

APPENDIX G
Responses to Public Comments on the Draft EA

The comments that TVA received on the Draft EA are listed below along with TVA's responses. The comments are grouped according to the pertinent section of the EA. Similar comments were combined and many comments were edited for brevity and clarity.

Purpose and Need

1. How much electricity was produced by TVA's Buffalo Mountain Windfarm during the first year of operations? What was the capacity factor for the first year and how did it compare to the goal of 6 million kWh? What capacity factor does TVA expect to achieve in the future and how does this compare to other conventional and renewable methods of electrical generation? Patti Young, W. T. Smith, Richard A. Moore, Jr.

Response: The existing Buffalo Mountain windfarm produced 4.8 million kWh of electricity from November 2000 through March 2002. Generation during the first few months of operation was low because of transmission, communications, and generating equipment problems. These were largely corrected by April 2001, and from April 2001 through March 2002, the windfarm has been available 95% of the time. The capacity factor during this period was between 26 and 27%. We anticipate future annual production of 4.6 to 4.7 million kWh at a capacity factor between 26 and 27%. The proposed windfarm at Buffalo Mountain is expected to have a capacity factor of 28 to 30%, depending on the turbine model and tower height selected. The proposed windfarm at Stone Mountain would have a higher capacity factor because of elevation and windspeed differences. The capacity factor of TVA's Green Power Switch solar facilities is about 18%. The GPS landfill gas and methane gas generation facilities have not been operating long enough to determine their capacity factors; their capacity factor is expected to exceed 90% in the near future. The capacity factor of TVA's nuclear and coal-powered plants exceeds 80%. Hydro and combustion turbine plants are operated intermittently and have a lower capacity factor.

2. How much electricity did TVA produce in FY2001 (total from all sources)? What was TVA's total capacity in FY2001 and what was the overall capacity factor? Patti Young, Richard A. Moore Jr.

Response: TVA produced over 156 billion kilowatt-hours of electricity in FY2001. TVA's winter capacity is 30,365 megawatts. TVA's overall capacity factor, or the amount of time that all TVA generating units were actually operating in 2001, was approximately 58%.

3. The findings from construction of the first 3 turbines should be stated. Robert Smith

Response: The anticipated environmental impacts of the existing Buffalo Mountain windfarm were described in an Environmental Assessment completed in 2000. The observed impacts were considered during preparation of this EA.

4. Your message to the valley when these turbines were being installed was enough power for 400 homes. What percentage of that figure has been realized and how many years will it take to pay for total cost including maintenance? W. T. Smith

Response: Based on the performance of the existing wind turbines during their first 18 months of operation, we expect them to generate enough power to serve 360 homes. Based on the current Green Power Switch rate structure, it will take around 20 years to pay for the wind turbines.

5. Section 1.2, paragraph 3, states that the existing wind power plant "has met expectations." A list of specific expectations and an explanation of how they were met should be added. Robert Smith

Response: Comment noted.

6. Is Johnson County going to be totally supplied by green power? Dick St. John

Response: No. The amount of electricity generated by the Stone Mountain windfarm would serve less than 10% of Johnson County households.

7. How many years of generated power are needed just to pay for the wind turbines and attached equipment, or what percent of life is needed to pay off debt? Jim Harless, Nathan Newport

Response: TVA's investment in wind facilities is supported by the Green Power Switch (GPS) revenue that also supports the investment in the other GPS power supplies such as solar and landfill gas energy generation plants. The GPS revenue collected is not segregated or allocated by supply-type. However, the price of the GPS power (\$4 per 150 KWh) was set to "pay off" all costs, including debt, incurred to support the entire GPS supply portfolio over a 20-year period.

8. I do not support the Green Power Switch mainly because I think it is something TVA should be doing anyway without charging people extra for it. And you are talking about such a small percentage of your power being produced by this, and to charge people an extra four dollars per 150 kilowatt hours seems absurd to me considering the size of your system, the amount of money you take in, and the miniscule proportion that your Green Power initiative actually is within the system. TVA should fund such pilot projects out of its general budget, and can probably do so through cost-cutting in other areas. Susan Gawarecki

Response: Participation in the Green Power Switch program by both electrical distributors and end users is voluntary. Additional "green" generating facilities, funded by GPS, are being added as GPS program participation increases. TVA is exploring other opportunities for "green" generation and may at some time in the future build such projects into the general rate base.

9. If you were to increase the general rate base by as much as you take in for the Green Power, then that would cost the program how much per hundred kilowatt hours? Would it increase the cost? Susan Gawarecki

Response: The cost increase would probably be small. A decision to include the cost in the general rate base would have to be made jointly by TVA and TVA's power distributors.

10. Do you offer the option for your customers to choose to pay less if they want their power to come from a more efficient source, a cost-efficient source? I think it's one that you should be having with not just your power distributor companies but a lot of your rate payers as well. Susan Gawarecki

Response: No. The Green Power Switch program is the only component of TVA's power sales segregated solely by generation source.

11. I'm the developer at the Tri-County Flea Market and Antique Mall at the Tri-County Shopping Center in Oliver Springs, and extend the offer to TVA to connect the shopping center directly to power lines from the Buffalo Mountain windfarm. Ed Zellner

Response: Comment noted.

12. I have been involved with electricity since the early 1930s, and remember using wind power before there was widespread electrical service in the area. I support the Buffalo Mountain windfarm. Kenneth Hackworth

Response: Comment noted.

13. Where does the \$50 million come from to fund this proposed project? How is this money being repaid? Patti Young, Nathan Newport

Response: The Green Power Switch customers would fund the windfarm expansion. TVA would seek funding from other partners, including the Department of Energy, for the Regenesys™ facility.

14. Our electric bills will increase if the windfarm is built. Lynda Greene

Response: The proposed windfarm expansion will be funded by TVA's Green Power Switch program and not by TVA's general rate base. Participation in the GPS program is voluntary. This project would have no impact on electric bills of consumers who are not GPS participants.

15. Are you selling power outside the TVA grid to other power companies? Patti Young

Response: Depending on system needs and power availability, TVA both sells power to and buys power from neighboring utilities. Power generated through the Green Power Switch is only sold to GPS participants.

16. I think it's a wonderful idea using the Buffalo Mountain a facility. I read in the paper where that the facilities you're proposing could probably supply about 12,000 houses. Oak Ridge has 12,600 residential meters, so what you're proposing would take care of a city the size of Oak Ridge. R. C. Fox

Response: The number of houses supplied by the proposed Buffalo Mountain windfarm would more likely be a third or a fourth of the 12,000 houses. This smaller number is still a large proportion of Green Power Switch participants.

17. If wind energy is produced in large enough quantities, what will be its primary use and to whom will it be available? Billy Hodges

Response: The wind energy would be purchased by Green Power Switch program participants and used for residential and commercial purposes.

18. What is the overall public opinion regarding the wind energy facility? William J. Hartman

Response: TVA has not undertaken a poll to sample overall public opinion on the wind energy facility. The majority of the comments TVA has received have been supportive.

19. It seems to have less risk associated with it compared to nuclear power plants. William J. Hartman

Response: Comment noted.

20. So many of the citizens of the county were unaware of this project, until it appeared in the local paper, so we did not have time to research this project. I have been told that this is already a "done deal." Josephine H. Caraway, Charles K. Caraway

Response: Comment noted. TVA staff did not select the preferred site until after public comments, environmental impacts, and other factors were evaluated. The TVA decision to construct the windfarm will not be made until the environmental review process is completed.

21. Is it true that 20 MW of electricity is roughly equivalent to the power generated by about 100 SUVs sitting in a parking lot? Or a small gas generator package? DeNeece Butler

Response: The energy to work equivalence of 1 kilowatt (1/1000 megawatt) is 1.34100 U.S. horsepower (source: CRC Handbook of Chemistry and Physics). Twenty megawatts is therefore equivalent to 26,820 horsepower. Assuming the average sport utility vehicle has a 200 horsepower engine, at least 134 sport utility vehicles running at full throttle would be required to produce the work equivalent of 20 megawatts of energy. A small gasoline-powered generator package such as a homeowner might use for emergency power produces about 1 to 2.5 kilowatts of energy. It would take 20,000 1-kilowatt gasoline-powered generators to produce 20 MW of electricity.

22. What is the difference between power transmission and power generation? Are not the wind turbines generating power? DeNeece Butler

Response: Electrical power generation is the conversion of chemical or kinetic energy into electricity. Electrical power transmission is the movement of electricity from one location to another. Wind turbines of the type considered in this proposal are electrical power generators.

23. In the list of decision-making criteria, how does TVA rank the importance of the opinions of the people in the Potential Area of Effect? DeNeece Butler

Response: Public opinion on a project such as this is considered along with other issues, such as wind resources, site availability, access to the site, and environmental impacts.

24. Please site an instance when the TVA has invested as much as you have invested in the investigation of the Stone Mountain Site for a proposed project and decided against pursuing it because of negative public opinion? DeNeece Butler

Response: TVA considers public comments received during the NEPA process in deciding on a future course of action. An example of a proposal for which public comments influenced TVA against proceeding with the project was the agency's review of an application for a barge unloading facility for wood chips. In the course of reviewing the permit application for this project under Section 26a of the TVA Act, TVA prepared an Environmental Impact Statement (EIS) to assess the environmental impact of the barge unloading facility. After considering public comments and taking into account the negative environmental impacts of the project as documented in the EIS, TVA denied the applicant's request for a Section 26a permit.

25. Has the TVA ever had an order to "cease and desist" or an injunction, temporary or otherwise, issued to it by a federal judge? If so, when and by whom? DeNeece Butler

Response: Yes, TVA has received such injunctions. For example, the 6th Circuit Court of Appeals in January 1977 issued an injunction halting construction of the Tellico Dam.

26. The proposed windfarm would generate less than <0.04% of TVA's total FY2001 electrical production. Current wind power production plans are based on the amount of electricity that can be subsidized by TVA's green power program. What are TVA's wind power production goals beyond 2003? What is the policy basis for these goals and how do they support TVA's overall strategy to meet growth in electrical demand during the next 20 years? Richard Moore

Response: The proposed windfarm would be funded by Green Power Switch program revenues. It would meet the demands of the expected GPS program growth over the next few years. TVA presently has no firm goals for additional wind generation beyond the currently proposed windfarm.

27. What happened to TVA's conservation efforts? (i.e., TVA financed home insulation) Billy Kennedy

Response: TVA is continuing to undertake a variety of conservation efforts through the *energy right*© program and other programs.

28. What is the average annual power need of say, a household of four with electric heat and appliances? Jana Jones

Response: Such a household would probably use about 1200 KWh per month.

29. What is the average annual power output of one of your coal plants as compared to a nuclear facility as compared to a hydroelectric power facility? Jana Jones

Response: The output of TVA's different generating facilities varies greatly. Detailed information on their power output is available at http://www.tva.com/sites/sites_ie.htm.

30. Section 1.2, paragraph 1 of the Draft EA states that the Green Power Switch program involves “electricity generated from renewable sources with relatively low environmental impacts. These renewable sources are wind, solar, and methane gas from landfills and wastewater treatment plants.” The term “renewable” should be defined. Hydropower should be included, and nuclear power with fuel reprocessing should be included. A basis should be provided to defend the statement that the listed renewable sources have “relatively low environmental impacts,” or the statement should be deleted. Robert Smith

Response: The renewable sources were jointly selected by TVA, distributors participating in GPS, and other organizations involved in GPS. Prior to selecting the renewable sources, TVA conducted a public opinion survey to determine end users preferences. The GPS program has also been certified by the Center for Resource Solutions.

31. There is new nuclear design using inert gas and ceramic “pebbles” which is totally safe and as green as anything can be if that is an issue. Ed Sturdivant

Response: Such new nuclear designs still have fuel cycle, thermal, and other impacts not associated with typical “green power” generating facilities.

32. What are the projections for percent growth in TVA electrical demand over the next ten years? Richard A. Moore Jr.

Response: TVA is projecting an annual growth rate of 2.2 percent in electrical demand over the next 10 years (2002–2012).

33. The DOE has stated a goal to increase wind-generated electricity production in the U.S. from 0.1% to 5% by the year 2020. What are TVA’s goals for increasing wind power generating capacity? Richard A. Moore Jr.

Response: TVA currently plans to add 20 megawatts of wind generation to support the Green Power Switch program. Absent a national renewable portfolio standard, TVA plans for additional wind generation will depend on the demand for the GPS program.

34. I am concerned about the cost and need for the Regenesys™ system since the wind park would be part of the whole power grid. Is it solely a research project to demonstrate the possibility of storing power? Could it be applied to keeping the power from the wind park within Johnson County, storing and releasing power? Of course, since the system would only power close to 6000 homes (according to Joe Thackery) there would be need for constant inflow of electricity from outside the county. However, it would be an incentive for the county to accept the park if we knew that even if the rest of the TVA system got shut down (due to some connection with terrorists) that our county would continue to have some electricity. Annlynn W. Eastin

Response: The primary purpose of constructing and operating a Regenesys™ facility in conjunction with the windfarm is to demonstrate storage of power from an intermittent, generating source and to use the stored power during periods of high demand. Whether the power from the turbines is used immediately after it is produced or whether it is stored and released later, the power is applied to the grid to meet consumer demand.

Alternatives

1. Vestas wind turbines are not listed as being under consideration despite being the manufacturer chosen for the first 3 turbines. Explain why Vestas turbines are not being considered. Robert Smith

Response: None of the companies submitting bids to construct the proposed windfarm included Vestas turbines as part of their bid packages.

2. What is the expected life span of the proposed wind turbines and what are the annual operation and maintenance costs? Who pays these costs? Patti Young; Richard A. Moore Jr., Jim Harless

Response: The average life expectancy of wind turbines is between 20 and 25 years. Average annual maintenance costs per turbine for a 20-megawatt plant (13 to 16 turbines) could be as much as \$10,000.

3. What happens when there is an ice fog which occurs frequently on Stone Mountain?

Do the turbines fling 3-foot-long ice spears outside the 60-by-60-foot area when they turn? Patti Young

Response: The wind turbines are automatically taken offline during icing events, and would not normally be restarted until they are mostly ice-free.

4. We know the composition of the blades is affected over time by ice, snow, and rain that will cause them to deteriorate with pieces falling off. Is this not a significant safety factor for people in the area? (The NWCC Handbook states that blade throw occurs anywhere from 300 to 1500 feet away). Patti Young

Response: TVA, like many other windfarm operators, has a program of routine inspections and maintenance to detect and correct such turbine deterioration.

5. Would these turbines shake the ground or vibrate for miles around as the wind mill did on Howard's Knob in Boone, NC? Florence E. Tucker

Response: The wind turbine on Howard's Knob was an experimental first generation machine designed over 25 years ago. Improvements in turbine design since then have eliminated many of the problems such as vibration experienced with early turbines.

6. Has TVA consulted with NASA regarding its experience with the older model wind turbine erected on Howard's Knob in nearby Boone? Are you aware of how uneven the wind velocity can sometimes be due to gusting? Did you know that the wind velocity was so high several years ago that the anemometer atop Grandfather was destroyed? DeNeece Butler

Response: TVA is familiar with the experimental wind turbine installed on Howard's Knob 20+ years ago. Wind turbine technology has greatly advanced since then, and modern wind turbines are engineered to withstand gusty winds. We are aware of the wind conditions on Grandfather Mountain.

7. To avoid the problems experienced by Oregon residents who live near a wind farm, what is proposed, in the form of a written agreement, for maintenance of these wind turbines, so that when the gear boxes wear or malfunction there is not a "screaming" sound produced to drive residents crazy? Particularly, when it is proposed that the wind turbines are automated a monitored from a TVA location removed from the site. DeNeece Butler

Response: TVA's maintenance program includes periodic onsite inspections and continuous automated monitoring. The remote monitoring system allows rapid detection of problems such as those described in the comment, and would automatically take wind turbines offline in the event of a major problem. TVA does not intend to enter into written agreements with nearby landowners.

8. No mention was made of lightning concerns. What measures will be taken to protect against lightning strikes? DeNeece Butler; Patti Young

Response: The wind turbine models that TVA is considering contain extensive lightning protection features including lightning receptors in the blade tips, conductors from the blade tips to the turbine bed plate, a lightning rod on the turbine nacelle, a nacelle ground grid, and

redundant grounding paths from the turbine bed plate and nacelle to a ground grid built into the turbine foundation. The associated transformers and substation are similarly grounded.

9. What experience has TVA had with wind turbines that have become locked into place when the wind velocity is 55 mph, and the wind velocity continues to rise to hurricane levels? DeNeece Butler

Response: Modern wind turbines, including those models that TVA is considering, are built to withstand sustained winds of 105 mph and gusts of 147 mph. The turbines presently operating on Buffalo Mountain have withstood winds in excess of 55 mph; they successfully shut down automatically and were later restarted.

10. Have the windmills been known to affect the television cable reception? Celia Payne

Response: Modern wind turbines do not affect television broadcast or cable reception.

11. What is the estimated uncertainty in the predictions of expected power output? How does that compare with the demonstrated error in the predicted power output from the first 3 turbines? Was the difference in altitude between Buffalo and Stone Mountains accounted for in the comparisons, and how much difference does it make? Robert Smith

Response: TVA is working with EPRI and DOE through the Turbine Verification Program and other means to refine our forecasts. The accuracy of the forecasts depends greatly on the amount of available wind velocity information. Refined forecasts will be included in future Green Power Switch newsletters.

12. Has TVA considered a water wheel type, horizontal mounted turbine, not over two or three stories high, with a light weight rotor and blades and in the middle there will be a rotor to produce electricity. Such a low profile turbine would greatly reduce the visual impacts. L. J. Simcox

Response: TVA has not conducted a detailed evaluation of such a turbine. TVA has reviewed various turbine designs and the models proposed to be used are the state-of-the-art for efficient, economical electrical generation.

13. How do you propose to prevent vandalism at a new windfarm? Susan Gawarecki

Response: Vandalism has not been a problem at the existing Buffalo Mountain windfarm. A small area around the base of each turbine is fenced, and a gate on the access road limits truck access. TVA has worked closely with the Windrock ATV Club, whose members frequent the surrounding area. TVA plans to use similar measures at the new windfarm, which would also be visited by maintenance personnel on a regular basis.

14. I think it would be good to mention on your maps where north is. Barbara Walton

Response: Comment noted.

15. How much actual acreage would be leased by TVA? Would all of this acreage be restricted? What would the owner of the land with the wind turbines be allowed to do with the acreage not leased by TVA? How much are you paying for lease rights? What kind of lease agreement is TVA offering the landowners where the windfarm is proposed? Patti Young

Response: TVA would lease the property in the immediate area of the wind turbines, and other uses of this lease area would be restricted. There would be no restrictions on other portions of the landowner's property. The landowner would be paid an annual easement fee for a negotiated amount.

16. What is TVA proposing as compensation for the landowners of property through which the power transmission lines would run? Where would the powerlines run? When were you going to let the landowners know? Patti Young; Helen Icenhour

Response: Likely transmission routes are described in Chapter 2. The payments for transmission rights-of-way would be negotiated with affected landowners. The routes would be finalized after a site and developer are selected.

17. What is TVA proposing as compensation to the landowners where the Regenesys™ stations are proposed? Patti Young

Response: Payments for easements or other landrights for the land on which the Regenesys™ facility is sited would be negotiated with the landowner.

18. Who conducts the inspections and submits annual reports on facility operations and conditions when a windfarm is online? Patti Young

Response: The Green Power Switch manager is responsible for annual reports. The TVA Public Power Institute is responsible for operation of the wind facility and provides internal reports to the GPS manager.

19. What happens at the end of the economic service life or at the end of the lease agreement? What does your decommissioning plan include? Patti Young

Response: Once the wind turbines reached the end of their lifespan, TVA would decide whether to repower the facility. If the decision were to remove the wind turbines, they would be disassembled and, where possible, components would be salvaged or recycled. Transformers and metering equipment would be removed. The decision on whether to remove foundations and underground electrical lines would be made in conjunction with the landowner.

20. What is the projected cost to expand Buffalo Mountain versus Stone Mountain? Patti Young

Response: Overall project costs are very similar for the two sites.

21. What is the projected time line to finish Buffalo Mountain versus Stone Mountain? Patti Young

Response: Project construction times for the two sites are very similar, and either windfarm could be completed within a year of signing the construction contracts.

22. Based on the number of letters you were supposed to have sent, how many households are within three miles of Stone Mountain? Buffalo Mountain? Patti Young

Response: Notification letters were sent to owners of property within three miles of the proposed windfarm sites. About three times as many letters were sent to Stone Mountain area landowners than were sent to Buffalo Mountain area landowners.

23. What all is involved in producing this type of electricity? Max Greene

Response: The steps involved in constructing and operating the windfarm are described in Chapter 2 of this EA. For more on how wind turbines operate, see www.awea.org.

24. Some people may suffer mental pain and anguish. In fact, they already are. The people living here in the Stone Mountain area for years may be uneducated and unlearned but the outsiders that have moved in are not; in fact, one is a lawyer. Lynda Greene

Response: Comment noted.

25. I own much of the proposed Stone Mountain windfarm site. I, and others, have built several multi-million dollar businesses in Johnson County. I do care about Johnson County and, like others, want

good-paying jobs in industries that don't pollute. I believe the windfarm would be beneficial to Johnson County. Danny Herman

Response: Comment noted.

26. On page 2-2 in Table 2-1, the maximum power output for the NEG/Micon 1500 72C turbine should be at 13 meter/seconds, not at 12 m/s. On page 2-3, in the paragraph "Electrical Collection System" it is probably correct to write "these transformers would step up the voltage to 13.2, 26, or 34.5 KILOvolts". Gerda Harms, Robert Smith

Response: The maximum power output windspeed of 12 m/s for the NEG/Micon turbine was taken from manufacturers literature dated August 2001. The other error has been corrected.

27. From the draft EA: "Access to the site via Bulldog Road would require major upgrading of this portion of road where pavement ends and a trail exists." If that "trail" is privately owned, and no right of way to TVA is available, is it TVA's intention to use its power to condemn it? DeNeece Butler

Response: TVA does not intend to condemn this land.

28. There will be no operating permit for the wind power plant and no State of Tennessee or federal regulations govern the operation of wind turbines. Considering the lack of regulatory authority, how will TVA ensure the wind power plant is operated and maintained as described in Chapter 4 of the EA? How will TVA ensure compliance of a private owner/operator under the PPA approach? Richard Moore

Response: For a turnkey contract, the TVA Public Power Institute would be responsible for the operation of the windfarm, and would carry out the commitments in the EA as a part of the operation. For a power purchase agreement (PPA), the other party would be responsible for windfarm operation, and commitments in the EA would be included as mandatory parts of the PPA.

29. The widespread scope, severity and magnitude of these impacts warrant further assessment in an Environmental Impact Statement. Richard Moore

Response: Comment noted. Construction and operation of the proposed windfarm at Buffalo Mountain is not expected to cause significant environmental impacts.

30. Section 2.2.1, Buffalo Mountain Expansion, Electrical Connections: What is the environmental impact due to clearing 100 feet of right-of-way for 3 to 4 miles? What is the environmental impact due to replacing the existing poles? I did not find these addressed. Robert Smith

Response: This is described in more detail in the Final EA.

31. I am concerned that you demonstrate that you have done a thorough study of the environmental damage this will incur. Annlynn W. Eastin

Response: Comment noted.

32. Accidents associated with construction and operation of wind turbines and energy storage facility should also be added. Robert Smith

Response: Comment noted. According to industry data, the accident rate for these types of construction projects is low, and TVA is committed to maintaining safe worksites.

33. Most negative impacts of the facilities are said to be small, minor, insignificant, etc. This is at least partially because the sizes of the facilities are small, minor, insignificant, etc. relative to other typical power plants of 600+ Mwe. Because the Green Power Switch program is continually expanding, for comparison purposes the impacts should be extrapolated to the magnitude that would be expected for a

typical power plant sized installation. Appropriate factors should be applied (3-8 times) to account for the low capacity factor of wind power relative to typical power plants. Robert Smith

Response: Such a comparison is unnecessary because the purpose of the proposed windfarm is to provide power for the Green Power Switch program. GPS facilities also do not have fuel cycle impacts typical of many large conventional power plants. There are no plans to supply the GPS program from large conventional power plants.

34. Calling the power plant a “farm” is inappropriate and a marketing ploy. A “farm” is defined as a tract of land devoted to agriculture. Robert Smith

Response: TVA is following the wind industry convention of referring to wind generation facilities as windfarms.

35. Section 2.2, Turbine Construction, states that once foundations are completed, the surrounding area would be restored as nearly as possible to preconstruction conditions. This is vague and should be described in more detail. Robert Smith

Response: The area around the base of the turbines would be regraded to approximate preconstruction conditions while maintaining vehicle access to the wind turbines. Cleared areas would be replanted with non-invasive species to control erosion.

36. It makes good business and environmental sense to me to put the windmill, as an experiment into Green Program, where they are already accepted and on property not to be demised or ruined. R. R. Woods

Response: Comment noted.

37. Will TVA consider constructing the energy storage plant without the wind turbines? Richard A. Moore Jr., Nathan Newport, Jim Horton

Response: No. TVA will not construct the energy storage plant as currently proposed in this EA without the wind turbines. TVA may construct similar energy storage plants not associated with windfarms in the future to meet the overall power system needs.

38. Section 2.3, Alternative 3-No Action, states TVA would lose the ability to demonstrate the energy storage facility in conjunction with intermittent generation from the wind power plant. According to page A-2 of the EA for the storage facility in Mississippi, that facility near the Columbus AFB was chosen partly because it had a large number of power interruptions (Average >25 per year). Therefore, that facility will demonstrate storage in conjunction with intermittent generation. In addition, it should be possible to use electrical controls to simulate intermittent generation at that facility. It is not necessary to build another facility for the stated purpose. Having the intermittent generation come from wind power is not necessary for the demonstration. Robert Smith, Harry Wills, Jim Horton

Response: The power interruptions at CAFB are not caused by an intermittent generation source but by several factors such as transmission line degradation due to age, substation component failures, voltage sags, weather, etc. The Columbus, Mississippi RegenesysTM facility will demonstrate the technology's ability to store energy during periods of low demand for use during periods of high demand (peak) and to improve power quality. That is to say, the facility will receive an intermittent supply of power for the purpose of storing it and discharging it as demand dictates.

The purpose of the combined RegenesysTM and wind turbine project is not to store and dispatch energy from a conventional source/supply but to store wind or “green” power, an intermittent source, during off-peak times and dispatch wind or “green” power at times of high energy

demand. The storage component is a key issue in determining the value of wind generated power.

39. I would suggest that TVA would alternatively construct this wind park facility above Roan Mountain (Carter County), Tennessee adjacent or at the Roan Mountain State Park. I would suggest that the elevation of Roan Mountain would provide a more dependable source of wind and that the local community of both Roan Mountain would be appreciative of the economic benefits (even enhancing tourism) that this TVA project would bring to Carter County. Robert D. Ritchie

Response: Comment noted.

40. I am being told by County Commissioners that there are a lot of deals being made with TVA that the public does not know of and that they are making decisions based on these deals? What deals is TVA making with the Johnson County Commission? Chuck Eckstadt

Response: TVA has not made any agreements concerning the windfarm with the Johnson County Commission.

41. I personally am in favor of the windmills for a variety of reasons. A) We as a nation are in desperate need of alternative renewable energy. The windmills are a perfect example of such an energy source. B) Projects like this must begin somewhere so why not here in Johnson County. Let us be the pioneers in future energy. C) I live at the foot of Stone Mountain and I realize that windmills are probably not the greatest thing in the world to look at, but would be a whole lot better than some such as ski slopes that cover our neighboring North Carolina mountains, clear cut areas which are becoming more prevalent these days, condominiums. Etc. D) If this much money is spent in Johnson County, there is bound to be a positive impact on the county. Harry S. Reece

Response: Comment noted.

42. It is common knowledge that Mr. Paul Brown has pushed for this project so that TVA will construct roads to his property along the peak of Stone Mountain for future real estate development. This would be at a large cost to the rest of the community. Don Taylor

Response: TVA has no plans to construct roads or any other project components on Mr. Brown's property.

43. It appears that the powers that be have already made the decision to build the windfarm on Stone Mountain. TVA and the county commission should hold a county-wide referendum on the project. If a referendum was held today, this project would loose by a landslide. I have no reservations that I am speaking for the majority. Don Taylor, Ed Sturdivant

Response: TVA's preferred site, as described elsewhere in this EA, is Buffalo Mountain. TVA has received a large number of comments supporting and opposing a windfarm on Stone Mountain.

44. At the January 15 meeting one alternative was to not build a Regenesys™ station. If that is the case, Buffalo Mountain is again the logical choice because in the Public Power Institute newsletter article "Clean Power From Wind," TVA said that one of the reasons Buffalo Mountain was chosen for its new wind park was that "Electricity from the turbines is fed into the nearby Clinton Utilities Board power system, which is connected to the TVA power grid." Patti Young

Response: Comment noted. The electricity generated by the proposed Stone Mountain windfarm would similarly be fed into the local distributor's power system, which is connected to the TVA power grid.

45. You are doing a great thing with the concept of clean energy and we support the idea! We do not think it is fair for N.C. residents to not benefit from the windfarm but have only the possible negative effects like noise pollution and visual impact. William Curtis, Julia Curtis

Response: Comment noted.

46. How much dynamiting would occur during windfarm construction? James Taylor, DeNeece Butler

Response: TVA would conduct core drillings at each potential wind turbine location to determine foundation conditions. Dynamiting would be required for foundations on areas of shallow, solid rock, which are likely on Stone Mountain.

47. How large are the sites proposed to be cleared for the wind turbines? Patti Young

Response: Approximately 200 feet x 200 feet would have to be cleared for each turbine to allow for assembly and erection by crane during construction. The actual fenced-in space around each turbine during operation would be no more than 60 feet x 60 feet. Areas cleared for construction and not needed for windfarm operations would be restored as nearly as possible to pre-construction condition.

48. Destroying the top of Stone Mountain by flattening its surface to accommodate one acre by one acre construction areas, to create a 16-foot service road and to erect windmills that will stand as tall as a 36-story building will be a total abomination to this Appalachian Mountain region. Judy Mowery

Response: Comment noted.

49. Has TVA contracted construction and operation of the wind power plant? If so, who was contracted? Richard A. Moore Jr.

Response: No. A developer/contractor would not be selected until the environmental review is complete and the location selected.

50. Will TVA consider constructing the proposed wind turbines in phases? For example, the first phase might consist of two or three turbines operated for a period of time to determine community acceptance and assess performance. Richard A. Moore Jr.

Response: This was the approach used that resulted in the three-turbine demonstration on Buffalo Mountain. As a result of that phase, we have determined that the wind in portions of the valley is sufficient, have studied noise levels and impacts on wildlife, etc., and have also determined that the cost of expanding at the rate of a few turbines at a time is very expensive. The cost of power is reduced if infrastructure costs such as substations, transmission lines, and roads as well as the erection costs are spread over the greatest number of turbines at the time of plant construction.

51. What agencies regulate and approve the siting process? Who is the oversight group that ensures permitting compliances? What regulations apply to establishing the permit and its requirements? We would like to see a copy of the regulations and the permit. Patti Young, Richard A. Moore Jr.

Response: There are no federal or State of Tennessee regulations specific to the siting or operating of wind turbines. However, TVA coordinates with appropriate State and local agencies on the siting and operation of all generating facilities, regardless of fuel type. Regulations affecting endangered species, wetlands, and cultural resources can affect the siting process. The FAA is responsible for issuing permits on lighting the wind turbines.

52. Has the FAA approved the towers and what are the lighting requirements? Richard A. Moore Jr.

Response: When a site is selected, TVA will request the FAA to conduct an Aeronautical Study of the site. Since the local airport is 3 to 4 miles from Stone Mountain we do not anticipate any impact from the turbines on the airport traffic. The FAA will determine lighting requirements.

Each wind turbine at Buffalo Mountain has one white, medium-intensity flashing light on top of the turbine. There are no lights on the blades. The FAA would make the final decision as to whether all turbines require lights.

53. The windfarm sites are fairly remote from electricity users. Describe the expected transmission losses. Also, how efficient is the Regenesys™ system. Susan Gawarecki

Response: Both windfarm sites are less than 5 miles from a substation and a local distribution network servicing electricity users. No appreciable transmission loss is expected over these short distances. The Regenesys™ facility would be 65 to 70% efficient.

54. Most of the residents of Johnson County are in favor of the windfarm, and the outspoken opponents represent a small minority of the local residents. The support was evidenced by the County Commission's 22 to 3 vote in favor of the project on January 15. Nelson Gray, Margaret Thacker, Dr. Donald F. Tarr, James R. Grayson, Darlene Atwood, James R. Grayson, Harry S. Reece, R. G. Grindstaff

Response: Comment noted.

55. The EA does not describe the electromagnetic fields that would be produced. What would their impacts be? Kathy Helms, Helen Icenhour, Patti Young

Response: None of the various windfarm components would produce electrical fields strong enough to impact the public or to impact wildlife.

Meteorology and Air Quality

1. The last sentence of the last paragraph in Section 3.2.2 is incomplete and unclear. Robert Smith

Response: This sentence has been rewritten in the Final EA.

2. Is it true that Tennessee ranks 39th in the 50 states in terms of windiness? DeNeece Butler

Response: Compared to many other states, the wind energy potential in Tennessee is fairly low. Nevertheless, many ridge systems and mountain summits in eastern Tennessee, as well as western North Carolina, are ranked by DOE (see <http://rredc.nrel.gov/wind>) as having Class 3 or higher wind power, and are therefore potentially suitable windfarm sites.

3. The information on wind speeds on page 3-1 states for Buffalo Mountain: "Average monthly wind speeds at a height of 164 feet (50 m) varied from a low of 9.8 mph (4.4 m/s) in August 2001 to a high of 17.4 mph (7.9 m/s) in February 2001." Then for Stone Mountain, "For the period of April through July, average monthly wind speeds at a height of 164 feet (50 m) varied from a low of 13.9 mph (6.2 m/s) in June to a high of 17.2 (m/s) for April." This is a comparison of two different time periods. Even at that, from this information there is very little difference in wind speeds. Roger C. Ramsey

Response: Comment noted. Because potential generation is proportional to the cube of average wind velocity, a small increase in wind velocity has a large effect on generation.

4. Additional information is needed to clarify how TVA determined the average wind speed at Stone Mountain and classified the mountain as a high class 4 site. Were the three years of monitoring data from the mid-1980s used or only data collected since April 2001? A table with monitoring data and calculations would be useful. Richard Moore

Response: The classification of the wind resource at each site was based on both mid-1980 and more recent wind measurements.

5. We support TVA's proposal to expand its electrical power production from wind and other non-polluting sources because of the beneficial effects on air quality. Frances Lamberts – League of Women

Voters of Tennessee, Janice Teinert, Lori Baker, Mark Weiner, Vic Thomas, Patricia Cartwright, Lisa Bingham, lewlight@aol.com, Freida Van Allen, Linda Modica – Vice Chair, State of Franklin Group of the Sierra Club, Cathy Landy, League of Women Voters of Watauga

Response: Comment noted.

6. Is it true that there is no longer an acid rain problem of any significance in the country except for the Northeast? DeNeece Butler

Response: There are no areas near the Tennessee Valley that are in non-attainment for SO₂, a primary cause of acid rain. However, SO₂ levels and acid rain cannot be correlated at a local level. The Southern Appalachian Mountain Initiative (SAMI) is focusing on the impacts of air pollutants, including acid deposition, on the natural resources of the Southern Appalachian Mountains. SAMI is a partnership of state and federal environmental regulatory agencies, federal land managers, industry, academia, environmental groups, and interested public participants. SAMI's goal is to identify and recommend reasonable measures to remedy existing, and to prevent future adverse impacts from human induced air pollution on the air-quality related values of the Southern Appalachian Mountains. Parallel to SAMI's voluntary mission, federal air regulations are requiring emissions reductions in the SAMI states to protect human health. SAMI is evaluating the costs and benefits in the years 2010 and 2040 of current air regulations and of emissions management strategies that SAMI might recommend. The assessment results will be summarized in a final report in summer 2002 and will be the basis of SAMI's recommendations to policy makers. More information can be obtained from the SAMI website, www.saminet.org.

7. Quantify the emissions that would result from the open burning of cut trees and brush during construction. Compare them with estimates of emission reductions claimed for wind power. DeNeece Butler, Robert Smith

Response: In the worst case scenario, where all of the trees removed from the ridge top are burned and not sold for timber, the total estimated particulate emissions would be about 2.43 tons at Stone Mountain and 0.73 tons at Buffalo Mountain. These one-time emissions are an order of magnitude less than the 20 tons of particulate emissions offset by the operation of the windfarm. Carbon monoxide emitted from the burning of timber at Stone Mountain and Buffalo Mountain, respectively, would be 15 and 4.5 tons. The windfarm would offset around 15 tons per year of carbon monoxide emissions.

8. Explain the basis for the estimated offset of emissions due to windfarm operation. Does the estimate penalize the wind power plant for the impact of power used by the turbines for heating, etc. when they are not producing power? What are the uncertainties of the estimates, and how do they compare with the predictions versus actual results for the first 3 turbines? DeNeece Butler, Billy Kennedy, Robert Smith

Response: The emissions offsets were calculated by multiplying the predicted annual energy production in megawatt-hours for each windfarm by TVA's system-wide emissions rates for fiscal year 2000. The emissions offsets are based on net energy production, as are TVA's system-wide emissions rates. The uncertainties of the estimates are lower for Buffalo Mountain than for Stone Mountain because the wind resource has been monitored longer on Buffalo Mountain than on Stone Mountain.

9. Quantify the air emissions and other pollution produced by hauling the tons of wind turbine construction debris and energy storage facility operations waste, as well as other exhaust emissions during construction. Robert Smith

Response: Hauling construction debris to a landfill would likely require no more than 10 trips, and the resulting emissions would be very small. Carbon monoxide (CO) and nitrogen oxides (NO_x) would be the primary air pollutants from hauling operations. Particulate matter, sulfur

dioxide, and volatile organic compound emissions would be much smaller. The typical emissions of NO_x and CO from diesel powered trucks is 1 to 2 grams per mile of travel. The emissions from the hauling of construction materials as well as from operation of construction equipment are insignificant and do not warrant a detailed estimation.

10. Section 2.4 claims that there would be beneficial effects to air quality, but the effects are not quantified. Robert Smith

Response: The effects on air quality are quantified in Section 4.2.

11. To reach either wind facility requires traveling relatively long distances, over poor roads, and over large elevation changes. Both for construction and for operation, driving to the location of the wind plant will generate more pollution than driving to other typical power plant locations. This additional pollution should be considered and discussed. Robert Smith

Response: The mobile source air emissions associated with construction and operation of the facility are insignificant. Total emissions could best be expressed in the units of pounds instead of tons. The windfarm would offset hundreds of tons of emissions annually, and the benefits outweigh the increased mobile emissions by two orders of magnitude.

12. The wind facility is a unique visual site in the region. This fact causes interest and visitation. The additional pollution associated with people traveling even longer distances to visit the facility should be considered and discussed. For larger capacity power plants these impacts would be less significant relative to the amount of energy produced (i.e. per KWh). Because of the relatively small amount of energy generated or stored at the subject facilities, these issues should be addressed. Robert Smith

Response: The increase in mobile emissions as a result of higher levels of visitation relative to other electric power plants cannot be estimated. What can be said for certain is that the magnitude of these increased emissions will be two to three orders of magnitude less than what the windfarm will offset

13. The quality of the air will be the same with or without the windmills in Johnson County. Wind patterns and movement of emissions is unknown. R. R. Woods

Response: Comment noted.

14. The EA claims that the proposed windfarm will have a positive impact on air quality by offsetting the use of other electrical generating plants that emit air pollutants. Will this offset result from a reduction in pollution from coal plants? TVA should concurrently take other steps to reduce its air emissions. Annlynn W. Eastin, Dick St. John, Richard Moore, Jana Jones, John McClellan, C. Bellman

Response: TVA has committed to add more pollution control equipment to several of its fossil fueled plants, and this decision is independent of the windfarm proposal. Selective catalytic reducers (SCRs) are being installed for removal of NO_x and scrubbers will be added to reduce SO₂ emissions. The purpose of the windfarm is to provide an alternative source of power that has relatively low environmental impacts. Wind resources in the Tennessee Valley Region are not plentiful enough to replace an appreciable amount of fossil power.

15. The generation of 20 MW of wind power would yield less than one half of 1 percent of TVA's total yearly output. The resultant pollution emissions not generated by fossil plants would be initially impressive but when viewed as part of all TVA emissions, not even worth mentioning; and especially not worth spoiling Johnson County's natural beauty. Linda Kolehmainen; Richard Kolehmainen; Bird Turner

Response: Comment noted.

16. I thought most of the air pollution in the N.C. mountain area originated from power plants in the Midwest, as reported by the media for many years, so how would wind farms in the mountains alleviate that problem? H. Mehaffey

Response: See the second response that describes the Southern Appalachian Mountain Initiative. One goal of SAMI is to determine the impact of air quality in Appalachia from pollutant sources in all the surrounding regions. Under certain weather conditions, midwestern power plants impact N.C. Sources closer to N.C. generally have a greater impact.

17. Sodium polysulfide solutions have a slight odor of hydrogen sulfide often called rotten egg gas. Has it been demonstrated that the plant in England is odor free? Wayne Wolsey

Response: The plant in England has not yet been operated on a commercial scale. During production, there is a remote possibility of production of trace amounts of hydrogen sulfide. To capture any hydrogen sulfide that may be produced, there is a ventilation and extraction system that passes the hydrogen sulfide through two carbon bed absorbers.

18. TVA estimates less than 10 pounds of bromine will be discharged to the atmosphere each year under normal operating conditions. TVA also estimates the maximum concentration of bromine will not exceed 3 ug/m^3 at ground level. Please provide the bases for these estimates in the EA or EIS.

Response: The discharge rate was provided by the manufacturer and is based on mass balance, empirical data from the pilot facility operating in the UK, and the efficiency of the adsorbers. The maximum concentration at ground level was determined using an EPA approved atmospheric model.

19. Alternative 1, if chosen, would actually have a positive impact on the Appalachian Trail if it helped to decrease emissions from TVA power plants fueled by fossil fuels and resulted in improved air quality and visibility along the A.T. through the Smokies and north into Virginia. Marianne Skeen – Vice Chair ATC Board of Managers, Morgan Sommerville – ATC Regional Representative for Georgia, North Carolina, and Tennessee.

Response: Comment noted. See the above response to Comment 14 for steps TVA is taking to improve air quality.

20. According to Table 3-2, air emissions from Anderson County are several times those from Johnson County. Therefore building the windfarm on Buffalo Mountain should have more of an effect on air quality. Patti Young

Response: The proposed windfarm would result in little observable difference in air quality in either Anderson County or Johnson County. The potential for emissions offsets is greater at the Stone Mountain site in Johnson County because of the site's greater wind resource.

Socioeconomic Resources

1. The economic benefits to Johnson County seem very low. TVA should offer more economic benefits. Charles Cutliff, Johnson County Commissioner, Barbara Medley, Roger C. Ramsey, Thomas and Polly Saboat, Annlynn W. Eastin, Dennis Scanlin

Response: Comment noted.

2. As a present or likely future resident of Johnson County, I support building the windfarm on Stone Mountain. It will be an asset to the community, a tourist attraction, and will help the community grow. Paul Brown, Sam Adams, Bobby Littleton, Cynthia Cornett, Peggy May and 80 customers of Peggy's Hair and Tanning; Ron D. Wilson, Karen Anderson, Gary & Sandra Matheson, Janette Guinn, Renee Freeman, Steve, Tom D Tugman

Response: Comment noted.

3. TVA can also provide incentives for conservation to multi-family developers as well as individual homeowners and businesses. Mark Wiener

Response: Comment noted.

4. The EA does not address the effect on property values in Johnson County. The views of unspoiled mountains increase our property values and make the area desirable for retirement and second homes. How would property values be affected? Barbara Medley, Patti Young, Bob and Judy Mowery, Hank Medley, Barbara Hayes, William J. Hartman, Chuck Eckstadt, William and Geraldine Church, Kari A. Burshiem, DeNeese Butler, Peggy Oehm, James Taylor, Ed Sturdivant, R. R. Woods, Thomas and Polly Saboat, Joe and Heather Gildea, Timothy K. Lowe, J. Randall Brooks, Jr., John McClellan, Larry and Lori Kizer, Richard Moore, Julia Curtis, William Curtis

5. How will landowners be compensated for loss of property values? Lynda Greene, DeNeece Butler, Karen Warrick, William Curtis/Julia Curtis

6. How would the windfarm affect overall county property tax revenues, the residential building industry, insurance providers, and related businesses? Judy Mowery, Joe and Heather Gildea, Ed Sturdivant, Danny Maguire

7. I also doubt that windmills will lower nearby property values or drive tourists from the mountains. My wife and I recently bought a vacant lot next to her house in part just so we can erect our own small wind generator. To my mind, this will be a beautiful sight and enhance our neighborhood. Beauty is in the eye of the beholder. Dr. Scott A. Rogers

8. How have the Buffalo Mountain windmills affected property values in Anderson County? Celia Payne

9. What would the tax revenues be to Anderson County from property taxes, employment taxes, and sales tax? Jim Horton

Response (Questions 4-9): Section 4.3 of the Final EA has been revised to include more information on these issues. In summary, at the Stone Mountain site, there probably would be some impact to property values in those locations where the visual impacts are most intrusive. Little research has been conducted on the extent of these impacts, but the existing research suggests that they would be considerably less than the 40 to 60 percent decrease claimed by some commentators. Impacts of this magnitude would be unlikely except possibly for sites causing extensive visual and other disturbance. No impacts to property values are expected at the Buffalo Mountain site due to its remoteness and the scarcity of distinct views of the site.

Any negative impacts to property values would also impact property tax revenues of the affected local governments. However, they would represent only a very small part of the total property tax revenues of the jurisdiction. As discussed in the Final EA, if TVA enters into a Power Purchase Agreement, property taxes would be paid on the windfarm site; if TVA owns the site there would be a small redistribution of TVA in lieu of tax payments to the local jurisdictions. Overall impacts on local businesses would be very small. Other economic impacts, including other local tax collections, also would be small. There would be no compensation to landowners unless portions of the project are built on their property.

10. Because of their appearance and noise, the proposed facilities will deter tourism in the Johnson County area. Patti Young, Richard A. Moore Jr., Margaret Shields, Thomas and Polly Saboat, Vikki Woods, Cass Ballenger, Member, Congress of the United States, 10th District, North Carolina

11. The proposed windfarm will help the Johnson County economy by increasing tourism as people travel to see the windfarm. Kristy Allen, Frances Lamberts – League of Women Voters of Tennessee

12. If the windfarm is built in Johnson County, TVA should be a leader in efforts to make the windfarm a tourist attraction by constructing a visitor center, interpretive displays, access roads, and by advertising. Todd V. Eastin

13. In what ways have the windmills affected the tourism industry in Anderson County? Celia Payne

Response (Questions 10-13): It is not anticipated that selection of the Buffalo Mountain site would have any impact on tourism. The Stone Mountain windfarm could have a marginal negative impact if it is seen as detracting from the scenic beauty of the area. There are, however, also cases where local efforts have converted windfarm sites into tourist attractions. While it may be possible to create such a tourist attraction at either of these sites, it is likely that the attraction would be somewhat short-lived as windfarms become more common.

14. How many temporary and permanent jobs are proposed for Johnson County? Describe these jobs. Describe the salaries attached to these jobs. Patti Young, Cynthia Cornett, Ms. Swan Chatfield, Richard A. Moore Jr.

15. Section 4.3 of the EA states that Regenesys™ plant workers would be drawn from Sullivan and Washington Counties, as well as Johnson County. How many jobs will be offered to local residents? Patti Young

16. The Regenesys™ plant in Mississippi created 60 construction jobs for two years. If Johnson County gets the windfarm and not the Regenesys™ plant, how many construction jobs would be created? Celia Payne

17. European wind power associations describe highly positive employment advantages of wind power. For the modern European countries as a whole, one megawatt of wind power created generates jobs for 15-19 people, and perhaps double that number in countries with lower labor productivity. Expansion of wind power can therefore be expected to have substantial long-term benefits for the communities involved. Frances Lamberts, League of Women Voters of Tennessee

Response (Questions 14-17) As discussed in Section 4.3 of the EA, there would be very few if any permanent jobs created in the county since the facility probably would be controlled from a central location. Temporary jobs are expected to peak at about 75 for a short time during construction of the Regenesys™ facility; peak construction of the windfarm, which would likely precede Regenesys™ facility construction, would be lower. Regenesys™ facility commissioning, which would last about 6 months after construction is completed, would require about 20 workers. A variety of skills, primarily craft, would be required. Salaries would be determined prior to the hiring process, and would be market competitive, varying among the different crafts and skills.

Local residents may apply for any job openings. The number of openings will be determined by the contractor, who may use company employees for some work. Sullivan and Washington

Counties are mentioned to show the extent of the labor market area from which the project would draw construction workers. This is not intended to imply targeting of a specific county or area for hiring.

We are not familiar with the 15-19 jobs per megawatt of European wind power. However, it may have to do with the total jobs made possible by the availability of the electric energy created. In this case, that benefit would accrue across the entire TVA service area, not necessarily to the local area.

18. The economic advantages for the Stone Mountain windfarm are very short sited and short term thinking. Long term jobs will be created in Johnson County as new folks move in from other counties and other states looking for a different lifestyle and less stress from suburban and city living. R. R. Woods

Response: Comment noted.

19. Most Johnson County citizens drive out of the county for employment, and while we want to entertain ideas of any kind that further the economic growth of our area, I'm not sure a windfarm is the answer to our economic dilemma. Ms. Swan Chatfield

Response: Comment noted.

20. How about taking 10% off the electric bill of each household in the immediate viewshed of the turbines? Annlynn W. Eastin

Response: TVA rates are applied uniformly across the Valley.

21. The proposed windfarm would create few no jobs and little revenue to Johnson County. Where are the benefits? Give us 500 jobs and \$1,000,000 a year and we will let you place them on any mountain in the county. Roger C. Ramsey

Response: Comment noted.

22. As part of TVA's Green Power Switch program, customers voluntarily pay higher electricity rates for "Green" power. In my area this amounts to an increase of about 40% in electricity rate per retail KWh. What are the associated environmental and health effects due to the economic impact of spending large amounts of "extra" money on "Green" power? People and companies must either work more (and drive, etc.) to obtain extra money to pay the extra for "Green" power, or they must spend less money on other things such as newer (i.e., less polluting) vehicles, cleanup or efficiency projects, quality of food, etc. Although it may seem that the amount is small for each person or company that signs up for only a couple blocks of "Green" power per month, the total impact may be large, and it is increasing as the program expands. Robert Smith

Response: Residential Green Power Switch customers are currently buying an average of 1.7 blocks for a total individual cost of \$6.80 per month. This small, voluntary, monthly expenditure is unlikely to decrease these customer's purchases of other goods and services.

23. I note that Section 4.3 states that the impact on local economies and employment are "not significant" and "very minor." Robert Smith

Response: From the viewpoint of the county or of the labor market area, the increases in employment and income would indeed be minor and would not be considered significant. Clearly, these would not be minor to those persons who directly benefited.

24. In what ways have the windmills impacted Anderson County – both negative and positive? Celia Payne

Response: Economic impacts would be primarily the additional income and employment during the construction of the existing facility on Buffalo Mountain and a small increase in local government revenues. The other noteworthy impact is the project's contribution to the longer-term ability of the economy of the Tennessee Valley to sustain itself with considerably less impact on the environment.

25. Does the project ever show a reasonable payback to either rate payers or tax payers? R. R. Woods

Response: The only rate payers affected are those who voluntarily sign up for Green Power Switch. The impact on tax payers would be essentially the same as from any public power or similar public project. Taking some property out of the private sector would slightly reduce property tax revenues, which would be at least partly if not totally compensated for by increased in lieu of tax payments from TVA.

26. Will the city, state, or county incur any costs to construct or operate the proposed plant? Describe these costs, if any. Richard A. Moore Jr., Patti Young

Response: Neither state nor local governments should incur any costs to either construct or operate the proposed plant.

27. I have heard that you are going to clean up a site in Johnson County, and up to \$500,000 will be paid to the county each year. Will you be paying property tax or are you exempt??. Chuck Eckstadt

Response: We are not sure what cleanup site is referenced in the comment. With respect to the proposed project, TVA, as a public entity, pays in lieu of tax payments instead of property taxes. This is discussed in Section 4.3 of the EA.

Groundwater and Geological Resources

1. Drilling and blasting during construction of the turbine foundations has the potential to create acid. How will this acid impact the groundwater, which most nearby Johnson County residents use for their water source? Kathy Helms, Timothy K. Lowe, J. Randall Brooks, Jr., John McClellan, Lynda Greene

Response: The potential for acid drainage or runoff caused by exposure of acid-forming geologic materials (e.g., pyritic shales) during drilling or blasting is addressed in EA Section 4.4 under the subsection entitled, "Alternative 2 – Stone Mountain Windfarm – Impacts During Construction." Mitigative measures that would be implemented in the event acid-forming materials are encountered at the windfarm site are also discussed in this section.

2. The EA does not mention the many springs on and near Stone Mountain which supply the water for many residents. The Brownlow Water System, which serves about 200 families, is supplied by these springs. TVA needs to survey local residents and more accurately map water supplies. Linda Kolehmainen; Richard Kolehmainen; Bird Turner, Richard Moore, Timothy K. Lowe, J. Randall Brooks, Jr., John McClellan

Response: Actions such as those proposed under the Stone Mountain windfarm alternative, involving limited water use and low potential for groundwater contamination, generally do not require door-to-door water use surveys for an EA-level NEPA evaluation. Tennessee Department of Environment and Conservation water well records and regional hydrological literature were used in assessing groundwater use in the project area. Issues related to local springs are implicitly addressed in the groundwater resource sections of the EA since spring water is derived directly from shallow groundwater sources.

3. The grading, drilling, blasting and other construction activities on Stone Mountain will damage springs which supply water to numerous residents. Some of these springs are only 300 feet from the

mountaintop. Use of wells by local residents is not cost-effective because the required depth is increasing. The effects on springs and the water supplies of local residents needs to be described. David Stout, James Taylor, Patti Young, Jana Jones, C. Bellman, R. R. Woods, Timothy K. Lowe, J. Randall Brooks, Jr., John McClellan

Response: Appropriate best management practices (BMP) would be implemented to prevent damage to springs and streams in the vicinity of construction sites (see EA Section 4.10, "Aquatic Ecology"). BMPs would include runoff and erosion controls to prevent contamination of springs and streams located downgradient of construction sites and access roads. Measures to prevent and mitigate potential contaminant releases (e.g., equipment-related fuels, oils, or solvents) would be documented in the project Storm Water Pollution Prevention Plan and Spill Control and Countermeasures Plan. Should acid-forming geologic materials (e.g., pyritic shale) be encountered in foundation excavations or during drilling, these materials would be segregated and handled so as to minimize impacts to local water quality (see EA Section 4.4, "Alternative 2 – Stone Mountain Windfarm – Impacts During Construction").

4. How will you compensate people who rely on springs on Stone Mountain for their water supply if those springs are disrupted or polluted? Helen Icenhour, Richard Moore

Response: Spring water supplies determined to have been damaged by project construction or operations would either be restored or replaced with an alternate water supply. The method of compensation would be handled on a case-by-case basis after investigation of the damage claim by TVA.

5. The EA states "there are no known wells completed in the residuum in the site area" (sec 3.4, pg 3-9). How was this determined for the Stone Mountain area? Richard Moore

Response: This statement was based on the literature reference cited in the EA section in which the statement appears. No physical inventory of existing wells in the project area was performed.

6. What quantity of herbicides will TVA apply annually to clear transmission line right-of-ways, access roads, etc., on Stone Mountain? Will these herbicides have the potential to enter groundwater? What is the potential for herbicides to contaminate groundwater resources and potable water supplies? Richard Moore

Response: As discussed in EA Section 4.4, areas surrounding wells or springs located along transmission line right-of-ways would not be treated with herbicides.

Floodplains

1. Is there an increased risk for release of electrolyte solutions at the Shouns Substation and Mountain City Industrial Complex sites due to their location in the 100-year floodplain? Richard Moore

Response: The risk is not increased. If one of these sites were selected, TVA would elevate portions of the site supporting critical components to above the 500 year flood elevation.

Managed Areas and Ecologically Significant Sites

1. Is there not a federal law that has to do with things that can be seen from the Appalachian Trail? Please investigate and describe this law. Because the windfarm on Stone Mountain would be seen from the Appalachian Trail, it would not be allowed. Lynn Hubbard

Response: Currently, there is no such law. The Appalachian Trail Conference (ATC) passed a resolution in April of 2000 establishing "Policy on Roads and Utility Developments." This policy states that the ATC seeks to avoid, minimize, or eliminate the visual, aural, and experiential impacts of roads and utility developments upon the trail resources. Further, the ATC

opposes facility development on mountain-tops, ridge-lines, and other visible areas in the foreground (within 0.5 miles) and middle-ground distance (within 4-5 miles) zones as seen from the Appalachian Trail, unless the visual, aural, and experiential impacts to the Appalachian Trail can be satisfactorily mitigated on-site. The proposed Stone Mountain Windfarm site lies more than ten miles from the Appalachian Trail. TVA requested comments from the Appalachian Trail Council, U.S. Forest Service and the National Park Service, who are all involved in managing the Appalachian Trail. Only the Appalachian Trail Conference submitted comments to TVA; their comments are included in this EA.

2. The EA does not describe the Cumberland Trail State Park, which will be near the Buffalo Mountain windfarm. Please describe this trail and how views from it would be affected by the windfarm. Include a simulated view of the proposed windfarm from the trail. Lisa Huff, Barbara A. Walton, Robert Smith

Response: The Cumberland Trail State Park is a proposed 303 mile hiking and backpacking trail extending from Cumberland Gap on the Tennessee, Virginia, Kentucky border to the Tennessee River Gorge on the Tennessee, Alabama, and Georgia border. Several trail segments, totaling more than 110 miles, are completed and open. A further 183 miles of trails are in the detailed planning stage, with 10 miles currently under construction. The proposed Smoky Mountain segment will run from existing trails within Frozen Head State Park along the crest of Smoky Mountain in the vicinity of the Anderson-Cumberland County line to the headwaters of Straight Fork Creek and continue down into the Straight Fork drainage. The proposed Buffalo Mountain Windfarm expansion, including associated infrastructure, would not lie on or immediately adjacent to this, or any other, proposed segment of the Cumberland Trail. A simulated view of the wind farm from the Frozen Head fire tower has been added to Section 4.12 of the Final EA. Similar but much narrower views may be seen occasionally through the trees at distances of 3 -5 miles from the proposed Smoky Mountain segment of the trail.

3. Construction of the windfarm on Stone Mountain would be contrary to the goals of the National Park Service for the Appalachian Trail as described in the EA. How does TVA justify working at odds with another federal agency, for the production of 20 MW of electricity? DeNeece Butler

Response: TVA requested comments from the Appalachian Trail Conference, U.S. Forest Service and the National Park Service, who are all involved in managing the Appalachian Trail. Only the Appalachian Trail Conference submitted comments to TVA; their comments are included in Visual Resources section of this Appendix.

Cultural Resources

Archaeology

1. The EA states that surveys will be performed to determine the presence and significance of archaeological resources. How will these surveys impact project cost and schedule? If significant resources are found, what is the potential budget impact from construction delays and how is this addressed in the construction contract? Richard Moore

Response: Response: Archaeological surveys of the windfarm sites and Regenesys™ sites have been completed and their results are described in this EA.

2. Building the windfarm at Stone Mountain would have adverse effects on archaeological sites within the area. Joe and Heather Gildea

Response: An archaeological survey of the Stone Mountain windfarm site has been completed and no archaeological sites were identified. Therefore, no adverse effects are expected.

Historic Structures

1. How does TVA plan to mitigate the adverse impact of the proposed Stone Mountain wind plant and energy storage plant on historic resources? Richard Moore

Response: Mitigation would be determined through consultation between TVA and the SHPO, and could involve any number of actions such as detailed documentation of the historic structures, historic preservation educational programs, etc. As identified in this EA, Stone Mountain is not the preferred site for the proposed windfarm. If further consideration is given to this site in the future, the necessary consultation with the SHPO will be undertaken.

2. At the foot of Rich Mountain Road is a cabin in which Daniel Boone is said to have stayed when he came to hunt on Rich Mountain, Stone Mountain and Elk's Knob, three of the four highest mountains in Watauga County. Trade, Tennessee, which is at the State line on Highway 421, is said to be the oldest European settlement in the State of Tennessee. These facts are not mentioned in the EA. Rae H. Gulick

Response: Should this site be selected, a thorough historic survey would be completed which would note these and other sites.

3. Building the windfarm at Stone Mountain would have adverse effects on numerous historical properties. A windfarm on Buffalo Mountain would affect few historical properties. Rusty Painter, Roger C. Ramsey, Joe and Heather Gildea, Patti Young

Response: Comment noted.

4. The remnants of the mine entrance, inclined railway, and railroad structures and right-of-ways in the vicinity of Windrock, near Buffalo Mountain, were not mentioned. These may be potentially historic sites, and they should be considered and discussed. Robert Smith

Response: The remnants of these Windrock mining features are known and could be potentially eligible for listing on the National Register of Historic Places. The Buffalo Mountain site is out of the viewshed of these potentially eligible sites.

Terrestrial Ecology**Vegetation**

1. The EA states that TVA will replant using non-invasion plant seed, but will you replant trees that the EA says will take 15 years to reforest. Who will monitor the progress and success of the revegetation plan? Patti Young

Response: There are no current plans to replant trees on the windfarm site. Cleared portions of the site that are not maintained by mowing will naturally revegetate with trees and shrubs within a year or two. TVA personnel will monitor revegetation success.

2. If the technology is unproven over the next few years, then you have a mountain top ruined forever or many years. Trees will not re-grow on the top of Stone Mountain because of the limited humus soil present. R. R. Woods

Response: The area at Stone Mountain that could be disturbed during windfarm construction to the extent that most of the soil would be removed is very small.

3. How many field surveys were conducted to assess plant species at Stone Mountain and when were they done? Richard Moore

Response: One field survey was conducted in June, 2001, two field surveys were conducted in November, 2001, and one field survey was conducted in January, 2002.

4. Selection of Stone Mountain would result in more forest fragmentation and more forest clearing than would selecting Buffalo Mountain. Roger C. Ramsey, Peggy Oehm.

Response: Comment noted.

5. The statement in Section 4.9.1, Alternative 2 that “because extensive unfragmented high-elevation forest occurs on surrounding mountains, the resulting impacts would be insignificant.” This statement is not true. Because this would be one of the first fragmentations of the Stone Mountain area, the impact is more significant, not less. Robert Smith

Response: Comment noted. The forest canopy toward the northern end of the Stone Mountain site has been cleared previously, and the area is now maintained in an early successional state. Therefore, some forest fragmentation has already occurred at this site. The amount of additional forest removal associated with this project is expected to be insignificant in a regional context. The text has been revised to reflect the concerns addressed in this comment.

6. Our organization is clearly very supportive of the Green Power Switch and the development of wind technology in the TVA service area, and we're very excited about both potential sites At Stone Mountain the forest disturbance would be minimal, and it would be even less at Buffalo Mountain. Steven Smith, Executive Director, Southern Alliance of Clean Energy

Response: Comment noted. Each project would disturb an area of between 20 and 30 acres. At Buffalo Mountain, more of the project site is previously disturbed than at Stone Mountain.

Wildlife

1. A bat and bird mortality study should be continued. Barbara A. Walton, Bill Brickenstein, Charles C. Coutant, Nancy A. Coutant

Response: Comment noted. See response to the following comment.

2. We further recommend that the yearly monitoring that is already being conducted at the three wind turbines on Buffalo Mountain be continued, and that TVA continue providing this office with a timely copy of the monitoring results. These results should include species names and numbers of individual species. Lee A. Barclay Ph.D.; Field Supervisor; U.S. Department of the Interior; Fish and Wildlife Service

Response: TVA intends to continue the ongoing monitoring through 2002, and is considering both continuing this monitoring and monitoring the new windfarm.

3. TVA should use measures to reduce bird deaths such as scarecrows or fake owls to deter birds, experiments with colored or reflective rotors, and stopping the rotors during fall and spring migration seasons. Nathan Newport, Bill Brickenstein, Michael Strutin

Response: Because most or all of the bird mortality at the Buffalo Mountain windfarm occurs at night, the use of visual methods (aside from different types of lighting) to reduce bird mortality is unlikely to be successful. The wind energy industry is currently conducting research on methods to reduce bird mortality. TVA will monitor these research findings and consider adopting feasible methods.

4. The Buffalo Mountain wind turbines have white strobe lights. White strobes are more disorienting to migrating birds. Is it possible to change the lights on the existing turbines to red and use red lights on the new turbines? Would red lights be acceptable to the Federal Aviation Administration? Lisa Huff, Dean Whitworth

Response: Research comparing the effects of red and white lights on migrating birds is limited. Available results indicate that white strobe lights are less attractive to birds than are steady or flashing red lights (see Manville 2000). Similar research comparing white and red strobes has not

been conducted. Flash duration is probably more critical to birds than light color, and short flashes with long off phases seem to have the least impact on birds.

5. Since these turbine structures will require lighting, we recommend the use of white flashing strobe lights as dim as legally possible, with flash time intervals as long as legally possible, and with the flash as brief as legally possible. These recommendations are intended to reduce the attraction of lighted turbine structures and rotating rotor blades to migratory birds and, if implemented, should lessen their mortality from collisions with these turbine structures and associated appurtenances. Lee A. Barclay Ph.D.; Field Supervisor; U.S. Department of the Interior; Fish and Wildlife Service

Response: TVA will follow these recommendations.

6. TVA should consider using sound-producing devices or other mitigating factors to deter bats and reduce bat mortality. Lisa Huff, Barbara A. Walton, Bill Brickenstein

Response: TVA is exploring a variety of methods of reducing bat mortality and intends to adopt feasible methods.

7. Please put lights on towers to alert migrating birds to the flight hazard. Bobbie and Lawrence DeRidder

Response: Lights on towers are more likely to attract birds at night than they are to alert and repel birds. TVA therefore intends to use the minimum level of lighting allowable under Federal Aviation Administration regulations.

8. What is the rate of bird mortality, and how is it measured? How do you account for scavengers in measuring bird mortality? Susan Gawarecki, Patti Young, Shipp H. Webb

Response: These topics are discussed in Section 4.9.2 of the Final EA.

9. Tremendous numbers of hawks migrate through this area. Is it correct that there has been little impact to hawks at the present Buffalo Mountain windfarm? Jim Horton

Response: No hawk mortality has been observed at the Buffalo Mountain windfarm.

10. I am concerned about the siting of wind farms on raptor migration routes along the East Coast. California windfarms have killed many birds, even without being in a migration pathway. Bill Brickenstein, Shipp H. Webb

Response: Comment noted. No hawk mortality has been observed at the Buffalo Mountain windfarm, and little to no hawk mortality is predicted to occur at either site.

11. Turbine shadows or shade attract rodents looking for shelter. The National Wind Coordinating Committee's handbook states, "Disturbed ground surface can be more suitable for burrowing animals, many of which are attractive prey for raptors and other predators. Overhead lines, guy wires, turbines and towers may provide new perching opportunities for raptors, but also increase the risk of collisions and electrocutions." Patti Young

Response: The quoted statement is much more applicable to windfarms in western North America than to windfarms in the East because of the much higher numbers of burrowing prey animals such as ground squirrels using non-forested habitats in the west. The availability of raptor perch sites at the windfarm would be minimized by using underground electrical connections between the wind turbines and the onsite substation.

12. Bear, deer, and bobcats utilize the Stone Mountain ridge as an avenue of travel. These were not addressed in the EA. How would such mobile species that may leave the area during construction be

impacted? Patti Young; James Taylor, Linda Kolehmainen, Richard Kolehmainen, Bird Turner, R. R. Woods

Response: Deer are common in the study area. Bear and bobcats occur in the vicinity, as do coyotes. These species are quite mobile and can have large home ranges. While there would be some disturbance to these species during the construction of the windfarm, the disturbance would be temporary and, for the most part, limited to higher elevations in the project site. The windfarm and associated facilities would have little effect on any of these species.

13. How much time was spent actually surveying the animal species; and what method or methods were used to do this? Patti Young

Response: Various survey methods were used at the different project areas, including point counts, transect counts, fixed point hawk watches, mist netting, Anabat surveys, and time constrained searches. Surveys were conducted on 20 days from mid-2001 through early 2002.

14. I prefer the Stone Mountain site because the negative impact on the bat population of Buffalo Mountain makes it an environmentally undesirable location for additional wind turbines. Due to habitat loss, most migratory birds and bat populations are already in serious decline in our state. Jo Ann Thompson

Response: Comment noted.

15. The Stone Mountain area has abundant wildlife, some of which are endangered species, such as the red-tailed hawk. This would totally destroy the natural breeding grounds for such animals as well as extinction in many cases. Bob and Judy Mowery

Response: The red-tailed hawk is not an endangered species and is fairly common in the Stone Mountain area. The effects on wildlife and endangered species are described in Sections 4.9 and 4.11. Construction of the Stone Mountain windfarm would not result in extinction of any species.

16. The bird losses would be much greater at the Stone Mountain location than at Buffalo Mountain. Linda Kolehmainen; Richard Kolehmainen; Bird Turner, Patti Young

Response: The EA notes that bird mortality would likely be greater at Stone Mountain than at Buffalo Mountain.

17. Does the relatively small search radius of 50 meters contribute to an under-count of dead birds? Robert Smith

Response: The number of dead birds found decreases rapidly with distance from the turbine towers, and none have been found at distances greater than 36 m. Based on these results, it is very unlikely that a larger search radius would result in a significantly higher count.

18. Page 4-16, 3rd paragraph: The stated total of 21 dead birds is one more than the sum of the 13 by the turbines plus the 7 by the meteorological tower (20). What is the explanation for the difference? Robert Smith

Response: The Final EA has been revised to correct this discrepancy and include the results of carcass searches conducted since publication of the Draft EA.

19. Page 4-18, last sentence: The reference should be to Section 4.9.1, not 4.8.1. Robert Smith

Response: This error is corrected in the Final EA.

20. It should be stated that the 1.4 to 1.6 acres per year compares with 20-30 acres immediately for wind power. Also, the estimate should account for realistic uncertainty in estimate of wind power production (i.e. coal acres could be as low as 0.7 or less). Robert Smith

Response: The comparison requested in the comment is between the initial land disturbed by constructing one type of generating facility and the subsequent annual land disturbed by operating a second type of generating facility. The point of the statement in the Final EA is that constructing and operating a 20-MW generating facility, regardless of facility type, will likely result in impacts to vegetation and wildlife.

21. Page 3-22: For Buffalo Mountain, results of migrant passerine counts are called “moderate” and hawk censuses are called “relatively low numbers.” These expressions should be quantified because the meanings are not clear. Robert Smith

Response: These descriptions are based on the professional opinion of the section author as well as comparisons with simultaneous observations at nearby mountains, and comparisons with similar studies published elsewhere.

22. Johnson County is blessed to have multitudes of songbirds. These birds both migratory and local are rapidly disappearing from most other areas of both Tennessee and the country at large. These birds should be protected and obviously Congress agrees with this premise as they passed the “Neotropical Migratory Bird Conservation Act” of 2000. This act establishes funds for partnership programs to support habitats for migratory song birds in the Caribbean and Latin America where many North American song birds spend their winter. According to the EA Stone Mountain is directly on the migratory path. Joe and Heather Gildea

Response: Comment noted.

23. Stone Mountain is described as having heavy use by nocturnal migrant birds while Buffalo Mountain is described as having moderate use. Joe and Heather Gildea

Response: Comment noted.

24. Studies by Winkelman and Karlsson on wind farm bird mortality as quoted by the English Nature Society, cited 0.54 collisions per day per turbine during the height of the migratory season at Oosterbierum in the Netherlands and 49 dead birds at one turbine during one night of migration at Nasudden in Sweden. Joe and Heather Gildea

Response: Comment noted. These and other studies have shown that bird mortality rates can be quite site-specific.

25. Stone Mountain is filled with deer, fox, rabbit, squirrel, wild turkey and an abundance and variety of birds. To virtually destroy the forest and disturb the watershed it provides will have a devastating effect on Stone Mountain. Reducing the impact this project will have on the wildlife (according to the study) is not the same as not disturbing the wildlife at all! Judy Mowery

Response: Comment noted.

26. I think it is significant that Stone Mountain is the only local area where I have seen rattlesnakes and bobcats in the wild. William and Geraldine Church

Response: Comment noted.

Threatened and Endangered Species

Threatened and Endangered Plants

1. What are the results from the research to determine the origin of the Fraser fir trees on Stone Mountain? Richard Moore, Roger C. Ramsey

Response: This stand of Fraser fir is the remains of a plantation, and not a naturally occurring stand. It is described in more detail in the Final EA.

2. No endangered or threatened plants occur on Buffalo Mountain; the threatened Fraser fir occurs on Stone Mountain. Roger C. Ramsey, Peggy Oehm.

Response: Comment noted. See also the response to the above comment.

3. According to Table 3-4 on page 3-28, there are eleven species of plant life that are either endangered, or candidates for endangered listing in Johnson County while there is only one species present in Anderson County where the Buffalo Mountain wind farm already exists. Joe and Heather Gildea

Response: Comment noted. As described in the EA, impacts to listed plants would be insignificant at either site.

Threatened and Endangered Terrestrial Animals

1. Section 3.11.2 states that yellow-bellied sapsuckers were observed on the Stone Mountain, and that this site is one of only two known nesting localities for the species in Tennessee. Joe and Heather Gildea

Response: Comment noted. Since the Draft EA was issued, TVA has become aware of a third nesting locality, in the extreme northeast corner of Johnson County. Nevertheless, the Stone Mountain population is very important.

2. Comprehensive and unbiased scrutiny needs to be given to the welfare and protection of viable populations of state and federal-listed plant and animal taxa, and specialized habitats. Field visits by independent personnel are needed to certify that impacts to these ecological resources are not detrimental. Wayne H. Schacher

Response: TVA has conducted comprehensive field surveys. The results of these field surveys are described in the EA, and have been reviewed by the U.S. Fish and Wildlife Service, the Tennessee Wildlife Resources Agency, and the Tennessee Department of Environment and Conservation.

3. The information in the EA clearly reveals that greater study is needed regarding endangered species in and around the Stone Mountain Site. This requires a federal and state intergovernmental agency review of this proposed project. These agencies must study and comment on the impact that the Stone Mountain Site will have on these endangered species. Timothy K. Lowe, J. Randall Brooks, Jr., John McClellan

Response: TVA believes it has completed sufficient studies to assess the impacts on threatened and endangered species. The comments of federal and state agencies are included elsewhere in this EA.

4. According to the EA, Weller's salamander is vulnerable to extirpation or extinction and the loss of the Stone Mountain population would have a measurable impact on its population. TVA's proposal of a monitoring and mitigation plan leaves me with an uncomfortable feeling. A better solution would be to choose another site. Linda Kolehmainen; Richard Kolehmainen; Bird Turner

Response: Comment noted.

5. The U.S. Fish and Wildlife Service supports TVA's mitigation measures to minimize disturbance to the yellow-bellied sapsucker and Weller's salamander at the Stone Mountain site. Lee A. Barclay Ph.D.; Field Supervisor; U.S. Department of the Interior; Fish and Wildlife Service

Response: Comment noted.

Visual Resources

1. Page 3-33, next to last paragraph: Grammatical error in sentence beginning, "The project site is be visible..." Robert Smith

Response: This error has been corrected in the Final EA.

2. The undisturbed viewshed is one of the greatest assets of Johnson County and Watauga County, and the reason many of us live here. According to the EA, the windfarm on Stone Mountain would cause great visual impacts. The visual impacts at Buffalo Mountain would be much less, and we prefer that it be built there. Joe and Heather Gildea, Bob and Judy Mowery, Larry and Ann Lane, Linda Kolehmainen; Richard Kolehmainen; Bird Turner, Roger C. Ramsey, Marguerite and Alexander Peresada, Cinda and Al Williamson, Margaret Whisenhunt, Donna Davis, Richard A. Moore, Jr., Pete Wachs, Margaret Shields, David A. Sliger, Ms. Swan Chatfield, Robert Sloan, Thomas P. Vaughan

Response: Comment noted.

3. A windfarm on Stone Mountain would ruin views from my property and community. Patti A. Young, Rebecca H. Saunders, Vikki Woods, Chuck Eckstadt, Dean Norwood

Response: Comment noted.

4. Windfarms in Europe have caused great visual impacts. Joe Gildea

Response: Comment noted.

5. Mountaintop developments have ruined mountains at Banner Elk. Please do not ruin Stone Mountain. Charles Edmondson, Kenneth and Linda Caswell, Peggy Oehm, Gregg and Karen Merchen

Response: Comment noted. Buffalo Mountain is TVA's preferred site for the proposed windfarm.

6. Compared to mountains along Route 91 in Johnson County that have been stripped by loggers, the Stone Mountain windfarm will be quite attractive. Ben Shupe

Response: Comment noted.

7. While the windfarm would allow TVA households to choose "green power," it would cause visual pollution in Mountain City and most of Johnson County. Don Taylor

Response: Comment noted.

8. The lights will be no concern whatsoever. I think it will be beautiful. And I hope it doesn't disturb the coon hunters. Mr. David Stout

Response: Comment noted.

9. Aircraft warning lights on top of Stone Mountain would be extremely ugly. R. R. Woods

Response: Comment noted.

10. Night lights, and their effect on the visibility of the night sky, are a growing concern. Have you looked at the impact on the night sky from the strobes, which you said would be two white strobes per tower? Is it possible to use lights that slowly decrease and increase in intensity instead of crisply flashing strobe lights? Susan Gawarecki, Lisa Huff, DeNeece Butler

Response: TVA has not quantified the level of added night sky brightness, but intends to use the minimum level of lighting consistent with Federal Aviation Administration regulations. Pulsed lights, which slowly decrease and increase in intensity, are more likely to attract birds at night than are flashing strobe lights.

11. My biggest objection is the moving lights that would be installed on the wind turbines. Rebecca H. Saunders

Response: No moving lights would be installed on the wind turbines.

12. Describe the substation lighting at the windfarm. Is it similar to the Shouns Substation? Patti Young

Response: A discussion of substation lighting has been added to the Final EA.

13. Can wind turbines less than 200 feet tall, and therefore not requiring lights, be used to eliminate the light pollution? Billy Kennedy

Response: TVA is not considering shorter turbines, but intends to use the minimum level of lighting consistent with Federal Aviation Administration regulations.

14. Has TVA considered using turbines of a color like light gray, which might have less of a visual impact than the normal white? Burtin Spicer

Response: Yes, the turbines being considered are generally a matte finish, gray-white color with low reflectivity.

15. The white color of the turbine blades will cause light reflections which will affect nearby residents. How will this be mitigated? DeNeece Butler

Response: The turbines being considered are generally matte finish, gray-white color with low reflectivity, and further discussion of turbine color has been added in Section 4.12.

16. I enjoy the visual impact of the three turbines on Buffalo Mountain. Burton Spicer

Response: Comment noted.

17. Building the windfarm on Buffalo Mountain will not cause more visual impacts as seen from Oak Ridge. David Reister

Response: Comment noted.

18. Please add more viewshed simulations for the Buffalo Mountain area, such as a perspective from Frozen Head and from the Cumberland Trail. Lisa Huff, Robert Smith

Response: A simulated view of the wind farm from the Frozen Head fire tower has been added to Section 4.12, along with further discussion of these views.

19. More visual modeling might have helped curb some of the opposition. Dennis Scanlin

Response: Comment noted.

20. Construction of the windfarm on Stone Mountain would change the area from one meeting the USDA Forest Service visual quality objective of at least "partial retention" to "modification." This change appears contrary to the goals of the Appalachian Trail. Specific objectionable features include the tall wind turbine towers, flashing lights, potential daytime reflections from rotating turbine blades, the white color of the turbines, the connecting transmission line, and the potential for future expansion on Stone Mountain. We request a more thorough visual analysis of potential impacts on the Appalachian Trail. Marianne Skeen, Vice Chair ATC Board of Managers, Morgan Sommerville ATC Regional Representative for Georgia, North Carolina, and Tennessee, Steve Perri Chairman, Appalachian Trail Committee Tennessee Eastman Hiking and Canoeing Club

Response: Because TVA has selected Buffalo Mountain as the preferred wind farm location, additional visual analyses in the Stone Mountain area are not presently planned to support the current proposal.

21. If Stone Mountain alternative is chosen we strongly suggest the following mitigation measures:

- The windmills be placed as far off the crest of the ridge as possible, to minimize their domination of the skyline;
- The flashing strobe lights be low-intensity red lights instead of high-intensity white lights;
- The windmill blades be constructed of or coated with a material that eliminates reflectivity;

- The windmills be painted a color that will create the minimum contrast with their surroundings;
- The visual impact of the transmission line be mitigated to the maximum extent possible, i.e., make it nonlinear, minimize the clearing width, feather the edges of the cleared area, etc.;
- That the potential for future expansion of the site be discussed, in light of increased consumer demand for electricity and specifically “green” electricity; and
- Every effort possible be made to achieve a VQO of “partial retention,” as seen from identified viewpoints along the A.T.

Marianne Skeen, Vice Chair ATC Board of Managers; Morgan Sommerville ATC Regional Representative for Georgia, North Carolina, and Tennessee; Steve Perri Chairman, Appalachian Trail Committee Tennessee Eastman Hiking and Canoeing Club

Response: Comment noted.

22. Because it would not negatively impact the Appalachian Trail viewshed and have a positive impact on air quality along the A.T., we support the selection of the Buffalo Mountain site. Marianne Skeen Vice Chair ATC Board of Managers; Morgan Sommerville ATC Regional Representative for Georgia, North Carolina, and Tennessee; Steve Perri Chairman, Appalachian Trail Committee Tennessee Eastman Hiking and Canoeing Club

Response: Comment noted.

23. Although windmills on Stone Mountain may be visible from some vantage points on the Appalachian Trail, I do not see this as a problem. They would be an inspiring sight and help offset air pollution. James Arwood, Appalachian Trail maintenance coordinator for the State of Franklin Group of the Sierra Club

Response: Comment noted.

24. The Regenesys facility would have both a wall around the tanks to serve as a visual screen, and chain link fencing would surround the entire site. Why would both a wall and fencing be any less visually unattractive? DeNeece Butler

Response: The screening wall serves two purposes. First, it hides many of the industrial features of the facility (pumps, piping, cooling towers, compressors, etc.). Secondly, the wall protects the storage tanks from vandalism and projectiles that could be generated during stormy conditions. The chain link fence would serve to protect the public and to provide security for the facility.

25. Describe the shadow flicker that would result from the wind turbines and how TVA would mitigate it. Shadow flicker can have a deleterious effect on the nervous systems of people and animals subjected to it? DeNeece Butler

Response: Discussion of shadow flicker has been added to Section 4.12. For further information on shadow flicker see <http://members.aol.com/resoft/detailedinfo.htm> and <http://www.windpower.org/tour/index.htm> (go to part 9, #9)

26. The magnitude of the visual impacts of a windfarm on Stone Mountain warrants evaluation by the Environmental Impact Statement process. Richard Moore

Response: Comment noted.

27. A windfarm on Stone Mountain would seriously diminish the attractiveness of northern Watauga County for vacation and retirement homeowners, who have made up most of the area’s new residents. Rae H. Gulick

Response: Comment noted.

28. I personally see the turbine towers as a graceful symbol of hope that humanity can begin to live responsibly and in fact continue to exist on this planet. I would not mind them in my back yard. Annlynn W. Eastin

Response: Comment noted.

29. The placement of wind turbines on Stone Mountain will drastically alter the viewshed, causing a long term negative impact when compared with the natural appearance of an undisturbed mountain. However, the mountain is privately owned and its future use and appearance is largely in the hands of whoever owns it. I prefer wind turbines to housing developments and road building scars. Todd V. Eastin

Response: Comment noted.

30. Section 4.8.2: The statement is made that “at these distances [the turbines on Buffalo Mountain] are relatively small and are not a visual impact.” This statement is not true. The turbines stand out as clearly man made, and have a significant visual impact. Robert Smith

Response: The statement in the first paragraph of that section has been revised to qualify that the turbines would not have a visual impact on historic structures.

31. I am a resident of the Stone Mountain area, and believe that the wind turbines will be aesthetically pleasing. I support selection of the Stone Mountain site. Maryrose Carroll, Joseph E. Potter, Melissa Burniston, Janette Guinn, Joe Hawkins, Neva Ruritan Club

Response: Comment noted.

Land Use

1. Characterizing a windfarm as an industrial site seems to exaggerate the environmental impacts. Steven Smith, Executive Director, Southern Alliance of Clean Energy

Response: Comment noted. However, some land use classifications would characterize a windfarm site as industrial in the absence of active farming or other land use activities.

2. The Mountain Ridge Protection Act of Johnson County prohibits the construction of tall structures on ridgetops with the exception of electrical transmission, communications, or other public utilities. This exception does not encompass wind-power generating stations. Wind turbines are prohibited by the North Carolina Mountain Ridge Protection Act. The Johnson County law was based upon the North Carolina law and is intended to prevent construction of tall structures such as wind turbines. Ed Sturdivant, Rich Colamena, Patti A. Young, Linda Kolehmainen; Richard Kolehmainen; Bird Turner, J. P. Burnham, DeNeece Butler, Roger C. Ramsey, Richard A. Moore Jr., John McClellan

Response: Construction of the wind turbines would likely be allowed under the Act for the reasons described in Section 3.15.

3. The only legal restriction I know of that regulates a viewshed like this is Johnson County's Ridgetop Protection Act. I voted for this Act as a county commissioner 5 or 6 years ago. Wind energy was never mentioned in discussions of the provisions of the Act. Todd V. Eastin

Response: Comment noted. See response to Comment 2.

4. I was a member of the Johnson County Garden Club when the club pushed for passage of the county ridge protection law. The intent of the law was to make sure that no structure could protrude above any ridge line which was not in harmony with its natural surroundings, or would detract from the natural beauty and tranquility of the ridge. The Stone Mountain windfarm would be contrary to this intent. Joe and Heather Gildea

Response: Comment noted. See response to Comment 2.

5. The EA has misinterpreted North Carolina's public policy with regard to mountain ridgetop protection as set forth in "North Carolina Mountain Ridge Protection Act of 1983" N.C. Gen.Stat.§§113A-205 et seq. This public policy should be given due consideration and weight, because the Stone Mountain site is almost on the Tennessee-North Carolina border, and the EA itself concludes that "construction and operation of the [Stone Mountain] windfarm facilities would permanently alter the visual landscape character resulting in a significant [adverse] visual impact [in Watauga County, North Carolina]" and "would create substantial visual discord and adverse contrast while reducing scenic attractiveness and tranquility."

The North Carolina Mountain Ridge Protection Act prohibits the construction of buildings or structures over 40 feet tall on protected mountain ridges in North Carolina. The statement in the EA, "The North Carolina Act specifically excludes structures of a slender nature from being considered 'tall buildings or structures regulated under the act.'" (EA 3-43) Apart from noting, correctly, that the windfarm will not actually be in North Carolina, this brief discussion is the EA's entire analysis of the North Carolina policy. It implies clearly, but incorrectly, that the North Carolina Mountain Ridge Protection Act would permit construction of the proposed windfarm in North Carolina. This is not the case.

The North Carolina Act must be interpreted in light of its purposes. These include the legislative finding that "Tall or major buildings and structures located on ridges are a hazard to air navigation and person on the ground and detract from the natural beauty of the mountains." N.C. Gen. Stat.§113A-207. In light of these findings, a windfarm such as that proposed here, with 13 to 16 300-foot-high towers (including the rotors) with flashing stroboscopic lights, spaced on average 900 feet apart for two miles along the top of a 4400-foot-high mountain ridge, cannot properly be construed to fall within the exception for "Structures of a relatively slender nature and minor vertical projections of a parent building, including chimneys, flagpoles, flues, spires, steeples, belfries, cupolas, antennas, poles, wires, or windmills." N.C. Gen. Stat.§113A-206 (3)(b). The Legislature in 1983 had in mind the traditional, solitary farm windmill which has long been in use in rural communities, not windfarm turbines of the size, type or certainly number proposed here, especially when "all the turbines would probably be seen together from most viewing locations." (EA 4-31)

The North Carolina Mountain Ridge Protection Act also has an exception for "any equipment for the transmission of electricity or communications or both," much like the Johnson County act. N.C. Gen. Stat. §113A-206 (3)(a). However, this exception would not apply to the proposed windfarm. The proposed windfarm would clearly be a "generating" facility. Traditionally, electricity generation and electricity transmission are viewed as distinct and separate concepts and functions. Indeed, separate certificates from our Utilities Commission are required for construction of electric transmitting lines and electric generating facilities. N.C. Gen. Stat. §62-110; N.C. Gen. Stat. §62-110.1. We believe that no interpretation of N.C. Gen. Stat. §113A-206 (3)(a) is required. The windfarm would not be included within the exception by the plain meaning of the word "transmission." However, even if one were to conclude that there was some ambiguity requiring interpretation, we see no basis in this statute to read "transmission" more broadly. It is easy to see why the legislature would wish to make an exception for transmission lines which typically run up one side of a ridge, over the top at one point and down the other side. Such lines do relatively little to interfere with the beauty and integrity of a ridge line or create a potential safety hazard. The windfarm proposed here is a far cry from such a minimal intrusion. Roy Cooper, North Carolina Attorney General

Response: The Buffalo Mountain site is TVA's preferred alternative. The EA recognizes that some of the visual impact of the Stone Mountain alternative would be experienced in North Carolina; accordingly, if further consideration is given to the Stone Mountain site, TVA will be mindful of North Carolina's policies in this area.

6. The EA has misperceived North Carolina's public policy with regard to such matters as set forth in "North Carolina Mountain Ridge Protection Act of 1983" N.C. Gen. Stat. §§ 113A-205 et seq. (1999). The proposed wind turbines are clearly not "minor vertical projections." Construction of the windfarm would be contrary to the intent of this law. Rae H. Gulick, DeNeece Butler, Timothy K. Lowe, J. Randall Brooks, Jr.

Response: See response to Comment 5.

7. The Johnson County ridge law has not stopped construction of cell phone towers and I don't know if it would stop either TVA or a private company from building wind turbines. Freddy Phipps

Response: Comment noted. As to wind turbines, see response to Comment 2.

8. The Land Use sections of the EA do not mention the recreational use of the Buffalo Mountain by ATV riders, mountain bikers, and stargazers. Robert Smith

Response: The Final EA has been revised to mention recreational land use.

9. Page 4-42, last paragraph: The land use impacts of a Buffalo Mountain Braden Field Regenesys facility should be extrapolated to the size of a conventional power plant for comparison purposes. Robert Smith

Response: The alternatives under consideration in this EA do not include a conventional power plant and therefore extrapolating land use impacts to such a presumably larger plant is not relevant.

10. How many acres would the windfarm footprint and the area of influence of the turbine blades occupy? How much of this area would be fenced? Susan Gawarecki

Response: The exact area to be leased has not yet been determined, but would include an area extending a few hundred feet on each side of the long axis of the row of wind turbines. Only a small area around the base of each turbine would be fenced.

11. Is your plan to purchase or lease the land at the windfarm site? William J. Hartman

Response: The windfarm site would be leased.

Noise

1. What will the wind turbines sound like when the wind approaches 55 miles per hour, at which point they will cut off? I live about three miles from the Stone Mountain site. Will I hear them at this high wind speed? Karen Warrick

Response: While wind turbine noise increases slightly with increased wind speeds, background noise increases significantly with increased wind speed. Noise from wind turbines is less likely to be heard at high wind speeds, because the noise from the wind turbines would be drowned out by leaves rustling in the wind and wind "howling". The noise from the wind turbines should not be audible at a distance of three miles at any wind speed.

2. My property is located about 300 feet below the Stone Mountain windfarm site. I have three dogs. Will the noise from the wind turbines affect my dogs? James Taylor.

Response: The noise levels discussed in the report are based on A-weighted values which filter out sound outside the range of human hearing. Because dogs have a wider range of hearing, unweighted sound levels are more appropriate to assess possible impacts on dogs. Unweighted sound levels from wind turbines are greatest in the lowest frequencies and minimal in high frequencies. An individual dog's response to noise is quite variable; many dogs show little or no reaction to loud noises, while some are quite fearful of them. Dogs that are disturbed by noises

are generally disturbed by impulsive noises such as thunder, firecrackers and sirens. Since wind turbines emit a continuous noise, more like a hum, it is not expected to disturb nearby dogs. TVA personnel have also observed dogs at the base of operating wind turbines on Buffalo Mountain, and the dogs did not appear affected by turbine noise.

3. Will TVA perform a baseline noise survey at the residences nearest to the Stone Mountain site to include the cut-in speed, during turbulent conditions, and from different wind directions? This is especially for those residences in depressions out of the wind where they will not have the benefit of background wind to mask turbine noise. Patti Young, Richard A. Moore Jr.

Response: TVA will perform a noise survey at the residences nearest to the Stone Mountain site, if necessary, to assess the potential for noise impacts. The level of detail of this survey will be decided based on the potential for impact and any need for mitigation measures.

4. For many of with property near the Stone Mountain site, on many nights there is either no sound at all, or only sound from birds or katydids. The windfarm would change this. The windfarm noise is of great concern to us. Judy Mowery, Helen Icenhour, Lynda Greene, Peggy Oehm, Rebecca H. Saunders

Response: Comment noted. See the noise analysis in Section 4.13.

5. Were the wind turbine noise levels listed in the EA measured in even, flat terrain? How would complex terrain such as at Stone Mountain and varying wind direction affect turbine noise levels? DeNeece Butler

Response: The noise levels were not measured, they were calculated using standard noise equations which do not consider complex terrain or wind direction. Complex terrain can affect noise levels by creating echoes as sound waves reflect off surfaces such as nearby mountains or canyon walls. Wind direction can affect noise levels by reducing the distance the noise can be heard in the upwind direction and increasing the distance in the downwind direction. However, as wind speed increases, the background noise increases significantly, making it more likely that the wind turbine noise would be drowned out by rustling leaves and “howling” wind. According to the Danish Wind Industry Association, at wind speeds greater than 8 m/s (18 mph) background noise will generally mask any turbine noise completely.

6. What is the basis for the “typical” background noise levels of 45 dBA day and 35 dBA night cited for Stone Mountain in lieu of actual measurements? Describe how typical background noise is determined. Richard Moore, C. Bellman

Response: According to the “Handbook of Environmental Acoustics”, the DNL for rural areas typically ranges from 40 to 48 dBA (Cowan 1994). If we assume a daytime noise level of 45 dBA and a nighttime noise level of 35, the calculated DNL would be 44 dBA or in the middle of the typical range for rural areas.

7. Complaints about noise impacts are misleading due to technical advances in the last 20 years. I lived in California for years and watched the development of gigantic windfarms in the coastal mountains east of San Francisco. Even with literally hundreds of windmills, I never found the noise to be that overwhelming – and these units were based on construction that has now been superceded by superior designs. Dr. Scott A. Rogers

Response: Comment noted.

8. While it may be true that the noise level would be no greater from 14 turbines versus 1, it is also true that the noise would now be heard over a much larger distance, approximately 2 miles along the ridge. This should be stated. Robert Smith

Response: Comment noted.

9. My only negative thought about the windmills is a concern about the noise level and how it will affect area affect residents. Harry S. Reece, William Curtis, Julia Curtis

Response: Comment noted. See the noise analysis in Section 4.13.

10. I live in the Virginia Beach Area of Virginia and hear Navy jets all day long. People get used to the sound of the jets and will get used to the sound of the wind turbine blades. L. J. Murphy

Response: Comment noted.

Solid and Hazardous Waste

1. TVA estimates up to 13 tons of hazardous waste will be generated annually by the energy storage facility (2,200 lb/month). Where will the hazardous waste be disposed and what is the projected annual cost for disposal? Richard Moore

Response: The 13 tons per year (2,170 pounds per month) is an upper limit for the waste generated during worst case conditions. TVA estimates that the facility will be a small quantity generator and therefore the amount of hazardous waste generated will be below the limit of 2,200 lb/month. The potential source of the hazardous waste stream is the chemical effluent tank. This tank will contain waste only if there is a leak of either electrolyte. The nature of the substance in the tank is impossible to predict as it is impossible to predict which electrolyte might be released and what the quantity might be. The collected spillage will be treated with caustic soda to neutralize it. The waste may or may not then be considered hazardous because it will no longer be corrosive. However, if the substance is classified as hazardous due to characteristic, it will be disposed of in a licensed treatment facility. The estimated annual cost for shipment and disposal is \$5,000.

2. What waste products would be generated at the energy storage facility? Nathan Newport

Response: A description of the waste streams produced by the Regenesys™ facility is included in Chapter 2 and Section 4.14 of the EA.

Transportation

1. How and when are general airplane aviation flight patterns considered in choosing the site for the windfarm? Susan Gawarecki

Response: We would work through the regional FAA office in Atlanta. They would identify the requirements to make aviation safe. We contact the regional flight service center when a light fails. They would make information available to pilots flying through the area.

2. One of the Regenesys™ sites is next to an airport. Have you received any input from the airport owners as to whether the facility would interfere with the flight paths for takeoff and landing? Susan Gawarecki

Response: Yes. The facility would not interfere with takeoffs or landings at the airport.

3. I live on Grover Reece Road adjacent to the Stone Mountain site. I presently have drainage problems caused by the road, and am concerned that these problems will increase if TVA uses this road during construction of the wind farm. Robert Acres

Response: TVA would reclaim any area by windfarm construction and would repair any damage to the road. Any new roads that TVA built would be designed to drain properly.

4. Trucks hauling wind turbine parts to Stone Mountain will not be able to make it up Grover Reece Road. I own property along Bulldog Road, the other proposed access route. I will not allow you to expand Bulldog Road on my property. Mike Tilley.

Response: TVA does not plan to build any access road across your property.

5. The truck traffic during the 15 to 18 month construction period will damage roads, disrupt neighborhoods, and cause other damage. How will landowners be compensated for damages? Patti Young

Response: TVA will repair any roads that are damaged and take steps to prevent drainage onto other landowners.

6. Who will build and maintain the construction and access roads? Would these roads be open or closed to the public? Patti Young

Response: TVA would work with the county for their roads and repair any damage. TVA probably would maintain new roads. The county would have to decide whether to keep their roads open to the public. TVA would not allow access to the base of the wind turbine. The developer would select a construction contractor to build new roads and repair damage to existing roads.

7. Will tanker trucks loaded with dangerous chemicals be traveling winding, narrow roads in Johnson County during the winter? DeNeece Butler

Response: No chemicals are required for the operation of the wind turbines. TVA will complete the initial filling of the Regenesys facility tanks during a time when the weather will allow for safe passage of tanker trucks on the road to Mountain City. Following their initial filling, occasional replenishment of the tanks will be necessary. This would require one tanker delivery every 3 – 4 months; these deliveries will be timed to allow for safe passage on area roads.

Environmental Justice

1. Is TVA proposing to build the windfarm on Stone Mountain because Johnson County is, as described in the EA, a rural, low income area with high unemployment? Does the low income designation help TVA get grants for its construction? Patti Young, Pete Wachs, Katherine B. Hegemann

Response: The windfarm sites were selected because of their suitable wind resource, road access, proximity to an electrical distribution system, and willing landowner. Potential environmental justice impacts are described in Section 4.17 of the Final EA, which concludes that disproportionate impacts to disadvantaged populations are not expected to result from the selection of either site. No grant money would be involved in construction of the windfarm. TVA may seek grant money for the construction of the RegenesysTM facility; the availability of this grant money is not dependent on economic conditions in the project area.

Water Supply and Wastewater

1. Mountain City is in the midst of a drought, and has asked citizens to conserve water. According to the EA, the RegenesysTM facility would use up to 5,000 gallons of water an hour. The local water systems cannot supply this volume. What would be the source of this water? Patti Young; Margaret Shields; R. R. Woods; Betty Sliger; Ina Melvin, Councilwoman, Town of Mountain City; Marty Van Hatter; Lori Baker; Horst A. Stollberg; DeNeece Butler

Response: The EA states that under normal operating conditions, the RegenesysTM facility would require about 5 gallons per minute (300 gallons per hour). Under extreme conditions it could require as much as 9 gallons per minute (540 gallons per hour). This volume is much smaller

than the volume that was incorrectly stated at the public meeting on January 15 and in local newspapers (5000 gallons per hour). The evaluation/calculations in the EA were based on current production capacities and daily use rates that were submitted by Mr. Terry Reece, Mountain City Councilman. The calculations show that treatment capacity would adequately supply the Regenesys™ facility, as well as current consumers.

2. Given the water shortage in the Mountain City area, would you consider building the windfarm without the Regenesys™ facility? Betty Sliger, Stephen Smith, Southern Alliance for Clean Energy

Response: As explained in Chapter 2, the windfarm could be built without the Regenesys™ facility, but the Regenesys™ facility would not be built without the windfarm. The Regenesys™ facility requires a relatively small inflow of water for operation. According to local officials, Mountain City's treatment capacity would easily accommodate this required supply.

3. We are aware of concerns in the Mountain City area about water use by the Regenesys™ facility. We urge TVA to develop a closed-loop water design for this facility, use other methods to minimize water use, or choose a different location for it. Cathy Landy, League of Women Voters of Watauga, Ruth Gutierrez, Lori Baker, Horst A. Stollberg

Response: See response to Water Supply and Wastewater Comment 1 above. The Regenesys™ facility utilizes a non-contact cooling system which circulates water about 5 times before discharge.

4. Firefighting efforts in Johnson County are by volunteer fire departments. How would these firefighters reach the windfarm and what would be the water source they would draw upon? Will TVA help upgrade the fire service in this fire-prone area because of the increased risk of fire? Patti Young

Response: The presence of the windmills on Stone Mountain would not increase the risk of fire. Regenesys™ has a dedicated fire suppression system even though there is very little risk of fire associated with this technology. The facility would not be constructed on the mountain but at one of the proposed sites near Mountain City.

5. The Town of Mountain City in a November 2001 meeting discussed with TVA officials and proposed windfarm in Johnson County. The Board of Mayor and Aldermen told TVA officials that we would work with them to furnish water and sewer to their proposed site to include sale of city property for their energy storage facility. This position was reaffirmed in our February 5, 2002 Board of Mayor and Aldermen meeting. Harvey Burniston, Mayor, Town of Mountain City.

Response: Comment noted.

6. How much water if any is used? What will be done to this water? How will the water be disposed of? Max Greene, Marty Van Hatter, Susan Gawarecki

Response: Under normal operating conditions, the Regenesys™ facility would require about 5 gallons per minute (300 gallons per hour) and under extreme conditions it could require as much as 9 gallons per minute (540 gallons per hour). This water would be re-circulated through the cooling system approximately 5 times and treated as necessary with a small quantity of sodium sulfate prior to discharge. The wastewater would then be sent to the local wastewater treatment facility. All applicable permits would be obtained from state and local authorities prior to discharge of any wastewater.

8. How much water would be required to construct and operate the windfarm without the Regenesys™ facility? Celia Payne

Response: There would be no water required to operate the windfarm. The only major water volume required for construction would be for the concrete foundations. If a depth of 35 feet and

a diameter of 20 feet were required for each footing, as estimated in the EA, a conservative estimate for the water required would be 275,000 gallons. This volume would be spread out over several months of construction activity.

9. The proposed wind farm will permanently damage the environment in my home. Once you denude the top of Stone Mountain, build a road to the farm, and either destroy the watershed or take all the water, the damage is done. Katherine B. Hegemann.

Response: About 15 to 20 acres would be cleared on the top of Stone Mountain for road building and wind turbine construction. This is a small portion of the total acreage of mountaintop land. As described in Sections 4.4, 4.10, and 4.18, impacts to the watershed and water supplies would be minor and insignificant.

The Regenesys™ Facility

1. The proposed energy storage facility stores a large quantity of sodium bromide. Sodium bromide in the charged state releases bromine, a poisonous gas, when exposed to the atmosphere. Because bromine is corrosive, there is a credible potential for an inadvertent release to the environment caused by equipment failure (e.g., pump or valve failure). Other conditions could also result in a catastrophic release of bromine. The ability to detect and correct an upset condition will be greatly reduced if the facility is operated remotely. The EA does not describe the potential impact to the local population and employees if a charged tank of sodium bromide solution is released to the atmosphere. Richard Moore, Susan Gawarecki, Robert Smith

Response: Accident scenarios are discussed in the new Appendix D – Risk and Mitigation that has been added to the Final EA.

TVA's plan is to staff the facility for the first two to three years of operation and then evaluate the potential for remote operation. The system is designed for remote operation and therefore has built-in gas and leak detection that would immediately make remote operators aware of such an event. TVA would contract with local groups to respond to emergency situations in the unlikely event of an electrolyte release.

All external piping is dual walled so that any leakage from the internal piping is contained in the outer piping. This volume would drain into the process building and would ultimately be pumped into the chemical effluent tank and neutralized. All of the tanks are connected to a vent system which sends extracted gas to two (2) carbon bed adsorbers or through the emergency scrubber, depending on the concentration of the gas stream. These devices remove harmful components from the gas stream.

2. The EA does not describe the containment for the electrolyte tanks. Richard Moore, Robert Smith

Response: Each electrolyte storage tank is double walled so that if the inner tank develops a leak, the spilled electrolyte is contained in the space between the inner and outer tanks. The capacity of this secondary containment is great enough to contain the entire volume of electrolyte stored in the inner tank. In addition, the screening wall also serves as tertiary containment in the event of puncture or rupture of the outer wall of a storage tank. The capacity of the tertiary containment is approximately one fifth of the volume of the storage tank.

The inner, carbon steel wall of the sodium bromide tank is internally lined with 3 mm of polyvinyl di-fluoride (PVDF) to protect against corrosion. There is a corrosion probe in the roof of the tank, which will give warning of faults in the PVDF lining. In order to further minimize

corrosion and its effects, the wetted parts of the outlet valves from the storage tank and the circulating pumps that are in contact with the sodium bromide electrolyte are PVDF coated.

3. A credible potential for explosion also exists from the hydrogen generated by the process (24 tons/year) and the incompatibility of bromine and hydrogen. The potential impact from an explosion and resulting fire should be described in the EA or EIS. Richard Moore

Response: Hydrogen can be explosive at concentrations between 4 and 75 percent in air. Consequently, discharged gas would be maintained at a concentration well above its explosive limit, prior to being released. The stack and piping would be purged with nitrogen prior to and following operation of the Electrolyte Management System to remove any air that could dilute hydrogen to its explosive limit. The hydrogen gas is discharged through a water trap to ensure that air does not penetrate the system from outside the stack. The hydroxyl room, where hydrogen is produced, is a dedicated, reinforced concrete building, located outside the main process building. The hydroxyl room is designed and constructed to contain any explosion and direct the blast upward, away from auxiliary equipment located nearby.

The discharge points for bromine and hydrogen are separated. Bromine is denser than air and would tend to disperse near ground level. Hydrogen, being much less dense than air would rise and disperse rapidly. The plant was designed so that there would be no credible potential for these two substances to mix.

There is very little flammable material associated with a completed Regenesys™ facility. The greatest hazard associated with a fire would be loss of electrolyte due to damage that might be caused to the bulk storage tanks. If the damage was sufficient, and electrolyte was released, bromine gas could be transported to surrounding areas. The Emergency Response Plan will identify actions required to protect the environment and public health.

4. The EA does not address the potential impacts to groundwater resources and surface water/aquatic ecology due to the accidental release of electrolyte solutions. What are the potential impacts to groundwater and surface water if the tanks' contents leak or spill to the ground and/or drain to nearby creeks (e.g., Roan Creek)? Richard Moore

Response: Secondary and tertiary containment has been designed to prevent release of electrolyte solutions to the environment. In the unlikely event that released electrolyte reaches surface water, the chemical would act as a biocide, destroying the aquatic life it came in contact with. The released electrolyte would contaminate groundwater and remediation would be required. The extent of the damage in both cases would depend on the amount of electrolyte released and the effectiveness of the Emergency Response Plan.

5. Will a catastrophic release have a significant adverse impact on aquatic life and/or potable groundwater supplies? Richard Moore

Response: The impact could be significant if the volume of electrolyte reaching these resources were great enough. However, the event of a release actually reaching surface and ground water is highly unlikely due to the containment features described under *Response to Comment #1*.

6. Could the electrolyte tanks be potential targets for terrorism? The EA or EIS should consider this possibility and address the impacts from sabotage or terrorist action. Richard Moore

Response: This possibility was considered. It is difficult to develop preventative measures for sabotage due to the challenges associated with determining the probability and mode of an attack. However, security at the completed facility will be high. The entire facility will be surrounded by security fencing with access provided only to authorized personnel and, the facility will have

sufficient lighting. Certain areas of the facility are locked closed with access provided by authorized persons to authorized persons on a permit basis. The storage tanks are surrounded by a screening wall which also helps to protect them.

7. Page 2-4, Figure 2-1: There is a small building shown in the lower right of the figure, but the label is not legible. What is the purpose of this building, and what chemicals are used there? A scrubber is shown in the figure. What chemicals are used in the scrubber? What is the risk of a dangerous accidental chemical reaction between chemicals that would normally be separated? Robert Smith

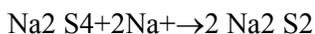
Response: The hydroxyl building is located in a dedicated reinforced concrete building adjacent to the process building. The Electrolyte Management System helps to maintain the efficiency of the plant and comprises three process systems: bromine removal by electrolysis, sulfate removal by crystallization, and hydroxyl production by electrolysis. During hydroxyl production, which takes place in the hydroxyl building, hydrogen is evolved and hydroxyl ions are produced. The sodium bromide from either the sulfate removal or bromine removal systems is stored in the hydroxyl production tank. The sodium bromide stored here is electrolyzed using three hydroxyl production modules which are similar to the modules used for energy storage and energy discharge in the process building. The hydroxide produced is used in the tank to tank scrubber system and the hydrogen produced is emitted to the atmosphere via stack. There is also bulk nitrogen storage which is used to purge the hydroxyl production tank prior to the initiation of hydrogen production.

The scrubber shown in the drawing is the emergency scrubber. In the event of a high gas level alarm inside the process building, the emergency scrubber sequence is initialized, the process building is sealed, and the scrubber tank is gravity filled with sodium polysulfide from the bulk storage tank. The emergency ventilation system extracts air from the process building and discharges it to atmosphere via the emergency scrubber. The sodium polysulfide is circulated through the scrubber column removing the pollutants in the gas stream. The piping design also allows the system to be operated with sodium hydroxide as the scrubbing solution. The facility has been engineered so that there would be no risk of hydrogen mixing with other gases by separating potential discharge points and by considering the very low density of hydrogen gas and the much higher densities of other potential chemical gases.

8. Fire was not considered in detail. Are there flammable materials in the fuel cells? Could there be a fire started in the ventilation filters? Robert Smith

Response: There are no flammable materials in the modules. Although the possibility is extremely remote, there have been instances of carbon bed ignition. The most probably cause for bed ignition is the buildup of contaminants that react exothermically to produce localized ignition temperatures. For this to occur, an extreme combination of conditions such as minimal air flow across the beds, very high bromine concentration, and extreme temperatures (above 410°C) in the beds, would have to persist for 24 to 36 hours. The plant design incorporates safety features to prevent the occurrence these conditions.

9. Page A-4: You have greatly oversimplified the equations, to the point of being incorrect. The equations should read:



Otherwise, it would state that sodium is also reduced and oxidized. Wayne Wolsey

Response: The equation has been changed in the Final EA and reads:



10. The science behind the Regenesys™ energy storage system is sound and with proper engineering the facility could be self-contained and diked against accidental spills. How proven is the technology? Has TVA instead considered the option of instead using an electrolytic hydrogen-fuel cell cycle? Such a system could produce saleable byproducts without the need for dangerous chemicals. Dean Whitworth

Response: There will be two Regenesys™ facilities, of the same size, in operation prior to completion and operation of the wind energy storage facility. The purpose of the facility being constructed in Mississippi is demonstration of the technology. Regenesys™ is currently going through the commissioning of a facility in Great Britain and is sharing all of the lessons learned from those experiences. TVA has done technical and business evaluations of the process and believes the technology is sound and that there are economic drivers that will benefit the TVA's stakeholders in the long run.

TVA does study the use of all types of fuel cells and their potential applications. In this particular project, we are interested in the storage of electricity that has already been produced in the TVA generation system. Specifically, electricity that is produced by wind power at a remote site. Hydrogen-fuel cells produce electricity and cannot store energy produced by a renewable source such as wind. Fuel cells were therefore not considered in this EA. The production and distribution of commercial gases is not in the scope of this project.

11. What is the projected efficiency of the Regenesys™ system (MW out/MW in)? Dean Whitworth

Response: The projected efficiency of the Regenesys™ technology is 60 – 70 % based on megawatts out versus megawatts in.

12. The merits of adding a Regenesys™ storage system need to be weighed very carefully. The purpose should be optimizing use of the wind turbines and reducing reliance on polluting generating sources (thereby reducing emissions) at the same time. The decision, therefore, should favor the method—immediate and continued direct use of the electricity or a storage/use cycle—that provides the strongest opportunity to reduce the use of fuel-burning generating sources. The decision criteria should also compare the process water requirements if the wind-generated electricity is used directly or if it is stored for later use. If the decision is made to add a storage system, TVA has another opportunity to set the industry's environmental responsibility standard. The system should be sited where TVA can use raw, reclaimed, or non-potable process water. This would minimize water use conflicts, minimize the impact on municipal water supplies, and put TVA in the positive light of using resources wisely. Sue Sewing

Response: Comment noted.

13. In your final product (i.e., EIS or additional materials for public) you need to stress experimental nature of the energy storage system. I understand the importance of storage. Michael Edwards

Response: Comment noted.

14. Material Safety Data Sheets should be included for the Regenesys™ electrolytes. Barbara A. Walton

Response: The appropriate data sheets have been added in Appendix E of the Final EA.

15. The first sentence in the first full paragraph on page 4-41 is in error. Regenesys™ is described in Appendix A, not B, and is not detailed. The system capacity is not even given. The information provided is inadequate for a decision. I recommend TVA get experience building and operating the system in Mississippi, then consider it in a separate NEPA document. At that time, pick sites that are at least 600 ft. from any residence (4 out of 5 in this EA were not). I am much concerned about the statement on page A-3 that states that the system can be operated remotely; TVA did not state its intention in this document. Any system intended to be operated remotely needs redundancy or at least a fail-safe feature. For

example, 2 tanks for each electrolyte and either redundant piping or a division between the two hundred modules would lower the pumping rate from 5000 gpm, which may also reduce noise. Barbara A. Walton

Response: Comment noted.

16. It is very surprising that the energy storage facility is being sold under the "Green Power Switch" program as having "relatively minor environmental impact." This is a chemical processing plant that uses hazardous chemicals, and includes handling "an extremely hazardous substance." Workers and residents near this facility will risk central nervous system affects including "mental dullness, slurred speech, weakened memory, apathy, anorexia, constipation, drowsiness, and loss of sensitivity to touch and pain." This facility has similar environmental impact as a typical, small scale, hazardous chemical plant. Robert Smith

Response: The Regenesys facility would emit trace quantities of particulate and bromine to the atmosphere as well as non-regulated hydrogen. It would produce very little if any hazardous waste and the wastewater discharged would require no special treatment other than what is provided by the local sewage treatment facility. The energy storage facility's impact to the environment would be minor.

Comments on the EA for Energy Storage Facility in Mississippi (incorporated by reference):

1. Appendix D, General: The Risk and Mitigation Analysis in the EA for energy storage relies almost entirely on conclusions that "event probability is sufficiently low so that serious consideration should not be given to the event, or the proposed design features eliminate the possibility of a release caused by the occurrence of one of these events." (Page D-4) Considering that an "extremely hazardous" chemical is involved, the worst-case consequences should be estimated and discussed, regardless of the estimated probability of the event. Robert Smith

Response: See the discussion of worst-case consequences in Appendix D of this EA.

2. Appendix D, Scenario A: It is notable that a relatively detailed probability calculation was performed for the evaluation of the risk of an aircraft crash damaging the electrolyte tank, and that the EA is dated August 2001, the month before the 9-11 attacks. In this post 9-11 era, is it adequate to rely on conclusions from probability calculations based on normal operations at an Air Force Base? The worst-case consequences of gross tank failure should be estimated and discussed, regardless of the estimated probability of the event. Robert Smith

Response: Appendix D, Scenario A is a reasonable evaluation because the first RegenesysTM Facility built by TVA is adjacent to Columbus Air Force Base, an operational pilot training facility. The calculation method uses a factor which is selected based on what type of airfield is nearest. The worst case consequences of gross tank failure have been estimated in accordance with 40 CFR 68.

3. Appendix D, Scenario C: Bromine emissions were estimated for emergency conditions (pipe work or module leakage). This estimate assumed operation of sump neutralizing, emergency ventilation, and emergency scrubber. Are all these emergency operations automatic? What are the worst case emissions in the event of a leak in conjunction with loss of power? Robert Smith

Response: Much of the system control is automatic by programmed routines. However there is also necessary manual input to allow operating decisions to be made. For example, most of the duty extraction fans are manually controlled, but if gas levels reach a certain level, the fans are stopped automatically to seal off the area.

If a leak occurs inside the building due to pipe work or module leakage, bromine emissions would remain inside the building until the gas stream is extracted and treated by the emergency

scrubber. If power was lost, the gas laden air would remain inside the sealed building until power is restored.

4. Appendix D, page D-8, Fire Induced Toxic Gas Releases: This section should be revised significantly. While the electrolytes themselves may be “non-flammable,” the MSDS (Appendix C) for sodium polysulfide states the combustion products are “Very toxic gases composed of oxides of carbon and sulfur.” In addition, fires could potentially cause leaks in conjunction with loss of operation of mitigation systems. Therefore, the consequences of a fire could be very severe, and should be considered in detail. Robert Smith

Response: Comment noted.

5. The possibility of a fire caused by burning of other materials should be considered in more detail. The 2nd paragraph states, “No other flammable materials that could give rise to a fire will be used in the process or stored within the main building.” Are the membranes in the power modules combustible? In addition, the facility will store a large amount of electrical/chemical energy. Therefore, electrical faults could cause melting and burning of materials that are not normally considered flammable. Because of the hazardous chemicals involved, these scenarios should be considered and evaluated in more detail. Robert Smith

Response: The membranes in the modules are not combustible.

Petitions

In addition to the comments listed above, TVA received petitions with the following text:

I am in favor of the Stone Mountain Windfarm and Storage Facility to be located in Johnson County, Tennessee.

These petitions had a total of 335 signatures.

TVA also received petitions with the following text:

Petition opposed to the Stone Mountain Windfarm Proposal (Signing this petition does not mean you are against the Clean Air Act). We, the undersigned, are opposed to the construction of a windfarm on Stone Mountain. Although we believe strongly in the need to discover cleaner alternatives to energy production, we believe that the windfarm would adversely impact Johnson County, Tennessee, and surrounding areas by spoiling the natural beauty, discourage future residents from moving here, devalue properties within sight of the wind turbines and power transmission lines, and that in general, it is not a cost-efficient program supplying less than 1 percent of the total power grid for the TVA system.

These petitions had a total of 615 signatures.