

## **5.15 Land Use**

### **5.15.1 Introduction**

The land use analysis examines the effects of policy alternatives on the rates of residential shoreline development for selected reservoirs (Table 4.15-02), both mainstem and tributary storage. The selected reservoirs were chosen because their respective rates of residential development may be affected by the alternatives to the existing reservoir operations policy that are being considered in the ROS. Some reservoirs may see a slight acceleration or deceleration of buildout, thereby reaching planned capacity somewhat before or after the currently projected buildout date of 2023. As discussed in Section 4.15, residential development is the predominant land use change occurring in the shoreline (primary) and secondary zones of influence around the reservoirs. Consequently, this analysis concentrates on potential impacts from changes in the rate of residential development. Impacts from commercial or industrial development were considered in the Shoreline Management Initiative (SMI) EIS and are expected to be relatively minor in comparison to residential development. Any proposals for such developments requiring TVA approval would be subject to separate environmental review.

Each reservoir is unique, in that the Land Management Plan (LMP) and the SMI govern the available shoreline for residential development (see Section 4.15.2). Consequently, the amount of shoreline available for development varies widely among reservoirs, from as little as 8 percent to as much as 88 percent of total shoreline (Table 4.15-02).

Population in the region is expected to continue to grow, with urbanization applying pressure to some counties more than others. This anticipated growth would continue to create demand for shoreline residential property. Due to the limited availability of developable shoreline property, all reservoir land where residential access is allowed would eventually be fully developed to its planned capacity.

The factors that affect residential development are both external and internal and differing reservoir levels that result from a change in the TVA reservoir operations policy are only one of several factors of influence to be considered when analyzing rates of shoreline residential development.

### **5.15.2 Impact Assessment Methods**

The land use analysis is based on the following information from the SMI:

- The residential development projection (e.g., 38 percent of total shoreline, or 4,192.2 miles) is the maximum system-wide reservoir shoreline property available for residential development. Actual buildout is expected to be less than 38 percent because of environmental safeguards and maintain and gain exchanges, as required by the SMI.

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- Sixty-seven percent, or 2,809 miles, of the shoreline property available for residential development is undeveloped.
- The pattern for development is defined for a reservoir on an individual basis by its LMP and varies widely between reservoirs.
- The full residential buildout within the primary zone of influence (the 0.25-mile shoreline band) is likely to occur within 25 years, or approximately 2023.
- The Shoreline Management Policy requires that environmental impacts due to residential development be mitigated according to applicable regulations. Each proposed development is reviewed independently, and the mitigation requirements imposed are project specific.
- The land use analysis used the same population growth and buildout assumptions concluded in the SMI—full buildout is likely to yield 83,000 new lakefront lots, 91,000 new backlots, and an estimated population increase of 396,000 persons.
- Urbanization was identified as a population growth trend that causes some counties to grow faster than others; therefore, population growth is not evenly distributed throughout the region. Localized areas of faster growth were identified in reservoir counties near Knoxville, Tennessee; Huntsville, Alabama; the Nottely and Chatuge Reservoirs in North Georgia; and the Watts Bar area in East Tennessee.

The descriptions of positive and negative factors that influence the rate of shoreline development came from the Lake Improvement Plan (TVA 1990). Interviews with TVA land management specialists indicate that the factors identified in the Lake Improvement Plan continue to be pertinent to this analysis. For example, growth, infrastructure (transportation and utility) improvements, good-quality commercial recreation and reservoir access, scenic beauty, water quality, and property value are some of the factors that are attractive to prospective buyers. Conversely, remoteness, lack of infrastructure and urban amenities, steepness of the land, lack of commercial recreation, and large reservoir fluctuations were considered detractors for prospective buyers. The land use analysis has examined these factors and additional external factors, such as the general state of the economy, attractive mortgage rates, and real estate marketing efforts in order to understand the relationship to shoreline residential development.

TVA land management specialists have been directly involved in the planning process and the development of the specific LMPs. Having the dual role of process participants and long-term observers, these technical specialists were interviewed to obtain their understanding of the relationship between the factors discussed above and the relative rates of development seen at different reservoirs.

This land use analysis assumed that a correlation exists between the management of reservoir elevations and the duration of reservoir water levels, and the perceived desirability of reservoir

shoreline for residential development. Table 4.15-02 quantifies the magnitude (in acres and shoreline miles) of shoreline to be converted to residential use within the primary zone. Potential impacts on the rate of shoreline residential development associated with the alternative reservoir operations policies are expected to be indirect, requiring a qualitative approach. The policy alternatives were compared to the Base Case to evaluate the likely effect of each alternative in causing the rate of shoreline residential development to increase or decrease. For this analysis, an increase in the rate of development means that buildout likely would occur sooner than expected under the Base Case; a decrease in the rate of development means that buildout would occur later than expected under the Base Case.

The impacts of the anticipated changes in the rate of development can be viewed as positive or negative, depending on point of view. An increase in the rate of development can result in a beneficial economic impact or an adverse impact on the natural condition of the reservoir shorelines, and the inverse relationship is also true. The terms adverse and beneficial used to describe the impacts of the alternatives pertain to potential effects on the natural condition surrounding the reservoirs. Via several survey instruments, the SMI (TVA 1998) identified that visual quality and the natural aesthetics of the reservoir shorelines are important to large percentages of residents and recreational users.

The criteria for comparing the alternatives included the metrics cited in Section 4.15.3 and were supplemented where possible by the findings of other study teams, and observations derived from reservoir LMPs, TVA Watershed Management Teams, and others. Indirect effects of shoreline residential development on other resource areas are described in the sections for those resources.

### **5.15.3 Base Case**

The Base Case was established as the reference against which to compare the rates of conversion to residential land use affected by each policy alternative. Assuming no change in reservoir operations policy and practice, the buildout projected by the SMI may be regarded as a reasonable basis on which to expect future land use conversion to residential shoreline development to reach planned capacity.

### **5.15.4 Reservoir Recreation Alternative A**

The improved recreational opportunities and visual quality under Reservoir Recreation Alternative A could result in a slight increase in the rate of residential shoreline development. This increase could be slightly adverse to the natural condition of the land surrounding the reservoirs.

### **5.15.5 Reservoir Recreation Alternative B**

The effects on land use under Reservoir Recreation Alternative B would be similar to those described for Reservoir Recreation Alternative A. The slight increase in the rate of residential

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shoreline development could be slightly adverse to the natural conditions of the land surrounding the reservoirs.

### **5.15.6 Summer Hydropower Alternative**

The effects on land use under the Summer Hydropower Alternative could be slightly beneficial to the natural condition of the land surrounding the reservoirs. A decrease in the rate of residential shoreline development may result from reduced recreational opportunities and visual quality.

### **5.15.7 Equalized Summer/Winter Flood Risk Alternative**

The likely effects on land use under the Equalized Summer/Winter Flood Risk Alternative could be no change or a slight benefit to the natural condition of the land surrounding the reservoirs. A slight decrease in the rate of residential shoreline development may result from reduced recreational opportunities and visual quality.

### **5.15.8 Commercial Navigation Alternative**

No change to the natural condition of the land surrounding the reservoirs is anticipated under the Commercial Navigation Alternative. No change in the rate of residential shoreline development on the affected reservoirs is anticipated, because summer recreation levels would not change from the Base Case.

### **5.15.9 Tailwater Recreation Alternative**

The effects on land use under the Tailwater Recreation Alternative would be similar to those described for Reservoir Recreation Alternative B. A slightly adverse effect on the natural condition of the land surrounding the reservoirs is anticipated for the same reasons.

### **5.15.10 Tailwater Habitat Alternative**

The effects on land use under the Tailwater Habitat Alternative could range from no change to a slightly adverse effect on the natural condition of the land surrounding the reservoirs, similar to those described for Reservoir Recreation Alternative B.

### **5.15.11 Preferred Alternative**

The effects on land use under the Preferred Alternative would be similar to those described for Reservoir Recreation Alternative A. The improved recreational opportunities and visual quality could result in a slight increase in the rate of residential shoreline development. This increase could be slightly adverse to the natural condition of the land surrounding the reservoirs.

**5.15.12 Summary of Impacts**

A number of factors influence the rate of shoreline residential development, such as the overall condition of the economy and the attractiveness of mortgage rates. These factors are broad based and would apply to development at all reservoirs. Other factors, such as urbanization, developed infrastructure and recreation, and reservoir fluctuation are apt to be reservoir specific—with attributes at certain reservoirs more likely to attract development. Those reservoirs are likely to develop faster than other reservoirs. In all cases, all of these factors apply to all of the alternatives being considered to varying degrees.

The land use analysis concluded that the reservoir operations policy can influence the rate of shoreline residential development but is not a determining factor when compared to other factors, such as urbanization and the health of the economy. Table 5.15-01 summarizes anticipated impacts on land use by policy alternative. Shoreline development is expected to occur as projected in the SMI, and none of the alternatives would affect the identified 38-percent total buildout. The land use analysis did find that some alternatives, including the Preferred Alternative, could contribute to a slight increase in the rate of residential shoreline development. Increased summer pool durations and winter flood guide levels, as described in the Preferred Alternative, would provide for an overall increase in reservoir recreational opportunities and visual quality. Improvements to these public values could result in a slight increase in the rate of shoreline development. Both the planning and management processes ensure that the environmental impacts of future development are addressed by the appropriate regulations in place for each proposed project.

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**Table 5.15-01 Summary of Impacts on Land Use by Policy Alternative**

<b>Alternative</b>	<b>Description of Impacts</b>
Base Case	Buildout to 38% would occur as projected in the Shoreline Management Initiative (by 2023).
Reservoir Recreation A	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of residential shoreline development.
Reservoir Recreation B	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of residential shoreline development.
Summer Hydropower	Slightly beneficial effects on natural conditions would occur because a decrease in the rate of residential shoreline development may result in a slight benefit to the natural condition of land surrounding the reservoirs.
Equalized Summer/Winter Flood Risk	No change to slightly beneficial effects on natural conditions would occur because of a slight decrease in the rate of residential shoreline development.
Commercial Navigation	No change to natural conditions would occur.
Tailwater Recreation	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of residential shoreline development.
Tailwater Habitat	No change to slightly adverse effects on natural conditions would occur because of a slight increase in the rate of residential shoreline development.
Preferred	Slightly adverse effects on natural conditions would occur because of a slight increase in the rate of residential shoreline development.