, safety and services, elk and vegetation management, and research, planning, and monitoring. Applying a threshold analysis, Rocky Mountain's shortfall represents 2.7% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 6.8 to 1.

Rocky Mountain National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	2,781,899	$132.6	Not quantified	$15.8	>8.4 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$193.6	$209.3	$71.1	5,178	$112.6	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	3.3	4.9	5.6	$37.0	130 to 121	Less
State	2.2	3.2	4.0	$43.6	129 to 119	Less
Difference	1.1	1.7	1.6	-$6.7		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Sequoia and Kings Canyon National Parks

Sequoia and Kings Canyon National Parks are home to giant sequoia groves, the largest trees in the world. Located in central California, the parks encompass 1,352 square miles, extending from the Sierra foothills to 14,494 feet at the summit of Mount Whitney – the highest peak in the contiguous 48 states. In 2004, the parks received 1.5 million visitors. Recreational activities include hiking, wildlife viewing, camping, swimming, and touring caves. Highlights of the park's economic importance include:

- Over $58 million in annual recreational benefits, providing a park benefit to cost ratio greater than 2.5 to 1.
- $74 million in annual visitor spending, supporting close to 2,000 local jobs (not including park staff).

Sequoia and Kings Canyon's business plan (FY2002) shows a budget shortfall of $14.8 million (adjusted to 2004 dollars). This funding is needed for resource protection, deterring marijuana cultivation, biodiversity research/monitoring, fire program support, facility and trail maintenance, communications, and road rehabilitation. Applying a threshold analysis, the parks' shortfall represents 25% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the parks would still maintain an annual benefit to cost ratio greater than 1.5 to 1.

Sequoia and Kings Canyon National Parks – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	1,525,212	$58.6	Not quantified	$23.1	>2.5 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$73.9	$102.2	$39.5	1,882	$61.3	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	2.2	2.6	3.0	$34.9	107 to 132	More
State	1.7	2.4	2.9	$47.5	62 to 89	More
Difference	0.5	0.2	0.1	-$12.6		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Shenandoah National Park

Comprising 300 square miles of the Blue Ridge Mountains, Shenandoah National Park rises 3,500 feet above the Shenandoah valley in northern Virginia. Located 80 miles west of Washington, D.C., the park offers a rolling landscape of hardwood forests and historic farms, while protecting a sizeable portion of the Blue Ridge/ Central Appalachian biome – one of the world's most diverse temperate ecosystems. The park received more than 1.2 million visitors in 2004. Recreational activities include viewing scenic overlooks, hiking, camping, wildlife viewing, and visiting historic sites. Highlights of the park's economic importance include:

- $70 million in annual recreational benefits, providing a park benefit to cost ratio greater than 4.4 to 1.
- $44 million in annual visitor spending, supporting over 1,000 local jobs (not including park staff).

Shenandoah's most recent business plan (FY2003) shows a budget shortfall of $8.0 million (adjusted to 2004 dollars). Increased funding is needed to protect natural and cultural resources, maintain facilities and trails, rehabilitate overlooks, and support interpretation and education programs. Applying a threshold analysis, Shenandoah's budget shortfall represents 11.5% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 2.9 to 1.

Shenandoah National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	1,261,000	$70.0	Not quantified	$15.7	>4.4 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$43.9	$55.1	$20.5	1,010	$32.3	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	1.9	2.1	3.6	$25.5	131 to 151	More
State	1.4	2.4	3.4	$43.9	125 to 153	More
Difference	0.5	-0.3	0.2	-$18.3		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Zion National Park

Zion National Park is characterized by multi-colored cliffs, deep canyons, high plateaus, striking rock towers and mesas, and the Virgin River. Located in southwest Utah, the park encompasses about 150,000 acres, rising from an elevation of 3,600 feet to 8,700 feet. More than 2.6 million people visited the park in 2004. Recreational activities include scenic viewing, hiking, wading in the river, picnicking, and camping. Highlights of the park's economic importance include:

- Close to $100 million in annual recreational benefits, providing a park benefit to cost ratio greater than 10.5 to 1.
- $83 million in annual visitor spending, supporting over 2,000 local jobs (not including park staff).
- Amenity values contributing to annual population, employment, and personal income growth more than 2.5 percent higher than the state average.

Zion's most recent business plan (FY2000) shows a budget shortfall of $4.8 million (adjusted to 2004 dollars). This funding is needed for major investments in rehabilitating the water system, campgrounds, and roads, constructing an emergency operations center, and conducting an inventory of natural and cultural resources. Applying a threshold analysis, Zion's budget shortfall represents 4.9% of annual recreational benefits. Funding the shortfall is justified where it would increase park benefits, or prevent losses in park benefits, by this amount. Even if the funding only prevented losses in benefits, the park would still maintain an annual benefit to cost ratio greater than 6.9 to 1.

Zion National Park – Overview of Economic Importance

Economic Benefits (2004)	*Visitation*	*Total Recreational Benefits ($mil)*	*Other Benefits*[1]	*Annual Budget ($mil)*	*Benefit to Cost Ratio*[1]	
	2,677,342	$98.6	Not quantified	$9.4	>10.5 to 1	
Economic Impacts (2004)	*Visitor Spending ($mil)*	*Sales ($mil)*	*Personal Income ($mil)*	*Jobs*	*Value Added ($mil)*	
	$83.1	$95.4	$34.7	2,013	$54.7	
Economic Growth	*Annual Population Growth 1970-2003*	*Annual Employment Growth 1970-2003*	*Annual Personal Income Growth 1970-2003*	*Median Earnings per Job 2003*	*Housing Affordability: Index and Affordability Trend 1990-2000*[3]	
	(%)	*(%)*	*(%)*	*($'000)*	*1990-2000*	*Trend*
Local	5.2	6.2	6.5	$25.7	112 to 109	Less
State	2.4	3.5	3.9	$35.0	143 to 124	Less
Difference	2.8	2.7	2.6	-$9.3		Same

[1] Other park benefits not quantified include ecosystem services, biodiversity, science, education, cultural, spiritual, and passive use values. The benefit-cost ratio is conservative; it only reflects recreational benefits.

Chapter 6: Next Steps

The findings presented in this study build upon the work of a number of researchers who have endeavored to capture the economic significance of the U.S. National Park System from a variety of angles. We conclude that national parks play an important role in local economies as well as the national economy. Policy makers at all levels should be aware of this, and carefully consider the potential benefits and costs of budgetary decisions that will affect NPS sites in the future.

In an effort to make this report as objective as possible, and to support informed decision making and structured debate on the merits of public funding for NPS, we have made every attempt to clearly describe our methods and assumptions. In some cases those assumptions can be challenged and alternative estimates may be made. To make such a process as constructive as possible, the spreadsheets and more complete description of our approach are available upon request.

In addition, we believe that further study of the economic significance of the national park system could yield more robust estimates of greater precision. We have identified weaknesses in current methods and data throughout the body of the report. Following is a list of suggestions for additional study that will help to fill those gaps.

- *Case Studies:* This report includes a cross section of case studies. Additional case studies will be useful in building a richer understanding of the characteristics of the full range of NPS sites. In order to do so effectively, base documents, including business plans, visitor surveys, and examinations of site needs are very helpful.

- *Effects of Budget Shortfalls:* Cost-benefit analysis of the park system could be greatly fortified by a more comprehensive examination of the effects on parks of budget shortfalls. This should include the physical and ecological changes that result from insufficient budgets, today and over time. Once completed, economic analysis will be required to evaluate the economic benefits of improvements, or avoidance of deterioration, of park quality.

- *Impact Analyses:* MGM2 currently produces conservative and defensible estimates of the impacts of local economic activity attributable to park visitation. Efforts to extend the inclusiveness of site-specific spending patterns for more NPS sites, as well as inclusion of broader geographic areas of park-related spending could make estimates more accurate.

- *Historic Sites:* A major subset of NPS sites are historic, but there has been very little primary research conducted on the benefits associated with preserving these sites and making them available for public visitation. Additional visitor survey research should be a priority for improving estimates of the economic benefits of historic sites.

Despite a list of substantive work that could be done to improve our current estimates of the park system's economic significance, we do not envision a scenario where additional research could alter the conclusions of this report. The U.S. National Park System provides national economic benefits far in excess of the public cost of maintaining and operating them, and parks are an important engine for local jobs and income and are a substantial driver of economic growth. Federal support of NPS is a wise economic investment.

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Appendix: Key Project Steps and Sources

This appendix provides an overview of steps taken to carry out the study and key sources of information. To begin, we conducted an extensive literature review of more than one hundred studies addressing the economic role of protected lands, including national parks and wilderness areas. This review was complemented by interviews with 30 experts from academia, the National Park Service and other government agencies, non-governmental organizations, and the private sector to gain their perspectives on the economic role of national parks (Box A-1).

Based on the literature review and expert interviews, we determined that providing the most complete picture of the park system's economic importance would require analysis of three types of economic measures: *economic benefits* generated by the parks, *economic impacts* of park visitation, and the *economic growth patterns* associated with parks. Our approach and data sources for these analyses are described briefly below.[13]

Economic Benefit Analysis

Economic benefit measures the total value that people derive from the national park system through direct and passive use. We determined through the literature review and expert interviews that, while extensive data were available on recreational values associated with protected lands, quantitative estimates of other types of benefits (e.g., ecosystem services, biodiversity, research/education, cultural/spiritual values, and passive use values) were either quite limited or did not exist. Focusing on recreational use, we identified a number of important sources for conducting our analysis, including:

- *Database of Recreational Value Estimates* (Kaval and Loomis 2003) – This database compiles 1,239 estimates of recreational value from 593 studies. These estimates span 30 separate outdoor recreational activities, including wildlife viewing, sightseeing, hiking, and so on.

- *Visitor Study Surveys* (University of Idaho, Park Studies Unit, Visitor Services Project. http://www.psu.uidaho.edu/vsp.reports.htm) – Among other information, these surveys provide data on the most common activities engaged in by park visitors.

- *National Park Business Plans* (Business Plan Initiative, www.nps.gov) – The National Park Service, in partnership with the National Parks Conservation Association, developed the business plan initiative to support analysis of park operations. Parks that have developed a business plan provide a financial summary of their current budget, as well as estimates of their current budget shortfalls and priority needs.

- *State of the Parks* (National Parks Conservation Association, www.npca.org) – The National Parks Conservation Association initiated these studies to assess the condition of natural and cultural resources in the parks, and to determine how well equipped the National Park Service is to protect the parks.

These sources allowed for cost-benefit analysis of the National Park System, where costs reflect the park system budget and benefits reflect recreational values associated with park visitation. For our case study sites, we identified the range of recreational activities engaged in at each site (based on Visitor Study Survey information), and weighted recreational estimates from the Kaval and Loomis database accordingly. Information on the current budgets, shortfalls, and priority needs for case study sites was drawn from park business plans and/or State of the Parks reports, where available.

Economic Impact Analysis

Economic impact analysis measures park visitors' spending and the effects it has on a town or county's output, employment, and income. The National Park Service currently supports the *Money Generation Model 2* (MGM2) to estimate economic impacts of each park and the overall system. MGM2 estimates economic impacts by multiplying the number of park visitors by average spending per visitor and regional economic multipliers.

Our study's economic impact estimates reflect the most recent MGM2 model estimates, with case study site estimates drawn from http://web4.canr.msu.edu/MGM2/. Based on our analysis of case study sites, we identified some instances where MGM2 estimates appear quite conservative (e.g., Denali). These cases are highlighted along with potential opportunities for refining and extending impact analysis for the parks.

Economic Growth Analysis

Economic growth analysis measures trends occurring as a result of economic activity associated with proximity to parks. Such economic activity extends beyond tourism to include all economic activity attracted to an area by the natural amenities provided by the park. For this study, we drew upon a range of existing studies of the relationship

[13] Spreadsheets showing calculations for each analysis are available upon request.

between protected lands and economic growth. In addition, we conducted analysis of our case study sites using the Bureau of Land Management and Sonoran Institute Economic Profile System (www.sonoran.org). We analyzed the growth in population, employment, income, earnings per job, and housing affordability in counties surrounding or adjacent to the park site compared to state-wide averages from 1970 to 2003.

Box A-1: Experts Interviewed for Study

1. **Hana Blake** Community Planning Director, Erie Canal Heritage Corridor
2. **Fred Boyles** Superintendent, Andersonville National Historic Site
3. **Steve Colt** Associate Professor of Economics, University of Alaska Anchorage
4. **Suzanne Copping** Assistant Coordinator, National Heritage Areas, National Park Service
5. **Ginny Fay** Eco-Systems (former Alaska State Tourism Director)
6. **Kate Fox** Essex National Heritage Area
7. **Mary Goundrey** Civil War Preservation Trust
8. **Jim Gramann** Visiting Chief Social Scientist, National Park Service
9. **Howard Gross** California Desert Program Manager, National Parks Conservation Association
10. **John Howard** Superintendent, Antietam National Battlefield
11. **Bill Jackson** Director of Water Resources Division, National Park Service
12. **Grace Johns** Senior Natural Resource Economist, Hazen and Sawyer
13. **John Kelly** Planning Director, Acadia National Park
14. **Chris Leggett** Senior Associate, Industrial Economics, Incorporated
15. **John Loomis** Professor, Department of Agricultural and Resource Economics, Colorado State University
16. **Paul Lorah** Professor and Chair, Department of Geography, University of St. Thomas (St. Paul, MN)
17. **Pete Morton** Economist, The Wilderness Society
18. **Tom Offut** Trustee, Yellowstone Park Foundation
19. **Kyle Patterson** Public Information Officer, Rocky Mountain National Park
20. **Bruce Peacock** Economist, National Park Service
21. **Alexandra Picavet** Public Affairs Specialist, Sequoia and Kings Canyon National Parks
22. **Thomas Power** Professor and Chair, Department of Economics, University of Montana
23. **Ray Rasker** Senior Economist, Sonoran Institute
24. **Gundars Rudzitis** Professor, Department of Geography, University of Idaho
25. **Lucie Schmidt** Assistant Professor of Economics, Williams College
26. **Jim Stratton** Alaska Regional Director, National Parks Conservation Association
27. **Butch Street** Public Use Statistics Office, National Park Service
28. **Daniel Stynes** Professor Emeritus, Department of Park, Recreation and Tourism Resources, Michigan State University
29. **Bob Unsworth** President, Industrial Economics, Incorporated
30. **Joe Zarki** Joshua Tree National Park