# 5.24 Recreation

## 5.24.1 Introduction

Recreation use of TVA reservoirs and below-dam areas would be affected to varying degrees by changes in reservoir and tailwater management under all policy alternatives except the Base Case. Estimated changes in recreation use in response to operating scenarios under the policy alternatives were evaluated. Estimates represent reservoir and tailwater recreation use of the 35 TVA projects studied in the ROS for the late-summer and early-fall period (August through October). As discussed in Section 4.24, use estimates are presented for those users of public recreational facilities and commercially provided recreational facilities, and users who have private residential access to project reservoirs.

## 5.24.2 Impact Assessment Methods

Behavioral response models were used to assess potential changes in recreation use in reservoirs and areas downstream in response to policy alternatives. Recreation area users were asked survey questions to ascertain how their use might change with changes in reservoir levels and corresponding tailwater flows. Responses were then used in behavioral models to quantitatively predict changes in recreation use during the August to October period. During this period, the policy alternatives were expected to reflect their primary impacts on levels and flows. Model predictions for changes in recreation use by policy alternative were made relative to the recreation use for the August to October period under the Base Case. Models assumed that the only factors to change would be reservoir levels, while other factors affecting recreation (e.g., the number of facilities) would remain the same. Changes in recreation use during other times of the year were qualitatively evaluated using survey response indicators that allowed generalization on recreation use changes during these other times.

The Base Case is described below specifically for the August through October period (as also described in Section 4.24). The quantitative impacts of the other policy alternatives were compared to the Base Case for the same 3-month period. Changes in recreation use were evaluated for public site users, commercial site users, and private access recreation users.

## 5.24.3 Base Case

The total annual recreation use under the Base Case is 21.8 million user days (see Section 4.24). During the August through October 2002 period, which is the basis for quantitatively comparing the impacts of the policy alternatives, recreation use is about 6.6 million user days (Table 5.24-01) (also see Appendix D8, Table D8-07).

**Table 5.24-01 Recreational Use by Policy Alternative for 2002 (August through October)**

| Alternative | Total Recreational Use | Total Public Use (Reservoirs and Tailwaters) | Public Reservoir Use | Public Tailwater Use | Commercial Use | Private Use |
|---|---|---|---|---|---|---|
| Base Case | 6,569,334 | 873,924 | 670,561 | 203,363 | 3,844,556 | 1,850,854 |
| Reservoir Recreation A | 7,907,800 | 896,484 | 692,160 | 204,324 | 3,997,786 | 3,013,530 |
| Reservoir Recreation B | 8,114,041 | 920,321 | 711,123 | 209,198 | 4,103,949 | 3,089,770 |
| Summer Hydropower | 5,300,096 | 849,185 | 655,920 | 193,265 | 3,725,224 | 725,687 |
| Equalized Summer/Winter Flood Risk | 6,813,723 | 859,883 | 667,534 | 192,349 | 3,891,437 | 2,062,403 |
| Commercial Navigation | 6,449,369 | 873,048 | 669,945 | 203,104 | 3,847,202 | 1,729,119 |
| Tailwater Recreation | 8,115,039 | 918,551 | 710,362 | 208,189 | 4,107,702 | 3,088,786 |
| Tailwater Habitat | 8,009,471 | 916,430 | 712,761 | 203,669 | 4,104,229 | 2,988,812 |
| Preferred | 7,735,922 | 894,110 | 689,524 | 204,586 | 3,950,983 | 2,890,828 |

Public recreation use of reservoirs and tailwaters totaled about 874,000 user days during August, September, and October, comprising 13 percent of the total recreation use by all user types during that period. Public recreation use on reservoirs totaled about 671,000 user days, while public use of tailwater areas totaled about 203,000 user days (Table 5.24-01).

Survey results from public access site users showed that air temperature (either too hot or too cold) was reported to be the most important reason for not recreating at TVA reservoirs or below-dam areas during winter (November through February), early spring (March and April) and fall (September and October). Low water levels were listed as the second most important reason for not recreating during these months and were cited as the most important reason for not using the projects during June and July. Results also showed that approximately 40 percent of all individuals surveyed at public access sites stated that nothing could be done to increase their recreation use of ROS projects; approximately 30 percent of respondents indicated that increasing water levels during low use months (typically late fall through early spring) would result in higher use.

Commercial recreation use at the 35 projects totaled over 3.8 million user days during August through October, comprising 59 percent of the total recreation use by all user types (Table 5.24-01). Surveys of commercial operators showed that their services are least likely to be used during December and January due to colder air temperatures. Operators indicating

lower use of their facilities during March, April, August, September, and October cited low water levels as the primary reason. Approximately 67 percent of all commercial operators surveyed indicated that increasing water levels would result in an increased number of days that people would use their recreational facilities at ROS projects. Approximately 18 percent indicated that nothing could be done to increase patronage of their facilities.

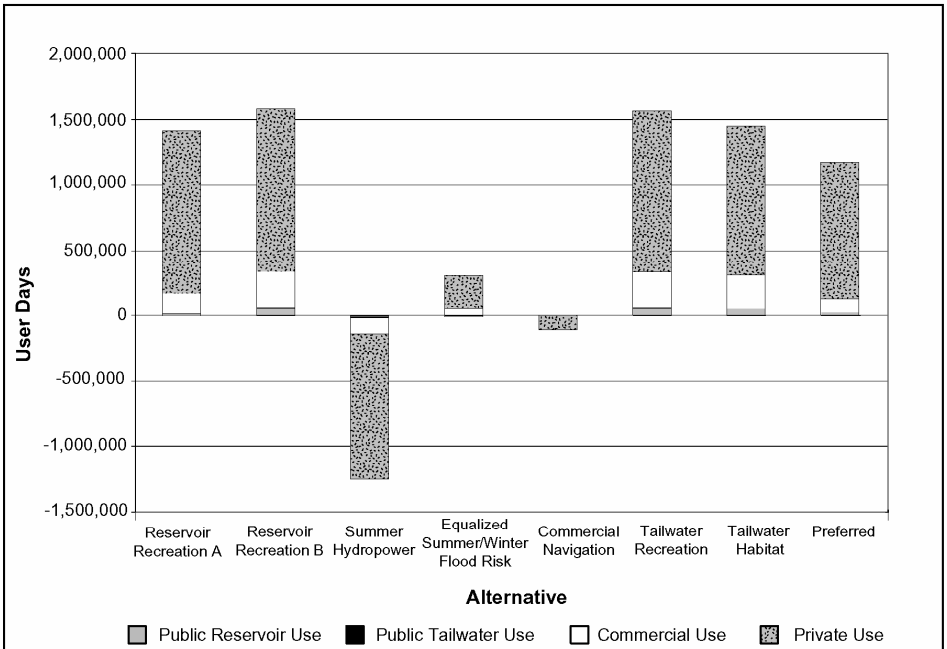
Private recreation use totaled about 1.9 million user days, comprising 28 percent of the total recreation use by all user types (Table 5.24-01). Results of surveys of private property owners adjacent to TVA reservoirs showed that this user group attributes their lack of participation in recreation to be primarily due to water levels, regardless of time of year, even for those months during which water levels are typically at full summer pool levels. Approximately 66 percent of property owners stated that increasing water levels would increase their use of the ROS projects during the periods of low use. Approximately 14 percent stated that nothing could be done to increase their recreation use of the projects.

### 5.24.4 Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, Tailwater Recreation Alternative, Tailwater Habitat Alternative, and Preferred Alternative

Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, the Tailwater Recreation Alternative, the Tailwater Habitat Alternative, and the Preferred Alternative all show similar expected results, with recreation use during August through October expected to total between 7.7 and 8.1 million user days (Table 5.24-01). Public access use on reservoirs and tailwaters is expected to total between 894,000 and 920,000 user days, or about 11 percent of total recreation use under these alternatives. Reservoir public use is expected to total between 689,000 and 713,000 user days, or 9 percent of the total recreation use. Public use below project dams is expected to total between 204,000 and 209,000 user days, or 2 percent of all recreation use.

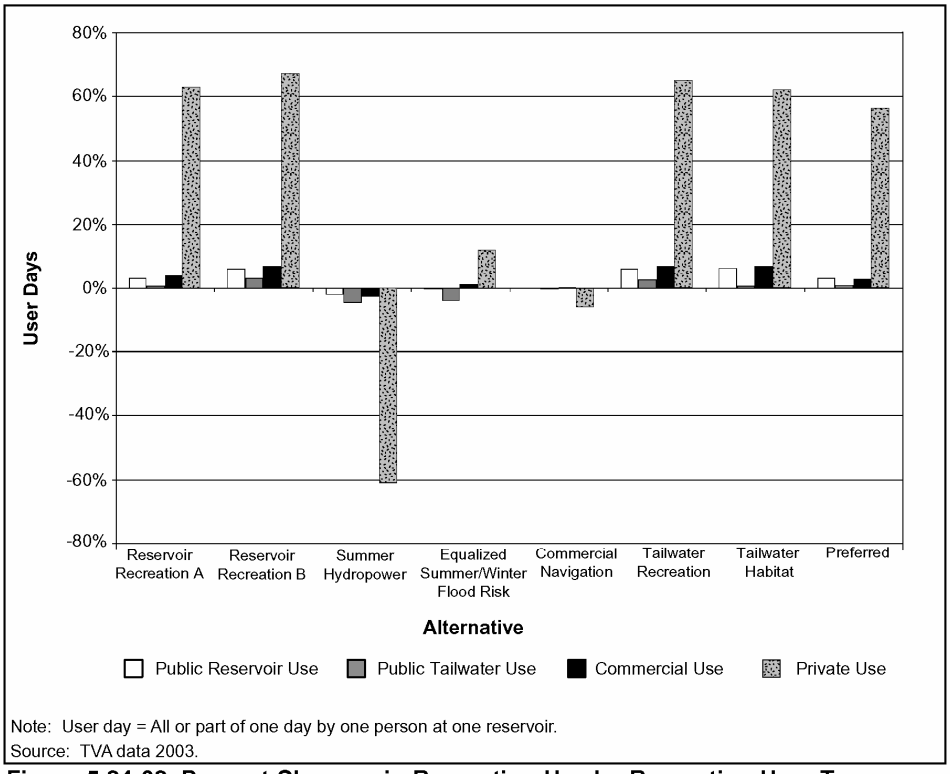
Commercial recreation use under these alternatives is expected to total between 4.0 and 4.1 million user days, or 51 percent of the total recreation use (Table 5.24-01). Private access recreation use under these alternatives is expected to total between 2.9 and 3.1 million user days, or about 37 to 38 percent of all recreation use.

Total recreation use under these alternatives is expected to increase between 1.2 and 1.5 million user days (or about 20 to 23 percent) compared to the Base Case during the August through October period (Figure 5.24-01). The majority of this expected increase is due to an expected increase in private access recreation use of about 61 to 67 percent, or about 1.0 to 1.2 million user days (Figure 5.24-02). All other recreation use types show increases in use but were not as dramatic as the private use increase. Commercial site recreation use is expected to increase by between 2.8 and 7 percent under these alternatives, while public use on tailwaters is expected to increase by 0.2 to 3 percent and public reservoir use is expected to increase by between 3 and 6 percent under these alternatives (Figure 5.24-02).




Note: User day = All or part of one day by one person at one reservoir.
Source: TVA data 2003.

**Figure 5.24-01 Changes in Recreation Use during August through October (2002) by Policy Alternative**




Note: User day = All or part of one day by one person at one reservoir.
Source: TVA data 2003.

**Figure 5.24-02 Percent Changes in Recreation Use by Recreation User Type during August through October (2002) by Policy Alternative**

Recreation use of reservoirs and below-dam areas may increase slightly during the remaining months of the year (November through July) as some people take advantage of the overall higher reservoir elevations that would be available. Changes in use would probably occur more during months with good weather and less during colder winter months. Use of riverine areas could decrease slightly during mid-summer due to lower releases but would likely stay about the same during fall. Riverine use attributed to scheduled recreation flow releases would remain the same under Reservoir Recreation Alternative A and Reservoir Recreation Alternative B, would increase appreciably for the Tailwater Recreation Alternative, and would decrease under the Tailwater Habitat Alternative. Because of the cold water and air temperatures during late winter and early spring, use of riverine areas is not expected to change appreciably.

### 5.24.5 Summer Hydropower Alternative

Recreation use during August through October is expected to total about 5.3 million user days (Table 5.24-01) under the Summer Hydropower Alternative. Public access use on reservoirs and tailwaters is expected to total about 849,000 user days, or about 16 percent of recreation use by all user types. Reservoir public use is expected to total about 656,000 user days, or about 12 percent of the total recreation use under this alternative. Public use below project dams is expected to total about 193,000 user days, or 4 percent of the total recreation use.

Commercial site recreation use under this alternative is expected to total about 3.7 million user days, or 70 percent of the total recreation use (Table 5.24-01). Private recreation use is expected to total about 726,000 user days, or 14 percent of the total recreation use.

In contrast to the previous four alternatives, recreation use under the Summer Hydropower Alternative is expected to decrease during August through October by about 1.3 million user days (or about 19.3 percent) compared to the Base Case (Figure 5.24-01). The majority of this expected decrease is due to an expected decrease in private access recreation use of about 1.1 million user days, or about 61 percent (Figure 5.24-02). Other types of recreation use are also expected to decrease, with commercial site use expected to decrease by 3 percent, public reservoir use expected to decrease by about 2 percent, and public use below project dams expected to decrease by about 5 percent.

Generally, recreation use of project reservoirs and below-dam areas during the remaining months of the year (November through July) would likely experience a decrease due primarily to the much lower water levels occurring during the warm weather months. With respect to the riverine areas, overall boating activity is expected to decrease primarily because the only scheduled recreational release would be below Ocoee #2. If the increased water releases occur on weekdays, boating activity on the tributaries may decrease in locations where scheduled releases do not typically occur. If the increased water releases occur on weekends, a slight increase in boating activity may result. Lower releases on the weekend could lead to an increase in wade fishing on cold-water tributary rivers where trout fishing occurs. Mainstem riverine areas would probably not be affected.

### 5.24.6 Equalized Summer/Winter Flood Risk Alternative

Recreation use during August through October is expected to total about 6.8 million user days (Table 5.24-01) under the Equalized Summer/Winter Flood Risk Alternative. Public access use on reservoirs and tailwaters is expected to total about 860,000 user days, or about 13 percent of recreation use by all user types. Reservoir public use is expected to total about 668,000 user days, or about 10 percent of the total recreation use under this alternative. Public use below project dams is expected to total about 192,000 user days, or 3 percent of the total recreation use.

Commercial recreation use under this alternative is expected to total about 3.9 million user days, or 57 percent of the total recreation use (Table 5.24-01). Private recreation use is expected to total about 2.1 million user days, or 30 percent of the total recreation use.

Changes in recreation use under this alternative are expected to be relatively minor, with expected increases during August through October of about 244,000 user days (or about 4 percent) compared to the Base Case (Figure 5.24-01). The majority of this expected increase is due to an expected increase in private recreation use of about 212,000 user days, or about 11 percent (Figure 5.24-02). Public reservoir recreation use and commercial recreation use would remain relatively unchanged, with expected changes of -0.5 to 1 percent respectively. Public use of projects tailwaters is expected to decrease by about 5 percent, or 11,000 user days (Figures 5.24-01 and 5.24-02).

In general, the Equalized Summer/Winter Flood Risk Alternative would likely result in overall lower levels of recreation use during spring and summer on reservoirs and below-dam areas due to lower reservoir levels and discharges during the warm-weather seasons. Use during late fall and winter (November through February) may be slightly greater due to the expected higher reservoir elevations during this period. Recreation use of riverine sections would not change for areas where and times when scheduled recreation releases occur, but may decrease slightly during summer and fall as releases would be typically lower than under the Base Case.

### 5.24.7 Commercial Navigation Alternative

Recreation use during August through October is expected to total about 6.4 million user days under the Commercial Navigation Alternative (Table 5.24-01). Public access use on reservoirs and tailwaters is expected to total about 873,000 user days, or about 13 percent of recreation use by all user types. Reservoir public use is expected to total about 670,000 user days, or about 10 percent of the total recreation use. Public use below project dams is expected to total about 203,000 user days, or 3 percent of the total recreation use.

Commercial site recreation use under the Commercial Navigation Alternative is expected to total about 3.8 million user days, or 60 percent of the total recreation use (Table 5.24-01). Private recreation use is expected to total about 1.7 million user days, or 27 percent of the total recreation use.

Similar to the Equalized Summer/Winter Flood Risk Alternative, changes in recreation use under the Commercial Navigation Alternative are expected to be relatively minor—with an expected decrease of less than 120,000 user days during August through October (or about 2 percent) compared to the Base Case (Figure 5.24-01). The expected decrease is driven by the expected decrease in private access recreation use of about 122,000 user days, or about 7 percent (Figure 5.24-02). Public reservoir recreation use, public use below project dams, and commercial site recreation use would remain relatively unchanged, with expected changes of less than 1 percent.

During the remaining months of the year (November through July), this alternative would likely result in very small changes in use of project reservoirs and downstream areas. The reservoir and below-dam area elevations would be similar to those experienced under the Base Case. Changes in riverine use would also be small, as there would be little change in flow releases and no change in scheduled recreation releases.

### 5.24.8 Summary of Impacts

Table 5.24-02 provides a summary of the expected changes in recreation by policy alternative. An overall rating is also indicated for each alternative. Four of the alternatives are expected to result in large increases in recreation use: Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, the Tailwater Recreation Alternative, and the Tailwater Habitat Alternative. These alternatives are expected to result in increases in use of between 1.3 and 1.5 million user days. In contrast, the Summer Hydropower Alternative is expected to result in a moderate decrease in recreation use of about 1.3 million user days, and the Preferred Alternative would result in a moderate increase in recreation use of about 1.2 million user days. The Equalized Summer/Winter Flood Risk Alternative and the Commercial Navigation Alternative are expected to result in a slight increase or little change in recreation use.

**Table 5.24-02 Summary of Changes in Recreational Use by Policy Alternative (August through October)**

| Alternative | Recreation Use Types | | | | |
|---|---|---|---|---|---|
| | Public Use In Reservoirs | Public Use in Tailwaters | Commercial Use[1] | Private Use | Overall Rating |
| Reservoir Recreation A | Slightly beneficial (3.0%) | No change (0.5%) | Slightly beneficial (4.0%) | Substantially beneficial (63.0%) | Substantially beneficial (20.4%) |
| Reservoir Recreation B | Slightly beneficial (6.0%) | Slightly beneficial (3.0%) | Slightly beneficial (7.0%) | Substantially beneficial (67.0%) | Substantially beneficial (23.5%) |
| Summer Hydropower | Slightly adverse (-2.0%) | Slightly adverse (-5.0%) | Slightly adverse (-3.0%) | Substantially adverse (-61.0%) | Adverse (-19.3%) |
| Equalized Summer/ Winter Flood Risk | No change (-0.5%) | Slightly adverse (-5.5%) | Slightly beneficial (1.2%) | Beneficial (11.0%) | Slightly beneficial (3.7%) |
| Commercial Navigation | No change (-0.1%) | No change (-0.1%) | No change (0.1%) | Slightly adverse (-6.0%) | Slightly adverse (-1.8%) |
| Tailwater Recreation | Slightly beneficial (5.9%) | Slightly beneficial (2.5%) | Slightly beneficial (7.0%) | Substantially beneficial (67.0%) | Substantially beneficial (23.5%) |
| Tailwater Habitat | Slightly beneficial (5.9%) | No change (-0.1%) | Slightly beneficial (7.0%) | Substantially beneficial (61.0%) | Substantially beneficial (21.9%) |
| Preferred | Slightly beneficial (2.8%) | No change (0.6%) | Slightly beneficial (2.8%) | Substantially beneficial (56.0%) | Beneficial (17.8%) |

Note: An increase in recreational use ranging from 0 to 1% was considered No Change, from >1 to 8% was considered Slightly Beneficial, from >8 to 20% was considered Beneficial, and >20% was considered Substantially Beneficial. A decrease in recreational use ranging from 0 to 1% was considered No Change, from >1 to 8% was considered Slightly Adverse, from >8 to 20% was considered Adverse, and >20% was considered Substantially Adverse.

[1] Commercial whitewater rafting activity on Ocoee #2 and Ocoee #3 was considered in this summary. Under the Summer Hydropower Alternative and the Tailwater Habitat Alternative, commercial whitewater releases would be suspended on Ocoee #3. For purposes of this summary, it was assumed that these alternatives would result in the closure of commercial whitewater operations on Ocoee #3. The expected increase in use overall is expected to occur for reservoir use.