OHIO VALLEY E. EXHIBIT ONE

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Case No. 94-1698-EL-ECP

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Two-Year Review of

Centerior Energy Corporation's

Environmental Compliance Plan Pursuant

to Section 4913.05, Revised Code.

WRITTEN TESTIMONY

OF

CHARLES E. MANN

April 11, 1997

Q: Please state your name, title and business address.

A: My name is Charles E. Mann. I am a Director of Fieldston Co., Inc. My business address is 1800 Massachusetts Ave NW, Washington, DC 20036.

Q: Please describe your educational background.

A: I received a Bachelor of Science and Master of Science degree in Political Science from the Massachusetts Institute of Technology in 1973.

Q: Please describe your professional experience.

A: I have worked in the analysis of energy issues since beginning my career at the U.S. Department of Interior in 1973. Since leaving the U.S. Federal Energy Administration (the predecessor to the Department of Energy) in 1975, I have worked as a consultant, first at Energy and Environmental Analysis, Inc., and then at Dames and Moore. From 1986 to 1996 I was at ICF Kaiser, where I directed the utility consulting practice in the Consulting Group of ICF Kaiser. Since the beginning of 1997 I have been a Director in the consulting practice at Fieldston Co., Inc. My consulting activities are in the areas of electric utility planning, fuel market analysis, and analysis of wholesale power markets. I have been extensively involved in the review and development of SO_2 compliance plans for electric utilities.

Q: **Have you testified previously in regulatory proceedings?**

A: Yes. I have testified in regulatory proceedings before the Federal Energy Regulatory Commission, the Public Service Commission of New York and the Department of Public Service of Massachusetts. I have also testified in Federal District Court.

Q: **What is the purpose of your testimony?**

A: I have been asked to review Centerior Energy Corporation's ("Centerior") Supplemental Fuel Switching Study ("Supplemental Study") to determine whether Centerior has adequately documented and carried its burden of proof that its plan for making fuel switching decisions during the duration of Phase I of the acid rain program (through December 31, 1999) satisfies the criteria for obtaining Commission pre-approval under Section 4913.04 of the Ohio Revised Code ("Rev. Code").

Q: What are the specific criteria in Section 4913.04 of the *Rev. Code* which are applicable to Centerior's request for preapproval of its fuel switching decision-making strategy during the remainder of Phase I?

A: There are 5 principal criteria under which I have reviewed Centerior's fuel switching decision-making plan and methodology:

1. The plan must be reasonably designed to meet the acid rain control requirements applicable to Centerior. § 4913.04(A)(1).
2. Centerior's plan must be a reasonable and least cost strategy for compliance with the applicable acid rain control requirements and be consistent with providing reliable, efficient, and economical electric service. § 4913.04(A)(2).
3. Centerior's plan must, to the maximum extent, provide for the use of Ohio coal at Eastlake and Ashtabula. § 4913.04(A)(3). Any decision to displace or decrease use of Ohio high sulfur coal must be least-cost. § 4913.04(A)(3).
4. Centerior's plan must evaluate and compare relative risks of alternative compliance

strategies, including both fuel switching and acquiring emission allowances. §§ 4913.04(A)(4); 4913.02(B)(2), and (B)(6).

5. Centerior's plan must be adequately documented, § 4913.04(A). Also, under the Commission's Opinion and Order of July 20, 1995, the Supplemental Study was required to address fully and document conclusions with respect to both the above criteria and the specific issues identified in such Opinion and Order.

In my examination of the above criteria, I have considered specifically whether there is any justification for the Commission to give pre-approval to Centerior's fuel switching decision that would be made during Phase I pursuant to the decision-making methodology identified in the Supplemental Study.

Q: In overview, please describe Centerior's plan for making fuel switching decisions at Eastlake and Ashtabula for the remainder of Phase I of the acid rain program?

A: Centerior intends to employ the methodology presented in its Supplemental Study to make short-term fuel switching decisions during the period October 1, 1997 through

December 31, 1999. The decision-making methodology consists simply of comparing the "evaluated cost" of burning low, medium and high sulfur coals. The evaluated cost consists of two components: the projected delivered prices for the coals (mine-mouth, plus transportation), plus the projected emission allowance cost of such coals. The methodology assumes that Centerior need consider only two environmental compliance choices: burn high sulfur coal and consume more emission allowances, which are costed out at their projected future market value (expressed on a BTU basis), or burn lower sulfur coal, consume fewer emission allowances currently, and "bank" such allowances for future use in Phase II of the acid rain program.

Centerior's methodology involves a mechanical computation of the evaluated costs of coals of different sulfur contents. When each fuel switching decision is to be made, Centerior would make only a single long-term projection of delivered fuel costs and emission allowance market prices, without taking explicit account of risks, uncertainties, and sensitivity analyses. Based on the then-current projections of emission allowance prices, Centerior would compare the computed evaluated costs of high sulfur coal and medium and low sulfur coal.

Most significantly, Centerior's plan presumes that the decision to switch is justified at any time and for any duration of coal commitments if, based on the then-current long-term projections of delivered fuel and emission allowance costs, the analysis shows that fuel switching would produce modest cost savings, in terms solely of evaluated cost. If lower sulfur coal shows an evaluated cost saving of even one or two cents per MMBtu (respectively, approximately $0.25 or $0.50 per ton of coal; 0.7% or 1.4% of the evaluated cost), Centerior's plan assumes the decision to fuel switch is adequately justified. Centerior thus presumes itself justified, under its methodology, to switch from high to low sulfur fuel, incurring an average fuel premium on the order of $3.64 per ton (for both Eastlake and Ashtabula combined during 1998 and 1999, see Confidential Exhibit 5) in order to "save" only $0.25 to $0.50 per ton.

Q: What is the economic choice that Centerior is making when it decides to switch fuels at Ashtabula and Eastlake for the remainder of Phase I?

A: The essence of a fuel switching decision for the duration of Phase I is that Centerior would commit to incur millions of dollars in additional fuel costs, when Centerior has an ample and growing inventory of statutory emission allowances, and to defer use of, or "bank" those statutory allowances for many years into Phase II. Thus, a Centerior fuel switch is a decision to bank or accumulate emission allowances. Fundamentally, Centerior is proposing to pay millions of dollars today of scarce corporate funds, which may be immediately chargeable to ratepayers, in order to better position itself for compliance with acid rain requirements late in Phase II. Centerior is doing so though it does not need allowances for Phase I compliance or for many years into Phase II, even if it were to continue to burn high sulfur coal. Moreover, Centerior is doing so even though the purported benefits of a fuel switch, on an evaluated cost basis, are only a penny or two per MMBtu. Based on the particular projections presented in the Supplemental Study, Centerior is purporting to justify a switch that would cost more than 10 times in higher delivered fuel costs what it will save in terms of allowance costs.

Since Centerior is planning to bank its allowances for use late in Phase II, Centerior is also making a bet on the emission allowance market during the multi-year period between 1998 and the date the allowance bank would otherwise run out. Centerior is betting that over this long period, the higher delivered fuel costs it will pay, plus at least a 10% carrying cost for each year of the extended allowance bank, will always be less than amounts Centerior would otherwise pay to purchase an equivalent number of emission allowances in the market. That is, since Centerior's decision to switch fuels is also a decision to accumulate allowances, Centerior is betting, based on a single current long-term projection of allowance prices, that it is cheaper to pay today for those allowances in the form of higher delivered fuel costs (plus interest) than it would be to keep burning cheaper high sulfur fuel and wait and purchase the allowances in the market when needed late in Phase II.

Q: In summary, has Centerior presented a methodology which is likely to produce fuel switching decisions that are reasonable and least cost, which maximize the use of Ohio (i.e., high sulfur) coal, and which should receive pre-approval?

A: No. A reasonable and least cost strategy for environmental compliance during the remainder of Phase I should be based on what is likely to be the lower cost strategy under a broad range of assumptions for, and conditions in, both the fuel and allowance markets. The strategy must explicitly evaluate uncertainties and risks inherent in both the fuel and emission allowance projections and Centerior's projected system-wide need for allowances. Centerior's Supplemental Study methodology ignores important risk and uncertainty factors.

A reasonable and least cost strategy should expressly evaluate and compare options for meeting future years' compliance requirements through future years' purchases of emission allowances, as an alternative to "investing" substantial amounts of scarce funds in a banking strategy. Centerior's plan would commit millions of dollars of scarce funds to pay higher fuel costs in order to free up allowances for compliance use late in Phase II, without even pausing to reconsider alternative means of acquiring allowances for use in such future years.

Most significantly, a reasonable and least cost strategy for fuel switching should require that the purported net present value benefits of fuel switching be substantially larger than the currently incurred, higher delivered fuel costs (plus carrying costs). Centerior's burden to demonstrate substantial net benefits from fuel switching should be especially high where the fuel switch eliminates, rather than maximizes, use of Ohio coal, and where the utility faces financial constraints. Centerior has failed entirely to consider how to maximize the use of Ohio coal or to justify the impacts of a fuel switch on the Ohio industry. And Centerior has failed to explain how it could be cost effective and prudent to incur today millions of dollars of increased fuel costs on a bet that it would save, over an extended period of time, perhaps only hundreds of thousands of dollars in allowance costs far in the future.

In light of the fact that Centerior's fuel switching plan would entail substantial immediate costs, and that the necessity or cost of banking allowance into Phase II has not even been evaluated or justified in the Supplemental Study, and in light of the substantial risks and uncertainties that were ignored, and the plainly modest evaluated cost savings from switching, Centerior should not receive advance approval from the Commission for making switching decisions relying exclusively on the methodology set forth in the Supplemental Study.

Q: **Does Centerior need to switch fuel at any time during Phase I to meet its acid rain control requirements?**

A: No. Centerior has ample statutory allowances to cover projected emissions at Eastlake and Ashtabula for the duration of Phase I. In fact, Centerior projects a growing inventory of statutory allowances during Phase I, even if there were no fuel switching at Eastlake and Ashtabula. See Confidential Table 5 in Supplemental Study. Even in Phase II, Centerior retains a significant inventory of emission allowances for many years, with or without fuel switching at Eastlake and Ashtabula for the remainder of Phase I. I calculate that even if Centerior were to switch all of its Eastlake and Ashtabula Ohio high sulfur coal to medium sulfur coal for the balance of Phase I, it would extend its allowance bank only by about two years, late in Phase II. See Confidential Exhibit 4.

Q: Explain the significance of the Supplemental Study's failure to take risks and uncertainties into account in making fuel switching decisions?

A: A reasonable and least-cost planning strategy must explicitly take account of significant risks and uncertainties over the planning horizon. The Supplemental Study did not do so. Centerior is proposing to make its fuel switching decisions during the remaining years of Phase I based solely on highly uncertain long-term price forecasts for delivered coal and emission allowances and its current long-term forecast for load growth and system-wide plant utilization and dispatch. Over the long-term, and, indeed, in the short-term, year-by-year, there is substantial uncertainty and volatility in emission allowance prices, delivered fuel prices for different sulfur grades of coal, load, and system-wide plant utilization. Centerior undertook no examination of these uncertainties. The Commission's Opinion and Order of July 20, 1995 expressly required such uncertainties to be fully evaluated in the Supplemental Study. Nevertheless, the Supplemental Study contains no sensitivity analyses and, more importantly, does not present a strategy for taking into account risk in making fuel switching and emission allowance banking decisions.

Centerior also entirely ignored the likely effects of powerful forces sweeping the electric utility industry, such as increased competition in wholesale power markets, emergence of retail competition, pressures on utilities to reduce operating costs and to restructure into multiple business units, and consolidation of utilities by merger and acquisition. In the less than two years between Centerior's first study (January 20, 1995) and its Supplemental Study (October 1, 1996), the electric utility world changed dramatically, in ways quite pertinent to the fuel switching/emission allowance banking strategy. Yet the Supplemental Study does not acknowledge the possible, indeed probable, effects of these forces on high cost utilities such as Centerior. Centerior may well need fewer emission allowances in the future rather than more.

Under current circumstances, it is no longer reasonable to assume a "business as usual" environment for the duration of the Phase I and Phase II planning horizon.

And yet, this is exactly what Centerior has done by simply extrapolating current fuel prices, emission allowance prices, load forecasts, and system dispatch models to make its single projections on which the entire decision-making methodology rests. To be reasonable, Centerior's fuel switching/emission allowance banking decision must be based on an evaluation of the uncertainties relating to all aspects of its future needs for allowances, an evaluation eschewed in the Supplemental Study.

Q: Does Centerior's fuel switching plan yield a return commensurate with the risks?

A: No. Centerior is a financially constrained company. Any expenditure of millions of dollars in higher delivered fuel costs should be justified by substantial returns yielded to the company and to its ratepayers. Centerior states that its required rate of return is 10%. <u>See</u> Tables 2-4 of Supplemental Study. Indeed, given the significant uncertainties attendant to the emission allowance market, a reasonable and least cost decision that entails banking allowances should be expected to yield above average returns.

There are two ways to illustrate that Centerior's proposed fuel switching, based on Centerior's own current projections, is not a sound economic decision, let alone a reasonable and least cost decision. First, Centerior will incur millions of dollars in higher delivered fuel costs in 1997-1999, but save only hundreds of thousands of dollars over the life of its allowance bank. See Confidential Exhibit 5. Even if there were no risk associated with the initial expenditure of millions of dollars, the switching decision might not be prudent. After discounting for the considerable risks and uncertainties in the allowance and fuel markets and in system utilization projections, with evaluated costs as close as the ones presented in the Supplemental Study, a decision to fuel switch should be a non-starter.

Second, Centerior's fuel switching plan involves nothing less than an investment in banked emission allowances. Centerior uses a 10% rate of return in the Supplemental Study, for evaluating expenditures made in the form of higher incurred costs for delivered fuel. However, Centerior's own projections of future years' allowance prices show that allowance prices will grow at considerably less than 10%. See Supplemental Study, Confidential Table 1. This is, on its face, a losing proposition. If Centerior's projections of emission allowance and fuel prices prove to be entirely accurate -- which they won't -- what Centerior should be planning to do is to continue to burn the lowest delivered cost high sulfur coal (consistent with SIP limitations) for the duration of Phase I, and to purchase emission allowances in future years to meet compliance requirements in those years. According to Centerior's position, it will be cheaper by far for Centerior to purchase allowances in the market in Phase II, when needed for compliance, than to pay higher delivered fuel costs in 1997-1999. However, the Supplemental Study ignores the alternative of purchasing allowances in the market and presents no strategy for evaluating the purchasing or holding of emission allowances, as is required by Rev. Code § 4913.04(A)(4).

Q: **In light of the risks and uncertainties, should a plan that accumulates emission allowances for future use show clearly superior returns?**

A: Yes. The concept of least cost planning for acid rain compliance requires consideration of risks and uncertainties. If two plans have roughly equal net present value benefits, based on long-term projections of highly volatile variables, such as fuel costs and emission allowance prices, the more reasonable and least cost plan is the one that defers decisions to incur costs as long as possible, to add flexibility.

In financial analysis, higher risk should be accepted only for higher return. I doubt that the 10% carrying cost used by Centerior in its calculations is adequate compensation for the risk of holding these SO_2 allowances. Therefore, because the fuel switch does not project clearly superior returns on the initial expenditure of the premium for lower sulfur coal, the strategy should not be deemed reasonable and least cost.

Q: In light of the above discussion, does Centerior's plan, as described in the Supplemental Study, represent a reasonable and least cost compliance plan, as required by Rev. Code § 4913.04(4)(2) ?

A: No.

Q: Has Centerior presented an emission allowance banking strategy?

A: Centerior has presented no defensible emission allowance banking strategy. Centerior's fuel switching plan is to accumulate allowances and leave them sitting in the bank, thereby deferring the date for full utilization of its statutory bank by approximately two years late in Phase II. Relative to its projected need for emission allowances, Centerior holds one of the largest emission allowance banks of any Phase I utility. By largest bank, I mean the length of time the bank lasts without further major reductions in projected emissions. Centerior's bank of statutory allowances is projected to last longer than most other Phase I utilities. However, Centerior has developed no strategy for determining its optimal bank, or even for determining whether it is a good idea to increase the bank by immediate expenditures for higher fuel costs.

Because of the probable emergence of competition in wholesale and retail power markets, and the pending merger creating First Energy, it might be appropriate for the Commission to consider whether Centerior's native load consumers, who may be paying today for the bank, are likely to be the beneficiaries of Centerior's allowance bank when it is used late in Phase II.

Given the relative size and expected duration of its emission allowance bank, a reasonable and least cost plan for Centerior's compliance with acid rain requirements should bear a heavy burden specifically to justify increasing a Phase II bank and lengthening its duration. The Supplemental Study presents no analysis of this banking strategy. Thus, were the Commission to give advance approval to the Study's fuel switching decision-making methodology, it would be simultaneously approving a multi-million dollar investment without any meaningful evaluation of the alternatives to that investment.

Q: **Does Centerior's implicit emission allowance banking strategy allow for reasonable flexibility?**

A: No. Centerior recognizes the need for maximum flexibility in fuel purchasing by planning to purchase <u>all</u> of its coal for Eastlake and Ashtabula (Unit 5), after its current long-term contract for high sulfur coal expires on September 30, 1997, pursuant to short-term contracts (one-year or less). However, Centerior's emission allowance banking decision has a duration of more than 10 years.

Nonetheless, the Supplemental Study fails to justify such a long-term commitment to the emission allowance bank. Even if Centerior got around to reconsidering its banking strategy at some future point, the investment in added fuel costs would already have been made and substantial carrying costs incurred.

Centerior should be required to evaluate a more flexible emissions allowance purchase strategy, which would allow the company to take advantage of favorable opportunities in the allowance market over the course of the next ten years, rather than incurring millions of dollars in higher fuel costs now.

Q: **Do Centerior's plan and the Supplemental Study's methodology meet the requirements of Rev. Code § 4913.04(A)(4) for evaluating and comparing the relative risks of both fuel switching and acquiring emission allowances?**

A: No. as stated above, the evaluated cost methodology relies exclusively on a single, current long-term emission allowance forecast, what one might call the "forecast du jour." But developing a reasonable and least cost strategy for purchasing and holding emission allowances over the course of Phase I and Phase II demands that every utility, including Centerior, evaluate all uncertainties and risks and that explicit comparisons be made between incurring fuel switch premiums today and allowance purchases in the market in the future.

Q: Does Centerior's plan give any weight to maximizing use of Ohio high sulfur coal, as required by Rev. Code § 4913.04(A)(3)?

A: No. The Supplemental Study does not evaluate any consequences to the Ohio coal industry of a reduction in demand for such coal. If Centerior were to decrease demand for Ohio high sulfur coal by as much as 1.4 million tons per year, it would represent a substantial reduction in demand for Ohio coal (which is almost entirely high sulfur). In 1975, Ohio produced 47 million tons, in 1984, 39 million tons, and in 1994, 30 million tons. Thus, Centerior's demand constitutes a material percentage of total market demand for Ohio high sulfur coal, and the displacement of such demand would likely have adverse effects on Ohio coal suppliers.

Centerior has not evaluated the production implications of a shrinking market for the Ohio coal industry. Centerior has also not evaluated the socio-economic impacts of reduced demand for Ohio coal generally. Thus, Centerior's fuel switching plan gives no particular weight to the burning of Ohio coal versus out-of-state coal (the presumed source of medium and low sulfur coal, as Ohio produces very little coal with lower sulfur content). Accordingly, Centerior's fuel switching decision-making methodology does not even attempt to maximize the use of Ohio coal.

Q: Has Centerior demonstrated that displacing or decreasing Ohio coal represents least cost, as required by § 4913.04(A)(3)?

A: No. The discussion above demonstrated that Centerior's plan, based on its own projections, provides only negligible benefits compared to its substantial up-front costs, and therefore should not be considered a reasonable and least cost plan. In addition, Centerior supplied additional information not contained in the Supplemental Study that demonstrates that, with respect to Eastlake, the lowest cost strategy, even on an evaluated cost basis, is the continued burning of Ohio high sulfur coal.

In presenting the options of lower sulfur coal for Eastlake Units 1-5, the Supplemental Study, in Table 2, presented options only for coal exclusively of 1.2, 1.6, 2.5, and 3.8 pound coal. The Study declined to project coal prices for 6.0 pound coal, on the ground that the exclusive use of 6.0 pound coal will result in an SO_2 rate in excess of the SIP limit. Of course, Centerior has been burning considerable quantities of Ohio high sulfur coal at Eastlake, notwithstanding the SIP limitation. Centerior cited no change in environmental rules or the SIP limitation that would preclude continued alternating burns of high-sulfur and lower sulfur coal. Thus, the Study created the false impression that there was no need to evaluate the delivered cost of Ohio 6.0 pound coal.

In response to discovery requests, Centerior has submitted important additional confidential data, see Confidential Exhibit 7, OVCC-27 Tables 2 and 2(a), that demonstrates the viability of two low cost plans that would continue the burning of Ohio high sulfur coal at Eastlake for the duration of Phase I. See Confidential Exhibit 1. First, Centerior could continue to burn its historic percentage of 6.0 pound coal at Eastlake in combination with whatever lower-sulfur coal was lowest cost. Second, Centerior could burn as much 6.0 pound coal at Eastlake as possible, in alternation with 3.8 pound coal, which would not violate the SIP limit of approximately 5.6 pounds. In Confidential Exhibit 1, using only data provided by Centerior during discovery under a protective agreement, I present the delivered and evaluated cost of these two options which would preserve the burning of 6.0 pound coal at Eastlake. These calculations show that, even using Centerior's own projections of coal and emission allowance prices, and applying Centerior's own evaluated cost methodology, **the continued burning of at least historical levels of 6.0 pound coal at Eastlake for the remainder of Phase I is the lowest cost option for Centerior.**

Thus, definitively, I conclude that Centerior has not met its burden of demonstrating that any displacement or decrease in its consumption of Ohio coal represents least cost.

Q: Given the way the Supplemental Study presents the decision-making methodology for fuel switching in Phase I at Ashtabula and Eastlake, is it appropriate to give Centerior advance approval and let it decide whether it is least cost to fuel switch ?

A: Clearly, no. The flexibility that Centerior seeks to make fuel switching decisions based on the incomplete and inadequate decision making methodology contained in the Supplemental Study is not the type of flexibility that is consistent with a reasonable and least cost environmental compliance planning strategy. Centerior has failed to meet its burdens of proof for any of the criteria under Rev. Code § 4913.04, and, moreover, the Supplemental Study has not fully justified its conclusions on the seven issues identified in the Commission's Opinion and Order of July 20, 1995. If Centerior were given advance approval to make a fuel switch based on the Supplemental Study's methodology, including its current projections, it is more likely that it would make a wrong decision than a correct decision, and it is very unlikely that it would make a least cost decision.

Q: Did Centerior's Supplemental Study adequately document and justify its conclusions with respect to the seven issues required to be addressed under the Commission's Opinion and Order of July 20, 1995?

None of the seven issues have been fully addressed or adequately documented in the Supplemental Study. The Study basically discloses single projections of mine-mouth fuel costs, transportation costs, and emission allowance prices. The Study reveals little if any factual foundation for any of these projections. The Study makes no disclosure of load growth or system utilization assumptions. The inadequate documentation in the Study makes it difficult to evaluate the credibility of these forecasts. For example, there is no basis to evaluate the separate transportation and mine-mouth components of the delivered price of coal of different sulfur contents. In my opinion, the Study is not "adequately documented," as is required of environmental compliance plans under Section 4913.04 (A) of the Revised Code.

A number of specific omissions and shortcomings of the Supplemental Study have been described earlier in my testimony, such as the omission of data on the burning of

6.0 pound coal at Eastlake, the failure to present sensitivity analyses to take account of uncertainties concerning Centerior's anticipated need and price of allowances in future years, and the failure to present any analysis of the impact of reduced consumption of Ohio coal on the Ohio coal industry, as distinct from the impacts on Centerior customers. There are of course other areas in which the Supplemental Study simply omits sufficient back-up information to permit analysts to fairly evaluate the credibility of each of the key projections (delivered fuel costs, emission allowance prices, load growth, and system utilization).

Q: Does the Supplemental Study make any findings that the option of continued burning of Ohio high sulfur coal would be inconsistent with providing reliable, efficient, and economical electric service, as required by Rev. Code § 4913.04(A)(2)?

A: Rev. Code § 4913.04(A)(2) requires a finding that the utility's plan be not only a reasonable and least cost strategy for compliance with applicable acid rain control requirements, but that it be "consistent with providing reliable, efficient, and economical electric service." The

Supplemental Study makes no finding that continued burning of high sulfur coal would be inconsistent with providing reliable, efficient, and economical electric service. Centerior has historically burned high sulfur 6.0 lb coal at both Eastlake and Ashtabula, therefore I would expect that continued burning of such coal at historical levels would be consistent with providing reliable, efficient, and economical electrical service. Moreover, as stated elsewhere in this testimony, Centerior should have considered an option of increasing the percentage of high sulfur 6.0 lb coal burned at Eastlake, in combination with medium sulfur 3.8 lb coal, to meet SIP limits. Such an option is the least cost strategy according to Centerior's figures released during discovery. <u>See</u> Confidential Exhibit 1.

While Centerior has made some claims during discovery that alternating between high and medium sulfur coal causes certain operational costs to be incurred, the Study fails to document any such operational issues. Centerior certainly has not met its burden of proof of demonstrating any reliability, efficiency, and operating factor that would preclude its consideration of continued, or, indeed, expanded, burning of Ohio high sulfur coal at Eastlake and Ashtabula for the duration of Phase I.

Q: **Did Centerior fail to examine other pertinent issues, such as the impact of environmental regulations and new technologies on its methodology for evaluating fuel switching decisions?**

A: Centerior failed to consider the impact that new environmental regulations or technological change might have on Centerior's system utilization, and resulting emission levels, during the environmental compliance planning horizon. More stringent NO_x reduction regulations could force some of Centerior's generating units to become uneconomic, because retrofits of equipment could not be justified in a more competitive electricity market. New regulations regarding SO_2 or air toxics could also have the same effect. The EPA recently proposed in its Clean Air Power Intiative a futher reduction in both SO_2 and NO_x emmissions. A recently proposed tightening of the limits on "fine particulate" concentrations in the air could result in tightened standards for SO_2 emmission. If these regulations are adopted, or some variant of such regulations, compliance options selected by utilities could effectively require scrubbers at some plants. Even if Centerior were not required to make any changes as a result of new environmental regulations, changes elsewhere in the utility industry could have significant effects on nationwide demand for SO_2 emission allowances. Thus, new environmental regulations and technologies are an ever-present cause of uncertainties that should be evaluated by a reasonable and least cost environmental compliance plan.

Q: **Have you relied on any other descriptions of Centerior's fuel switching and emission allowance banking strategy than what appeared in the Supplemental Study?**

A: Yes. Materials submitted in discovery are attached as Exhibit 7 and I have relied on portions of depositions, Exhibit 8, in which Centerior officials explained their fuel switching and emission allowance strategies.

Q: **Should the Commission give advance approval to Centerior's fuel switching decision-making methodology and authorize Centerior to apply the methodology and assumptions of the Supplemental Study to switch away from Ohio high sulfur coal at any time during the remainder of Phase I?**

A: No.

Q: Does this conclude your testimony?

A: Yes, except that I have prepared confidential Exhibits and confidential explanatory testimony associated with each Exhibit that illustrate some of the conclusions presented herein.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on April 11, 1997, he caused true and correct copies of the Testimony of Charles E. Mann to be served by telecopy upon:

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