9. ESTIMATING COSTS OF ALTERNATIVES

9.1 WHY INCLUDE COST ESTIMATES IN THE GMP? WHAT COSTS SHOULD BE INCLUDED?

Cost estimates in GMPs are required by the 1978 Parks and Recreation Act, and costs are important to meaningful decision making. GMPs must be both visionary and realistic, and they must be developed in a fiscally responsible manner. Cost estimates are a key factor to be used (along with impacts and advantages of the various alternatives) during the process to select a preferred alternative. Decision makers and the public need to have an overall picture of the estimated costs of various alternatives, including the no-action alternative, to make wise decisions and determine feasibility within the planning process.

The *Park Planning Program Standards* direct that plans should include estimates of annual recurring costs (hereafter referred to as "annual operating costs") and of one-time costs for facility rehabilitation, new construction, or management projects. Costs of alternatives may vary significantly in recurring needs such as staffing, operations, and maintenance, as well as one-time projects such as facilities, transportation projects, research, and resource rehabilitation. The GMP should focus on the elements of alternatives that affect desired conditions, and it should present the costs of those actions. For clarity, cost estimates should include the year in which they were made, such as "All cost estimates are in 2008 dollars."

> We should be as prophetic in foreseeing park needs and as generous in satisfying them as we can, for the longer the waiting, the more difficult and costly the task will be.
>
> — Harold A. Caparn

Land acquisition costs also affect NPS decisions, but typically **should not** be included in the public cost presentation. The chief of the Land Resources Division, in a memo to the chief of Park Planning, has stated that land acquisition costs are inappropriate in GMPs due to the fluctuation in land value, inconsistency in estimate development, and the confidentiality of the acquisition process. This request not to include land costs in the GMP builds on a 1990 memo from the associate director that directs regional directors to include land costs in planning documents <u>only</u> if the estimates have been cleared by the chief of the Land Resources Division. Exceptions may be made if the cost estimates are requested by Congress or the Office of Management and Budget, or in other special circumstances, in which case Land Resource Division staff should be involved in preparing the estimates. A discussion of proposed boundary adjustments should still be included in the narrative, and it should explain that land costs will be developed before legislative action and acquisition.

In identifying alternatives and their associated costs, facilities and projects should be presented conceptually, not as finished products. Within a single alternative, there will be a range of appropriate facilities and management actions that meet the desired conditions. As the alternative is developed, it is the role of the planning team to

choose those facilities or actions that are *most appropriate* for the alternative, and to develop cost estimates based on available information. It is understood (and stated explicitly in the plan's disclaimer language) that costs for facilities and management actions are presented in the GMP for comparison purposes only and will change as specific projects are proposed and approved. The basis for cost estimates should be included in the administrative record of the plan development. What is presented to the public will have less detail than the calculations done to develop the estimates.

9.2 COST PRESENTATION CONTENT

The elements listed below should be included in the GMP.

- *Alternatives comparison summary* — The summary should include the cost estimate table and disclaimer language. Disclaimer language should also appear wherever costs and implementation schedules are presented.
- *Description of the alternatives* — An explanation of costs, FTEs, and partnership opportunities would typically appear in the description of the alternatives; they could be repeated in the alternatives summary section as desired.
- *Internal briefing statements* — Information for internal briefing statements as listed below does not need to be in the public document.

9.2.1 Alternatives Comparison Summary:

The following should appear in the summary comparison of alternatives:

- A table that shows a comparative analysis among alternatives (see template and example below) and that includes the following (these elements are discussed in more detail in the next section):
  1. Annual operating costs
  2. Staffing levels (FTE)
  3. One-time facility costs
  4. One-time non-facility costs
  5. Costs for other projects or actions that significantly influence the alternatives and cost comparison
- Disclaimer language (see sec. 9.5).

9.2.2 Description of Alternatives

The following elements should appear in the description of alternatives:

- *An explanation of costs* — The explanation should include descriptions of the major costs are for each alternative. For example, if alternative B includes a cost estimate for facility construction, the project should be described as follows: "Estimates for alternative B include construction costs for a new visitor facility for orientation and information in the developed zone near the east entrance." Changes in operations and maintenance should also be described. For example, if an alternative has reductions in deferred maintenance due to

removal of a building, that reduction should be described in the text. In the discussion of costs, it may be appropriate to include a timeline for implementation or to note "trigger events" for action items. For example, the plan may state, "The proposed shuttle system in alternative C would be instituted when capacity of the existing parking lots was exceeded and resources were being impacted by improper parking."

- *A general explanation of the difference in total FTE levels among the alternatives* — For example, the plan may state that "new staff in alternative C would include two environmental compliance specialists and three visitor protection rangers." FTE levels should indicate ONPS-funded NPS employees only — neither volunteers nor partner-funded positions are to be included in this figure. (For the no-action alternative, the staffing level should indicate current authorized staffing limits, not existing encumbered or actual staffing levels, since the latter vary over time.)
- *A discussion of partnership opportunities, if appropriate* — The text should recognize that some costs may be borne by partners, but the GMP should not name partners unless they are specifically identified in the establishing legislation or other legally binding document. Any costs that may potentially be borne by partners must still appear in the tabular presentation of costs as NPS costs; the explanation of the partnership role would be provided in the text of the alternatives. Additionally, the text may include caveats that some projects will only be undertaken at the scale presented if sufficient outside funding and/or non-NPS personnel are available.

9.2.3 Internal Briefing Statements

The following should appear only in the internal briefing statements:

- *Potential costs for boundary adjustments* — This should include a description of how the costs were calculated, and a note if the estimates were approved by regional and/or WASO Land Resources Division staff.
- *Description of tools used to estimate costs* — For instance, if a visitor center is proposed, the briefing paper would state that the Facility Model was used and when approval was received. Another example would be a statement that the CRV calculator was used for cost estimates.
- *Total deferred maintenance* — The total deferred maintenance in the park, as of a certain date, should be included as a point of reference for proposed new costs. If proposed actions in the alternatives would affect the deferred maintenance, that information may be included.

9.3 Cost Presentation Format and Template

Cost figures should be presented as a single number, not as a range, since the disclaimers state they are estimates only. Cost tables should **not** include life-cycle costs or costs for boundary adjustments, and the annual costs should **not** be added to the one-time costs. Costs should be rounded to the nearest $10,000 or $100,000, depending on the project size.

The format in Table 9.1 could be used in the GMP. If used, the **footnotes in italics should be included in the text of the document**. (Bracketed, non-italic text in the footnotes is provided as guidance to planning teams.)

TABLE 9.1: EXAMPLE OF A COST COMPARISON TABLE (all cost estimates are in 2008 dollars)

	Alternative A	Alternative B (NPS Preferred)	Alternative C
Annual Operating Costs (ONPS)[1]	$2,370,000	$4,450,000	$5,870,000
Staffing (FTE)[2]	32	40	57
Total One-Time Costs[3]	$3,450,000	$33,040,000	$49,280,000
Facility Costs[4]	$3,450,000	$28,240,000	$44,480,000
Non-Facility Costs[5]	0	$4,800,000	$4,800,000
Other Costs[6]			
• Battlefield Bypass Project[7]	0	$15,000,000	$15,000,000
• OMSI Science Center Bunkhouse[8]	0	$2,100,000	0

[NOTE: Boundary adjustment costs should **not** be included in this table.]

1. Annual operating costs are the total costs per year for maintenance and operations associated with each alternative, including utilities, supplies, staff salaries and benefits, leasing, and other materials. Cost and staffing estimates assume that the alternative is fully implemented as described in the narrative.

2. The total number of FTEs is the number of person-years of staff required to maintain the assets of the park at a good level, provide acceptable visitor services, protect resources, and generally support the park's operations. The FTE number indicates ONPS-funded NPS staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

[For the no-action alternative, the staffing level should indicate current approved staffing levels, not existing actual levels, since actual staff levels vary over time.]

3. [The total one-time costs should equal the sum of all elements listed in the rows that follow. No one-time costs should be double counted in multiple rows.]

4. One-time facility costs include those for the design, construction, rehabilitation, or adaptive reuse of visitor centers, roads, parking areas, administrative facilities, comfort stations, educational facilities, entrance stations, fire stations, maintenance facilities, museum collection facilities, and other visitor facilities.

[For the no-action alternative one-time facility costs would include costs associated with projects already approved and fully funded. Projects with an approved PMIS statement but without approved implementation funding should not be included in the no-action alternative.]

5. One-time non-facility costs include actions for the preservation of cultural or natural resources not related to facilities, the development of visitor use tools not related to facilities, and other park management activities that would require substantial funding above park annual operating costs. Examples include . . .

[The planning team should include relevant examples here or refer to the alternatives narrative, for clarity. Examples could be the rehabilitation of a historic landscape, development of a fire management plan for prairie or forest restoration, studies and inventories, the development of a new film, website, or exhibit for visitors, outreach programs, and myriad other actions. The defining criterion is that these costs are not related to facility costs. In the no-action alternative, non-facility costs should include <u>only</u> those costs already planned within existing programs, and identified within the PMIS with an approved funding source, as noted above.]

6. [Projects that would be partially or wholly funded from other sources. These actions should be separated from the facility costs and titled explicitly, with an explanation of the funding plan. A footnote with references to pages where the project is described in detail may be appropriate. Examples are given in footnotes 7 and 8.]

7. [The battlefield bypass project would reroute the main highway within the park. Final decision on the bypass rests with the Virginia Department of Transportation. If approved, the state will fund approximately $12 million of the total $15 million cost. More information is available in chapter 2, page y.]

8. [The OMSI Science Center Bunkhouse project would be a partnership project to construct living quarters near the existing science center. The project will only be undertaken if OMSI is able to raise the $2.1 million necessary for the bunkhouse construction. See page 93 for details.]

Each of the cost categories in the table (annual operating, staffing, total one-time, facility, and non-facility, and) should appear in each GMP. Costs for other projects could be included if they represent significant differences among the alternatives, are of significant magnitude, or involve atypical funding. Optional cost rows may be used at the discretion of the planning team and should describe other projects that are clearly explained in the narrative descriptions of the alternatives. These projects should be listed individually, not bundled together and shown as a single cost.

9.4 Suggested Tools and Methodology for Estimating Costs

Suggested Tools	Methodology
☑ Determine which costs need to be calculated for the alternatives.	Prepare a matrix, similar to what is done for the impact analysis, which identifies all major facilities and management actions that are being proposed in each alternative and that need to have costs estimated. Only report costs that make a substantial contribution to the differences among alternatives. Group actions under each alternative according to new facilities, changes to existing facilities, non-facility costs, operating costs, or other costs.
☑ Determine annual operating costs.	The ONPS database provides the baseline costs for the park's no-action alternative. The difference between authorized limits and actual FTEs may not be captured in the ONPS number, however, and may be added to the figure. For the other alternatives add additional costs for maintenance and operations associated with each alternative. Annual operating costs should be calculated as if the alternative was fully implemented, in today's dollars. FTE salaries and benefits are included in the annual operating costs. The annual maintenance cost of new facilities is estimated to be 4% of the construction costs. Annual operating costs of non-facility projects should be estimated as feasible.
☑ Determine staffing — the number of FTEs.	FTEs (full-time equivalents) needed to implement the action alternatives should be shown as NPS employees, not volunteers. The number of FTEs should be calculated as if the alternative were fully implemented. A general description of the new FTE positions should be provided. The costs associated with the new proposed FTEs in each alternative should be added to the annual operating cost.
☑ Calculate one-time costs for construction and/or major rehabilitation of facilities, and acquire approval of the facility model runs for the preferred alternative.	Use a cost matrix to keep track of all one-time costs. For the no-action alternative one-time facility costs would include costs for projects already approved and fully funded. Projects with an approved PMIS statement but without approved implementation funding should not be included in the no-action alternative.

Suggested Tools	Methodology
	If the action will affect the annual operating costs, determine the effect and adjust the operating costs accordingly. For facility removal, the cost of demolition should be added to the facility cost. Any costs that may be borne by partners must be included in the one-time costs; however, an explanation should be given in the narrative of cost-sharing opportunities. Additionally, the text may include caveats that some projects would only be undertaken at the scale presented if sufficient outside funding and/or non-NPS personnel were available. (If partnership project costs are significant or involve atypical funding, it may be appropriate to list them individually in the "Other Project Costs" section.) Facility construction/rehabilitation costs may be estimated through: • Facility Planning Model (for new facilities) • Current Replacement Value calculator • similar construction/rehabilitation projects • other NPS or industry guideline, and/or professional judgment **Facility Planning Model (FPM):** http://construction.den.nps.gov/prplanning.cfm This model can be used to determine the square footage for new visitor centers, administrative facilities, comfort stations, educational facilities, entrance stations, fire stations, maintenance facilities, museum collection facilities, and other visitor facilities. The model is a program that moves through a series of questions about the park, current and expected visitation, and what will be housed within the facility. The model results in an estimated facility size, but it does not generate costs. An industry-accepted method is used to determine the potential cost, based on square footage and other factors. Note that for all facilities proposed in the preferred alternative, a facility model run must be approved by the WASO Construction Program Management Division and by regional leadership. Documentation of this approval should be included in the briefing material for the GMP. The contact for the facility planning model is the WASO Construction Program Management Division (Nancy Cocroft, 303-969-2391). **Current Replacement Value (CRV) Calculator:** http://inside.nps.gov/waso/custommenu.cfm?lv=4&prg=190&id=293 The on-line CRV calculator reflects industry standards for costs associated with NPS facilities. The CRV calculator is used for generating rough cost estimates for

Suggested Tools	Methodology
	new assets. This includes buildings, roads, trails, and many other categories. It calculates cost per unit, per square foot, or per linear mile, depending on the type of asset. The model automatically makes adjustments for locality cost differences (e.g., Golden Gate NP has a location factor of 1.47 while Abraham Lincoln Birthplace NHS has a location factor of 1.04). The total itemized cost is multiplied by the location factor to get a location-based cost. The CRV calculator is a Microsoft Excel spreadsheet that requires you to enter the park (for locality-specific costs), the asset code (for example 4300 — Housing), and the asset number. Once you enter this information, you are taken to a spreadsheet that is specific to that type of asset, where you enter more data about the particular asset, such as type of construction, number of stories, and square footage. The calculator automatically gives you the total cost, taking into account any locality adjustments. From there, you can "record the CRV" to generate a separate spreadsheet with your results. Additional costs, such as one-time costs for the installation of utilities may not be included in the CRV results and should be factored into the cost estimates through other industry-standard means. The cost estimate produced by the CRV can be increased by a certain percentage to capture the additional costs. The contact for this tool is the WASO Park Facilities Management Division (Tim Harvey, 202-513-7034). **Park Asset Management Plan (PAMP)** http://165.83.71.10/maintenance/fmss/PAMP%20Guide_final_05_2007.pdf The PAMP describes park assets, how important each asset is in supporting the park mission, operations and maintenance funding levels, and key data about current replacement values, quantities, asset condition, and the amount of deferred maintenance. The plan also predicts future system replacement needs, out-year project development, and candidates for planned disposition. For GMPs, the PAMP can give an indication of where and how much money will be spent on assets, as well as list the assets that must be maintained.
☑ Calculate one-time costs for non-facility actions.	The defining criterion is that these costs are not related to facility costs. As noted above, use a cost matrix to keep track of all one-time costs and organize them into relevant sections. In the no-action alternative, non-facility costs should include only those costs already planned within existing programs and identified within PMIS with an approved funding source.

Suggested Tools	Methodology
	Any costs that may be borne by partners must be included in the one-time costs; however, an explanation should be given in the narrative of cost-sharing opportunities. Additionally, the text may include caveats that some projects would only be undertaken at the scale presented if sufficient outside funding and/or non-NPS personnel were available. Examples include the rehabilitation of a historic landscape; development of a fire management plan for prairie or forest restoration; studies and inventories; the development of a new film, website, or exhibit for visitors; outreach programs; and myriad other actions. Non-facility costs generally are estimated through professional judgment and/or other NPS or industry guidelines, similar projects, or in a few cases the CRV calculator. If the action will affect annual operating costs, determine the effect and adjust the operating costs accordingly.
☑ If appropriate, identify boundary adjustment costs.	Contact the Land Resources Division to estimate the cost for significant boundary adjustments, including land purchases and easements. These costs will be reported in internal documents only, not in the GMP or other communications with the public. A description of how this cost was determined is required for internal documentation. If a boundary adjustment is proposed, the text and the summary cost table should note that acquisition costs are not included in the presentation of costs.
☑ If necessary, calculate other project costs.	Other project costs should be included if they represent large differences among the alternatives, are substantial, or involve atypical funding. These are actions that should be clearly identified in the narrative descriptions of the alternatives. Specific projects should be listed individually. See the preceding section for examples. These signature actions should be separated from facility costs and noted explicitly, with an explanation of the funding plan costs and potentially with references to pages where the project is described in detail. If the action will affect annual operating costs, determine the effect and adjust operating costs accordingly.
☑ As needed, consult with WASO offices in estimating costs.	The two major offices in establishing NPS cost-estimating tools and application of those tools are the WASO Park Facilities Management Division in Washington, DC, and the WASO Construction Program Management Division (WASO CPMD) in Denver. These divisions are involved in the Facility Management Software System (FMSS), which tracks existing assets, as well as value analysis, facility planning modeling, and the NPS Development Advisory Board for new construction projects.

9.5 DISCLAIMER LANGUAGE

The authors of the GMP should consider public expectations about costs and project timelines when providing the public information about each alternative. The following disclaimers, which are shown in italics to emphasize the text that should be included in the GMP, should be included in either bulleted or narrative format when cost estimates are presented in the plan.

Example of List Format for Disclaimer

The following applies to costs presented throughout this GMP:

- *The costs are presented as estimates (in 2008 dollars) and are not appropriate for budgeting purposes.*
- *The estimates presented have been developed using NPS and industry standards to the extent available.*
- *Specific costs will be determined at a later date, considering the design of facilities, identification of detailed resource protection needs, and changing visitor expectations.*
- *Actual costs to the National Park Service will vary depending on if and when the actions are implemented, and on contributions by partners and volunteers.*
- *Approval of the GMP does not guarantee that funding or staffing for proposed actions will be available.*
- *The implementation of the approved plan, no matter which alternative is selected, will depend on future NPS funding levels and servicewide priorities, and on partnership funds, time, and effort.*

Example of Narrative Format for Disclaimer

The cost figures shown here and throughout the plan are intended only to provide an estimate of the relative costs of alternatives. NPS and industry cost estimating guidelines were used to develop the costs (in 2008 dollars) to the extent possible, but the estimates should not be used for budgeting purposes. Specific costs will be determined in subsequent, more detailed planning and design exercises, and considering the design of facilities, identification of detailed resource protection needs, and changing visitor expectations. Actual costs to the National Park Service will vary depending on if and when the actions are implemented, and on contributions by partners and volunteers.

The implementation of the approved plan, no matter which alternative is selected, will depend on future NPS funding levels and servicewide priorities, and on partnership funds, time, and effort. The approval of a GMP does not guarantee that funding and staffing needed to implement the plan will be forthcoming. Full implementation of the plan could be many years in the future.

Notes: