

United Mine Workers of America

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Comments of United Mine Workers of America on Proposed LADCO EGU White Paper May 2005

Background

Five states in the Lake Michigan region (Illinois, Indiana, Michigan, Wisconsin and Ohio) are considering emission limits for electric generating units (EGUs) exceeding those required by EPA's new Clean Air Interstate Rule (CAIR). These limits are proposed in a "White Paper" prepared for the Lake Michigan Air Directors Consortium (LADCO).

The United Mine Workers of America (UMWA) represents organized coal miners in the United States, including active and retired miners in all five states of the LADCO region. This region contains active mining operations in Illinois, Indiana and Ohio, mainly producing coals of medium (1.5%-3.0%) to high sulfur (>3.0%) content. The majority of these high-sulfur coals are produced from the Illinois #6 seam, one of the largest reserves of energy in North America.

Due to fuel-switching resulting from enactment of the 1990 Clean Air Act Amendments, coals from the Illinois Basin (Illinois, Indiana and western Kentucky) have struggled to maintain viable markets. To meet new SO₂ emission limits under the 1990 acid rain program, many generating plants switched to low-sulfur coals from the Powder River Basin of Wyoming or from Central Appalachia. Overall, UMWA estimates that more than 100

million annual tons of eastern high-sulfur coal production was displaced due to such fuel-switching in the 1990s.

UMWA has a long record of constructive involvement in environmental control issues affecting coal mining and combustion. UMWA negotiated the first 10-million ton SO₂ compromise bill in the U.S. Senate in 1988, bringing together Senators Robert C. Byrd (D-WV) and George Mitchell (D-ME) to support a proposal to retrofit scrubbers on the largest and highest-emitting eastern power plants. In the OTAG process, UMWA advocated a compromise NO_x control proposal for a 65% reduction of emissions across the eastern United States, a proposal that later was advanced by New York and other northeastern states.

UMWA Supports Early Scrubbing

UMWA supports EPA's Clean Air Interstate Rule, and was active in negotiations with the Administration leading to the choice of the Rule's Phase II SO₂ emission cap. UMWA opposed the 2.0 million ton SO₂ cap in the "EPA Strawman" proposal on the grounds that it would lead to the shutdown of many smaller (e.g., <200 MW) and older (e.g., >40 years) power plants. We argued against U.S. DOE's proposal for a 4.5 million ton SO₂ cap on the grounds that it would promote additional fuel-switching, and was not sufficient to achieve progress in meeting EPA's new PM_{2.5} standard.

UMWA's preference, as noted twice in testimony before the U.S. Senate Environment & Public Works Committee, is for a single-phase NO_x and SO₂ control plan that maximizes early installation of control technologies to reduce SO₂ and NO_x, thereby increasing the "cobenefits" of mercury capture through scrubber and SCR technologies. UMWA supports utility plans to move forward with the installation of scrubber technologies under CAIR to earn early reduction credits that can defray the costs of scrubber installations and provide greater flexibility in fuel choice.

Proposed EGU Limits Will Discriminate against Midwestern Coals

The EGU White Paper's proposed emission limits for SO₂ (Attachment 1) are based upon estimates of Best Available Control Technology (BACT)

emission limits for new (0.10 lb. SO₂/MMBTU) and existing (0.15 lb. SO₂/MMBTU) plants.

UMWA disagrees that BACT represents an appropriate level of control to be considered for the universe of electric generating units across the five-state LADCO region. BACT is applied through the Clean Air Act to new sources through NSR and PSD review processes, and to modified sources subject to NSR requirements. There is no basis in the Clean Air Act for an across-the-board application of BACT limits to more than 75 Gigawatts of coal-fired generating capacity in this five-state region.

UMWA has evaluated the proposed SO₂ limits in the EGU White Paper in terms of the ability to meet these emission limits with locally-available coals using wet FGD lime or limestone scrubbers achieving 95% SO₂ control. This is the level of control that U.S. EPA has proposed for Best Available Retrofit Technology (BART) analyses of plants burning eastern bituminous coals. We used coal delivery data for 2002 from all mines in the states of Illinois, Indiana and Ohio, based on FERC Form 423.

In 2002, FERC Form 423 reports indicate the following deliveries of coal from mines in these three states:

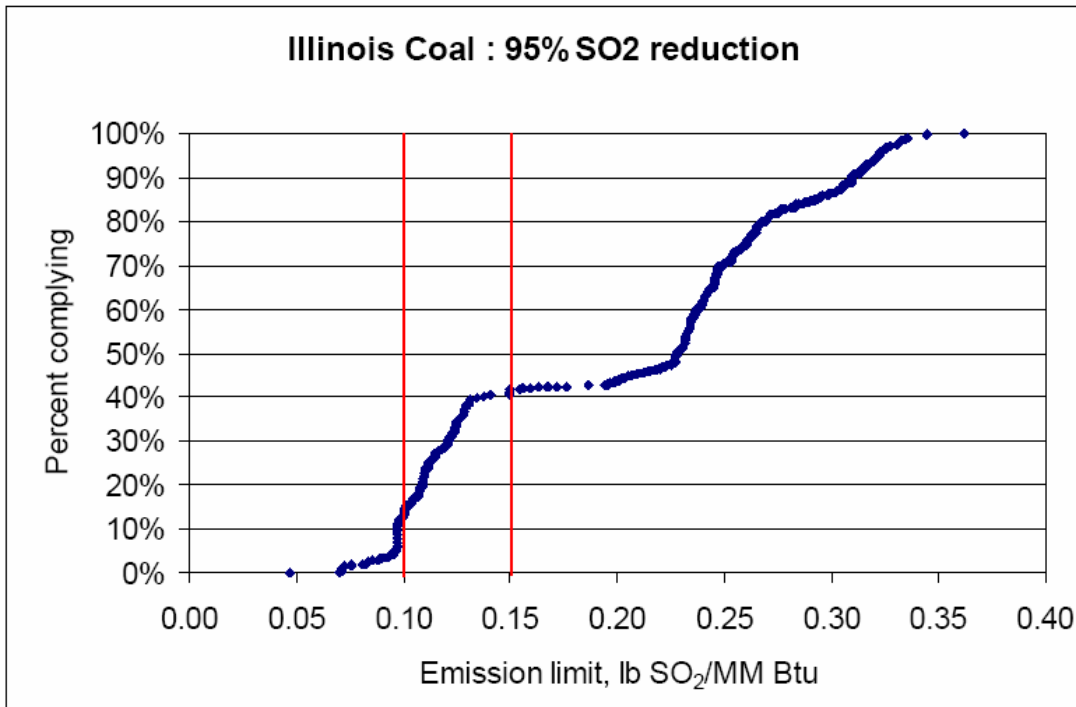
State	SO ₂ lb/MM Btu	BTU Btu/lb	Deliv. Cost \$/MM Btu
IL	3.97	11530	1.32
IN	3.95	11114	1.10
OH	5.38	11927	1.13

These data indicate the relatively high sulfur content of coals from these three producing states. Both Illinois and Indiana average ~4.0 lb. SO₂/MMBTU, implying a required removal rate of 96.2% to 97.5% to meet emission limits of 0.10 lb. and 0.15 lb., respectively. For Ohio, the average removal rate would need to be 97.2% to 98.1%. While such removal efficiencies may be achievable on some new units, it is not appropriate to assume that these levels of control could be achieved across a universe of hundreds of plants of diverse capacity, age, retrofit difficulty and thermal efficiency.

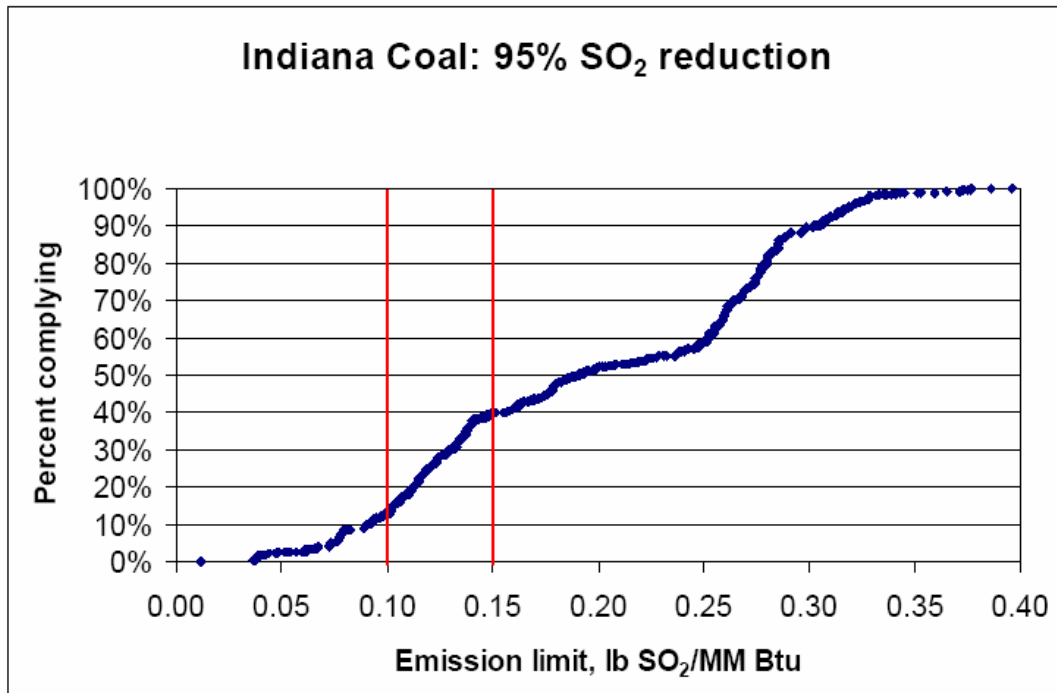
The majority of coal reserves in the Illinois Basin contain higher sulfur content than indicated by the average 2002 delivered coal data noted above. Attachment 2 provides the distribution of coal reserves in Illinois by sulfur and BTU content per million BTU. Nearly 90% of Illinois' demonstrated reserve base of 105 billion tons is concentrated in the highest sulfur category of >2.5 pounds of sulfur per million BTU. This corresponds to >5.0 pounds of SO₂ per million BTU.

The three charts below are tonnage-weighted cumulative frequency distributions illustrating the impact of applying the proposed EGU SO₂ limits on all of the coals delivered from Illinois, Indiana and Ohio in 2002, based on the sulfur content of reported coal deliveries.

Only 10% of coal shipped from Illinois in 2002 could meet the lower limit of 0.10 lb./SO₂, while some 40% could meet the alternative 0.15 lb./SO₂ limit. The emission rate limit corresponding to the ability to use 100% of the Illinois coals represented by these data is approximately 0.35 lb. SO₂/MMBTU. The limits proposed in the EGU White Paper would exclude between 60% and 90% of Illinois production.

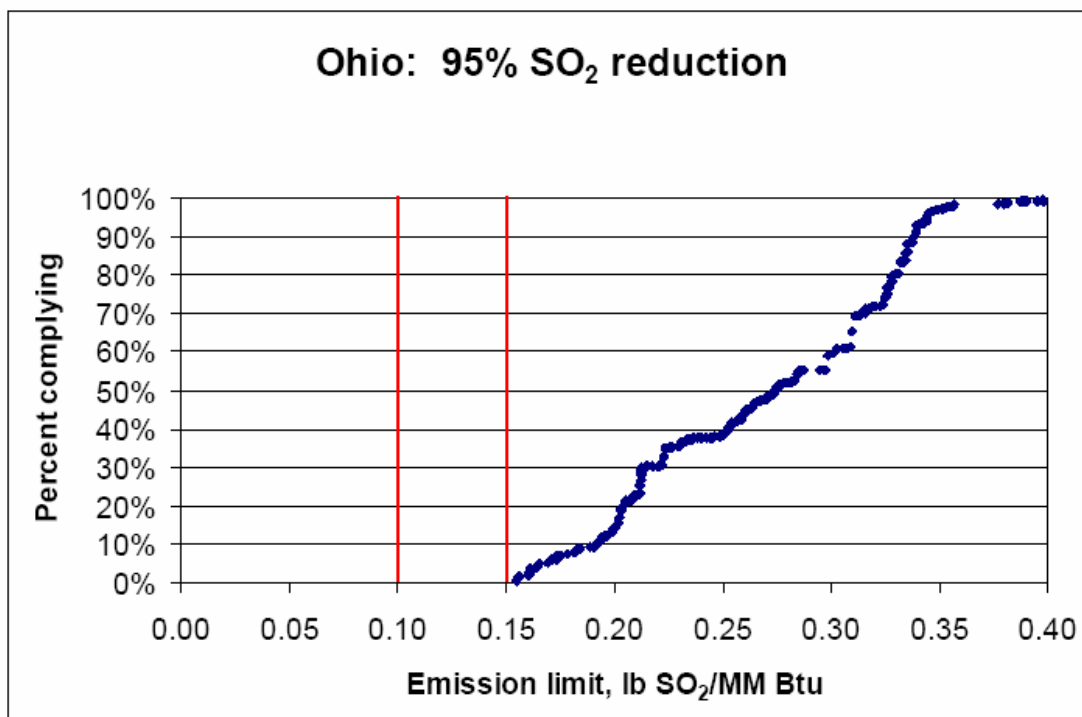


The data for coals shipped from Indiana are similar to those for Illinois, suggesting an emission rate limit of roughly 0.35 lb. SO₂ as a level that would not preclude utilization of coals from active mining operations. The fraction of Indiana coal precluded by the EGU White Paper's proposed emission rate limits ranges from approximately 88% (at 0.10 lb. SO₂) to 60% (at 0.15 lb. SO₂).



The situation in Ohio is more extreme. Due to the very high sulfur content of Ohio coals, none of the coals shipped from active mines in 2002 could meet either of the White Paper's proposed emission limits. Again, however, an emission rate limit of 0.35 lb. SO₂ would permit nearly all Ohio coals to be used at an assumed 95% FGD control efficiency.

In contrast to these results, Powder River Basin coals with a sulfur content of 0.6 lb. SO₂/MMBTU would require a reduction of 75% to 83% to meet the alternative limits proposed in the EGU White Paper. This level of control could be achieved by lower-cost dry scrubbing technologies. In effect, meeting the emission limits proposed in the EGU White Paper would encourage continued fuel-switching while discriminating against the use of local coal resources.



Conclusion

Midwestern coal miners and communities have suffered devastating losses due to the fuel-switching resulting from implementation of the 1990 acid rain program. Many Midwestern states are intent upon recovering some of the economic losses to their coal industries by encouraging the use of local coals to meet the reduction requirements of the CAIR rule. EPA projections indicate that northern Appalachian and Midwest coal production will increase as a result of CAIR and the Clean Air Mercury Rule (see Attachment 3).

For these reasons, UMWA respectfully requests that states reject the severe and unreasonable emission limitations proposed in the EGU White Paper, in favor of less stringent alternatives consistent with the use of all locally-available coals at plants suitable for the installation and economic operation of high-efficiency wet scrubbing technologies.

Attachment 1

TABLE 1 – CONTROL MEASURE SUMMARY FOR EGUs

Control Measure Summary	SO ₂ Emissions (tons/year) in 5-state MRPO Region	
2002 Existing measures (MRPO average SO₂ is 1.16 lbs/mmBtu): NSPS; PSD/NSR; State RACT Rules; Title IV SO ₂ Program	2002 Base:	2,798,884
2009 On-the-Way proposed measures: CAIR (IPM estimates 46% reduction in 2009 emissions from 2002 levels due to early reductions, additional reductions through 2015)	Reduction: 2009 Remaining:	<u>-1,296,587</u> 1,502,297
Candidate measure IDEGU1: Adopt Emission Caps Based on “Retrofit SO₂ BACT Level” of 0.15 lbs/mmBtu <i>Emission Reductions:</i> 66% reduction from 2002 levels in 2009, 84% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$800/ton to \$1,500/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-1,841,645</u> 957,239 <u>-2,347,834</u> 451,050
Candidate measure IDEGU2: Adopt Emission Caps Based on “SO₂ BACT Level for New Plants” of 0.10 lbs/mmBtu <i>Emission Reductions:</i> 77% reduction from 2002 levels in 2009, 89% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$800/ton to \$3,000/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-2,160,725</u> 638,159 <u>-2,498,184</u> 300,700

Control Measure Summary	NO _x Emissions (tons/year) in 5-state MRPO Region	
2002 Existing measures (MRPO average NO_x is 0.43 lbs/mmBtu): NSPS; PSD/NSR; State RACT Rules; Title IV NO _x Requirements	2002 Base:	1,045,736
2009 On-the-Way proposed measures: NO _x SIP Call (21% reduction from 2002 levels); additional reductions from CAIR not anticipated until 2010	Reduction: 2009 Remaining:	<u>-218,338</u> 827,398
Candidate measure IDEGU1: Adopt Emission Caps Based on “Retrofit NO_x BACT Level” of 0.10 lbs/mmBtu <i>Emission Reductions:</i> 62% reduction from 2002 levels in 2009, 71% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$700/ton to \$1,600/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-646,886</u> 398,850 <u>-745,036</u> 300,700
Candidate measure IDEGU2: Adopt Emission Caps Based on “NO_x BACT Level for New Plants” of 0.07 lbs/mmBtu <i>Emission Reductions:</i> 69% reduction from 2002 levels in 2009, 80% reduction from 2002 levels in 2013 <i>Control Cost:</i> \$700/ton to \$2,100/ton <i>Timing of Implementation:</i> Assumes full reductions achieved in 2013 <i>Implementation Area:</i> 5-State MRPO region	2009 Reduction: 2009 Remaining: 2013 Reduction: 2013 Remaining:	<u>-726,656</u> 319,080 <u>-835,246</u> 210,490

Disclaimer: The control measures identified in this document represent an initial set of possible measures. The Midwest RPO States have not yet determined which measures will be necessary to meet the requirements of the Clean Air Act. As such, the inclusion of a particular measure here should not be interpreted as a commitment or decision by any State to adopt that measure. Other measures will be examined in the near future. Subsequent versions of this document will likely be prepared for evaluation of additional potential control measures.

Attachment 2

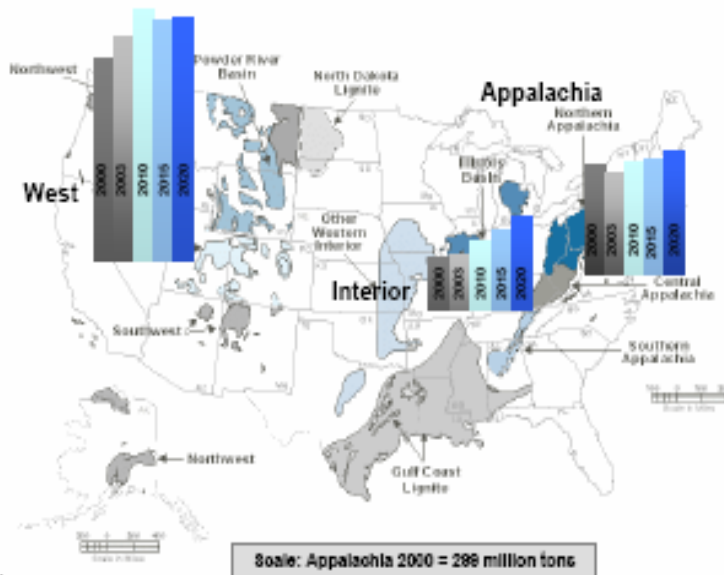
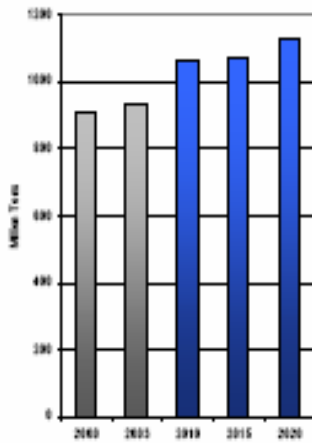
Table 1. Estimates of the Demonstrated Reserve Base and Estimated Recoverable Reserves of Bituminous Coal in Illinois by Btu/Sulfur Range and Type of Mining (Million Short Tons Remaining as of January 1, 1996)								
Heat content (million Btu per short ton)	Sulfur Content (pounds of sulfur per million Btu)							Total All Sulfur Categories
	< 0.40	0.41-0.60	0.61-0.83	0.84-1.24	1.25-1.67	1.68-2.50	> 2.50	
Demonstrated Reserve Base								
Minable from Surface								
15-19.99	0.00	0.00	0.00	0.00	0.00	8.84	121.98	130.82
20-22.99	0.00	0.00	4.16	161.45	132.20	501.23	14,102.65	14,901.71
23-24.99	0.00	0.00	1.36	26.42	20.12	80.81	1,084.50	1,213.21
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	372.25	372.25
Total	0.00	0.00	5.52	187.87	152.33	590.88	15,681.39	16,617.99
Minable Underground								
20-22.99	199.42	683.74	1,089.46	1,660.13	1,220.92	2,439.41	48,028.67	55,321.75
23-24.99	2.44	34.08	255.55	874.93	650.75	1,509.48	28,712.89	32,040.12
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	1,167.04	1,167.04
>25.99	0.00	0.00	0.00	0.00	0.00	0.00	9.45	9.45
Total	201.86	717.82	1,345.02	2,535.06	1,871.67	3,948.88	77,918.06	88,538.37
Minable Total								
15-19.99	0.00	0.00	0.00	0.00	0.00	8.84	121.98	130.82
20-22.99	199.42	683.74	1,093.63	1,821.58	1,353.12	2,940.64	62,131.33	70,223.46
23-24.99	2.44	34.08	256.91	901.35	670.87	1,590.28	29,797.40	33,253.33
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	1,539.30	1,539.30
>25.99	0.00	0.00	0.00	0.00	0.00	0.00	9.45	9.45
Total	201.86	717.82	1,350.54	2,722.93	2,023.99	4,539.76	93,599.45	105,156.40
Estimated Recoverable Reserves								
Recoverable from Surface								
15-19.99	0.00	0.00	0.00	0.00	0.00	5.22	71.18	76.41
20-22.99	0.00	0.00	2.48	110.69	87.11	303.37	8,586.19	9,089.84
23-24.99	0.00	0.00	0.70	0.72	4.46	30.94	682.05	718.86
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	226.75	226.75
Total	0.00	0.00	3.18	111.41	91.57	339.53	9,566.17	10,111.86
Recoverable Underground								
20-22.99	45.58	176.75	325.61	450.29	356.33	696.70	15,180.30	17,234.57
23-24.99	0.54	8.29	80.18	316.55	226.24	554.23	9,435.98	10,622.01
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	266.76	266.76

Total	46.12	185.04	405.79	766.85	582.58	1,250.93	24,883.03	28,120.34
Recoverable Total								
15-19.99	0.00	0.00	0.00	0.00	0.00	5.22	71.18	76.41
20-22.99	45.58	176.75	328.09	560.99	443.45	1,000.07	23,766.48	26,321.41
23-24.99	0.54	8.29	80.88	317.28	230.70	585.17	10,118.03	11,340.88
25-25.99	0.00	0.00	0.00	0.00	0.00	0.00	493.51	493.51
Total	46.12	185.04	408.96	878.26	674.14	1,590.47	34,449.20	38,232.20
<p>Note: Data may not equal sum of components due to independent rounding. Source: Illinois State Geological Survey, <i>Illinois Coal Reserve Assessment and Data Base Development: Final Report</i>, Open-File Series 1997-4.</p>								

Attachment 3

Current and Projected Coal Production for the Power Sector with CAMR

National Coal Production for the Power Sector: Continued Growth with CAMR



By 2020, nationwide coal production is projected to increase by 20%, with growth occurring in all major supply regions.

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Notes: Coal production for the power sector. This data is from the Final CAMR Regulatory Impact Analysis.

Source: U.S. EPA, Final CAMR Regulatory Impact Analysis (2005).