

Preface

Forty miles into a week-long trip we pulled into the beach and started looking for the ranger. We had signed up for a permit by phone on the long drive to the put-in, and rules required a check-in at the backcountry station to become “official” and to sign up for sometimes scarce camps. But this was early May, and we had launched in a snowstorm at 7,000 feet two days before, riding our boats like sleds down a snow drift that buried the highway guardrail. By the next morning six inches of new snow blanketed our first camp, covering Toklat the sleeping Alaskan pound-puppy so completely we thought he was lost.

We did our due diligence anyway, walking around the ranger compound for an hour before heading down river without finding anyone. This river is packed to capacity all summer long and one of the hardest-to-get permits in the country, a 30-to-1 long shot in a lottery held in January. But with snow on the ground, we had the place to ourselves.

River allocation – deciding “who gets to go” – has been part of our personal and professional lives for decades. We were river runners before we became researchers, and allocation was on the agenda for our first natural resources projects (Grand Canyon in the 1970s for Shelby, and Hells Canyon in the 1980s for Whittaker). But when we started considering *this* project it was a classic “approach-avoidance” dilemma – a worthy topic with lots of interesting work to be done yet, but a mine field of potentially explosive issues, some recently stirred up but others dormant for years. What were we thinking?

Whenever allocation comes up, a common question is, “What are they doing on river X, Y or Z?” The answer may be out there somewhere, but you need to know the right people to ask, hope they haven’t retired or moved on to other jobs, and get lucky to find information that is comprehensive, accurate, and up-to-date. This project started as an effort to collect and organize information about river allocation systems in North America.

But what about other allocation issues? Since river allocation efforts began in the 1970s, diverse publications have been developed – some readily available, but others buried in the “fugitive” literature. Many allocation issues were adequately covered before, but others needed more work; a summary that referenced it all in one place could bring everyone “up to speed” and clarify what is known.

When it became clear we shared these goals with the River Management Society and the Bureau of Land Management, the project was off and running. We thank Richard Fichtler (BLM in Missoula, Montana) and Gary Marsh (BLM Washington DC office) for conceiving and supporting the project, as well as RMS allocation project committee members (Linda Jalbert, Tom Mottl, Caroline Tan, and Dennis Willis) for their reviews. We also thank the dozens of river managers, stakeholders, and researchers who provided information about allocation systems nationwide, or reviewed sections of the report for accuracy and clarity (see “list of sources” in the appendices).

Digging into the work confirmed our curiosity as well as our concerns about the topic; we learned yet again why allocating river use is so challenging:

- Carrying capacity and allocation are complex and contentious. When things are scarce, somebody wins and somebody loses, with a tough balancing act between “protecting resources” and “being fair to users.”
- Early allocation systems were often attempts at “holding patterns,” and many became artifacts of historical use. Systems were designed by a few managers at high-profile rivers, but through information-sharing these approaches spread across the country.
- For a variety of reasons, including diverse geography, history, managing agencies, types of trips, and user populations, river managers adjusted and modified their allocation systems to fit unique situations. However well-intentioned, resulting systems were often an intricate patchwork of incremental solutions.
- Such diverse and sometimes Byzantine systems are hard to characterize, classify, compare, evaluate, and (if necessary) repair.
- Many of these systems had unanticipated economic and “distributive justice” consequences.
- Stakeholders have entrenched positions, often with much to gain or lose, and they have developed strong cases for the benefits and costs of existing or alternative systems. These groups are often powerful, politically astute, and ready to flex their muscles to protect their interests.
- Although inevitable, change is difficult. Decision-making is hampered by history, inertia of “the way things are,” political pressure, complexity, implementation costs, and poor information about consequences.

In spite of all this, rivers are special places that people care about passionately. The twenty or so rivers with the longest history of capacities and allocation are some of our nation’s most precious resources, and people continue to flock to them. There are also about 165 Wild and Scenic Rivers (and another 3,400 potential study rivers) with a mandate to address capacities. As populations continue to grow, capacity and allocation will be on-going river management challenges.

So what lessons can be learned from three decades of allocation systems? This document collects and organizes that information, putting it in a systematic and readily-accessible form. The goal is to help resource managers and stakeholders better consider their options and the consequences of their choices, and help researchers identify the work still to be done.

Doug Whittaker and Bo Shelby
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Commercial and non-commercial trips at Deer Creek in the Grand Canyon. Capacities decide “how many is too many?” while allocation decides “who gets to go?”

Chapter 1. Introduction

Public use on many North American rivers has grown substantially in the past half century. The most dramatic increases appeared in the 1970s and early 1980s, with periods of variable growth in the past two decades (Cordell et al., 1999). With the national population now exceeding 300 million (nearly double the 180 million in 1960), demand for outdoor recreation and river use is likely to remain high or increase, while the number of rivers remains finite.

On some rivers, use increases have led to crowding, conflict, and resource degradation. In response, some river managers have established carrying capacities – use limits designed to ensure that biophysical or social impacts do not exceed standards associated with resource health and experience quality. Substantial literature address impacts, standards, and carrying capacities (or other management tools) to reduce visitor impacts. A more specialized and limited literature focuses on allocation – “who gets to go?” – once capacities have been set.

Allocating use can be as controversial as the capacities that make allocating use necessary, and allocation decisions have created heated public debate, political maneuvering, and law suits. Capacities identify the limits, but allocation decisions make those limits real to individuals and groups. Agencies have the challenging task of trying to make allocation systems fair, efficient, and effective.

This report summarizes information about allocating use on North American rivers. The goal is to review allocation systems and public responses to them. The report describes the advantages and disadvantages of different choices in different settings, providing river professionals with the tools to assess and develop their allocation options.

How to use this report

This report is designed as a reference document. As with an encyclopedia, many readers will not read the entire document; but when they want information on a particular topic, it should be easy to find. The document is organized into chapters described below, with additional “sidebars” on tangential topics and appendices about specific rivers and other references.

- ***How systems work: An overview.*** Chapter 2 establishes common terminology and includes a sidebar on “preparing for allocation decision-making.” Most readers will find this helpful as an introduction (for those new to the topic) or a “refresher” (for those with more background).
- ***Evaluating allocation systems.*** Chapter 3 reviews idealized and more pragmatic allocation goals. It includes a sidebar on “calculating a user scorecard” to assess how use is currently distributed.
- ***Allocation approaches.*** Chapter 4 reviews advantages and disadvantages of “split allocation” and “common pool” approaches. It includes a sidebar describing information and controversy related to the economic value of commercial allocations.
- ***Primary distribution systems.*** Chapter 5 reviews the mechanisms used to allocate use (e.g., reservations, lotteries, queuing on site, or auctions), describes how they work, and their advantages and disadvantages. It includes a sidebar on “mixing mechanisms.”
- ***Secondary distribution systems.*** Chapter 6 covers systems for re-distributing use when there are cancellations or no-shows. These include call-in and web-based sign-up systems, and

mechanisms for distributing use among those unsuccessful in primary systems. A sidebar addresses philosophical issues that warn against systems that over-emphasize the “business” of permit systems.

- ***River allocation systems in North America.*** Chapter 7 summarizes a survey of river allocation systems. It describes the number of rivers that use different approaches, primary mechanisms, secondary mechanisms, etc. The summary indicates the diversity of systems that exist, and links to an appendix with additional detail for specific rivers.
- ***Case studies.*** Chapter 8 describes six specific allocation systems in greater detail (Grand Canyon, four Idaho Wild & Scenic Rivers, Colorado’s Arkansas River, McNeil River, Boundary Waters, and Deschutes River) with notable innovations or challenges.
- ***Opinion about allocation systems.*** Chapter 9 summarizes user and stakeholder positions about allocation, including a survey of private boaters and interviews with regional and national organizations. It includes a sidebar on allocation research and monitoring needs.

Appendices include river-by-river information from the survey of allocation systems, and a list of websites and contacts for more information.

Chapter 2. How river allocation works: An overview

This chapter reviews concepts and defines terminology commonly used in river allocation. More extensive discussion is provided in subsequent chapters. The chapter ends with a sidebar on “preparing for allocation decision-making.”

Distinguishing capacity and allocation

In recreation management contexts, many people confuse carrying capacity (use limits) with allocation. While the concepts are closely related, it is important to distinguish between them.

Carrying capacity is sometimes used as an “umbrella” concept to refer to any overuse or conflict issue, but a more focused definition recognizes capacity as “the level of use beyond which impacts exceed standards” (Shelby and Heberlein, 1986). It has its roots in range management and Hardin’s (1968) “tragedy of the commons,” suggesting that collective rather than individual behavior is the cause of incremental biophysical or social experience degradation (Vaske, Donnelly & Whittaker, 2000; Manning, 2007).

The general solution to these problems is to set limits – in Hardin’s words, “mutual coercion, mutually agreed upon” – which requires agreement about management objectives and specific standards that define when impacts and related use levels become unacceptable. A large literature and several planning frameworks have been developed to help managers think about visitor impacts and the diversity of management actions that address them (Stankey et al., 1985, Shelby & Heberlein, 1986; Graefe et al., 1990; Manning, 2007). Capacities are a class of actions that can be particularly powerful (especially for social impacts), and at their core, they involve specific use limits. **Allocation**, in contrast, refers to the systems that actually distribute use once it is limited.

Allocation systems are only needed if user demand exceeds the supply of recreation opportunities defined by a capacity. Capacity determines how much use is too much, while allocation determines who gets to use the limited “spaces” defined by that capacity. An allocation system refers to the mechanisms used to distribute (or ration) those spaces. In river management, allocation nearly always refers to permit systems that ration use (usually launches, but sometimes boats, people, or “user days”) during a specific time period (per day, week, month, or season).

Allocation approaches

There are three conceptual approaches to allocating river use. Brief descriptions are provided below; more extensive reviews of features, consequences, advantages, and disadvantages are provided in Chapter 4.

The most common approach is called **split allocation** (occasionally known as a fixed allocation). It develops different systems for distributing use to the commercial (trips organized by outfitters and guides) and non-commercial (do-it-yourself or “private”) sectors (see definitions below). In the commercial sector, use is allocated to individual commercial companies who generally use pricing and reservation systems to allocate space on their trips to passengers. In the non-commercial sector, use is allocated to individuals, trip leaders, or groups of users, generally through lotteries, reservations, or on-site queuing mechanisms. Under split allocation systems,

challenging issues include determining the appropriate amount of use to allocate to each sector, distributing or transferring use among outfitters within the commercial sector, and choosing allocation mechanisms within the non-commercial sector.

The *common pool* (also sometimes known as “freedom of choice,” “no allocation,” or “non-fixed allocation”) approach was developed to address possible sector inequities in split allocations. It allocates all of the use to individuals or groups without distinguishing whether they intend to take a commercial or non-commercial trip (none of the use is allocated to outfitters). Applicants who receive a permit can choose to take a trip by themselves or with an outfitter. Although the concept has been around for many years, common pool systems have only been used in a few settings and consequences have not been well-documented. Challenges include choosing allocation mechanisms that are fair to commercial and non-commercial groups, and maintaining stable numbers of quality outfitters that provide services to people who don’t have the ability to do it themselves without guaranteed outfitter allocations.

A third type of allocation approach has been labeled an *adjusting split allocation*. This approach assumes an initial split system based on historical use patterns. However, going forward in time, all prospective users (commercial and non-commercial) would have to “register” their interest before competing in the separate sector allocation systems. This registration program could provide improved information about demand for commercial vs. non-commercial trips, which could then be used to adjust the proportion of use allocated to each sector. Although this approach has never been used, some rivers have modestly adjusted splits to address real or perceived inequities during plan revisions or similar planning processes. Other challenges include developing a registration program, “rules” for adjusting splits, and distributing or transferring use among outfitters within the commercial sector.

Allocation mechanisms

In addition to the *general* approaches defined above, the specific mechanisms for allocating use *within* sectors or common pool can also vary. It is useful to distinguish between *primary distribution mechanisms* (which distribute most of the use, usually well in advance of when trips will be taken), and *secondary distribution mechanisms* (which distribute use when there are cancellations or no-shows from the primary distribution).

Primary mechanisms tend to use one of six alternatives briefly described below. More detailed descriptions and discussions of advantages and disadvantages are provided in Chapter 5.

- **Pricing and priced-based auctions.** This allocates use to those willing and able to pay more money. Pricing is the most common way to allocate goods in market economies, but it is less often applied to “non-market goods” such as space on a public river. Nonetheless, outfitters often allocate space on their trips by the prices they charge, and priced-based auctions have been used to allocate prized hunting permits in several states (a concept that could be applied to allocating use to the non-commercial sector on rivers).
- **Reservations** are often used when pricing alone does not effectively allocate a commodity. They tend to favor people who can plan further ahead and are willing to reserve a trip in advance of other prospective users. Reservations are a common allocation mechanism in the travel industry (e.g., for hotels, airlines), and have frequently been used to ration campground sites, public use cabins, or space on concession tours in natural resource settings. In most commercial use allocation systems, outfitters combine reservations with pricing to allocate space on their trips.

- **Pure lotteries.** In a pure lottery, individuals or groups compete for an “equal chance” to access the river. Like reservations, lotteries tend to favor those who can plan ahead because they typically occur well in advance of trips.
- **Weighted lotteries.** In a weighted lottery, selection probabilities are altered for certain groups to serve other management goals or be more “fair” (e.g., by increasing odds for previously unsuccessful applicants or those who have been unable to visit the river more recently).
- **Points-based auctions.** This mechanism awards access to those who have been waiting the longest, as determined by cumulative “years on the list.” A variation of this option has been implemented in Grand Canyon for the transition from an old waiting list system to a weighted lottery (see side bar in Chapter 7).
- **On-site queuing** (also known as “first-come/first-served) trades time rather than money for a commodity. Queues are common for distributing commodities such as concert tickets (where fans camp in lines the night before tickets go on sale), and have been used in river settings where a proportion of permits are available to those who show-up at the launch. On-site queuing is distinguished from “virtual queuing” (e.g., web-based first-come/first served systems) or web-based waiting lists, which are typically coupled with a reservation mechanism.
- **Merit** systems allocate use to special populations to serve other management goals. They include allocations on the basis of some skill, knowledge, past behavior, or special status (e.g. a landowner), or allocations to educational, non-profit, research, or administrative trips. In most cases merit mechanisms allocate a small amount of use and are not considered part of a primary allocation system.

Secondary mechanisms for redistributing cancellations and no shows tend to employ one of four alternatives described below. These can make use available to all users, or can be modified to favor previously unsuccessful applicants or those with other characteristics. More detailed descriptions and discussions of advantages and disadvantages are provided in Chapter 6.

- **Call-in or web-based systems** re-distribute use to those willing to check-back frequently. These are generally reservation systems for “difficult-to-predict” available space, and the responsibility is on users to claim unused access.
- **Notification systems** re-distribute use to known “interested users” (usually unsuccessful applicants from the primary distribution) who are presented with a take-it-or-leave-it option when cancellations occur. Also known as a “waiting list,” this option requires the agency assumes more responsibility for finding users to claim unused access.
- **Supplemental points-based auctions or lotteries.** This mechanism operates a lottery or points-based auction as a permit becomes available. It works best when cancellations occur well before actual launch dates.
- **On-site queuing** (also known as “first-come/first-served). Similar to the system described under primary mechanisms, it favors local users who can spontaneously claim a cancellation on-site.

Categories of use

There are several ways of distinguishing different types of users. In many allocation systems, users are primarily distinguished by whether they are commercial or non-commercial (see below), although other characteristics could be used. The following summarizes some conventional

distinctions used in this report; formal definitions for these use categories may differ (or may not be used at all) by different agencies or rivers (e.g., some agencies manage commercial use through concession contracts, while others have Special Use Permit or Commercial Use Authorization programs).

- **Commercial use** refers to trips where users pay an outfitter for equipment, services, and expertise when taking a trip down a river. It is distinguished from non-commercial use primarily by the presence of guides or other paid staff on the trip. It doesn't include trips where people rent equipment or pay for services such as shuttles or food packing, but don't have guides (sometimes described as "semi-commercial," "outfitted use," or "livery services" see below).
- **Non-commercial use** refers to trips without guides, where users share costs and chores. On some rivers, non-commercial users may rent boats or other equipment, pay for shuttles or food packing, or otherwise receive help in organizing their trip. Non-commercial trips are also commonly known as "private" or "do-it-yourself" trips.
- **Outfitted use** is occasionally used to identify non-commercial trips using rental equipment. "Equipment-only outfitters" or "livery services" that provide this gear but do not provide guides are distinguished from "full-service outfitters" who have guides. In general, equipment-only outfitters do not control an allocation of use, while full service outfitters generally do (under split systems). However, some livery services have exclusive concession or Special Use Permit contracts.
- **Charter trips** refer to trips where individuals who are organized as a group contract with an outfitter to provide a commercial trip (without other users accompanying them). In many ways, they are similar to non-commercial groups (they tend to have smaller group sizes and their goal is to take the trip by themselves), but they require a guide and/or equipment from an outfitter.
- **Tour trips** refer to trips organized and scheduled by a full service outfitter, which combine individuals from several separately contracted groups. With tour trips, people join an existing trip expecting be combined with people who they don't usually know.
- **Outfitters** own or operate a commercial company (either full service or equipment-only); **guides** refer to staff who operate individual trips (which may include baggage boat operators, "swampers" or other people who facilitate the trip on-site).
- **Commercial passengers** refer to the people that take commercial trips (charter or tour trips).
- **Administrative use** refers to several types of trips that may occur outside of the commercial and non-commercial sector. Common administrative trips include ranger patrols, planning and monitoring trips, research trips, and "VIP show-me trips" (e.g., for congressional representatives, other agency officials). Administrative use sometimes includes educational or special group trips (see below), in which case it is not counted as part of the commercial or non-commercial sectors.
- **Educational or special group trips** refer to trips taken by universities or conservation Non-Governmental Organizations (NGOs), clean-up trips, or special needs groups (e.g., persons with disabilities, access challenged groups). Some agencies or rivers consider this a third category of use (along with commercial and non-commercial), which blurs distinctions because commercial outfitters are often hired to operate the trips. Other rivers simply include them in the administrative use category. Regardless of how these trips are classified, there are challenges deciding eligibility criteria for such trips or deciding how many are appropriate.

Preparing for allocation decision-making

Allocation only becomes necessary when use exceeds capacity, but waiting until then to prepare for allocation decision-making is likely to increase controversy and limit management options. Seemingly innocuous “incremental” decisions can effectively preclude allocation choices, while planning ahead can provide more information and allow a range of allocation solutions. If you think use limits and allocation systems are in your river’s future, you might consider the following:

- ***It starts with a capacity.*** Several recreation planning frameworks (including Limits of Acceptable Change [LAC] and Visitor Experience and Resource Protection [VERP]) have been developed to address visitor impact issues by (1) defining valued recreation opportunities, (2) establishing standards for important indicator variables, and (3) identifying management actions that would meet those standards. These standards-based frameworks can be used to establish a numeric capacity, but they tend to consider use limits a “last resort” and fail to recognize other management benefits of capacities (Haas 2001; 2004). If you think a use limit will eventually be needed, make sure to apply these frameworks to land-use and activity/project plans so they specify an explicit capacity.
- ***Understand use-impact relationships.*** Not all impacts are correlated with use levels, but many social impacts are directly related to use. Documenting these links is critical for setting capacities and recognizing when use levels are approaching them.
- ***Be careful about burning “management flexibility” with indirect (no capacity) strategies.*** Managers often employ “indirect” impact reduction actions to postpone implementation of a use limit (and the allocation system that comes with it). But if use continues to rise in spite of those actions, use and impacts will be that much higher when you are finally serious about limits. Allocation issues are challenging enough when use is equal to demand (when it has just reached capacity). Trying to develop an allocation system while simultaneously “turning back the clock” (reducing use) is much more difficult. Saving some “indirect” management actions may also provide some valuable flexibility if allocations need to be adjusted to smooth the transition or encourage stakeholder support.
- ***Be careful about limiting commercial use before non-commercial use.*** Most split allocation systems limit commercial use before instituting a full system, and dozens of rivers currently limit commercial use but leave non-commercial use unlimited. There is nothing inherently wrong with this incremental approach, particularly if the commercial sector is responsible for most of the use or growth. However, a “commercial first” limit program tends to “pre-determine” a split approach if a full system is ever implemented. Should you want the option to consider a common pool in the future, explicitly reserving that right may be necessary before starting limits for commercial use only.
- ***Monitor demand when use is unconstrained.*** Before use limits are imposed, relative demand between commercial and non-commercial sectors is unconstrained and “natural.” If one chooses a split allocation approach, this information is invaluable for establishing the initial split.
- ***Define capacities early; remind the public when capacities are approached.*** Capacities that haven’t been exceeded are easier to set, and transitions to permit systems are easier to accept if users and stakeholders see them coming. Allocation systems can be logistically complex and controversial, and the amount of front-end work is easy to underestimate.
- ***Agree on allocation goals before developing a system.*** The details of allocation systems can be controversial and polarizing. Focusing on general allocation goals before getting into the details is one way to address these decisions. Chapter 3 reviews potential goals and how they may be used to evaluate allocation system choices.



Tubers and canoers on the Niobrara National Scenic River. Allocation systems may distribute use both within and among the commercial and non-commercial sectors.

Chapter 3. Criteria for evaluating allocation systems

This chapter reviews allocation goals and develops other ways of evaluating whether an allocation system is successful. Much of the material on idealized and pragmatic allocation goals is summarized from a longer treatment by Shelby and Danley (1980). The chapter includes a sidebar on “calculating a user scorecard” to assess how use is being currently distributed.

Idealized allocation goals and “fairness”

Allocation is needed when resources are scarce, and society endeavors to share those resources through “distributive justice” – a normative ideal where individuals obtain what they “ought” to have based on some “fairness” criterion. The problem comes in deciding what defines “fair” using concepts such as equality, equity, need, and efficiency. Brief summaries of these idealized goals are provided below:

- **Equality** is based on egalitarian principles that people have equal rights to certain benefits. Most simply, equality is achieved by providing equal shares of a commodity, or equal chances to obtain it (a variation necessary when a commodity is not divisible). In river allocation, equality may be an issue during comparisons between commercial and non-commercial sectors, support for common pools or adjusting split approaches, or support of pure lottery mechanisms.
- **Equity** is an alternative to a strict equality goal, and generally refers to balancing individuals’ contributions with outcomes in a distribution system (Homans, 1961), and generally addresses the concept of “fairness.” Equal opportunity to run a river may not be “equitable” or “fair” if there is general recognition that some individuals have invested more (effort, money, time) to obtain a permit. Equity-based goals in river allocation might argue for weighted lotteries or points-based auctions (more equitable or “fair” for previously unsuccessful applicants), reservations (more equitable for people who plan ahead), or pricing (more equitable for people willing to pay more). Equity issues also play into comparisons between effort to compete in commercial and non-commercial sectors (the latter often has more fees and requires more user effort through applications and scheduling), or the creation of separate allocations for landowners or service groups.
- **Efficiency** refers to an economics principle where a resource is maximized if it is put to its most highly valued use. Market-based economies attempt to maximize efficiency by distributing goods to those willing to pay the highest price for them, a concept that requires assumptions about the value of money (which is not equally valuable to people with different levels of wealth), and the ubiquity of fair markets and information. For non-market goods (like space on a river), efficiency-based arguments are raised when non-commercial users claim that a trip is more valuable to them than a commercial passenger who might be willing to substitute a week at a resort. Efficiency also plays into discussions of how certain “currencies” improve the ability to obtain a permit (e.g., greater wealth is an advantage with pricing, longer planning horizons is an advantage with reservations), with a person’s willingness to use this currency relative to how they value the trip (Shelby, Whittaker, & Danley, 1989a).
- **Need** is a final distributive justice ideal (Deutsch, 1975). At a societal scale, government programs often attempt to provide a “safety net” of basic services before funding higher order (but less basic) services for others. In a river allocation context, need is less commonly discussed, but may provide the basis for administrative, research, service, or landowner allocations.

Considering how specific allocation mechanisms serve these various goals can be interesting and helpful, providing one set of criteria to judge an allocation system. But more often allocation systems are complex enough to support several goals, and linking specific features to these idealized goals can be challenging. Evaluating allocation choices based solely on these idealized goals also ignores political and social realities, because stakeholders' pragmatic assessments of their chances under any particular system may carry equal weight (Shelby, Whittaker, & Danley, 1989b).

Pragmatic goals from stakeholders and agencies

I know the world isn't fair, but why isn't it ever unfair in my favor?

Bill Watterson (Calvin & Hobbes)

A second way of judging allocation systems focuses on more “concrete” goals commonly expressed by stakeholders or agencies. Some of these may stem from idealized goals discussed above, while others are related to perceptions about which systems favor certain groups, or fit with the way a group plans and organizes trips. Pragmatic goals (and indicators of whether they are being met) are listed below. Many were developed from a focus group study of Hells Canyon boaters (Shelby & Danley, 1980); Chapter 9 provides additional information about stakeholder preferences.

- ***Simple and easy to understand.*** There are obvious benefits to simpler vs. more complex systems, and many stakeholders encourage reducing “red tape” as much as possible. “Understandability” is a related concern, because more complex systems may discourage some users. Indicators of simpler systems might include the length of regulations and the number of questions from users. A survey of users can also help (see Chapter 9).
- ***Efficient utilization of capacity.*** With demand exceeding the capacity of a river, there is pressure to use available supply. “No shows” and cancellations are likely with any system, but some are better at filling those spaces. Indicators of more efficient systems include the percentage of “no shows” or cancellations, or the ability to be flexible across sectors.
- ***Flexibility.*** River trip plans often change. Weather, flow levels, group composition, boat availability, and the health of members or trip leaders can all affect whether a trip can utilize a permit or have to cancel. Some allocation systems accommodate more of this flexibility than others. Flexibility indicators include ability to change trip leaders, add or delete group members, re-schedule dates, or change trip lengths.
- ***Minimizes ability to “work the system.”*** This is the flip-side to flexibility, and refers to rules that discourage users from searching for “loopholes” that allow them to obtain permits, control allocations, or join trips more than their “fair share” (even as these may be legitimate ways to obtain a permit). Potential measures track outfitter utilization of their allocations, permit holders that cancel or no show, or the number of “repeat users” relative to the apparent odds of obtaining a permit.
- ***Business stability for outfitters.*** Outfitters have an obvious interest in allocation systems that encourage business stability; agencies in turn may benefit from stable outfitters that provide consistently high quality products because they are in it “for the long run.” Measures may track the number and rate of change among outfitters, the size and rate of change among allocations, or analyses of outfitter financial health. A related issue focuses on whether outfitters are able to capture the value of an allocation (see sidebar in Chapter 4).

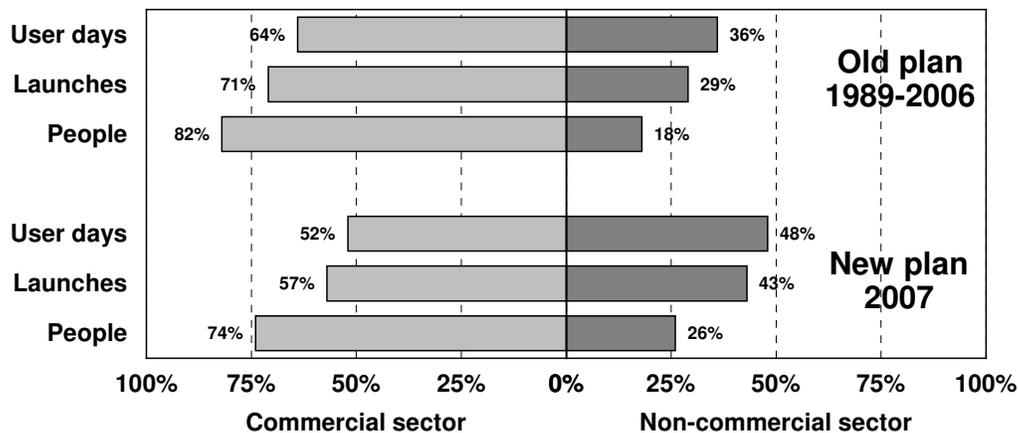
- ***Avoid encouraging additional use.*** Some allocation systems may encourage outfitter marketing or private user participation, which could attract greater use than might otherwise occur. Since an allocated river by definition already has more demand than supply set by the capacity, a system that encourages more use has a “negative feedback loop.” Analyses of outfitter marketing and pricing efforts might help indicate whether this is occurring.
- ***Equal procedures for different groups.*** This commonly-expressed goal among non-commercial boaters relates to the common pool vs. split allocation debate (see Chapter 4), but can be easily measured through an analysis of procedures for users in different sectors. A survey of permit system applicants may also help evaluate the relative “burden” of procedures for each sector.
- ***Responsive to demand by different groups.*** This goal is related to the common pool vs. split allocation debate, and focuses on whether allocations can be adjusted across sectors. It relates to flexibility and efficient utilization goals, and can be measured by the extent that unused allocations can be utilized by other users.
- ***Agency costs.*** Given societal goals to contain unnecessary agency spending and the reality of limited agency budgets, minimizing financial costs is important. In some cases, this can be assessed by summing staff and equipment costs (particularly if these operations are contracted), but there are likely to be hidden costs associated with initial development and early modifications.
- ***Costs to users.*** In addition to agency costs, allocation systems pass some direct financial costs on to users (through fees), as well as the indirect “time and effort” costs to participate. Higher agency costs do not always translate into higher user costs (e.g., developing an efficient web-based application process may reduce user time and effort). Measures include fees for applications and use, and estimates of user burden to participate in the system.
- ***Legal viability.*** This agency criterion can substantially constrain allocation choices. Many allocation systems are tied to historical use patterns or previous regulations, so larger changes (e.g., a shift to a common pool from a split system) may induce legal challenges. Based on the review of existing systems (see Chapter 7 and 8), there is considerable agency discretion in developing allocation systems, and if one defines success as “not getting sued” (or having your system upheld even after being sued), several systems are successful (see Chapter 9). However, there may be legal vulnerabilities when new allocation systems are implemented even when they are modeled after older, tested systems. Different agencies, designations, and historical uses may all play roles in legal viability.

Calculating a “use scorecard”

Please don't ask me what the score is, I'm not even sure what the game is.
Ashleigh Brilliant

Allocation systems distribute different amounts of use to different identifiable groups, and split allocation systems in particular encourage “keeping score” between sectors to see “who gets more use.” However, results depend on whether you count users, user-days, launches, or boats. A comprehensive comparison provides information about all of these variables (see Chapters 7 and 8), but deciding which deserves more attention depends on resource and trip characteristics, as well as the impact and capacity issues the system addresses. Some considerations follow:

- **What use level “unit” creates the most important impacts?** Use limits are designed to control important impacts, so allocation systems should arguably distribute use by the units that cause these impacts. If river encounters or camp competition are the basis for a capacity, the number of launches is probably more important than the number of people, boats, or user days. If the concern is waiting times at rapids or boater-angler encounters, the number of boats may be more important.
- **The choices are easier when trip characteristics are homogenous.** On some rivers it may be hard to distinguish commercial and non-commercial trips. The more similar they are in terms of trip length, group size, and boats per trip, the less important it is to track all the different variables – all will provide similar estimates of the “split.”
- **Pay attention to more variables when trip characteristics are different.** On other rivers, differences may be large and predictable (e.g., commercial trips are larger, non-commercial trips have more boats per capita and stay longer). It is more important to track all the relevant variables, and stakeholders can focus on the measures that work best for them. “User days” probably best “equalizes” sector differences, but few social impacts are related to user days alone. In these cases, a “use scorecard” (and the comparison graphs they produce; see below) should probably show the full range of variables, particularly as the level of controversy rises.



Annual Grand Canyon allocation splits (before and after 2006 plan).
Note: A few Jan/Feb launch dates were not available so comparisons are not quite “apples to apples.”