
EXECUTIVE SUMMARY

Floating Houses Policy Review

FINAL ENVIRONMENTAL IMPACT STATEMENT
FEBRUARY 2016



TENNESSEE VALLEY AUTHORITY



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COVER SHEET

Floating Houses Policy Review

Proposed action:	The Tennessee Valley Authority (TVA) has prepared this Environmental Impact Statement to assess the impacts and address environmental, safety, and socioeconomic concerns associated with the proliferation of floating houses and nonnavigable houseboats on its reservoirs. TVA will decide which of six alternative policies will be used into the future to regulate and manage floating houses and other nonnavigable structures on its reservoirs.	
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Abstract: The Tennessee Valley Authority (TVA) is reviewing its policy on floating houses and nonnavigable houseboats that are designed and used primarily for human habitation. TVA's review is in response to the increased mooring of floating houses (FHs) on its reservoirs, which has implications for navigation, public health and safety, the environment, and public recreation. TVA considered five alternative policies and the No Action Alternative. It has prepared this Environmental Impact Statement (EIS) to assess the potential impacts of implementing each alternative. The alternative policies vary greatly, from allowing additional FHs (Alternative A) to requiring that all FHs be removed (Alternative C). One alternative (Alternative B1) would allow existing, currently unpermitted FHs to remain if new minimum standards are met. Another alternative (Alternative B2) would allow the same, but FHs and nonnavigable houseboats would be removed after a sunset period. Under one alternative (Alternative D), TVA would enforce current regulations to address FHs. TVA proposes to implement Alternative B2 as its new policy and amend its regulations under Section 26a of the TVA Act to establish new standards and requirements to address environmental and safety concerns. TVA also analyzed impacts associated with current management as the No Action Alternative. For most resources, the impacts would be greatest for the No Action Alternative because the increase in the numbers of FHs under this scenario would be greatest.

EXECUTIVE SUMMARY

ES 1. Introduction

The Tennessee Valley Authority (TVA) is a multi-purpose federal agency responsible for managing a range of programs for the use, conservation, and development of the natural resources in the Tennessee Valley including the Tennessee River. In carrying out this mission, TVA operates a system of dams and reservoirs on the Tennessee River and its tributaries—its water control system—in order to manage the water resources of the Tennessee River for the purposes of navigation, flood control, and power production (Figure ES 1). Consistent with those purposes, TVA uses the system to improve water quality and water supply, and to provide a wide range of public benefits including recreation.

In June 2015, TVA released a Draft Environmental Impact Statement (EIS) to assess the impacts and address environmental, safety, and socioeconomic concerns associated with the proliferation of floating houses (FHs) and nonnavigable houseboats (NNs) on its reservoirs. After considering input from the public and intergovernmental agencies, TVA has prepared this Final EIS.

This environmental review was prepared in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations (40 CFR Parts 1500–1508) and with TVA's procedures for NEPA implementation. The EIS process ensures that the public and other environmental and permitting agencies have opportunities to provide input to the decision that TVA must make about the growth of FHs and the FHs/NNs already located on its reservoirs. The Final EIS identifies the alternatives TVA is considering, including its preferred alternative, the current environment, and the potential impacts from each alternative.

ES 2. Purpose and Need for Action

TVA is considering how to respond to the increased mooring of FHs on its reservoirs. The increase in FHs has implications for navigation, public health and safety, the environment, and public recreation. Potential actions in response to the proliferation of FHs could include amending its regulations under Section 26a of the TVA Act (18 CFR Part 1304).¹

In 1971, TVA amended its Section 26a regulations to prohibit the mooring or anchoring of new NNs on TVA reservoirs. Criteria were established to identify when a houseboat was considered "navigable" and the conditions under which existing NNs would be allowed to remain. Since 1971, TVA has made minor changes to its regulations affecting NNs, most notably in 1978, when TVA updated the prohibition of NNs except for those in existence on or before February 15, 1978. The navigability criteria, however, largely have remained unchanged. FHs are a modern version of the pre-1978 NNs that TVA addressed in its 1971 and 1978 regulatory actions. FHs do not have permits issued by TVA.

¹ The Tennessee Valley Authority Act is the legislation passed by Congress in 1933 that established TVA. Section 26a gives TVA jurisdiction to regulate obstructions that affect navigation, flood control, or public lands across, along, or in the Tennessee River or any of its tributaries. Accordingly, TVA's approval is required prior to the construction, operation, or maintenance any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations.

Absent taking action, TVA anticipates that the mooring of FHs on its reservoirs will continue to increase. Until now, TVA has discouraged the increased mooring of FHs without using the full scope of its regulatory authority under Section 26a. TVA is considering the policy implications before deciding how to address the problem. The policy decision addresses the FHs/NNs that are now moored on some TVA reservoirs and would apply to all TVA reservoirs.

ES 3. Alternatives

Consistent with NEPA, TVA evaluated a reasonable range of alternatives and the alternative of taking no action. With its purpose and need to address the increased mooring of FHs on its reservoirs providing context, TVA began by identifying a broad set of possible management actions (e.g., new standards, enforcement, updating rules and regulations, removal of noncompliant structures, permitting or not permitting new FHs) that could be combined into policy alternatives. This process included consideration of ways to manage existing currently permitted NNs, as well as options for addressing the existence of hundreds of currently unpermitted FHs.

In developing the alternatives, TVA consulted a number of internal resources and TVA staff familiar with FH/NN issues and management of the reservoirs, in addition to resource specialists familiar with the conditions at the marinas with FHs/NNs and their ongoing impacts. TVA also considered comments received in recent years from the public, marina owners, recreationists, landowners, and others who have communicated about FHs/NNs, in addition to comments received during the scoping process.

TVA then identified a set of five policy alternatives to evaluate in detail, in addition to the No Action Alternative. The resulting alternatives range from the complete removal of all NNs and FHs to the continued management of existing NNs and establishment of a permit program for development of existing and/or new FHs.

The identified alternatives include grandfathering existing FHs (permitting them to remain on the reservoirs), removing them after a sunset period, and immediately removing them. In developing the Draft EIS, TVA considered varying sunset periods for removal of existing FHs/NNs (e.g., 10, 15, 20, 25 years) before deciding that limiting the evaluation to immediate removal and removal after a 30-year period would provide the TVA decision maker and the public a sufficient understanding of the consequences of removal over shorter time periods.

In the Draft EIS, TVA considered a 30-year sunset period as part of Alternative B2. In the Final EIS, TVA revises Alternative B2 to apply a shorter sunset period of 20 years. TVA proposes to implement Alternative B2, as revised, as its new policy for managing floating

Understanding the terms “Floating Houses” and “Nonnavigable Houseboats”

Floating houses are a modern version of the pre-1978 nonnavigable houseboats. Floating houses are considered to be structures designed and used primarily for human habitation, rather than for the primary purpose of recreational boating or water transportation. A boat no longer capable of navigation or water transportation, which is used for habitation, may be considered a floating house by TVA.

“Nonnavigable houseboat” is the term found in TVA’s regulations that refers to early-era floating houses that existed on TVA reservoirs when TVA amended its regulations in 1971 and 1978. At that time, TVA grandfathered and issued permits to the existing nonnavigable houseboats but prohibited new ones going forward.

houses and nonnavigable houseboats. The analyses involving a 30-year sunset period are retained as part of the administrative record and are not being discarded.

The six alternatives are described below. Table ES 1 identifies the six alternatives selected to be carried forward for detailed analysis.

Table ES 1. Summary and Comparison of Alternatives

Alternative	Description
No Action Alternative	Current Management
Alternative A	Allow Existing and New Floating Houses
Alternative B1	Grandfather Existing and Prohibit New
Alternative B2 (Preferred)	Grandfather but Sunset Existing and Prohibit New
Alternative C	Prohibit New and Remove Unpermitted
Alternative D	Enforce Current Regulations and Manage through Marinas and Permits

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ES 3.1 No Action Alternative – Current Management

For the purposes of NEPA and the environmental analysis in this EIS, the No Action Alternative is the baseline against which all action alternatives are compared. Under the No Action Alternative, TVA would continue to use discretion in enforcing its Section 26a regulations and would address specific problems caused by FHs/NNs on a case-by-case basis.

ES 3.2 Alternative A – Allow Existing and New Floating Houses

Under Alternative A, TVA would approve and issue permits for the mooring of existing and new FHs that meet new minimum standards within permitted marina harbor limits. Noncompliant FHs would be removed from the reservoir. TVA would change its regulations to set minimum standards for safety and wastewater issues, and TVA would increase its enforcement of these standards. Existing permits issued to NNs would remain valid if the NN complies with its permit conditions. Permitted NNs would not be subject to new standards if they comply with their current permits.

ES 3.3 Alternative B1 – Grandfather Existing and Prohibit New

Under Alternative B1, TVA would approve and issue permits for the mooring of existing FHs that meet new minimum standards within permitted marina harbor limits. Permitted NNs in compliance with their permits would continue to be allowed. TVA would prohibit new FHs and update its regulations to clarify that FHs are deemed nonnavigable and not allowed.

ES 3.4 Alternative B2 – Grandfather but Sunset Existing and Prohibit New

Under Alternative B2, TVA would approve existing FHs that meet new minimum standards and allow mooring within permitted marina harbor limits but would establish in its updated regulations a sunset date by which time all FHs must be removed from TVA reservoirs. TVA would prohibit new FHs. TVA would continue to allow existing permitted NNs that are compliant with their permit conditions but would require that they also be removed from TVA reservoirs by the sunset date. The sunset period would last no more than 20 years. TVA prefers to implement Alternative B2 as its new policy.

ES 3.5 Alternative C – Prohibit New and Remove Unpermitted

Under Alternative C, TVA would prohibit new and existing FHs. TVA would continue to allow permitted NNs that comply with their current permit conditions. TVA would require removal of all unpermitted FHs and permitted NNs that are noncompliant with their permit conditions in accordance with 18 CFR 1304.406 (see Appendix A). TVA would amend its regulations to clarify its navigability criteria. TVA would not issue new standards.

ES 3.6 Alternative D – Enforce Current Regulations and Manage through Marinas and Permits

Under Alternative D, TVA would use its existing Section 26a regulations and property rights to remove existing FHs and noncompliant NNs, and to stop the mooring of new FHs on its reservoirs. TVA also would use the conditions and covenants in its land use agreements with marina operators to implement this approach.

ES 4. Affected Environment

The EIS includes baseline information for understanding the potential environmental, socioeconomic, and recreation impacts associated with the FH/NN policy alternatives under consideration by TVA. It describes the setting and existing conditions of natural, social, and economic resource areas that would be affected by the policy alternatives. The discussion of the affected environment also includes a description of the study area boundaries, current TVA planning policy, and the temporary scope of the EIS.

The following 12 resource areas are discussed in detail:

- Socioeconomics and Environmental Justice
- Recreation
- Public Safety
- Navigation
- Solid and Hazardous Wastes
- Visual Resources
- Land Use
- Cultural Resources
- Water Quality
- Ecological Resources
- Threatened and Endangered Species
- Floodplains

Although the geographic scope of this environmental review is the entire Tennessee River Watershed, specifically TVA's reservoir system and adjacent shoreline and land, particular attention is given to reservoirs with existing commercial marinas, as well as those reservoirs with a reasonable potential to support commercial marinas in the future. The EIS addresses the 29 reservoirs that currently house FHs and NNs or are likely to have additional FHs in the future if current trends continue. In addition to the 29 reservoirs described above, 20 reservoirs currently have no marinas and have low estimates of potential FH development. These reservoirs are identified in Section 1.4.1 and are not discussed further in the EIS. Table ES 2 identifies the 29 reservoirs addressed in the EIS.

Table ES 2. Reservoirs with Marinas or Potential for Future Commercial Marinas in the Study Area

Reservoir	Estimated Current Number of Floating Houses and Nonnavigable Houseboats	Number of Marinas	Existing Marina Footprint (acres)
Bear Creek	0	0	0.0
Blue Ridge	12	1	23.7
Boone	133	7	51.6
Cedar Creek	0	0	0.0
Chatuge	0	4	39.2
Cherokee	2	11	130.2
Chickamauga	20	14	172.1
Douglas	0	10	69.0
Fontana	357	6	997.1
Fort Loudoun	100	10	101.8
Fort Patrick Henry	6	1	5.4
Guntersville	12	19	464.3
Hiwassee	30	4	45.2
Kentucky	55	61	658.1
Little Bear Creek	0	0	0.0
Melton Hill	0	1	2.0
Nickajack	30	3	45.5
Normandy	0	0	0.0
Norris	921	24	644.4
Nottely	0	1	4.1
Parksville	0	1	13.5
Pickwick	2	7	112.0
South Holston	117	6	144.9
Tellico	0	4	67.3
Tims Ford	0	1	23.7
Watauga	37	7	109.8
Watts Bar	2	13	148.6
Wheeler	0	5	70.6
Wilson	0	5	14.6
Total	1,836	226	4,159

TVA customized the study area for each resource area to address the potential effects of the FH/NN policy alternatives on that resource area. The analysis in the EIS also includes considerations of the existing reservoir land planning process. This process allocates land to seven land use zones defined in TVA’s *Natural Resource Plan* (TVA 2011a). The zones identify the land use of the reservoirs for purposes including recreational, industrial, sensitive resource management, and natural resource conservation. The zones provide a baseline for current conditions as well as planned uses that could be affected by the policy decisions in each alternative.

The temporal scope of the environmental analysis in the EIS extends at least 30 years into the future. This period was selected because it is a typical period used for planning TVA management actions and policies. However, results beyond 5 to 10 years become increasingly uncertain and speculative.

ES 5. Environmental Consequences

The EIS describes the direct and indirect environmental impacts of the six alternatives as they affect the 12 resource areas.

To complete the environmental analysis, TVA estimated the future number of FHs/NNs under each of the alternatives over the 30-year study period. As shown in Table ES 3 and discussed in Section 4.1.1 of the Final EIS, the largest predicted increase in the number of FHs would occur under the No Action Alternative. The second highest increase in the number of FHs on TVA reservoirs over a 30-year study period would be under Alternative A. The largest predicted decrease in the number of FHs/NNs would occur under Alternative B2 at the end of a 20-year sunset period. Under Alternative C, permitted NNs would be allowed and all existing FHs would be removed from TVA reservoirs, with no further reduction over the 30-year study period. Under Alternative B1, approximately 25 percent of the existing FHs/NNs would be removed from TVA reservoirs initially, with no further reduction over the remainder of the 30-year study period. Under Alternative D, approximately 25 percent of FHs that do not comply with the current regulations would be modified to meet the regulations’ criteria for navigation, allowing the modified FHs to remain and new structures to be built (that meet navigation criteria, but with primary design and purpose of habitation) at the same rate assumed under the No Action Alternative, based on marina harbor area capacity.

Table ES 3 Projected Number of Floating Houses and Nonnavigable Houseboats by Alternative

Year	Alternative					
	No Action	A	B1	B2 ^a	C	D
Current	1,836	1,836	1,836	1,836	1,836	1,836
2021	2,365	1,906	1,377	1,377	918	1,337
2045	3,692	3,233	1,377	0	918	2,016

^a Under Alternative B2, the reduction in the number of FHs/NNs would be realized in 20 years.

The impacts of each alternative were characterized by one of three impact levels: positive, neutral, or negative. The extent, duration, and intensity of the impact determined the overall level assigned to the impact.

Each of the policy alternatives TVA is considering for management of FHs/NNs has potential positive and negative impacts for all of the resource areas. Many of the alternatives would provide some benefits even if the overall impact of the alternative on the resource area is negative. For example, under Alternative A, the increased number of FHs would affect surface water recreators, but the new standards would result in fewer impacts on water quality experienced by this group of recreators. The full range of impacts is identified in Table ES 4, at the close of this section.

ES 5.1 Temporary and Indirect Impacts

Actions associated with some alternatives would indirectly and/or temporarily affect a number of different resources areas. For example, demolition and removal of unapproved structures associated with Alternatives A, B1, B2, C, and D could indirectly and temporarily affect multiple resource areas—including recreation, solid and hazardous wastes, visual resources, cultural resources, water quality, ecological resources, and threatened and endangered species—due to the use of heavy equipment. Alternatives that involve removal of unapproved structures and prohibition of new structures (Alternatives B1, B2, and C) would result in an overall decrease in FHs/NNs and associated environmental impacts.

ES 5.2 Long-Term Impacts

Under all of the alternatives, the long-term impacts for many of the resource areas—including public safety, navigation, solid and hazardous wastes, land use and farmland, visual resources, ecological resources, threatened and endangered species, and floodplains—would be minor. In general, the alternatives that would result in increased numbers of FHs (No Action Alternative, Alternative A, and Alternative D) would result in negative impacts on these resource areas. The current safety issues from improper mooring and anchoring practices that create recreation boating hazards could increase under these alternatives, but these may be manageable. Similarly, increased number of FHs would degrade the scenic quality of the reservoirs; however, the presence of FHs/NNs is part of the existing conditions and in many cases would be limited to small portions of the reservoir in the vicinity of the marinas.

While there would be positive impacts from the alternatives that result in fewer numbers of FHs/NNs (Alternatives B1, B2, and C), the benefits are expected to be minor. For example, minor beneficial impacts on threatened, endangered, or special concern (TES) species would be expected due to fewer FHs/NNs, better management and compliance with existing and new regulations, and expected increases in water quality. This may prove to be beneficial to TES species that use the aquatic environment near marinas. Similarly, there would be beneficial impacts on terrestrial resources along the shoreline due to fewer FHs and improved management under Alternatives B1, B2, and C. However, the potential for change in land use would be minor and may be offset by the areas being redeveloped for other uses.

The following discussion provides additional information related to impacts on socioeconomics, recreation, cultural resources, and water quality; impacts related to these resources under the various alternatives would be more substantial. This discussion is organized by alternatives when the types and magnitude of the impact would be similar.

ES 5.2.1 No Action Alternative, Alternative A, and Alternative D

Different socioeconomics groups would be affected by these alternatives in different ways. FH/NN owners and renters, marinas, and other industries that derive income from FHs/NNs would experience positive impacts from the additional FHs that would be allowed under these alternatives. FH/NN owners would benefit from the increased market value of their FH or increased rental income. Marina owners and associated industries would benefit from

increased revenues from expanded visitation and associated demand for services. Under Alternative A, FH owners would incur costs to modify their structures to comply with the new standards or to remove their structure from TVA reservoirs. Under Alternative D, FH owners may incur costs to bring their structure into compliance with existing TVA regulations regarding navigability. Shoreline property owners, recreational users, and the general public would experience negative impacts from additional FHs allowed under these alternatives. The continued growth of the FH market could depress the value of shoreline property. Increased visual impacts and reductions in water quality and safety would affect recreational users and the owners of shoreline property.

The No Action Alternative, Alternative A, and Alternative D also would affect recreators differently, depending on how they use the reservoirs. FH users would benefit the most from the policies implemented under these alternatives, which would generally result in increased opportunities for recreation. However, the quality of the recreation experience for current FH/NN users may decline based on congestion in the marinas. Surface water and shoreline recreation would be negatively affected by the increased numbers of FHs and associated impacts on water quality, obstructed views, and limits to the shoreline from expanded marina boundaries.

Many of the activities associated with the No Action Alternative, Alternative A, and Alternative D could adversely affect historic properties in the Area of Potential Effects (APE). Adverse effects could result from damage from increased numbers of FHs sitting on the shoreline during drawdown and increased erosion. Increased FHs may adversely affect known and unknown archaeological sites and architectural resources along the shoreline.

The No Action Alternative would result in the most substantial negative impacts on water quality because it does not affirmatively address current wastewater discharge issues. An increase in the number of FHs is expected to exacerbate water pollution problems, adding to the cumulative wastewater loading to surface waters. Alternative A would result in neutral to beneficial impacts because the new standards would help address the wastewater issues. However, some benefits could be offset by the expected increase in the number of FHs. Alternative D would probably result in some adverse impacts on surface water quality because of a lack of new standards coupled with a probable increase in the number of FHs. Alternative D would also probably cause adverse indirect impacts on surface water quality because the growth in FH numbers would increase the amount of pump-out wastewater. This increase in pump-out wastewater would increase loading on local municipal or onsite wastewater treatment systems; in turn, their discharges to surface water would probably increase.

ES 5.2.2 Alternative B1, Alternative B2, and Alternative C

The impacts under Alternatives B1, B2, and C would vary by socioeconomic group. In general, FH/NN owners and renters, marinas, and other industries that derive income from FHs/NNs would experience negative impacts from requirements for reducing FHs/NNs. Under Alternative C, owners of unapproved FHs would experience loss of equity or rental income and would incur costs to remove the structures. Under Alternative C, owners of permitted NNs would benefit due to increased market values and rental prices from the reduced supply of FHs under this alternative. Under Alternative B2, owners of FHs/NNs would experience loss of equity or income and incur costs because all structures would have to be removed after a sunset period. Shoreline property owners, other recreational users, and the general public would experience positive impacts from the reduced numbers of FHs/NNs allowed under Alternatives B1, B2, and C.

The impacts on recreation would also vary by user group. Surface water recreation would improve from the amount of available space, improved water quality, and unobstructed views. Shoreline recreation would also benefit from increased shoreline access in areas where FHs were once moored and from improved views. Under Alternatives B1 and B2, water quality would improve once the new standards are in place. FH recreation would significantly decrease under all of these alternatives, but the quality of recreation could improve for the NNs that are allowed to remain because of less congestion.

The impacts on cultural resources would vary by the location of the resource. Alternatives B1, B2, and C would likely decrease the number of FHs on the TVA reservoirs. This decrease would likely reduce damage from FHs sitting on the shoreline during drawdown and shoreline erosion within the APE, which could reduce the likelihood of adverse effects to inundated historic properties. TVA is consulting with the State Historic Preservation Officers in the TVA region in compliance with Section 106 of the National Historic Preservation Act and is developing a Programmatic Agreement to address the impacts associated with Alternative B2, TVA's Proposed Policy alternative.

Alternatives B1, B2, and C would result in beneficial impacts on surface water quality, with Alternative B1 slightly beneficial, Alternative B2 beneficial to very beneficial after 20 years, and Alternative C very beneficial in the shortest period. Alternatives B1, B2, and C would have beneficial indirect impacts on surface water quality because the reduction in FH/NN numbers would reduce the amount of pump-out wastewater. The reduction in pump-out wastewater would reduce loading on local municipal or onsite wastewater treatment systems; in turn, their discharges to surface water may decrease.

ES 6. Proposed Standards

Under Alternatives A, B1 and B2, TVA would establish new standards to which FH owners must comply. Compliance with the following standards would be required:

- Provide ground fault protection (ground fault circuit interrupter [GFCI]) not exceeding 100 milliamperes on any and all power sources. Utility-supplied sources should have GFCI protection at main marina feeder circuit, branch circuits, structure, or individual circuits. All electrical cables that enter the water or otherwise supply FHs shall have GFCI protection at their source. Generators or other non-utility sources should have GFCI protection as close as possible to the power source. The GFCI protection shall disconnect all circuits supplied by the power source. The permit holder shall comply with all currently applicable federal, state, and local laws, regulations and codes pertaining to electrical installations, wiring and equipment. If a FH is documented to be in violation of federal, state and local regulations and codes, TVA will revoke the permit and require removal of the FH if the violation or problem is not corrected as specified by the regulatory agency in accordance with their requirements.
- Underwater and above water cables causing potential navigation hazards must be marked by warning buoys and highly visible line markers as appropriate to prevent accident or injury.
- The future use of unencased Styrofoam flotation to replace or repair existing flotation is prohibited.
- All discharges, sewage, and waste water, and the pumping, collection, storage, transport, and treatment of sewage and wastewater must be managed in accordance

with all applicable federal, state, and local laws and regulations. If a FH is documented to be in violation of local, state or federal discharge/water quality regulations by the respective regulatory agency, TVA will revoke the permit and require removal of the FH if the violation or problem is not corrected as specified by the regulatory agency in accordance with their requirements.

- Allow no expansion of existing structures unless TVA deems that it is essential for compliance with standards (such as additional holding tank capacity) and approves in advance.
- TVA will consider the exchange and retirement of one or more permitted NNs for a new FH meeting standards, with the lesser of an equal footprint or 1,000 square feet, including decks, docks and walkways.
- FH owners will be required to pay an annual administrative cost fee to TVA to maintain their structures on a TVA reservoir including decks, docks and walkways.
- FH owners must provide an initial certification affirming their structure complies with electrical, flotation, sanitation, and mooring standards.
- Pre-1978 NNs must be in compliance with current TVA permit conditions. If not, the structure must comply with all new standards and rules for FHs or be removed from the reservoir. All approved pre-1978 NNs without direct utility connections must be equipped with a properly installed and operating Marine Sanitation Device (MSD) or Sewage Holding Tank and pump out capability.

TVA will initiate a formal rulemaking process to promulgate these new regulations and standards, wherein TVA will provide greater detail as to how the proposed policy would be administered and implemented. Upon the publication in the *Federal Register* of a Notice of Proposed Rule, these proposed regulations and standards are subject to additional public review and comment. As currently proposed, FH and NN owners would be granted a reasonable period of time to make necessary modifications to their structures to meet these new standards or existing NN permit conditions. During this transition period, TVA may issue “interim” permits to owners, followed by a final permit once the structure is verified to comply with the required standards.

Table ES 4. Summary of Resource Impacts by Alternative

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Socioeconomics						
Total market value of FH	Doubles in 30 years	Slight initial decrease as FHs are removed that are not upgraded to meet new standards; then an increase over 30 years	25-percent reduction in short period	Elimination of FH market value after sunset period	Major loss of market value over short period; FHs prohibited	Major loss of market value over short period; then an increase over 30 years
FH owner loss of use	No change	Reduced by number of FHs not upgraded to meet new standards	Reduced by number of FHs not upgraded to meet new standards	Complete loss of use after sunset period	Major loss of use in short time period	Loss of use for those NNs and FH not compliant with current permit and 26a rules
FH or NN owner costs of upgrading structure to meet standards	No change	Increase in costs	Increase in costs	Greatest increase in costs; then removing all FHs and NNs	Increase in costs for removing all unpermitted FHs and noncompliant NNs	Large increase in costs over short period for removal or upgrading FHs to meet current navigation criteria
Marina owner revenue and employment from FHs and NNs	Increased revenues	Increased revenue over 30 years	Moderate reduction in income over 30 years	Greatest reduction in income over time, reduced to 0 after sunset period	Large reduction in income in shortest period	Reduction in income over short period; then an increase over 30 years

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Socioeconomics (Continued)						
FH owner rental income	Supply of rentals increases and rental price stays constant or slightly decreases	Slight reduction in rental market and increase in rental price	Reduction in rental income	Gradual reduction over time, reduced to 0 after sunset period	Greatest loss over short period	Slight to moderate loss over short period
Renters of FHs and NNs	More options and slightly reduced rental prices	Slightly fewer options and slightly reduced rental prices	Reduced options and slightly higher rental prices	Loss of FH and NN rental options after sunset period	Greatest loss of FH rental opportunities over a short period and likely higher rental prices for remaining NNs	Moderate loss of rental options and likely higher rental prices for remaining NNs
Shoreline property owners	Reduced shoreline property values and reduced enjoyment	Reduced shoreline property values and reduced enjoyment, but impacts primarily near marinas	Slight improvement in shoreline property values and increased enjoyment	Greater improvement in shoreline property values after sunset period and greatest increase in enjoyment	Greatest positive impact on shoreline property owners within short period of time	Moderate positive impact on shoreline property owners in short period
TVA costs	Slight increase in costs for management	Greater costs for management of new standards and removing abandoned structures	Greater costs for management of new standards and removing abandoned structures	Greatest costs for management of new standards and removing abandoned structures after sunset period	Greatest costs for removing abandoned structures over a short period of time	Moderate potential cost increase for removing abandoned structures, concentrated in a short period, and increased management costs

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Recreation						
FH and NN users	Greatest increase in number of recreation days	Large increase in number of recreation days	Decrease in number of recreation days	Number of recreation days reduced to 0 after sunset period	Large decrease in number of recreation days over a short period	Moderate or slight increase in number of recreation days after initial reduction
General public using shorelines and open water	Reduced enjoyment and access, and increased congestion	Reduced enjoyment and access, and increased congestion, primarily in marina areas	Slight improvement in access and reduced congestion, primarily in marina areas	Largest positive impact for public over sunset period	Greatest positive impact for public recognized in shortest period	Moderate positive impact for public in short period
Recreational boating and fishing	Greatest reduction in reservoir surface area, access to shoreline, and quality of recreation	Large reduction in reservoir surface area, shoreline access, and quality of recreation; impacts focused in marina areas	Moderate increase in reservoir surface area, shoreline access, and quality of recreation as unpermitted structures are removed	Moderate increase in reservoir surface area, shoreline access, and quality of recreation as unpermitted structures are removed; greater increase after sunset period	Greatest increase in reservoir surface area, shoreline access, and quality of recreation in shortest period	Neutral to slight increase in reservoir surface area, shoreline access, and quality of recreation (depending on number of FHs removed)

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Recreation (Continued)						
Shoreline recreation access and quality of recreation	Greatest reduction in access to shoreline areas and quality of recreation	Large reduction in access and quality near marinas	Moderate increase in access and quality as unpermitted structures are removed	Moderate increase in access and quality as unpermitted structures are removed; greater increase after sunset period	Greatest increase in access and quality in shortest period	Neutral to slight increase in access and quality (depending on number of FHs removed)
Public Safety						
Shoreline user and swimmer exposure to electric hazards	No reduction in hazards	Reduced exposure to electrical hazards with enforcement of new safety standards and removal of unpermitted structures	Reduced exposure to electrical hazards with enforcement of new safety standards and removal of unpermitted structures	Reduced exposure to electrical hazards with enforcement of new safety standards and removal of unpermitted structures; greater reduction after sunset period	Greatest reduced exposure to electrical hazards in shortest period with enforcement of new safety standards and removal of unpermitted and noncompliant structures	Reduced exposure to electrical hazards due to removal of unpermitted structures; however, hazards may persist under current regulations
Hazards associated with structural integrity	No reduction in hazards	Reduced hazards due to enforcement of new safety standards	Reduced hazards due to enforcement of new safety standards	Reduced hazards due to enforcement of new safety standards; greater reduction after sunset period	Reduced hazards due to removal of unpermitted and noncompliant structures	Reduction in hazards due to removal of unpermitted structures

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Public Safety (Continued)						
Safety hazards from unsafe mooring practices	Increase in safety hazards associated with ropes and cables and poorly secured FHs (similar to current conditions)	Reduced hazards with enforcement of new safety standards	Reduced hazards with enforcement of new safety standards	Reduced hazards with enforcement of new safety standards	Reduced hazards with removal of unpermitted and noncompliant structures	Reduction in safety hazards associated with ropes and cables and poorly secured FHs due to removal of unpermitted structures and enforcement of current mooring regulations
Safety hazards from FHs/NNs dislodging and drifting into commercial navigation channels	No reduction in hazards (similar to current conditions)	No reduction in hazards (similar to current conditions)	Reduced hazards as unpermitted structures are removed	Reductions over time leading to elimination of hazards as all FHs and NNs are removed after sunset period	Reduced hazards as unpermitted and noncompliant structures are removed	Reduced hazards as unpermitted structures are removed
Solid and Hazardous Wastes						
Amount of solid and hazardous waste material generated for handling and disposal	No reduction in amount (similar to current conditions)	Moderate increase in quantity generated due to demolition activities	Moderate increase in quantity generated due to demolition activities	Greatest long-term increase in quantity generated due to demolition activities	Greatest short-term increase in quantity generated due to demolition activities	Short-term increase in quantity generated due to demolition activities

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Solid and Hazardous Wastes (Continued)						
Release of solid and hazardous wastes into the environment due to deterioration of aging structures	No reduced potential as structures continue to deteriorate over time (similar to current conditions)	Reduced potential as unpermitted structures are removed	Reduced potential as unpermitted structures are removed	Greatest long-term reduced potential as unpermitted structures are removed; greater reduction after sunset period	Greatest short-term reduced potential as unpermitted and noncompliant structures are removed	Reduced short-term potential as noncompliant FH structures are removed initially
Visual Resources						
Scenic integrity of reservoirs	Reduced as number of FHs increases	Reduced as number of FHs increases, primarily near marinas	Slightly enhanced as unpermitted structures are removed	Slightly enhanced as unpermitted structures are removed; significant enhancement after sunset period	Enhanced in shortest period	Neutral to slightly enhanced (depending on number of FHs removed)
Scenic quality of reservoirs	Reduced as number of FHs increases	Reduced as number of FHs increases, primarily near marinas	Slightly enhanced as unpermitted structures are removed	Slightly enhanced as unpermitted structures are removed; significant enhancement after sunset period	Enhanced in shortest period	Neutral to slightly enhanced (depending on number of FHs removed)
Viewshed	Reduced as number of FHs increases	Reduced as number of FHs increases, primarily near marinas	Slightly enhanced as unpermitted structures are removed	Slightly enhanced as unpermitted structures are removed; significant enhancement after sunset period	Enhanced in shortest period	Neutral impact or slightly enhanced (depending on number of FHs removed)

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Land Use						
Direct land use change associated with recreational area expansions to accommodate FHs	Increased potential	Increased potential	Slightly reduced potential	Slightly reduced potential	Reduced potential	Slightly reduced potential (depending on number of FHs removed)
Cultural Resources						
Disturbance of benthic or shoreline archaeological sites	Increased potential as number of FHs increases	Increased potential, primarily near marinas	Reduced potential with prohibition of new structures	Reduced potential with prohibition of new structures; greatest reduction after sunset period	Reduced potential with prohibition of new structures	Reduced potential
Incompatibility with historic structures	Increased potential as number of FHs increases	Increased potential, primarily near marinas	Reduced potential with prohibition of new structures	Reduced potential with prohibition of new structures; greatest reduction after sunset period	Reduced potential with prohibition of new structures	Reduced potential with historic structures initially
Water Quality						
Nutrient enrichment of reservoirs	Increased potential	Reduced potential with enforcement of new wastewater standards	Reduced potential with enforcement of new wastewater standards	Reduced potential with enforcement of new wastewater standards; potential eliminated after sunset period	Reduced potential with removal of unpermitted FHs or noncompliant NN structures	Slightly reduced potential with removal of noncompliant structures and rules enforcement

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Water Quality (Continued)						
Recreational user exposure to human pathogens	Increased potential without enforcement of new wastewater standards	Reduced potential with enforcement of new wastewater standards	Reduced potential with enforcement of new wastewater standards	Reduced potential with enforcement of new wastewater standards; potential eliminated after sunset period	Reduced potential from removal of unpermitted or noncompliant structures	Slightly reduced potential from removal of noncompliant structures and rules enforcement
Ecological Resources						
Terrestrial resources adjacent to shorelines	Minor adverse impacts	Minor adverse impacts	Minor beneficial impacts	Minor beneficial impacts	Minor beneficial impacts	Minor adverse impacts
Waterfowl and shorebirds	Minor to negligible adverse impacts	Minor to negligible adverse impacts	Minor to negligible beneficial impacts	Minor to negligible beneficial impacts	Minor to negligible beneficial impacts	Minor to negligible adverse impacts
Aquatic resources and aquatic ecological health in and around marinas	Minor to moderate adverse impacts on aquatic habitats	Minor to moderate adverse impacts on aquatic habitats	Minor beneficial impacts on aquatic habitats	Greatest but still minor beneficial impacts on aquatic habitats over time	Minor beneficial impacts on aquatic habitats	Minor to moderate adverse impacts on aquatic habitats
Establishment and spread of invasive terrestrial animals or plant species	Little effect	Little effect	Little effect	Little effect	Little effect	Little effect
Wetlands	Minimal impacts due to resource protection and regulations	Minimal impacts due to resource protection and regulations	Minimal impacts due to resource protection and regulations	Minimal impacts due to resource protection and regulations	Minimal impacts due to resource protection and regulations	Minimal impacts due to resource protection and regulations

Resource	Alternative					
	No Action Alternative	Alternative A	Alternative B1	Alternative B2 (Preferred)	Alternative C	Alternative D
Threatened and Endangered Species						
Threatened, endangered, or special concern species	Minor potential negative effects	Minor potential negative effects	Minor potential beneficial impacts	Minor potential beneficial impacts	Minor potential beneficial impacts	Minor potential negative effects
Critical habitat	No impacts	No impacts	No impacts	No impacts	No impacts	No impacts
Floodplains						
Floodplains and flood risk	Minor adverse impacts on floodplains	Minor adverse impacts on floodplains	Neutral to minor beneficial impacts on floodplains	Neutral to minor beneficial impacts on floodplains	Neutral to minor beneficial impacts on floodplains	Neutral to minor adverse impacts on floodplains