GILPIN GROUP
Environmental Consulting and Planning

EAST KENTUCKY POWER COOPERATIVE

(Kentucky 59 Fayette)

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED SMITH STATION CT UNITS 9 & 10 AND THE SMITH-WEST GARRARD ELECTRIC TRANSMISSION PROJECT

June 2007

EXECUTIVE SUMMARY

East Kentucky Power Cooperative (EKPC), headquartered in Winchester, Kentucky, is proposing to install two new combustion turbine electric generating units (CTs) at its existing J.K. Smith Electric Generating Station in southern Clark County, Kentucky. The new units would utilize natural gas as a fuel source and would each have a net electrical output of between 82 and 98 megawatts. The proposed new units are needed to provide additional electric capacity that would allow EKPC to meet its projected electrical peaking demand in the 2009-2011 period. EKPC is also proposing to construct two new electric switching stations, one at its existing J.K. Smith Generating Station and one in western Garrard County, Kentucky; and a 36 mile, 345 kilovolt electric transmission line that would extend through Clark, Madison, and Garrard Counties, Kentucky, between the proposed new switching stations. The proposed new transmission facilities are needed to provide an outlet for the additional electric power that would be generated at the J.K. Smith Station as a result of the installation of the proposed new CT units.

EKPC has requested financing from the Rural Utilities Service, an agency that administers the U.S. Department of Agriculture's Rural Development Programs (USDA Rural Development), for the installation and construction of the proposed new facilities. USDA Rural Development must complete an environmental analysis and prepare an Environmental Assessment (EA) in accordance with its *Environmental Policy and Procedures for Implementing the National Environmental Policy Act* (7 CFR Part 1794), prior to approving the financing for the proposed project.

EKPC originally considered the installation five CT units at its existing J.K. Smith site; however, due to the cancellation of Warren Rural Electric Cooperative Corporation's

connection to EKPC's system, the need for the additional peaking power has been partially delayed. Three of the originally proposed units have been removed from consideration in the EA, and removed from the current application for RUS financing, as the need for the units is not projected to occur until between 2012 and 2014. Additionally, the USDA Rural Development made the decision, based on the need for the proposed facilities, to combine the Smith to West Garrard 345 kV Transmission Line and the Smith CT Units 9 & 10 in one environmental assessment.

From the beginning, USDA Rural Development and EKPC incorporated the public, agencies, government officials, and other interested parties into the project through a scoping process. USDA Rural Development and EKPC initiated scoping through a number of processes including newspaper notices; mailings to land owners, public officials, Native American tribes, and responsible agencies; a public scoping meeting; and public meetings. The concerns raised during the scoping process are addressed in the alternatives, environmental impacts, and consultation sections of this document.

EKPC investigated numerous alternatives, in addition to the proposed facilities, to meet its 2009-2011 projected electrical peaking demand, including: no action; alternate sources of power; conservation/interruptible load service; renewable energy sources; non-renewable energy sources; alternate CT and switching station sites; alternate transmission line routes; placing the proposed transmission line underground; and other various electrical alternatives. Based upon the alternatives investigated, EKPC determined that the proposed facilities afforded the best approach for meeting its projected electrical peaking demand.

The environmental investigation undertaken for the proposed action, and documented in this report, examined potential impacts on air and water quality; wetlands; floodplains;

soils, including prime and statewide important farmland soils; land use; recreation; vegetation; fisheries; wildlife; threatened, endangered, or rare species; cultural resources; transportation; noise; health and safety; radio, television, and cellular phone interference; socioeconomics; environmental justice; and aesthetics. The investigation did not uncover any significant adverse environmental impacts. However, through consultation with the Kentucky Heritage Council, State Historic Preservation Office (SHPO), consulting parties, and EKPC, the USDA Rural Development has identified the following four historic sites that could potentially be adversely impacted by the alternate transmission line routes:

- Gd-66 – 2-story brick Italianate house, listed in the NRHP; and
- Ma-203 – Igo House/Greenlan Farm, potentially eligible for listing in the NRHP.

The USDA Rural Development further identified that EKPC's proposed route could potentially adversely impact two of these historic sites, Ma-203 and Gd-66. The adverse effect determinations are based on visual impacts and do not result from the physical modifications or removal of the structures. The USDA Rural Development, working with EKPC, will consult with the SHPO to identify measures that would avoid, minimize, or mitigate any potential adverse effect on these historic structures, and, as a result, no significant adverse impacts would be expected.

Based upon the information provided, the investigations conducted for this proposal, the results of those investigations, and USDA Rural Development's on its independent review of this Environmental Report (ER), USDA Rural Development has adopted the ER as its EA to meet its environmental regulations for complying with the *National Environmental Policy Act of 1969* (NEPA).

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1.0 INTRODUCTION

East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky is a non-profit electric generation and transmission cooperative headquartered in Winchester, Kentucky. EKPC provides electric power to 16 locally based electric distribution cooperatives with its power plants, peaking units, hydro power and more than 2,600 miles of transmission lines. The distribution cooperatives distribute power to over 502,000 electric consumers in 89 counties located across the central and eastern portions of Kentucky. EKPC has requested financing from the Rural Utilities Service, an agency that administers the U.S. Department of Agriculture's Rural Development programs (USDA Rural Development), for the proposed installation of two new combustion turbine electric generating units (CTs) at its existing J.K. Smith Electric Generating Station in southern Clark County, Kentucky; and to construct and maintain an electric transmission line and associated facilities in Garrard, Madison, and Clark Counties, Kentucky. The Rural Utilities Service must complete an environmental analysis and prepare an Environmental Assessment (EA) in accordance with its *Environmental Policy and Procedures for Implementing the National Environmental Policy Act* (7 CFR Part 1794), prior to approving the financing for the proposed project.

GILPIN GROUP - Environmental Consulting & Planning of Oswego, New York has been contracted by EKPC to conduct an environmental investigation and analysis, and prepare an environmental report (ER) for independent review by the USDA Rural Development. Based on USDA Rural Development's review, the ER has been accepted as the agency's EA to meet environmental regulations for complying with the *National Environmental Policy Act of 1969* (NEPA). The EA will serve as a detailed written record of the environmental analysis completed for the proposed project and will be used to determine

whether the preparation of an Environmental Impact Statement is necessary. The EA incorporates a detailed description of the proposed project, along with a discussion of the purpose, need, and alternatives considered for the proposed action. A discussion of the affected environment within the proposed project areas, the potential environmental impact of the proposed action, and the mitigation of potential environmental impacts is also included.

1.1 PROPOSED ACTION

In order to provide the additional 200 MW of peaking generating power projected to be needed for the 2009 - 2011 time period, EKPC is proposing to construct:

- Two (2) Combustion turbine (CT) units (Units 9 & 10) at its existing Smith Electric Generating Station in Clark County, Kentucky
- Approximately 36 miles of 345kV electric transmission line with related facilities in Garrard, Madison, and Clark Counties, Kentucky
- A 345 kV switching station (West Garrard Switching Station) in Garrard County, KY &
- A 345 kV switching station (J.K. Smith Switching Station) at its existing Smith Electric Generating Station in Clark County, Kentucky

The proposed transmission and switching station facilities would be necessary to support the added generation that would be produced by the new CT units at the existing J.K. Smith Generating Station. A detailed description of the proposed action is located in *Section 2.2 Description of the Proposed Action* of this document.

EKPC was originally proposing the installation of five CT units at its existing J.K. Smith Generating Station based on projections contained in its *2006 Integrated Resource Plan* (IRP), which included Warren Rural Electric Cooperative Corporation (WRECC)

becoming a member of EKPC's system in 2008 (See Section *1.3.2 Need for the Proposed Action*). Subsequent to the filing of the 2006 IRP, WRECC decided not to join EKPC's system and to remain with TVA as its power supplier. The change in EKPC's load requirements without WRECC, necessitated an update to the power supply plan that indicated a need for less peaking capacity needed in the immediate future, resulting in the reduction of number of currently proposed units from five to two.

1.2 AGENCY ACTION

The Rural Utilities Service, an agency that administers the U.S. Department of Agriculture's Rural Development Utilities Programs (USDA Rural Development), is the agency responsible for implementing the National Environmental Policy Act (NEPA) for this federal action. USDA Rural Development has followed its policies and procedures, 7 CFR Part 1794 *Environmental Policy and Procedures for Implementing the National Environmental Policy Act*, in order to assure compliance with the Council on Environmental Quality regulations for the implementation of NEPA. In doing so, USDA Rural Development worked with the local, state, and federal agencies with expertise in their resources, as well as Native American tribes and interested consulting parties to evaluate the potential environmental impacts of the proposal. The proposed federal action related to EKPC's proposed electric project would be the granting of financing for the construction of the proposed facilities.

1.2.1 Federal Decision

The USDA Rural Development's decision to be made, based on the environmental analysis outlined in the EA, would be whether to implement the proposed action and grant the financing assistance for the construction of the proposed electric facilities.

1.2.2 Classification

The Rural Utilities Service's *Environmental Policies and Procedures*, 7 CFR Part 1794, categorizes the construction of CT Units and the electric transmission line project, as proposed in this document, as *normally* requiring an Environmental Assessment (EA) with scoping. In the early planning stages of project development, the CT Units and the transmission line were initiated as two separate projects. The electric transmission line project proceeded as an EA with scoping; however, under the discretion afforded by 7 CFR Part 1794, the USDA Rural Development decided that the proposed new CT units at the J.K. Generating Station would not require scoping. The existing J.K. Smith generating site, including the proposed site for the new units, has been extensively studied in recent years.

The existing site currently has seven CTs for which four separate EAs were prepared. In addition to the four EAs, an Environmental Impact Statement (EIS) was prepared in 1981 to study the impacts of a proposed coal fired electric generating facility located at the Smith Generating Site. The EIS was submitted to RUS for review and approval, and a Record of Decision (ROD) was issued by USDA Rural Electrification Administration for the project. However, the proposed facility was never constructed. An EIS, prepared by the U.S. Department of Energy, was also completed in 2000-2001 for a proposed coal gasification plant at the existing Smith site. The Final EIS was made available for public comment in November of 2002, and a Record of Decision to implement the project was issued in February 2003. Like, the proposed coal fired facility; the coal gasification plant was never constructed.

Due to the previous environmental and scoping efforts, the location of the proposed units within an existing site, the extensive investigations resulting from these processes, and the results of the ensuing investigations at the J.K. Smith Power Station Site, USDA Rural

Development determined that holding scoping meetings for the proposed new units (CT Units 9 & 10) would not substantially add to the environmental investigation process. As planning for the proposed projects progressed, the USDA Rural Development determined that since the proposed electric transmission project would be necessary to support the added generation that would be produced by the new CT units at the existing J.K. Smith Generating Station, the projects should be treated as one and assessed in this EA.

1.3 PURPOSE & NEED

EKPC's determination that it needs 200 MW of additional peaking generation capacity and the transmission and switching stations to support the additional generation is explained below.

1.3.1 Purpose for the Proposed Action

The purpose of the proposed action is to provide additional electric generating capacity to allow EKPC to meet projected peaking demand in the 2009-2011 period and to construct necessary transmission facilities to allow EKPC to deliver the additional electric power required during that period.

1.3.2 Need for the Proposed Action

EKPC's load forecast indicates that the total energy requirements for its system are projected to increase by 2.3 percent per year over the 2006 through 2026 period. Net winter peak demand will increase by approximately 1,800 MW, and net summer peak demand will increase by approximately 1,100 MW. During the 2006 through 2026 period, energy sales to the residential users are expected to increase by 2.4 percent per year, small commercial sales by 2.4 percent per year, and large commercial sales by 2.6 percent per year. These increases in demand will result in the need to increase the amount of power EKPC produces.

EKPC's load forecast is prepared every two years in accordance with EKPC's Rural Utilities Service approved Work Plan. EKPC prepares the load forecast by working jointly with member systems to prepare their load forecasts. The load forecast provides the basis for EKPC's *Power Supply Plan*, which in turn, provides the generation determinations necessary for EKPC to prepare its *Integrated Resource Plan*. These forecasts, projections, and plans outline EKPC's system needs.

The current *Power Supply Plan* is an update of the plan documented in EKPC's *2006 Integrated Resource Plan* (IRP) that was approved by the EKPC Board of Directors at the October 2006 Board Meeting and was filed with the Kentucky Public Service Commission on October 21, 2006. The 2006 IRP was based on the assumption that Warren Rural Electric Cooperative Corporation (WRECC) would become a member of EKPC's system in 2008. Subsequent to the filing of the 2006 IRP, WRECC decided to remain with TVA as its power supplier. The change in EKPC's load requirements without WRECC necessitated an update to the power supply plan. The current plan was updated in February of 2007 and documents the need for approximately 200 MW (winter rating) of peaking capacity to be added from 2009 to 2011 to meet member system load requirements.

EKPC's most recent capacity additions include Smith CTs 6 & 7 in January 2005 (98 MW each, winter rating), the Gilbert coal fired unit in March 2005 (278 MW), and two landfill gas to energy plants (total 5.6 MW) that began operation in 2006 and 2007. The J.K. Smith site currently contains seven CTs with a total winter generating capacity of 842 megawatts (MW). Even with the recent additions in capacity in place, EKPC will require the additional 200 MW of power to meet the winter peak demand in 2009-2011. The addition of this capacity will help bring EKPC's reserve margin from a projected negative seven percent

for the winter 2008-2009 season to about +12 percent for the winter 2011-12 season. The two proposed CT Units 9 and 10 would aid in meeting the projected 200 MW of peaking capacity that EKPC's system will require during the 2009-2011 timeframe.

EKPC's analysis supports construction of the additional CT Units at EKPC's existing J.K. Smith Power Station. EKPC will also need sufficient transmission facilities to deliver the additional electric power generation to meet peaking demand in 2009-2011. Additional transmission is needed to avoid brownouts and power interruptions caused by insufficient generation or transmission system overloads. Four existing 138 kV transmission lines are presently connected to the J.K. Smith Substation at the generating station. These lines are currently at maximum capacity and are insufficient to accommodate delivery of any additional electric power generation at an expanded J.K. Smith Generating Station. Thus, EKPC requires additional electric transmission facilities and associated system upgrades sufficient to provide an outlet for the additional 200 MW of power to be generated at the Smith station.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

EKPC investigated numerous alternatives to provide its needed additional electric generating capacity, as well as alternatives for the delivery of the additional electric power. The following sections offer a detailed documentation of the alternatives investigated by EKPC.

2.1.1 Additional Generation Capacity

2.1.1.1 No Action

EKPC evaluated taking *no action* to meet the projected peaking capacity requirement outlined above in Section *1.3 PURPOSE & NEED* and determined that the *no action* alternative was not a viable alternative to the proposed project. Choosing the *no action* alternative would mean EKPC would not construct the project, as proposed, and would not take the necessary steps to meet its system's projected peaking capacity requirements. As described in Section *1.3.2 Need for the Proposed Action*, approximately 200 MW of peaking capacity needs to be added to EKPC's system to help overcome the current capacity deficits. Should EKPC maintain the status quo and not take the steps necessary to satisfy the load growth on its system, EKPC's electric consumers would eventually start experiencing a deterioration of electric service as the electrical peak load on the system grows. If adequate generation is not available, EKPC's consumers could experience power interruptions as the peak electrical demand on its system increases. EKPC is under contractual and statutory obligation to its member distribution systems to provide adequate reliable electric power for their present and future electric energy requirements. Should EKPC choose the *no action* alternative, it would not be able to meet its obligation to its members.

2.1.1.2 Alternate Sources of Power

EKPC issued a *Request for Proposals* (RFP) in April 2004 to evaluate potential peaking alternatives. The RFP outlined EKPC's peaking capacity needed, as well as a specific time frame for the peaking capacity needs and other requirements. Proposals were received for power purchase agreements and combustion turbine/peaking equipment and/or construction contracts. Due to the lack of availability of firm transmission on the grid (firm

transmission means power purchased is guaranteed to be shipped to the intended system), EKPC could not reasonably be guaranteed to receive the power purchases. In addition, market power prices have also increased, particularly in winter, which results in higher costs. The evaluation of the RFPs supported the construction of the proposed new combustion turbines at the existing electric generating site in Clark County, Kentucky, based mostly on the results of an economic analysis of the proposals. Thus, alternate sources of power, such as market power, were not considered as viable alternatives to the proposed project.

2.1.1.3 Conservation & Interruptible Load Service

Energy conservation was considered by EKPC, but was dismissed as an option that was not viable. Energy conservation would not sufficiently reduce demand, so as to eliminate the need for the additional planned generation at the J.K. Smith Power Station and would not provide an outlet for the additional electric capacity that would be generated. As described above in Section *1.3.2 Need for the Proposed Action*, the transmission lines servicing the J.K. Smith Generating Station are currently at maximum capacity and are insufficient to accommodate delivery of any additional electric power produced at the generating station.

EKPC has in the past and continues to negotiate as much as possible with its industrial consumers concerning interruptible load service (ILS). Interruptible loads are regular daytime loads which are normally supplied by EKPC and which may be interrupted at EKPC's discretion. ILS is a volunteer program and consumers who wish to participate receive a discounted rate for the service provided. EKPC uses ILS to decrease the demand for power on EKPC's system during peak hours. Decreasing peak demand can decrease or delay EKPC's need for peaking generation, and hopefully, provide the consumer with the necessary power at a reduced cost. Based on projections, EKPC will still need to acquire additional

electrical capacity even taking into account ILS. Consequently, EKPC determined that while continuing forward with ILS is important in helping to meet its total energy requirements, ILS cannot by itself meet its energy requirements and cannot be considered as a viable alternative to the proposed project.

2.1.1.4 Renewable Energy Resources

EKPC considers renewable energy as an important component of its power supply program. Therefore EKPC has worked to develop renewable programs to offer to its consumers. The renewable programs considered by EKPC and their ability to answer the need for 200MW of peaking capacity needed for the 2009 – 2011 period are outlined below.

2.1.1.4.1 Landfill Gas to Electricity

Landfill gas is created from organic matter decaying in a landfill. This gas is captured and used to make electricity. EKPC is the first and only utility in Kentucky to operate landfill gas to electricity (LFGTE) generation. EKPC markets this renewable energy to its member systems through a program called EnviroWatts, and 14 of the 16-member systems offer the voluntary program to their residents.

Fifteen (15) MW are currently produced at EKPC's five renewable plants. Kentuckians produce 10 pounds of waste per person, per year, and this waste is deposited in approximately 32 landfills across the state. Of these landfills, approximately 20 could feasibly host a LFGTE facility creating a total approximately 100 megawatts of capacity. Sixteen (16) of these landfills are within the EKPC member co-op service territories. Collectively, these sixteen sites have the potential to produce approximately fifty (50) megawatts of capacity in the next few years.

EKPC is currently working with landfills in an attempt to acquire the rights to utilize this resource. EKPC is unable to guarantee the willingness of landfill operators to enter into a contract to produce LFGTE power on their facilities. Consequently, EKPC determined that while continuing forward with LFGTE is important in helping to meet its total energy requirements, LFGTE cannot by itself meet its energy requirements and cannot be considered as a viable alternative to the proposed project.

2.1.1.4.2 Hydroelectric Power Capacity

In a process called hydroelectric power generation, flowing water creates energy that can be used to activate a turbine that drives an electric generator to create electricity. Currently, hydroelectric power provides approximately 10% of the nation's electricity. EKPC obtains 405 megawatts of hydroelectric power from threes sources under two contracts. EKPC contracts with the Southeastern Power Administration (SEPA) for two sources of hydroelectric capacity – the Cumberland Basin System and the Laurel Dam facility. EKPC is under contract with SEPA for a 20-year period starting in 1999. For the third source, EKPC contracts with Duke Energy Ohio, Inc to obtain power from the Ohio River.

No additional sources of hydroelectric power are currently available for EKPC's use. In addition, one of the three sources EKPC previously used is currently unavailable. Consequently, EKPC determined that while continuing forward with hydroelectric power is important in helping to meet its total energy requirements, hydroelectric power cannot by itself meet its energy requirements and cannot be considered as a viable alternative to the proposed project. The three available sources of hydroelectric power are as follows:

2.1.1.4.2.1 Cumberland Basin System

The first source provides for 100 MW of scheduled peaking power from the Cumberland Basin System of Projects. Under normal conditions, EKPC is guaranteed 186,900 MWh per year with a minimum monthly take of 6,000 MWh and maximum monthly take of 24,000 MWh. This energy is scheduled for delivery through the Tennessee Valley Authority system. Due to current maintenance work at the Wolf Creek and Center Hill dams, SEPA cannot supply its energy guarantee requirements. The energy schedules for all SEPA customers have been modified to reflect energy as available from the Cumberland System.

2.1.1.4.2.2 Laurel Dam

The second source provides EKPC with 70 MW of peaking capacity from the Laurel Dam facility. EKPC is guaranteed 700 MWh per week or 36,400 MWh per year. EKPC receives all energy from this facility and can call for the unit with as little as five minutes notice. EKPC is required to run the unit a minimum of 30 minutes every 48 hours and is requested not to lower the lake level more than six inches in a 24-hour period. EKPC dispatches the Laurel Dam hydro-generating unit within the EKPC control area.

2.1.1.4.2.3 Greenup Hydro

EKPC is under contract with Duke Energy Ohio, Inc. to purchase all of the available energy output from the Greenup Hydro plant located on the Ohio River. The plant is dispatched into the EKPC control area. The plant is a run-of-river hydro unit and generates electric energy based on water conditions in the Ohio River. The average output of the plant is 40 MW and the maximum generating capacity is 65 MW. EKPC's current contract runs from January 1, 2007 through December 31, 2010. EKPC has routinely purchased the output of the Greenup hydro plant for several years.

2.1.1.4.3 Wind Power

As another potential "green power" source, EKPC is conducting a Wind Power Study in southeastern Kentucky to study the feasibility of wind generation. In 2002 two wind monitoring towers were installed in southeastern Kentucky. Wind studies began in 2003. In 2004, two wind towers were relocated and a third added. By 2005, data from the wind towers indicated current wind technology limits application to high elevation sites in Kentucky.

Unfortunately, the high elevation areas in Kentucky that provide the opportunity for wind power also are home to rare species and protected areas in the Commonwealth. Permitting for wind power in these areas is anticipated to be difficult, at best. In addition, wind power would not provide the 200 MW of power needed to address EKPC's peaking power needs for 2009 – 2011. Consequently, EKPC determined that while continuing forward with wind power studies and potential wind power projects is important in helping to meet its total energy requirements, wind power cannot by itself meet its energy requirements and cannot be considered as a viable alternative to the proposed project.

2.1.1.4.4 Solar

The Kentucky Governor's Office of Energy Policy has stated that solar energy can be used to generate electricity in Kentucky with the use of Photovoltaic (PV) systems. These PV systems can provide electricity to assist with various functions such as lighting, refrigeration, and telecommunications system. Solar power would not provide the power needed to address EKPC's need for 200 MW of peaking power in 2009 – 2011. Concentrated Solar Power (CSP) is a technology that is being developed to create large amounts of electricity from solar energy. CSP programs occur primarily in the southwest, and due to Kentucky's geographic location CSP is not a viable energy source. Consequently, EKPC determined that while

continuing forward with solar panels for individual uses, solar power could not by itself meet its energy requirements. In addition, solar power is an intermittent source of electricity because it is dependent upon weather conditions and is not available for electric power generation during inclement weather, such as rainy or overcast days, as compared to the proposed CT units that would consistently be available when needed. As a result, solar power cannot be considered as a viable alternative to the proposed project.

2.1.1.5 Non-Renewable Energy Sources

EKPC uses the fossil fuels in the form of coal, natural gas, and petroleum (No. 2 fuel oil) for its electric generation needs. EKPC evaluated these non-renewable energy sources when determining the resource it would utilize to answer its peaking system needs.

2.1.1.5.1 Petroleum

Petroleum (No. 2 fuel oil) was considered as the primary fuel source for running the CT units but was eliminated from further consideration as an alternative to answering EKPC's peaking capacity needs. The use of fuel oil to fire the CT's was eliminated primarily for two reasons – increased emissions and delivery. Using fuel oil to run the CT's results in increased rates of emissions, especially particulate matter and SO_2 in relation to natural gas. Increasing rates of emissions from the units results in a greater impact to the environment and leads to greater difficulty in obtaining air permits required for operation of the units. In addition, delivery of fuel oil to the Smith Site is more difficult to accomplish than natural gas. An existing natural gas pipeline bisects the J.K. Smith Power Station, and provides a reliable, abundant supply of natural gas into the facility.

2.1.1.5.2 Coal

Burning coal to create power was also considered as an alternative source of power to respond to EKPC's peaking demand. After evaluating this resource, coal was eliminated from further consideration as an alternative to answering EKPC's peaking capacity needs for several reasons. Coal fired units answer the needs for baseload generation needs. Operating coal-fired units in order to respond to peaking demands results in inefficient operation of the units. Also, baseload generation tends to have high fixed costs and low operating costs and if EKPC were to construct coal fired base load units to respond to its peaking needs, the high fixed costs associated with those types of units result in higher costs for EKPC and its members. The need for 200 MW of peaking capacity occurs in 2009 and construction of a baseload coal-fired unit to respond to that need would not be possible in that timeframe. Therefore, coal was eliminated from consideration as the source of fuel to respond to EKPC's peaking need.

2.1.1.5.3 Natural Gas

Natural gas is the proposed fuel source for operation of the combustion turbine units. The proposed CT units would be either model 7EA or model LMS100, both manufactured by GE Energy. The CTs would be operated on natural gas and utilize dry low nitrogen oxide (NOx) combustion systems. The use of natural gas to fire the CT units results in lower emissions than those created from burning No. 2 fuel oil as discussed in Section *2.1.1.5.1 Petroleum*. Also, delivery of natural gas into the J.K. Smith Power Station can be accomplished through an existing facility that bisects the site. Therefore, natural gas is the optimal fuel source for running the CT Units to answer EKPC's peaking needs.

2.1.1.6 Alternate Sites

EKPC considered installing the proposed new CT units at other existing generating sites within its system; however, the infrastructure for the needed CT units that exists at J.K. Smith Power Station is not in place at the other generating sites. EKPC decided to utilize this existing infrastructure and avoid duplicating these existing facilities at other sites, and, therefore, did not investigate any other alternate sites for the proposed CT units. The proposed site is located at its existing J.K. Smith Electric Generating Station in southern Clark County, Kentucky, on land that has been previously disturbed. There are currently seven other peaking units at the generating station and the infrastructure is currently in place to support the new units. The existing generating station is also located on a large tract of land owned by EKPC that is located in a remote area and which isolates the generating station from other land uses (See Section *3.0 AFFECTED ENVIRONMENT*). EKPC also dismissed the alternative of constructing new generating units at a new, or *"green field"* site, because locating the proposed new units on undisturbed land would have more of an impact on the environment due to site preparation, installation of infrastructure, etc., as compared to the proposed location.

2.1.2 Transmission Alternatives

A number of alternatives were investigated by EKPC for the proposed electric transmission line project including *no action*, placing the line underground, electrical alternatives, alternate substation sites, and alternate routes. Based upon all the alternatives that were investigated, EKPC determined that the transmission project, as proposed, offered the most viable option for providing the outlet needed for the addition of generation at the Smith site.

2.1.2.1 No Action

Choosing the *no action* alternative would involve maintaining the status quo and not constructing the electric transmission project, as proposed. Twenty-five transmission facilities are expected to overload in 2009 and 2010 as a result of the additional generation required to meet 2009-2011 peaking demand. If additional transmission facilities are not added to address this issue, EKPC will not be able to dispatch the additional generation produced at the J.K. Smith generating site to meet the electrical demand on its system. Therefore, EKPC determined that the *no action* alternative was not a viable alternative to the proposed action.

2.1.2.2 Placing the Line Underground

Placing the proposed transmission line underground was considered by EKPC, but it was determined that this alternative was not a viable option to satisfy the need for this project. Construction of underground facilities for the large voltages required for this project would create many hurdles and difficulties that would disrupt communities, individuals, and the environment. Underground lines are not as accessible as overhead lines because underground access points, or manholes, are located on average every 2,200 feet along underground lines for the purpose of pulling the electric cable, splicing the cable together, and performing emergency restoration in the event of an outage. As a result, the manholes need to be located close to roads so that they are accessible, and the line cannot be located across remote rural areas. This results in more angles and increased length of line, as compared to overhead lines. Underground line construction is also much more disruptive to the soils, vegetation, and archaeological resources in addition to existing structures (homes, etc,), if not avoidable, that may be present in a project area, as compared to overhead type construction. A six-foot wide

trench would need to be dug at least six feet deep along the entire length of any proposed underground transmission line in order to install the line underground. Overhead line construction only requires soil disturbance at support structure locations, which involves very little soil disturbance. Additionally, the cost of underground construction is prohibitive, as compared to overhead type construction, ranging from 10 to 12 times more costly. The estimated cost of construction for the proposed overhead transmission line is $36.78 million, as compared to $367.8 to $551.7 million for constructing the line underground.

2.1.2.3 Electrical Alternatives

As described above in Section *1.3.2 Need for the Proposed Action*, EKPC is proposing the construction of two new CTs at its existing J.K. Smith Generating Station that would produce an additional 200 MW of electric generation at the generating station. The existing electric transmission lines currently serving the generating station are insufficient to accommodate the added capacity. As a result, EKPC is proposing the construction of the Smith-West Garrard Electric Transmission Project to provide an outlet for the additional generating capacity associated with the proposed new CTs.

EKPC prepared a *System Impact Study* (SIS) to evaluate the electric transmission facilities needed to provide the necessary outlets for the proposed CTs. Thirty-eight possible 345 or 138 kV electric transmission outlets were evaluated from the J.K. Smith Substation to determine their ability to prevent thermal overloads identified by the study. The screening process eliminated most of these outlet options for one of the following two reasons:

- An outlet either singularly or in combination with other outlets did not eliminate a substantial number of the thermal overloads caused by the proposed additional capacity; or
- An outlet did not provide any significant additional benefits when compared to the performance of another outlet that would be shorter and/or less expensive.

As a result of the screening analysis, it was determined that at least three 138 kV outlets from the J.K. Smith site and significant additional upgrades on the transmission system are required to accommodate the additional generating capacity. Transmission system losses would also be higher with 138 kV outlet alternatives, as compared to 345 kV outlet alternatives. A 345 kV transmission line would have capacity to accommodate additional foreseeable electric generation produced at the J.K. Smith site. For these reasons, 138 kV transmission alternatives were eliminated from further consideration for the J.K. Smith Substation.

The screening analysis determined that two of the 345 kV transmission outlet alternatives more fully resolved the transmission system problems identified, as compared to the remainder of the outlet options. These two transmission outlet options are:

1. The J.K. Smith-Tyner 345 kV line and the installation of a 345-161 kV transformer at Tyner; and
2. The J.K. Smith-West Garrard 345 kV line and a new 345 kV switching station at West Garrard connecting this line with E ON US's Brown-Pineville 345 kV circuit.

These two outlets would substantially reduce the number and severity of overloads that would be caused by the addition of new generation at the J.K. Smith site.

Three alternatives were identified that could address the two outlet options outlined above.

2.1.2.3.1 Alternative 1

Alternative 1 includes the construction of a new 345 kV switching station in the western Garrard County area (West Garrard), and the construction of a new 36 mile, 345 kV transmission line between the existing J.K. Smith Substation in Clark County and the West Garrard Switching Station. A number of existing 69 and 138 kV transmission line corridors

were also determined to be in the area, which may be able to be used for rebuild and/or co-location.

2.1.2.3.2 Alternative 2

Alternative 2 includes the addition of all facilities required at the existing Tyner Substation to terminate the proposed J.K. Smith-Tyner 345 kV line and to add the new 345-161 kV autotransformer. Additional land would be needed to construct the new 345-161 kV substation, and to connect it to the existing Tyner Substation. Included in this alternative is the construction of a new 40 to 50 mile, 345 kV transmission line between the J.K. Smith Substation and the Tyner Substation, and the addition of a 138 kV reactor at EKPC's Dale Generating Station. The area that would be traversed by this line does not appear to have any large areas of concentrated development. However, a large portion of the line would have to cross the Daniel Boone National Forest (DBNF), requiring a Special Use Permit from the U.S. Forest Service for any portion of the line on National Forest System land.

2.1.2.3.3 Alternative 3

Alternative 3 has many of the same physical issues as Alternative 2 discussed above related to the Tyner Substation Expansion and the new 345 kV line between J.K. Smith and Tyner. The primary difference is that Alternative 3 includes the construction of a 17.9 mile 138 kV transmission line between J.K. Smith and E ON US's Spencer Road Substation in lieu of the addition of a series reactor at Dale Station. Alternative 3 would also require the expansion of the Spencer Road Substation and replacement of both 138/69 kV transformers with larger units, resulting in a significant amount of work at this site.

2.1.2.3.4 Comparison of Alternatives 1, 2, & 3

All three of the alternatives described above would require significant new 345 kV transmission line construction. However, Alternative 2 and 3 would be expected to require significantly more lead time to secure an approval for the construction of the transmission line, than Alternative 1, due to the crossing of the DBNF and having to acquire a Special Use Permit from the U.S. Forest Service for the construction of the line. Alternative 2 and 3 would also be expected to have more potential impact. The transmission line located within either of these two alternate routes would be longer in length and have fewer opportunities for co-location with existing transmission lines, as compared to Alternative 1; thereby involving more land owners, having more of an effect on existing land use and natural resources located in the area, and being more costly to construct. Furthermore, Alternative 3 would require additional construction of approximately 18 miles of new 138 kV transmission line, and Alternatives 2 and 3 would require substantially more system upgrades than Alternative 1, increasing economic and environmental costs associated with the construction of the proposed new line. The West Garrard Switching Station associated with Alternative 1 is also centrally located within EKPC's system and would provide better opportunities for future expansion and support of EKPC's system than Alternatives 2 and 3. Based on the comparison of the three alternatives, Alternative 1 was determined to be the optimal transmission plan that also offers the lowest construction costs and, therefore, is being recommended for implementation by EKPC (See Table 2.1.2.3.4.a below for a summary of the comparison between the three 345 kV electric transmission outlet alternatives).

Table 2.1.2.3.4.a - *Comparison of 345kV Transmission Outlet Alternatives*

	Crosses DBNF – Special Use Permit Required	Approx. Miles of 345kV Line Needed	Approx. Miles of 138kV Line Needed	Reactor at Dale Needed	Co-location /Rebuild Opportunities	Summary
Alternative 1 **(Proposed)**	No	36	0	No	Many	This alternative requires fewer miles of ROW, does not require special use permit, and provides many opportunities to co-locate or rebuild existing facilities
Alternative 2	Yes	40-50	0	Yes	Few	This alternative requires more miles of ROW, requires a special use permit from the DBNF, requires a reactor at Dale Station, and provides few opportunities to co-locate or rebuild existing facilities
Alternative 3	Yes	40-50	18	No	Few	This alternative requires more miles of ROW, requires a special use permit from the DBNF, requires 18 additional miles of 138 kV transmission line, and provides few opportunities to co-locate or rebuild existing facilities

More detailed information pertaining to the electrical alternatives investigated for the proposed Smith to West Garrard Transmission project is contained in the report titled *Electric Alternative Analysis, Smith-West Garrard 345 kV Transmission Project*, prepared by EKPC June 2006. This report can be referred to online for further information at the USDA Rural Development's website: http://usda.gov/rus/water/ees/ea.htm.

2.1.2.4 Alternate Routes

Based on the evaluation of the electrical alternatives described above (Section *2.1.2.3 Electric Alternatives*), EKPC prepared a Macro-Corridor Study of route alternatives for the proposed construction of a new 345 kV transmission line between the proposed J.K. Smith Switching Station in Clark County, and a proposed new West Garrard Switching Station in Garrard County. In order to accomplish this task, EKPC incorporated a computer-based

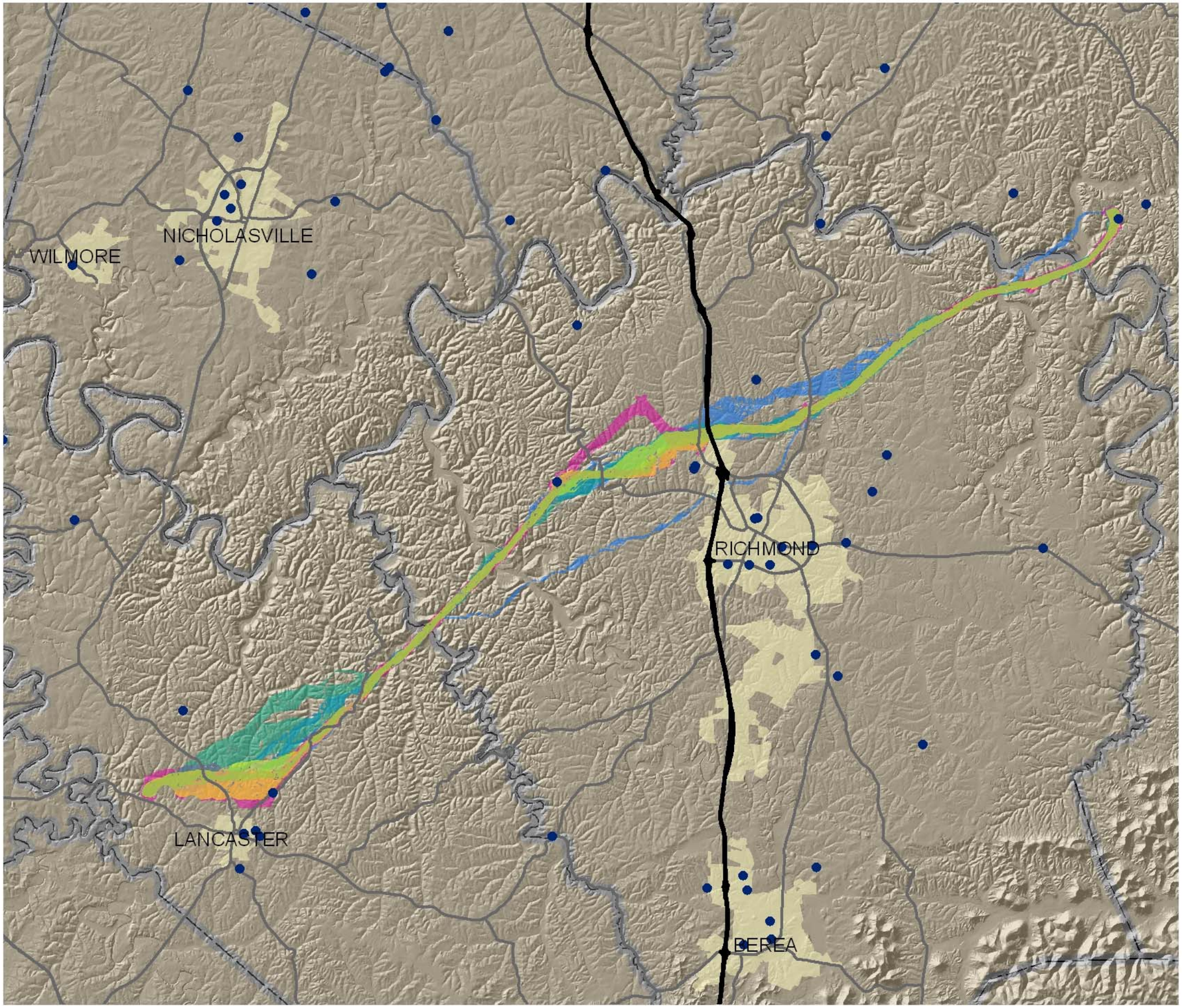
methodology that was developed by the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC), and was calibrated by an interdisciplinary group of experts for use in Kentucky. The EPRI-GTC methodology was used as a tool to evaluate the suitability of individual land tracts, or *grid cells*, for locating the proposed transmission line. Based on the analysis of a large area located between the endpoints for the proposed new line, a macro-corridor and study area were developed that incorporated portions of Clark, Fayette, Garrard, Jessamine and Madison Counties in central Kentucky. Then, using more detailed information about the grid cells within the study area, alternate corridors were developed for further consideration. The Macro-Corridor Study was provided at the scoping meeting and can be referred to online for further information at the USDA Rural Development's website: http://usda.gov/rus/water/ees/ea.htm.

The EPRI-GTC methodology approaches corridor development by considering three broad perspectives or *environments*:

- *Built Environment* that is concerned with minimizing the impact on people and cultural resources;
- *Natural Environment* that is concerned with protecting water resources, plants and animals; and
- *Engineering Environment* that is concerned with maximizing co-location and considering physical constraints.

Using the EPRI-GTC methodology, corridors within which to route the line were developed for each of the three broad perspectives, or environments. The corridors initiate at the Smith Substation on the eastern end of the study area and generally follow EKPC's existing 138 kV Smith-Fawkes Transmission Line to the west. At Richmond, near Interstate Highway 75, the corridors widen and include other existing transmission lines as possibilities for co-location. The corridors follow the existing lines to the Newby Substation, then generally follow the route of EKPC's existing Newby-Lancaster Transmission Line, which

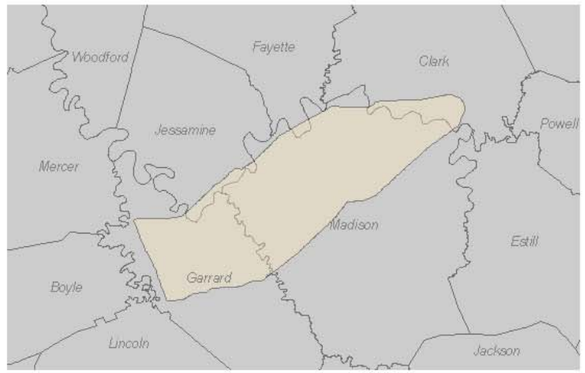
Alternative Corridors Map



- Average Corridor
- Built Corridor
- Natural Corridor
- Engineering Corridor
- Major Highway
- Major Road
- Existing Substation
- Existing Transmission
- City Boundary

N
W E
S

5 Miles



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runs southwest to Lancaster. From here the corridors again widen and head west to the proposed West Garrard Switching Station site (See Alternative Corridors Map, page 24).

Once the corridors were developed, EKPC further refined the route of the proposed transmission line with the assistance of the EPRI-GTC routing methodology to develop a proposed final centerline. Two independent teams of transmission line professionals at EKPC then analyzed aerial photography, topographic maps, windshield survey information, and GIS data in conjunction with the EPRI-GTC model, along with information gathered as a result of the public scoping meeting, to identify Alternative Route Corridors. After developing the Alternative Route Corridor centerlines independently, the routing teams met to discuss the centerlines they developed and to combine common segments into one set of route corridor centerlines. EKPC then hosted open houses in August, one in Lancaster, Kentucky and one in Richmond, Kentucky, to solicit comments from the public regarding the Alternative Route Corridors, following which the routing team met to further refine the routes.

After taking into account public input, agency input, engineering constraints, GIS data, and professional judgment, the alternative routes were developed. Sixteen (16) alternative routes have been considered throughout the NEPA process. The alternatives considered have been labeled A, Ar, B, Br, C, Cr, D, Dr, E, Er, F, Fr, G. Gr. H, and Hr. An “r” in the route name indicates a route that would involve rebuilding segments 10 and/or 12 rather than paralleling these segments. (See Alternative Sections Identification Map, page 26). The following table shows the total length, amount of new ROW, amount of co-location/parallel, amount of rebuild, etc., for each of the alternate routes investigated.

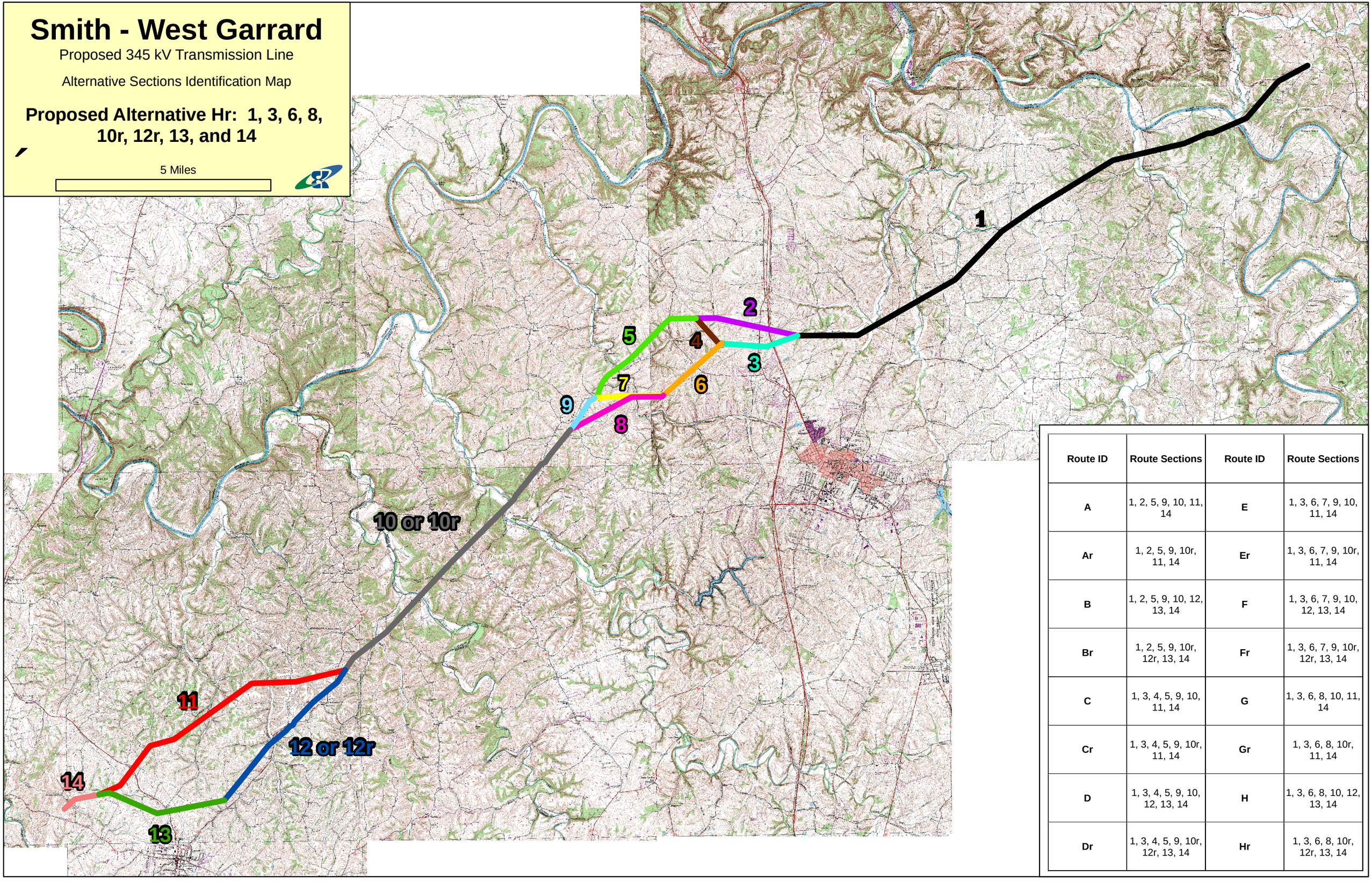
Smith - West Garrard

Proposed 345 kV Transmission Line

Alternative Sections Identification Map

Proposed Alternative Hr: 1, 3, 6, 8, 10r, 12r, 13, and 14

5 Miles



Route ID	Route Sections	Route ID	Route Sections
A	1, 2, 5, 9, 10, 11, 14	E	1, 3, 6, 7, 9, 10, 11, 14
Ar	1, 2, 5, 9, 10r, 11, 14	Er	1, 3, 6, 7, 9, 10r, 11, 14
B	1, 2, 5, 9, 10, 12, 13, 14	F	1, 3, 6, 7, 9, 10, 12, 13, 14
Br	1, 2, 5, 9, 10r, 12r, 13, 14	Fr	1, 3, 6, 7, 9, 10r, 12r, 13, 14
C	1, 3, 4, 5, 9, 10, 11, 14	G	1, 3, 6, 8, 10, 11, 14
Cr	1, 3, 4, 5, 9, 10r, 11, 14	Gr	1, 3, 6, 8, 10r, 11, 14
D	1, 3, 4, 5, 9, 10, 12, 13, 14	H	1, 3, 6, 8, 10, 12, 13, 14
Dr	1, 3, 4, 5, 9, 10r, 12r, 13, 14	Hr	1, 3, 6, 8, 10r, 12r, 13, 14

Table 2.1.2.4.a – Alternate Route Comparison

Alternate Routes	A	B	C	D	E	F	G	H
Total No. of Miles	35.7	36.2	35.9	36.4	35.3	35.8	35.1	35.6
Total No. of Acres	649	658	653	663	642	651	639	648
Acres of Clearing	132	131	133	132	140	139	133	131
Percentage of Clearing	20.3	19.9	20.4	19.9	21.8	21.4	20.8	20.2
Miles of New ROW (Greenfield)	12.0	8.4	10.7	7.1	11.9	8.3	12.6	9.0
Miles of Collocation	23.7	27.8	52.2	29.3	23.4	27.5	22.5	26.6
Miles of Rebuild	0	0	0	0	0	0	0	0
Miles of Single Circuit	35.7	36.2	35.9	36.4	35.3	35.8	35.1	35.6
Miles of Double Circuit	0	0	0	0	0	0	0	0

(Table 2.1.2.4.a – continued)

Alternate Routes	Ar	Br	Cr	Dr	Er	Fr	Gr	Hr
Total No. of Miles	35.7	36.2	35.9	36.4	35.3	35.8	35.1	35.6
Total No. of Acres	648	658	653	662	642	651	639	648
Acres of Clearing	108	100	109	101	115	108	109	101
Percentage of Clearing	16.7	15.2	16.7	15.3	17.9	16.6	17.1	15.6
Miles of New ROW (Greenfield)	12.0	8.4	10.7	7.1	11.9	8.3	12.6	9.0
Miles of Collocation	15.8	15.8	17.3	17.3	15.5	15.5	14.8	14.8
Miles of Rebuild	7.9	12.0	7.9	12.0	7.9	12.0	7.7	11.8
Miles of Single Circuit	27.8	24.2	28.0	24.4	27.4	23.8	27.4	23.8
Miles of Double Circuit	7.9	12.0	7.9	12.0	7.9	12.0	7.7	11.8

The EPRI-GTC Route Evaluation Model applies a statistical comparison to alternative routes based on predefined weighted criteria that focuses on the built, natural, and engineering environment. In order to calibrate the EPRI-GTC methodology for use in Kentucky, a siting model was developed using data collected from a group of Kentucky stakeholders during a workshop conducted in February 2006. The workshop was conducted and the model was developed and tested by a project team of independent experts. Stakeholders at the workshop represented a range of interests from around the state, such as environmental concerns, historic preservation, homeowners associations, agricultural groups and government agencies, as well as EKPC personnel and representatives of other utilities. The resulting model

includes data layers, features, layer weights and suitability values that are specific to Kentucky.

Numbers between 1 and 9 were used to represent degrees of suitability, with 1 being most suitable for locating a transmission line and 9 being least suitable for locating a line. These values are described in the EPRI-GTC Project Report (which can be made available upon request) as follows:

- Areas that have High Suitability for an Overhead Electric Transmission Line (1, 2, 3) - These are areas that do not contain known sensitive resources or physical constraints, and therefore should be considered as suitable areas for the development of corridors.
- Moderate Suitability for an Overhead Electric Transmission Line (4, 5, 6) - These are areas that contain resources or land uses that are moderately sensitive to disturbance or that present a moderate physical constraint to overhead electric transmission line construction and operation. Resource conflicts or physical constraints in these areas can generally be reduced or avoided using standard mitigation measures.
- Low Suitability for an Overhead Electric Transmission Line (7, 8, 9) - These are areas that contain resources or land uses that present a potential for significant impacts that cannot be readily mitigated. Locating a transmission line in these areas would require careful siting or special design measures. Note that these areas can be crossed but it is not desirable to do so if other alternatives are available.

The EPRI-GTC methodology recognizes it is prohibitive to locate overhead transmission lines on or around some features, because of physical constraints or permitting delays. These areas are termed "avoidance areas" because the methodology seeks to avoid entering them, *if possible*. Features that constitute avoidance areas were determined by the Kentucky stakeholder groups and are listed in red in Figure 3. One of the first steps in implementing the EPRI-GTC methodology is identifying avoidance areas on the Study Area surface to avoid locating transmission in those areas, *if possible*.

Three top routes emerged from this comparison, which were analyzed in the final step of the EPRI-GTC routing methodology by applying expert judgment. This was accomplished by reviewing select issues on each of the routes and assigning them a rating of low, medium,

or high. The categories of expert judgment include visual, community, rights-of-way schedule, construction/maintenance accessibility, and regulatory issues, as well as issues related to impacts on cultural/historic resources. Based upon the impact scores in the expert judgment process, EKPC determined that alternate route Hr is the most favorable of the alternate routes investigated and is recommending this alternate route for the proposed construction of the new transmission line.

For more detailed information regarding the development of the Average Alternative Corridor, refer to EKPC's *Macro-Corridor Study, Smith to West Garrard 345-kV Transmission Line*, June 2006, available online at the USDA Rural Development's website: http://usda.gov/rus/water/ees/ea.htm. EKPC's *Selection of Preferred Route, Smith to West Garrard 345 kV Transmission Project,* December 2006 at this same website can also be referred to for more detailed information regarding the route selection process.

2.1.3 Alternate Switching Station Sites

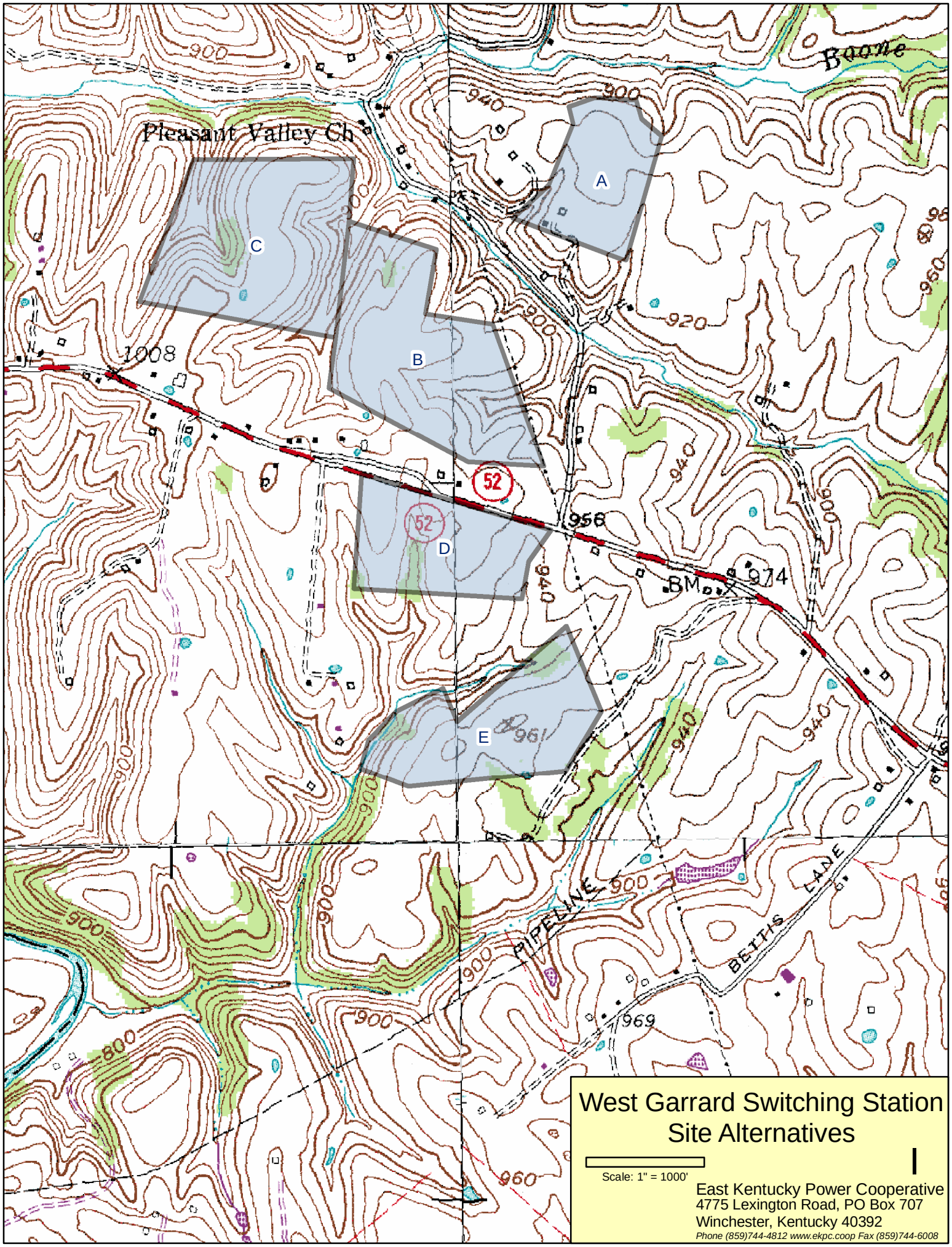
EKPC considered 11 alternate sites for the construction of the proposed West Garrard Switching Station. All of these sites are located within Garrard County and are located in the general area the line needs to connect into E ON US's existing 345kV transmission line. The majority of these alternate sites were eliminated early in the evaluation process. Most of the alternate sites located to the north of the proposed site were eliminated from consideration due to congestion and development (homes, subdivisions, etc) associated with State Route 27 and Lake Herrington that would limit further expansion of the sites. Hilly terrain of the area also limited the size of the sites to the north, as well as access to the sites. Most of the sites located to the south of the proposed site were excluded from further evaluation due to congestion in the vicinity of the city of Lancaster. Locating the proposed switching station to

the south of the proposed site would also unnecessarily add to the length of the proposed new transmission line, thereby affecting more property owners, as compared to the proposed site.

Of the 11 alternate sites that were initially considered for the proposed new West Garrard Switching Station, five sites were investigated in further detail. One of these five sites is located directly west of the proposed site, approximately 1,000 feet north of State Route 52 (See Site C, West Garrard Switching Station Site Alternatives Map, page 31). However, upon further investigation, this site was determined not to be large enough for the intended use since the terrain in the immediate area would have required extensive grading. This site was also determined to be further away from the existing transmission line, as compared to the other alternate sites that were evaluated, and would have required more transmission line construction, as well as affect more property owners. As a result, this alternate site was eliminated from further consideration.

EKPC also evaluated an alternate site located south of the proposed site on the southern side of State Route 52, approximately 1,000 to 2,000 feet from the road (See Site E, West Garrard Switching Station Site Alternatives Map, page 31). The shape of this alternate site was determined not to be conducive for the intended use and the site was not favorably located for the construction of the proposed new transmission line due to development in the area.

Another alternate site investigated for the proposed new switching station is located south of the proposed site, immediately adjacent to the southern side of State Route 52 (See Site D, West Garrard Switching Station Site Alternatives Map, page 31). This site was eliminated from consideration because the property owner was not willing to sell and due to engineering design constraints. The site was determined not to be large enough for the


Pleasant Valley Ch
Boone
A
B
C
D
E
52
52
1008
956
974
961
969
920
940
900
800
960
PIPELINE
BEITHS LANE
West Garrard Switching Station
Site Alternatives
Scale: 1" = 1000'
East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Phone (859)744-4812 www.ekpc.coop Fax (859)744-6008

intended use and the proposed new line would have to cross below the existing transmission line in order to connect to the site.

EKPC also investigated a site approximately 1,000 feet northeast of the proposed site (See Site A, West Garrard Switching Station Site Alternatives Map, page 31). This site was initially eliminated because EKPC determined that it was within close proximity to an historic structure that was eligible for inclusion in the *National Register of Historic Places*. However, it was later determined that the structure had been razed by the property owner. As a result, EKPC reexamined the site but determined that it was not large enough for the intended use. The site also does not have good access because it is not located along a road and would have required a fairly long access road involving a number of property owners in order to secure access.

EKPC is recommending the proposed switching station site for the construction of the proposed new West Garrard Switching Station (See Site B, West Garrard Switching Station Site Alternatives Map, page 31) because the site is large enough for the intended use and has good access from State Route 52. The site is also located within very close proximity to the existing transmission line requiring minimal line construction to connect the new station to the existing line. Additionally, the initial evaluations of the site indicated minimal effects could be expected to the environment. The landowner was also willing to sell the property for a reasonable price.

Alternate sites were not investigated for the proposed J.K. Smith Switching Station because this switching station is being proposed for location on industrial land currently owned by EKPC and associated with the J.K. Smith Generating Station. The site for this

switching station has also been graded as a result of previous construction activity at the generating station and would require minimal site preparation.

2.2 DESCRIPTION OF PROPOSED ACTION

The proposed action is to construct, operate and maintain CT Units 9 & 10 and 345kV Smith – West Garrard transmission line and West Garrard and J.K. Smith Switching stations needed to transmit this additional generation. These facilities are proposed for construction in Clark, Madison, and Garrard counties, KY, and the following sections provide a detailed description of the proposed action.

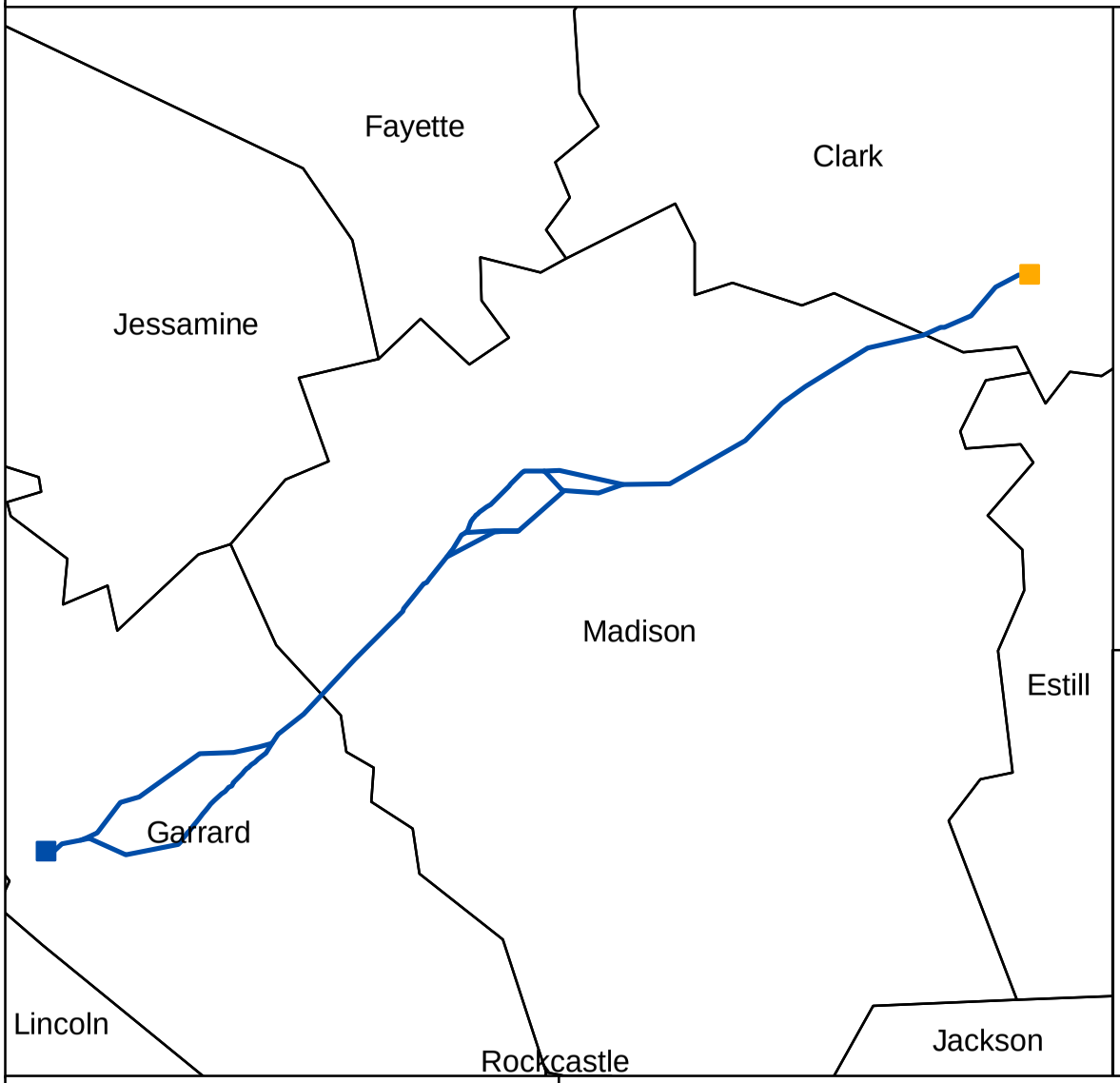
2.2.1 Location

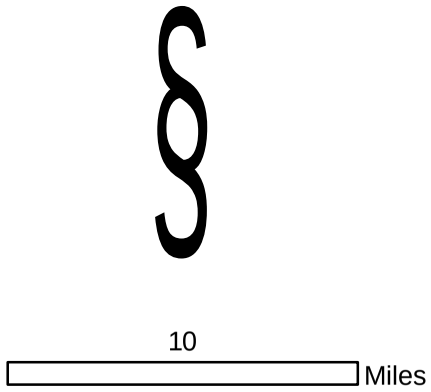
As described in Section *1.0 INTRODUCTION,* the proposed project area is located in Clark, Garrard, and Madison Counties, Kentucky (See PROJECT AREA LOCATION MAP, page 34).

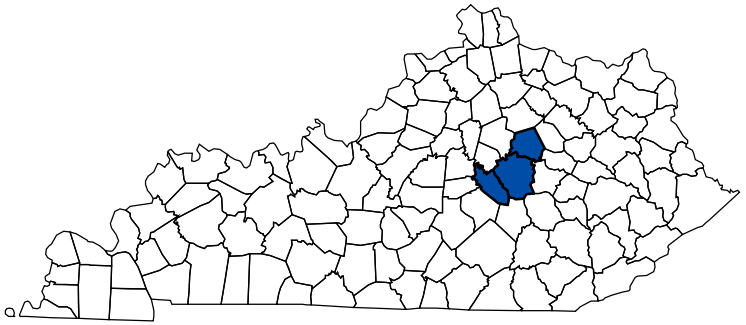
EKPC is proposing to install the two new CT units at the existing combustion turbine site located at its existing J.K. Smith Electric Generating Station in southern Clark County, Kentucky (See PROJECT AREA LOCATION MAP, page 34). EKPC's J.K. Smith Generating Station is located on the northern side of the Kentucky River, west of State Route 89, and east of Red River Road. The existing site currently has seven CTs and the proposed new units would be installed in line, and parallel with, the existing units (See Alternate Routes Map 9 of 9, Combustion Turbine Site Layout, and Site Diagram, pages 48, 35, & 36).

The proposed site for the West Garrard Switching Station is located in western Garrard County (See PROJECT AREA LOCATION MAP, page 34), northwest of Lancaster, Kentucky, near the northwestern corner of the intersection of State Route 52 and Boones

PROJECT AREA LOCATION MAP







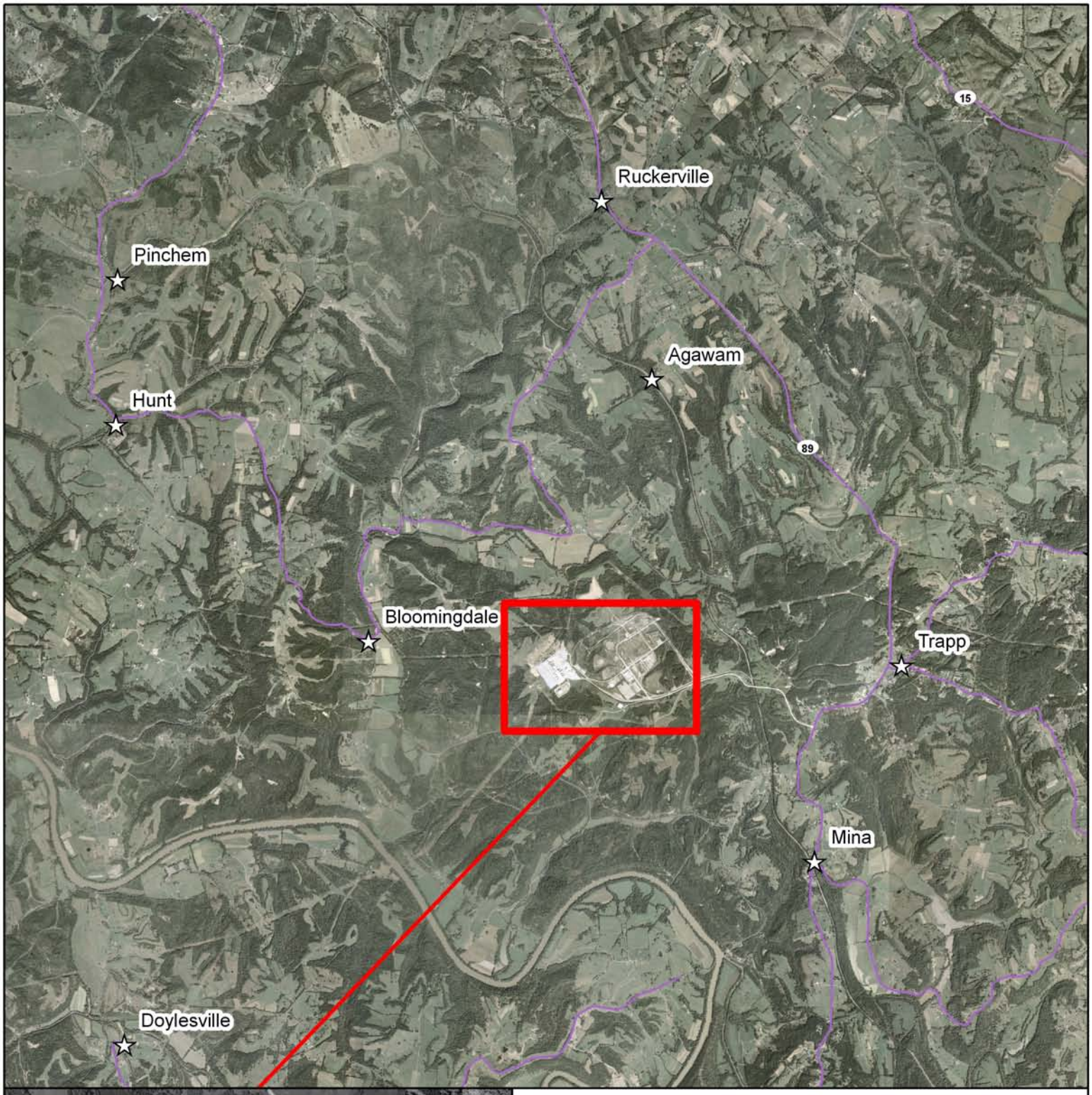
Proposed CT and JK Smith Switching Station Site

Proposed West Garrard Switching Station Site

Alternate Transmission Line Routes

Proposed CT Units 9 & 10 / Smith - West Garrard 345 kV Transmission Line Project
Garrard, Madison, and Clark Counties, KY

EAST KENTUCKY POWER COOPERATIVE
P.O. Box 707
Winchester, KY 40392-0707



J.K. Smith Power Station
Clark County, Kentucky

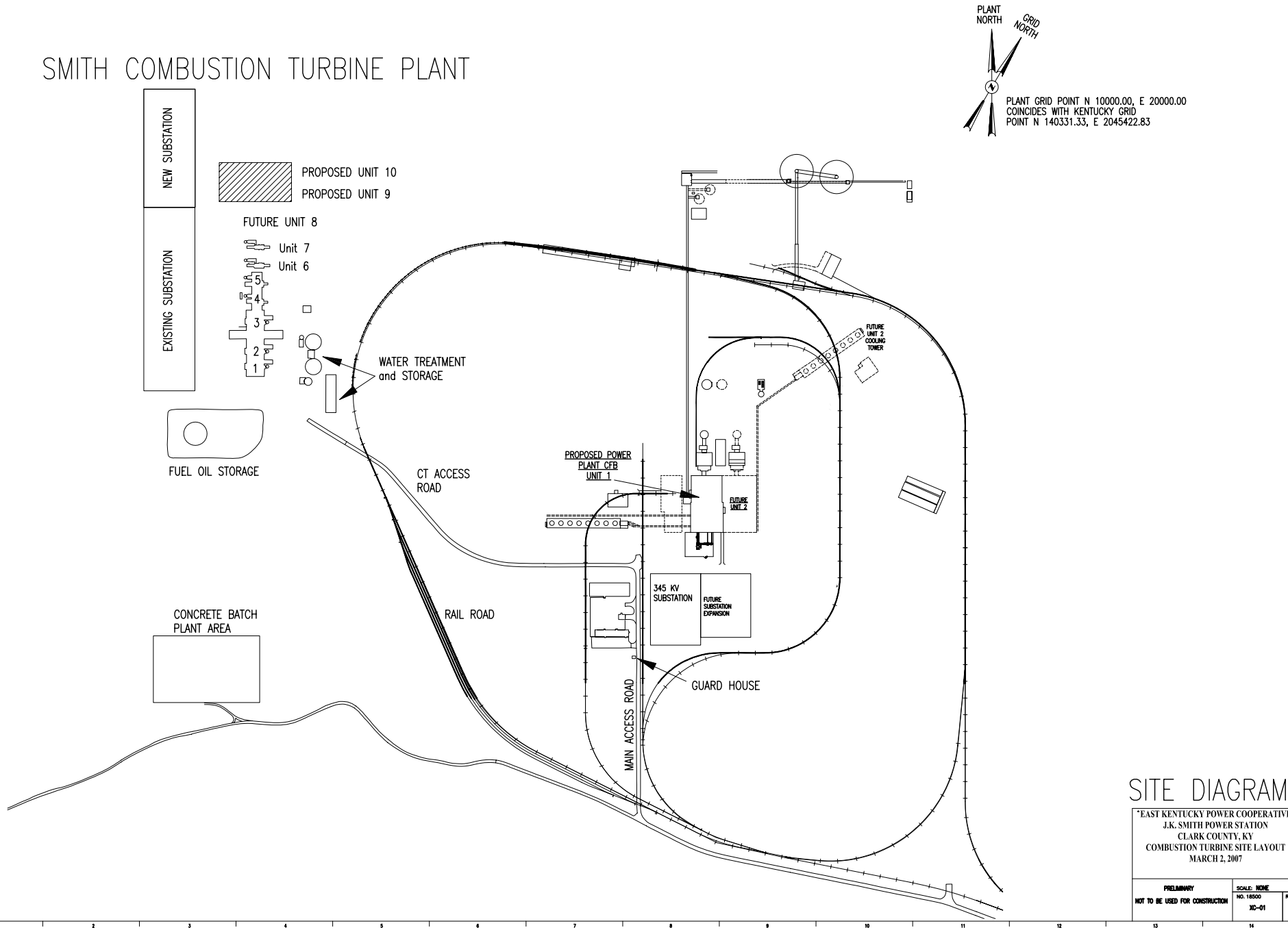
Combustion Turbine Site Layout

Scale: 1" = 1 mile

East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Phone (859)744-4812 www.ekpc.coop Fax (859)744-6008

SITE DIAGRAM

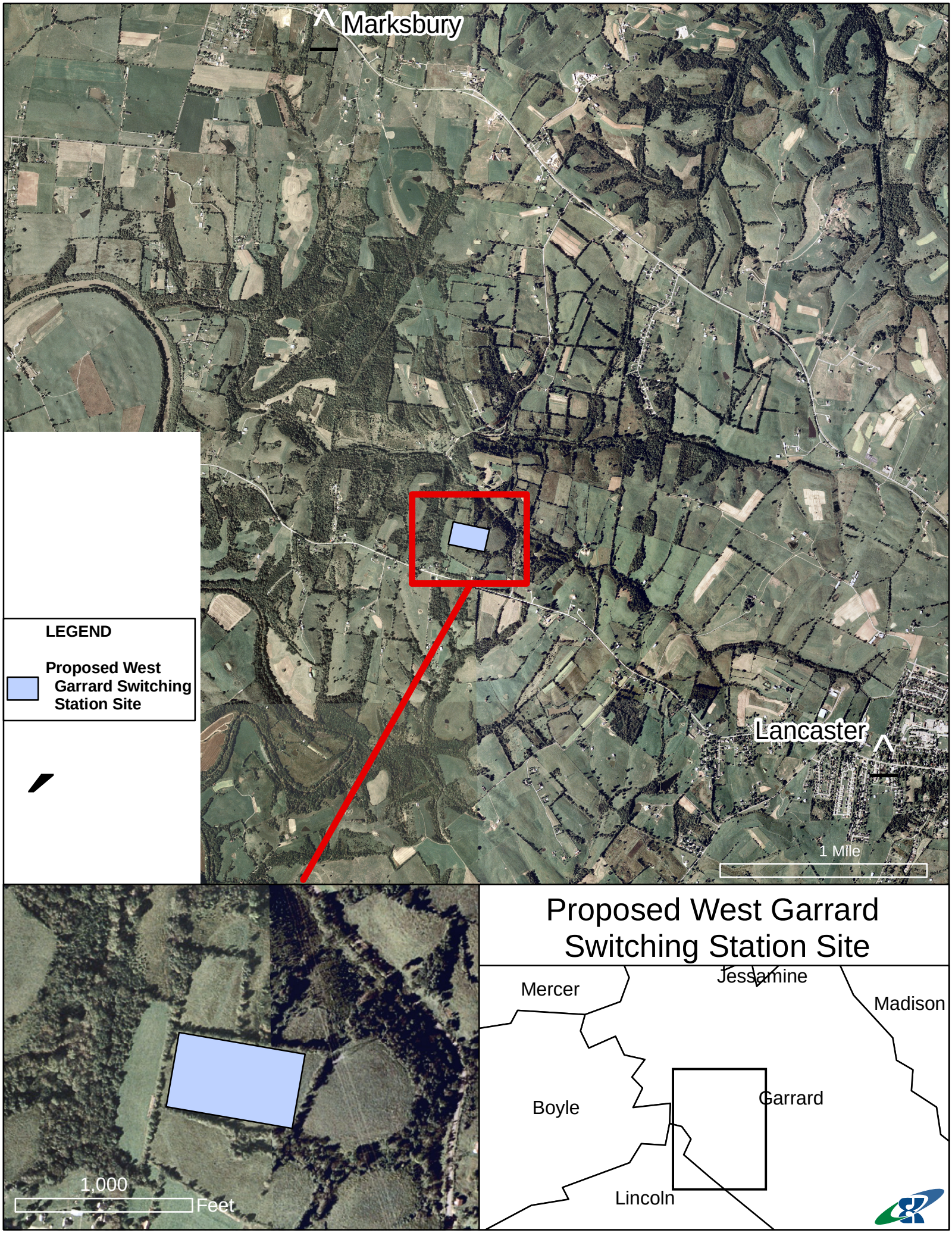
SMITH COMBUSTION TURBINE PLANT



SITE DIAGRAM

EAST KENTUCKY POWER COOPERATIVE
J.K. SMITH POWER STATION
CLARK COUNTY, KY
COMBUSTION TURBINE SITE LAYOUT
MARCH 2, 2007

PRELIMINARY NOT TO BE USED FOR CONSTRUCTION	SCALE: NONE NO. 18500 XD-01	REV. 0


Marksbury
Lancaster
LEGEND
Proposed West Garrard Switching Station Site
1 Mile
1,000
Feet
Proposed West Garrard Switching Station Site
Mercer
Jessamine
Madison
Boyle
Garrard
Lincoln