Clearing the Air

Getting the Dirt on TVA's Coal-fired Power Plants

Written by the
Tennessee Valley Energy Reform Coalition (TVERC)

for the
Tennessee Clean Air Task Force

December 1998

Clearing the Air

Getting the Dirt on TVA's Coal-fired Power Plants

Written by the Tennessee Valley Energy Reform Coalition for the Tennessee Clean Air Task Force

Tennessee Clean Air Task Force Members:
American Lung Association of Tennessee (ALA)
League of Women Voters of Tennessee (LWV)
National Parks and Conservation Association (NPCA)
Tennessee Environmental Council (TEC)
Tennessee Valley Energy Reform Coalition (TVERC)

October 1998

ACKNOWLEDGEMENTS

The Tennessee Valley Energy Reform Coalition (TVERC) wishes to thank the many people who contributed to this report, including Wayne Davis, Mike Moscheck, Sam Pearson, Jim Renfro, and the TVA staff.

TVERC is grateful to the Energy Foundation (a joint initiative of The John D. and Catherine T. MacArthur Foundation, The Joyce Mertz-Gilmore Foundation, The Pew Charitable Trusts, and The Rockerfeller Foundation), the Turner Foundation, and supporters of TVERC whose grants and donations made this report possible.

Executive Summary

Electric power plants constitute the single largest industrial source of air pollution, nationally and regionally. The Tennessee Valley Authority (TVA) is the nation's largest utility, and thus one of the largest polluters. Amongst utilities, TVA is the second largest emitter of nitrogen oxides and the third largest emitter of sulfur dioxide and carbon dioxide.

TVA's fleet of eleven coal-fired power plants, with an average age of 40 years, are responsible for 73 percent of the sulfur and 33 percent of the nitrogen oxides released into the air in the Tennessee Valley. This pollution causes acid rain, reduced visibility, ozone smog, and polluted waters, all of which have major impacts on the people and the environment in the Tennessee Valley.

Clearing The Air promotes a serious effort to confront regional air pollution by spotlighting our region's largest air pollution source, TVA. While TVA is not our only source of air pollution and should be applauded for recent pledges to significantly reduce one pollutant, nitrogen oxide (NO_x), more work needs to be done. TVA and other utilities across the country continue to enjoy a major loophole in current pollution standards. This loophole allows coal-fired power plants built before 1985 to pollute at levels many times that required of new power plants. Removing this lethal loophole may be the single best method of cleaning our air. *Clearing Our Air* attempts to expose this loophole and how TVA's fleet of old coal-fired power plants continues to fall short of current pollution control technologies which all new plants must meet. Only by removing this pollution subsidy nationwide will new cleaner technologies be given a fair chance to compete and thus allow us all to breathe easier.

Contact information for the Tennessee Clean Air Task Force Members:

Written and edited by Jennifer Mitchell and Dr. Stephen Smith, TVERC, (423) 637-6055

American Lung Association of Tennessee (ALA), (615) 329-1151
League of Women Voters of Tennessee (LWV), (423) 753-5288
National Parks and Conservation Association (NPCA), (423) 494-7008
Tennessee Environmental Council (TEC), (615) 321-5075

This report is available on the internet at http://www.TnGreen.com

What's in the Air?

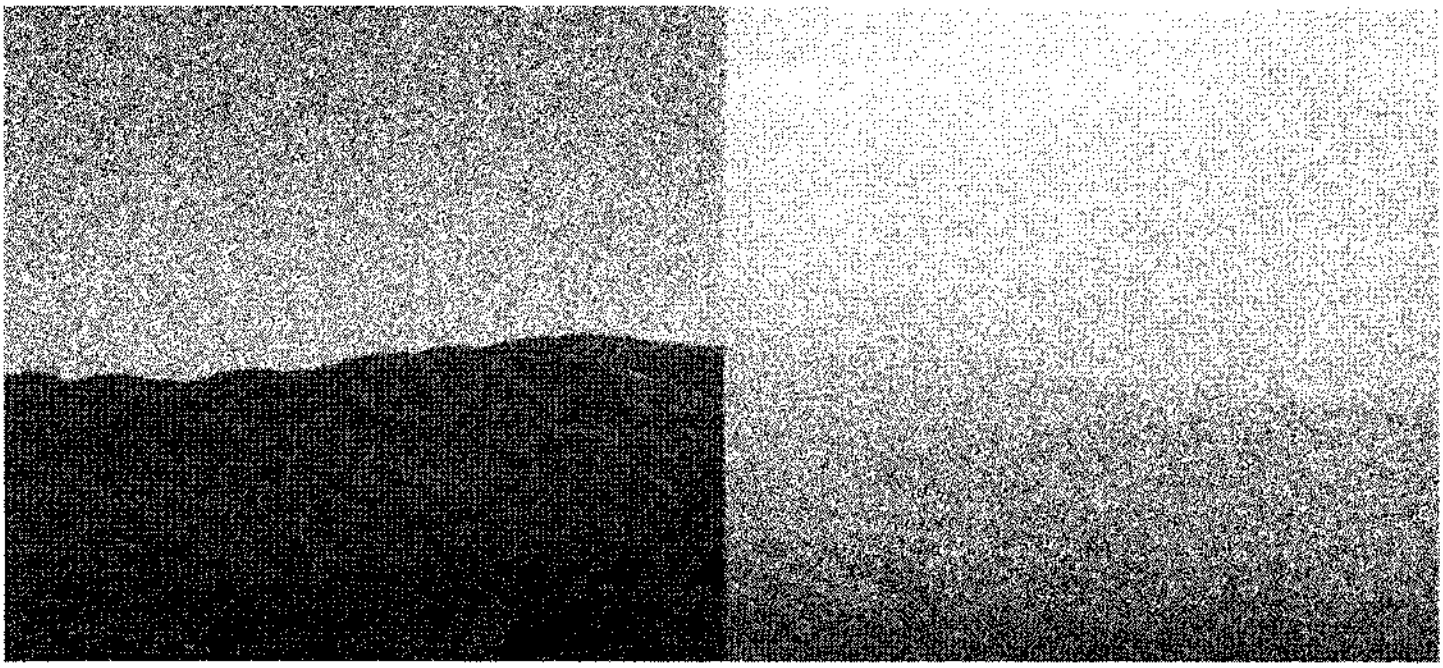
Pollution. Tennessee's air is unhealthy. Air pollution levels in the summer of 1998 broke records across the state. Tennessee's four largest urban areas all experienced air pollution at levels above EPA's national health standards. Furthermore, air pollutants in smaller communities such as Cookeville, and non-urban areas such as Jefferson and Lawrence Counties, also exceeded health standards. In fact, pollution levels at all seventeen of the state's monitoring sites surpassed health limits.[1]

Hundreds of thousands of Tennesseans are at risk from the pollutants in the air. For those people most vulnerable to the effects of air pollutants--children, the elderly, and people with asthma or chronic lung diseases--clean air can be a matter of life or death. The American Lung Association estimates that 570,000 children, 350,000 seniors, 153,000 people with asthma and 170,000 people with emphysema or chronic bronchitis live in Tennessee counties where the air puts their health at risk. But even healthy people engaged in strenuous outdoor activities are at risk, and over half of the state's population live in counties where the air is often not healthy. Moreover, as the population in the major urban areas grows, the number of people at risk will expand.[2]

No area is isolated. As the prevailing winds blow from west to east, they carry pollutants from urban centers across the state, to the Great Smoky Mountains National Park (GSMNP) and other forests which cover the eastern border of Tennessee. As a result, even areas that we thought were pristine experience high levels of pollution. In fact, ozone concentrations in the GSMNP regularly exceed safe levels and are often twice that of cities like Knoxville, and the famous mist-like haze that gave the Great Smoky Mountains their name has turned from a natural wonder to a human-made problem. The once blue mist produced by water vapor is now a whitish-gray haze containing fine particles of sulfates and nitrates.[3]

For those people most vulnerable to the effects of air pollutants ...clean air can be a matter of life or death

According to Jim Renfro, Air Resource Specialist with the National Park Service, data from the National Weather Service show that "the worst summertime visibility in the entire country is right here in Eastern Tennessee." The average visibility in the park has decreased 60 percent (80 percent in the summer and 40 percent in the winter) in the last 50 years. Natural visibility is estimated at 93 miles; however, current average annual visibility is 22 miles and only 12 miles in the summer months. And on several days this past summer, visibility was reduced to below 5 miles, caused not by clouds or fog, but by air pollution.[4]



Natural Visibility
93 miles

Today's Average Visibility
22 miles

The same particles that impede visibility also fill the air we breathe. Fine sulfate- and nitrate-based particles--some as small as 0.5 microns, or one one-hundredth the width of a human hair--are inhaled deep into the lungs where they can trigger asthma or asthma-like attacks. Indeed, as the air gets hazier, the saying "if you're seeing it, you're breathing it" has an uncomfortable ring to it. Yet with many air pollutants, what you can't see can harm you even more.[5]

Though they may be invisible to the eye, airborne nitrogen oxide (NO_x) emissions contribute to unhealthy levels of ozone. In the presence of sunlight, airborne NO_x reacts with oxygen and volatile organic compounds to form ozone. Ozone can destroy organic material, including human lung tissue, leaving it swollen and unable to move air adequately. Chronic exposure can weaken the lungs making them vulnerable to respiratory infection, especially in children. Furthermore, NO_x emissions, like sulfur emissions such as sulfur dioxide (SO_2), can form fine particles, which lodge deep in the lungs. Combining several pollutants, like SO_2, NO_x and ozone, creates even more damage to lungs and respiratory health.[6]

If current trends continue, visitors to the GSMN may encounter warning signs for air pollution, water quality warnings along lifeless streams, and marginal scenic vistas cloaked in a dull haze

In addition to posing threats to human health, these pollutants also threaten ecological health. Both sulfates and nitrates fall as acid deposition (rain, snow, fog, and dry particles) into the mountain streams and the headwaters of the Tennessee and Cumberland Rivers, causing these waters to become more acidic. The average pH of wet precipitation in the Smokies is 4.5, which is five to ten times more acidic than natural rainfall in the region. Moreover, cloud water in the area has an average pH of 3.5 and has been measured as low as 2.0--a pH equal to vinegar. Results from the Integrated Forest Study show that total nitrogen deposition (wet, dry, and cloud) is higher in the GSMNP than in any other monitored location in North America, and only one monitored location, Whitetop Mountain, Virginia, has higher sulfur.[7]

Ozone exposure also damages forests, plants, and crops. A recent study reported that reductions in growth resulting from exposure to ozone are costing Tennessee farmers from $38 million to $65 million annually. Furthermore, cumulative ozone exposures (the sum of all of the hourly ozone concentrations equal to or greater than 60 parts per billion) are higher in the Smokies than at any other location in the eastern part of the US. This cumulative exposure can severely damage plants. Consequently, at least thirty plant species in the GSMNP exhibit physical evidence of ozone damage, and sixty additional species are showing symptoms consistent with ozone exposure.[8]

Air quality problems abound throughout the state. While the Smokies are the most visible victims of air pollution, people are at risk from Memphis to Bristol. If current trends continue, visitors to the GSMNP may encounter warning signs for air pollution, water quality warnings along lifeless streams, and marginal scenic vistas cloaked in a dull haze. And people in our urban centers will be warned that going outside is harmful to their health.

From the Light Switch to the Smokestack

Electric power generation is the single largest industrial source of air pollution nationwide. While we often point our finger at the sources that we see--diesel fumes, car exhaust, and smoke from factories--the largest industrial source, electric power generation, can be traced back to our light switches, thermostats, televisions, hair dryers, and hot showers. In fact, residential customers in Tennessee consume more electricity per capita than

TVA's Paradise Power Plant

Although you may not live right next to a TVA plant, the plume from Paradise's plant demonstrates how pollutants can be picked up and carried long-distances downwind.

From The Light Switch to The Smokestack

You can help stop pollution by conserving energy. Every time you flip the light switch, coal is burned to produce your electricity. In Tennessee, where electricity costs are approximately $.06 per kilowatt hour, a person who pays $70 a month for electricity burns approximately 700 pounds of coal a month--more than 4.2 tons of coal a year. See the table below to see how much coal you use and how much you pollute based on your electric bill.

If your bill is..	Each month, you use approximately...	Or every year approximately...	As a result, every year you release... SO_2	NO_x	CO_2
$50 per month	500 lbs of coal	3 tons of coal	105 lbs	60 lbs	12,915 lbs
$70 per month	700 lbs of coal	4.2 tons of coal	147 lbs	85 lbs	18,081 lbs
$100 per month	1000 lbs of coal	6 tons of coal	210 lbs	121 lbs	25,830 lbs
$120 per month	1200 lbs of coal	7.2 tons of coal	253 lbs	145 lbs	30,996 lbs
$140 per month	1400 lbs of coal	8.4 tons of coal	295 lbs	169 lbs	36,162 lbs
$160 per month	1600 lbs of coal	9.6 tons of coal	337 lbs	194 lbs	41,328 lbs

*Note that this does not include the additional electricity needed per person for activities outside of the home.

residential customers in any other state.[9]

Almost all of the electricity in the Tennessee Valley comes from TVA, as does almost all of the electricity-related air pollution. TVA produces 73 percent of sulfur dioxide (SO_2) emissions and 33 percent of nitrogen oxide (NO_x) emissions released in the Tennessee Valley. The remaining sources of emissions include mobile sources such as trucks and automobiles, industries, and other miscellaneous sources.[10]

One power plant, such as TVA's Cumberland Plant, emits as much nitrogen oxide (NO_x) as seven million cars

Since TVA's power plants are the largest source of key air pollutants in the Tennessee Valley, cleaning them up could reduce emissions significantly. Due to their size, targeting power plants is also the most efficient way of reducing emissions: consider that one power plant, such as TVA's Cumberland Plant, emits as much NO_x as seven million cars.[11]

A Snapshot of TVA

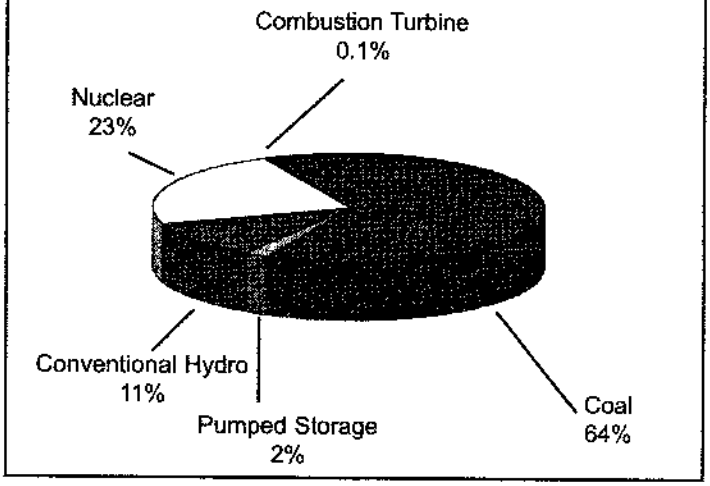
TVA is the largest utility in the nation, serving eight million customers in seven states. It has the ability to provide approximately 30,000 megawatts of electricity and has recently produced in excess of 27,000 megawatts.[12]

Contrary to many people's perceptions, most of TVA's power does not come from harnessing the rivers. Only about one-tenth of TVA's power is from hydropower plants. A larger amount, almost 25 percent, comes from nuclear power plants, while the majority--more than 60 percent--is generated by coal-fired power plants. (See Fig. 1.) These coal-fired plants, unfortunately, also generate massive quantities of air pollution.[13]

TVA operates 11 coal-fired power plants of which seven--Cumberland, Kingston, Johnsonville, Allen, Gallatin, Bull Run, and John Sevier--are within Tennessee. Two are just across the state line in Kentucky (Paradise and Shawnee) and two are just over the Alabama border (Widows Creek and Colbert). (See Fig. 2.)

Fig. 1

TVA Generation Summary, 1996



TVA's Coal-fired Power Plants

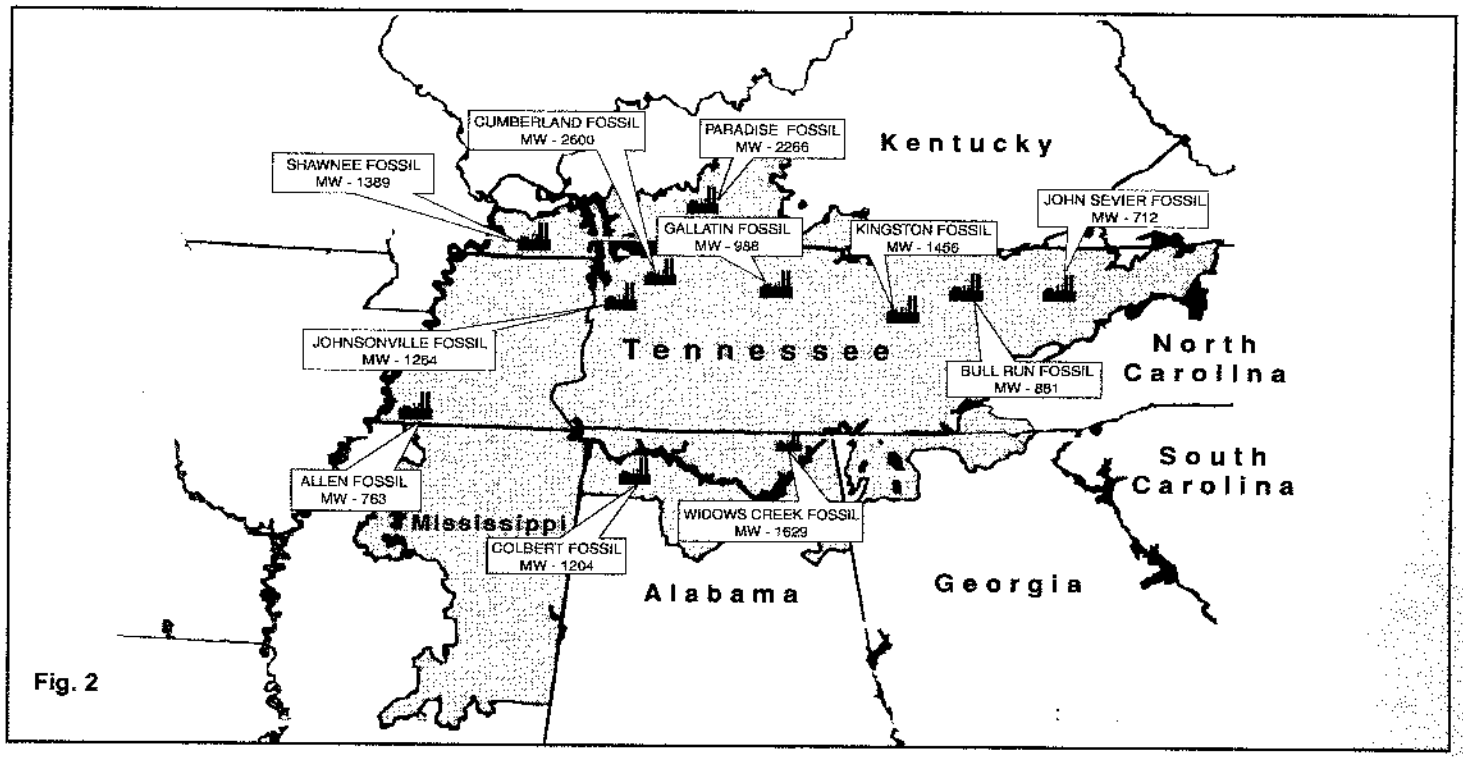


Fig. 2

Each power plant has between one and ten coal-burning units, or boilers, which generate steam for electricity. TVA's Kingston power plant, for example, has nine boilers, while Bull Run has only one. Overall, there are 59 boilers at TVA's 11 plants. These 11 power plants range greatly in size: John Sevier (712 megawatts) is TVA's smallest plant, and Cumberland (2600 megawatts) is the largest.

Power from these plants is provided to customers through 159 local electric power distributors. As the industry deregulates, electric power, like long-distance telephone service, will become subject to market competition and Valley customers will be able to choose whom they want to provide their electricity. Details of how a utility generates its power, including costs and environmental impacts, will affect customer choice in the future. But for now, these 159 distributors and therefore Tennessee Valley customers remain "captive," meaning that they can only buy power from TVA. The amount of power that Tennessee Valley residents consume, therefore, directly affects the amount of pollution that fills our air.

TVA's Air Pollution History

As far back as the 1950's, TVA's coal-fired plants were showing pollution impacts in local communities. With time, complaints about soot on clothes and automobiles, damage to plants and trees, and growing health concerns, forced TVA to address the air pollution problem. At some plants, air problems were so bad that TVA offered free car washes as part of the solution. Generally, the early response was to build taller smokestacks for the plants. The smokestacks at Kingston, for example, were raised from 250 feet to 1000 feet. However, while raising the height of the smokestacks helped alleviate problems in the immediate vicinity of the plant, the pollution did not go away--it just went farther downwind.[14]

After the Environmental Protection Agency (EPA) was established in 1970 to develop and enforce the nation's environmental laws, it demanded greater efforts to reduce air pollution emissions and challenged TVA's approach. In 1974, EPA directed TVA to continuously monitor emissions from its stacks. TVA went to great lengths, including appealing to the U.S. Supreme Court, to counter this directive. Throughout the 1970s, its stance with regard to federal clean air mandates remained hostile. It argued that, apart from taller smokestacks, control technologies were too expensive, as well as ineffective and unnecessary.[15]

In response to TVA's resistance to emissions-reduction efforts, several states and ten citizen groups, including the Tennessee Environmental Council, the Tennessee Chapters of League of Women Voters and

the American Lung Association filed suit in 1976 to compel compliance with federal clean air mandates. TVA lost the suit and began more serious efforts to address its air emissions. Little by little, problems were identified and incremental "bolt-on" solutions were implemented. Such efforts included the addition of electrostatic precipitators to remove ash and large particles from smokestack emissions. Thus, while some progress was made, it came in response, primarily, to EPA regulations and citizen pressure.[16]

Paradise alone emits more SO_2 than all of the coal-fired power plants in the state of New York

Public discussion of economic, health, and environmental effects from acid rain grew throughout the 1980s. Power plants' contributions to the problem was highlighted. At that time, pollution from eastern power plants had tripled over the previous 30 years; rain in the eastern U.S. had become 30 to 40 times more acidic than normal with damage costs exceeding $5 billion a year; and forests suffered from stunted growth and dieback. A decade-long effort to force reductions in the responsible air pollutants culminated in the Clean Air Act (CAA) Amendments of 1990.[17]

Concerning power plants, the 1990 CAA amendments stipulated two implementation phases. The dirtiest power plants (those with emission rates over 2.5 pounds SO_2, per million British Thermal Units, or mmBtu) were required to bring emission rates down to 2.5 pounds SO_2 per mmBtu by January 1, 1995. The second phase of these amendments, or "Phase II," requires all plants to reduce emissions to 1.2 pounds SO_2 per mmBtu by the year 2000. Both phases also require (less stringent) NO_x reductions.

Seven of TVA's eleven plants made this "Phase I" list of the nation's dirtiest power plants, and to date, TVA has complied with all required reductions. But while compliance is good, it is becoming clear that TVA's plants are still heavy polluters.

TVA's Air Report Card

In 1997, TVA's coal-fired power plants burned a total of 41 million tons of coal--enough to fill 410,000 railroad cars. In this same year, TVA emitted 880,000 tons of SO_2; 505,000 tons of NO_x; and 108,358,000 tons of carbon dioxide (CO_2), the principal global warming gas.[18]

Taken together, TVA's emissions ranked:

#2 nationally in annual utility emissions of NO_x, a principal contributor to ozone, regional haze, and acid rain;

#3 nationally in annual utility emissions of SO_2, a principal contributor to acid rain, soot, and regional haze; and

#3 nationally in annual electric company emissions of CO_2.[19]

Only two other utilities, Southern Company and American Electric Power, had higher emissions of these key pollutants.

TVA is also among the top utility emitters of toxic air pollutants such as mercury and other heavy metals. (These emissions are just now being quantified for regulation.)

Thus, today, TVA stands as one of the nation's worst air polluters. It also ranks among the worst in plant-by-plant performance. (See appendix for plant by plant data.) TVA's Paradise and Cumberland plants each emit more NO_x than any of the other 887 coal-fired power plants in the nation, and four additional plants are among the top 50 emitters.[20]

In 1997, Paradise was also the fourth largest SO_2 emitter among the nation's power plants, while five other plants were among the top 50 SO_2 emitters. To give a feeling for the amount of pollution still belching from TVA's plants, Paradise alone emits more SO_2 than all of the coal-fired power plants in the state of New York.[21]

Size Matters, but So Does Age

TVA has argued that its pollution problems must be judged in relation to its size and the scale of electricity services its provides. Cumberland is one of the largest plants in the country and TVA is the nation's biggest utility. Looking at the ***rate*** of emissions for each plant, however, provides a way to compare power plants across the industry, regardless of their size.

On average, TVA emits 205 pounds CO_2 per mmBtu, 1.67 pounds SO_2 per mmBtu, and .96 pounds NO_x per mmBtu. These rates are above the national average emission rates of 196, 1.1, and .52 pounds per mmBtu, respectively. No matter how you look at it, TVA remains a heavy polluter.[22]

TVA is one of the nation's largest polluters primarily because its fleet of coal-fired plants are old; most were built during the post war industrial growth era of the 1950s. On average, TVA's plants are 40 years old.

Lethal Loophole

Under the Clean Air Act, Congress exempted the older, pre-1985 power plants from new pollution control requirements because the utility industry argued that they would eventually be phased out, and it would therefore be wasteful to retrofit these plants with expensive technology. But this ruling has become a lethal loophole--while old, dirty coal-fired plants continue to pollute, people and ecosystems suffer.

Despite arguments that older plants would soon retire, TVA's plants are still going strong; and currently, TVA does not have any plans to phase them out. Moreover, TVA recently announced that it will spend $44.5 million to improve the efficiency of Paradise, Bull Run, Cumberland, and Widows Creek. This announcement does little to support the industry's argument that these older, "exempt" plants will be phased out soon. Indeed, TVA may even push these plants harder as the pressure of regional growth, TVA's debt, and the competition of deregulation increase.[23]

Today's standards require new plants to use the "best available control technology" to lower emissions, taking into account the costs of compliance. It is generally accepted that the "best available" technology for NO_x on new coal-fired power plants is selective catalytic reduction (SCR) which can lower emissions to below 0.15 pounds NO_x per mmBtu, and SO_2 scrubbers, which can reduce emission rates to approximately 0.3 pounds SO_2 per mmBtu, if the boiler burns low-sulfur coal. TVA is not currently required, however, to meet these new lower standards. Average emission rates at its plants remain about six times new plant standards. The "grandfathering" of TVA's plants causes large "excess emissions," i.e., emissions over and above those that would occur if the plants were meeting the new standards. In 1997, TVA released 721,714 tons of "excess SO_2" and 425,338 tons of "excess NO_x." (See Fig. 3.)[24]

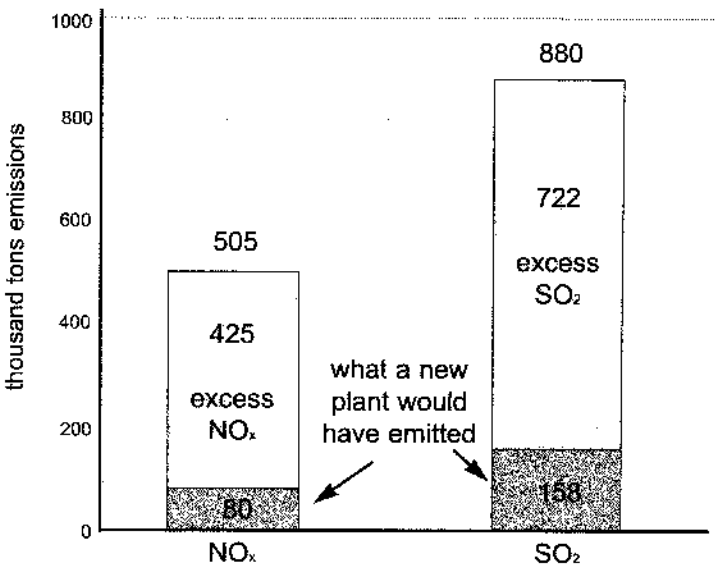


Fig. 3 In 1997, TVA released 721,714 tons of "excess SO_2" and 425,338 tons of "excess NO_x."

With current knowledge of public health and environmental effects of air pollutants, and with the data showing significant proportions of these coming from coal-fired power plants, there is a need for TVA's coal-fired plants to be held to new-plant standards. For Tennessee, all of whose coal-fired power plants are exempt from the more protective standards, the consequences of continued exemption are severe.

Good News: TVA Takes a Serious Step on Ozone Forming Nitrogen Oxides

In response to EPA's efforts to reduce dangerous ozone levels throughout the eastern United States, TVA recently pledged to take the lead nationwide on reducing nitrogen emissions by installing SCR units at ten boilers. In addition, TVA will add some (less effective and less costly) controls at several other boilers. These actions are expected to reduce NO_x emissions during the summer months' peak ozone season by 75 percent by 2003, and could reduce NO_x emissions statewide by as much as 20 percent.[25]

This is a big and positive step for TVA and for the region. Historically, it is one of TVA's biggest commitments to cleaning up the environment, estimated to cost $600 million. Since much of Tennessee is at risk of violating new health standards for ozone, NO_x reductions at TVA's plants will improve ozone levels significantly. But further actions will be required to improve air quality in Tennessee. Even with the proposed reductions at TVA, it is likely that some areas will still violate EPA's health standards. Additional controls on

TVA plants, coupled with emission reductions in the transportation and industrial sectors, will be required.

Bad News: TVA Still Has Much More To Do on Sulfur

Under the Clean Air Act, a utility like TVA is allowed to trade sulfur emissions between plants, as long as its average emission rates fall within state and federal regulations. This means that a power company like TVA can meet new requirements by overcompensating at some plants, while maintaining or even increasing pollution at others. This idea is sometimes referred to as the "Bubble Concept." In theory, a bubble surrounds all of TVA's plants and as long as the average emission rates are within regulations, TVA is in compliance.

To date, TVA has significantly reduced SO_2 emissions by installing SO_2 scrubbers on six of its stacks: two at Cumberland, two at Paradise, and two at Widows Creek. At several other units, TVA has started to or plans to burn low sulfur coal. But while this may look good on paper, there are definitely problems in practice.

TVA has slowly been cleaning up the sulfur emissions at its plants in the western part of the system. In fact, at Cumberland, they have reduced SO_2 emissions below required emission levels.

Overcompliance at its western plants, however, has enabled TVA to "bank" pollution credits against new reduction requirements, enabling it to delay cleaning up some of its plants. The banking option, moreover, gives TVA the flexibility to raise emissions at some plants, which has, indeed, occurred. Eastern TVA plants (including John Sevier, Bull Run, Kingston, and Widows Creek in northeastern Alabama) emitted 108,000 more tons of sulfur in 1997 than 15 years ago. (See Fig. 4.) While acceptable under the current legal restrictions, the impacts of this higher regional pollution on the eastern part of the state, especially on the Park, may be devastating.[26]

Eastern TVA plants emitted 108,000 more tons of sulfur in 1997 than 15 years ago.

While TVA is reducing overall sulfur emissions somewhat, it also recently purchased 58 percent of the SO_2 credits available on the Chicago Board of Trade. The $9.7 million purchase allows TVA to pump an additional 87,000 tons of SO_2 into the air.[27]

SO_2 Emissions at TVA's Eastern Plants (in thousands of tons)

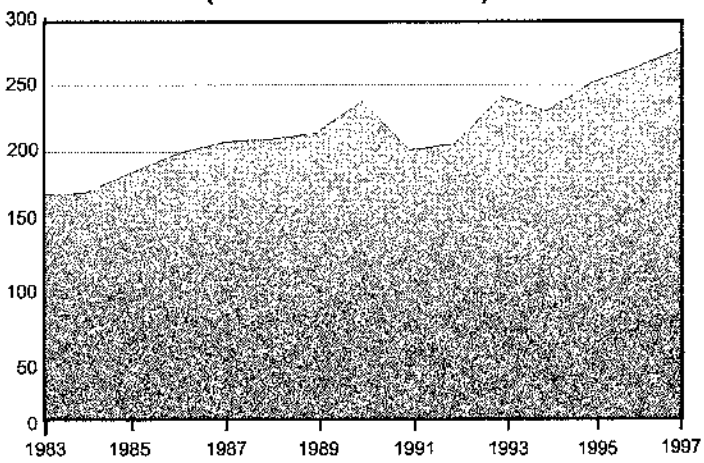


Fig. 4 Between 1983 and 1997, SO_2 emissions at TVA's four eastern plants--Bull Run, Kingston, John Sevier, and Widows Creek--rose from 168,000 tons to 276,000 tons.

Through a combination of overcompliance at Cumberland and purchasing sulfur pollution credits on the open market, TVA now plans to delay additional clean-up of sulfur emissions well past the year 2000 target set by EPA. While this is "legal," it will do little to help citizens breathe easier in the east and will mean a continued toll on the eastern forests and our National Park.

What the Future Holds: Carbon Emissions and Global Warming

Carbon emissions are not currently regulated, but it is highly likely that they will be in the near future. The Kyoto Protocol to the United Nations Framework Convention on Climate Change, adopted in December 1997, requires all signatory nations to reduce their greenhouse emissions by 2008-2012.

Of the six greenhouse gases that are targeted for reduction, carbon dioxide is considered by many researchers to be the main culprit in predicted global temperature increases. Under the protocol, the US is committed to reduce its CO_2 emissions seven percent below 1990 levels--some 248 million tons.

TVA's coal-fired power plants currently emit 108,358,000 tons of CO_2 annually--approximately three times as much as if natural gas plants supplanted its coal-fired plants. (A switch to natural gas would also eliminate SO_2 emissions nearly completely, and significantly lower NO_x emissions.) Since the electricity sector is responsible for roughly one third of the

CO_2 emissions in the US, utilities, and TVA especially, will have to play a significant role in reducing CO_2 emissions. The need for future reductions should be considered in current decision making. While TVA can continue to emit large amounts of CO_2 until regulations are in place, acting now will reduce emissions and costs over the long-run.[28]

The U.S. Department of Energy has released an analysis that shows the U.S. could see a net savings of $30 billion if early action is taken on global warming and CO_2 reductions through nationwide energy efficiency programs and improvements to utility plants. America's utilities get only a third of the available electricity from the fuel they burn. On average, two-thirds are lost as waste heat. Specifically, U.S. utilities burn 32 "quads" (quadrillion Btus), but lose 21 quads in the process and deliver only 11 quads to utility customers. Our wasted heat from electricity generating units is equal to the total energy use of Japan.[29]

TVA at the Crossroads

Combating air pollution has proven to be a difficult challenge. While we have seen great successes over the years, we continue to have serious problems. The increase in asthma and respiratory disease along with a growing body of evidence of serious damage to natural treasures like the Great Smokies indicate that our work is not done. Rapid regional growth in many places has overtaken earlier gains in pollution control, and the new challenges of global warming may prove to be more difficult than any pollution problems we have faced so far.

...the new challenges of global warming may prove to be more difficult than any pollution problems we have faced so far

Policy and economic events are coming together to create a moment in time when decisions must be made which have long-term environmental and economic consequences. These factors include: the restructuring of the electric power industry; new health-based clean air standards for ozone, ozone transport, fine particles (PM 2.5), and air toxins; EPA's regional haze proposal to protect places like the Smokies; and the implementation of the goals set out in Kyoto through reduction of greenhouse gas emissions. Each of these will require large financial commitments by the utilities. There is an opportunity for making the right decisions now. Shortcuts, indecision, or poor planning will carry large economic, health and environmental costs.

Recommendations

Clean 'em up! Remove the Lethal Loophole

All power plants burning fossil fuels should be required to meet the same emission standards required of plants built today. No unfair advantage should be given to old, dirty power plants. Pollution should not pay. If all coal-fired power plants in Tennessee met this requirement, SO_2 emissions would be reduced by more than 721,714 tons and NO_x emissions would be reduced by 425,338 tons.

Requiring all power plants to comply with the current standards will eliminate the cost advantage enjoyed by older power plants. Once the subsidy is eliminated, utilities may determine that these plants are not economically competitive. This will open the door for new cleaner technologies.

TVA has already announced its commitment to reducing NO_x emissions. It should go further and set a national example by investing in technology to bring its most viable plants down to new plant standards on sulfur. All of TVA's plants should begin to burn low sulfur coal and those capable of doing the most damage–those closest to the Park and urban centers, and those that emit the most sulfur–should consider switching to natural gas or be scrubbed to remove as much pollution as possible. Cleaning up these plants would remove TVA from the list of the nation's dirtiest plants, make it a national leader on clean air technology, and put pressure on other utilities to match TVA's leadership. Most importantly it will help the people of Tennessee breathe easier.

Avoid Unwise Investments

The current regulatory system works to examine specific environmental and health problems in an isolated fashion: acid rain during the 1980s; summer smog during the 1990s; and mercury, climate change, and regional haze will be addressed in the next 10 to 15 years. In the past, the series of incremental policy changes addressed air pollution piecemeal. TVA should develop a strategy for the phased retirement or switching to natural gas (repowering) of its oldest boilers. This would avoid the

costly trap of continuing to add wasteful bolt-on technology to old inefficient power plants. Natural gas technology can dramatically reduce all pollutants and nearly double the efficiency of some of TVA's oldest boilers.

Invest in Energy Efficiency

Every time we reduce our need for electricity, we prevent pollution associated with power production. In a real sense, pollution is a reflection of inefficiency. Energy efficiency, therefore, is the most cost-effective means of reducing pollution. Tennessee's residential customers consume more electricity per capita than those in any other state. Educating people on home insulation, new lighting, purchasing energy efficient appliances, and simply turning off the light switch is an easy first step. Continued wasteful and inefficient power consumption by its customers may help TVA to pay down its debts from bad investment decisions in the past; but TVA should help and enable its electricity customers to reduce consumption in the interest of health, environmental protection, and long-term economic gains.

Develop Green Power

Switching from coal-fired power production to cleaner renewable energy like solar or wind power is another way to eliminate NO_x, SO_2, and CO_2. Other energy options such as burning biomass, or collecting methane from landfills for fuel can also reduce emissions.

TVA recently announced that it would offer some of its customers the option to purchase cleaner, renewable energy, or "Green Power." As part of this Green Power Program, TVA hopes to offer a variety of renewable energy options including wind, biomass, landfill-methane, and solar. This program is currently in the development stage, but TVA plans to have a pilot project in the spring of 1999, and hopes to offer renewable energy to all customers by 2001-2002.

While some TVA consumers will pay more for this voluntary program, everyone will benefit. Many concerned citizens will be willing to go first, but TVA should match the voluntary Green Power Program with an aggressive program of investing in new technologies for the 21st century. While "early adopters" of Green Power will help decrease the cost, all ratepayers have a responsibility to help in the sustained orderly development of clean technologies.

Let the Public Know

Recent research has shown that customers care about what source of energy is being used to produce the electricity they purchase. Seventy-five percent of consumers participating in focus group research believe it is very important or somewhat important to know this information. Political leaders, as well as consumer and environmental groups throughout Tennessee should call for disclosure on utility bills. Bills should include information such as the fuels used by the utility to generate electricity and the amount of air pollution produced by them. Consumers need to know how their utility stacks up, and whether their power supplier provides options to customers to help reduce air pollution–or merely continues to make the region's air quality worse. Consumer information leads to consumer action.[30]

In Sum

Cleaning up our air makes sense. Not just because it will benefit neighboring states, but because it will benefit all of us who live in Tennessee.

Improving air quality, improving public health, and improving the health of the Park will require several key actions. Reducing emissions from utilities, one of the largest air pollution sources, is one of the most important first steps.

This step will require stricter regulation of the nation's dirtiest coal-fired power plants, and closing the loophole that allows these old plants to produce at a rate four to ten times that of new plants. It will also require energy efficiency measures; the implementation of cleaner, renewable energy sources such as wind or solar power; and a greater public awareness so that we can all make choices that are necessary to clean up the air.

As was recently stated in an editorial in the Asheville *Citizen Times*:[31]

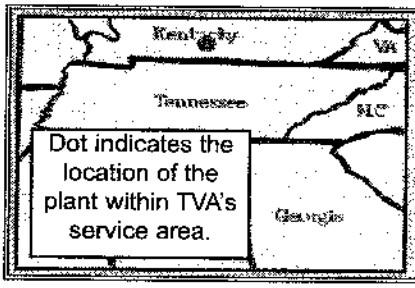
It is easy to let a problem like air pollution become incrementally worse and worse because solutions are expensive and call for lifestyle changes. But time is running out...changes must be made both on a regulatory level and on a personal level...We have a health, environmental, and economic disaster in the making. We've got to clean up our air.

Endnotes

1. Tennessee Air Pollution Control Office, Shelby County Air Pollution Control Office, Knox County Air Pollution Control Office, Chattanooga-Hamilton County Air Pollution Office, conversations with Janice Nolen (ALA), June 1998. Knox County Air Pollution Control Office and the Chattanooga-Hamilton County Air Pollution Office, conversations with Stephen Smith (TVERC), August 1998.
2. ALA, Lungs At Risk: State-by-State Charts of Populations-At-Risk in Counties Projected to be in Non-Attainment Under the New Air Quality Standards for Ozone and Particulate Matter, December 1997.
3. Jim Renfro, Air Resource Specialist, National Park Service, conversations with Stephen Smith (TVERC) and Jennifer Mitchell (TVERC), July 1998.
4. Quote from conversation with Jim Renfro, Air Resource Specialist, Great Smoky Mountains National Park, 23 July 1998. Visibility data from James Renfro, "Air Quality Fact Sheet for the Great Smoky Mountains National Park," 1994. See also Tim Hilchey, "Haze Gets Worse in 2 Eastern Parks, but 10 Parks in the West Fare Better," New York Times, 7 June 1994; and Preliminary Notice of Adverse Impact on Great Smoky Mountain National Park Under Section 165(d)(2)(C)(ii) of the Clean Air Act, Department of the Interior. Office of the Secretary, 57 Fed. Reg. 4465, February 5, 1992.
5. American Lung Association (ALA), "Health Effects of Outdoor Air Pollution," April 1996.
6. ALA, op cit. note 5.
7. Renfro, Fact Sheet, op. cit. note 4
8. Crop data from Ellen Baum, "Estimate of Impact of Ozone on Crop Value in the Southeast." Smokies data from Renfro, Fact Sheet, op. cit. note 4.
9. Energy Information Administration (EIA), Electric Sales and Revenue, December 1996. Julia Hutchins, EIA, conversations with Jennifer Mitchell (TVERC), 6 October 1998. Also supported by "Facts About America's Electric Co-ops," The Tennessee Magazine, Caney Fork Electric Cooperative Edition, July 1998.
10. TVA, Energy Vision 2020: Integrated Resource Plan, Volume One, December 1995.
11. Cumberland's emissions from Environmental Protection Agency (EPA), Continuous Monitoring Database, 1996 see www.epa.gov/acidrain/scorecard1996. Car equivalent calculated on the assumption that one car emits approximately 39 pounds of NOx a year.
12. Jim Andrews, "Demanding Summer Heats Up," in Inside TVA, 7 July 1998.
13. TVA, "Overview of TVA's Fossil System and Clean Air Compliance" packet from meeting with TVA, 22 June, 1998.
14. Nelson M. Campbell and George P. Adams, "At The Crossroads: Policy and Planning At TVA," 9 December 1994. Dean Hill Rivkin, "Courts and the Public Interest," in Erwin C. Hargrove and Paul K. Conkins, eds., TVA: Fifty Years of Grassroots Bureaucracy, 1983.
15. Campbell and Adams, op. cit. note 14. Rivkin, op. cit. note 14.
16. Francis Lamberts, LWV, conversation with Stephen Smith (TVERC) and Jennifer Mitchell (TVERC) 24 July 1998.
17. LWV, "Who Will Stop the Rain?" September 1983.
18. EPA, op. cit. note 11.
19. Natural Resources Defense Council, Benchmarking Air Emissions of Electric Utility Generators in the United States, June 1998.
20. EPA, op. cit. note 11.
21. Ibid.
22. Ibid.
23. Clean Air Act information from US Public Interest Research Group (PIRG), Lethal Loophole: A Comprehensive Report on America's Dirtiest Power Plants and The Loophole That Allows Them To Pollute, June 1998. TVA's announcement from Associated Press, "TVA spending $44.5 million for coal plant improvement," Knoxville News Sentinel, 17 July 1998.
24. US PIRG, op. cit. note 21.
25. TVA, meeting with Stephen Smith (TVERC) and Jennifer Mitchell (TVERC), 29 July 1998.
26. Data from EPA, op. cit. note 11.
27. Air pollution credits information from Lois Reagan Thomas, "TVA buys more air pollution credits," Knoxville News Sentinel, 27 March 1997.
28. Data from EPA, op. cit. note 11.
29. Armory and Hunter Lovins, "Climate: Making Sense and Making Money," 1997; Department of Energy (DOE), "Scenarios of US Carbon Reduction," 1997.
30. Izaak Walton League of America and the Clean Water Fund, License to Pollute: Minnesota Coal Plants and the Dirty Power Loophole, October 1997.
31. "Its Time To Clean The Air," Asheville Citizen Times, 16 June 1998.

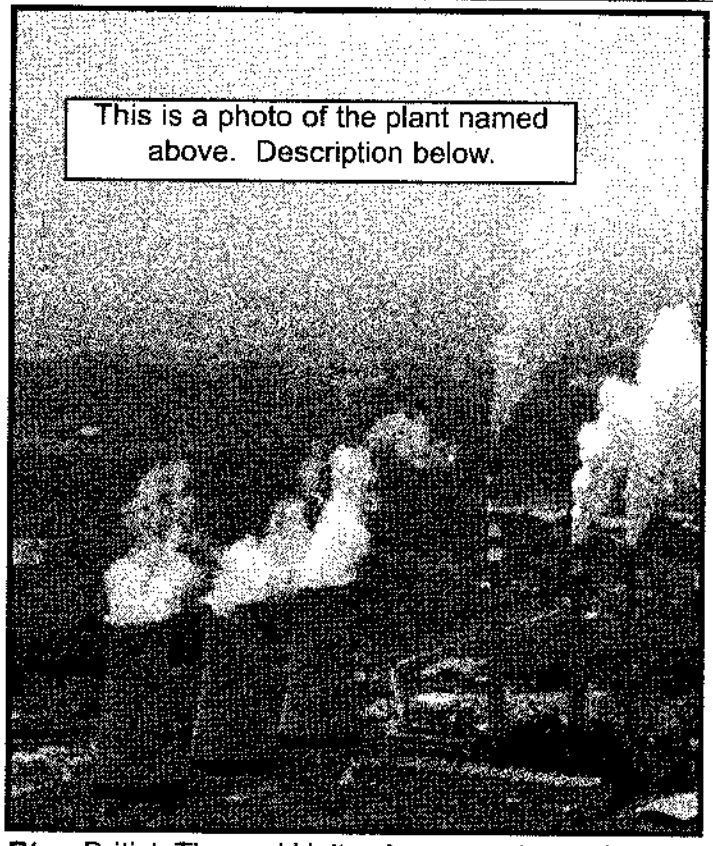
Appendix

A Closer Look at TVA's Coal-fired Power Plants



(Plant Name)

Steam Plant



At a Glance

location: (general information)
federal congressional district: (US House Rep.)
state representative district: (TN House Rep.)

number of boilers: (boiler=burning or steam generating unit. TVA has a total of 59 coal-fired boilers at their 11 plants.)
types of boilers: (indicates boiler design. The design can affect the burning efficiency and the amount of pollution released, e.g., cyclone poilutes more than wall. TVA has five types of boilers: cell, cyclone, tangential, wall and atmospheric fluidized bed combustion or AFBC.)
years boilers went online: (years started)
average age: (average age of boilers)
generating capacity: (see below)
coal consumed: (plant's annual coal consumption)
average heat rate: (measures efficiency, expressed in Btus per kWh–see below, lower number means more efficient)
1997 total emissions: (see next page)
1997 emission rates: (see next page)

controls: (pollution controls already at this plant)

Btu: British Thermal Units. A commonly used unit of energy. There are approximately 10,500 Btu in one pound of coal.
Energy: The electrical output of a plant over time, measured in watt (or kilowatt) hours
Generating unit: boiler.
Generating capacity: Capacity refers to the instantaneous maximum capability of the generator. Capacity is expressed in terms of megawatts (MW) or million watts.
Kilowatt-hours: kWh or thousand watt hours. The unit watt-hour is a unit of energy: the electrical output of a plant over a unit of time.
Megawatt: MW or million watts. A watt is a unit of electric power.
mmBtu: million Btu.
New plant standards: Under the Clean Air Act, new plants must meet emissions standards based on "best available control technology" or BACT. Generally, BACT includes scrubbers, which can achieve emission rates of less than 0.3 pounds SO_2 per mmBtu and selective catalytic reduction (SCR) which will achieve rates of 0.15 pounds NO_x per mmBtu. New plant standards, therefore, refer to 0.3 pounds per mmBtu for SO_2 and 0.15 pounds per mmBtu for NO_x.
NO_x: nitrogen oxide.
Size of plant: TVA has eleven plants and produces a total of approximately 15,132 MW from its coal-fired power plants. Based purely on power production, TVA's plants range in size from its smallest plant, John Sevier (712 MW), to TVA's largest plant, Cumberland (2,600 MW).
SO_2: sulfur dioxide.

***See "Concerns" (next page) for definitions of control technologies.

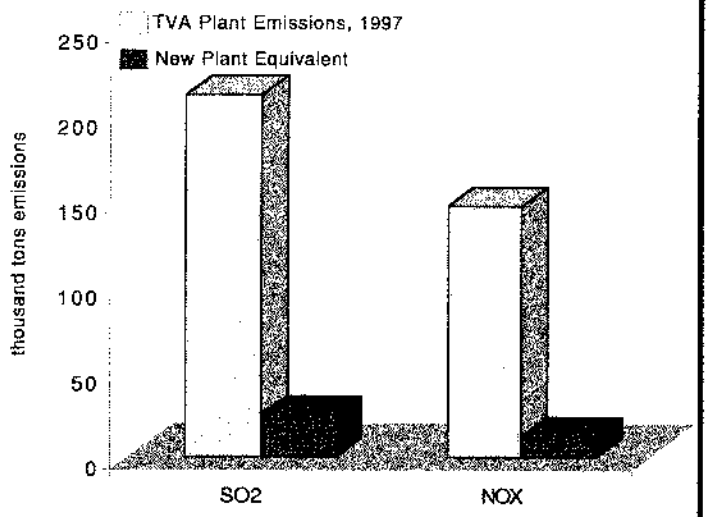
A Level Playing Field

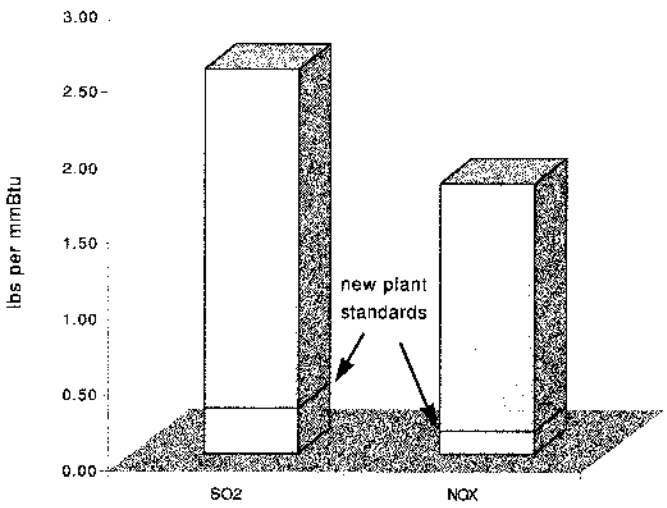
Current Emissions of SO_2 and NO_x

Total emissions refers to the total tons of a specified pollutant released by this plant in 1997

This graph compares the current total emissions of SO_2 and NO_x from the specific plant with the amount that this plant would produce if it met new plant standards.

The **new plant equivalent** is calculated by taking the heat produced at the plant (in mmBtu) and multiplying it by the new plant standard: either .3 pounds SO_2 or .15 pounds NO_x per mmBtu. This number (which indicates the number of pounds of a pollutant that would be released) is then divided by 2000 pounds per ton in order to calculate the number of tons of SO_2 or NO_x that would be produced if this plant (or a plant of the same size) met new plant standards.





Current Emission Rates

An **emission rate** is a standard unit that allows us to compare plants regardless of their size. It is calculated by converting total emissions (from above) back to pounds emitted, and then dividing it by the quantity of heat released by the plant. (The units of heat are expressed as mmBtu.)

Emission rates are expressed in pounds of a specified pollutant released per unit of heat released.

This graph, therefore, compares the current emission rate (in pounds per mmBtu) of SO_2 and NO_x from the specified plant with new plant standards: 0.3 pounds per mmBtu for SO_2, and .15 pounds per mmBtu for NO_x.

The current national averages are: 1.1 pounds per mmBtu for SO_2 and .52 pounds per Btu for NO_x.

Concerns

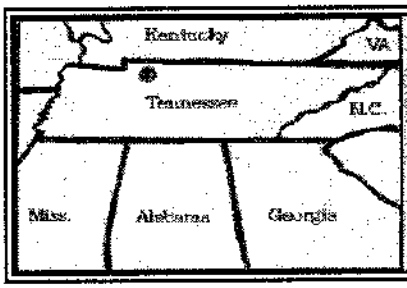
This section provides concerns about this plant based on the above information.

Ozone non-attainment area: an area that does not meet the National Ambient Air Quality Standards for ozone, which is formed by NO_x. and other pollutants in the presence of light and heat.

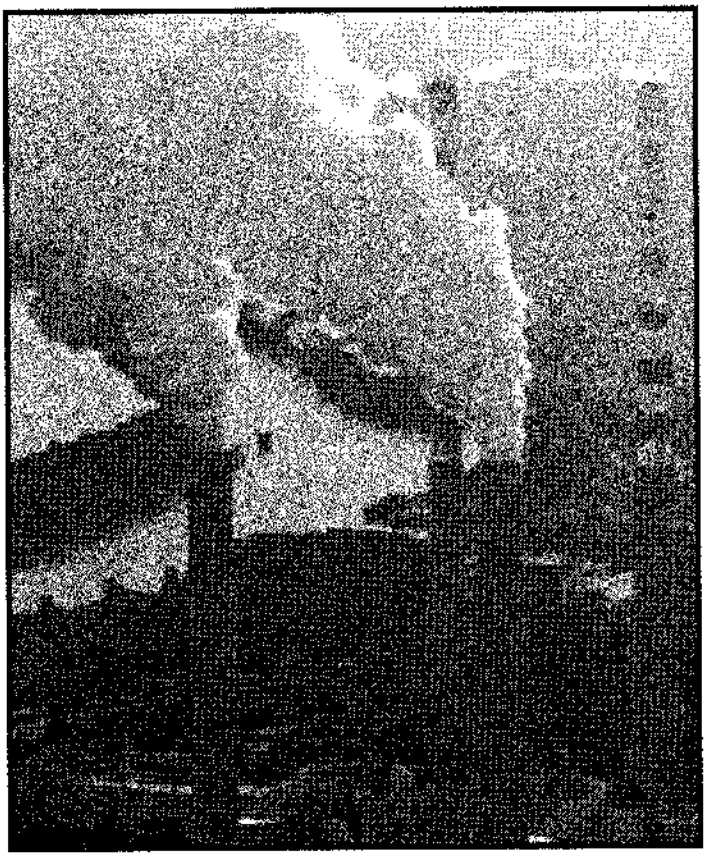
PM 2.5 non-attainment area: an area that does not meet the National Ambient Air Quality Standards for ozone, which is caused by SO_2 and other pollutants.

Pollution control devices for SO_2: 1) Switching to low sulfur coal, generally western coal, could reduce emission rates to approximately 1 pound SO_2 per mmBtu; 2)SO_2 scrubbers remove approximately 90% of the gaseous SO_2 emissions in the stack; and 3)repowering, which is defined as switching from a coal-fired boiler to a natural gas boiler.

Pollution control devices for NO_x: 1)low NO_x burners which alter the combustion process in order to reduce NO_x emissions; 2)SCR units, or selective catalytic reduction, which can reduce NO_x emissions by 85 to 95%; and and 3)repowering, which is defined as switching to a natural gas boiler.



Cumberland
Steam Plant



At a Glance

location: Stewart County, Tennessee
federal congressional district: John Tanner
state representative district: Don Ridgeway

number of boilers: 2
types of boilers: cell
years boilers went online: 1973
average age: 25
generating capacity: 2,600 MW
coal consumed: 8,390 tons/year
average heat rate: 9,893 Btu/kWh

1997 total emissions:
SO_2 20,968 tons
NO_x 159,693 tons
CO_2 23,591,360 tons

1997 emission rates:
SO_2 .18 lbs/mmBtu
NO_x 1.4 lbs/mmBtu

controls: SO_2 scrubbers on both stacks; low NO_x burners are currently being added to boiler 2

TVA's Cumberland Steam Plant is located in Stewart County, Tennessee, just northwest of the Nashville metropolitan area. Construction of this plant began in 1968 and was completed in 1973.

Cumberland is the largest of TVA's coal-fired power plants. It produces close to one-fifth of the power generated by TVA's coal-fired facilities. This plant has two boilers with a combined generating capacity of 2,600 megawatts.

Cumberland is one of the nation's largest polluters. In 1997, this plant emitted almost 160,000 tons of NO_x--more than any other plant in the nation. Furthermore, it is releasing NO_x at a rate more than four times the rate of new plants.

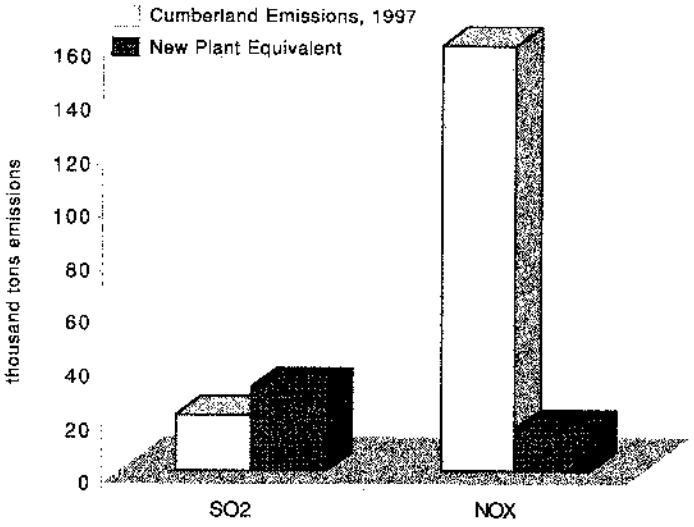
Cumberland also released approximately 21,000 tons of SO_2 in 1997. The amount of SO_2 emitted is mostly due to the large size of this plant. In 1994, TVA installed SO_2 scrubbers on both stacks at Cumberland, and consequently reduced this plant's SO_2 emissions from over 300,000 tons a year to less than 21,000 tons a year. Today, Cumberland's SO_2 emission rate is below new plant standards.

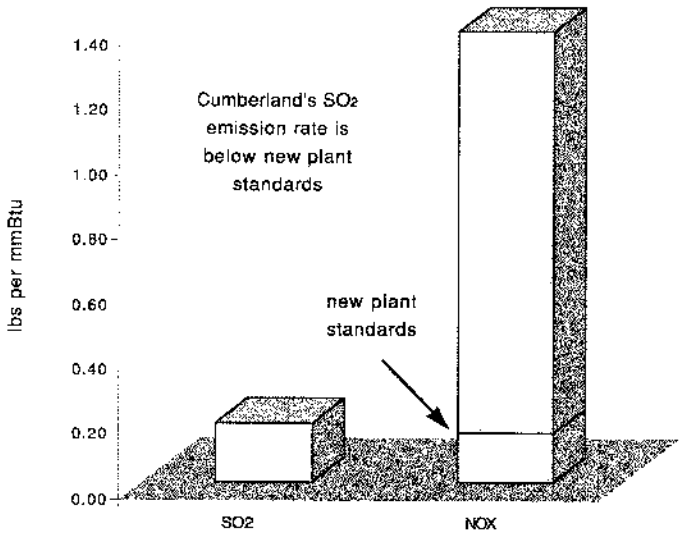
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Cumberland emitted 20,968 tons of SO_2. Because Cumberland has been retrofitted with SO_2 scrubbers, this plant actually releases about the same amount of SO_2 as a new plant. Cumberland is the largest of TVA's plants, but of all of TVA's coal-fired power plants, it releases the least amount of SO_2.

In 1997, Cumberland emitted 159,693 tons of NO_x. Among power plants, it was the largest polluter in the nation. If Cumberland met the same standards required for new plants, it would have only released 17,245 tons--close to one-tenth of its current emissions. Reducing emissions to the standards required for new plants would be equal to eliminating the NO_x pollution from 7.3 million cars.





Current Emission Rates

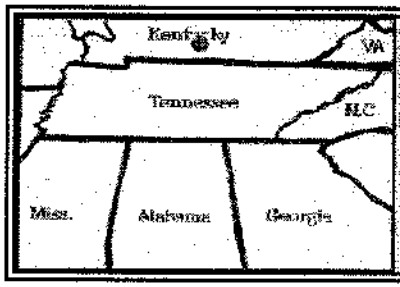
TVA's Cumberland Plant currently emits SO_2 at a rate of .18 pounds per mmBtu burned. This rate is less than the emission rate for new plants: .3 pounds per mmBtu.

However, Cumberland emits NO_x at a rate of 1.39 pounds per mmBtu--much higher than .15 pounds per mmBtu, the rate for new plants. In fact, Cumberland emits NO_x at a rate more than nine times greater than new plants. The NO_x emission rate at Cumberland is also much higher than the national average of .52 pounds per mmBtu.

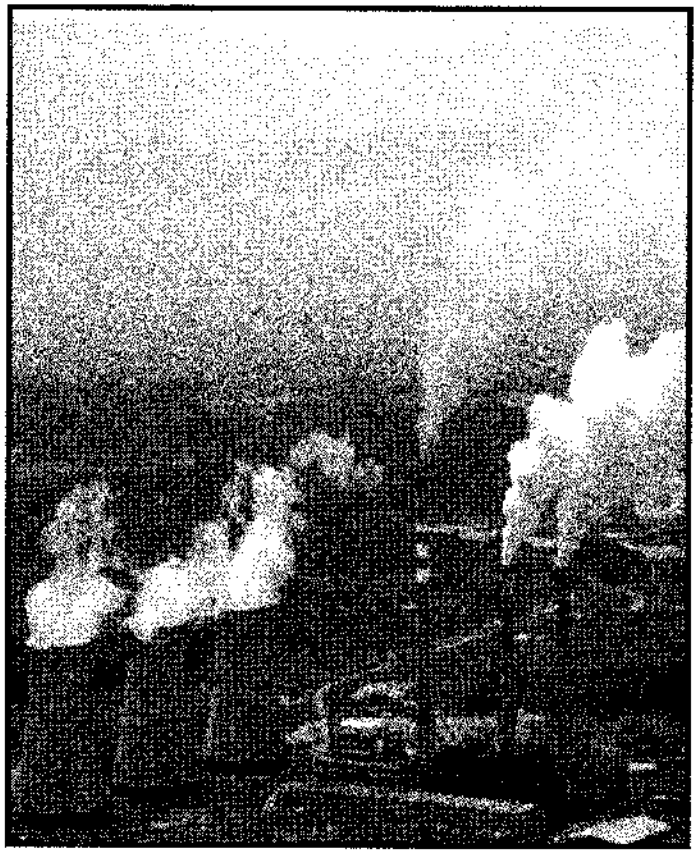
Concerns

By installing SO_2 scrubbers at Cumberland, this plant has gone beyond new plant standards for SO_2. However, projections from current data indicate that the counties surrounding Cumberland may fall into in non-attainment for fine particulate matter (PM 2.5), which makes Cumberland's SO_2 emissions a concern even though they are below new plant standards. There is also concern about TVA's strategy of overcompliance at this plant in order to "bank and pollute." As a result of reducing SO_2 emissions early, TVA has been increasing emissions at the eastern plants, and plans to delay meeting the next phase of SO_2 reductions at some of its plants.

NO_x emissions at Cumberland are also a concern--especially due to the plant's proximity to Nashville, which is slated for ozone non-attainment. TVA, however, has made a commitment to SCR technology at this plant and estimates that this will bring Cumberland's NO_x emission rates down to .06 pounds per mmBtu. This is a tremendous first step since Cumberland is one of the nation's largest plants.



Paradise
Steam Plant



At a Glance

location: Paradise, Kentucky
federal congressional district: Edward Whitfield
state representative district: Larry "Brent" Yonts

number of boilers: 3
types of boilers: cyclone
years boilers went online: 1963-1970
average age: 33
generating capacity: 2,266 MW
coal consumed: 6,940 tons/year
average heat rate: 9,942 Btu/kWh

1997 total emissions:
SO_2 212,377 tons
NO_x 149,828 tons
CO_2 17,134,051 tons

1997 emission rates:
SO_2 2.5 lbs/mmBtu
NO_x 1.8 lbs/mmBtu

controls: SO_2 scrubbers on two of three stacks

TVA's Paradise Steam Plant is located in central Kentucky, northwest of Bowling Green. It is also west of Mammoth Cave National Park.

Paradise is TVA's second largest plant. The plant has three generating units with a combined generating capacity of 2,266 megawatts. Two of the Paradise units were brought online in 1963 and the third was brought online in 1970.

Among power plants, Paradise is the second largest NO_x polluter and the fourth largest SO_2 polluter in the nation. Paradise emits approximately 150,000 tons of NO_x and over 212,000 tons of SO_2. It is TVA's dirtiest plant.

TVA has made some efforts to reduce SO_2 emissions at Paradise. In 1994, TVA installed SO_2 scrubbers on two stacks at and consequently reduced the SO_2 emission rates at this plant. However, Paradise still burns coal with a high sulfur content and thus their SO_2 emission rate is still much higher than new plant standards.

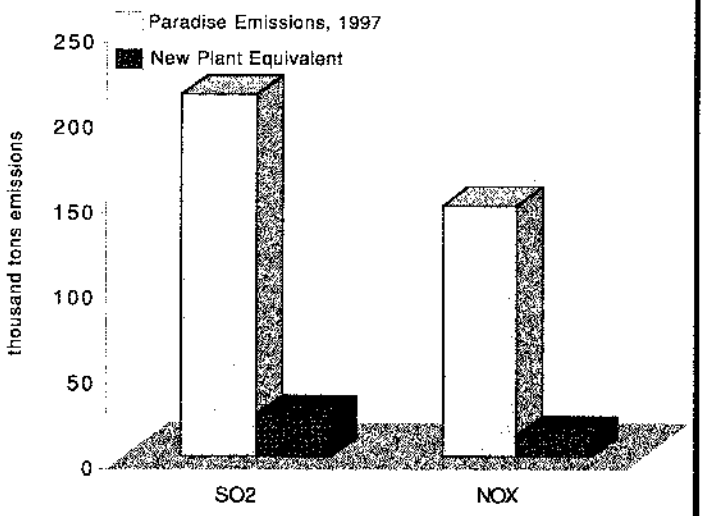
TVA plans to install and SCR units at two of Paradise's three boilers in order to reduce NO_x emissions. This technology has the potential to bring Paradise's NO_x emissions down to new plant standards. (See graph.)

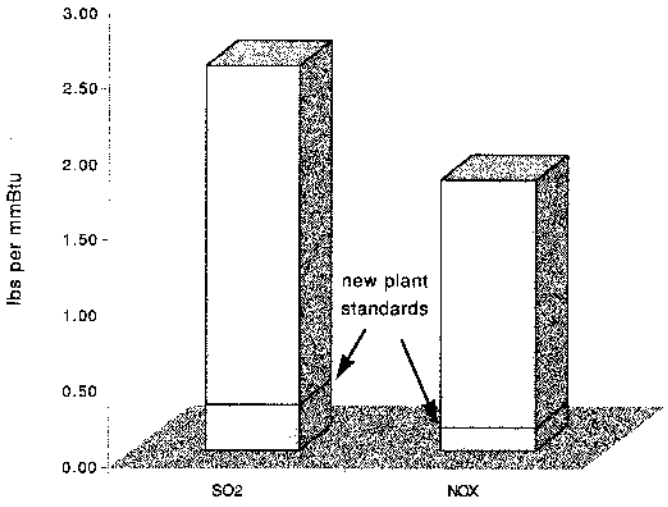
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Paradise emitted 212,377 tons of SO_2. Although Paradise was retrofitted with SO_2 scrubbers on two stacks, this plant still produces nearly eight times as much as a new plant. It is the fourth largest polluter of SO_2 in the nation.

In 1997, Paradise emitted 149,828 tons of NO_x—second only to Cumberland. If Paradise met the same standards required for new plants, it would have emitted 12,525 tons--less than one-tenth of its current emissions. Reducing emissions to the standards required for new plants would mean a savings of more than 137,000 tons of NO_x, and would be equal to eliminating the pollution from 7 million cars.





Current Emission Rates

TVA's Paradise Plant currently emits SO_2 at a rate of 2.5 pounds per mmBtu. This rate is twice the national average and more than eight times the emission rate allowed for new plants: .3 pounds per mmBtu.

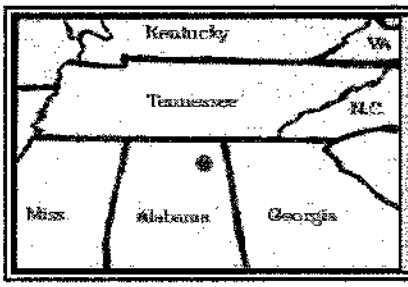
Paradise emits NO_x at a rate of 1.8 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Paradise, therefore, emits NO_x at a rate nearly twelve times greater than new plants. The NO_x emission rate at Paradise is also more than three times greater than the national average of .52 pounds per mmBtu.

Concerns

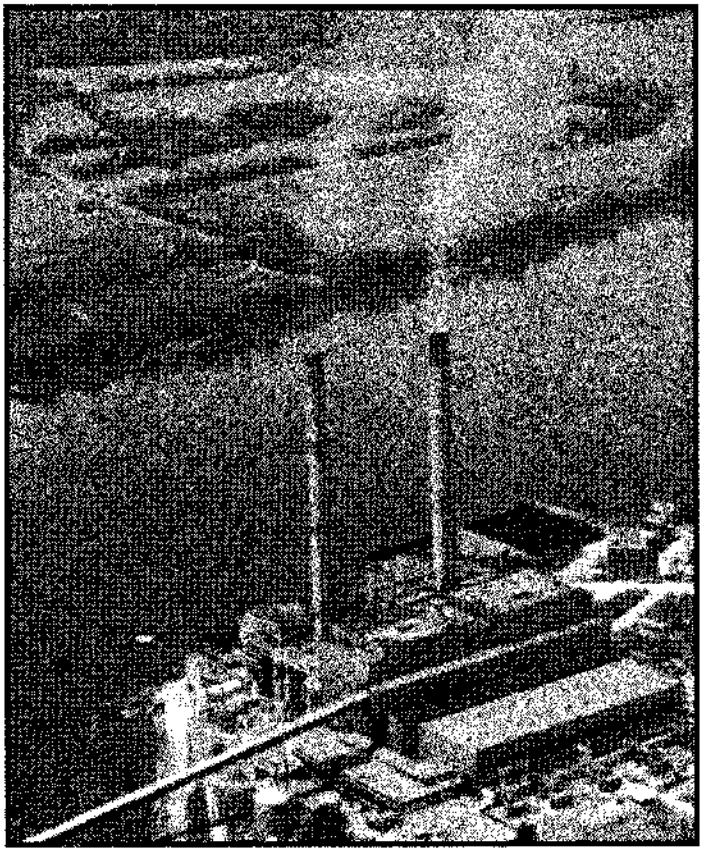
Emissions at Paradise are a concern because of this plant's proximity to Bowling Green, which is slated for non-attainment of PM 2.5 standards. It is also upwind of Mammoth Cave, which is a Class I, or protected, area.

Paradise emits both SO_2 and NO_x at rates much higher than new sources and the national average. Since Paradise is a large plant, even slightly high emission rates can lead to huge quantities of SO_2 and NO_x emitted into the air.

TVA has made a commitment to install SCR technology at two of the boilers at this plant, which could substantially reduce NO_x emissions. However, there is a serious concern that Paradise continues to burn coal with a high sulfur content.



Widows Creek
Steam Plant



At a Glance

location: Stevenson, Alabama
federal congressional district: Bud Cramer
state representative district: John Robinson

number of boilers: 8
types of boilers: 6 wall and 2 tangential
years boilers went online: 1952-1965
average age: 42
generating capacity: 1,629 MW
coal consumed: 3,495 tons/year
average heat rate: boilers 1-6, 11,510 Btu/kWh;
boiler 7, 9,834 Btu/kWh;
boiler 8, 10,417 Btu/kWh
1997 total emissions:
SO_2 34,420 tons
NO_x 28,779 tons
CO_2 9,015,912 tons

1997 emission rates:
SO_2 .78 lbs/mmBtu
NO_x .65 lbs/mmBtu

controls: burns low sulfur coal at 1-6, and SO_2 scrubbers on two of three stacks; low NO_x burners on 7-8

TVA's Widows Creek Steam Plant is located near Stevenson, Alabama. Widows Creek is located in the eastern part of Alabama and is in close proximity to both Chattanooga and the Southern Appalachian Mountains. It is also west of Cohutta National Wilderness Area, a protected area.

Widow's Creek is TVA's third largest plant. The plant has eight generating units with a combined net generating capacity of 1,629 megawatts. The first of Widows Creek's eight boilers began producing energy in 1952 and all eight were online by 1965.

Boilers 1 through 6 are some of TVA's least efficient boilers, with an average heat rate of more than 11,500 Btu/kWh. These boilers have electrostatic precipitators to capture the fly ash and burn low sulfur coal but do not have any NO_x controls.

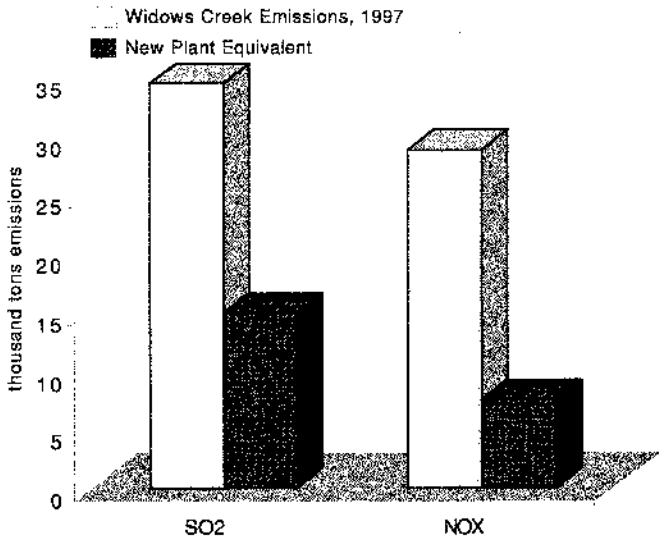
Boilers 7 and 8 are equipped with scrubbers to remove particulate matter and sulfur from stack exhaust. Boilers 7 and 8 also have low NO_x burners to reduce NO_x emissions and TVA recently announced that it will place SCR technology on boilers 7 and 8 by 2003.

A Level Playing Field

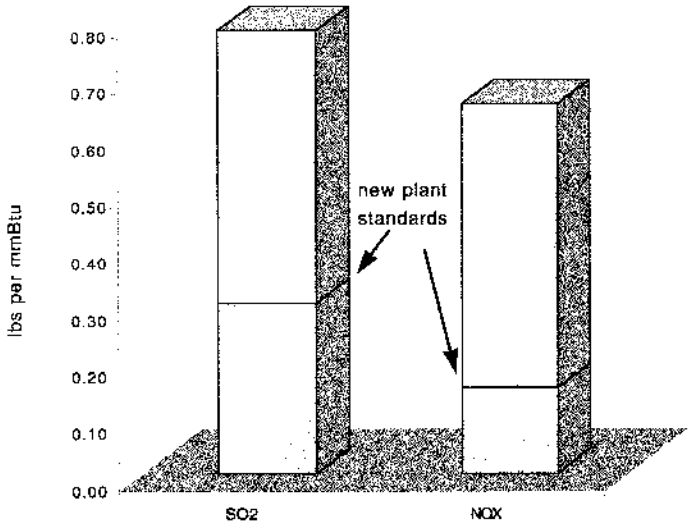
Current Emissions of SO_2 and NO_x

In 1997, Widows Creek emitted 34,420 tons of SO_2. If Widows Creek met the same standards required for new plants, it would have emitted 13,181 tons in 1997--less than half of today's emissions.

In 1997, this plant also released 28,770 tons of NO_x. If Widows Creek met the same standards required for new plants, it would have only emitted 6,591 tons--22,188 tons less. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from 1.1 million cars.



Current Emission Rates



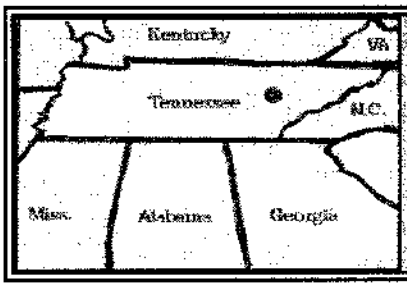
TVA's Widow's Creek Plant currently emits SO_2 at a rate of .78 pounds per mmBtu burned. This rate is more than two and a half times greater than emission rates for new plants: .3 pounds per mmBtu.

Widows Creek emits NO_x at a rate of .65 pounds per mmBtu. Amongst TVA's plants, it has the second lowest emission rate. However, the rate for new sources is just .15 pounds per mmBtu. Widows Creek, therefore, emits NO_x at a rate more than four times greater than new plants. The NO_x emission rate at Widows Creek is also slightly higher than the national average of .52 pounds per mmBtu.

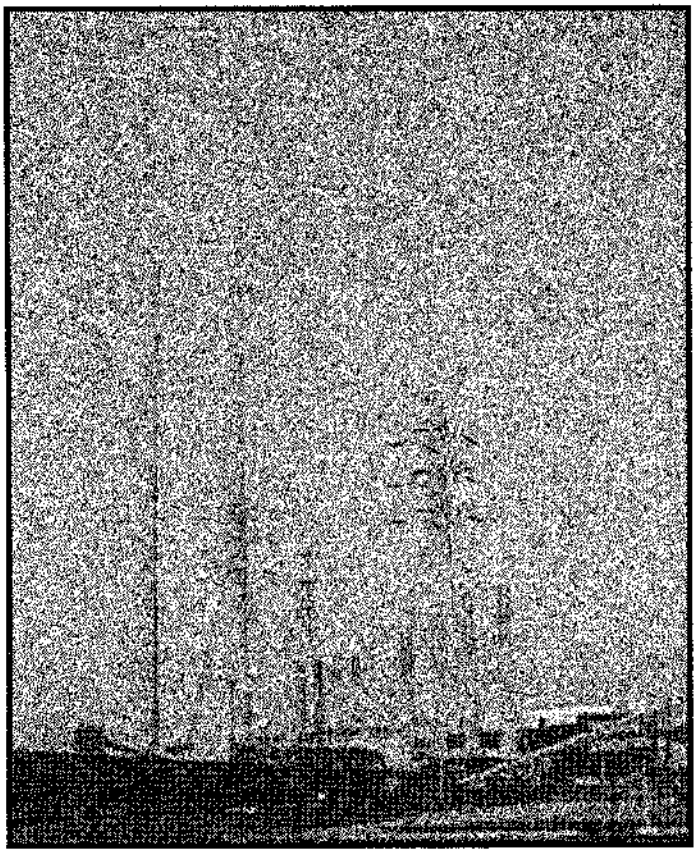
Concerns

There is some concern about emissions at this plant since it is in close proximity to the mountain ecosystem and can effect acid deposition rates in the mountains. Moreover, emission at this plant directly impact air quality in the city of Chattanooga. The location of Widows Creek is particularly important because Chattanooga is targeted for non-attainment of new pollution standards.

The average heat rate for boilers 1 through 6 also indicates that these boilers are some of TVA's most inefficient coal-fired boilers. Due to age, inefficiency, and location, these boilers may be prime candidates for repowering to natural gas, or retirement.



Kingston
Steam Plant



At a Glance

location: Kingston, Tennessee
federal congressional district: Zach Wamp
state representative district: Dennis Ferguson

number of boilers: 9
types of boilers: tangential
years boilers went online: 1954-1955
average age: 43
generating capacity: 1,456 MW
coal consumed: 3,846 tons/year
average heat rate: boilers 1-4, 10,038 Btu/kWh; boilers 5-9, 9,854 Btu/kWh
1997 total emissions:
SO_2 105,188 tons
NO_x 28,010 tons
CO_2 10,582,784 tons

1997 emission rates:
SO_2 2.1 lbs/mmBtu
NO_x .54 lbs/mmBtu

controls: low NO_x burners on boilers 5-9, combustion optimization on boiler 9; burns medium sulfur coal

TVA's Kingston Steam Plant is located in the eastern part of Tennessee approximately two miles north of Kingston, Tennessee. It is west of Knoxville and the Great Smoky Mountains. The plant has nine generating units with a generating capacity of 1,456 megawatts, and is TVA's fourth largest plant.

Four of the Kingston units were brought online in 1954 and the remaining five units were brought online in 1955.

Five of Kingston's nine boilers have low NO_x burners. NO_x emissions at the other four remain uncontrolled.

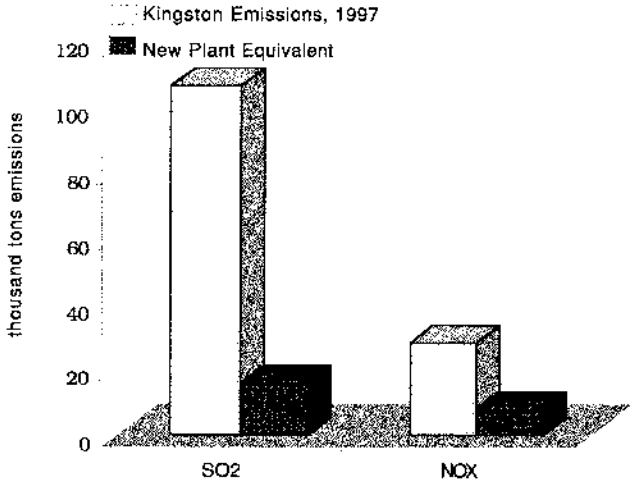
Although TVA reports this it burns medium sulfur coal at Kingston, SO_2 emissions rates at this plant remain high and continue to rise.

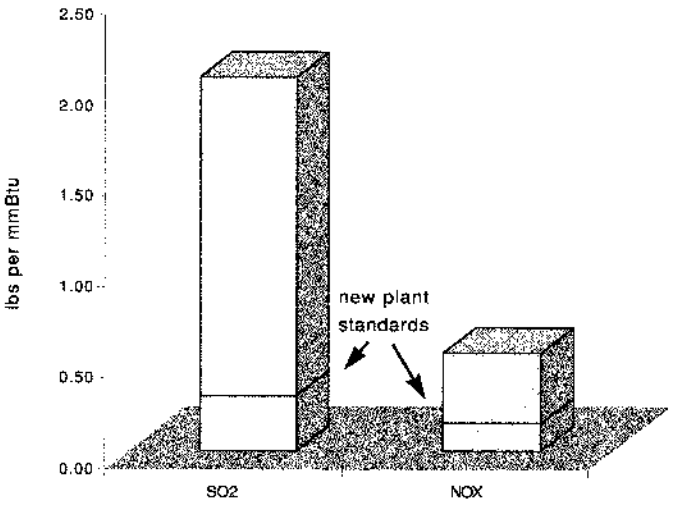
A Level Playing Field

Current Emissions of SO_2 and NO_x

Of TVA's eastern plants, Kingston is the largest emitter of SO_2. In 1997, Kingston emitted 106,107 tons of SO_2. If Kingston met the same standards required for new plants, it would have emitted 15,472 tons in 1997–nearly 90,635 tons less than its current emissions.

In 1997, Kingston also released 28,010 tons of NO_x. If it met the same standards required for new plants, it would have only emitted 7,736 tons–one fourth of its current emissions. Reducing NO_x emissions to the standards required for new plants would be equal to eliminating the pollution from 1 million cars.





Current Emission Rates

TVA's Kingston Plant currently emits SO_2 at a rate of 2.1 pounds per mmBtu burned. This rate is nearly twice the national average and almost seven times the emission rates for new plants.

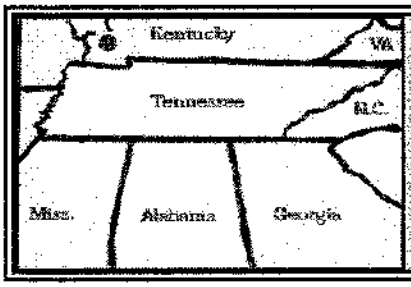
It also emits NO_x at a rate of .54 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Kingston, therefore, emits NO_x at a rate nearly four times greater than new plants. This rate is only slightly higher than the national average of .52 pounds per mmBtu.

Concerns

The main concern at this plant is its proximity to the GSMNP and Knoxville. Although low NO_x burners have reduced the NO_x emission rate at Kingston, the rate is still above the national average and twice as high as new plants. Ozone-forming NO_x emissions from this plant are a concern since Knoxville and the surrounding areas are at risk of ozone non-attainment in the future.

More worrisome, however, is the SO_2 emission rate. Due to the concern for this mountain ecosystem, and the data indicating that SO_2 emissions have risen in the eastern part of Tennessee, sulfur emissions from Kingston need to be addressed.

An additional concern is that, at times, the proximity of Kingston and Bull Run create a combined plume which may increase the impacts on Knoxville and the GSMNP.



Shawnee
Steam Plant

At a Glance

location: Paducah, Kentucky
federal congressional district: Edward Whitfield
state representative district: Charles Geveden

number of boilers: 10 (one is a demonstration)
types of boilers: 9 wall and one AFBC
years boilers went online: 1953-57 and 1989
average age: 43, demonstration boiler is 9 years old

generating capacity: 1,389 MW
coal consumed: 3,579 tons/year
average heat rate: boilers 1-9, 10,023;
boiler 10, 9,854
1997 total emissions:
SO_2 38,296 tons
NO_x 34,322 tons
CO_2 7,366,686 tons

1997 emission rates:
SO_2 .83 lbs/mmBtu
NO_x .74 lbs/mmBtu

controls: burns low sulfur coal at boilers 1-9; low NOx burners on 6 boilers; AFBC on boiler 10

TVA's Shawnee Steam Plant is located ten miles northwest of Paducah, Kentucky--on the banks of the Ohio River. The plant has ten generating units with a generating capacity of 1,389 megawatts.

Shawnee was brought online to meet the electricity requirements if the Atomic Energy Commission's Paducah uranium enrichment facility. Nine of it's units were brought online between 1953 and 1957, and the tenth unit was brought on in 1989. This tenth unit was constructed as a demonstration project and includes an atmospheric fluidized bed combustion (AFBC) unit which reduces emissions significantly: of Shawnee's 10 boilers, the AFBC demonstration project has the lowest SO_2 and NO_x emission rates--about half the rate of the other boilers.

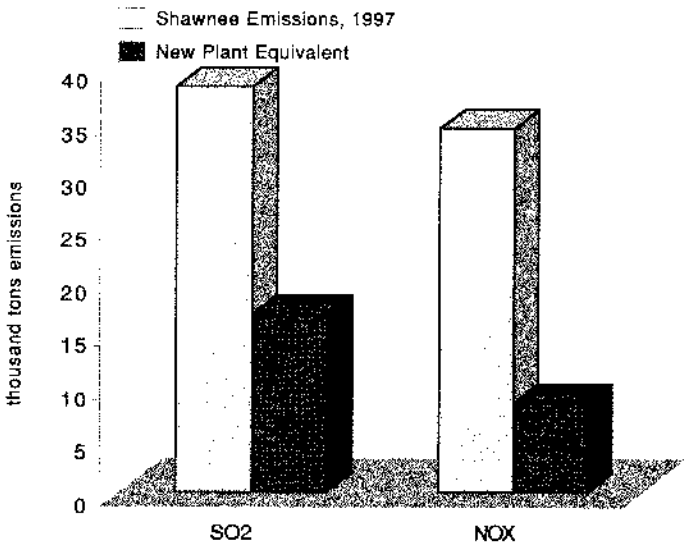
There are no scrubbers on this plant; low-NO_x burners are currently being installed.

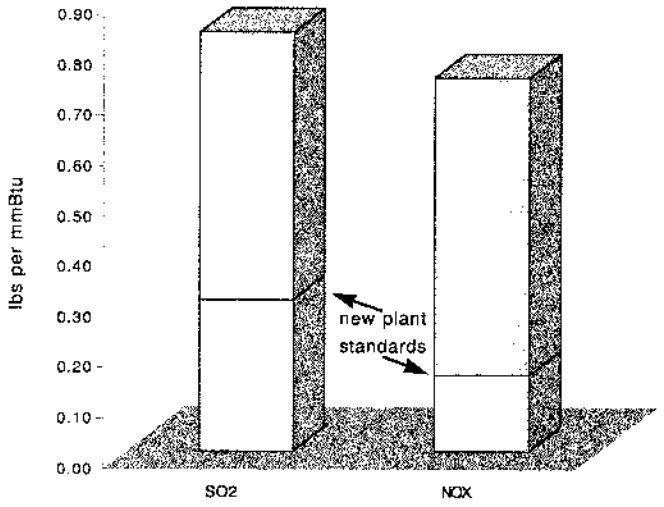
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Shawnee emitted 38,296 tons of SO_2. If Shawnee met the same standards required for new plants, it would have emitted 13,917 tons--some 24,000 tons less than its current emissions.

Shawnee also released 34,322 tons of NO_x in 1997. If Shawnee met the same standards required for new plants, it would have only emitted 6,958 tons--about one-fifth of its current emissions. Reducing NO_x emissions to the standards required for new plants would be equal to eliminating the pollution from 1.4 million cars.





Current Emission Rates

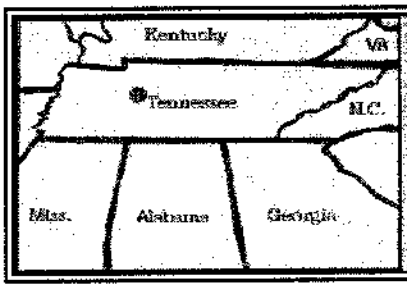
TVA's Shawnee Plant currently emits SO_2 at a rate of .83 pounds per mmBtu burned. This rate is close to three times the emission rates allowed for new plants: .3 pounds per mmBtu.

Shawnee emits NO_x at a rate of .74 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Shawnee, therefore, emits NO_x at a rate nearly five times greater than new plants. While .74 pounds per mmBtu is better than some of the larger TVA plants, the NO_x emission rate at this plant is still higher than the national average of .52 pounds per mmBtu.

Concerns

Shawnee's SO_2 and NO_x emission rates are higher than new plants and the national average.

There appears to be the potential for multiple non-attainment counties near Shawnee which may require additional controls. Counties east of Shawnee are slated for non-attainment for both PM 2.5 and ozone standards.



Johnsonville
Steam Plant

At a Glance

location: New Johnsonville, Tennessee
federal congressional district: John Tanner
state representative district: Charles Tidwell

number of boilers: 10
types of boilers: 6 tangential and 4 wall
years boilers went online: 1951-53, and 1959
average age: 43
generating capacity: 1,264 MW
coal consumed: 2,926 tons/year
average heat rate: boilers 1-6, 11,564 Btu/kWh; boilers 7-10, 10,339 Btu/kWh
1997 total emissions:
SO_2 115,938 tons
NO_x 18,632 tons
CO_2 8,134,504 tons

1997 emission rates:
SO_2 2.9 lbs/mmBtu
NO_x .47 lbs/mmBtu

controls: low NO_x burners at boilers 7-10; combustion optimization on boilers 1-6

TVA's Johnsonville Steam Plant is located west of Nashville and just south of Cumberland. The plant has ten generating units with a generating capacity of 1,264 megawatts and is TVA's sixth largest plant.

Six of Johnsonville's boilers were brought online between 1951 and 1953 and the remaining four were brought online in 1959. These first six boilers are some of TVA's oldest units and are TVA's least efficient boilers, with an average heat rate in excess of 11,500 Btu/kWh.

TVA installed low NO_x burners at four of Johnsonville's boilers between 1993 and 1994.

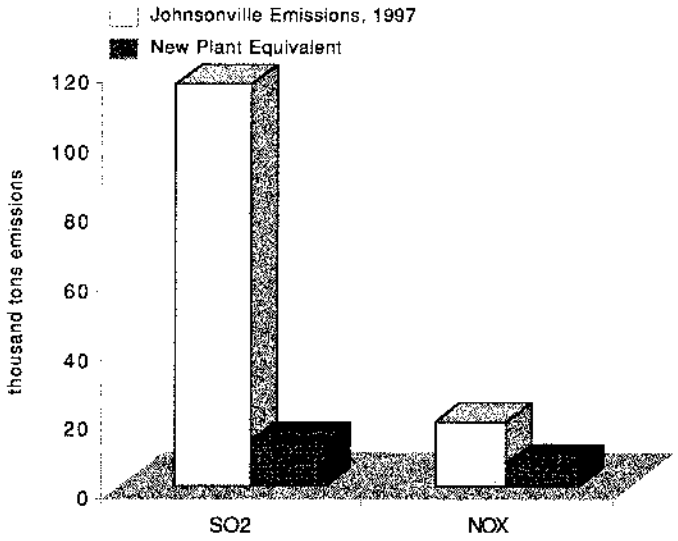
Johnsonville has not been retrofitted with any SO_2 control technologies, and does not burn low sulfur coal. Consequently, of TVA's plants, Johnsonville has the second highest SO_2 emission rate.

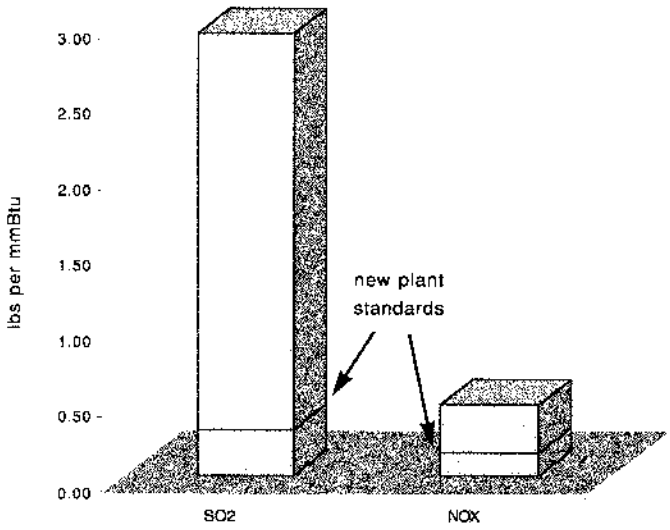
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Johnsonville emitted 115,938 tons of SO_2. If Johnsonville met the same standards required for new plants, it would have emitted 11,893 tons in 1997--over 104,000 tons less than its current emissions.

Johnsonville also emitted 18,632 tons of NO_x in 1997. If Johnsonville met the same standards required for new plants, it would have only emitted 5,946 tons--less than one third of its current emissions. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from 650 thousand cars.





Current Emission Rates

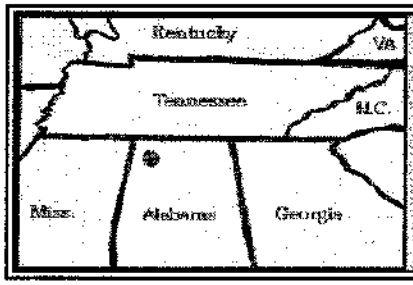
TVA's Johnsonville Plant currently emits SO_2 at a rate of 2.9 pounds per mmBtu burned. Of TVA's plants, Johnsonville has the second highest SO_2 emission rate. Johnsonville's rate is nearly ten times the emission rates allowed for new plants: .3 pounds per mmBtu.

Johnsonville emits NO_x at a rate of .47 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Johnsonville, therefore, emits NO_x at a rate more than three times greater than new plants. However, .47 pounds per mmBtu is better than the national average of .52 pounds per mmBtu. Johnsonville's low NO_x burners have made significant improvements in lowering NO_x emission rates at this plant.

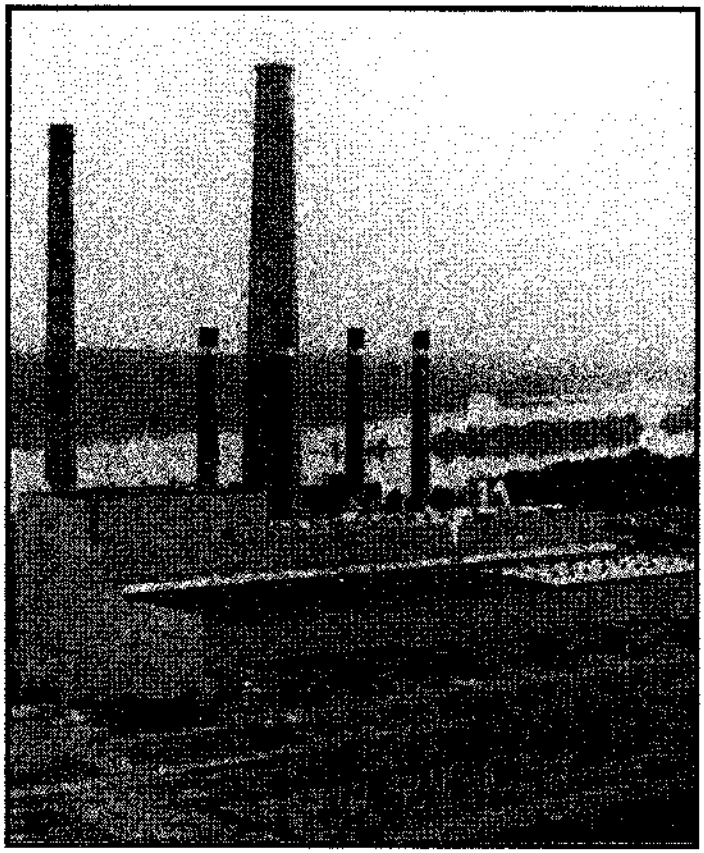
Concerns

Johnsonville's SO_2 emission rate is extremely high--more than two and a half times the national average and ten times greater than new plant standards. SO_2 emissions and the accompanying sulfur particles from this plant are a concern since the area surrounding Johnsonville is slated for PM 2.5 non-attainment under the new standards. There is serious concern, therefore, that there are no SO_2 controls at this plant.

Moreover, the average heat rates indicate that this plant is one of TVA's oldest and least efficient power plants. In particular, boilers 1 through 6 are TVA's least efficient. Due to age and proximity to the Nashville area, Johnsonville is a prime candidate for repowering to natural gas, or retirement.



Colbert
Steam Plant



At a Glance

location: Colbert, Alabama
federal congressional district: Bud Cramer
state representative district: Johnny Morrow

number of boilers: 5
types of boilers: wall
years boilers went online: 1955 and 1965
average age: 41
generating capacity: 1,204 MW
coal consumed: 2,709 tons/year
average heat rate: 9,947 Btu/kWh

1997 total emissions:
SO_2 78,023 tons
NO_x 15,678 tons
CO_2 7,366,686 tons

1997 emission rates:
SO_2 2.2 lbs/mmBtu
NO_x .44 lbs/mmBtu

controls: low NO_x burners at all five boilers; burns low sulfur coal at boilers 1-4

TVA's Colbert Steam Plant is located in Colbert, Alabama, in the northwest corner of the state. The plant has five generating units with a generating capacity of 1,204 megawatts and is TVA's seventh largest plant.

Four of Colbert's units were brought online in 1954 and the remaining plant was brought online in 1965.

Between 1993 and 1995, TVA installed low NO_x burners at all of Colbert's boilers. This has reduced NO_x emissions from Colbert significantly, but Colbert's emissions still exceed new plant standards.

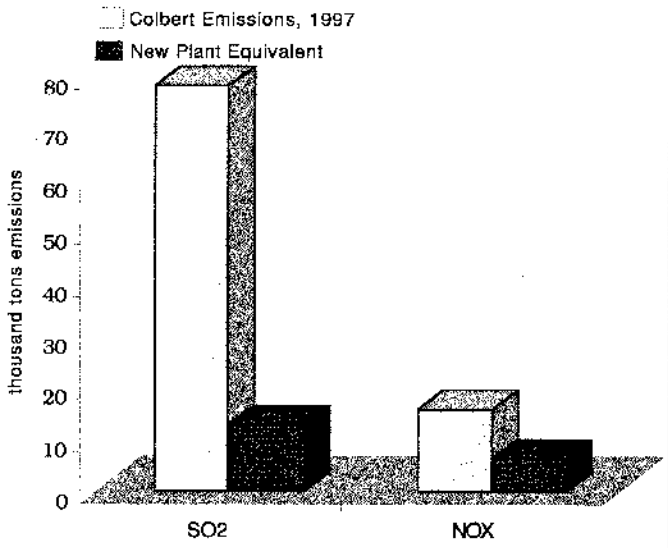
TVA has also tested biomass technology (i.e., wood-waste co-firing) at this plant, which may help with future emissions reductions.

A Level Playing Field

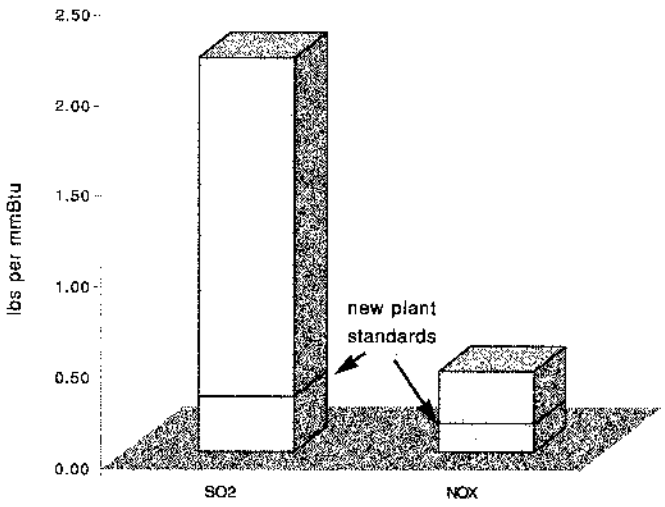
Current Emissions of SO_2 and NO_x

In 1997, Colbert emitted 78,023 tons of SO_2. If Colbert met the same standards required for new plants, it would only have emitted 10,770 tons in 1997--over 67,000 tons less than its current emissions.

Colbert also emitted 15,678 tons of NO_x in 1997. If it met the same standards required for new plants, it would only have emitted 5,385 tons. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from 528 thousand cars.



Current Emission Rates

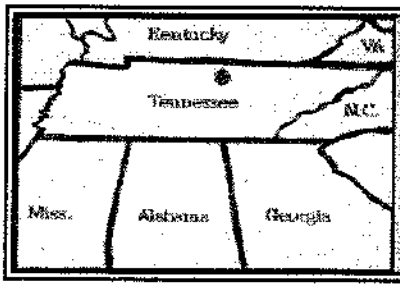


TVA's Colbert Plant currently emits SO_2 at a rate of 2.2 pounds per mmBtu burned. Colbert's rate is nearly more than seven times a new plant's emission rate of .3 pounds per mmBtu.

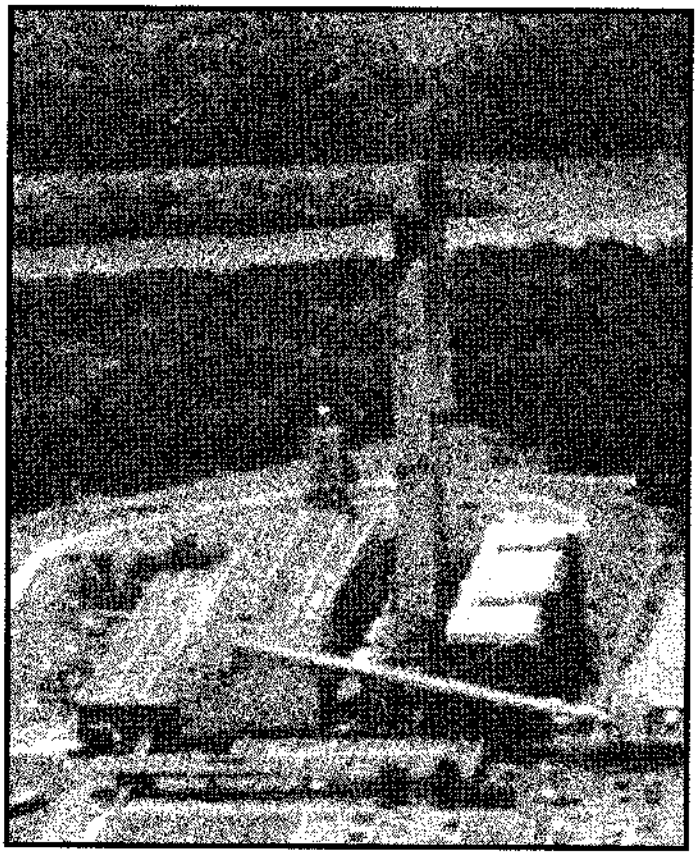
Colbert emits NO_x at a rate of .43 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Colbert emits NO_x at a rate about three times greater than new plants. Colbert's low NO_x burners have made significant improvements in lowering NO_x emission rates at this plant.

Concerns

Colbert's SO_2 emissions remain a serious concern. The SO_2 emission rate at this plant is very high.



Gallatin
Steam Plant



At a Glance

location: Sumner County, Tennessee
federal congressional district: Bart Gordon
state representative district: Randy Stamps

number of boilers: 4
types of boilers: tangential
years boilers went online: 1956-1959
average age: 40
generating capacity: 988 MW
coal consumed: 2,740 tons/year
average heat rate: 9,326 Btu/kWh

1997 total emissions:
SO_2 117,103 tons
NO_x 12,336 tons
CO_2 6,490,743 tons

1997 emission rates:
SO_2 3.7 lbs/mmBtu
NO_x .39 lbs/mmBtu

controls: low NO_x burners at all four boilers; burns medium sulfur coal

TVA's Gallatin Steam Plant is located in Sumner County, Tennessee. It is northeast of Nashville.

Gallatin has four generating units. This plant is one of TVA's smaller plants. It has a generating capacity of less than 1,000 megawatts--approximately 988 megawatts. Two of Gallatin's units were brought online between 1956 and 1957 and the remaining two were brought online in 1959.

Although Gallatin is one of TVA's smaller plants, it has a higher SO_2 emission rate than any other TVA plant. Consequently, Gallatin emits a disproportionate amount of SO_2. Although it is TVA's eighth largest plant, it is the second largest polluter of SO_2.

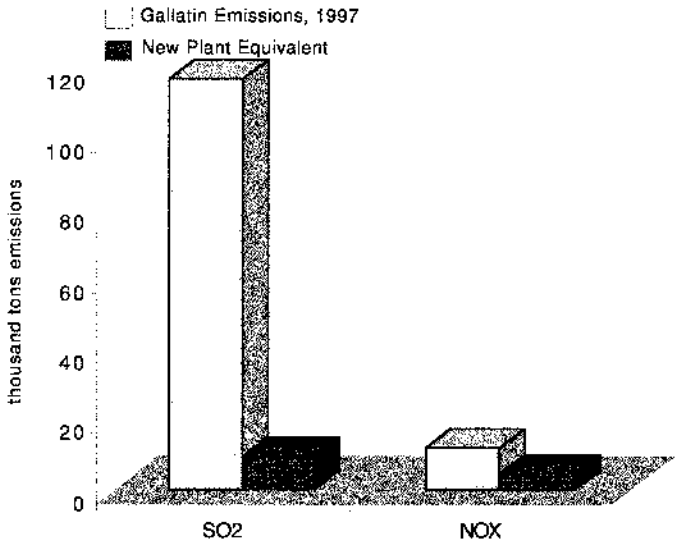
Gallatin's emissions of NO_x are much lower. Between 1994 and 1995, TVA installed low NO_x burners at all of Gallatin's boilers. This has reduced Gallatin's NO_x emissions significantly.

A Level Playing Field

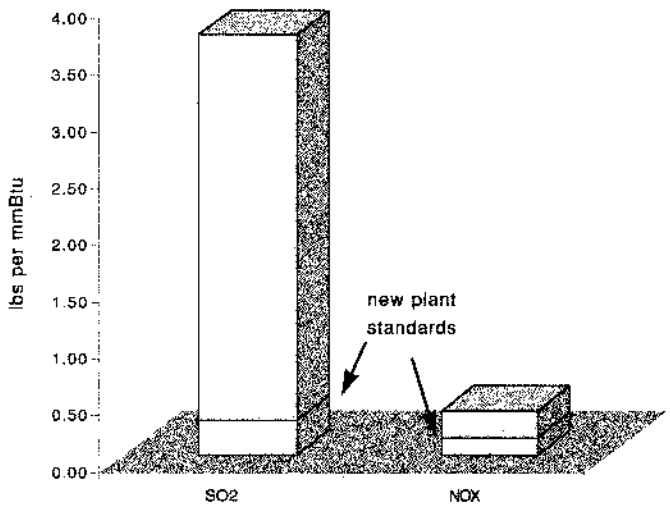
Current Emissions of SO_2 and NO_x

In 1997, Gallatin emitted 117,103 tons of SO_2. If Gallatin met the same standards required for new plants, it would have only emitted 9,489 tons in 1997--a mere fraction of its current emission. If it met new standards, it would emit nearly 107,614 tons less than it currently emits.

In 1997, Gallatin emitted 12,336 tons of NO_x. If it met the same standards required for new plants, it would only have emitted 4,745 tons. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from nearly four hundred thousand cars.



Current Emission Rates



Gallatin has the highest SO_2 emission rate of all of TVA's plants. This plant currently emits SO_2 at a rate of 3.7 pounds per mmBtu burned or more than twelve times the emission rates for new plants: .3 pounds per mmBtu.

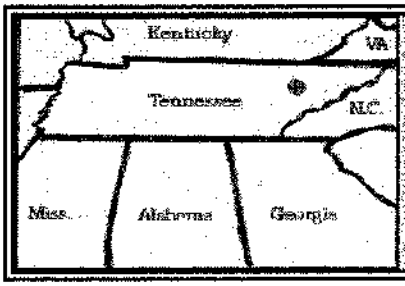
On the other hand, Gallatin has the lowest NO_x emission rate in TVA's system. Gallatin emits NO_x at a rate of .39 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Gallatin still emits NO_x at a rate greater than new plants.

Concerns

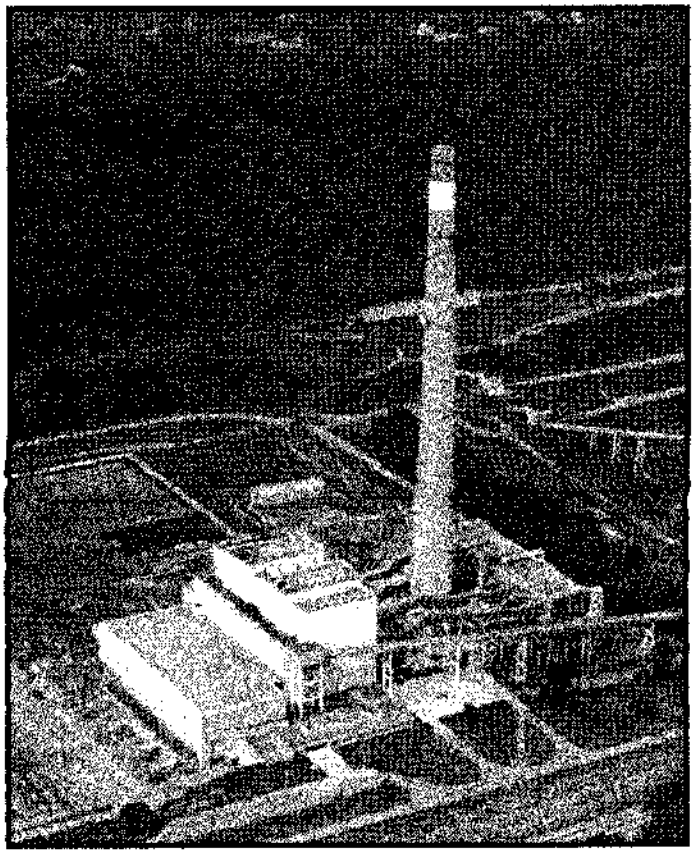
The SO_2 emissions at Gallatin are a serious concern. Gallatin's emission rates are not only more than twelve times the national average, they are also way above the 2.5 emission rate flagged by EPA as "Phase I," or the dirtiest plants.

SO_2 and the accompanying sulfur particles emitted from this plant are a health concern due to its proximity to the population of Nashville.

NO_x emissions from this plant are also a concern due to its proximity to Nashville since the Nashville metropolitan area is slated for ozone non-attainment.



Bull Run
Steam Plant



At a Glance

location: Anderson County, Tennessee
federal congressional district: Zach Wamp
state representative district: Gene Caldwell

number of boilers: 1
types of boilers: tangential
years boilers went online: 1967
average age: 31
generating capacity: 881 MW
coal consumed: 2,380 tons/year
average heat rate: 8,981 Btu/kWh

1997 total emissions:
SO_2 66,751 tons
NO_x 17,434 *tons*
CO_2 5,962,590 tons

1997 emission rates:
SO_2 2.3 lbs/mmBtu
NO_x .60 lbs/mmBtu

controls: burns medium sulfur coal

TVA's Bull Run Steam Plant is located in Anderson County, Tennessee, on the banks of Bull Run Creek. Bull Run is located in the eastern part of Tennessee near Knoxville and the Great Smoky Mountains National Park and thus its emissions directly effect these areas.

This plant has only one generating unit and is the only single generator coal-fired plant in TVA's system. Bull Run is one of TVA's smallest plants--only Allen and John Sevier are smaller. It has a generating capacity of less than 1,000 megawatts, or some 881 megawatts.

Bull Run was brought online in 1967.

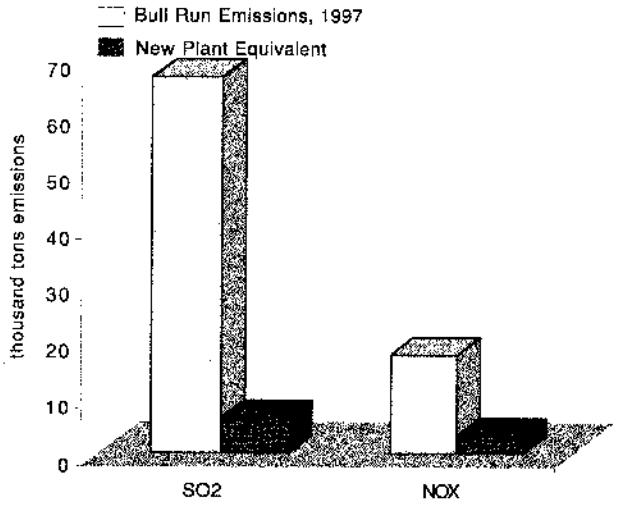
This plant's SO_2 emission rate also jumped from 2.1 pounds per mmBtu to 2.3 pounds per mmBtu between 1996 and 1997. Although Bull Run is one of TVA's smaller plants, it has a high SO_2 emission rate and emits a large amount of SO_2 for its size. NO_x emission rates at this plant are much lower.

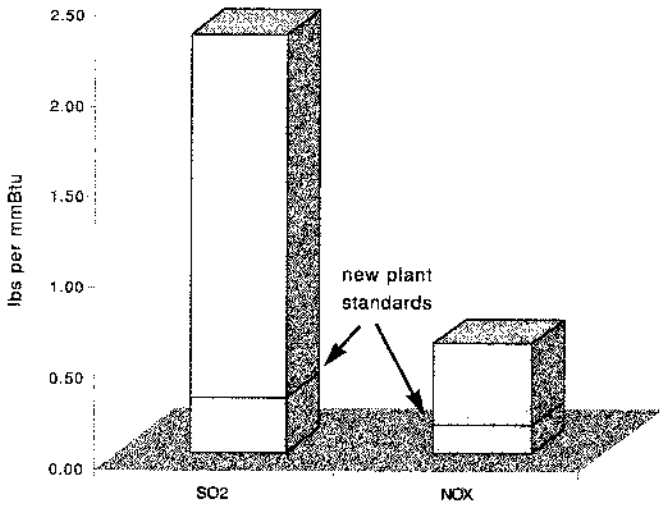
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Bull Run emitted 66,751 tons of SO_2. If Bull Run met the same standards required for new plants, it would have only emitted 8,717 tons in 1997--58,034 tons less than it currently emits.

In 1997, Bull Run emitted 17,434 tons of NO_x. If it met the same standards required for new plants, it would have emitted 4,359 tons. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from 671 thousand cars.





Current Emission Rates

Bull Run currently emits SO_2 at a rate of 2.3 pounds per mmBtu burned or more than seven times the emission rates for new plants. This is much higher than the national average.

Bull Run emits NO_x at a rate of .60 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Bull Run, therefore, emits NO_x at a rate four times greater than new plants. Bull Run's NO_x emission rate of .61 pounds per mmBtu is also higher than the national average of .52 pounds per mmBtu.

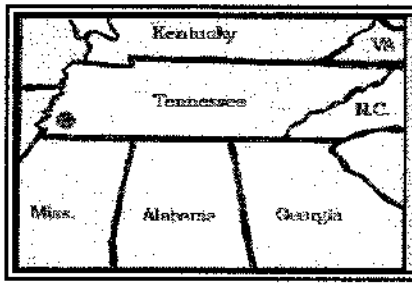
Concerns

The main concern at this plant is its proximity to the GSMNP and Knoxville.

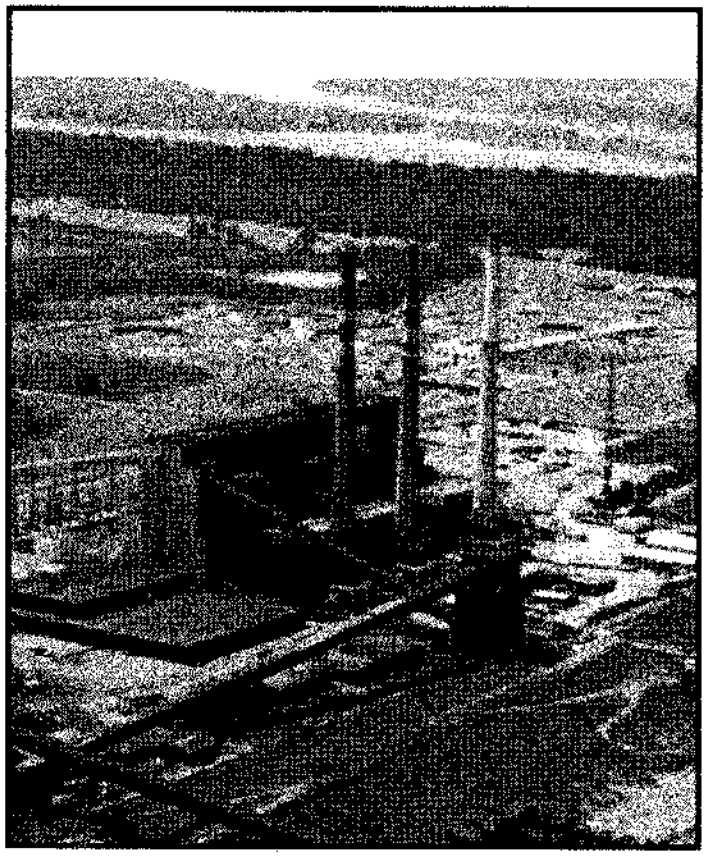
SO_2 emission rates at Bull Run appear to be rising. This is a concern because of the fragile nature of the Park ecosystem, which is extremely sensitive to further SO_2 emissions.

In addition, at times, the proximity of Kingston and Bull Run create a combined plume which may increase the impacts on Knoxville and the Park.

Because Bull Run is TVA's most efficient plant, and due to its location, consideration should be given to applying further SO_2 controls at this plant.



Allen
Steam Plant



At a Glance

location: Memphis, Tennessee
federal congressional district: Harold Ford
state representative district: Barbara Cooper

number of boilers: 3
types of boilers: cyclone
years boilers went online: 1959
average age: 39
generating capacity: 753 MW
coal consumed: 2,212 tons/year
average heat rate: 9,592 Btu/kWh

1997 total emissions:
SO_2 21,323 tons
NO_x 28,486 tons
CO_2 5,027,023 tons

1997 emission rates:
SO_2 .87 lbs/mmBtu
NO_x 1.2 lbs/mmBtu

controls: burns low sulfur coal

TVA's Allen Steam Plant is located near Memphis, Tennessee. Allen was brought online in 1959 and has three generating units. Allen is TVA's second smallest plants--only John Sevier is smaller. It has a generating capacity of less than 1,000 megawatts, or some 753 megawatts.

Although Allen is one of TVA's smaller plants, it has a high NO_x emission rate and emits a large amount of NO_x for its size. Allen is second smallest plant, but it has the third largest NO_x emission rate.

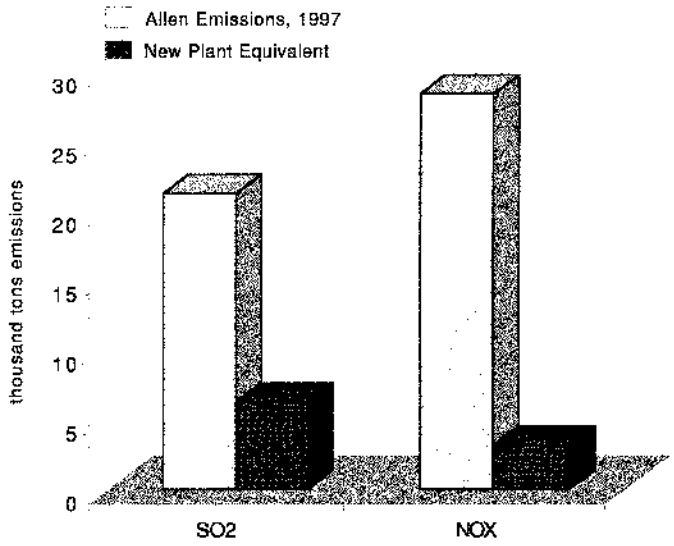
Furthermore, the area surrounding Allen is at risk for ozone non-attainment and will require reductions of ozone-forming NO_x emissions. TVA has made a commitment to install SCR units at all three of Allen's boilers before 2002. It is estimated that this action will reduce NO_x emission rates below the rate of a new plant.

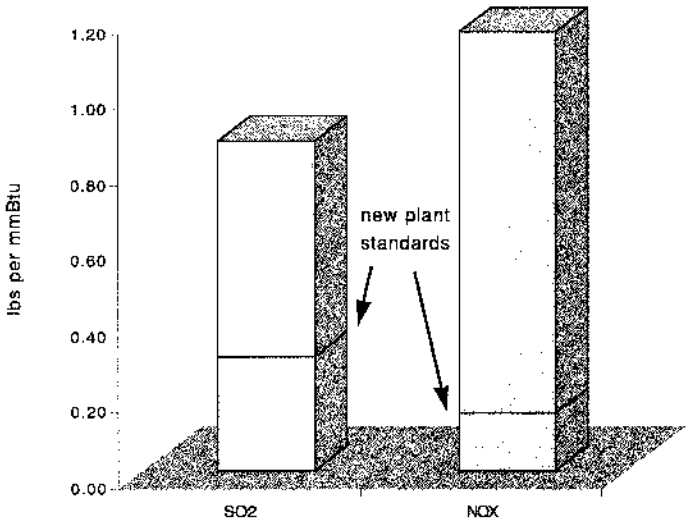
A Level Playing Field

Current Emissions of SO_2 and NO_x

In 1997, Allen emitted 21,323 tons of SO_2. If Allen met the same standards required for new plants, it would have only emitted 7,349 tons in 1997--13,974 tons less than it currently emits.

In 1997, this plant also released 28,486 tons of NO_x. If it met the same standards required for new plants, it would have released 3,675 tons. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from approximately 1.3 million cars.





Current Emission Rates

Allen currently emits SO_2 at a rate of .87 pounds per mmBtu burned or approximately three times the emission rates for new plants: .3 pounds per mmBtu.

Allen emits NO_x at a rate of 1.16 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. Allen, therefore, emits NO_x at a rate nearly eight times greater than new plants. Allen's NO_x emission rate of 1.3 pounds per mmBtu is also higher than the national average of .52 pounds per mmBtu.

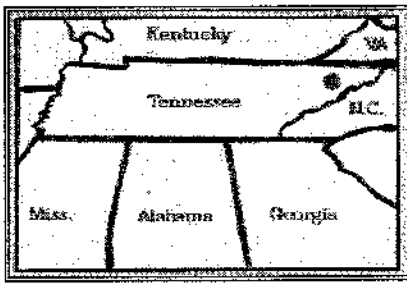
Concerns

Due to Allen's proximity to the city of Memphis, NO_x and SO_2 emissions remain a serious concern.

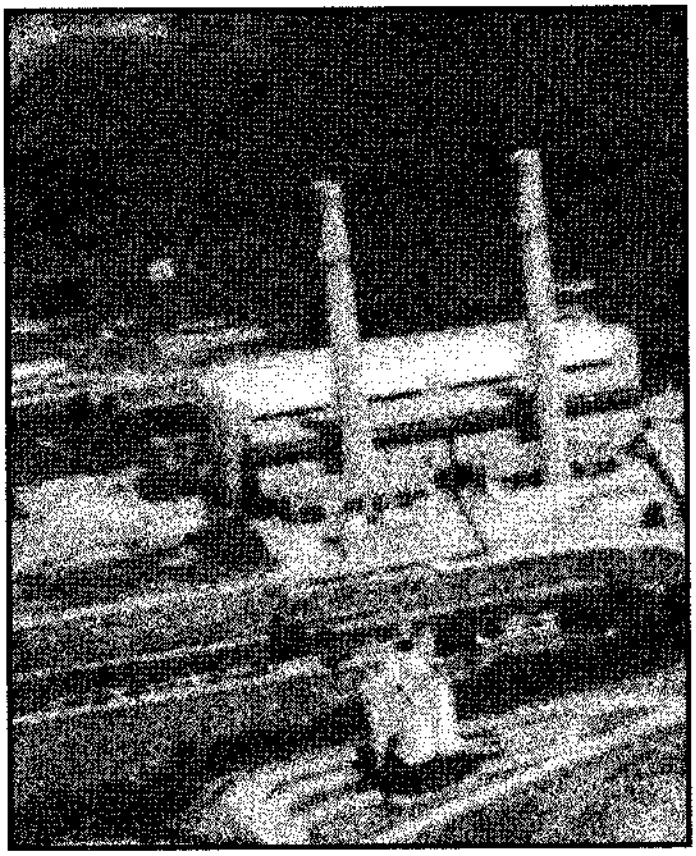
Memphis is at risk of ozone non-attainment and therefore, NO_x controls are needed at this plant. TVA's commitment to install SCR units at this plant are projected to reduce NO_x emissions.

Allen's sulfur particulate emissions remain a serious health concern since this plant is located close to the population of Memphis.

Due to Allen's proximity to Memphis, consideration should be given to repowering to natural gas.



John Sevier
Steam Plant



At a Glance

location: Rogerville, Tennessee
federal congressional district: William Jenkins
state representative district: Ken Givens

number of boilers: 4
types of boilers: tangential
years boilers went online: 1955-57
average age: 42
generating capacity: 712 MW
coal consumed: 1,942 tons/year
average heat rate: 9,438 Btu/kWh

1997 total emissions:
SO_2 68,826 tons
NO_x 11,350 tons
CO_2 5,533,332 tons

1997 emission rates:
SO_2 2.6 lbs/mmBtu
NO_x .42 lbs/mmBtu

controls: low NO_x burners at all four boilers; burns medium sulfur coal

TVA's John Sevier Steam Plant is in eastern Tennessee, near the town of Rogersville. It is located on the banks of the Holston River, near the Great Smoky Mountains.

John Sevier has four generating units and is the smallest of all of TVA's coal-fired power plants. It has a generating capacity of less than 1,000 megawatts, or some 712 megawatts. John Sevier was brought online between 1955 and 1957.

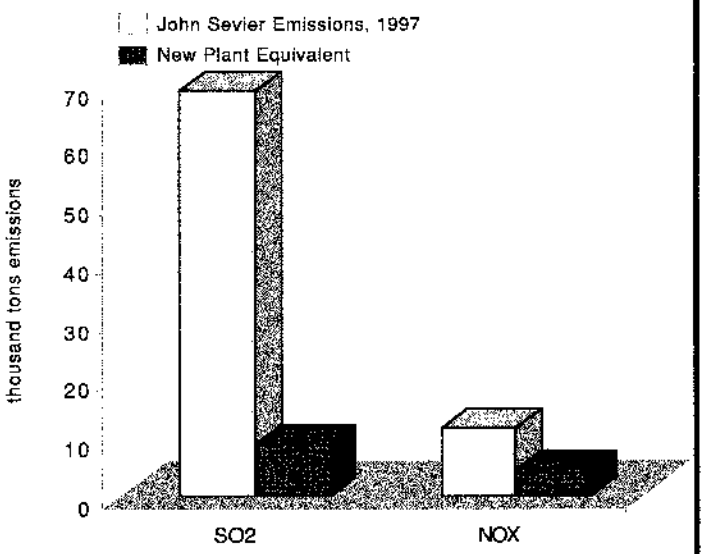
Although John Sevier is TVA's smallest plant, it has a high SO_2 emission rate and consequently emits a disproportionate amount of SO. for its size. John Sevier is the smallest plant, but it has the third largest SO_2 emission rate.

A Level Playing Field

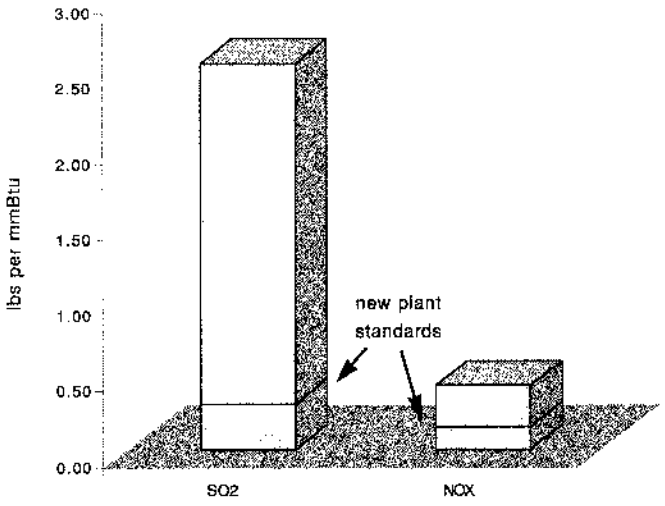
Current Emissions of SO_2 and NO_x

In 1997, John Sevier emitted 68,826 tons of SO_2. If it met the same standards required for new plants, it would have only emitted 8,090 tons in 1997. If it met new plant standards, John Sevier would have emitted 60,737 tons less than it currently emits, which means that the "excess emissions" at John Sevier are more than the total emissions of Cumberland and Widows Creek combined.

John Sevier also released 11,350 tons of NO_x in 1997. If it met the same standards required for new plants, it would only have emitted 4,045 tons. Reducing emissions to the standards required for new plants would be equal to eliminating the pollution from 375,000 cars.



Current Emission Rates



John Sevier currently emits SO_2 at a rate of 2.6 pounds per mmBtu burned or approximately eight and a half times the emission rates for new plants: .3 pounds per mmBtu. John Sevier emits SO_2 at a rate more than twice the national average.

John Sevier emits NO_x at a rate of .42 pounds per mmBtu. The rate for new sources is just .15 pounds per mmBtu. John Sevier, therefore, emits NO_x at a rate nearly three times greater than new plants. However, John Sevier's NO_x emission rate is considerably lower than the national average of .52 pounds per mmBtu.

Concerns

SO_2 emissions at John Sevier are a concern due to the proximity to the Park, which is extremely sensitive to further SO_2 emissions.

SO_2 and sulfur particulate emissions at this plant are a concern for the Tri-Cities area: Bristol, Kingsport, and Johnson City.

Paradise
June 1998

TVERC

Tennessee Valley
Energy Reform
Coalition

P.O. Box 1842
Knoxville, TN 37901
phone: 423-637-6055
fax: 423-524-4479
tverc@TnGreen.com
www.TnGreen.com

Tennessee Clean Air Task Force Formed

Sign Your Organization on Today

In June, environmental and health organizations throughout Tennessee announced the formation of a Tennessee Clean Air Task Force. This announcement was in response to growing evidence of serious air quality problems in the Tennessee Valley and recent reports documenting that coal-fired power plants are one of the largest sources of air pollution.

Members of the Task Force include The Tennessee Valley Energy Reform Coalition (TVERC), the Tennessee Environmental Council (TEC), the National Parks and Conservation Association (NPCA), the American Lung Association (ALA) of Tennessee, and the League of Women Voters (LWV) of Tennessee. These groups have joined together to educate Tennessee Valley residents about clean air and to fight for increased public participation in the State's process to implement new EPA air regulations.

A Member of
COMMUNITY
SHARES
A Fund for Change

To learn more about the Task Force and how you can be a part, contact the TVERC office at 423-637-6055, or sign your organization up today.

We endorse the following statement:

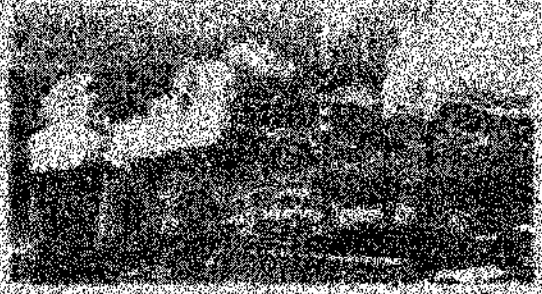
Pollution from electric power plants is having major impacts on health, the environment, and quality of life in the Tennessee Valley. Although modern power plants are required to install technology that greatly reduces air pollution, the power plants in the Tennessee Valley and elsewhere are exempt from this requirement. Requiring all power plants to meet modern pollution emission standards will greatly improve air quality in the Tennessee Valley, and we support this requirement.

Signature: _____

Organization: _____ Date: _____

For a copy of this report contact:
Tennessee Valley Energy Reform Coalition (TVERC)
PO Box 1842
Knoxville, TN 37901

(423) 637-6055
tverc@TnGreen.com
or see our website www.TnGreen.com



printed on 100% recycled paper