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THE WHITE HOUSE

WASHINGTON

September 8, 1988

MEMORANDUM FOR ALAN M. KRANOWITZ

FROM: CHUCK GREENER *CG*
LARRY HARLOW *LH*

SUBJECT: Clean Air Legislation Information

Senate:

Senator Byrd told a West Virginia editorial board about two weeks ago that he believes that it is in the best interest of West Virginia coal to compromise now on acid rain. He cited the following reasons: 1) President Reagan has been very helpful & supportive, but the ballgame changes next year; 2) There is now a public groundswell on the environment that will build and crest next year; and 3) There is a tiny window of opportunity now which we should try to use.

To date, there has been no direct discussion between Byrd and Mitchell, but one is anticipated. Byrd's staff contends that Byrd wants a bipartisan bill and that a clean air bill "is not Byrd's gift to Dukakis". However, Simpson's staff, while doubtful that Mitchell and Byrd can agree on a bill at all because of the different constituencies they represent, suspects that a bill produced by the two Democrats will hurt western, low sulfur coal by facilitating the burning of West Virginia, high sulfur coal. This would leave western Republican Senators in a bind, since they would have to oppose any such acid rain legislation.

Byrd's staff believes there is a "better than even chance" that agreement will be reached between Mitchell and Byrd in private negotiations. (Don't be surprised if it contains UMW labor protection provisions!) The "when and where" answers are in Byrd's head.

House:

Chairman Dingell and Congressman Waxman have been meeting at the staff level to see if an agreement can be reached on an ozone non-attainment provision. In addition, they have been working with Congressman Swift and the "Group of Nine" in an effort to accomplish this task. However, since Waxman is out with pneumonia and is not expected back until next week, a decision clearly is not imminent. Moreover, Dingell's staff still argues that there is a 25 - 50% chance, at best, of a bill this year.

One final note, Congressman Madigan prior to yesterday's Leadership meeting indicated that the key decision will be the rule the Speaker grants the bill for Floor consideration. I am assuming that he does not foresee any compromise developing between Waxman and Dingell, and thus the critical decision is under what sort of rule a Clean Air bill would be brought to the House Floor.

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**ANALYSIS OF THE MITCHELL
COMPROMISE ACID RAIN PROPOSAL**

**PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY**

**BY
ICF INCORPORATED**

SEPTEMBER 1988

Final

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INTRODUCTION

- . THIS REPORT SUMMARIZES SOME OF THE MAJOR FINDINGS OF AN ANALYSIS OF THE RECENTLY DRAFTED MITCHELL COMPROMISE ACID RAIN CONTROL PROPOSAL. THE DISCUSSION FOCUSES ON THE FORECASTED EFFECTS OF THE PROPOSAL ON
 - UTILITY EMISSIONS
 - COSTS (INCLUDING FEES AND SUBSIDIES)
 - COAL MARKETS
- . THIS ANALYSIS WAS CONDUCTED USING INTERIM 1987 EPA BASE CASE ASSUMPTIONS. EPA RETROFIT SCRUBBER COST ASSUMPTIONS HOWEVER WERE REVISED DOWNWARD TO BRING THEM INTO APPROXIMATE AGREEMENT WITH MOST RECENT INDUSTRY ESTIMATES. THE POTENTIAL EFFECTS OF THE AVAILABILITY OF CLEAN COAL TECHNOLOGIES WERE NOT ASSESSED IN THIS ANALYSIS.
- . THE INTERPRETATIONS AND ASSUMPTIONS IN THE ANALYSIS APPROXIMATE BUT DO NOT PRECISELY REPLICATE THE MITCHELL COMPROMISE AS PROPOSED. A SUMMARY OF THE PROPOSAL IS ATTACHED.

DESCRIPTION OF PROPOSAL (AS ANALYZED)

	<u>PHASE I</u>	<u>PHASE II</u>
COMPLIANCE DATE	1/1/1995	1/1/2003
SO ₂ REQUIREMENTS	REQUIRED SCRUBBING AT 33 GW OF "COST-EFFECTIVE" SITES. ALL UTILITY OIL PLANTS MEET 1.0 LB. SO ₂ /MMBTU LIMIT.	ALL UTILITY COAL-FIRED UNITS OF AT LEAST 100 MW WITH 1985 SO ₂ EMISSION RATE GREATER THAN 1.2 LB. SO ₂ /MMBTU REQUIRED TO MEET 1.0 LB. SO ₂ /MMBTU ANNUAL LIMIT.
TECHNOLOGY REQUIREMENTS	SCRUBBERS AT DESIGNATED COAL UNITS (90% REMOVAL BELOW 1985 RATES ^{1/}).	90% REMOVAL REQUIRED AT AFFECTED UNITS IF REDUCTIONS ACHIEVED THROUGH SCRUBBING. (THE POTENTIAL EFFECTS OF THE AVAILABILITY OF CLEAN COAL TECHNOLOGIES WERE NOT ASSESSED FOR THIS ANALYSIS.)
NOx REQUIREMENTS	NONE AT EXISTING UTILITY PLANTS. NEW NOx NSPS BY 1991 (AFFECTS COAL UNITS BUILT AFTER 1995).	"COST-EFFECTIVE" NOx CONTROLS. ^{2/}
FEE	1 MILL/KWH ON ALL FOSSIL GENERATION AT PLANTS WITH EMISSION RATES IN EXCESS OF 1.0 LB. SO ₂ /MMBTU (EFFECTIVE 1/1/1989 THROUGH 1/1/2000 -- ASSUMED TO BE EXTENDED THROUGH 2002).	NONE
SUBSIDY	\$200/KW ON SO ₂ CONTROL TECHNOLOGY.	\$150/KW ON SO ₂ CONTROL TECHNOLOGY.

^{1/} ANALYZED AS 90 PERCENT REMOVAL FROM INPUT COAL.

^{2/} NO CONTROLS ASSUMED AT CYCLONE OR WET BOTTOM BOILERS.

DESCRIPTION OF PROPOSAL (AS ANALYZED)

- PHASE I (1995): 33 GIGAWATTS OF SCRUBBERS REQUIRED. UTILITY OIL PLANTS MUST MEET A 1.0 LB. SO_2 /MMBTU LIMIT.
- PHASE II (2003): AFFECTED UNITS REQUIRED TO MEET 1.0 LB. SO_2 /MMBTU ANNUAL AVERAGE LIMIT. MINIMUM 90 PERCENT REMOVAL MUST BE ACHIEVED IF CONVENTIONAL CONTROL TECHNOLOGIES ARE USED, MINIMUM 70 PERCENT REMOVAL IF CLEAN COAL TECHNOLOGIES ARE USED. "COST-EFFECTIVE" NO_x CONTROLS ARE ALSO REQUIRED.
- SUBSIDIES OF \$200/KW FLAT SUBSIDY (IN 1987 DOLLARS) FOR REQUIRED SO_2 CONTROL TECHNOLOGY IN PHASE I; \$150/KW FLAT SUBSIDY FOR SELECTED SO_2 CONTROL TECHNOLOGIES IN PHASE II.^{1/}
- FEE: SUBSIDIES ARE FUNDED BY A 1 MILL/KWH FEE (IN 1987 DOLLARS) ON ALL FOSSIL GENERATION WITH AN EMISSION RATE IN EXCESS OF 1.0 LB. SO_2 /MMBTU. FEE BEGINS ON 1/1/1989 AND ENDS NO EARLIER THAN 1/1/2000. (FEE IS ASSUMED TO BE EXTENDED TO THE EXTENT NECESSARY TO FUND THE SUBSIDIES.)

THE POTENTIAL EFFECTS OF THE AVAILABILITY OF CLEAN COAL TECHNOLOGIES WERE NOT ASSESSED IN THIS ANALYSIS.

^{1/} THE PROPOSAL ALLOWS ANY PERCENT REDUCTION TO MEET THE 1.0 LB. SO_2 RATE BUT ONLY ALLOWS SUBSIDIES FOR THOSE MEETING MINIMUM REMOVAL.

CASES ANALYZED

- . TWO CASES WERE ANALYZED TO CAPTURE A RANGE OF IMPACTS ASSOCIATED WITH A MAJOR UNCERTAINTY UNDER THE BILL -- THE AVAILABILITY OF LOW SULFUR EASTERN COAL TO MEET THE 1.0 LB. ANNUAL SO_2 RATE REQUIREMENT:
 - "1.0 LB. COAL AVAILABLE" - THIS CASE ASSUMED THAT LOW SULFUR "COMPLIANCE" COALS IN THE EAST (COMPLIANCE COALS CAN MEET A 1.2 POUND SO_2 PER MILLION BTU RATE ON A MONTHLY AVERAGE -- I.E., NSPS SUBPART D REGULATIONS) COULD MEET A 1.0 LB. ANNUAL AVERAGE SO_2 LIMIT.
 - "No 1.0 LB. COAL AVAILABLE" - THIS CASE ASSUMED THAT LOW SULFUR "COMPLIANCE" COALS IN THE EAST WOULD NOT BE ABLE TO MEET A 1.0 LB. ANNUAL LIMIT. ONLY WESTERN COAL WOULD BE AVAILABLE TO MEET THE 1.0 LB. ANNUAL LIMIT.
- . THE IMPACTS OF THE BILL ARE EXPECTED TO BE WITHIN THE RANGE OF IMPACTS UNDER THE TWO CASES ANALYZED (BECAUSE IT IS UNLIKELY THAT EITHER ALL "COMPLIANCE" EASTERN COALS OR NO EASTERN "COMPLIANCE" COALS WOULD BE ABLE TO MEET THE 1.0 LB. ANNUAL RATE). SEE ATTACHMENT B FOR FURTHER DISCUSSION OF THE UNCERTAINTY OF EASTERN COAL RESERVES MEETING THE 1.0 LB. LIMIT.

MAJOR FINDINGS

	ACTUAL 1980	BASE 1995	CHANGE FROM BASE: COMPROMISE BILL 1995	BASE 2003 ^{1/}	CHANGE FROM BASE: COMPROMISE BILL 2003 ^{1/}	
					EASTERN 1.0 LB. COAL ASSUMPTIONS AVAILABLE	NOT AVAILABLE
UTILITY EMISSIONS (MILLIONS OF TONS)						
SO ₂	17.4	18.6	-4.7	20.2	-10.7	-11.4
NO _x	6.6	7.9	--	9.3	-2.4	-2.4
ANNUALIZED COSTS ^{2/} OF PROGRAM (BILLIONS OF 1987 \$/YR)						
UTILITY COMPLIANCE COSTS	--	--	+1.3	--	+3.8	+5.0
LEVELIZED SUBSIDIES	--	--	+0.4	--	+0.6	+1.1
TOTAL	--	--	+1.7	--	+4.4	+6.1
COAL PRODUCTION (MILLIONS OF TONS)						
N. APPALACHIA	185	180	-3	205	-27	+13
C&S APPALACHIA	259	305	+3	400	+30	-44
MIDWEST	134	125	-1	160	-23	+8
WEST	251	428	0	585	+23	+31
TOTAL	830	1038	-1	1350	+3	+8
RETROFIT SCRUBBERS (GIGAWATTS)	--	--	33	--	58	110

^{1/} BASE CASE FORECASTS AND COMPROMISE BILL COAL PRODUCTION AND COST IMPACTS IN PHASE II ARE FOR 2005 (NOT 2003). EMISSIONS AND EMISSION REDUCTIONS ARE PRESENTED FOR 2003.

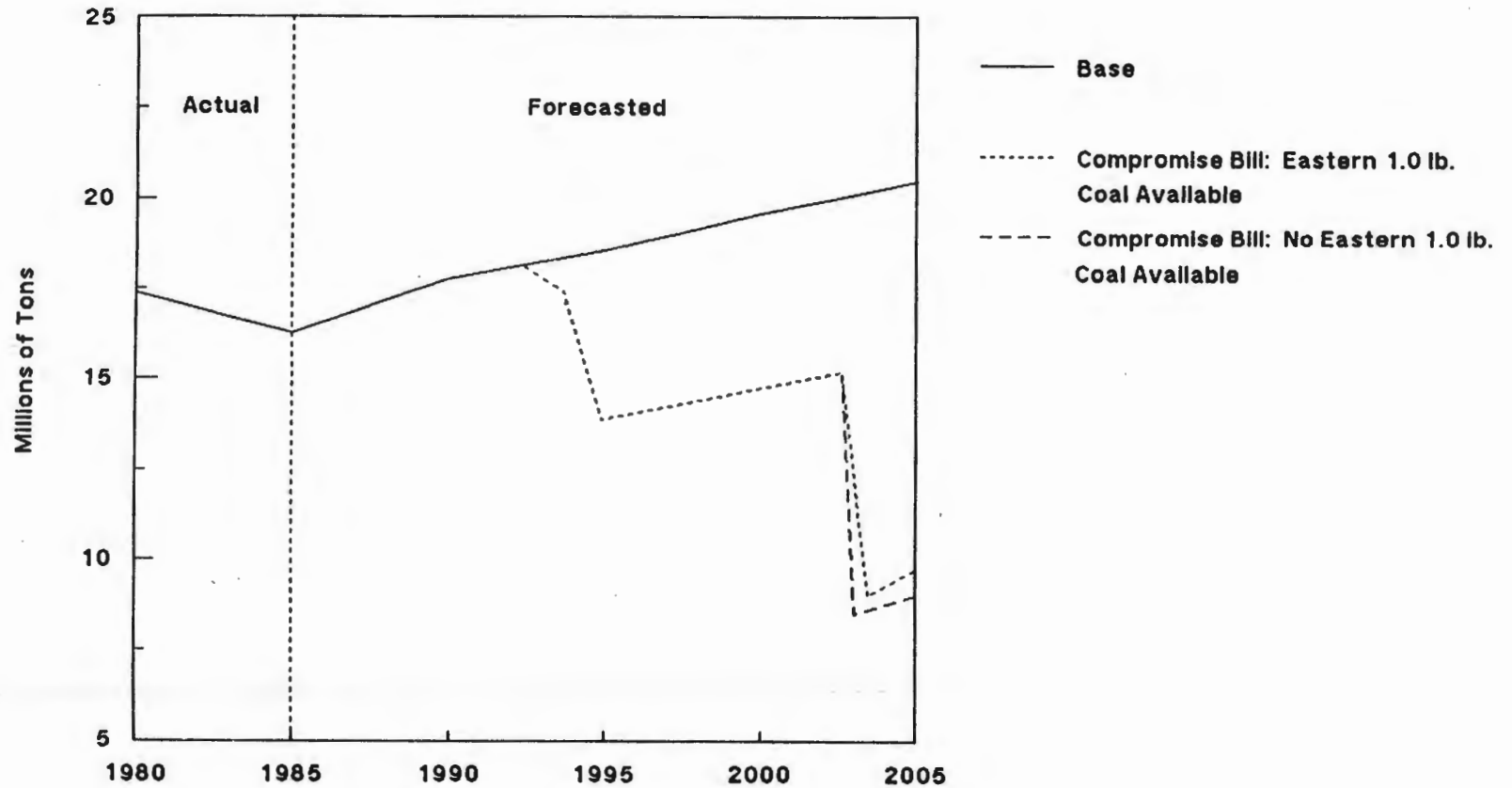
^{2/} FOR COMPARISON PURPOSES, UTILITY REVENUES TOTALED ABOUT \$156 BILLION IN 1986 (IN 1987\$). ON A NATIONAL BASIS, PERCENT RATE IMPACTS WOULD RANGE FROM 1-3 PERCENT NATIONALLY, ALTHOUGH SOME INDIVIDUAL STATE AND UTILITY RATE IMPACTS WOULD BE HIGHER.

MAJOR FINDINGS

- . TOTAL ANNUALIZED COSTS OF THE PROGRAM IN PHASE I TOTAL \$1.7 BILLION, AND IN PHASE II RANGE FROM \$4.4-6.1 BILLION. PHASE I ANNUALIZED COSTS ARE ABOUT DOUBLE THE COSTS OF OTHER PROPOSALS ACHIEVING COMPARABLE REDUCTIONS AND WHICH PERMIT "LEAST COST" REDUCTIONS. PHASE II ANNUALIZED COSTS ARE APPROXIMATELY 50 PERCENT HIGHER THAN COMPARABLE LEAST COST PROPOSALS (E.G., COOPER BILL).**
- . COAL MARKET IMPACTS ARE MINIMAL IN PHASE I BECAUSE REDUCTIONS ARE ACHIEVED THROUGH SCRUBBING AND FUEL SWITCHING AT OIL PLANTS. IN PHASE II, IMPACTS IN HIGH SULFUR PRODUCING REGIONS, (E.G., NORTHERN APPALACHIA AND THE MIDWEST) RANGE FROM LOSSES OF ABOUT 50 MILLION TONS TO GAINS OF ABOUT 20 MILLION TONS RELATIVE TO "BASE CASE" LEVELS. IN BOTH CASES, HOWEVER, HIGH SULFUR COAL PRODUCTION IS FORECASTED TO REMAIN ABOVE CURRENT (1985) LEVELS.**
- . THERE ARE SIGNIFICANTLY FEWER LOSSES FROM HIGH SULFUR COAL PRODUCING REGIONS UNDER THE MITCHELL COMPROMISE THAN UNDER COMPARABLE "LEAST COST EMISSION REDUCTION" PROPOSALS (E.G., COOPER BILL), WHICH GENERALLY ARE ESTIMATED TO RESULT IN LOSSES OF ABOUT 80-100 MILLION TONS FROM HIGH SULFUR REGIONS.**

SUMMARY OF IMPACTS: NATIONAL SO₂ EMISSION REDUCTIONS

UTILITY SO₂ EMISSIONS

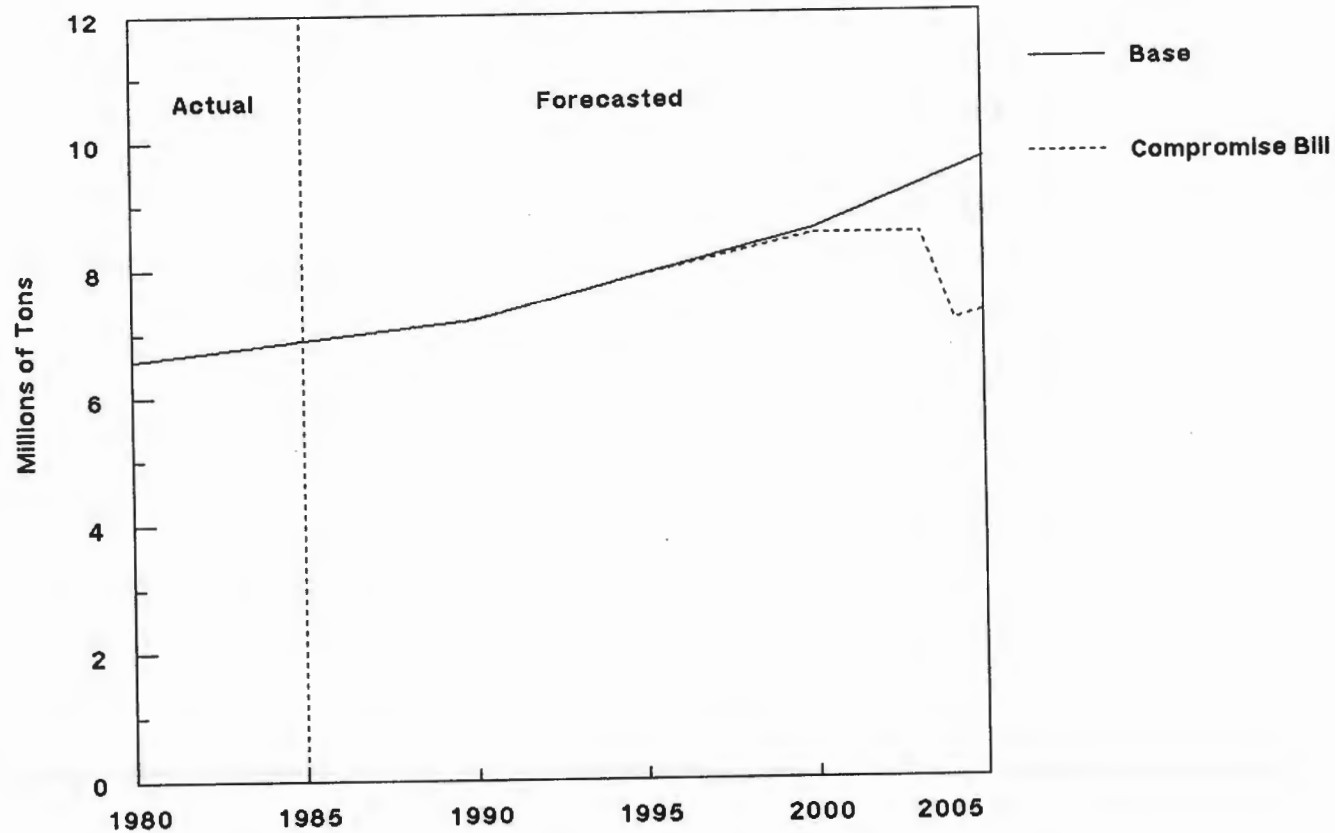


SUMMARY OF IMPACTS: NATIONAL SO₂ EMISSION REDUCTIONS

- . NATIONAL UTILITY SO₂ EMISSIONS ARE FORECASTED TO BE REDUCED (BELOW BASE CASE LEVELS) BY**
 - ABOUT 4.7 MILLION TONS UNDER PHASE I (ABOUT 3.7 MILLION TONS FROM REQUIRED SCRUBBERS, 0.5 MILLION TONS FROM OIL PLANTS, AND THE REMAINDER FROM UTILIZATION/FUEL SHIFTS DUE TO THE FEE).**
 - ABOUT 10.7-11.4 MILLION TONS UNDER PHASE II IN 2003. ABOUT 0.7 MILLION TONS MORE REDUCTIONS ARE FORECASTED IF EASTERN COAL RESERVES ARE NOT AVAILABLE TO MEET THE 1.0 LB. ANNUAL RATE REQUIREMENT. THIS IS BECAUSE MANY EASTERN PLANTS ARE FORECAST TO SCRUB UNDER THESE CIRCUMSTANCES, ACHIEVING MORE REDUCTIONS (90 PERCENT REMOVAL) AS A RESULT.**
- . BECAUSE UTILITY SO₂ EMISSIONS ARE FORECASTED TO INCREASE BY ABOUT 2.8 MILLION TONS FROM 1980 TO 2003, SO₂ EMISSION REDUCTIONS UNDER PHASE II AMOUNT TO ABOUT 7.9-8.6 MILLION TONS BELOW 1980 UTILITY LEVELS. NOTE THAT TOTAL SO₂ REDUCTIONS BELOW 1980 LEVELS WILL BE APPROXIMATELY 1 MILLION TONS GREATER BECAUSE OF REDUCTIONS IN EMISSIONS IN OTHER SECTORS THAT HAVE OCCURRED SINCE 1980 (E.G., SMELTERS) OR ARE EXPECTED TO OCCUR.**

SUMMARY OF IMPACTS: NATIONAL NO_x EMISSION REDUCTIONS

UTILITY NO_x EMISSIONS

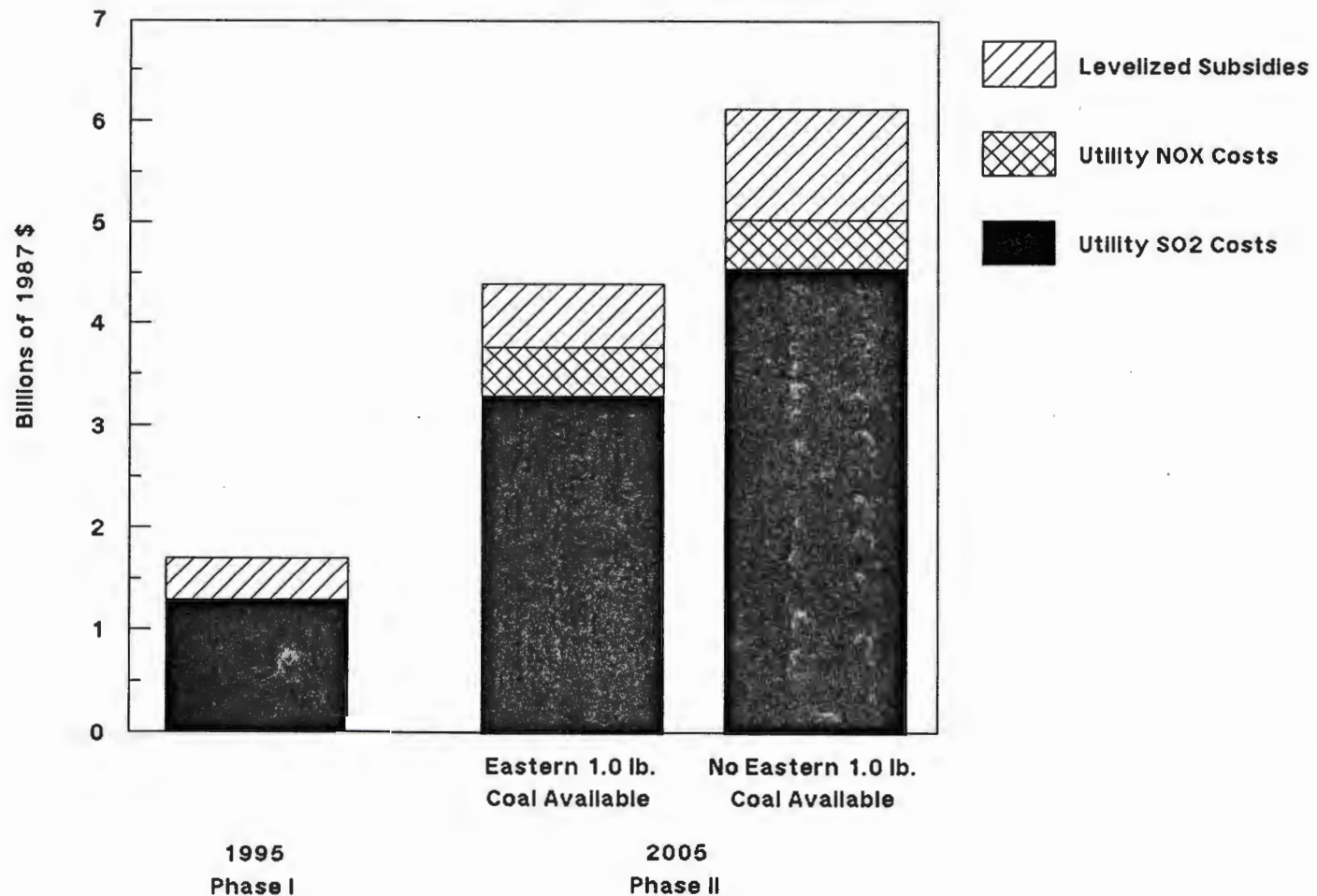


SUMMARY OF IMPACTS: NATIONAL NO_x EMISSION REDUCTIONS

- . NATIONAL UTILITY NO_x EMISSIONS ARE FORECASTED TO BE REDUCED (BELOW BASE CASE LEVELS) BY ABOUT 2.4 MILLION TONS BY PHASE II (0.2 MILLION TONS OF THESE REDUCTIONS ARE FORECASTED TO COME FROM A TIGHTENING OF NSPS REGULATIONS TO A 0.5 LB. PER MILLION BTU LIMIT). BECAUSE OF FORECASTED BASE CASE GROWTH IN UTILITY NO_x EMISSIONS, UTILITY NO_x EMISSIONS REMAIN ABOVE 1980 LEVELS.**
- . UTILITY NO_x EMISSION REDUCTIONS REFLECT COST EFFECTIVE RETROFITS AT MOST EXISTING UTILITY BOILERS (BUT NO REDUCTIONS AT CYCLONE/WET BOTTOM BOILERS), AND AMOUNT TO ABOUT 2.2 MILLION TONS OF REDUCTIONS. THESE "COST EFFECTIVE" REDUCTIONS ASSUME AN 0.5 LB. PER MILLION BTU RATE WOULD BE REQUIRED AT WALL-FIRED UNITS AND AN 0.4 LB. RATE AT TANGENTIALLY-FIRED UNITS.**
- . ABOUT 0.5-0.6 MILLION TONS OF ADDITIONAL REDUCTIONS BY 2005 COULD BE OBTAINED THROUGH LIMITING NO_x EMISSIONS AT CYCLONE/WET BOTTOM BOILERS TO A 1 LB. PER MILLION BTU RATE.**

SUMMARY OF IMPACTS: NATIONAL UTILITY COSTS

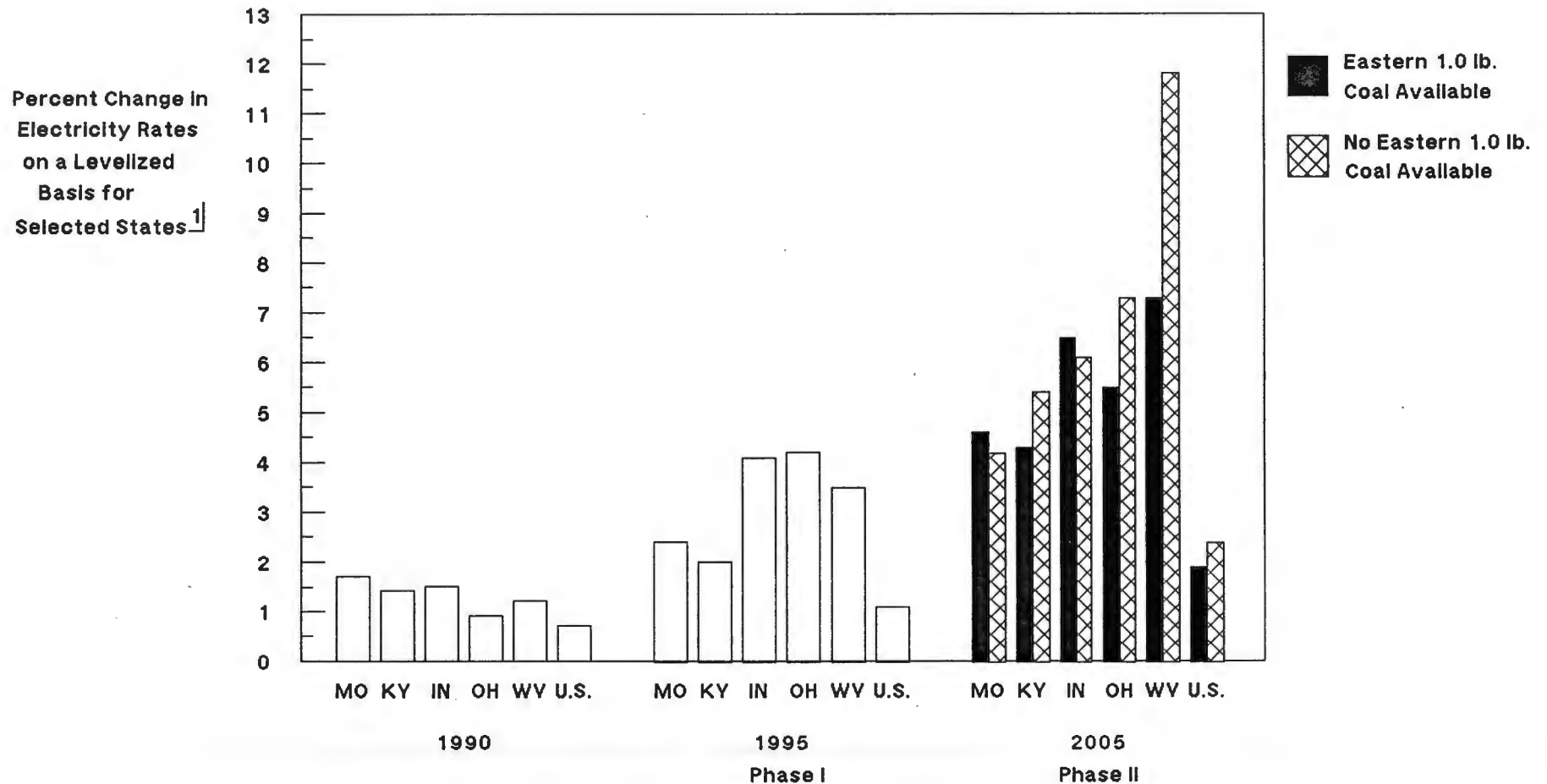
INCREASE IN ANNUAL COSTS



SUMMARY OF IMPACTS: NATIONAL UTILITY COSTS

- . UNDER PHASE I, NET UTILITY ANNUALIZED COSTS ARE ABOUT \$1.3 BILLION. TOTAL ANNUAL COMPLIANCE COSTS (INCLUDING SUBSIDY COSTS FUNDED BY THE GENERATION FEE) ARE ABOUT \$1.7 BILLION, OR ABOUT TWICE THE COSTS OF OTHER PROPOSALS WITH SIMILAR REDUCTIONS.**
- . NET UTILITY ANNUALIZED COSTS UNDER PHASE II ARE FORECASTED TO BE \$3.8-5.0 BILLION. TOTAL ANNUALIZED COSTS (INCLUDING SUBSIDIES) OF THE PROGRAM ARE ABOUT \$4.4-6.1 BILLION, APPROXIMATELY 50 PERCENT HIGHER THAN THE COSTS OF OTHER COMPARABLE EMISSION REDUCTION PROPOSALS (E.G., COOPER BILL).**
- . ELECTRICITY RATE IMPACTS WOULD BE EXPECTED TO RANGE FROM 1-2 PERCENT ON A LEVELIZED BASIS NATIONALLY. SEE PAGES 13-14 FOR FURTHER DETAIL ON STATE LEVEL IMPACTS.**

SUMMARY OF IMPACTS: ELECTRICITY RATES



¹ "Levelized" rate increases will tend to be lower than "first-year" rate impacts because the higher capital outlays in the first year of capital investments are spread out over the duration of the investment.

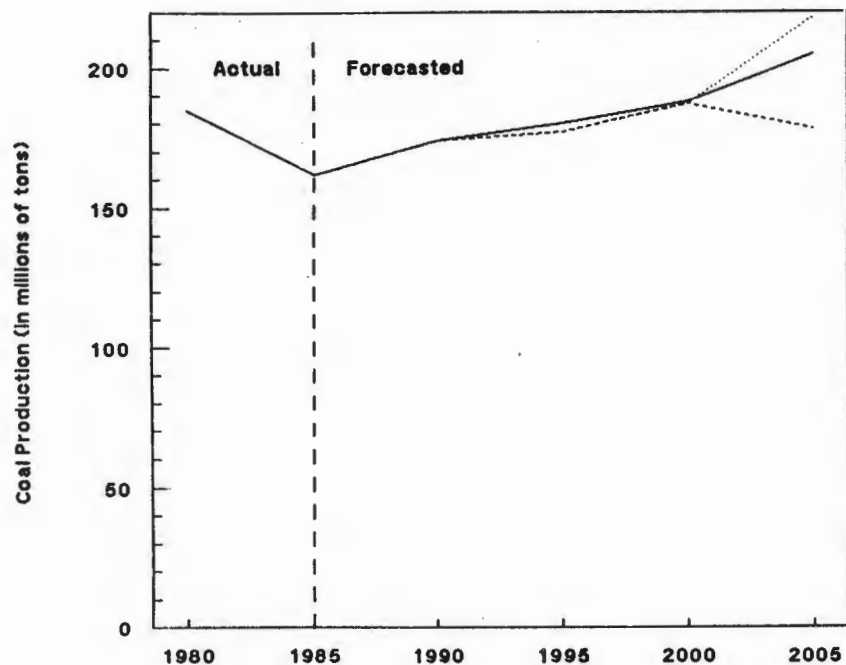
Note: States which buy or sell significant amounts of electricity from other states may have higher or lower electricity rate impacts.

SUMMARY OF IMPACTS: ELECTRICITY RATES

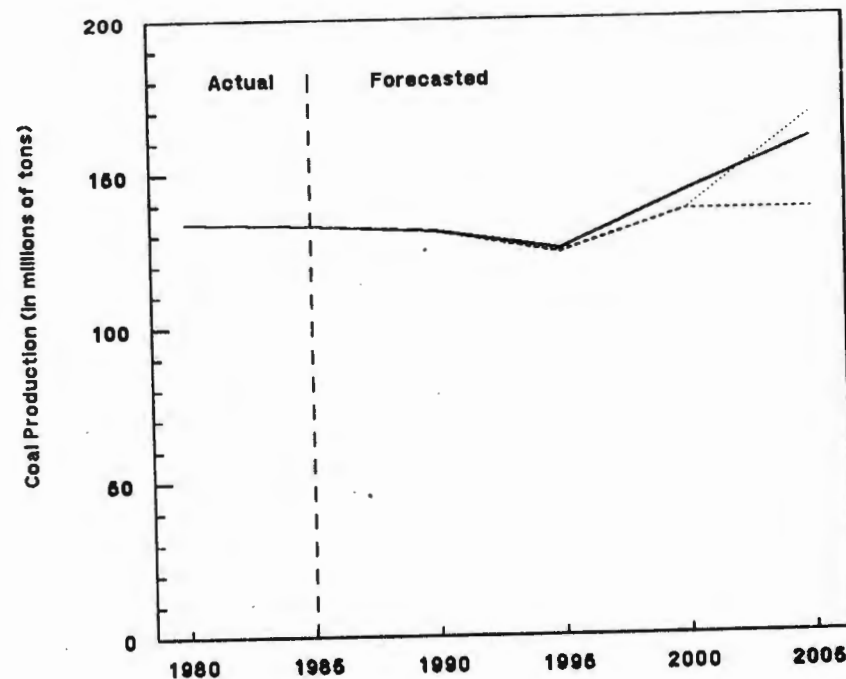
- NATIONAL "LEVELIZED" RATE INCREASES ARE ABOUT 1 PERCENT IN 1990 DUE TO THE TAX, ABOUT 1 PERCENT IN 1995 UNDER PHASE I, AND ABOUT 2 PERCENT IN 2005 UNDER PHASE II. NATIONAL ANNUAL AVERAGE RATE IMPACTS ARE KEPT RELATIVELY LOW BECAUSE THE FEES WHICH FUND THE SUBSIDY ARE SPREAD OVER TIME.**
- A NUMBER OF STATES HAVE CONSIDERABLY HIGHER RATE IMPACTS THAN THE NATIONAL AVERAGE. A FEW EXAMPLES ARE SHOWN ABOVE. IN 1990, THESE STATES HAVE RELATIVELY HIGH RATE IMPACTS BECAUSE THEY GENERATE MOST OF THEIR ELECTRICITY FROM FOSSIL FUELS. BY 1995 AND 2005, THESE STATES HAVE MOST OF THE CONTROL TECHNOLOGY REQUIREMENTS AND, HENCE, THE HIGHEST COSTS AND RATE IMPACTS, EVEN AFTER SUBSIDIES.**
- WHILE OVERALL "LEVELIZED" PERCENT RATE IMPACTS IN INDIVIDUAL STATES ARE GENERALLY LOWER THAN 5 PERCENT (EXCEPT IN THE ABOVE NOTED STATES), "FIRST YEAR" RATE IMPACTS AND INDIVIDUAL UTILITY RATE IMPACTS COULD BE SOMEWHAT HIGHER.**

SUMMARY OF IMPACTS: HIGH SULFUR COAL MARKETS

**COAL PRODUCTION IN
NORTHERN APPALACHIA**



**COAL PRODUCTION IN
MIDWEST**



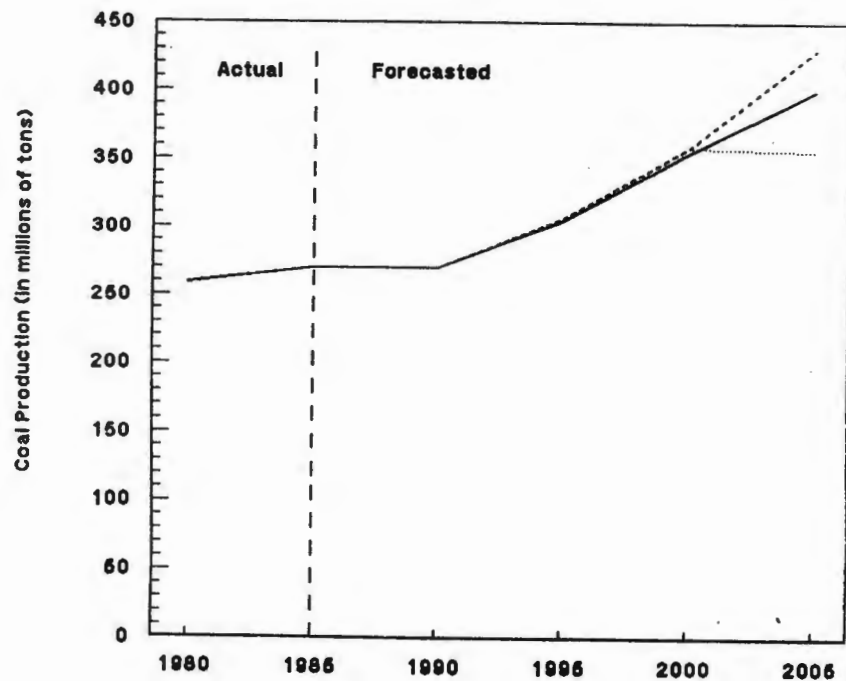
— BASE CASE
- - - - - COMPROMISE: EASTERN 1.0 LB. COAL AVAILABLE
..... COMPROMISE: NO EASTERN 1.0 LB. COAL AVAILABLE

SUMMARY OF IMPACTS: HIGH SULFUR COAL MARKETS

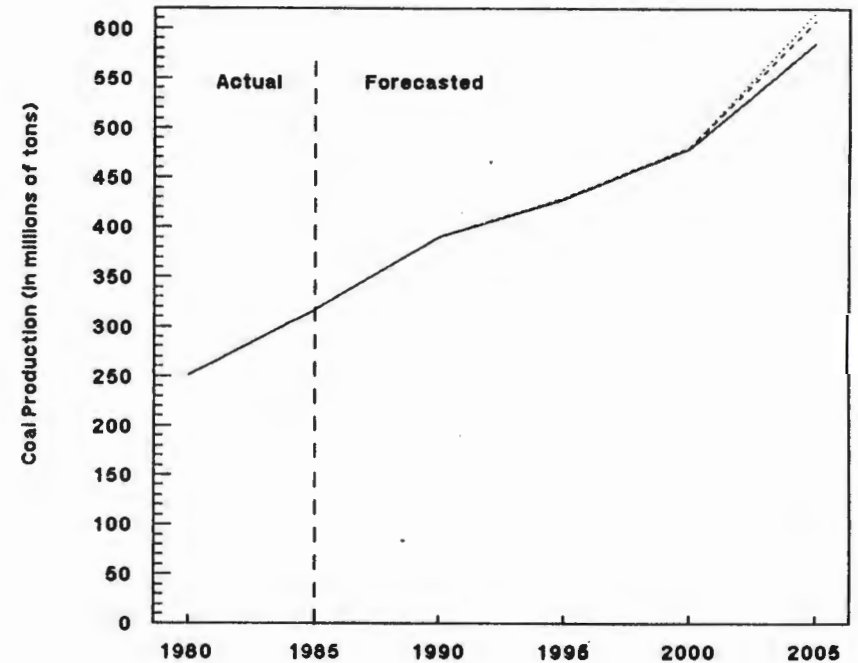
- PHASE I IS FORECAST TO BE RELATIVELY COAL MARKET "NEUTRAL" WITH RESPECT TO THE HIGH SULFUR COAL MARKETS - COAL PRODUCTION FROM PREDOMINANTLY HIGH SULFUR REGIONS (NORTHERN APPALACHIA AND THE MIDWEST) REMAIN APPROXIMATELY AT BASE CASE LEVELS.**
- BY PHASE II, SHIFTS IN COAL PRODUCTION FROM HIGH SULFUR REGIONS RANGE FROM GAINS OF ABOUT 20 MILLION TONS TO LOSSES OF ABOUT 50 MILLION TONS BELOW BASE CASE LEVELS. HIGH SULFUR COAL PRODUCTION REMAINS ABOVE CURRENT LEVELS IN ALL CASES. WHILE MANY OF THE REDUCTIONS ARE ACHIEVED THROUGH SCRUBBING (ABOUT 58-110 GIGAWATTS BY 2005), A NUMBER OF UNITS WHICH BURN HIGHER SULFUR COALS IN THE BASE CASE SHIFT TO LOWER SULFUR COALS.**
- PROJECTED GROWTH IN NORTHERN APPALACHIA AND MIDWEST ARE REDUCED CONSIDERABLY TO THE EXTENT 1.0 LB. EASTERN COAL IS NOT AVAILABLE. THIS IS BECAUSE MORE PLANTS SCRUB NORTHERN APPALACHIA OR MIDWEST COALS IN LIEU OF COAL SWITCHING IN ORDER TO MEET THE REDUCTION REQUIREMENTS.**

SUMMARY OF IMPACTS: LOW SULFUR COAL MARKETS

COAL PRODUCTION IN
CENTRAL & SOUTHERN APPALACHIA



COAL PRODUCTION IN
WEST

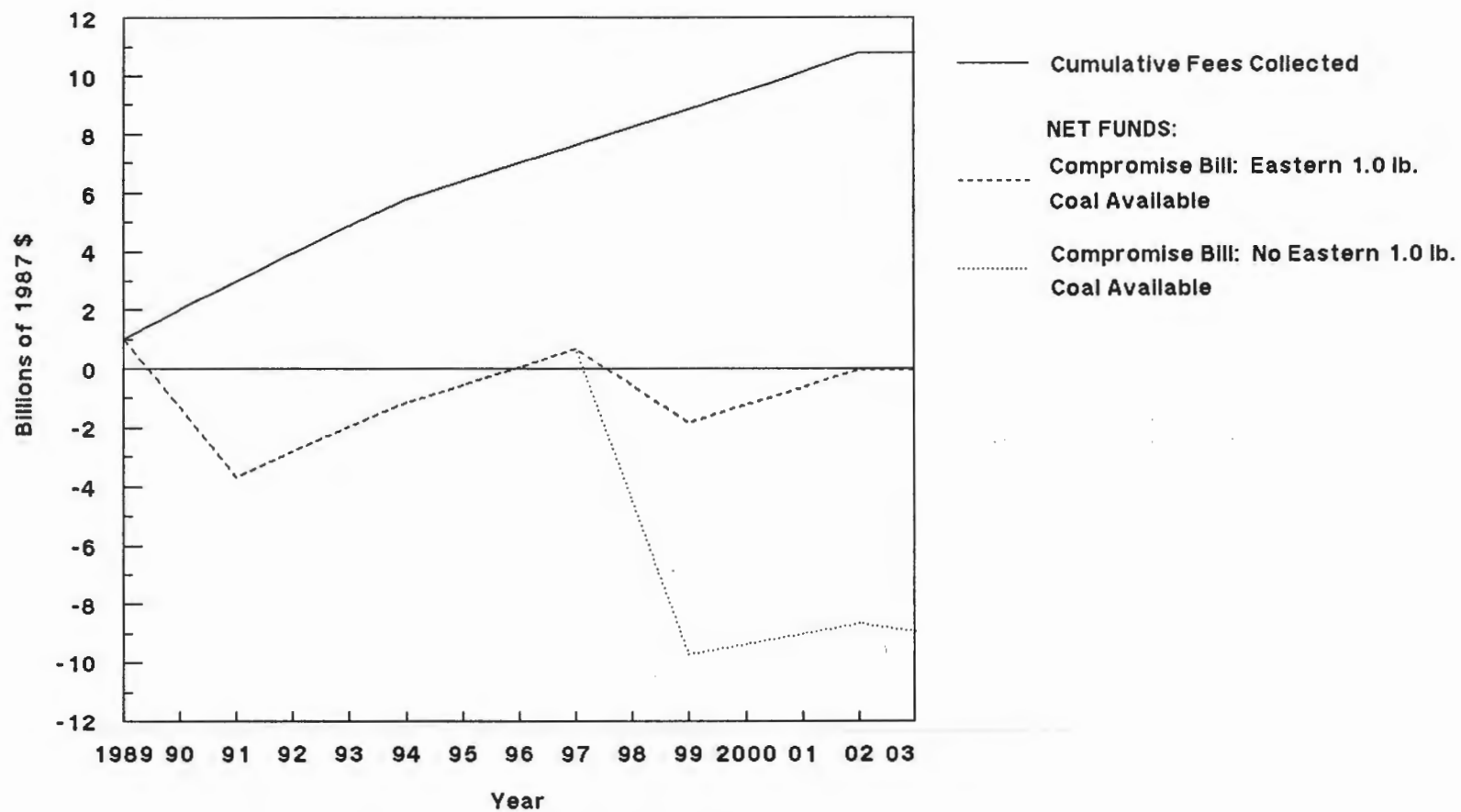


— BASE CASE
----- COMPROMISE: EASTERN 1.0 LB. COAL AVAILABLE
..... COMPROMISE: NO EASTERN 1.0 LB. COAL AVAILABLE

SUMMARY OF IMPACTS: LOW SULFUR COAL MARKETS

- LOW SULFUR COAL PRODUCING REGIONS (CENTRAL APPALACHIA AND THE WEST) ARE FORECASTED TO EXPERIENCE MODERATE GAINS ABOVE BASE CASE LEVELS, REFLECTING SWITCHING FROM HIGH TO LOW SULFUR COALS.**
- ASSUMING THE AVAILABILITY OF 1.0 LB. ANNUAL AVERAGE RESERVES IN THE EAST, CENTRAL APPALACHIA AND THE WEST SHARE THE FORECASTED COAL PRODUCTION GAINS. HOWEVER, IF 1.0 LB. ANNUAL AVERAGE COAL IS NOT AVAILABLE IN THE EAST, VIRTUALLY ALL OF THE COAL PRODUCTION GAINS WOULD COME FROM THE WEST (AND FROM HIGH SULFUR COAL PRODUCING REGIONS), WITH LESS PRODUCTION GROWTH IN CENTRAL APPALACHIA. THIS OCCURS BECAUSE SOME PLANTS ALREADY CONSUMING LOWER OR MEDIUM SULFUR CENTRAL APPALACHIA COALS WOULD SWITCH TO LOW SULFUR WESTERN COALS OR SCRUB HIGHER SULFUR EASTERN COALS TO MEET THE 1.0 LB. RATE.**
- AS NOTED EARLIER, THE TWO CASES PRESENTED HEREIN WERE DESIGNED TO BOUND THE LIKELY EFFECTS OF THE PROPOSAL; IT IS EXPECTED THAT CHANGES IN COAL PRODUCTION WOULD FALL SOMEWHERE IN BETWEEN THESE FORECASTS.**
- POTENTIAL SHIFTS TO IMPORTED COALS, SHIFTS AT BITUMINOUS PLANTS TO SUBBITUMINOUS COALS, CLEAN COAL TECHNOLOGIES, AND ADVANCED COAL PREPARATION WERE NOT ANALYZED HEREIN. THESE FACTORS COULD HAVE A SIGNIFICANT IMPACT ON REGIONAL COAL PRODUCTION AS DISCUSSED LATER.**

SUMMARY OF IMPACTS: FLOW OF FUNDS

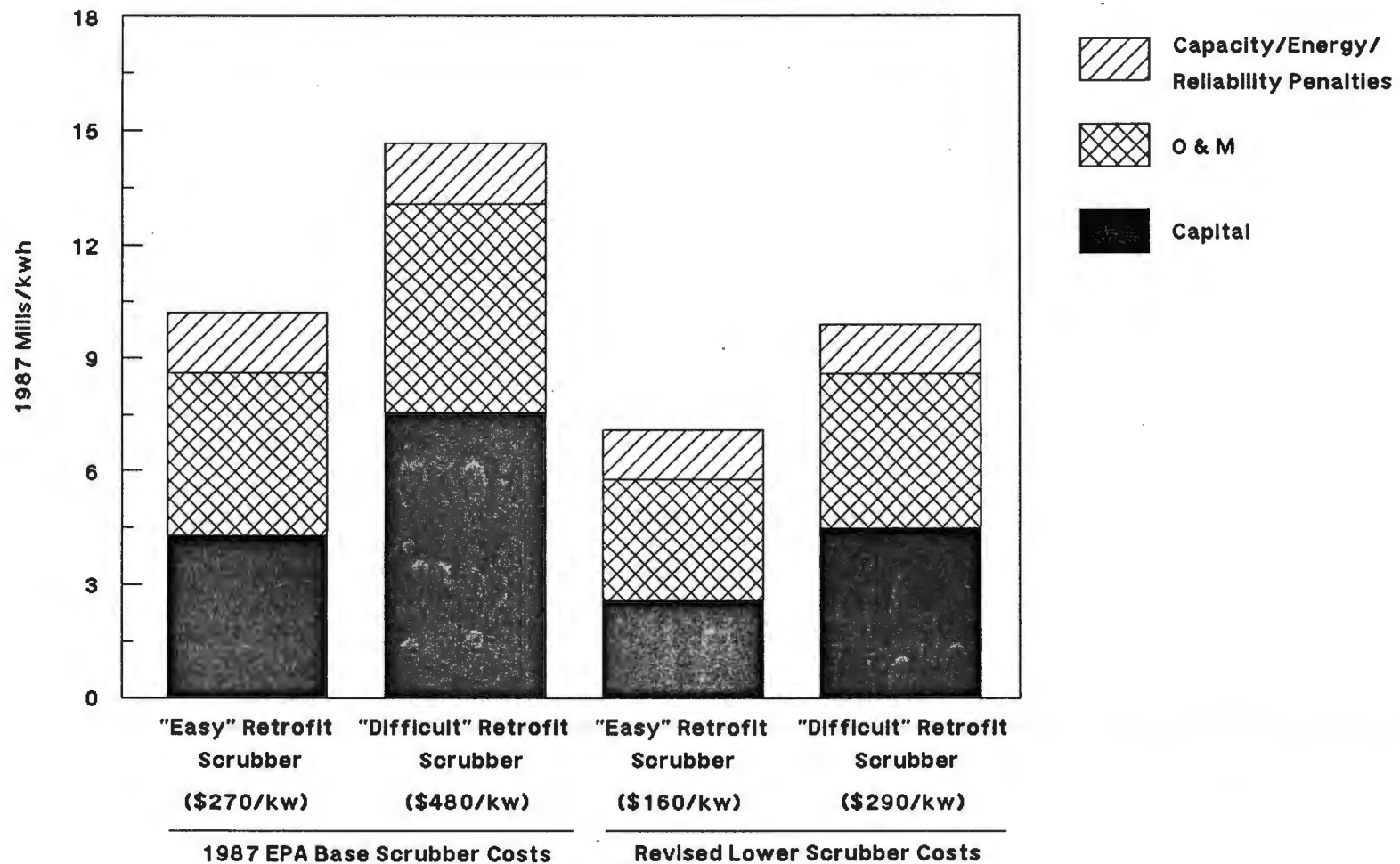


SUMMARY OF IMPACTS: FLOW OF FUNDS

- . ASSUMING 1.0 LB. EASTERN COAL IS AVAILABLE, THE REVENUES FROM THE GENERATION FEE ARE JUST SUFFICIENT TO FUND THE SUBSIDIES IF THE FEE IS EXTENDED THROUGH 2002.
- . HOWEVER, ASSUMING "NO 1.0 LB. EASTERN COAL," ADDITIONAL SCRUBBERS WOULD BE ADDED, INCREASING THE SUBSIDY OUTLAYS. AS A RESULT, A HIGHER GENERATION FEE WOULD NEED TO BE LEVIED OR BORROWING AUTHORITY WOULD HAVE TO BE OBTAINED.

KEY ASSUMPTIONS - SCRUBBER COSTS

COMPARISON OF SCRUBBER COSTS ¹⁾



¹⁾ Assumes 5.0 lb. SO₂/mmBtu (or 3.0% S) coal. "Easy" and "Difficult" reflect "retrofit factors".

KEY ASSUMPTIONS - SCRUBBER COSTS

- **RETROFIT SCRUBBER COSTS WERE REVISED DOWNWARDS FROM PREVIOUS EPA ASSUMPTIONS (40% REDUCTION IN CAPITAL COSTS, 25% REDUCTION IN O&M COSTS) TO BRING INTO APPROXIMATE AGREEMENT WITH OTHER RECENT INDUSTRY ESTIMATES. THESE LOWER SCRUBBER COSTS PARTIALLY REFLECT LESS REDUNDANCY REQUIRED TO MEET AN ANNUAL EMISSION LIMIT AS OPPOSED TO A 30 DAY AVERAGE UNDER THE CURRENT NSPS. RETROFIT FACTORS ARE APPLIED TO REFLECT RELATIVE EASE OR DIFFICULTY OF INSTALLING A SCRUBBER AT AN EXISTING SITE.**
- **THIS ANALYSIS WAS LIMITED IN THAT THE POTENTIAL ROLE OF CLEAN COAL TECHNOLOGIES WAS NOT CONSIDERED. TO THE EXTENT SUCH TECHNOLOGIES ARE AVAILABLE BY PHASE II AND EMPLOYED, COMPLIANCE COST FORECASTS COULD BE LOWER THAN PRESENTED HEREIN AND COAL MARKET IMPACTS WOULD BE DIFFERENT.**

KEY ASSUMPTIONS - COAL SUPPLY

- COAL RESERVES - THERE IS UNCERTAINTY AS TO THE QUANTITY AND AVAILABILITY OF COALS WHICH COULD MEET THE 1.0 LB. ANNUAL RATE REQUIREMENT (PARTICULARLY IN THE EAST). CURRENT SHIPMENT DATA SUGGESTS THAT 1.0 LB. COALS ARE MUCH MORE LIMITED THAN COMPLIANCE COALS IN THE EAST. FOR THIS ANALYSIS, TWO CASES WERE ANALYZED TO PROVIDE A RANGE OF IMPACTS ASSOCIATED WITH THIS UNCERTAINTY. EASTERN COMPLIANCE COAL RESERVES WERE ASSUMED TO BE CAPABLE OF MEETING THE 1.0 LB. ANNUAL LIMIT IN ONE CASE, AND WERE NOT IN THE OTHER CASE. THE UNCERTAINTIES IN RESERVE CHARACTERIZATIONS, SHIPMENT DATA, SULFUR RETENTION IN ASH, AND OTHER FACTORS AS THEY RELATE TO THE AVAILABILITY OF 1.0 LB. COAL ARE DISCUSSED IN ATTACHMENT B.
- COAL RANK SWITCHING - IT WAS ASSUMED THAT BITUMINOUS COAL PLANTS COULD NOT USE SUBBITUMINOUS COALS. TO THE EXTENT SUCH FUEL SWITCHING IS TECHNOLOGICALLY FEASIBLE AND ECONOMIC (INCLUDING POSSIBLE DERATES), COMPLIANCE COSTS COULD BE LOWER AND COAL SWITCHING TO WESTERN COALS COULD BE GREATER THAN FORECASTED HEREIN.

OTHER IMPACTS

- SOLID WASTES - SOLID WASTE PRODUCTION WOULD INCREASE AS A RESULT OF THE WIDE-SCALE CONTROL TECHNOLOGY INSTALLATION FORECASTED UNDER THIS PROPOSAL. IT IS EXPECTED THAT IN MOST CASES UTILITIES WOULD UTILIZE A FORCED OXIDATION PROCESS TO PRODUCE A DRY BY-PRODUCT (GYPSUM) INSTEAD OF THE WET SCRUBBER SLUDGE PRODUCED BY EARLIER SCRUBBER DESIGNS.
- ADMINISTRATIVE COSTS - ADMINISTRATIVE COSTS IN IMPLEMENTING THE FEE AND SUBSIDY PROGRAM WERE NOT ASSESSED OR INCLUDED HEREIN.
- TIME CONSTRAINTS - THE PROPOSAL WOULD ALLOW 6 YEARS FOR SOURCES TO PLAN, CONSTRUCT AND PERMIT 33 GIGAWATTS OF EMISSION CONTROL TECHNOLOGY. THE TYPICAL ASSUMPTION IS 2 TO 3 YEARS TO CONSTRUCT AND INSTALL AN FGD SYSTEM. IF ADEQUATE PLANS ARE SUBMITTED TO EPA WITHIN THE TWO YEARS OF ENACTMENT AS REQUIRED, AND IF EPA IS ABLE TO APPROVE THEM IN A TIMELY FASHION, THERE WOULD LIKELY BE SUFFICIENT TIME TO MEET JANUARY 1995 DEADLINES. HOWEVER, IT IS POSSIBLE IN CERTAIN CASES THAT THIS PROCESS MAY NOT FUNCTION AS SMOOTHLY, RESULTING IN POTENTIAL DELAYS IN FINAL COMPLIANCE OR ADDITIONAL COSTS.

OTHER IMPACTS

- SYSTEM CONSTRAINTS - THE INSTALLATION OF AN FGD SYSTEM REQUIRES A FEW WEEKS TO SEVERAL MONTHS OF DOWN TIME AT THE END OF THE CONSTRUCTION PERIOD. GIVEN THE LARGE NUMBER OF PLANTS AFFECTED, UTILITIES WILL HAVE TO CAREFULLY PLAN THESE OUTAGES TO AVOID SYSTEM RELIABILITY PROBLEMS AND CAPACITY SHORTAGES. FURTHER, REPLACEMENT POWER COSTS DURING THESE OUTAGES COULD BE SIGNIFICANT (AND WERE NOT ANALYZED HEREIN).
- DEMAND RESPONSE - THE EFFECTS ON ELECTRICITY DEMAND (AND POTENTIAL SHIFTS TO NON-UTILITY POWER PRODUCTION) AS A RESULT OF THE HIGHER COSTS AND RATE IMPACTS OF THE COMPROMISE PROPOSAL WERE NOT ADDRESSED HEREIN.

ATTACHMENT A

**ELECTRIC UTILITY AND
COAL MARKET FORECASTS
UNDER THE MITCHELL COMPROMISE PROPOSAL**

TABLE 2-1
SULFUR DIOXIDE FORECASTS
COMPROMISE BILL

						CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
						EASTERN COAL ASSUMPTIONS	
						1.0 LB. COAL 2005	NO 1.0 LB COAL 2005
	1980	1985	EPA BASE CASE 1995	CHANGE FROM EPA BASE 1995	EPA BASE CASE 2005		
<u>Utility SO2 Emissions</u>							
(millions of tons)							
31-Eastern States							
Coal							
SIP	N.A.	N.A.	14.08	-4.13	15.06	-9.98 -	-10.61
NSPS	N.A.	N.A.	1.31	0.04	1.47	0.01 -	0.00
ANSPS	N.A.	N.A.	0.01	0.01	0.52	0.22 -	0.11
TOTAL COAL	14.92	14.21	15.41	-4.08	17.04	-9.75 -	-10.50
OIL/GAS	1.27	0.57	1.02	-0.48	1.06	-0.46 -	-0.45
TOTAL 31-EASTERN STATES	16.19	14.78	16.43	-4.55	18.10	-10.21 -	-10.95
17-Western States							
Coal							
SIP	N.A.	N.A.	0.98	-0.06	0.98	-0.39 -	-0.39
NSPS	N.A.	N.A.	1.04	0.01	1.06	0.0 -	0.0
ANSPS	N.A.	N.A.	0.02	0.0	0.25	0.03 -	0.04
TOTAL COAL	1.10	1.48	2.05	-0.06	2.29	-0.36 -	-0.35
OIL/GAS	0.09	0.01	0.12	-0.06	0.12	-0.09 -	-0.09
TOTAL 17-WESTERN STATES	1.19	1.49	2.17	-0.12	2.40	-0.45 -	-0.44
United States							
Coal							
SIP	N.A.	N.A.	15.07	-4.19	16.04	-10.37 -	-11.00
NSPS	N.A.	N.A.	2.35	0.04	2.53	0.00 -	0.00
ANSPS	N.A.	N.A.	0.04	0.01	0.77	0.25 -	0.15
TOTAL COAL	16.02	15.69	17.46	-4.14	19.33	-10.12 -	-10.85
OIL/GAS	1.36	0.58	1.14	-0.53	1.18	-0.54 -	-0.53
TOTAL UNITED STATES	17.38	16.27	18.60	-4.67	20.51	-10.66 -	-11.38

Note: Totals may not add due to independent rounding.

T A-2
NITROGEN OXIDE FORECASTS
COMPROMISE BILL

			EPA BASE CASE 1995	CHANGE FROM EPA BASE 1995	EPA BASE CASE 2005	CHANGE FROM EPA BASE	
						EASTERN COAL ASSUMPTIONS	
	1980	1985				1.0 LB. COAL 2005	NO 1.0 LB COAL 2005
<u>Utility NOX Emissions</u>							
<u>(MILLIONS OF TONS)</u>							
31-Eastern States							
Coal							
SIP	N.A.	N.A.	4.46	-0.08	4.74	-1.58	- -1.57
NSPS	N.A.	N.A.	1.01	0.04	1.12	-0.28	- -0.29
ANSPS	N.A.	N.A.	0.03	0.01	0.96	-0.10	- -0.09
TOTAL COAL	4.55	N.A.	5.50	-0.04	6.81	-1.95	- -1.95
OIL/GAS	0.57	N.A.	0.42	0.0	0.38	0.0	- 0.00
TOTAL 31-EASTERN STATES	5.12	N.A.	5.91	-0.04	7.20	-1.95	- -1.95
17-Western States							
Coal							
SIP	N.A.	N.A.	0.59	-0.00	0.59	-0.18	- -0.18
NSPS	N.A.	N.A.	0.90	0.00	0.91	-0.21	- -0.22
ANSPS	N.A.	N.A.	0.08	0.0	0.65	-0.08	- -0.08
TOTAL COAL	0.89	N.A.	1.58	0.0	2.15	-0.47	- -0.48
OIL/GAS	0.61	N.A.	0.36	0.0	0.35	0.00	- 0.00
TOTAL 17-WESTERN STATES	1.50	N.A.	1.93	0.0	2.49	-0.47	- -0.48
United States							
Coal							
SIP	N.A.	N.A.	5.05	-0.08	5.33	-1.75	- -1.75
NSPS	N.A.	N.A.	1.92	0.04	2.03	-0.49	- -0.51
ANSPS	N.A.	N.A.	0.11	0.01	1.61	-0.18	- -0.17
TOTAL COAL	5.44	N.A.	7.08	-0.04	8.96	-2.42	- -2.43
OIL/GAS	1.18	N.A.	0.77	0.0	0.73	0.00	- 0.01
TOTAL UNITED STATES	6.62	N.A.	7.85	-0.04	9.69	-2.42	- -2.43

Note: Totals may not add due to independent rounding.

TABLE A-3
UTILITY SULFUR DIOXIDE EMISSIONS BY STATE
(IN THOUSANDS OF TONS)
COMPROMISE BILL

			CHANGE FROM		CHANGE FROM		CHANGE FROM	
			EPA BASE		EPA BASE		EPA BASE	
			EPA CASE		EPA CASE		EPA CASE	
	1980	1985	1995	FROM EPA BASE 1995	2005	1.0 LB COAL 2005	NO 1.0 LB COAL 2005	ASSUMPTIONS
ME	17.	10.	3.	-2.	5.	-3.	-	-3.
NH	80.	74.	64.	-2.	64.	-47.	-	-47.
VT	0.	1.	3.	0.	3.	0.	-	0.
MA	258.	230.	272.	-133.	324.	-193.	-	-208.
RI	5.	2.	0.	2.	0.	2.	-	2.
CT	29.	56.	17.	36.	15.	33.	-	37.
NY	479.	420.	481.	-74.	541.	-123.	-	-195.
PA	1422.	1320.	1275.	-290.	1227.	-871.	-	-906.
NJ	103.	97.	130.	-3.	145.	-73.	-	-88.
MD	222.	217.	315.	-27.	360.	-178.	-	-229.
DE	51.	63.	60.	-4.	66.	-14.	-	-17.
DC	4.	1.	4.	0.	3.	0.	-	0.
VA	157.	131.	240.	-87.	292.	-105.	-	-163.
WV	984.	969.	961.	-241.	1011.	-615.	-	-696.
NC	445.	337.	504.	-5.	545.	-172.	-	-341.
SC	210.	162.	184.	-8.	248.	-136.	-	-153.
GA	704.	976.	874.	-224.	983.	-646.	-	-693.
FL	692.	501.	937.	-419.	907.	-447.	-	-469.
OH	2185.	2193.	2572.	-920.	2692.	-1891.	-	-1983.
MI	608.	401.	449.	-45.	436.	-70.	-	-107.
IL	1110.	1073.	955.	-477.	1211.	-680.	-	-681.
IN	1672.	1498.	1710.	-668.	2022.	-1430.	-	-1359.
WI	488.	367.	273.	2.	277.	0.	-	0.
KY	1029.	745.	893.	-257.	928.	-545.	-	-571.
TN	910.	802.	856.	-277.	1016.	-659.	-	-706.
AL	535.	563.	512.	-42.	573.	-279.	-	-314.
MS	122.	113.	146.	-2.	159.	-69.	-	-70.
MN	159.	124.	169.	-14.	231.	-57.	-	-57.
IA	236.	219.	302.	-5.	434.	-146.	-	-138.
MO	1227.	997.	1058.	-347.	1155.	-770.	-	-769.
AR	27.	69.	125.	-18.	147.	-20.	-	-20.
LA	21.	67.	86.	-3.	85.	-3.	-	-3.
TOTAL 31-EASTERN STATES	16191.	14798.	16431.	-4554.	18104.	-10207.	-	-10946.

UTILITY SULFUR DIOXIDE EMISSIONS BY STATE
(IN THOUSANDS OF TONS)
COMPROMISE BILL

	1980	1985	EPA BASE CASE 1995	CHANGE FROM EPA BASE 1995	EPA BASE CASE 2005	CHANGE	CHANGE
						FROM EPA BASE	FROM EPA BASE
						EASTERN COAL ASSUMPTIONS	
						1.0 LB COAL 2005	NO 1.0 LB COAL 2005
ND	79.	124.	177.	-7.	201.	-86.	-86.
SD	30.	32.	50.	-1.	53.	-40.	-40.
KS	102.	166.	224.	-31.	228.	-65.	-65.
NE	48.	45.	116.	-20.	124.	-19.	-19.
OK	45.	80.	209.	-29.	222.	-58.	-58.
TX	295.	430.	695.	-2.	759.	-123.	-107.
MT	23.	22.	45.	0.	55.	7.	7.
WY	128.	135.	62.	0.	70.	0.	0.
ID	0.	0.	0.	0.	0.	0.	0.
CO	71.	84.	130.	-0.	145.	-0.	-0.
NM	79.	114.	56.	0.	57.	-0.	0.
UT	25.	27.	69.	-23.	78.	-9.	-9.
AZ	84.	104.	126.	-8.	138.	2.	2.
NV	38.	35.	76.	0.	75.	0.	0.
WA	68.	85.	114.	0.	144.	-65.	-65.
OR	4.	2.	16.	4.	55.	2.	2.
CA	70.	3.	0.	0.	1.	0.	0.
AK	0.	0.	0.	0.	0.	0.	0.
TOTAL 17-WESTERN STATES	1189.	1488.	2166.	-117.	2405.	-454.	-440.
TOTAL U.S.	17380.	16286.	18597.	-4671.	20508.	-10660.	-11384.

UTILITY NITROGEN OXIDE EMISSIONS BY STATE
(IN THOUSANDS OF TONS)
COMPROMISE BILL

	1980	EPA BASE CASE 1995	CHANGE FROM EPA BASE 1995	EPA BASE CASE 2005	CHANGE FROM EPA BASE			
					EASTERN COAL ASSUMPTIONS			
					1.0 LB COAL 2005	1.0 LB NO COAL 2005	1.0 LB COAL 2005	1.0 LB NO COAL 2005
ME	4.	1.	0.	1.	0.	-	0.	-
NH	28.	30.	0.	30.	-3.	-	-3.	-
VT	0.	1.	0.	1.	-0.	-	-0.	-
MA	60.	88.	-14.	166.	-49.	-	-48.	-
RI	3.	1.	1.	0.	1.	-	1.	-
CT	19.	21.	10.	9.	12.	-	11.	-
NY	146.	173.	-0.	302.	-58.	-	-57.	-
PA	417.	420.	-6.	397.	-152.	-	-157.	-
NJ	81.	90.	-1.	127.	-15.	-	-17.	-
MD	67.	108.	0.	169.	-44.	-	-45.	-
DE	24.	25.	0.	34.	-10.	-	-8.	-
DC	1.	2.	0.	1.	0.	-	0.	-
VA	66.	96.	0.	165.	-53.	-	-52.	-
WV	319.	353.	-3.	372.	-142.	-	-143.	-
NC	234.	247.	0.	315.	-116.	-	-116.	-
SC	118.	96.	-2.	153.	-28.	-	-22.	-
GA	235.	249.	2.	275.	-102.	-	-100.	-
FL	242.	328.	-10.	402.	-65.	-	-65.	-
OH	526.	612.	3.	720.	-233.	-	-233.	-
MI	262.	303.	-0.	305.	-102.	-	-101.	-
IL	396.	327.	-1.	446.	-73.	-	-73.	-
IN	411.	515.	-3.	578.	-141.	-	-140.	-
WI	132.	174.	0.	201.	-57.	-	-57.	-
KY	278.	372.	-2.	400.	-103.	-	-103.	-
TN	215.	240.	1.	415.	-115.	-	-113.	-
AL	188.	196.	1.	239.	-96.	-	-96.	-
MS	57.	53.	0.	74.	-70.	-	-20.	-
MN	98.	130.	-0.	150.	-42.	-	-42.	-
IA	92.	111.	0.	149.	-45.	-	-45.	-
MO	270.	321.	-11.	360.	-65.	-	-65.	-
AR	26.	81.	-1.	90.	-21.	-	-21.	-
LA	98.	150.	0.	151.	-19.	-	-19.	-
TOTAL 31-EASTERN STATES	5113.	5914.	-36.	7196.	-1953.	-	-1949.	-

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UTILITY NITROGEN OXIDE EMISSIONS BY STATE
(IN THOUSANDS OF TONS)
COMPROMISE BILL

					CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	
		EPA BASE CASE	CHANGE FROM EPA BASE	EPA BASE CASE	EASTERN COAL ASSUMPTIONS		
	1980	1995	1995	2005	1.0 LB COAL 2005	NO 1.0 LB COAL 2005	
ND	56.	100.	-0.	137.	-21.	-	-21.
SD	21.	25.	0.	31.	-0.	-	-0.
KS	102.	143.	-0.	136.	-26.	-	-26.
NE	38.	75.	0.	79.	-19.	-	-19.
OK	127.	142.	0.	175.	-20.	-	-20.
TX	544.	655.	-0.	837.	-137.	-	-137.
MT	20.	55.	0.	77.	-19.	-	-19.
WY	96.	136.	0.	159.	-41.	-	-41.
ID	0.	0.	0.	0.	0.	-	0.
CO	98.	137.	0.	168.	-45.	-	-45.
NM	75.	81.	0.	83.	-17.	-	-17.
UT	40.	98.	0.	133.	-29.	-	-29.
AZ	89.	117.	0.	160.	-47.	-	-47.
NV	42.	68.	0.	78.	-24.	-	-24.
WA	26.	32.	0.	103.	-21.	-	-21.
OR	3.	14.	0.	86.	-11.	-	-11.
CA	132.	57.	0.	51.	-2.	-	-2.
AK	0.	0.	0.	0.	-1.	-	-1.
TOTAL 17-WESTERN STATES	1509.	1935.	-1.	2493.	-469.	-	-478.
TOTAL U.S.	6622.	7849.	-37.	9689.	-2422.	-	-2429.

NET ANNUALIZED UTILITY
CONTROL COSTS BY REGION 1/
(Millions of Mid 1987 Dollars)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
	1995	1.0 LB COAL 2005	NO 1.0 LB COAL 2005
MAINE/VT/NH	0.	22.	- 24.
MASS/CONN/RHODE I.	42.	81.	- 108.
NEW YORK	32.	119.	- 135.
PENNSYLVANIA	67.	341.	- 483.
NEW JERSEY	-11.	43.	- 49.
MARYLAND/DELAWARE	9.	106.	- 139.
VIRGINIA	13.	58.	- 114.
WEST VIRGINIA	94.	264.	- 473.
N.&S.CAROLINA	-10.	148.	- 382.
GEORGIA	50.	173.	- 264.
FLORIDA	150.	228.	- 217.
OHIO	276.	538.	- 771.
MICHIGAN	12.	78.	- 113.
ILLINOIS	70.	129.	- 134.
INDIANA	208.	414.	- 399.
WISCONSIN	4.	26.	- 31.
KENTUCKY	51.	169.	- 223.
TENNESSEE	45.	197.	- 262.
ALABAMA	6.	109.	- 160.
MISSISSIPPI	-0.	18.	- 18.
MINNESOTA	7.	19.	- 21.
IOWA	3.	28.	- 27.
MISSOURI	64.	194.	- 197.
ARKANSAS	13.	13.	- 13.
LOUISIANA	6.	6.	- 6.
TOTAL 31-EASTERN STATES	1200.	3520.	- 4762.

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NET ANNUALIZED UTILITY
CONTROL COSTS BY REGION ^{1/}
(Millions of Mid 1987 Dollars)
COMPROMISE BILL

CHANGE CHANGE
FROM FROM
EPA BASE EPA BASE

	CHANGE FROM EPA BASE 1995	EASTERN COAL ASSUMPTIONS	
		1.0 LB COAL 2005	NO 1.0 LB COAL 2005
N. & S. DAKOTA	1.	52. -	57.
KANSAS/NEBRASKA	21.	30. -	34.
OKLAHOMA	26.	24. -	25.
TEXAS	45.	93. -	105.
MONTANA	-2.	5. -	5.
WYOMING	2.	9. -	7.
IDAHO	0.	0. -	0.
COLORADO	4.	9. -	11.
NEW MEXICO	-5.	-0. -	-0.
UTAH	3.	-6. -	-5.
ARIZONA	3.	-4. -	2.
NEVADA	1.	4. -	4.
WASHINGTON/OREGON	1.	37. -	18.
CALIFORNIA	0.	1. -	1.
TOTAL 17-WESTERN STATES	98.	254. -	264.
TOTAL U.S.	1298.	3774. -	5026.

^{1/} Net of Levelized Subsidies.

TABLE A-6

PERCENT CHANGE IN ELECTRICITY RATES BASED ON
ANNUALIZED COSTS (i.e., LEVELIZED BASIS) 1/
(PERCENT)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		EASTERN COAL ASSUMPTIONS	
		1.0 LB COAL 2005	NO 1.0 LB COAL 2005
	CHANGE FROM EPA BASE 1995		
MAINE/VT/NH	0.2	1.4 -	1.3
MASS/CONN/RHODE I.	0.9	1.2 -	1.6
NEW YORK	0.4	0.9 -	0.9
PENNSYLVANIA	1.1	3.3 -	4.4
NEW JERSEY	-0.0	0.9 -	0.9
MARYLAND/DELAWARE	0.9	2.3 -	2.8
VIRGINIA	0.7	1.5 -	2.7
WEST VIRGINIA	3.5	7.3 -	11.8
N.&S. CAROLINA	0.7	1.7 -	3.7
GEORGIA	1.6	3.2 -	4.6
FLORIDA	1.9	2.3 -	2.1
OHIO	4.2	5.5 -	7.3
MICHIGAN	0.8	1.6 -	1.8
ILLINOIS	1.0	1.2 -	1.2
INDIANA	4.1	6.5 -	6.1
WISCONSIN	0.4	1.3 -	0.9
KENTUCKY	2.0	4.3 -	5.4
TENNESSEE	1.8	2.9 -	3.6
ALABAMA	0.8	2.2 -	2.8
MISSISSIPPI	0.3	1.1 -	1.1
MINNESOTA	0.6	0.8 -	0.8
IOWA	0.7	1.6 -	1.3
MISSOURI	2.4	4.6 -	4.2
ARKANSAS	0.7	0.6 -	0.6
LOUISIANA	0.2	0.2 -	0.2
TOTAL 31-EASTERN STATES	1.4	2.5 -	3.1

PERCENT CHANGE IN ELECTRICITY RATES BASED ON
ANNUALIZED COSTS (i.e., LEVELIZED BASIS) 1/
(PERCENT)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	
			<u>EASTERN COAL ASSUMPTIONS</u>
	CHANGE FROM EPA BASE 1995		<u>1.0 LB</u> <u>NO 1.0 LB</u>
			<u>COAL</u> <u>COAL</u>
			<u>2005</u> <u>2005</u>
N. & S. DAKOTA	0.6	2.1 -	2.2
KANSAS/NEBRASKA	0.7	1.0 -	1.0
OKLAHOMA	1.1	0.8 -	0.9
TEXAS	0.4	0.5 -	0.5
MONTANA	-0.1	0.5 -	0.5
WYOMING	0.2	0.6 -	0.5
IDAHO	0.0	0.0 -	0.0
COLORADO	0.2	0.4 -	0.4
NEW MEXICO	-0.3	-0.0 -	-0.0
UTAH	0.2	-0.3 -	-0.3
ARIZONA	0.1	-0.1 -	0.0
NEVADA	0.1	0.3 -	0.3
WASHINGTON/OREGON	0.2	0.7 -	0.3
CALIFORNIA	<u>0.0</u>	<u>0.0</u> -	<u>0.0</u>
TOTAL 17-WESTERN STATES	0.3	0.4 -	0.4
TOTAL U.S.	1.1	1.9 -	2.4

1/ Calculated as follows:

Compromise Bill Annualized Cost + Generation Fees -	-	.	1982 Average
Levelized Subsidies - Base Case Annualized Cost	-	---	Electricity Rates
In-State Generation After Distribution Losses	-	.	

Note: States which engage in significant interstate electricity transfers may have higher or lower rate impacts.

COAL PRODUCTION AND SHIPMENT FORECASTS
(IN MILLIONS OF TONS)
COMPROMISE BILL

	<u>1980</u>	<u>1985</u>	<u>EPA BASE CASE 1995</u>	<u>CHANGE FROM EPA BASE 1995</u>	<u>EPA BASE CASE 2005</u>	CHANGE	CHANGE	<u>EASTERN COAL ASSUMPTIONS</u>
						FROM	FROM	
						EPA BASE	EPA BASE	
						1.0 LB	NO 1.0 LB	
						COAL	COAL	
						<u>2005</u>	<u>2005</u>	
<u>Coal Production</u>								
NORTHERN APPALACHIA	185.	162.	180.	-3.	205.	-27.	-	13.
CENTRAL APPALACHIA	233.	245.	282.	2.	371.	34.	-	-38.
SOUTHERN APPALACHIA	26.	26.	23.	1.	29.	-5.	-	-7.
MIDWEST	134.	133.	125.	-1.	160.	-23.	-	8.
WEST	251.	316.	428.	0.	585.	23.	-	31.
TOTAL COAL REGIONS	<u>830.</u>	<u>881.</u>	<u>1038.</u>	<u>-1.</u>	<u>1350.</u>	<u>3.</u>	<u>-</u>	<u>8.</u>
<u>Coal Transportation</u>								
WESTERN COAL TO EAST	N.A.	N.A.	55.	0.	94.	11.	-	18.

TABLE A-8
UTILITY FUEL CONSUMPTION FORECASTS
(IN QUADS)
COMPROMISE BILL

						CHANGE FROM EPA BASE	CHANGE FROM EPA BASE		
						EASTERN COAL ASSUMPTIONS			
						1.0 LB COAL 2005	NO 1.0 LB COAL 2005		
	<u>1980</u>	<u>1985</u>	<u>EPA BASE CASE 1995</u>	<u>CHANGE FROM EPA BASE 1995</u>	<u>EPA BASE CASE 2005</u>				
<u>31 EASTERN STATES</u>									
COAL									
LOW SULFUR	0.87	1.89	2.63	0.64	4.81	2.10	-	0.67	
LOW-MEDIUM SULFUR	1.61	1.56	2.08	-0.47	3.16	0.39	-	-0.38	
HIGH-MEDIUM SULFUR	3.18	3.66	3.83	-0.12	3.97	-1.66	-	-0.82	
HIGH SULFUR	3.86	3.90	3.80	-0.07	4.42	-0.79	-	0.56	
TOTAL	<u>9.53</u>	<u>11.01</u>	<u>12.34</u>	<u>-0.02</u>	<u>16.37</u>	<u>0.03</u>	-	<u>0.04</u>	
OIL	1.99	0.93	1.54	0.05	1.94	0.05	-	0.09	
GAS	1.01	0.92	0.79	0.0	0.62	0.0	-	0.0	
<u>17 WESTERN STATES</u>									
COAL									
LOW SULFUR	1.41	1.61	2.42	-0.04	4.13	-0.18	-	-0.27	
LOW-MEDIUM SULFUR	0.43	0.94	0.85	0.08	1.11	0.19	-	0.30	
HIGH-MEDIUM SULFUR	0.74	0.96	1.11	-0.03	1.17	-0.01	-	-0.01	
HIGH SULFUR	0.01	0.07	0.07	-0.01	0.06	0.01	-	-0.01	
TOTAL	<u>2.59</u>	<u>3.58</u>	<u>4.44</u>	<u>-0.00</u>	<u>6.48</u>	<u>0.01</u>	-	<u>0.01</u>	
OIL	0.48	0.06	0.24	0.0	0.29	-0.06	-	-0.06	
GAS	2.58	2.28	1.64	0.0	1.58	0.06	-	0.06	
<u>TOTAL U.S.</u>									
COAL									
LOW SULFUR	2.28	3.50	5.06	0.60	8.94	1.92	-	0.41	
LOW-MEDIUM SULFUR	2.04	2.49	2.93	-0.39	4.28	0.57	-	-0.08	
HIGH-MEDIUM SULFUR	3.92	4.62	4.94	-0.15	5.15	-1.67	-	-0.83	
HIGH SULFUR	3.87	3.97	3.87	-0.08	4.49	-0.78	-	0.55	
TOTAL	<u>12.12</u>	<u>14.58</u>	<u>16.79</u>	<u>-0.02</u>	<u>22.85</u>	<u>0.04</u>	-	<u>0.05</u>	
OIL	2.47	0.99	1.79	0.05	2.23	-0.01	-	0.03	
GAS	3.59	3.20	2.43	0.0	2.20	0.06	-	0.06	

RETROFIT SCRUBBER CAPACITY
(GIGAWATTS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL 2005	NO 1.0 LB. COAL 2005
	<u>1995</u>		
MAINE/VT/NH	0.0	0.5	- 0.5
MASS/CONN/RHODE I.	0.0	1.7	- 1.5
NEW YORK	0.0	0.2	- 1.7
PENNSYLVANIA	3.3	8.3	- 11.7
NEW JERSEY	0.0	0.9	- 1.5
MARYLAND/DELAWARE	0.0	0.4	- 3.2
VIRGINIA	0.0	0.0	- 3.0
WEST VIRGINIA	1.9	2.5	- 8.6
N.&S. CAROLINA	0.0	1.4	- 12.4
GEORGIA	2.5	2.5	- 9.5
FLORIDA	1.8	2.8	- 3.6
OHIO	6.6	9.7	- 16.3
MICHIGAN	0.0	0.0	- 2.1
ILLINOIS	3.8	4.1	- 4.1
INDIANA	6.5	8.9	- 8.2
WISCONSIN	0.0	0.5	- 0.5
KENTUCKY	1.9	2.7	- 4.4
TENNESSEE	2.5	3.4	- 6.9
ALABAMA	0.5	1.6	- 4.2
MISSISSIPPI	0.0	0.0	- 0.0
MINNESOTA	0.0	0.1	- 0.1
IOWA	0.0	0.1	- 0.1
MISSOURI	1.9	3.2	- 3.2
ARKANSAS	0.0	0.0	- 0.0
LOUISIANA	<u>0.0</u>	<u>0.0</u>	<u>- 0.0</u>
TOTAL 31-EASTERN STATES	33.2	55.5	- 107.3

TAB 9
RETROFIT SCRUBBER CAPACITY
(GIGAWATTS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL 2005	NO 1.0 LB. COAL 2005
	<u>1995</u>		
N. & S. DAKOTA	0.0	1.4	- 1.4
KANSAS/NEBRASKA	0.0	0.2	- 0.2
OKLAHOMA	0.0	0.0	- 0.0
TEXAS	0.0	1.2	- 1.2
MONTANA	0.0	0.0	- 0.0
WYOMING	0.0	0.0	- 0.0
IDAHO	0.0	0.0	- 0.0
COLORADO	0.0	0.0	- 0.0
NEW MEXICO	0.0	0.0	- 0.0
UTAH	0.0	0.0	- 0.0
ARIZONA	0.0	0.0	- 0.0
NEVADA	0.0	0.0	- 0.0
WASHINGTON/OREGON	0.0	0.0	- 0.0
CALIFORNIA	<u>0.0</u>	<u>0.0</u>	- <u>0.0</u>
TOTAL 17-WESTERN STATES	0.0	2.8	- 2.8
TOTAL U.S.	33.2	58.3	- 110.1

TABLE A-10
NOX CONTROL CAPACITY
(GIGAWATTS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL 2005	NO 1.0 LB. COAL 2005
	<u>1995</u>		
MAINE/VT/NH	0.0	0.2	- 0.2
MASS/CONN/RHODE I.	0.0	7.3	- 7.3
NEW YORK	0.0	12.7	- 12.7
PENNSYLVANIA	0.0	18.0	- 18.0
NEW JERSEY	0.0	2.7	- 2.7
MARYLAND/DELAWARE	0.0	9.8	- 9.8
VIRGINIA	0.0	8.7	- 8.7
WEST VIRGINIA	0.0	13.6	- 13.6
N.&S. CAROLINA	0.0	21.3	- 21.3
GEORGIA	0.0	12.8	- 12.8
FLORIDA	0.0	14.5	- 14.5
OHIO	0.0	26.7	- 26.7
MICHIGAN	0.0	11.4	- 11.4
ILLINOIS	0.0	9.5	- 9.5
INDIANA	0.0	16.1	- 16.1
WISCONSIN	0.0	6.3	- 6.3
KENTUCKY	0.0	12.5	- 12.5
TENNESSEE	0.0	20.5	- 20.5
ALABAMA	0.0	11.7	- 11.7
MISSISSIPPI	0.0	3.6	- 3.6
MINNESOTA	0.0	4.6	- 4.6
IOWA	0.0	5.4	- 5.4
MISSOURI	0.0	7.6	- 7.6
ARKANSAS	0.0	3.1	- 3.1
LOUISIANA	<u>0.0</u>	<u>3.4</u>	- <u>3.4</u>
TOTAL 31-EASTERN STATES	0.0	264.5	- 264.5

TAB. 10
NOX CONTROL CAPACITY
(GIGAWATTS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL <u>2005</u>	NO 1.0 LB. COAL <u>2005</u>
N. & S. DAKOTA	0.0	2.2	- 2.2
KANSAS/NEBRASKA	0.0	6.0	- 6.0
OKLAHOMA	0.0	3.6	- 3.6
TEXAS	0.0	27.2	- 27.2
MONTANA	0.0	3.7	- 3.7
WYOMING	0.0	4.6	- 4.6
IDAHO	0.0	0.0	- 0.0
COLORADO	0.0	4.4	- 4.4
NEW MEXICO	0.0	3.8	- 3.8
UTAH	0.0	4.4	- 4.4
ARIZONA	0.0	7.3	- 7.3
NEVADA	0.0	3.0	- 3.0
WASHINGTON/OREGON	0.0	6.0	- 6.0
CALIFORNIA	<u>0.0</u>	<u>0.3</u>	- <u>0.3</u>
TOTAL 17-WESTERN STATES	0.0	76.5	- 76.5
TOTAL U.S.	0.0	341.0	- 341.0

TABLE A-11
GENERATION FEES
(MILLIONS OF 1987 DOLLARS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
	<u>1990</u>	<u>1995</u>	<u>2000</u>
MAINE/VT/NH	3.	4.	4.
MASS/CONN/RHODE I.	25.	11.	11.
NEW YORK	31.	16.	17.
PENNSYLVANIA	69.	54.	53.
NEW JERSEY	8.	9.	8.
MARYLAND/DELAWARE	20.	20.	19.
VIRGINIA	18.	5.	13.
WEST VIRGINIA	66.	36.	32.
N.&S. CAROLINA	70.	69.	54.
GEORGIA	53.	34.	37.
FLORIDA	56.	14.	9.
OHIO	115.	70.	65.
MICHIGAN	62.	37.	49.
ILLINOIS	43.	22.	39.
INDIANA	72.	29.	30.
WISCONSIN	30.	9.	7.
KENTUCKY	31.	19.	22.
TENNESSEE	56.	35.	37.
ALABAMA	38.	31.	34.
MISSISSIPPI	6.	4.	6.
MINNESOTA	13.	7.	11.
IOWA	17.	9.	12.
MISSOURI	42.	29.	29.
ARKANSAS	15.	0.	0.
LOUISIANA	<u>10.</u>	<u>0.</u>	<u>0.</u>
TOTAL 31-EASTERN STATES	968.	573.	595.

FBI 11
 GENERATION FEES
 (MILLIONS OF 1987 DOLLARS)
 COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
	<u>1990</u>	<u>1995</u>	<u>2000</u>
N. & S. DAKOTA	10.	10.	10.
KANSAS/NEBRASKA	9.	2.	2.
OKLAHOMA	7.	0.	0.
TEXAS	14.	14.	14.
MONTANA	1.	1.	1.
WYOMING	0.	0.	0.
IDAHO	0.	0.	0.
COLORADO	1.	0.	0.
NEW MEXICO	0.	0.	0.
UTAH	5.	0.	0.
ARIZONA	0.	0.	0.
NEVADA	0.	0.	0.
WASHINGTON/OREGON	8.	8.	8.
CALIFORNIA	<u>0.</u>	<u>0.</u>	<u>0.</u>
TOTAL 17-WESTERN STATES	56.	36.	36.
TOTAL U.S.	1024.	608.	631.

Fees by state indicate taxes paid on electricity generated in each state.
 To the extent electricity is sold or bought from other states, tax impacts
 on in-state customers could be different than shown here.

LEVELIZED SUBSIDIES
(MILLIONS OF 1987 DOLLARS)
COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL <u>2005</u>	NO 1.0 LB. COAL <u>2005</u>
	<u>1995</u>		
MAINE/VT/NH	0.	4.	- 4.
MASS/CONN/RHODE I.	0.	15.	- 14.
NEW YORK	0.	2.	- 15.
PENNSYLVANIA	39.	85.	- 115.
NEW JERSEY	0.	8.	- 13.
MARYLAND/DELAWARE	0.	3.	- 29.
VIRGINIA	0.	0.	- 27.
WEST VIRGINIA	23.	28.	- 83.
N.&S.CAROLINA	0.	13.	- 111.
GEORGIA	29.	29.	- 92.
FLORIDA	22.	31.	- 38.
OHIO	79.	107.	- 165.
MICHIGAN	0.	0.	- 18.
ILLINOIS	46.	48.	- 48.
INDIANA	78.	100.	- 93.
WISCONSIN	0.	4.	- 4.
KENTUCKY	23.	30.	- 46.
TENNESSEE	30.	38.	- 69.
ALABAMA	6.	16.	- 39.
MISSISSIPPI	0.	0.	- 0.
MINNESOTA	0.	1.	- 1.
IOWA	0.	1.	- 1.
MISSOURI	22.	34.	- 34.
ARKANSAS	0.	0.	- 0.
LOUISIANA	0.	0.	- 0.
TOTAL 31-EASTERN STATES	390.	596.	- 1061.

TAB 12
 LEVELIZED SUBSIDIES
 (MILLIONS OF 1987 DOLLARS)
 COMPROMISE BILL

	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE	CHANGE FROM EPA BASE
		1.0 LB. COAL <u>2005</u>	NO 1.0 LB. COAL <u>2005</u>
	<u>1995</u>		
N. & S. DAKOTA	0.	13.	- 13.
KANSAS/NEBRASKA	0.	2.	- 2.
OKLAHOMA	0.	0.	- 0.
TEXAS	0.	10.	- 10.
MONTANA	0.	0.	- 0.
WYOMING	0.	0.	- 0.
IDAHO	0.	0.	- 0.
COLORADO	0.	0.	- 0.
NEW MEXICO	0.	0.	- 0.
UTAH	0.	0.	- 0.
ARIZONA	0.	0.	- 0.
NEVADA	0.	0.	- 0.
WASHINGTON/OREGON	0.	0.	- 0.
CALIFORNIA	<u>0.</u>	<u>0.</u>	- <u>0.</u>
TOTAL 17-WESTERN STATES	0.	25.	- 25.
TOTAL U.S.	398.	621.	- 1086.

ATTACHMENT B

MEMORANDUM ON LOW SULFUR COAL'S ABILITY TO MEET AN ANNUAL AVERAGE EMISSION RATE OF 1.0 LB. SO₂/MMBTU



ICF INCORPORATED

September 27, 1988

MEMORANDUM

TO: Rob Brenner

FROM: Daniel E. Klein
Bruce H. Braine

SUBJECT: Issues Concerning Low Sulfur Coal's Ability to Meet an Annual Average Emission Rate Below 1.0 Lbs. SO₂/MMBtu

You have asked us to briefly summarize some of the findings from past investigations into low sulfur coal availability as it applies to standards that may be tighter than current "compliance" coal limits (i.e., 1.2 lb. SO₂ per million Btu on a 30 day average). In particular, this memo provides perspective on the impacts of a 1.0 lb. annual average SO₂ rate requirement on a unit-by-unit basis.

Clearly, if an emissions limit is set so low that few or no coal suppliers can meet it, then the limit is tantamount to requiring technological retrofits. On the other hand, a more lenient limit (or emissions trading between units) would enable more suppliers to compete, thereby enabling utilities to choose among compliance strategies in the marketplace. There is uncertainty concerning the endpoints of this spectrum as well as the effects associated with points in-between.

In the sections that follow, we present some thoughts on the ability of the low sulfur coal suppliers to meet standards tighter than compliance coal such as a 1.0 lb. SO₂ annual rate. Our main thoughts are summarized below:

- While many Appalachian coals can presently meet "compliance" limits in sufficient quantities and substantially expand to meet additional demands, there is less convincing evidence to suggest that ample quantities can be developed to meet tighter standards such as a 1.0 lb. annual SO₂ emission rate. Most "compliance" coals currently being delivered today from Appalachian range from 1.0-1.15 lbs. SO₂ per million Btu although a few plants do receive coals below 1.0 lb. SO₂ per million Btu. Less than 25 percent of the "compliance" coal delivered from Appalachia has been at

or below 1.0 lbs. SO₂ per million Btu on an as-delivered basis.^{1/}

- Giving credits for sulfur retention in ash (i.e., percent of delivered sulfur content in coal which is not converted to sulfur oxides and emitted) would tend to increase the available reserves that could meet a 1.0 lb. SO₂ per million Btu annual limit. Unfortunately, estimates developed by EPA (i.e., AP-42 factors) suggest relatively modest sulfur retention in ash for bituminous coals (only about 2.5 percent). Further, the actual sulfur retention in ash is likely to vary considerably depending on actual operating conditions. If more significant sulfur retention in ash occurs or is "credited" to powerplants (e.g., 5 percent for bituminous), more coal reserves would be available in Appalachia. Current coal shipment data suggests about 40 percent of "compliance" coals shipments in the 1980s would be at or below 1.05 lbs SO₂ per million Btu (and therefore could meet a 1.0 lb. annual rate assuming 5 percent sulfur retention in ash).
- At a 1.0 lb. SO₂ annual limit ample quantities of Western low sulfur coals could be produced. Similarly, low sulfur imported coal could become a very viable and economic option at many Eastern plants.
- A 1.0 lb. unit by unit emission limit would tend to constrict the available "pool" of low sulfur coal producers. Competition within that segment of the coal industry could be lessened with the resulting effect that the likelihood of higher prices for low sulfur (i.e., less than 1.0 lb. SO₂) coals would increase.
- In between the annual emission limit that would permit most compliance coals (i.e., about 1.1 lbs. SO₂ per million Btu) and the limit that would exclude virtually all Appalachian coals (i.e., about 0.85-0.9 lbs. SO₂ per million Btu), there is tremendous uncertainty as to the industry's ability to respond. Coal data are simply too sketchy and too flawed to make fine-grained distinctions across broad regions. Any attempt to accurately predict the tradeoffs between low sulfur coal and technological retrofits within this "gray zone" is likely to be so volatile and so uncertain as to render it unreliable for informed decision making.

^{1/} Form 423 shipment data for 1980-1987. Note however that there are uncertainties in this data as discussed later.

HOW LOW CAN YOU GO?

We have previously made studies of the coal market with the objective of identifying the industry's ability to supply "very low sulfur coals", that is, coals that could meet emission limits tighter than compliance coal standards. One particularly relevant study was conducted as part of EPA's industrial NSPS analyses. This study was aimed at existing productive capacity only, defined to be attainable on a single railcar basis (or 100 ton lots), and did not consider possible credits for sulfur retention in ash, if any. Accordingly, the numerical limits would require adjustments to be comparable to the annual average measurement criteria being discussed here. Nonetheless, they are instructive for highlighting regional differences.

This study of very low sulfur coals qualitatively examined three different levels of availability. The absolute minimum level was the lowest sulfur level that any producer in the region indicated that coal could be supplied. The hunt and scratch level corresponded to coal that could be supplied by several but not most coal producers in that region, and perhaps at significantly higher costs. The more common very low sulfur coal level indicated a minimum sulfur level that could be supplied by many coal producers without incurring additional costs. The table below summarizes the regional findings:

<u>Coal Supply Region</u>	<u>Lbs. SO₂/mmBtu (100-ton lots, no sulfur retention)</u>		
	<u>Absolute Minimum</u>	<u>Hunt & Scratch</u>	<u>More Common Very Low</u>
Central Appalachia	0.78	0.85-0.9	1.0
Southern Appalachia	0.75	0.85-0.9	1.0
Colorado	0.6	0.7	0.8
New Mexico	0.6	0.7	0.8
Utah	0.65	0.7	0.8
Powder River Basin	0.5	0.7	0.8
Imported Coal	0.3	0.5	0.6

As progressively lower emission limits are considered, the Appalachian low sulfur coals would be the first to be frozen out. Importantly, the 1.0 lb. SO₂ per million Btu annual average level represents a minimum level where many coal producers could supply coals. Some plants that would have otherwise considered low sulfur Appalachian coals under most emission reduction proposals would, under a 1.0 lb. limit, shift to western coals, imported coals, or technological retrofits instead.

Note that as emission limits get tighter, the control of the remaining supplies of very low sulfur coals falls into fewer and fewer hands. This could raise competitive questions and increase the likelihood of higher prices. When a low sulfur coal standard can be met by a reasonably large number of suppliers (within individual regions as well as among different regions), it is more likely that competition among producers will act to keep selling prices close to marginal costs. On the other hand, a limited number of suppliers is more likely to be able to exert pricing power within the market, pushing up prices closer to the comparable costs of technological retrofits.

HOW DO YOU MEASURE?

Measuring SO₂ emissions is not a straightforward process, and this in turn leads to uncertainties. Because of measurement difficulties, one cannot say with precision just what portion of our coal reserves can meet various emission limits. This in turn makes it difficult to estimate with precision likely coal market impacts of small changes in standards, particularly when the changes are near the lower thresholds of naturally occurring sulfur content.

Coal deposits are not uniform. Coal quality characteristics not only differ among different regions, but change seam-by-seam and within seams. Individual mines will show changes over time in the sulfur, Btu, and ash produced as different portions of the seam are produced. Because of this, the data on "average" seam quality that is reported may or may not be a good representation of the coal quality produced by individual mines over time.

Similarly, SO₂ emissions may or may not track closely the average quality of the coal feed. The amount of sulfur in coal emitted as sulfur dioxide varies depending on the sulfur retention in ash. While this reduces the SO₂ emissions associated with coal deliveries, it is also highly variable, making the SO₂ rates less predictable.

Further, the published data on utility coal receipts may itself be a poor indication of precise SO₂ levels. FERC Form 423 does not directly report SO₂ levels of the coal, but instead reports the average heat content (Btu/lb.) and sulfur content by weight (%). Through division, analysts estimate the lbs. SO₂/mmBtu. However, while the 423 data records allow for the sulfur percentage to be reported to the nearest 0.01%, we strongly suspect that a substantial portion of the raw data is reported by the utilities to only the nearest 0.1%. For very low sulfur coals, this can be a substantial uncertainty. For example, if a utility reported receipt of 12,000 Btu/lb., 0.70% sulfur coal, then the coal would average 1.17 lbs. SO₂/mmBtu. However, if the utility reported 0.7% to represent rounding for the actual range of 0.65-0.74%, then the coal could have been anywhere within the range of 1.08-1.23 lbs. SO₂/mmBtu. Hence, the margin of uncertainty reflected in the raw data itself may be greater than some of the fine distinctions in limits now being proposed.

WHAT ARE THE IMPACTS?

So what does all this suggest about potential coal market impacts and the tradeoffs between low sulfur coals and technological retrofits? We suggest the following:

- At levels close to present compliance coal standards, e.g., at or above the more common low sulfur coal levels noted earlier, there are adequate supplies available to the marketplace, enabling utility compliance choice between low sulfur coals and technological retrofits.
- At significantly tighter levels, e.g., below the "hunt & scratch" levels noted earlier, utility compliance

choice is foreclosed (except perhaps for some foreign coals) and technological retrofits are in essence mandated.

- In between the two levels, there is a "gray zone." There is not adequate data to enable anyone to predict with confidence the resulting impacts on the choice between retrofits and low sulfur coals.

As a result, the use of emission limits tighter than a compliance coal standard can be a particularly uncertain tool to use in attempting to fine-tune coal market impacts. Accordingly, for the analysis of the impacts of a 1.0 lb. annual average SO₂ rate, we plan to analyze two cases: One case would assume that all Eastern "compliance" coal reserves would be able to meet the 1.0 lb. annual SO₂ rate (referred to as "1.0 lb. Eastern Coal"). The other case would assume that no Eastern compliance coal reserves would be able to meet the 1.0 lb. annual SO₂ rate (referred to as "No 1.0 lb. Eastern Coal").

September 26, 1988

SUBJECT: ACID RAIN LEGISLATION AND CLEAN COAL PROGRAM

The Democratic (and to some degree, the Republican leadership as well) of the Senate is engaged in an effort to strike a compromise position with Senator Mitchell on acid rain legislation. The effort is targeted at clearing the way for a Senate vote (and possible House acquiescence) before sine die adjournment. The current effort is heading in a direction which:

- Mandates specific statutorily required reductions in SO₂ and NO_x emissions by dates certain;
- Imposes a nationwide fee (or pollution tax) to assist sources in meeting the reductions.

If successful, this compromise approach will have the effect of forcing utilities to the sidelines for remainder of the Clean Coal Program. They will be forced to wait for the statutorily established regulatory program to be put in place, challenge provisions in court if necessary, and accept government mandated direction as to what technology should be used to meet the requirement. Investments will not be forthcoming for new demonstration projects under the Clean Coal Program. The Administration's program will be dealt a serious if not fatal blow.

The political situation is as follows:

- Majority Leader Byrd is the major player in this effort. He is personally making the decisions.
- Senator Simpson has indicated he would like to see an acid rain bill adopted by the Congress. Other western Republican Senators have indicated they will follow Simpson's lead.
- All signs point to Republicans being forced into the politically damaging role of being the spoiler, by objecting to consideration of the bill at the last minute, an action which most Republicans (and the Administration) should want to avoid.
- The tremendous success of the Clean Coal Program to date and its ability to achieve emissions reductions greater than being discussed is being ignored.

It is important to note that no one is championing the Reagan-Byrd Clean Coal Program and Sen. Byrd is getting to play in this game for free by letting UMW President Trumka be his negotiator to protect West Virginia coal mining employment interests. No one is negotiating to preserve the preferred Administration's technology based approach.

It is possible that Sen. Mitchell will be introducing a new compromise today and that Sen. Simpson may be close to having gotten agreement on provisions which protect Western interests.

Action Required

1. Develop an Administration substitute to Mitchell which:
 - Authorizes the remaining funds for the Clean Coal Program;
 - Directs EPA to aggressively promote new technologies by modification of regulatory program;
 - Modifies existing emission reduction requirements to encourage use of new clean coal technologies;
 - Allows for flexibility in using coal and natural gas to meet requirements.
2. Seek Senate sponsors for substitute -- preferably Senators Simpson, Domenici, etc.
3. Hold Press conference with Lee Thomas, Simpson, and others to emphasize that this is the Administration/Byrd approach that has been enthusiastically supported by a majority of the Congress and is the approach most likely to bring the best technology to the market -- technology which achieves both SO₂ and NO_x emission reductions and allows for new and more efficient technologies to enter the marketplace.

Waxman Resumes Markup:

Clean-Air Proposals Multiply As Election Day Draws Closer

A House markup of clean-air legislation that had been stalled since March restarted suddenly June 15, as a new proposal landed on the table.

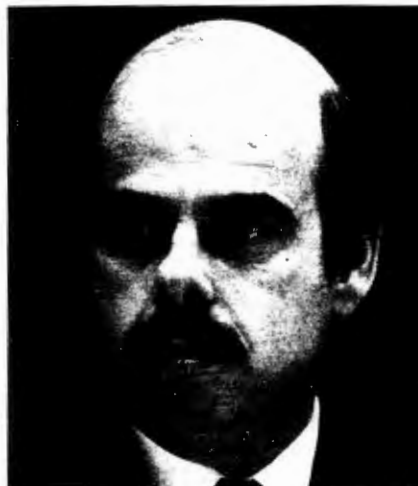
Chairman Henry A. Waxman, D-Calif., called a meeting of the Energy Subcommittee on Health and the Environment on unusually short notice — just one day. The markup was more than one and a half hours late in getting started and lasted only a few minutes. That was time enough for a coalition of mostly Republicans to plunk down a new substitute for the urban-smog provisions in Waxman's bill. It was offered by Jack Fields, R-Texas.

Then Waxman adjourned the markup, possibly to resume the week of June 20, so members could study the new substitute, discuss it privately and prepare amendments to it.

Members on both sides are looking for a compromise at the approaching November presidential election, which could have a major effect on the tactics of clean-air protagonists. Environmental groups seeking tighter pollution controls see Democratic Gov. Michael S. Dukakis, Mass., as their ally, while industry groups believe Vice President George Bush is interested in relieving their regulatory burdens.

The problem is that neither side knows which candidate is going to win — and whether it would be wiser to wait for an ally to occupy the White House or to take the best deal available this year.

Both Waxman and ranking committee Republican Norman F. Lent, N.Y., expressed impatience to get on with the legislative process and produce a bill this year. But privately, aides on both sides say Waxman has less to lose from delay as long as Dukakis maintains his current lead in public opinion polls. The aides say Waxman would probably command more votes in a House floor fight in a



STAN BAROUH

Rep. Henry A. Waxman, D-Calif.

pre-election atmosphere (when members are wary of appearing anti-environment), but that many Democrats might prefer to avoid a fight and the uncomfortable choices it would entail.

The bill before the subcommittee is an unnumbered draft that combines provisions from HR 2666, an acid-rain-control bill introduced by Gerry Sikorski, D-Minn., and HR 3054, an urban-smog-control bill introduced by Waxman. Industry groups have generally criticized the controls in both bills as being too stringent, although environmental groups say they would like to see even more stringent controls.

In previous sessions of the markup, the subcommittee approved the acid-rain language as Title I, but by the thinnest of margins, defeating amendments by 10-10 tie votes. (*Weekly Report* p. 579)

Now the subcommittee is turning to Title II of the bill, to control urban-smog problems. Urban smog consists mainly of carbon monoxide and ozone, which is formed from nitrogen oxides and hydrocarbons. Both factories and automobiles are sources of the contributing pollutants. The issue squarely pits Waxman, whose Hollywood dis-

trict is one of the smoggiest in the nation, against Energy Committee Chairman John D. Dingell, D-Mich., whose Detroit district takes in the headquarters of the nation's auto industry.

A so-called "group of nine" moderate industrial-state Democrats has developed a compromise proposal on urban smog. Waxman has criticized it as too weak. Dingell criticized the first draft as too stringent and won concessions on auto-tailpipe standards in a second draft, but has not publicly endorsed it. (*Weekly Report* p. 1631)

The group-of-nine proposal, still considered by both sides as the legislative vehicle with the best chances of long-term success, will not really come into play until the full committee markup. Of the nine group members, only Terry L. Bruce, D-Ill., sits on Waxman's subcommittee.

The Fields Plan

Fields is from Houston, another area with one of the nation's toughest smog problems, and he felt the Waxman bill gave local governments too little flexibility in addressing the problem. His substitute evolved from an earlier proposal by local government officials in the Houston area. Aides say Fields put it forward because he was concerned about the starting point from which the full committee would begin its markup.

Fields' substitute is favored by most Republicans on the subcommittee. Dingell is also expected to favor it. Waxman opposes it, and at least nine of the 12 subcommittee Democrats are expected to join him.

During and after the June 15 markup, both sides were expressing confidence that they had the votes to prevail. Waxman would need only a 10-10 tie to stop amendments to his smog title, but he would need a majority to send it to the full committee. The three uncertain votes identified by both sides were Tom Tauke, R-Iowa; Ralph M. Hall, D-Texas; and Bruce.

Although Fields had been privately negotiating with many committee members over the details of a possible substitute, Waxman and his allies had been unable to get their hands on a definite proposal until June 15. Aides said that by convening the markup, Waxman, in effect, flushed out the Fields proposal. ■

—By Joseph A. Davis



Clean this file

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET

DATE: June 17, 88

TO: Mr. Harlow

FROM: ROBERT K. DAWSON
ASSOCIATE DIRECTOR
NATURAL RESOURCES, ENERGY AND SCIENCE

Larry,

Thought you might be interested in
this analysis by my staff.

A handwritten signature in dark ink, appearing to be "R. Dawson", written over a large, stylized, inverted triangle shape.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

June 15, 1988

MEMORANDUM FOR: Robert K. Dawson
FROM: Ed Watts *EW*
SUBJECT: Cuomo-Celeste Acid Rain Proposal

This is in response to your request for an assessment of the Cuomo-Celeste acid rain proposal as described in the New York Times. A copy of the Times article is Attachment 1. The proposal itself is Attachment 2.

Major Provisions of the Proposal

- Overall objective is to reduce sulfur dioxide (SO₂) emissions by 50 percent over 15 years and nitrogen oxide (NO_x) emissions by 25 percent over ten years.
- Financing would come from:
 - a \$250 million per year 50% matching grant program for innovative emissions control technologies, with priority for retrofit technologies.
 - a \$650 million per year fund to pay for 50 percent of the cost of conventional emissions control equipment (e.g., scrubbers). This fund would be financed by requiring oil importers to set aside two percent of oil imports for placement in the Strategic Petroleum Reserve (SPR) and diverting appropriations that would have used for SPR to pay for the control equipment.
- SO₂ Emissions
 - 10 million ton reduction in utility emissions by existing sources would be required in three phases by year 2003.
 - States could choose between achievement of statewide average emission levels or a percentage reduction from 1980 emission levels.
- NO_x Emissions
 - Three million ton reduction in emissions from utility and non-utility sources would be required by 1998.
 - At least equal reductions would be required from mobile

- Strategic Petroleum Reserve

- Oil importers would be required to set aside two percent of imports for placement in the SPR.
- SPR capacity would be expanded to one billion barrels, doubling the current fill rate.
- Cost of filling SPR would be shifted from taxpayers to oil importers. As a result, the cost of foreign oil would increase by about fifty cents per barrel, and the cost of gasoline at the pump would increase by one cent per gallon.
- A dedicated fund, created from funds freed up by shifting costs to oil importers, would be used to cover fifty percent of the capital costs of conventional emissions reduction equipment.

- Innovative Emissions Control Technology

- Under this ten year, \$2.5 billion program, the Secretary of Energy would select projects in accordance with State plans and with the concurrence of EPA.
- Technologies would have to be applied to existing coal-fired facilities and priority would be given to retrofit technologies.

NRD/ES Assessment

- Emissions reduction requirements are only marginally different from those of the Waxman and Mitchell bills.
- The last increment of SO2 reductions would not be required until year 2003, compared to 1997 and 2000 in the Waxman and Mitchell bills, respectively.
- However, the Cuomo-Celeste provision requiring a 3.5 million ton reduction in SO2 emissions by 1993 would not allow enough time for the development of innovative clean coal technologies.
- Thus, less effective and less efficient existing technologies would be installed, retarding the widespread introduction of superior technologies.
- The SPR provision is not well justified. There is no reason why the oil industry should bear the burden of paying for a problem they didn't cause. Nor is there any compelling national security rationale for expanding the size of the SPR.

- The SPR provision would most likely violate GATT. It would invite retaliation by oil exporting countries or would require compensation of these countries for their economic losses.

Reactions from Outside Parties

- EPA has not developed a position on the proposal since they believe it is not going anywhere.
- Sen. Byrd makes the abovementioned point about retarding clean coal technology and feels the proposal would devastate the coal industry.
- Rep. Luken of Ohio, a member of the Energy and Commerce committee, says that Celeste does not speak for Ohioans on the issue.
- Rep. Eckhart of Ohio, a member of the Group of Nine, says that Congress will not likely enact an oil import provision as called for in the proposal.
- Gov. Moore, chairman of the National Governors Association's energy and environment committee, said that Cuomo and Celeste did not discuss their proposal with the committee. Moore criticized the severe impact that the proposal would have on the coal industry and consumers in general.
- Gov. Dukakis likes it.

Attachments

Cuomo and Governor of Ohio Join in Proposal on Acid Rain

By PHILIP SHABECOFF

Special to The New York Times

WASHINGTON, June 5 — The Governors of New York and Ohio, two states that have been on opposite sides of a fierce debate over reducing acid rain, have agreed on a joint proposal to require steep reductions nationwide in pollution from coal-fired power plants and other industrial sources over the next 25 years.

The proposal for new Federal acid rain legislation, which could represent a breakthrough in a long deadlock in Congress, was reached after a year of negotiations between Governor Cuomo and Gov. Richard Celeste of Ohio, assisted by their aides.

It Differs From Earlier Plans

The agreement would raise about \$800 million a year to pay about half the anticipated cost of compliance and to help the polluting states meet the anti-pollution goals. More than two-thirds of the \$900 million would be paid by the oil industry, the other third by the Federal Government. An additional \$800 million would be paid for by polluters.

The proposal differs in several key respects from legislation now pending in Congress, legislation that is backed by states that suffer from acid rain pollution and opposed by states where much of the pollution originates. Lead-

ing each side of the battle over that legislation have been lawmakers from New York, one of the biggest victims of the pollution, and Ohio, where plants emit more sulfur dioxide, a major source of acid rain, than any other state in the country.

Compared with the pending legislation, the new compromise would require a smaller reduction in the pollutants that produce acid rain. It lengthens the period for reaching the anti-pollution goals, and it provides innovative techniques for sharing the costs of compliance with the program by the whole nation, including a device for providing revenue from an expanded Strategic Petroleum Reserve.

Governors Cuomo and Celeste said in telephone interviews over the weekend that they would ask members of Congress from their respective states to introduce their proposal as amendments to the Clean Air Act. They also expressed the hope that an agreement between two large states at opposite poles of the issue would clear the way for a breakthrough on the impasse on

controls that has persisted for nearly a decade.

Governor Cuomo called the agreement "a reasonable and imaginative effort to resolve our differences and solve the problem of acid rain." He said he would "push hard and will keep pushing" to achieve a national program to deal with the issue.

Hundreds of lakes in the Adirondack Mountains in New York have become acidified by the pollution, much of which is believed to come from coal-fired electric power plants in Midwestern states such as Ohio.

Ohio and other Midwestern states with large coal-fired power plants have opposed acid rain controls because they feared that such a program would lead to sharply higher electric rates and to a loss of jobs in mining industries that produce a great deal of coal with a high sulfur content.

Governor Celeste said today that "if the folks in New York and Ohio can find a common ground, it may well serve as a guidepost for the rest of the nation."

New York's two Senators, Democrat Daniel Patrick Moynihan and Republican Alfonse D'Amato, praised the agreement and said they would introduce legislation to implement the proposal.

Governors Wanted Settlement

Governor Celeste said today the more strict legislation pending in Congress was like a "sword of Damocles" hanging over electric utilities and other industry in Ohio because it would impose a heavy cost. He also sought a settlement because many companies in his state have held off on long-range investment plans because of the

Governor Cuomo, who has long sought strong legislation that would reduce acid rain damage to New York, is

willing to accept a program somewhat less stringent than pending legislation, that would take longer to implement and that would cost New Yorkers more because the program has a better chance of being adopted.

Among acid rain legislation already in Congress, the most prominent was introduced by Senator George Mitchell of Maine. The legislation has wide support but also serious opposition, including that of the majority leader, Senator Robert Byrd of West Virginia. Mr. Byrd considers the Mitchell legislation, which would require businesses to pay the cost of acid rain control, a threat to his state's coal industry. Its chances are considered questionable.

Mr. Mitchell today said he would have to examine the New York-Ohio bill to see whether it was fair and sufficient, but he called the proposal "encouraging" and commended Governor Celeste for what he said was "political courage." He said that the proposal should help get a bill enacted this year.

Acid rain is caused by pollution from power plants and other industries that produce oxides of sulfur and nitrogen. These change chemically as they travel through the atmosphere and descend as acid rain, snow, fog or dust. Much of the pollution blows into the Northeast and Canada on winds from the Midwest's industrial areas.

Environmental Damage

Scientists generally agree that acid rain destroys plant and animal life in sensitive lakes and streams, and some scientists believe it damages forests and man-made structures, adds to the pollution pressures on marine life in eastern coastal areas, threatens human health in many areas.

Years of efforts by Eastern states and the Canadian Government to reduce acid rain have been unsuccessful. They have been opposed by polluting states and by the Reagan Administra-

New York: Today, partly sunny, a High 73-74. Tonight, partly cloudy, 59-66. Tomorrow, some sun, after thundershower. High 69-75. Yesterday High 82, low 54. Details, page

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SOCIALISTS APPEAL

tion on the ground that billions of dollars would be spent with too little information about acid rain's effects and the impact of controls on electric rates and coal-mining jobs. The result has been a deadlock on Capitol Hill.

The plan proposed by New York and Ohio to break this deadlock would require reductions of sulfur and nitrogen emissions by polluting states in several stages between now and 2003. Total sulfur dioxide emissions would be reduced in three phases by a national total of 18 million tons from the current level of about 23 million tons a year. All of the reductions would be made by coal-fired utility plants.

According to Thomas C. Jorling, head of New York's Department of Environmental Conservation, the major sources of Midwestern pollution would have to make the biggest reductions in the first stage of the program, which would end in five years.

The plan would also require a 3 million-ton reduction in nitrogen oxide pollution by 1998 from current emissions of nearly 20 million tons a year.

\$1.8 Billion a Year

The proposal anticipates that the plan would cost \$1.8 billion a year nationwide to carry out in the first 10 years.

Under the proposal, the Federal Government would provide \$800 million a year in subsidies. Of that, \$650 million a year would come from a major change in the way the nation pays for the Strategic Petroleum Reserve.

The reserve, which consists of oil that is under storage for use in the event of a national emergency, is now paid for with Federal tax revenues. Under the New York-Ohio proposal, the pace of filling the reserve would be accelerated and the cost would be shifted from the Treasury to the oil companies, which would be required to set aside 2 percent of their imports for that purpose.

ACID RAIN/ENERGY SECURITY INITIATIVE

I Introduction

The objective of this proposal is to reduce acid rain by cutting harmful air pollution and achieve environmental protection at a reasonable cost. Also, the proposal would enhance our energy security by expanding the Strategic Petroleum Reserve (SPR).

The proposal would amend the Clean Air Act to reduce emissions of sulfur dioxide and nitrogen oxide; provide federal assistance to accomplish these reductions; expand the clean coal technology program to develop and demonstrate more efficient, less expensive methods of reducing emissions of sulfur dioxide and nitrogen oxide; expand the capacity of the Strategic Petroleum Reserve; and establish new fill rates for the Strategic Petroleum Reserve.

II Acid Rain

The proposal calls for a combination of sulfur dioxide (SO_2) and nitrogen oxide (NO_x) emission reductions. A three-phase reduction of sulfur dioxide by 10.0 million tons per year would be achieved by the year 2003. In addition, nitrogen oxide emissions

would be reduced by 25 percent from 1980 levels (approximately 3 million tons) per year by 1998.

Reductions of sulfur dioxide would occur in three phases, at five-year intervals. A Federal assistance program would be established to cover 50 percent of capital cost for achieving these reductions. All reductions would come from existing utility sources: three and one-half million tons by 1993, an additional four and one half million tons by 1998, and a final two million tons by the year 2003. The two million ton reduction in Phase III would be contingent upon Congress establishing sufficient sources of funding to cover 30% of the capital cost of technology controls.

In Phase I of the program, a state would be required to achieve an SO_2 average emission rate of 2.0 lbs./MM Btu heat input, but would not be required to reduce emissions by more than 31% of total 1980 utility emissions. Phase II would require states to achieve an average SO_2 emission rate of 0.9 lbs./MM Btu of heat input or a maximum reduction of 32% of total 1980 utility emissions.

If a state did not meet the 0.9 lbs./MM Btu emission rate in Phase II, it would be required to undertake further reductions in Phase III. The maximum reduction required in these states would be 68% of total 1980 utility emissions.

This level of reduction and the time frame in which it would be achieved would serve two purposes: First, it would provide immediate and long-term reductions in the emissions of sulfur dioxide needed to protect the environment from the harmful effects of acid rain. Second, states required to make significant reductions in emissions would have the time and flexibility to do so without incurring unreasonable costs.

The proposal also calls for a 25 percent reduction (approx.: 3 million tons) in the emissions of nitrogen oxides by 1998 from all stationary combustion sources, calculated from 1980 emission levels.

An effective NO_x Control Program must also include reductions from mobile sources since they account for 40 to 50 percent of NO_x emissions. The NO_x reductions must be in addition, and at least equal to, those reductions from stationary sources.

By 1991, the Administrator of the Environmental Protection Agency would establish revised performance standards for existing fossil fuel steam generating units, large industrial process units and new vehicles. In setting these standards, the Administrator would prescribe limits achievable by cost-effective NO_x control technologies for various types of stationary and mobile sources.

States would be required to submit two plans to the U.S. EPA Administrator documenting how the reductions will be achieved. The first plan would be due 18 months after enactment and would document planned sulfur dioxide reductions to comply with the first two phases. A second plan documenting the planned sulfur dioxide reductions in the third phase would be submitted to the Administrator by January 1995.

Should a state fail to submit a plan on time or fail to carry out the plan according to the requirements approved by EPA, it would be considered to be in default. The consequences of default would be twofold: First, a state would lose its ability to choose between an emission rate or a maximum percentage reduction. Second, the emission rate would apply to each individual utility unit in the state.

Once in default, a state would lose its ability to design a flexible, cost-effective plan, and would be forced to achieve additional reductions greater than would be required under a statewide utility average.

Each state would also be required to submit a plan for the reduction of NO_x to the Administrator by January 1993. Failure

to submit an adequate plan or to implement the requirements of an approved plan would invoke universal control requirements.

III Financing

The proposal would provide significant amounts of money to assist the states in financing the required reductions. Funding would be restricted to capital expenditures.

The proposal would shift the cost of the Strategic Petroleum Reserve from taxpayers to importers of oil. This would free an estimated \$650 million in appropriations made to the Strategic Petroleum Reserve for financing acid rain control requirements.

Second, the proposal calls for a ten-year clean coal technology program which would provide an additional \$250 million annually to fund the required emission reductions accomplished with innovative control technologies.

The clean coal fund and the Strategic Petroleum Reserve appropriation would yield approximately \$900+ million per year under this proposal. The money would be placed into dedicated accounts that would be available for acid rain controls called for under Phases I and II. The Clean Coal Account would be used

to fund 50 percent of the deployment of new clean coal technologies in accordance with state plans. The other account would be used to fund 50 percent of the capital cost of conventional controls, such as retrofit or repowering, in accordance with state plans.

Financing for Phase III would be established by Congress prior to the eleventh year of the program. Reductions required in Phase III would be contingent upon adequate new funding to cover fifty percent of the capital cost of control technologies.

Grants would be made available for up to fifty percent of the cost of the air pollution control technology. The Administrator would be charged with making grants to the states for this purpose in accordance with state plans. In the case where grants are made for the clean coal technology program, these decisions would be made by the Secretary of Energy with the concurrence of the Administrator.

IV Strategic Petroleum Reserve

Under the proposal, importers of petroleum would be required to set aside 2 percent of imports for placement in the Strategic Petroleum Reserve. The capacity of the Strategic Petroleum Reserve would be expanded to one billion barrels to remain proportionate

to the increase in the levels of imported oil to the United States. Depending on the level of imports, this should increase the fill rate from the current 55,000 barrels per day to between 120,000 and 140,000 barrels per day. The Secretary of Energy would be required to assign the equivalent daily contributions to each importer of foreign oil.

The cost of filling the Reserve would be shifted from taxpayer to importers of oil. Importers would be assessed a small charge to create the necessary capacity for storage. As a result of the set aside and the surcharge, the cost of foreign oil will increase approximately \$.40 to \$.50 per barrel, or about \$.01 per gallon.

The money shifted from the Strategic Petroleum Reserve would be used to cover 50 percent of the capital cost of meeting the emission reductions.

V Clean Coal Technology Program

This proposal would include a clean coal technology program. It would establish a ten year \$2.5 billion matching grant program to support deployment of innovative acid rain control technologies for coal fired boilers with specific priority given to retrofit technologies.

A requirement of the program would be that all technologies funded under this portion of the proposal would result in a reduction in the emissions of sulfur dioxide or nitrogen oxides. The technologies would have to be applied to an existing coal-burning facility.

Grants would be available for fifty percent of the cost of deploying the new technology. The Secretary of Energy would select the projects funded under this proposal in accordance with state plans and with the concurrence of the Administrator.

VI New Benefits

The proposal would:

- 1) ~~reduce the emissions that contribute to acid rain~~ to protect regions sensitive to acid rain;
- 2) provide the states with the time and flexibility necessary to plan and achieve required reductions and significant financing to offset the costs of acid rain control;

3) increase the fill rate and the size of the Strategic Petroleum Reserve, which would increase the nation's energy security and safeguard regions heavily dependent on imported oil, like the Northeast, from potential disruptions in supply;

4) accelerate the deployment of new technologies to burn coal cleanly. This is especially important to states in planning those reductions that will be required in the second and third phases of reductions called for in this proposal.

6/2/88

1990 National Utility Sulfur Dioxide Emission Inventory

19-Apr-88			TONS/YEAR SO ₂ REDUCTIONS & STATEWIDE EMISSION RATES & PROVISIONS FOR MAX. % REDUCTIONS									
STATE	SO ₂ 1000TONS	LB/ MMBTU	2.00 YEAR:1993 MAX RED: 31%			0.90 YEAR:1998 MAX RED: 52%			0.9 YEAR: 2003 MAX RED 68%			STA
			SO ₂ /MMBTU	MAX TONS		SO ₂ /MMBTU	MAX TONS		SO ₂ /MMBTU	MAX TONS		
AL	843	2.62	94,340	17.4%	94,340	341,038	62.8%	341,038	341,038	62.8%	341,038	AL
AR	27	0.47	0	0.0%	0	0	0.0%	0	0	0.0%	0	AR
CT	36	0.47	0	0.0%	0	0	0.0%	0	0	0.0%	0	CT
DC	0.8	0.88	0	0.0%	0	0	0.0%	0	0	0.0%	0	DC
DE	53	1.48	0	0.0%	0	20,770	39.2%	20,770	20,770	39.2%	20,770	DE
FL	738	1.74	0	0.0%	0	350,483	48.3%	350,483	350,483	48.3%	350,483	FL
GA	737	2.93	337,339	32.2%	228,470	512,133	69.3%	343,240	512,133	69.3%	301,160	GA
IL	1128	2.80	321,714	28.6%	321,714	764,071	67.9%	343,320	764,071	67.9%	764,071	IL
IN	1940	4.31	823,383	53.6%	477,400	1,218,422	79.1%	800,800	1,218,422	79.1%	1,047,200	IN
KY	1008	3.73	467,317	46.4%	312,480	764,783	75.9%	324,160	764,783	75.9%	683,440	KY
MA	276	1.74	0	0.0%	0	133,341	48.3%	133,341	133,341	48.3%	133,341	MA
MD	223	2.15	13,338	7.0%	13,338	129,631	38.1%	129,631	129,631	38.1%	129,631	MD
ME	16	1.40	0	0.0%	0	3,714	33.7%	3,714	3,714	33.7%	3,714	ME
MI	343	1.88	0	0.0%	0	294,321	32.1%	293,800	294,321	32.1%	294,321	MI
MN	177	1.69	0	0.0%	0	70,087	39.6%	70,087	70,087	39.6%	70,087	MN
MO	1141	4.61	643,989	36.6%	333,710	918,243	80.3%	393,320	918,243	80.3%	775,880	MO
MS	129	1.31	0	0.0%	0	40,374	31.3%	40,374	40,374	31.3%	40,374	MS
NC	435	1.30	0	0.0%	0	174,000	40.0%	174,000	174,000	40.0%	174,000	NC
NH	81	2.91	23,330	31.3%	23,110	33,948	69.1%	42,120	33,948	69.1%	33,000	NH
NJ	110	0.85	0	0.0%	0	0	0.0%	0	0	0.0%	0	NJ
NY	480	1.34	0	0.0%	0	399,481	41.6%	399,481	399,481	41.6%	399,481	NY
OH	2172	3.93	1,044,634	49.1%	673,320	1,676,393	77.1%	1,139,448	1,676,393	77.1%	1,476,940	OH
PA	1444	2.69	228,400	19.7%	288,400	936,120	63.9%	762,320	936,120	63.9%	936,120	PA
RI	1	0.98	0	0.0%	0	82	8.2%	82	82	8.2%	82	RI
SC	213	1.98	0	0.0%	0	116,182	34.3%	116,700	116,182	34.3%	116,182	SC
TN	934	3.79	441,124	47.3%	289,340	712,206	76.3%	485,688	712,206	76.3%	685,120	TN
VA	164	1.39	0	0.0%	0	57,813	25.3%	57,813	57,813	25.3%	57,813	VA
VT	1	0.93	0	0.0%	0	0	0.0%	0	0	0.0%	0	VT
WV	484	3.18	189,639	39.0%	150,040	332,644	72.6%	332,720	332,644	72.6%	330,480	WV
WY	944	2.79	247,397	28.3%	247,397	639,484	67.7%	498,880	639,484	67.7%	639,484	WY
EAST	13,810.8		4,884,397	30.9%	3,497,990	10,482,132	66.3%	7,986,115	10,482,132	66.3%	9,788,433	EAST
AZ	88	0.39	0	0.0%	0	0	0.0%	0	0	0.0%	0	AZ
CA	78	0.13	0	0.0%	0	0	0.0%	0	0	0.0%	0	CA
CO	78	0.57	0	0.0%	0	0	0.0%	0	0	0.0%	0	CO
LA	239	2.23	24,630	10.3%	24,630	142,343	39.6%	134,380	142,343	39.6%	142,343	LA
KS	130	1.11	0	0.0%	0	28,378	18.9%	28,378	28,378	18.9%	28,378	KS
LA	23	0.09	0	0.0%	0	0	0.0%	0	0	0.0%	0	LA
MT	23	0.81	0	0.0%	0	0	0.0%	0	0	0.0%	0	MT
ND	83	1.16	0	0.0%	0	18,603	22.6%	18,603	18,603	22.6%	18,603	ND
NE	49	1.80	0	0.0%	0	4,900	10.0%	4,900	4,900	10.0%	4,900	NE
NM	83	0.74	0	0.0%	0	0	0.0%	0	0	0.0%	0	NM
NV	40	0.60	0	0.0%	0	0	0.0%	0	0	0.0%	0	NV
OR	38	0.17	0	0.0%	0	0	0.0%	0	0	0.0%	0	OR
OR	3	0.68	0	0.0%	0	0	0.0%	0	0	0.0%	0	OR
SD	19	1.63	0	0.0%	0	13,182	43.3%	13,182	13,182	43.3%	13,182	SD
TX	303	0.16	0	0.0%	0	0	0.0%	0	0	0.0%	0	TX
UT	23	0.39	0	0.0%	0	0	0.0%	0	0	0.0%	0	UT
WA	69	1.73	0	0.0%	0	33,104	48.0%	33,104	33,104	48.0%	33,104	WA
WY	121	0.99	0	0.0%	0	11,000	9.1%	11,000	11,000	9.1%	11,000	WY
WEST	1,324.0		24,630	1.6%	24,630	231,710	16.3%	231,648	231,710	16.3%	231,710	WEST
USA	17,334.8		4,910,047	28.3%	3,322,020	10,733,842	61.9%	8,128,373	10,733,842	61.9%	10,023,163	USA

7/15
file: Clean air act

THE WHITE HOUSE
WASHINGTON

Mitchell + 15 Senators

- no agreement
- Alan: good start
- Can't agree w/ rate subsidy
- Should have been able to do
1 mth. ago.

Group of 9 - Swift

- acid rain ozone proposal
 - no acid rain. Cooper (TN) has
attractive proposal
 - Rangel, Waxman, Fields
- Swift + Synar have met 3
days on amendments to Group of
9 package - off so, its ruined.

Clean-Air Proposals: No Breakthrough Yet

Two new clean-air compromises were thrown on the table June 6, but no one rushed to pick them up, leaving hopes for a breakthrough in the long-standing congressional deadlock still unfulfilled.

One proposal grew out of negotiations between Democratic Govs. Richard F. Celeste of Ohio, the state emitting the most acid-rain pollution nationwide, and Mario M. Cuomo of New York, the state receiving the most.

The other came from a group of nine House Energy Committee Democrats who have been trying to broker a compromise among members of that polarized panel.

The governors' proposal aroused the most hope and got the most attention because it grew out of an unusual collaboration. But the reaction from the committee leaders most likely to determine its fate was lukewarm at best. There was praise for the effort, but not for the result.

"Governors Celeste and Cuomo deserve to be commended," said John D. Dingell, D-Mich., chairman of the House Energy Committee, who then went on to question whether the plan could work.

Senate Majority Leader Robert C. Byrd, D-W.Va., another key opponent of acid-rain controls, took a similar approach. "I am encouraged to see this type of dialogue take place," said Byrd. "However, I do not see anything new in this proposal."

George J. Mitchell, D-Maine, chairman of the Senate Environment Subcommittee on Environmental Protection, commended Celeste for his "political courage.... I am hopeful this proposal will help ensure that acid-rain control legislation is enacted this year." But Mitchell has his own clean-air bill (S 1894) that he is trying to get onto the Senate floor. (1987 *Almanac* p. 299)

The plan offered by the so-called "group of nine" drew little immediate reaction, with key legislators saying they needed to study it. The plan is a refinement of a proposal made earlier

this year and is an attempt to take into account objections raised to the first proposal. (*Weekly Report* p. 984)

The acid-rain issue has polarized and paralyzed Congress since 1982. There is pressure to act this year because more than 100 cities face penalties by an August deadline that few will meet. Congress has already extended the deadline once, and it could be politically embarrassing if it is forced to do so again.

Governors Enter the Fray

The Celeste-Cuomo proposal would cut by almost one-half the annual emissions of sulfur dioxide, a main ingredient in the acid rain that Northeasterners say is killing their fish and forests.



Gov. Mario M. Cuomo of New York, left, and Gov. Richard F. Celeste of Ohio, both Democrats, offered a clean-air proposal designed to break a congressional deadlock.



The plan would require a 10-million-ton reduction in annual sulfur-dioxide emissions, an estimated 22 million tons nationwide, by 2003: 3.5 million tons by 1993, another 4.5 million tons by 1998 and 2 million tons by 2003.

The governors also called for a 25 percent reduction by 1998 in emissions of nitrogen oxides, another pollutant causing acid rain, with the reduction to be split equally between stationary and automotive sources.

Their program includes the five-year \$2.5 billion "Clean Coal Technology" program sought by mining-state members, including Byrd. Coal-burning power plants, especially in the Midwest and Ohio River basin, produce a large share of the nation's sulfur-dioxide emissions.

The \$2.5 billion provided by the federal government would be matched by private companies to finance a pro-

gram to demonstrate technologies for burning coal with less pollution. The Reagan administration has backed the program as part of a commitment to Canada, which lies downwind of U.S. smokestacks.

Cuomo and Celeste address Midwesterners' fears that new controls will raise electric bills by setting up a fund of about \$650 million per year to pay half of utility capital costs for the new controls. The fund would be paid for, in essence, by taxing oil companies. They would be required to set aside 2 percent of all their petroleum imports for placement in the nation's Strategic Petroleum Reserve.

The governors say that would free up the \$650 million from the general Treasury that is used to buy oil each

year, allowing the money to go to acid-rain control.

It was this part of the Celeste-Cuomo plan that raised the loudest objections on Capitol Hill.

"One initial question I have concerns the financing," said Dingell. "We're having enough trouble funding the Strategic Petroleum Reserve as it is."

Dingell, from an automaking district, has been skeptical of the need for tighter controls. But his doubts about the Celeste-Cuomo funding scheme are being echoed by members pushing tighter controls, especially those from the Northeast, the region most hurt by acid rain.

Congressional aides said the Cuomo-Celeste proposal may shift cost burdens off of utilities and ratepayers in states like Ohio and Indiana, and onto oil companies, an easy scapegoat. But that would really shift much

—By Joseph A. Davis

a mth.
- Warman has extension
of August 31 deadline.
Will seek

- Mitchell "I want candid
exclusion. Staggered dinner,
Sagean?"

D/O funded by gov
by utilities

copy rate increases when rates
rise so up as a result of controls
(10%)

- west - wires already paid
- midwestern - most attractive
Prox only midwest Sunk at Pres C.