ILLINOIS POLLUTION CONTROL BOARD
October 4, 2018

IN THE MATTER OF:	)	
	)	
AMENDMENTS TO 35 ILL. ADM. CODE	)	R18-20
225.233, MULTI-POLLUTANT STANDARD	)	(Rulemaking - Air)
(MPS)	)	

Proposed Rule. Second First Notice.

OPINION AND ORDER OF THE BOARD (by K. Papadimitriu):

Today the Board proposes, for second first notice, revised amendments to the Multi-Pollutant Standard (MPS) based on the testimony and comments received since first-notice publication. The MPS is a set of air pollution control rules in 35 Ill. Adm. Code 225 ("Control of Emissions from Large Combustion Sources"). At first notice, the Board adopted the proposal filed by the Illinois Environmental Protection Agency (IEPA), without substantive review, at IEPA's request to expedite the Board's review. IEPA proposed changing the existing MPS rule primarily by combining the two existing MPS groups into one group and replacing the existing rate-based emissions standards for sulfur dioxide (SO_2) and nitrogen oxide (NO_x) with mass-based standards.

The Board's second first notice differs from the IEPA's originally proposed first-notice rule by: reducing the annual mass caps for both SO_2 and NO_x; and requiring further reduction of those caps when units are permanently shut down ("retired") or temporarily shut down ("mothballed"). This second first notice rule lowers the proposed annual mass-based caps for SO_2 from 55,000 tons per year (tpy) to 44,920 tpy and for NO_x from 25,000 tpy to 22,469 tpy. The Board retains the originally-proposed ozone season NO_x mass-based cap of 11,500 tons. Additionally, as with transfers of power plants under IEPA's original proposal, the Board's second first notice rule reduces the annual SO_2 and NO_x mass caps when units are retired or mothballed.

Based on this rulemaking record, the Board could have proceeded directly to second notice with these substantive changes to the IEPA's original proposal. However, to help ensure that all interested persons have notice of and an opportunity to weigh in on these changes, the Board finds that publishing them as a second first notice is warranted. This finding is bolstered by the on-going disagreements among the participants over these fundamental issues, as well as by the significance of this rulemaking, reflected in its high degree of public participation. In order, to avoid any potential confusion, the Board will publish a notice of withdrawal of the original first-notice publication, which appeared in the *Illinois Register* on November 3, 2017.

The Board anticipates holding an additional hearing in this proceeding, but any person may request an additional hearing. 5 ILCS 100/5-40(b)(5) (2016); 35 Ill. Adm. Code 102.412(b). Second first notice publication in the *Illinois Register* will begin a period of at least 45 days for interested persons to file public comments with the Board. The Board directs the assigned hearing officer to schedule and proceed to hearing under the rulemaking provisions of the Illinois Environmental Protection (Act) and the Board's procedural rules (415 ILCS 5/27, 28 (2016); 35 Ill. Adm. Code 102).

In this opinion, the Board first provides procedural history (pp. 2), next the Board provides regulatory background (pp. 8) and factual background of this rulemaking (pp. 18), followed by an overview of IEPA's proposal (pp. 24). The Board then analyzes and makes findings on each of the issues raised in the rulemaking record, including local health impacts (pp. 29); compliance with federal law (pp. 43); replacing rate-based emission limits with mass-based limits and combining the two current MPS groups into one (pp. 45); fleetwide cap reductions for retirement and mothballing (pp. 56); and technical feasibility and economic reasonableness (pp. 59). The second first notice amendments appear in the order following this opinion (pp. 65).

I. BACKGROUND

A. Procedural History

In this part of the opinion, the Board describes how this rulemaking proceeded—from the filing and *Illinois Register* publication of the proposal, to the public hearings, and through the end of the public comment period.

1. Proposal Filing and First-Notice Publication

IEPA filed its proposal to amend the MPS on October 2, 2017. The proposal included IEPA's Statement of Reasons (SR), Technical Support Document (TSD), and proposed rule text. In an October 19, 2018 opinion and order, the Board accepted IEPA's proposal for hearing. *See* Amendments to 35 Ill. Adm. Code 225.233, Multi-Pollutant Standard (MPS), R18-20, slip op. at 5 (Oct. 19, 2017). With its proposal, IEPA requested expedited review, which the Board denied. *Id*. at 5-6. However, to avoid unnecessary delay, the Board submitted the proposed amendments to first notice publication without substantively reviewing IEPA's proposal. *Id*.

The proposed first-notice amendments were published in the *Illinois Register* on November 3, 2017. 41 Ill. Reg. 13299 (Nov. 3, 2017). Publication started a comment period of at least 45 days under the IAPA (5 ILCS 100/5-40(b) (2016)). The Board allowed public comment until June 15, 2018.

2. Public Hearings

a. Dates, Locations, and Transcripts. The Board held three hearings, each lasting two days: January 17 and 18, 2018, in Peoria; March 6 and 7, 2018, in Edwardsville; and April 16 and 17, 2018, in Springfield. The Board received a transcript of each hearing day: January 17, 2018 (1/17/18 Tr.); January 18, 2018 (1/18/18 Tr.); March 6, 2018 (3/6/18 Tr.); March 7, 2018 (3/7/18 Tr.); April 16, 2018 (4/16/18 Tr.); and April 17, 2018 (4/17/18 Tr.).

b. First Hearing. Before the first hearing, IEPA filed testimony for one witness: Rory Davis, an Environmental Protection Engineer in the Air Quality Planning Section of IEPA's Air

Pollution Control Division. Dynegy pre-filed testimony for two witnesses: Rick Diericx, Dynegy's Managing Director of Environmental Compliance; and Dean Ellis, Dynegy's Executive Vice President for Regulatory and Government Affairs. Pre-filed testimony was also filed by the AGO for the people of the State of Illinois.

In addition, IEPA pre-filed questions to the respective witnesses of the AGO and Dynegy. The AGO pre-filed questions to Dynegy and IEPA, and filed answers to IEPA's pre-filed questions. Dynegy pre-filed questions to IEPA's witness, and filed answers to pre-filed questions from the Board and IEPA. The Environmental Groups pre-filed questions to IEPA and Dynegy. IEPA filed answers to pre-filed questions from the Board, the AGO, and the Environmental Groups.

Also before the first hearing, the Environmental Groups filed a motion to extend until 9:00 p.m. the January 17, 2018 hearing hours, as well as a motion for a prehearing conference. The Board denied both motions, but extended the January 17, 2018 hearing hours until 7:00 p.m.

On January 17, 2018, the initial day of the first hearing, Mr. Davis testified for IEPA, along with David Bloomberg, Manager of IEPA's Air Quality Planning Section. IEPA's witnesses were questioned by Dynegy, the AGO, the Board, Sierra Club, ELPC, and the Environmental Defense Fund. The AGO testified through James Gignac and Andrew Armstrong. The AGO's witnesses were questioned by IEPA, Dynegy, and the Board. The Board also heard 66 oral public comments from citizens, Dynegy employees, and State Representative Jerry Long of the 76th District.

The Board's hearing officer entered the following exhibits into the record on the first day of the first hearing: testimony of Mr. Davis for IEPA (Exh. 1); questions to Mr. Davis by the Environmental Groups (Exh. 2); questions to Mr. Davis by Dynegy (Exh. 3); questions to Mr. Davis by the AGO (Exh. 4); questions to Mr. Davis by the Board (Exh. 5); IEPA's answers to all pre-filed questions (Exh. 6); a February 24, 2017 letter to Yasmine Keppner-Bauman, Unit Manager, IEPA, regarding IPH (Exh. 7); a February 24, 2017 letter to Ms. Keppner-Bauman regarding 2016 NO_x and SO_2 MPS Compliance Report (Exh. 8); testimony of Mr. Gignac for the AGO (Exh. 9); Excel spread sheet as separate exhibit to Mr. Gignac's testimony (Exh. 10); questions to Mr. Gignac by IEPA (Exh. 11); and Mr. Gignac's answers to IEPA's pre-filed questions (Exh. 12).

On January 18, 2018, the second day of the first hearing, the AGO's testimony continued. The AGO's witnesses were questioned by Dynegy, IEPA, the Sierra Club, ELPC, and the Board. IEPA's witnesses testified again and were questioned by the Board. Dynegy testified through Mr. Ellis and Mr. Diericx. Dynegy's witnesses were questioned by ELPC, Sierra Club, the AGO, and the Board. The Board also heard three oral public comments, each supporting the proposed amendments.

The Board's hearing officer entered the following exhibits into the record on the second day of the first hearing: an August 22, 2017 email from Douglas Aburano of USEPA to Mr. Bloomberg of IEPA (Exh. 13); testimony of Mr. Diericx for Dynegy (Exh. 14); testimony of Mr. Ellis for Dynegy (Exh. 15); Dynegy's answers to the Board's pre-filed questions (Exh. 16);

Dynegy's answers to IEPA's pre-filed questions (Exh. 17); Dynegy's answers to the AGO's pre-filed questions (Exh. 18); questions to Mr. Diericx by IEPA (Exh. 19); questions to Mr. Diericx by the Environmental Groups (Exh. 20); questions to Mr. Ellis by the Environmental Groups (Exh. 21); questions to Dynegy by the AGO (Exh. 22); questions to Dynegy by the Board (Exh. 23).

Following the first hearing, the Environmental Groups filed a motion to modify the hearing hours of the second hearing, which the Board's hearing officer denied by order of February 15, 2018. In addition, the Environmental Groups filed a motion to stay the rulemaking, pending the possible merger of Dynegy Inc. into Vistra.[1] The Board received responses supporting and opposing the motion for stay. The Board denied the motion, finding that the requested stay would cause unnecessary delay. *See* MPS, R18-20, slip op. at 4-5 (Feb. 22, 2018).

Also, after the first hearing, IEPA filed an unopposed motion to correct the hearing transcripts, which the Board grants.

c. Second Hearing. Before the second hearing, Dynegy, IEPA, and the AGO separately filed answers to questions posed to each at the first hearing. Dynegy's answers included a report by toxicologist Dr. Lucy Frasier. The Environmental Groups pre-filed testimony for Brian Urbaszewski, Director of Environmental Health Programs at Respiratory Health Association of Metropolitan Chicago. Dynegy pre-filed questions to IEPA's witnesses. The AGO pre-filed questions to the respective witnesses of Dynegy and IEPA. IEPA pre-filed questions to the Environmental Groups. The Environmental Groups pre-filed questions to Dynegy.

On March 6, 2018, the first day of the second hearing, Dynegy testified through Mr. Ellis and Mr. Diericx. They were questioned by Sierra Club, the AGO, the Environmental Groups, and the Board. Dr. Frasier also testified for Dynegy, based on her report. She was questioned by Sierra Club and the AGO. IEPA testified through Mr. Davis and Mr. Bloomberg. IEPA's witnesses were questioned by the AGO, Dynegy, the Board, and Sierra Club.

The Board's hearing officer entered the following exhibits into the record on the first day of the second hearing: Dynegy's answers to questions raised in the first hearing (Exh. 24); questions to Dynegy by the Environmental Groups (Exh. 25); questions to Dynegy by the AGO (Exh. 26); the AGO's answers to questions raised in the first hearing (Exh. 27); questions to Dynegy by the Board (Exh. 28); IEPA's answers to questions raised in the first hearing (Exh. 29); questions to IEPA by the AGO (Exh. 30); questions to IEPA by Dynegy (Exh. 31); questions to IEPA by the Board (Exh. 32); group exhibit from IEPA (Exh. 33).

On March 7, 2018, the second day of the second hearing, IEPA continued its testimony through Mr. Davis and Mr. Bloomberg. IEPA's witnesses were questioned by the Board, Sierra

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[1] Dynegy filed a public comment on October 31, 2017, notifying the Board of a planned merger, pending regulatory approval, between Dynegy Inc. and Vistra. PC 3. Attaching a merger announcement letter to the comment, Dynegy expected the merger to be complete by the second quarter of 2018. *Id*.

Club, and Dynegy. Dynegy testified through Mr. Diericx. The AGO testified through Mr. Gignac and Mr. Armstrong. The AGO's witnesses were questioned by Dynegy and IEPA. The Environmental Groups testified through Mr. Urbaszewski. He was questioned by IEPA, Dynegy, and the AGO. The Board heard 17 oral public comments, both supporting and opposing the proposed amendments.

The Board's hearing officer entered the following exhibits into the record on the second day of the second hearing: testimony of Mr. Urbaszewski for the Environmental Groups (Exh. 34); questions to Mr. Urbaszewski by IEPA (Exh. 35); questions to Mr. Urbaszewski by Dynegy (Exh. 36).

After the second hearing, IEPA, Dynegy, and the Environmental Groups filed separate motions to correct the hearing transcripts, all of which were unopposed. With the understanding that IEPA intends the second proposed correction on page two of its March 27, 2018 motion to read page 16, "line 9", rather than "line 1", the Board grants IEPA's motion. The Board also grants the motions of Dynegy and the Environmental Groups.

d. Third Hearing. Before the third hearing, the Environmental Groups filed testimony, and subsequently corrections to that testimony, of Tamara Dzubay, Clean Energy Finance Specialist at ELPC. The AGO pre-filed testimony of Mr. Armstrong. Dynegy filed a "Notice of Merger Closing," providing notification that the merger of between Dynegy Inc. and Vistra was complete as of April 9, 2018. IEPA pre-filed questions to the AGO's witness. Dynegy pre-filed questions to the respective witnesses of IEPA, the AGO, and the Environmental Groups.

On April 16, 2018, the first day of the third hearing, the Board heard 33 oral public comments. All were made by individuals opposing the proposed amendments.

On April 17, 2018, the second day of the third hearing, the AGO testified through Mr. Armstrong. He was questioned by IEPA, Dynegy, and the Board. Next, Ms. Dzubay testified for the Environmental Groups. She was questioned by ELPC, Dynegy, and the Board. IEPA then testified through Mr. Davis and Mr. Bloomberg. IEPA's witnesses were questioned by Dynegy, the AGO, the Board, and Sierra Club. Dynegy testified through Mr. Diericx, who was questioned by Dynegy, the Board, and the AGO. Finally, Vistra testified through Cynthia Vodopivec, the company's Vice President of Environmental Health and Safety. She was questioned by the AGO and the Board.

The Board's hearing officer entered the following exhibits into the record on the second day of the third hearing: testimony of Mr. Armstrong for the AGO (Exh. 37); questions to Mr. Armstrong by IEPA (Exh. 38); questions to Mr. Armstrong by Dynegy (Exh. 39); questions to Mr. Armstrong by the Board (Exh. 40); E&E article titled "Weak MISO Prices Compound Ill. Coal Plant Woes" (Exh. 41); testimony of Ms. Dzubay for the Environmental Groups (Exh. 42); corrections to the pre-filed testimony of Ms. Dzubay (Exh. 43); questions to Ms. Dzubay by Dynegy (Exh. 44); questions to Ms. Dzubay by the Board (Exh. 45); questions to IEPA by Dynegy (Exh. 46); email communication between Mr. Aburano of USEPA and Mr. Bloomberg of IEPA (Exh. 47).

The hearing officer set final filing deadlines at the third hearing. Additional questions for any participant had to be filed by May 1, 2018. Responses to those questions, as well as any post-hearing comments, had to be filed by June 1, 2018. Replies to those comments, as well as all pre-second notice comments, had to be filed by June 15, 2018.

After the third hearing, Dynegy, the AGO, and the Environmental Groups filed motions to correct the hearing transcripts. None of those motions are opposed. The Board grants them.

3. Oral and Written Public Comments

As noted above, the Board held three hearings in this rulemaking, each consisting of two separate days. The Board heard 119 (69 at the first hearing, 17 at the second hearing, and 33 at the third hearing) oral public comments during the six hearing days. The deadline for filing of public comments was June 15, 2018. In addition to the oral public comments, the Board received 2909 written public comments while the record was open. The Board received an additional twelve written public comments after the public comment period closed.

Dynegy filed two public comments early in the public comment period. The first comment notified the Board of the planned merger, pending regulatory approval, between Dynegy and Vistra. PC 3. Dynegy explained the merger should be complete by the second quarter of 2018, and attached a merger announcement letter to the comment. *Id*. The second comment was in response to an email exchange between the Joint Committee on Administrative Rules (JCAR) and the Board in which JCAR raised questions regarding the proposal. PC 5; *see also* PC 4. Dynegy states that JCAR's questions improperly assume there will be an increase in emissions and argues that in contrast with JCAR's assumptions, the proposal increases restrictions on SO_2 and NO_x emissions. PC 5.

Numerous individuals provided oral public comments at hearing, and filed written public comments opposing the proposed MPS amendments. Many individual commenters stated that IEPA's proposal would allow Dynegy to increase emissions of SO_2 and NO_x, and disproportionately affect environmental justice communities. *See, e.g.*, PC 6. Other individual commenters are concerned that switching from a rate-based to a mass-based emissions limit would allow Dynegy to shut down its cleaner-burning plants, and solely operate those plants with less or no emission control systems. *See, e.g.*, PC 2482. Many individual commenters worry that increased emissions and dirtier-burning plants will cause greater health problems in the areas around the plants, and overly burden vulnerable populations in Illinois, such as children, asthmatics, and the elderly. *See, e.g.*, PC 2482; *see also* PC 6. Some individual commenters also claim that Dynegy merging into Vistra shows the company is not in need of a "bail out," and that the requested rule amendment is not aimed to prevent economic collapse but rather to gain more profits. *See, e.g.*, PC 2754.

Many interest groups filed public comments opposing the proposed MPS amendments. *See, e.g.* PC 2887. These groups express concerns that the amendments would allow Dynegy to emit more pollutants at some facilities, avoid installing further pollution controls, and incentivize the closure of those plants that burn cleaner but are costlier to operate. *See, e.g. id.* Some interest groups are also concerned that communities of color, as well as low-income communities, will experience most of the negative impacts. *See, e.g. id.* Like the individual commenters above, the interest groups express concern over the merger of Dynegy into Vistra, stating that Dynegy's economic need for operational flexibility no longer exists. *See, e.g. id.* The interest groups also express concern with the way this amendment was proposed, arguing that the proposal was drafted by IEPA after "nine months of backroom discussions with corporate executives from Dynegy," and without public input. *See, e.g. id.* These interest groups are: Illinois NAACP State Conference (PC 2887); Citizens Against Longwall Mining (PC 2889); the United Congregations of Metro East-Alton, IL Area Cluster (2893); the Universalist Unitarian Church of Peoria (PC 2894); Moms Clean Air Force (Midwest) (PC 2895); Steelworks Org. of Active Retirees (Chapter 7) (PC 2901); and the Union of Concerned Scientists (PC 2907).

The Board also received comments from individuals in favor of IEPA's proposed MPS amendments. *See, e.g.*, PC 1714. Some of these individuals feel the amendments offer Illinois the best path forward to "preserve air quality, while protecting jobs and sustaining economic vitality." PC 1714. Several Dynegy facility employees provided oral public comments at the hearings in Peoria and Edwardsville. *See* 1/17/2018 Tr. at 255-259, 261-265; *see also* 3/7/2018 Tr. at 112-128. Kevin Largent, Managing Director of the Havana station, spoke of that station's economic importance to Mason County for taxes and employment. 1/17/2018 Tr. at 256-57. Mr. Largent also explained the economic and environmental benefits that the proposal would have, including increased operational efficiency at the plants and reduced allowable emissions. *Id*. at 256. Bruce Parker, Manager of Environmental Chemistry for the Joppa station, echoed many of Mr. Largent's statements, but added that if the amendments were rejected, Dynegy would likely be forced to close facilities. 3/7/2018 Tr. at 114.

The Board received public comments from twenty State legislators during the public comment period. Nine legislators support the proposed amendments, while eleven oppose the proposed MPS amendments. After the public comment period closed on June 15, 2018, the Board received an additional six public comments from State legislators in support of the proposed amendments.

Those legislators in favor of the proposed MPS amendments state that there is a clear economic and environmental benefit to changing the rule. *See, e.g.*, PC 1614. Some legislators argue the environmental benefits include lowering the amount of allowable emissions for both SO_2 and NO_x, a new cap on the Joppa facility, NO_x ozone season limits on five plants, and year-round operating requirements for plants with NO_x controls. *See, e.g.*, *id*. They also argue that the short-term, NAAQS-based emission limits protect public health. *See, e.g.*, *id*. The legislators supporting the proposed amendments state that Dynegy has shown its commitment to Illinois and the environment, as well as being an important employer and part of Illinois' economy. *Id*. The legislators in favor of the proposal are: Norine K. Hammond, State Rep. 93rd District (PC 1546); Jerry Long, State Rep. 65th District (PC 1547); Michael Unes, State Rep. 91st District (PC 1809); David B. Reis, State Rep. 109th District (PC 1810); Jerry F. Costello II, State Rep. 116th District (PC 1853); Andy Manar, State Senator 48th District (PC 1548); Sue Rezin, State Senator 38th District (PC 1614); Dale Fowler, State Senator 59th District (PC 1615); and Paul Schimpf, State Senator 58th District (PC 1832). The six public comments from State legislators filed after the public comment period closed encouraged the Board to proceed to second notice at the next scheduled Board meeting, to insure JCAR would have adequate time to review the rule. These six public comments were filed by: David B. Reis, State Rep. 109th District (PC 2914); Jerry F. Costello II, State Rep. 116th District (PC 2915); Bill Brady, State Senator 44th District (PC 2917); Norine K. Hammond, State Rep. 93rd District (PC 2919); Michael Unes, State Rep. 91st District (PC 2920); and C.D. Davidsmeyer, State Rep. 100th District (PC 2921).

The legislators who oppose the proposed amendments to the MPS argue that the amendments threaten public health and the environment. *See*, *e.g.*, PC 2731. Many legislators argue that this rule change would be a step backwards from the progress Illinois has made towards clean energy, and a direct deviation from the recently-passed Future Energy Jobs Act. *See*, *e.g.*, PC 2694; PC 2713. Many legislators raise concerns that switching from a rate-based to a mass-based emission standard will increase Dynegy's fleetwide actual emissions, and will disparately affect environmental justice communities. *See*, *e.g.*, PC 2731; PC 2713. Some legislators state that their constituents already have asthma at rates above the national average, and that the amendments will only make matters worse. *See*, *e.g.*, PC 2734. Some legislators also raise issues of how the rule was presented to the Board, arguing that the proposal was shaped by eight months of "backroom talks" between Dynegy and IEPA. *See*, *e.g.*, PC 2713. The legislators opposed to the proposal are: Will Guzzardi, State Rep. 39th District (PC 2570); Carol Ammons, State Rep. 103rd District (PC 2571); Steven A. Andersson, State Rep. 65th District (PC 2572); Anna Moeller, State Rep. 43rd District (PC 2694); Elizabeth "Lisa" Hernandez, State Rep. 24th District (PC 2733); La Shawn K. Ford, State Rep. 6th District (PC 2734); Toi W. Hutchinson, State Rep. 40th District (PC 2735); Julie A. Morrison, State Senator 29th District (PC 2577); Daniel Biss, State Senator 9th District (PC 2713); Laura Murphy, State Senator 28th District (PC 2731); and Cristina Castro, State Senator 22nd District (PC 3732).

The Board discuses additional public comments below.

B. Regulatory Background

In this section of the opinion, the Board reviews the history of the MPS and describes the federal air regulations impacting the MPS. But, the Board first provides a table of abbreviations and acronyms used in this opinion:

Abbreviations and Acronyms	
Act = Illinois Environmental Protection Act	**MPS** = Multi-Pollutant Standard
BART = Best Achievable Retrofit Technology	**MWh** = megawatt hour
CAA = federal Clean Air Act	**NAAQS** = National Ambient Air Quality Standards
CAIR = Clean Air Interstate Rule	**NO_x** = nitrogen oxides
CAMR = Clean Air Mercury Rule	**PC** = public comment
C.F.R. = Code of Federal Regulations	**PJM** = Pennsylvania New Jersey Maryland Interconnection LLC
CPS = Combined Pollutant Standard	**PM** = Particulate Matter
DRR = Data Requirements Rule	**RTO** = regional transmission organization
EGU = electrical generating unit	**SCR** = selective catalytic reduction
Exh. = hearing exhibit	**SIP** = State Implementation Plan
FERC = Federal Energy Regulatory Commission	**SO_2** = sulfur dioxide
FGD = flue gas desulfurization	**SR** = Statement of Reasons
lb/mmBtu = pounds per million British thermal units	**TSD** = Technical Support Document
MATS = Mercury and Air Toxics Standards	**USEPA** = United States Environmental Protection Agency
MISO = Midcontinent Independent System Operator, Inc.	

1. History of the MPS

a. Initial Adoption. In 2005, USEPA promulgated the Clean Air Mercury Rule (CAMR), which requires mercury emissions reductions. *See* 70 Fed. Reg. 28606 (May 18, 2005). To implement this federal rule, IEPA proposed rules to the Board. *See* Proposed New 35 Ill. Adm. Code 225 Control of Emissions from Large Combustion Sources (Mercury), R06-25. In this Mercury rulemaking, the Board amended 35 Ill. Adm. Code Part 225 Subpart A and added Subpart B. Further, based on a proposal by Ameren Energy Resources, LLC (Ameren) and IEPA, which Dynegy Midwest Generation, Inc. (Dynegy) and other participants supported, the Board adopted the MPS. *See* Mercury, R06-25 (Dec. 21, 2006).

Located at Section 225.233, the MPS is a voluntary "multi-pollutant" compliance alternative to meeting stringent limits on emissions of mercury alone. The MPS requires owners of eligible EGUs to install mercury control technology, thereby delaying the applicability of the more stringent mercury standards (35 Ill. Adm. Code 225.230(a)), while reducing SO_2 and NO_x emissions according to progressively declining rates over several years. Mercury, R06-25, slip op. at 8 (Dec. 21, 2006). Dynegy and IEPA expected that installing and operating pollution control equipment under the MPS would reduce SO_2 and NO_x emissions beyond the reductions required by federal regulations at the time, including the CAIR. Mercury, R06-25, slip op. at 10 (Nov. 2, 2006). These emission reductions, Dynegy and IEPA maintained, would reduce "the ambient levels of ozone and $PM_{2.5}$ [fine particular matter]." Mercury, R06-25, Corrected Joint Statement of IEPA and Dynegy at 4 (Aug. 23, 2006).

Under the current MPS, eligible EGUs must achieve the more stringent of either (1) enumerated SO_2 and NO_x emissions rates or (2) emissions limits equal to a percentage of a base emissions rate for the pollutant. *See* 35 Ill. Adm. Code 225.233(e). The MPS further requires electrical generating unit (EGU) owners to surrender SO_2 and NO_x allowances necessary to meet MPS requirements to IEPA for retirement. *See id.* at 225.233(f). The Board found the MPS, as well as the mercury rule of which it was a part, technically feasible and economically reasonable. *See* Mercury, R06-25, slip op. at 53-54, 78 (Nov. 2, 2006).

For SO_2, the originally-adopted MPS required all eligible EGUs to attain a system-wide average SO_2 rate of 0.33 pounds per million British thermal units (lbs/mmBtu) beginning January 1, 2013, and continuing through December 31, 2014. *See* 35 Ill. Adm. Code 225.233(e)(2)(A). The MPS then required a final overall SO_2 emissions rate of 0.25 lbs/mmBtu beginning on January 1, 2015, and continuing in each calendar year after that. *See id*. at 225.233(e)(2)(B).

For NO_x, the originally-adopted MPS required all eligible EGUs to attain a system-wide average NO_x annual emissions rate not exceeding 0.11 lbs/mmBtu beginning in calendar year 2012 and continuing in each subsequent calendar year. *See* 35 Ill. Adm. Code 225.233(e)(1)(A). Beginning in the 2012 ozone season and continuing in each subsequent ozone season, the MPS requires that eligible EGUs attain a system-wide overall NO_x season emissions rate of no more than 0.11 lbs/mmBtu. *See id.* at 225.233(e)(1)(B).

Owners of eligible units had until December 31, 2007, to provide written notification to IEPA that they intended to be regulated under the MPS. *Id.* at 225.233(b). Ameren timely opted the EGUs it owned and operated into the MPS, as did Dynegy for its EGUs. TSD at 3.

b. 2009 Amendments. In 2008, Ameren petitioned the Board for a variance from the 2013 and 2014 SO_2 emissions rates (0.33 lb/mmBtu or a rate equivalent to 44% of the base rate of SO_2 emissions, whichever is more stringent) found at Section 225.233(e)(2). Ameren Energy Generating Co. v. IEPA, PCB 09-21, slip op. at 1-2 (Jan. 22, 2009). The Board denied that variance request, finding that a variance was not the proper regulatory relief mechanism. *Id.* at 16.

Ameren then participated in another IEPA-initiated mercury rulemaking, Amendments to 35 Ill. Adm. Code 225: Control of Emissions from Large Combustion Sources (Mercury Monitoring), R09-10. In that rulemaking, Ameren proposed amendments to the MPS for the Ameren-owned EGUs. Accepting Ameren's proposed amendments, the Board adopted a final rule that added subsection (3) to Section 225.233(e), titled "Ameren MPS Group Multi-Pollutant Standard." Mercury Monitoring, R09-10, slip op. at 40 (June 18, 2009). This created a separate Ameren MPS group, which became subject to SO_2 and NO_x emissions standards different than those applicable to the other MPS group—the Dynegy group.

Specifically, the Ameren MPS group became subject to the following SO_2 and NO_x

emissions rates:

> (i) earlier seasonal and annual NO_x emission rates in calendar years 2010 and 2011 of 0.11 lb/mmBtu and 0.14 lb/mmBtu, respectively; (ii) an earlier SO_2 emission rate of 0.50 lbs/mmBtu in calendar years 2010 through 2013; (iii) an SO_2 emission rate of 0.43 lbs/mmBtu in calendar year 2014; (iv) an SO_2 emission rate of 0.25 lbs/mmBtu in calendar years 2015 and 2016; and (iv) a more stringent SO_2 emission rate of 0.23 lbs/mmBtu beginning in 2017 and continuing thereafter. Mercury Monitoring, R09-10, slip op. at 14 (Apr. 16, 2009).

Ameren relied on projections—that it and IEPA together prepared—of mass emissions from its MPS plants over an eleven-year period. *Id*. at 16. Based on those projections (originally submitted in variance proceeding PCB 09-21) and, using the Ameren MPS group's average heat input for 2000 through 2007, Ameren projected that its proposal would result in a projected net environmental benefit of 842 tons in reduced SO_2 and NO_x emissions from 2010 to 2020; and that benefit would increase over time because the lower final SO_2 emissions rate would continue beyond 2017. *Id.*; *see also* Mercury Monitoring, R09-10, Ameren Post-Hearing Comments at 14. Underscoring this "projected environmental benefit and the absence of any objection on the part of [IEPA]," and also finding the MPS amendments to be technically feasible and economically reasonable, the Board adopted them. *Id.* at 29; *see also* Mercury Monitoring, R09-10, slip op. at 5-6 (June 18, 2009).

c. Variance Proceedings. In May 2012, Ameren petitioned the Board for a variance from the MPS' overall SO_2 annual emissions rate applicable to the Ameren MPS group's EGUs. Ameren Energy Resources v. IEPA, PCB 12-126, slip op. at 2 (Sept. 20, 2012). Ameren did not request any relief from the MPS' mercury or NO_x standards. Specifically, Ameren sought relief from the requirements of two subsections. First, Ameren sought relief from Section 225.233(e)(3)(C)(iii) (imposing an overall SO_2 emissions rate of 0.25 lb/mmBtu in calendar years 2015 and 2016) for five years, beginning January 1, 2015, and ending December 31, 2019. Second, Ameren sought relief from Section 225.233(e)(3)(C)(iv) (imposing a final overall SO_2 emissions rate of 0.23 lb/mmBtu beginning in calendar year 2017) for approximately three years, from January 1, 2017, and ending January 15, 2020. *Id.* at 5-6. Ameren's proposed compliance plan required it to meet an overall SO_2 emissions rate of 0.35 lb/mmBtu from 2013 through 2019, returning to compliance with the 2015 SO_2 emissions rate on January 1, 2020, and with the SO_2 annual rate by January 15, 2020. *Id.* at 8-9.

The Board granted Ameren combined dual variances from Sections 225.233(e)(3)(C)(iii) and (iv), subject to conditions. *See* Ameren Energy Resources, PCB 12-126 (Sept. 20, 2012). These conditions included, among others, that Ameren continue to not operate two "shuttered" plants then in the Ameren MPS group—the Meredosia and Hutsonville stations—from the date of the order through the end of calendar year 2020. *Id.* at 68. The Board also imposed a schedule with milestones for completing the flue gas desulfurization (FGD) project at the Newton station. Through this Newton FGD project, Ameren would comply with the 2015 overall SO_2 annual emissions rate by January 1, 2020. *Id.* at 9, 69. The Board also required that Ameren meet an SO_2 annual emissions rate of 0.38 lb/mmBtu from the date of the order through December 1, 2012; an emissions rate of 0.35 lb/mmBtu from January 1, 2013 through December

31, 2019; and, beginning January 1, 2020, an emissions rate of 0.23 lb/mmBtu. *Id.* at 68.

Based on these lower SO_2 emissions rates and the continued closure of the Meredosia and Hutsonville stations, the Board found that a variance would provide a "net environmental benefit": 33,544 fewer tons of SO_2 from 2012 through 2020 as compared to emissions if the MPS instead applied. Ameren Energy Resources, PCB 12-126, slip op. at 54 (Sept. 20, 2012). Because of this net benefit, uncertainties about federal air pollution standards for EGUs, and a continuing decline in wholesale electricity prices, the Board found that immediate compliance with the MPS would pose an "arbitrary or unreasonable" hardship on Ameren. *Id.* at 62-63.

In May 2013, Ameren, along with Dynegy subsidiary Illinois Power Holdings, LLC (IPH), filed a joint motion to reopen PCB 12-126. They sought to substitute IPH for Ameren as grantee of the variance relief, subject to its conditions. *See* Ameren Energy Resources, PCB 12-126, slip op. at 1-2 (June 6, 2013). Ameren and IPH stated that, with Ameren intending to "exit the merchant generation business in Illinois" within five years, IPH planned to acquire Ameren's five operating coal-fired power plants in the Ameren MPS group (*i.e.*, excluding the shuttered Meredosia and Hutsonville stations). *Id.* at 2. Under Ameren and IPH's deal, these two shuttered stations would remain closed and be transferred to AmerenEnergy Medina Valley Cogen, LLC (Medina Valley), an indirect subsidiary of Ameren. *Id.* Ameren and IPH stated that the transaction would not proceed unless the Board transferred Ameren's variance to IPH. *Id.*

The Board denied the motion to substitute IPH for Ameren as grantee of the variance. *See* Ameren Energy Resources, PCB 12-126 (June 6, 2013). The Board reasoned that its "arbitrary or unreasonable hardship" finding was both specific to Ameren and based on the evidence Ameren had presented. *Id.* at 9-10. For IPH to obtain a variance, IPH would have to file a variance petition and demonstrate that IPH's compliance with the Ameren MPS group SO_2 emissions rates would impose an arbitrary or unreasonable hardship on IPH. *Id.* at 10. Any new variance request would also have to undergo a new analysis omitting the two shuttered stations that IPH would not acquire, *i.e.*, the Hutsonville and Meredosia stations. *Id.* at 11.

IPH and Ameren then filed a joint variance petition seeking the same relief for the same stations in the Ameren MPS group, subject to the same conditions. *See* Illinois Power Holdings, LLC v. IEPA, PCB 14-10 (Nov. 21, 2013). The Board granted the companies a variance with conditions. The Board found that timely compliance with the SO_2 emissions rates at Sections 225.233(e)(C)(3)(iii) and (iv) would pose an arbitrary or unreasonable hardship on IPH. Additionally, the Board found that IPH's commitment to a 327,996-ton overall mass cap on SO_2 emissions from the Ameren MPS group (from the fourth quarter of 2013 through the end of 2020) yielded a net environmental benefit of 7,778 tons, as compared to the MPS baseline over the same period. *Id.* at 76, 92. The Board also concluded that granting a variance would be consistent with Illinois' SIP obligations to attain and maintain compliance with the NAAQS. *Id.* at 99. In addition to the overall SO_2 emissions cap, the Board required that IPH (1) meet an overall SO_2 annual emissions rate of 0.35 lb/mmBtu through 2019 and then 0.23 lb/mmBtu; (2) at the E.D. Edwards, Joppa, and Newton stations, burn low-sulfur coal and meet a combined annual average stack SO_2 emissions rate of 0.55 lb/mmBtu; (3) operate the Duck Creek and Coffeen stations' FGD systems to meet a combined SO_2 removal rate of at least 98% on an annual average basis; (4) permanently retire E.D. Edwards Unit 1; and (5) meet specified construction milestones for the Newton station's FGD project. *Id.* at 100-05.

In September 2016, IPH, Medina Valley, and Ameren filed a joint motion to terminate (Jt. Mot.) the variance granted in PCB 14-10. In support of termination, they cited continued depressed wholesale electric market prices and a decision to permanently retire Newton Unit 2. Illinois Power Holdings, LLC, PCB 14-10, Jt. Mot. at 3-5. The companies stated that, with the unit's retirement, the Ameren MPS group could already comply with the SO_2 emissions limit in Section 225.233(e)(3)(C)(iii). *Id.* at 4. Further, IPH had complied with the conditions that the Board imposed in granting the variance. *Id.* IEPA responded (IEPA Resp.) that it did not object to the motion, and "did not disagree" with the companies' "demonstration of the environmental benefit" already achieved under the variance. IEPA Resp. at 1-2. The Environmental Law and Policy Center (ELPC) and Sierra Club urged the Board to seek additional information from the companies, including how IPH could, as of 2016, comply with the final MPS SO_2 emissions rate by closing just one unit. The Board found that all variance conditions had been met, including mass emissions reductions to ensure that emissions over the entire variance term would be 7,778 tons less than emissions under the MPS limits. *See* IPH, LLC v. IEPA, PCB 14-10, slip op. at 7-8 (Oct. 27, 2016). Finding no lack of sufficient relevant information to proceed, the Board granted the motion to terminate the variance, effective on the date of the order, October 27, 2016. *Id*.

d. Combined Pollutant Standard. Although not involved in this rulemaking, another set of emissions standards like the MPS stemmed from the Illinois mercury rulemaking: the CPS. The Board adopted the CPS at the request of IEPA and Midwest Generation, LLC (Midwest Generation)—as an alternative means of complying with mercury emissions standards. *See* Proposed New Clean Air Interstate Rules (CAIR) SO_2, NO_x, Annual and NO_x Ozone Season Trading Programs, 35 Ill. Adm. Code 225, Subparts A, C, D, E, and F, R06-26, slip op. at 20-21 (Aug. 23, 2007). The CPS, which applied only to Midwest Generation, required the company to reduce mercury, NO_x, particulate matter (PM), and SO_2 emissions through "a combination of permanent shut-downs of EGUs," installation of mercury control technology, and installation of "pollution control equipment for NO_x, PM, and SO_2 emissions that will also reduce mercury emissions." CAIR, R06-26, slip op. at 11. However, in Mercury Monitoring, R09-10, the Board adopted IEPA's proposal to remove the CPS from Illinois' CAIR and "reconstitute it as part of Illinois' mercury regulations." Mercury Monitoring, R09-10, slip op. at 51 (Apr. 16, 2009).

2. Federal Air Regulations Impacting the MPS

IEPA used the MPS to comply with federal air regulations under the CAMR, the Regional Haze Rule, and the Mercury and Air Toxics Standards (MATS) Rule. In addition, when revising the MPS and Illinois' Regional Haze SIP, IEPA relied on demonstrations to meet (1) CAA Section 110(l) requirements and (2) the Data Requirements Rule for the 2010 One-Hour SO_2 Primary NAAQS. Although IEPA did not use the MPS to comply with NAAQS, IEPA's proposal here includes amendments that prevent interfering with attaining or maintaining NAAQS. Below, the Board describes how the MPS and the proposed amendments relate to these federal air requirements.

a. Clean Air Mercury Rule. Originally, adopting the MPS rule was prompted by

USEPA's May 2005 adoption of the CAMR. 70 Fed. Reg. 28606 (May 18, 2005). On March 14, 2006, IEPA filed a rulemaking proposal to adopt mercury emissions standards for coal-fired power plants—this was Mercury, R06-25. As discussed, the concept of the MPS was later proposed by IEPA and Ameren (and supported by Dynegy) as a voluntary provision that would allow Illinois EGUs to comply with CAMR-required mercury emissions reductions by using "co-benefits" from reducing SO_2 and NO_x emissions. Mercury, R06-25, slip op. at 10 (Nov. 2, 2006); *see also* Tr.1 at 153-154. On December 21, 2006, the Board adopted the MPS at Section 225.233. *See* Mercury, R06-25 (Dec. 21, 2006); *see also* 31 Ill. Reg. 129 (Jan. 5, 2007).

On February 8, 2008, the United States Court of Appeals for the District of Columbia Circuit vacated CAMR. Mercury Monitoring, R09-10, slip op. at 4 (June 18, 2009); Tr.1 at 154-155; *see also* New Jersey v. USEPA, 517 F.3d 574, 578-81 (D.C. Cir. 2008).

b. Mercury and Air Toxics Standards Rule. Following the vacatur of CAMR, USEPA proposed the MATS Rule. Specifically, USEPA proposed MATS on May 3, 2011, under a Consent Decree issued by the D.C. Circuit Court. The MATS set emissions limits for mercury, PM, hydrogen chloride, and trace metals that applied to coal- and oil-fired EGUs. MATS took effect on April 16, 2012. 77 Fed. Reg. 9304 (Feb. 16, 2012); Exh. 29 at 4-5; Tr.1 at 153-154. With the MPS in place since 2006, IEPA could demonstrate that the MPS mercury emissions standards were already significantly more stringent than what MATS required. Tr.1 at 155.

c. Regional Haze. USEPA adopted the Regional Haze Rule on July 1, 1999, to establish goals and emissions reduction strategies for improving visibility in national parks and wilderness areas designated as "Class I." Regional haze is characterized by visual impairment caused by air pollution from many sources over a wide geographic area. Section 169A of the CAA sets a national goal to prevent and remedy visibility impairment resulting from manmade air pollution in these national parks and wilderness areas. 64 Fed. Reg. 35714 (July 1, 1999); 40 C.F.R. § 51.308.

The USEPA identified and designated 156 Class I areas. 40 C.F.R. Part 81, Subpart D. Although no Class I areas are located in Illinois, states must prepare implementation plans addressing regional haze for each Class I area—located within or outside the state—that might be affected by emissions from within the state. Tr.6 at 100; 40 C.F.R. § 51.308(d); 50 C.F.R. § 51.300(b). These SIPs must contain emissions limits representing Best Achievable Retrofit Technology (BART) for BART-eligible sources, unless the state demonstrates that an alternative approach would achieve greater progress toward natural visibility conditions. 40 C.F.R. § 51.308(e). States must submit to USEPA periodic revisions of their SIPs starting in 2021, then 2028, and then every 10 years. 40 C.F.R. § 51.308(f). States also must submit periodic reports to show reasonable progress, starting five years from the initial SIP submittal, then in 2025 and 2033, and then every 10 years. 40 C.F.R. § 51.308(g); Tr.4 at 12; *see also* 82 Fed. Reg. 3124, 3127 (Jan. 10, 2017).

IEPA submitted its initial Regional Haze SIP to USEPA for approval in June 2011. TSD at 15. Instead of reducing emissions by applying BART to BART-eligible units, IEPA determined that the alternative of relying on the already-existing MPS and CPS would provide greater reductions. Tr.4 at 12-14; Tr.3 at 156. IEPA projected total emissions under BART of

79,679 tpy NO_x and 237,761 tpy SO_2, compared to the MPS of 27,951 tpy NO_x and 55,953 tpy SO_2. TSD at 17-18; Exh. 33.

Illinois incorporated the MPS and CPS into its Regional Haze SIP as an alternative to BART. Tr.4 at 12-14; Tr.3 at 156. Included in the SIP were subsections (a), (b), (e), and (g) of the MPS at 35 Ill. Adm. 225.233, along with other provisions addressing Springfield City Water, Light, and Power, Southern Illinois Power Cooperative, Kincaid, and several oil refineries. Tr.3 at 157; *see also* "Approval and Promulgation of Air Quality Implementation Plans; Illinois: Regional Haze", 77 Fed. Reg. 3966 (Jan. 26, 2012). On July 6, 2012, USEPA approved the submittal as part of Illinois' Regional Haze SIP. *See* "Approval and Promulgation of Air Quality Implementation Plans: Illinois; Regional Haze", 77 Fed. Reg. 39943 (July 6, 2012); *see also* SR at 9-10.

IEPA also submitted a Five-Year Progress Report for the Illinois Regional Haze SIP in February 2017. TSD at 15-16; Exh. 33. IEPA explained that the forecasted emissions in both the initial SIP and Five-Year Progress Report were projected from a 2002 base year, as required by the Regional Haze Rule. Modeling analysis demonstrated that implementing BART on BART-eligible units could meet the visibility goals for Illinois and all other states in the Midwest Regional Planning Organization. In comparison, IEPA calculated the anticipated emissions reductions from the MPS. IEPA Resp. at 37 (Jan. 12, 2018); TSD at 15-16, referring to "Technical Support Document for Best Available Retrofit Technology Under the Regional Haze Rule" (Apr. 29, 2011); Exh. 33. IEPA explained that, because of the absence of Class I areas in Illinois and their distance from Illinois, the commitment to achieve emissions reductions under the Regional Haze SIP could be demonstrated based on the entire fleet rather than one plant. Tr.6 at 100-101. The comparison enabled IEPA to demonstrate that the alternative of relying on anticipated reductions from the MPS and other measures would provide greater emission reductions than BART and achieve results considered "better than BART." IEPA Resp. at 37 (Jan. 12, 2018).

When the Regional Haze Rule was adopted in 1999, USEPA stated that visibility impairment caused by air pollution occurred nearly all the time in national parks and wilderness areas. In addition to man-made air pollution, some impairments were caused by natural wildfires and dust episodes. On average, the visual range was less than 19 miles. Since 2000, USEPA reports that the visual range has increased from 10 to 20 miles in some eastern Class I areas and from 5 to 10 miles in some western Class I areas. However, some areas made little or no progress or were overwhelmed by the impacts of wildfire and or dust events. 82 Fed. Reg. 3081 (Jan. 10, 2017).

IEPA explained that with the goal of attaining "natural conditions" for visibility in all Class I areas, the Regional Haze Rule established a timeline beginning with a base year of 2002 extending to 2065. According to IEPA's 2017 Five-Year Progress Report, SO_2 emissions in 2015 were approximately 70,000 tons less than the Statewide projection of 269,000. Tr.4 at 15-16, referring to Exh. 33. Based on modeling by the Midwest Regional Planning Organization, IEPA anticipates that Illinois will be able to demonstrate continued improvement during the next planning period of 2021 to 2030. Tr.4 at 12.

The proposed MPS amendments would impose mass-based SO_2 and NO_x emissions limits that are (1) less than the anticipated SO_2 and NO_x emissions in Illinois' Regional Haze submittals and (2) "sufficient to limit both pollutants to less than what was determined to be necessary to achieve the visibility improvement goals discussed in the Regional Haze SIP submittals." SR at 11; TSD at 18-19. IEPA adds:

> The EGUs in the MPS Groups are not currently prohibited from emitting more than was anticipated in the Regional Haze SIP submittals. Therefore, increases in utilization of the affected units could have previously, or could still in the absence of the mass-based emission limits proposed in this rulemaking, result in emissions greater than those that were anticipated in the Regional Haze SIP submittals. SR at 11 n.3 (citations omitted); *see also* TSD at 19.

d. <u>Clean Air Act Section 110(l) "Anti-Backsliding" Analysis.</u> Section 110(l) of the federal Clean Air Act (CAA) limits approval of SIP revisions to those that would not "interfere with any applicable requirement concerning attainment and reasonable further progress . . . ." 42 U.S.C. § 7410(l). IEPA's Air Quality Section completes an anti-backsliding analysis under CAA Section 110(l) each time that a SIP revision is proposed due to a rule change or variance. Tr.6 at 69. David Bloomberg, Manager of IEPA's Air Quality Planning Section, testified about what an anti-backsliding demonstration to USEPA entails: IEPA "must provide information to show that the allowable emissions under a new rule are at least as stringent as the allowable emissions under the previous SIP submittal." Tr.1 at 22.

According to IEPA, Susmita Dubey is considered USEPA's expert on CAA Section 110(l). She is an attorney in USEPA's Office of General Counsel within the Air and Radiation Law Office. IEPA provided correspondence with Ms. Dubey. According to this communication, Ms. Dubey confirmed that CAA Section 110(l) requires comparing allowable emissions under the existing SIP with allowable emissions under the proposed SIP revision—if the revision allows no greater emissions, then CAA Section 110(l) is satisfied. Tr.6 at 79-85.

IEPA's anti-backsliding demonstration shows that the calculated allowable emissions of NO_x and SO_2 from the affected EGUs will be lower under the proposed MPS amendments than under the current MPS rate-based standards. They will also be lower than the totals projected when the initial Illinois Regional Haze SIP was submitted and approved. TSD at 15-19, Tables l, 2, 7, 8. USEPA indicated to IEPA that (1) the proposed amendments and the CAA Section 110(l) anti-backsliding demonstration are acceptable and (2) comparing allowable emissions is a straightforward way of demonstrating the reductions. Tr.1 at 36-37, 137; Exh. 1 at 2; TSD at 3.

e. <u>Data Requirements Rule for the 2010 One-Hour SO_2 Primary NAAQS.</u> To identify maximum one-hour SO_2 concentrations in the ambient air, USEPA's Data Requirements Rule (DRR) directs that states characterize—through monitoring or modeling—current air quality in areas with large sources of SO_2 emissions. 80 Fed. Reg. 51052 (Aug. 21, 2015). "For any area where modeling of actual SO_2 emissions serve as the basis for designating such area as attainment for the 2010 SO_2 NAAQS, the air agency shall submit an annual report . . . ." 40 C.F.R. § 51.1205(b). If the annual assessment identifies an increase in emissions, the state must take additional steps, such as modeling, to identify and address potential issues with the 2010 one-hour SO_2 NAAQS. Exh. 1 at 4; IEPA Resp. at 9 (Jan. 12, 2018).

IEPA stated that all sources affected by the proposed amendments were either (1) modeled in compliance with the DRR or (2) previously addressed because monitoring showed "nonattainment" in an area near the source. Exh. 1 at 3; Exh. 29 at 7-11. To determine whether increases in emissions could threaten NAAQS compliance, IEPA compared the modeled concentrations and the one-hour SO_2 NAAQS. Exh. 29 at 10. Based on the modeling results, IEPA concluded that the NAAQS in the Baldwin, Hennepin, Newton, Duck Creek, Havana and E.D. Edwards areas are not at risk. Exh. 29 at 10 - 11. IEPA noted that Coffeen was not modeled because its emissions were so low that it fell below the threshold for modeling under the DRR. Exh. 29 at 6.

In the area around the Joppa source, IEPA modeled "actual emissions" for the years 2012 to 2014, as directed by the Data Requirements Rule. TSD at 6-7; IEPA Resp. at 38 (Jan. 12, 2018). In addition to Joppa, three other significant sources contributed 60% of SO_2 emissions in the study area: Lafarge Midwest Inc.; Honeywell International Inc.; and Tennessee Valley Authority Shawnee Power Plant. Exh. 29 at 11. IEPA determined that the modeled SO_2 concentrations were at approximately 85% of the 2010 one-hour SO_2 NAAQS. IEPA explained that if the level were 90% or greater, or if there were an emission increase of 15% or more for levels in the 50-90% range, then USEPA's recommended guidelines state that the agency should conduct additional modeling. TSD at 6-7; Exh. 29 at 12; 80 Fed. Reg. 51081 (Aug. 21, 2015). To ensure that additional modeling would not be needed, and that the area would not become an SO_2 nonattainment area, the proposed MPS amendments include a separate SO_2 emissions cap for Joppa. IEPA determined that a cap of 19,860 tpy from all EGUs at Joppa (Units 1, 2, 3, 4, 5, and 6) would ensure the Massac County area will not become an SO_2 nonattainment area due to Joppa's emissions. SR at 6; TSD at 6-7; Exh. 1 at 3.

USEPA approved IEPA's data submission and modeling under the Data Requirements Rule, as well as IEPA's attainment area designation recommendations. IEPA Resp. at 4 (Jan. 12, 2018), citing:

- Initial nonattainment designations for the Lemont and Pekin areas (78 Fed. Reg. 47191 (Aug. 5, 2013))
- Proposed approval of the Attainment Demonstration SIP revisions for the Lemont and Pekin areas (82 Fed. Reg. 46434 (Oct. 5, 2017))
- "Round 2" area designations (81 Fed. Reg. 45039 (July 12, 2016))
- "Round 3" area designations resulting from the Data Requirements Rule modeling have not yet been published in the *Federal Register*. However, Illinois received notification of the designations from then-USEPA Administrator E. Scott Pruitt in a letter dated December 20, 2017.[2]

[2] The draft *Federal Register* notice can be found on USEPA's website at https://www.epa.gov/sites/production/files/2017-12/documents/final_frn-so2-noa_round_3_final_0.pdf. The USEPA TSD associated with these designations can also be found on USEPA's website at https://www.epa.gov/sites/production/files/2017-12/documents/12-il-so2-rd3-final.pdf.

f. <u>NAAQS Compliance.</u> IEPA used the MPS primarily to address the federal Regional Haze Rule, which, as noted, is designed to improve visibility over the nation's parks and wilderness areas. NAAQS are designed to protect human health and the environment. Because the MPS is a set of annual, fleetwide emissions standards while the SO_2 Primary NAAQS is an hourly standard, the current MPS, according to IEPA, is not the proper vehicle to comply with NAAQS. Tr.1 at 151; Tr.3 at 163; Exh. 29 at 12; PC 2750 at 12. IEPA therefore did not use the MPS for demonstrating NAAQS compliance. However, IEPA's proposal includes amendments to ensure that the modified mass emissions limits do not (1) interfere with attaining or maintaining any NAAQS or (2) interfere with reasonable further progress toward attaining any NAAQS or any other applicable CAA requirement. TSD at 3.

To ensure that the proposed amendments do not interfere with NAAQS attainment or maintenance, IEPA took additional steps through the modeling reviews under the Data Requirements Rule described above. This resulted in setting a separate annual SO_2 emissions cap for the Joppa station. Additionally, IEPA proposed rate-based NO_x emissions limits during the ozone season (May 1 to September 30) for specified units. TSD at 3; Exh. 29 at 12. These units are those currently equipped with selective catalytic reduction (SCR) for controlling NO_x emissions: Baldwin Units 1 and 2; Coffeen Units 1 and 2; Duck Creek Unit 1; E.D. Edwards Unit 3; and Havana Unit 9. PC 2750 at 13.

IEPA explained that all the EGUs in the MPS groups are also subject to emissions limits outside the MPS that will continue to apply. These include the federal acid rain program, Cross-State Air Pollution Rule, and MATS, as well as consent decrees and other State regulations. PC 2750 at 13; Exh. 6, Att. 2; Exh. 16; Exh. 29. IEPA states that the unit- and source-specific SO_2 limits in 35 Ill. Adm. Code 214 ("Sulfur Limitations") address NAAQS compliance and local impacts. TSD at 8. Among the emissions restrictions in Part 214 are hourly limits for the E.D. Edwards station. 35 Ill. Adm. Code 214.603. After modeling for the Pekin SO_2 nonattainment area, IEPA proposed these hourly limits to ensure NAAQS compliance. The Board adopted the hourly limits in <u>Amendments to 35 Ill. Adm. Code Part 214, Sulfur Limitations, Part 217, Nitrogen Oxides Emissions, and Part 225, Control of Emissions from Large Combustion Sources</u>, R15-21 (Nov. 19, 2015) and IEPA submitted them to USEPA as a SIP revision. IEPA's attainment demonstration relied on modeling emissions from E.D. Edwards, Havana, and Duck Creek using the Part 214 limits. These limits will remain in place to ensure NAAQS compliance. Exh. 1 at 3; Tr.1 at 151; Exh. 29 at 8.

C. <u>Factual Background</u>

In this part of the opinion, the Board discusses the EGUs of the MPS, the Dynegy federal consent decree, and electricity in Illinois.

1. <u>MPS EGUs</u>

The two MPS groups under the existing regulations consist of twelve coal-fired power stations. SR at 2. The Dynegy MPS group consists of the Baldwin, Havana, Hennepin, Vermilion, and Wood River stations. *Id*. The Ameren MPS group consists of the Coffeen, Duck

Creek, E.D. Edwards, Hutsonville, Joppa, Meredosia, and Newton stations. *Id*. The groups' names reflect the stations' owners in 2007, when Ameren and Dynegy elected to enter their respective stations into the MPS. *Id*. In 2014, a Dynegy subsidiary acquired all the stations in the Ameren MPS group, except the shuttered Hutsonville and Meredosia stations. *Id*. at 2-3. Vistra Energy Corp. (Vistra) recently purchased Dynegy and now owns all the stations in both the Dynegy and Ameren MPS groups, except the shuttered Hutsonville and Meredosia stations, which Ameren still owns. PC 2916 at 2.

Three stations in the Dynegy MPS group continue to operate. These include Baldwin station (in Randolph County), Havana station (in Mason County) and Hennepin station (in Putnam County). Exh. 6 at 7, 34-35. Two stations in the Dynegy MPS group do not operate: Vermilion station (in Vermilion County); and Wood River station (in Madison County). *Id*. at 7.

Five stations in the Ameren MPS group continue to operate. These include Coffeen station (in Montgomery County), Duck Creek station (in Fulton County), E.D. Edwards station (in Peoria County), Joppa station (in Massac County) and Newton station (in Jasper County). *Id*. As noted, two stations in the Ameren group do not operate: Hutsonville station (in Crawford County); and Meredosia station (in Morgan County).

While all MPS EGUs have some type of NOx emissions controls, only Baldwin, Havana, Coffeen and Duck Creek have SO_2 controls. Exh. 6 at 7, 34-35. The emissions controls at MPS stations are summarized in the table, below.

Name of MPS Power Station	**Number of EGUs**	**SO_2 Controls**	**NO_x Controls**
Dynegy MPS Group			
Baldwin	3	Spray dry absorber	Low NO_x burner, Over-fire air, SCR
Havana	1	Spray dry absorber	Low NO_x burner, Over-fire air, SCR
Hennepin	2	None	Low NO_x burner, Over-fire air
Ameren MPS Group			
Coffeen	2	Wet FGD	Over-fire air, SCR
Duck Creek	1	Wet FGD	Low NO_x burner
E.D. Edwards	2	None	Low NO_x burner, Over-fire air, SCR
Joppa	6	None	Low NO_x burner, Over-fire air
Newton	1	None	Low NO_x burner, Over-fire air

2. Dynegy Federal Consent Decree

In March 2005, Dynegy, as the successor owner of IPH's coal-fired stations, settled a CAA lawsuit with the federal government, Illinois, and environmental organizations. *See* Exh. 9 at 4-5, citing Mercury, R06-25, Corrected Joint Statement of IEPA and Dynegy (Aug. 23, 2006).[3] The suit alleged that ten Dynegy MPS group EGUs violated the CAA at five stations:

[3] *See also* https://www.epa.gov/enforcement/illinois-power-company-and-dynegy-midwest-generation-settlement (summary); https://www.epa.gov/sites/production/files/documents/dmgfinal-cd.pdf (consent decree).

Baldwin, Havana, and Hennepin stations, as well as the since-retired Vermilion and Wood River stations. Consent Decree at 8-9. The federal court-approved consent decree required Dynegy to install NO_x, SO_2, and PM controls at these ten EGUs, meet 30-day rolling average emissions rates and fleetwide declining annual tonnage caps, retire pollution emission allowances or credits, perform specified environmental mitigation projects, and pay a civil penalty. *Id.* at 15-37; *see also* Exh. 16, Att. A (listing consent decree's NO_x and SO_2 limits on each EGU). The pollution controls installed under the consent decree give the Dynegy MPS group a "compliance margin" under the existing MPS SO_2 and NO_x emissions rates. Exh. 9 at 13.

3. Electricity in Illinois

The Electric Service Customer Choice and Rate Relief Law of 1997 (220 ILCS 5/Art. XVI) overhauled Illinois' electric utility service policy. Passing the law began a transition toward delivery service "unbundling" and greater reliance on market forces to determine how electric power and energy would be provided to retail customers. *See*, *e.g.*, Illinois Commerce Commission (ICC), Illinois Power Agency, IEPA, and Illinois Department of Commerce and Economic Opportunity "Response to the Illinois General Assembly Concerning House Resolution 1146" (Jan. 5, 2015) (ICC Resp.)[4] at 5. Electricity distribution was maintained as a fully-regulated utility service. In order to spur the creation of a competitive market, investor-owned electric utilities were encouraged to "spin off" their generation assets by selling them to entities that became known as independent power producers. Transmission planning and control was granted to independent transmission operators (approved by the Federal Energy Regulatory Commission, or FERC) to protect "competitively neutral" electricity markets. *Id*. In this way, Illinois "restructured" its electricity industry, becoming a "restructured" state, where competitive markets govern planning and transmission and customers may choose supply options from different electricity suppliers. *Id*. at 4.

The law also required the major utilities to join FERC-approved regional transmission organizations (RTOs). ICC Resp. at 4. By 2002, the utility companies that ultimately became Ameren Illinois joined Midcontinent Independent System Operator, Inc. (MISO) and in 2004, Commonwealth Edison was integrated into Pennsylvania New Jersey Maryland Interconnection LLC (PJM). *Id*. at 12. Because Illinois resides in two RTOs—MISO and PJM—a "seam" runs through the State. This seam causes opportunities and problems for Illinois EGUs. Illinois' inclusion in MISO, which consists of EGUs in central and southern Illinois, is commonly known as "Zone 4." *See, e.g.*, ICC Resp. at 27; Exh. 42 at 1; Exh. 15 at 6. Zone 4 is complicated by the fact that it consists of a restructured state (Illinois) that is surrounded by fully-regulated, vertically-integrated electric utilities from 14 other states. Mixing competitive market participants with fully-regulated electric utilities results in artificially suppressed "capacity prices" within MISO. The regulated participants bid their capacity in MISO's annual auction at little to no cost because their compensation is fully recovered from regulated ratepayers.

Because technology does not yet allow for meaningful electricity storage or demand

[4] Available at http://www.epa.illinois.gov/Assets/iepa/air-quality/nuclear-plant-closings/potential-nuclear-plant-closings.pdf (last visited Aug. 2, 2018).

control, electricity generation must meet the demand in "real time," increasing or decreasing generation to follow changes in the demand curve. FERC Energy Primer (Nov. 2015)[5] (FERC Primer) at 41, 47; Exh. 15 at 7. Electricity prices tend to rise as demand grows and fall as demand declines. Higher demand requires activating more expensive EGUs (typically coal- or gas-fired). Due to resource unavailability or technological constraints, renewable and nuclear sources of energy cannot quickly increase or decrease their generation. FERC Primer at 41. Electricity market conditions therefore significantly affect how much MPS EGUs are utilized (referred to in the record as "capacity factor") and, consequently, how much they emit. Exh.15 at 6-11; PC 2750 at 4; TSD at 11-12.

IEPA notes that historically low prices for natural gas are a major factor in reduced operation of coal-fired EGUs. TSD at 12. During recent years, the demand for electricity has also declined due to energy efficiency measures and the weaker economy. *Id*. IEPA warns, however, that although MPS EGU utilization was relatively low in recent years, that could change with changes in electricity market conditions, the economy, or the weather, regardless of any changes to the current MPS rule. TSD at 12; PC 2750 at 4.

Vistra and Dynegy cite the energy market as one of the reasons that the MPS now requires revisions. Exh.15 at 6; PC 2753 at 3. Vistra maintains that IEPA's proposal would "update the MPS to better reflect current market conditions and changes in plant ownership." PC 2753 at 3. Dynegy and Vistra state that since the Board adopted the MPS, Illinois' energy market structure and conditions have changed significantly. Exh. 15 at 6; PC 2753 at 6. EGUs subject to the MPS shrunk from 31 to 18 due to unit retirement, which Vistra and Dynegy attribute to many factors, including "low natural gas prices, environmental regulations, increasing generation from other sources (in part due to subsidies), and a decline in energy and capacity prices in MISO Zone 4." PC 2753 at 7; *see also* Exh. 15 at 6-11.

a. <u>Grid Operators (PJM and MISO).</u> As noted above, wholesale energy markets are operated by independent grid operators—RTOs or independent system operators (ISOs) (referred to interchangeably in the record as "system operators," "grid operators," "ISOs," and "RTOs"), such as PJM and MISO. FERC Primer at 40; Exh. 15 at 7. ISOs and RTOs monitor and forecast demand. They also determine which EGUs get to supply electricity to the grid by running auctions to procure energy, capacity, and related products. ISOs and RTOs ensure grid safety and reliability, as well as the lowest energy prices. TSD at 12; Exh. 15 at 7; FERC Primer at 58-59.

Dynegy witness Dean Ellis, the company's Executive Vice President for Regulatory and Government Affairs, explained that the energy market operates "on a near-real-time basis": "In an electric system, within a balancing area or similar region, the amount of electricity generated at a point in time (less transmission and distribution losses) will exactly equal the amount consumed." Exh. 15 at 7. Grid operators, rather than EGUs, are responsible for keeping the supply and demand in balance. They keep this balance by controlling which EGUs supply electricity to the grid, when, and how much. Grid operators instruct EGUs to increase or

[5] Available at https://www.ferc.gov/market-oversight/guide/energy-primer.pdf (last visited Aug. 2, 2018).

decrease their output over time to meet demand. *Id*.

Grid operators "dispatch" (*i.e.*, instruct to supply electricity) those EGUs generating for the least cost, after considering reliability requirements and transmission system constraints. FERC Primer at 53. Other factors influence dispatch and bid prices:

> For example, wind generators only run when the wind blows. Nuclear plants, which have low incremental fuel costs, can have difficulties in rapidly changing output levels, and are not asked to deviate from their full output production level. Hydroelectric facilities with water stored behind dams may not have any fuel costs, but the water is limited in quantity so the system operator will attempt to call on that generation when it is of most value to the system. These other factors can be important in determining which units are dispatched and when by the system operator . . . . Exh. 15 at 8.

A grid operator may designate an EGU as a "reliability unit." When an EGU owner files with the grid operator to retire (shutdown permanently) or "mothball" (shutdown temporarily) an EGU, the grid operator may identify a reliability concern if that EGU is retired or mothballed. 3/6/18 Tr. at 111. The grid operator may issue a contract to that EGU to stay operational until the reliability concern is resolved. This is known as the grid operator designating the EGU as "reliability-must-run" (RMR) or a "system support resource" (SSR). *Id.* However, even if an EGU is required to operate for reliability purposes (*i.e.*, designated as SSR or RMR), a grid operator (*e.g.*, PJM or MISO) cannot require the EGU to operate above its emissions limits. *Id*.

Illinois is "bifurcated between two power markets, two wholesale power markets." 3/6/18 Tr. at 109. Dynegy's EGUs are therefore traded at two wholesale markets operated by two separate grid operators:

- PJM[6] operates in the Mid-Atlantic and Eastern states and includes investor-owned utilities in the Chicago area and Northern Illinois; and
- MISO[7] operates in the Midwest and the South and covers investor-owned utilities in Downstate Illinois. Exh. 15 at 6; 3/6/18 at 78, 83, 109.

Market conditions and prices in PJM and MISO vary, sometimes drastically. Mr. Ellis testified that, during the nine months ending September 30, 2017, Dynegy's MISO segment incurred an operating loss of $90 million, while its PJM segment had an operating income of $40 million. 1/18/18 Tr. at 144.

Mr. Ellis testified that Dynegy's MISO segment includes Baldwin, Havana, and Hennepin stations, while IPH's MISO segment includes Coffeen, Duck Creek, E.D. Edwards, Joppa, and Newton stations. 1/18/18 Tr. at 144; *see also* Exh. 25, Att. A at 4-5. Mr. Ellis testified that all these plants "are located in the local resource zone or load zone of MISO known

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[6] *See* www.pjm.com for details.

[7] *See* www.misoenergy.org for details.

as MISO Zone 4." Exh. 42 at 1; Exh. 15 at 6. Zone 4, however, also includes EGUs located in fully-regulated states that recover their costs from ratepayers and, thus, can bid lower. Exh. 15 at 6; Tr.2 at 144.

At the same time, the following MISO EGUs are "pseudo-tied" to PJM: Coffeen Unit 2 at 151 megawatts (MW); Duck Creek at 329 MW; E.D. Edwards Unit 3 at 150 MW; Newton at 307 MW; and Hennepin at 260 MW. 3/6/18 Tr. at 109. "Pseudo-tied" here refers to an EGU located within MISO selling electricity into PJM. For example, if Dynegy sells electricity from a MISO EGU to the PJM market, PJM assumes operational control of that MISO EGU for the amount of electricity sold. 3/6/18 Tr. at 109-110.

b. Pricing Mechanisms. An EGU may sell its generated electricity at electric energy markets, including "day-ahead" (24-hour period) markets and "real-time" (5-minute interval) markets. An EGU may also sell its commitment to stay available during specific intervals in a delivery year (referred to as "capacity market"). Mr. Ellis explained that "energy and capacity are generally two different things":

> Energy is the power that is actually produced on a day-by-day, hour-by-hour, basis by a power plant, whereas capacity is the total output of the plant that is procured in advance, usually one to three years in advance, to ensure that the generating plant is there, ready to produce electricity in the future when called on, to meet future anticipated demands. Tr.2 at 126-127.

i. Electric Energy Market. Grid operators hold auctions to set prices for each time interval (*e.g.*, five-minute interval). Tr.1 at 142-146. Electricity generators submit their bids, *i.e.*, offer prices at which they are willing to sell electricity. The grid operator then selects the EGUs that offered the lowest prices—starting with the lowest bids, then the next lowest, and so on until enough electricity is secured to satisfy the anticipated demand. The price of the last (*i.e.*, most expensive) EGU selected becomes the "clearing price"—the price paid to all EGUs selected (*i.e.*, dispatched). Thus, all EGUs that "cleared" the auction are paid the clearing price, even if their bids were lower. *Id*.

Bid prices largely depend on fuel prices and the cost of environmental controls. Tr.1 at 142-146. EGUs that bid lower due to lower fuel costs (*e.g.*, wind, natural gas) or other reasons (*e.g.*, units from vertically integrated states typically bid lower because they can recover costs from ratepayers) are dispatched, displacing other EGUs that did not clear auction. Exh. 15 at 8-9. IEPA notes that, due to the low cost of natural gas in recent years, gas-fired EGU electricity has been dispatched ahead of coal-fired EGU electricity. TSD at 12. Mr. Ellis testified that coal-fired EGUs are increasingly displaced by natural gas-fired generation (due to the rapid decrease in gas prices), wind-powered generation (due to the federal production tax credit encouraging bids at low or even negative prices), and nuclear-powered generation (due to the Illinois zero emissions credit enacted in the Future Energy Jobs Act (Public Act 99-0960)). Exh. 15 at 9-10.

Mr. Ellis noted that energy prices in MISO Zone 4 have declined approximately 50%, from about $60 per megawatt hour (MWh) in 2006-2007 to $30 per MWh currently. Exh. 15 at 10. Mr. Ellis testified that, because of steep declines in energy prices as well as the necessity to comply with Ameren's emission rate, Dynegy had to bid its Coffeen and Duck Creek EGUs at prices below fuel and operating costs to ensure that those EGUs were dispatched by the grid operator. Exh. 15 at 10, 11; Tr.2 at 137, 145.

ii. Capacity Market. Mr. Ellis testified that since the MPS was adopted, capacity prices have been low and volatile in MISO's Zone 4:

> [T]he capacity prices established in MISO's capacity auctions (*i.e.*, the amount MISO pays generators for their plants to be available during the delivery year covered by the MISO capacity auction) for the Downstate region have been volatile and, recently, too low to support much of the existing generation. Exh. 15 at 6.

Mr. Ellis explained that because MISO Zone 4 includes generators from unrestructured states that recover their costs from ratepayers, those generators can bid very low, undercutting Illinois' competitive generators. According to Mr. Ellis, this resulted in capacity prices over the last three years dropping from $150 per MW-Day to $1.50 per MW-Day. Exh. 15 at 7; Exh. 41 at 1. Mr. Ellis added that "the flawed MISO Zone 4 capacity market mechanism and the low and unstable capacity prices it has produced presents a significant challenge to the economic viability of Dynegy's Downstate generation fleet." Exh. 15 at 7.

4. Public Health Impacts of Coal Plant Emissions Regulated by the MPS

Since the CAA and the Act were first passed, SO_2 and NO_x emissions have been regulated in some fashion. These pollutants have clear negative effects on public health. On the details of those effects, however, the participants in this rulemaking present conflicting evidence on the levels at which emissions are harmful. The generally accepted health effects, as discussed in a recent USEPA review of SO_2 and NO_x regulations, are briefly described below.

a. Sulfur Dioxide. When exposed to SO_2 while exercising, individuals with asthma can feel respiratory effects, including asthma attacks. 83 Fed. Reg. 26762 (June 8, 2018). Health effects have been detected in adults with asthma within minutes of exposure at concentrations as low as 200 to 300 parts per billion. *Id*. at 26764. Children with asthma are particularly at risk from short-term SO_2 exposure. *Id*. at 26763. Individuals without asthma can also be affected by SO_2 while exercising, but only at high exposure concentrations. *Id*. Evidence of respiratory effects for long-term SO_2 exposure is inconsistent. *Id*.

b. Nitrogen Oxides. Similarly, short-term NO_x exposure can have respiratory effects that are particularly prevalent for individuals with asthma. Individuals with asthma can experience respiratory effects with NO_x exposure at low concentrations while resting. 83 Fed. Reg. at 17234 (May 18, 2018). Long-term exposure to NO_x may contribute to children developing asthma, but there is no other clear harm from long-term exposure to NO_x. *Id*. at 17240-41.

D. IEPA Proposal

In this section of the opinion, the Board provides an overview of IEPA's rulemaking proposal and then describes its purpose. This is followed by a discussion of the following specific aspects of IEPA's proposal: combining MPS groups; mass-based emissions limits; emissions controls; reduced limits for transferred plants; SIP revisions; policy goals; technical feasibility and economic reasonableness; and outreach.

1. Overview

To amend the MPS, IEPA proposed this rulemaking under Sections 27 and 28 of the Act (415 ILCS 5/27, 28 (2016)) and Section 102.202 of the Board's procedural rules (35 Ill. Adm. Code 102.202). SR at 1. IEPA intends for its proposed revisions to provide operational flexibility to Dynegy/Vistra. *Id.* To effectuate this, IEPA proposes merging all eight active stations of the two MPS groups into one MPS group, as well as changing the MPS' rate-based emissions standards to annual mass-based emissions standards for SO_2 and NO_x. *Id*. at 5-6.

IEPA's proposal includes other amendments to ensure compliance with NAAQS. These proposed amendments include placing a separate SO_2 mass limit on all EGUs at the Joppa station to ensure that Massac County will not become a non-attainment area under federal law. SR at 6. They also include retaining rate-based limits, as well as a fleetwide mass limit during the ozone season for NO_x. *Id*.

In addition, IEPA addresses Section 110(l) of the CAA, which requires that USEPA approval be obtained for MPS-related revisions to the Regional Haze SIP. SR at 9-11. IEPA similarly describes calculating reduced MPS limits for EGUs that are transferred to other owners. *Id*. at 7-8.

2. Purpose

IEPA developed this proposal in response to Dynegy's requests that the Board amend the MPS to simplify compliance and allow Dynegy more operational flexibility and economic stability. SR at 3. IEPA states that its proposal addresses Dynegy's requests while "safeguarding air quality." Id.

According to IEPA, the proposal simplifies compliance by combining the two existing MPS groups into one. This consolidation is possible because, every MPS EGU is owned by Dynegy. SR at 5. Moreover, by complying with mass-based emissions limits rather than rate-based emissions limits, Dynegy will gain flexibility over which units it runs. SR at 5, 9. IEPA adds that its proposal is consistent with Governor Rauner's Executive Order 2016-13, which "provided for a comprehensive review of State agency administrative rules and policies to promote, among others, economic development and increased government effectiveness." SR at 3 n.1.

Additionally, as described below, IEPA calculated combined allowable emissions under the current MPS and concluded that the proposal will result in "lower allowable emissions" from the EGUs in the combined MPS group. SR at 9. Furthermore, the rate-based limits for NOx during the ozone season, as well as the separate annual SO2 mass-emissions limits for the Joppa station will also ensure that air quality will be maintained. TSD at 3.

3. Combining MPS Groups

IEPA's proposal combines the Dynegy MPS group and the Ameren MPS group into a single MPS group consisting of all 18 operating EGUs. SR at 5. Specifically, the group would be comprised of:

- Baldwin Units 1, 2, and 3;
- Coffeen Units 1 and 2;
- Duck Creek Unit 1;
- E.D. Edwards Units 2 and 3;
- Havana Unit 9;
- Hennepin Units 1 and 2;
- Joppa Units 1, 2, 3, 4, 5, and 6; and
- Newton Unit 1. *Id*.

Under the current MPS, the Dynegy MPS group and the Ameren MPS group are subject to different emissions standards, even though all the EGUs are now owned by Dynegy. SR 3-5. IEPA notes that Dynegy requested combining the two MPS groups to allow the company "the flexibility of using its entire fleet to meet emissions standards" and to "simplify compliance." SR at 3.

4. Mass-Based Emissions Limits

IEPA proposes replacing the MPS' annual fleetwide rate-based emissions standards with mass-based emissions limits, *i.e.*, caps. SR at 6. IEPA's proposal limits the mass emissions of the combined MPS group to:

- 25,000 tpy of NO_x;
- 11,500 tons per ozone season (May 1 to September 30) of NO_x; and
- 55,000 tpy of SO_2. *Id*.

IEPA states that under the MPS' current rate-based emissions standards and nominal heat inputs, the proposed combined MPS group could emit 32,841 tpy of NO_x, 66,354 tpy of SO_2, and 13,766 tons per ozone season of NO_x. SR at 9. IEPA calculated these allowable emissions under the current MPS by using the rated capacity of, and the current MPS emission rates applicable to, each of the 18 EGUs in the proposed combined MPS group. TSD at 8-11. Also, IEPA's proposed caps allow fewer emissions than the emissions projected in Illinois' Regional Haze SIP submittals using the MPS rate-based standards applied to all 31 EGUs operating at a 2002 baseline year heat input—27,951 tpy NO_x and 55,953 tpy SO_2. TSD at 15-19,

IEPA cautions that, due to many variables, the proposal's impact on "actual emissions" is difficult to evaluate. SR at 9. Those variables, as discussed, include, among others, economic conditions, weather conditions, and the price of natural gas. *Id*. IEPA stresses that changes in these variables could result in increased demand for electricity and, in turn, increased use of and emissions from the MPS EGUs, even though "utilization/emissions of the EGUs in the existing MPS Groups have been lower than [IEPA's] proposed mass emission limits in recent years." *Id*. IEPA explains that the possibility of increased actual emissions exists, regardless of whether the current rate-based standards remain in effect or the proposed mass caps are adopted. *Id*.

In addition, IEPA's proposal places an annual cap of 19,860 tpy on SO_2 emissions from the Joppa station. SR at 6. The area surrounding Joppa was previously modeled using actual emissions from 2012 through 2014. This modeling showed SO_2 concentrations at approximately 85% of the NAAQS. TSD at 6-7. As discussed, for a modeled concentration between 50 and 90% of the SO_2 NAAQS, USEPA guidance calls for additional modeling if emissions in the area increase by 15% or more. TSD at 7, citing *Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS)*, 80 Fed. Reg. 51052, 51081 (Aug. 21, 2015). The proposed MPS cap for Joppa is designed to ensure that (1) the Massac County area does not become an SO_2 non-attainment area under USEPA's Data Requirements Rule and (2) additional attainment modeling will be unnecessary. SR at 6.

As discussed below, IEPA subsequently proposed a reduced annual limit of 49,000 tons for SO_2, as an attempted "compromise." Exh. 29 at 1-2.

5. <u>Emissions Controls</u>

IEPA proposes additional requirements for the five MPS EGUs that are currently equipped with SCR to control NO_x emissions: Baldwin Units 1 and 2; Duck Creek Unit 1; E.D. Edwards Unit 3; and Havana Unit 9. SR at 6. The proposed amendments would require these EGUs to comply with a combined NO_x average emissions rate of 0.10 lb/mmBtu during the ozone season. *Id*. IEPA states that averaging is only allowed among EGUs in the same MPS group. SR at 6. This means that if, for example, two of these EGUs were acquired by another owner and became a new MPS group, those two EGUs could average only with one another. *Id.*

Additionally, IEPA's proposal specifies how and when each of these EGUs must operate its SCR: owners are to "operate each existing SCR control system on each EGU in accordance with good operating practices and at all times when the unit it serves is in operation," but only if that SCR operation is "consistent with the technological limitations, manufacturers' specifications, and good engineering and maintenance practices for the SCR." SR at 6-7. IEPA's proposal also states that when an SCR is not operational, the EGU owner must minimize emissions "to the extent reasonably practicable." SR at 7. According to IEPA, taken together, the seasonal emissions rate and operational requirement ensures "continuation of a high level of NO_x control" by the EGUs with SCR. *Id.*

6. <u>Reduced Limits for Transferred Stations</u>

IEPA's proposal addresses transferring ownership of an MPS source (power station), including all EGUs at the station. SR at 7. "Transfer" means "sale, conveyance, transfer, or other change in ownership of an EGU." SR at 5. If Vistra transfers one or more of the 18 EGUs to a new owner, the transferred EGU or EGUs become a separate "transferee" MPS group and IEPA will reduce the mass emissions cap for the "transferor" MPS group by an allocation amount specified in the rules. SR at 5, 7. Allocation amounts are based on historical emissions and the level of control at each EGU. SR at 7. The new MPS group created from transferred EGUs receives mass emissions caps equal to the amounts allocated to the corresponding EGUs. *Id*. However, if all MPS EGUs are transferred to the same owner on the same date, the caps would not be adjusted and the allocation amounts would not apply. *Id*.

An EGU transfer may occur at any time during the annual and seasonal compliance periods. The entity that owns the EGU on the applicable compliance period's last day must demonstrate compliance with the emissions standards for the entire compliance period. SR at 7-8. For that compliance period, the prior owner must not include emissions from the transferred EGU in its calculations. SR at 8.

Also, IEPA's proposal includes EGU transfer notification, recordkeeping, and reporting requirements. SR at 8.

7. <u>SIP Revisions</u>

IEPA will submit any Board MPS amendments to USEPA for approval as a Regional Haze SIP revision. SR at 9-10. IEPA represented that USEPA, Region 5, reviewed IEPA's proposed MPS amendments and indicated that they are "likely approvable" as a revision to Illinois' Regional Haze SIP. SR at 11.

8. <u>Technical Feasibility and Economic Reasonableness</u>

IEPA considers the proposed amendments to be both technically feasible and economically reasonable. TSD at 8. IEPA reasons that Dynegy, the sole source affected by the proposal, agrees that the proposed standards are technically feasible. IEPA adds that Dynegy requested the MPS revisions to create operational flexibility for its EGUs, as discussed above. *Id*.; SR at 12.

9. <u>Outreach</u>

On July 27, 2017, IEPA sent draft MPS amendments to, and solicited comments from, the Illinois Attorney General's Office (AGO), Region 5 of USEPA, environmental groups, and other persons interested in the MPS. SR at 12. On August 9, 2017, IEPA participated in a question-and-answer session with approximately 12 environmental and community groups. IEPA answered questions regarding the proposal and shared technical information. *Id*. IEPA also participated in conference calls with the AGO about the proposal. *Id*.

IEPA reviewed all questions and comments that it received during this time and considered the feedback while drafting the rule language proposed to the Board. SR at 12. IEPA states that it filed the proposal only after all interested persons had a chance to review and discuss any issues with IEPA. *Id*.

II. BOARD DISCUSSION

In this section of the opinion, the Board discusses, and makes findings where necessary, in the following order; rulemaking under the Act; environmental and health impacts; mass-based limits and combining MPS Groups; mass cap reductions for retirement and mothballing; and technical feasibility and economic reasonableness.

A. Rulemaking Under the Act

Section 5 of the Act provides that "[t]he Board shall determine, define and implement the environmental control standards applicable in the State of Illinois and may adopt rules and regulations in accordance with Title VII of this Act." 415 ILCS 5/5(b) (2016). IEPA filed this proposal under Title VII of the Act; specifically, under Sections 27 and 28 of the Act (415 ILCS 5/27, 28 (2016)). Section 27 of the Act authorizes the Board to adopt substantive regulations as described in the Act and states that "[t]he generality of this grant of authority shall only be limited by the specifications of particular classes of regulations elsewhere in this Act." 415 ILCS 5/27(a) (2016). The Board's rulemaking authority under Sections 5 and 27 of the Act is "a general grant of very broad authority and encompasses that which is necessary to achieve the broad purposes of the Act." Granite City Division of National Steel Co. v. IPCB, 155 Ill. 2d 149, 182 (1993).

Before exercising its authority to adopt substantive regulations, the Board must consider factors specified in Section 27:

> In promulgating regulations under this Act, the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. 415 ILCS 5/27(a) (2016).

Section 28 of the Act provides procedures the Board must follow in conducting a rulemaking. 415 ILCS 5/28 (2016). For example, Section 28(a) provides:

> No substantive regulation shall be adopted, amended, or repealed until after a public hearing within the area of the State concerned. In the case of state-wide regulations hearings shall be held in at least two areas *** All such hearings shall be open to the public, and reasonable opportunity to be heard with respect to the subject of the hearing shall be afforded to any person *** After such hearing the Board may revise the proposed regulations before adoption in response to suggestions made at the hearing, without conducting a further hearing on the revisions. 415 ILCS 5/28(a) (2016).

In compliance with these provisions, the Board has evaluated all the comments and evidence in the record to arrive at its proposed second first notice amendments. As described below, the Board addresses and resolves the contested and general issues, respectively, posed in this rulemaking. In doing so, the Board determines whether this amended proposal is protective of the environment and public health, as well as whether it is technically feasible and economically reasonable. The Board does not include a section-by-section discussion of the proposed amendments, as only one section—Section 225.233—is affected, and the Board summarized the proposed amendments in detail above and in the original first notice opinion. *See* Amendments to 35 Ill. Adm. Code 225.233, Multi-Pollutant Standards (MPS), R18-20, slip op. at 3-5 (Oct. 19, 2017).

B. Environmental and Health Impacts

1. Allowable vs. Actual Emissions

a. Participants' Positions

i. IEPA Position. IEPA's proposal rests on projected reductions in fleetwide annual "allowable" emissions of SO_2 and NO_x. *See, e.g.*, PC 2750 at 3-4; SR at 9; 1/17/18 Tr. at 48. IEPA states that allowable emissions of a stationary source generally are calculated using the source's maximum rated capacity and the emissions rate specified as a federally enforceable permit condition. PC 2750 at 3 n.3. Accordingly, to calculate total allowable emissions of the MPS plants under the existing MPS standards, IEPA multiplied the "rated" or "nominal" capacity of each of the EGUs that will operate in the proposed combined MPS Group by the applicable MPS emission rate and totaled the results across the entire fleet. PC 2750 at 3; n.3. IEPA calculated currently allowable MPS fleetwide emissions of 66,354 tpy for SO_2, 32,841 tpy for NO_x and 13,766 tons for seasonal NO_x. *Id.*; *see also* TSD at 9-11.

ii. Public Comments and Testimony. Vistra supports IEPA's calculation of 66,354 and 32,841 tons in emissions of SO_2 and NO_x as the annual fleetwide allowable emissions under the current MPS rate limits. *See, e.g.*, PC 2753 at 12-13; PC 2902 at 24. Allowable emissions afford regulators the ability to "ensure a consistent comparison of emissions that may occur under a range of regulatory outcomes." PC 2902 at 14. By contrast, Vistra adds, the AGO's calculations, described below, do not represent "allowable emissions"—the "recognized, applicable, objective, regulatory concept, according to both U.S. EPA and IEPA." PC 2902 at 19. Both IEPA and USEPA, according to Vistra, "agree" that the AGO's approaches are inconsistent with any regulatory approach known to them. *Id.* at 15.

Other participants contest IEPA's reliance on allowable emissions. Specifically, the AGO rejects IEPA's reliance on allowable emissions to project a reduction in SO_2 and NO_x emissions from the MPS fleet attributable to the proposed switch from rate- to mass-based emission limits. *See, e.g.*, PC 2751 at 39-43; Exh. 37 at 2-8; Exh. 9 at 14-17. According to the AGO, using only allowable emissions to evaluate environmental impact—whether to arrive at a proposed cap of 55,000 or 49,000 annual tons—disregards the MPS' units "historical heat inputs," contrary to the approach that the Board employed in Mercury Monitoring R09-10, as well as variance proceedings PCB 12-126 and PCB 14-10. The AGO states that, in Mercury Monitoring R09-10, IEPA and Ameren projected future emissions based on actual historical heat inputs to demonstrate an environmental benefit. PC 2751 at 11.

The AGO asserts that, besides the issue of relying on allowable emissions, IEPA's approach ignores the operational constraints that the MPS SO_2 emission rate limits impose on the "IPH" Group, giving Vistra a "free pass" on installing pollution controls required by the MPS. Additionally, the AGO asserts that IEPA's proposal fails to consider the "mothballing" of Baldwin Unit 3 and Vistra's statements to investors that Vistra was contemplating additional EGU permanent shutdowns. PC 2751 at 26, 31, 39-43; PC 2897 at 13.

The AGO insists that a proper assessment of environmental impact must consider how the MPS plants operate by beginning with the assertion that no coal-fired EGU operates at maximum heat input. Exh. 9 at 14-16. The AGO further avers that plants do not necessarily emit pollution at maximum permissible rates. *Id.* Even at maximum heat input, the AGO continues, the existing two MPS Groups cannot both operate at maximum SO_2 emission rates and still comply with the MPS. *Id.*; *see also* PC 2897 at 18 (asserting that Dynegy can operate the MPS Groups at exactly their MPS allowable emission rates only under "extremely limited" circumstances). This is because of differences in pollution controls installed at plants in each MPS Group and the current MPS's groupwide emissions averaging requirement. PC 2897 at 18.

The AGO notes IEPA's acknowledgment that the Board, in considering the proposal's environmental impact, is not constrained by IEPA's federal Section 110(l) anti-backsliding analysis. PC 2897 at 20, citing 4/17/18 Tr. at 93. Although IEPA relied on the MPS years after its adoption to show compliance with the Regional Haze Rule, the MPS was not adopted for this compliance purpose, and IEPA had not relied on it when the Board was considering the MPS amendments in Mercury Monitoring R09-10. *Id.* Additionally, a Section 110(l) analysis, according to the AGO, is by design "indifferent" to whether a rule change would allow increased emissions if the emissions would not interfere with a CAA requirement. *Id.* at 21, citing 82 Fed. Reg. 15139, 15149 (Mar. 27, 2017).

The AGO assessed what it referred to as each MPS Group's "actual potential to emit," using maximum heat input for each MPS unit and 2016 unit-level emission rates. Exh. 9 at 17-18. The AGO contends this exercise shows that, although the Dynegy Group could run at maximum heat input and still comply with the MPS emission rate for SO_2, the IPH Group could not. *Id.* One scenario in which it could do so, the AGO posits, is to run the cleanest plants in the latter group first at maximum heat input, and then operate the less-clean plants until reaching the maximum allowable SO_2 rate. *Id.* Adding total emissions in that scenario from the IPH Group to those in the Dynegy Group yields a total of 49,305 tons, which, the AGO argues, should be considered the total "maximum allowable emissions" of SO_2 under the existing MPS using 2016 unit-level emission rates. *Id.* at 18. Following a similar analysis, the AGO contends that 29,140 tons should be considered the total maximum allowable emissions of NO_x under the existing MPS rate using 2016 unit-level emission rates. *Id.* at 18-19.

AGO witness Andrew Armstrong subsequently supplemented the unit-level rates with data from 2013-17, which were largely consistent except for Newton Unit 1 in 2017, because of newly-installed pollution control equipment there. PC 2751 at 29-30; *see also* Exh. 37 at 14-16. The AGO claims the IPH Group cannot operate at maximum capacity in compliance with the final 2017 SO_2 MPS rate. PC 2751 at 30. According to the AGO, the IPH Group could not even operate at the somewhat higher heat inputs in 2013 and 2014 and at the same time comply with the SO_2 rate. *Id.*, citing Exh. 37, Atts. 3-6. Nor could utilization of the IPH Group "appreciably increase" while continuing to comply with the MPS's final SO_2 emission rate, "no matter the [wholesale electricity] market conditions." PC 2897 at 20.

The Environmental Groups similarly assert that IEPA misplaces reliance on "maximum allowable emissions and 100% capacity rather than actual emissions." PC 2752 at 9. They argue that no evidence exists that prove the proposed amendments will reduce actual pollution; rather, they claim, the "evidence only indicates that there will be a reduction in allowables" under IEPA's proposal. *Id.* at 9-10; n.31. This reduction, the Environmental Groups add, will "take place on paper only"; According to the Environmental Groups, Vistra has offered no evidence of any "concrete improvement" that amending the MPS would provide. PC 2900 at 5. They contend that IEPA has confused compliance with federal law, *e.g.*, the Regional Haze Rule, with a showing of an actual environmental benefit. *Id.* at 7.

iii. IEPA Response. According to IEPA, "[n]o one in this rulemaking has disputed the accuracy" of IEPA's calculation of annual SO_2 and NO_x emissions allowed under the existing MPS standards. PC 2750 at 3. IEPA adds that, in calculating these emissions, it followed the method it regularly uses—one that is objective and used by USEPA in its review of the environmental impact of SIP submittals. *Id.* Additionally, IEPA asserts that USEPA Region 5 has evaluated IEPA's proposal, "agree[d]" with IEPA's "allowable emissions" calculation, and advised IEPA that the MPS amendments are "likely approvable" as a revision to the Illinois Regional Haze SIP. *Id.* at 5. USEPA also "agrees that an allowable-to-allowable comparison is the appropriate analysis to determine compliance with anti-backsliding requirements [of Section 110(l) of the CAA], and agrees" that the proposed amendments represent a reduction in allowable emissions. *Id.* at 5, 11; *see also* Exh. 13. Relying on allowable emissions avoids the "unpredictabilities and uncertainties" inherent in an analysis based on projecting actual emissions, IEPA maintains. PC 2750 at 11; PC 2898 at 9.

By contrast, IEPA asserts, the AGO's approach to assessing mass emissions relies on "unpredictable factors that change from year to year," "cherry-picked" data, and is "confusing, subjective, and problematic, as highlighted by the AGO's own testimony." PC 2750 at 6. IEPA is not familiar with the "novel" term "actual potential to emit," and finds problematic the AGO's exercise using 2017 unit-specific emission rates and 2002 unit-specific heat inputs. *Id.* at 7, citing 4/17/18 Tr. at 133-43; Exh. 37. Using these two factors would, according to IEPA, inappropriately restrict the EGUs according to the specific unit usage from 2002 and "actual" 2017 emission rates. PC 2750 at 8. IEPA also points to purported problematic methodologies in the AGO's proposed mass emissions caps; this critique is summarized below in the section of this opinion addressing proposed caps.

IEPA further argues that the AGO's assertion that the Board must assess emissions using historical heat inputs because it did so in Mercury Monitoring R09-10, a prior rulemaking that amended the MPS, is incorrect. PC 2750 at 8-9. There, IEPA continues, the Board adopted modified SO_2 and NO_x emission rates for specified years for the MPS plants then owned by Ameren, which had proposed the amendments. *Id.*, citing Mercury Monitoring, R09-10 (June 18, 2009). IEPA adds that a fall 2008 evaluation "confirmed" that Ameren's proposal resulted in a projected environmental benefit of 842 tons of reduced SO_2 and NO_x emissions from 2010 to

2020. *Id.* at 9, citing Mercury Monitoring, R09-10, slip op. at 16 (Apr. 16, 2009).

To calculate that benefit, IEPA multiplied an "average heat input" —based on the three highest years of inputs between 2000 and 2008—by the applicable SO_2 and NO_x MPS emission rates, to assess projected total tons of SO_2 and NO_x for that period. PC 2750 at 9. Unlike the AGO, IEPA did not use "actual emission rates from previous years" in Mercury Monitoring R09-10. To the contrary, IEPA used "allowable" emission rates, as it does in "all analyses." *Id.* Nor did IEPA use actual emissions from a single year, as the AGO did here. *Id.* at 9-10. IEPA would never do so, because that would generate a range of outcomes based on the choice of year. *Id.* at 10. Additionally, IEPA did not propose the modified MPS rates and implementation schedule in Mercury Monitoring R09-10; Ameren did, during the IEPA-initiated rulemaking to amend the Illinois mercury rule. *Id.* Ameren did so, according the IEPA, based on determinations regarding levels it could meet given operational and pollution control upgrade plans. *Id.*; PC 2898 at 13. IEPA neither "supported nor opposed" Ameren's proposal. *Id.* And, due to variability of the energy market, IEPA continues, the projected future emissions in Mercury Monitoring R09-10, compared to actual emissions, turned out to be "significantly overestimated," illustrating why projecting such emissions is so fraught. *Id.* at 10, n.7.

b. Board Findings

A core dispute—if not *the* central issue—here is how to assess the environmental impact of IEPA's proposal. IEPA maintains that environmental impact should be assessed by comparing allowable emissions under the specified mass cap levels to maximum allowable emissions under the existing MPS rates. On the other hand, the AGO and Environmental Groups contend that allowable emissions under the specified mass cap levels should be compared to projected emissions based on historical data—heat inputs and unit-level emission rates. In pressing their respective positions, the participants, at least initially, devoted considerable attention to which measure—allowable emissions or projected emissions based on "actual" or historical data—is appropriate for demonstrating compliance with CAA requirements, such as the Regional Haze Rule. *See, e.g.*, PC 2750 at 4-6, n.5, 11; PC 2902 at 14-15; Exh. 37 at 5. The Board therefore considers first which metric is appropriate for our purposes here.

As discussed further below, Mr. Bloomberg of IEPA explained that, "to demonstrate to USEPA that a regulation does not pose a risk of backsliding, the Illinois EPA must provide information to show that the allowable emissions under a new rule are at least as stringent as the allowable emissions under the previous SIP submittal." 1/17/18 Tr. at 22. Mr. Bloomberg further testified that, according to USEPA officials, CAA Section 110(l)—the anti-backsliding requirement—is satisfied if the comparison of allowable emissions establishes that the new standard would allow no greater emissions than the existing SIP. 4/17/18 Tr. at 84, citing Exh. 47. If the new rule would instead allow increased emissions, *i.e.*, it represents a relaxation of the existing standard, a more "in-depth [noninterference] demonstration" is required. 4/17/18 Tr. at 85, citing Exh. 47. The USEPA officials also stressed, in response to an IEPA query, that an "'actuals-to-actuals' comparison is impossible because 'actuals' can only be measured after they have happened. The best you can do is place an upper limit (i.e. an allowable limit) that sources are required to emit below." Exh. 47 at 2.

The same federal officials distinguished the cases that the AGO relied on to show that SIP revisions require a comparison of actual emissions under the existing SIP to those under the revision, explaining that neither case addressed whether allowable or actual emissions must be used to show noninterference in an anti-backsliding evaluation. *See* Exh. 47 at 3-4, citing Exh. 37 at 5-6. Based on this evidence, the Board finds that IEPA has established that, for purposes of evaluating the proposed SIP revision, USEPA requires a comparison of allowable emissions under the existing SIP and the revised SIP. And, given this finding, the Board also accepts IEPA's representation that USEPA Region 5 officials have indicated that, under this analysis, the proposed MPS amendments likely are approvable as a revision to Illinois' Regional Haze SIP. *See* 1/17/18 Tr. at 36-37; Exh. 13.

The Board recognizes, however, that these facts do not dictate how the Board should assess environmental impact under State law. A strict "allowables-to-allowables" comparison, although required for a SIP revision, is not automatically appropriate under the Act and Board rules. As the AGO points out and IEPA acknowledged, the Board is not "constrained to" IEPA's anti-backsliding analysis in considering the environmental impact of IEPA's proposed MPS amendments. PC 2897 at 20, citing 4/17/18 Tr. at 93.

As summarized above, the MPS was not originally proposed and adopted to bring Illinois into compliance with the Regional Haze Rule. *See* 1/17/18 Tr. at 138; Mercury, R06-25, slip op. at 1, 5 (Dec. 21, 2006). Rather, the current MPS was meant to provide a technically feasible regulatory alternative to immediate compliance with the Illinois mercury rulemaking. *Id.* USEPA's indication to IEPA that the SIP revision is likely approvable, *see* TSD at 3, Exh. 13, reflects an assessment that the amendments would not interfere with Illinois' progress toward visibility improvement goals under the Regional Haze Rule.

IEPA argues that allowable emissions are the only proper measure of impact in this context. IEPA explains that, by definition, allowable emissions are calculated based on a source's emission rate at its maximum rated capacity, unless a federally enforceable permit condition restricts a source's operating rate, hours of operation, or both. PC 2750 at 3 n.3, citing 35 Ill. Adm. Code 203.107; *see also, e.g.*, TSD at 12; PC 2750 at 6; 1/17/18 Tr. at 26 (opining that the "only way to properly evaluate a worst case scenario is by comparing allowable emissions"). According to IEPA, an allowable emissions methodology avoids the "unpredictabilities and uncertainties" inherent in projecting actual future emissions. PC 2750 at 11; PC 2898 at 9.

IEPA maintains that relying on historical data to project future emissions for comparing the proposed rule amendments is problematic because the possible outcomes depend on which data is used. PC 2750 at 9-10; *see also* PC 2753 at 18 (where Vistra explains that using historical data, such as actual annual unit-level emission rates, yields results that vary "widely" depending on which year's emissions rates are used). Actual emissions fluctuate from year to year for reasons unrelated to environmental rules, such as weather, fuel prices, and the "general strength of the economy." TSD at 11.

IEPA notes that the AGO's testimony highlights the problems with using actual emissions and operational data to project future emissions. *See* PC 2750 at 6-8. The AGO's attempt to make the projections reflect “how pollution sources operate in the real world,” Exh. 37 at 7, has generated a wide range of outcomes under shifting methodologies. These outcomes range from an “actual potential to emit” of 51,083 tons of SO_2 and 32,172 tons of NO_x, using 2017 unit-level emission rates, to “actual annual emissions” of 34,094 tons for SO_2 and 18,920 tons for NO_x, using 2002 heat inputs for each current MPS unit and “actual 2017 unit-level emission rates.” *Compare* 4/17/18 Tr. at 25-26, citing Exh. 37 att. 6, *with* Exh. 37 at 17-19.[8] Although the AGO did not treat the highest levels noted above as maximum allowable emissions under the existing MPS rates, AGO witness Mr. Gignac testified that only modestly lower figures—49,305 tons for SO_2, and 29,140 tons for NO_x—should indeed be considered “total maximum allowable emissions” of each pollutant using 2016 unit-level rates. Exh. 9 at 17-19.

Further, as noted by IEPA, both the “actual potential to emit” and “actual annual emissions” calculations rely on problematic methodologies. They depend on selecting specific years’ data and categories of data: the former, 2016 unit-level emission rates; and the latter, both 2002 heat inputs and 2017 unit-level emission rates. IEPA maintains that the various figures and caps suggested by the Illinois AGO “demonstrate the subjectivity of the Illinois AGO’s approach and that there is a multitude of ways to calculate an emissions cap when one makes arbitrary choices about which historic variables and data to use.” PC 2750 at 8. Selecting other years’ data would yield different outcomes, clearly reflecting the “unpredictabilities and uncertainties” of these alternative approaches to projecting emissions. PC 2750 at 11.

The AGO dismisses as minimal the variation in annual MPS unit-level emission rates from 2013 to 2017. *See* Exh. 37 at 15-16. The AGO’s calculations, however, reveal that even seemingly minor variations in these emission rates can produce considerable differences in fleetwide “potential to emit.” *See id.* at Atts. 3-6. For example, according to the AGO’s tables, the potential to emit SO_2 for the Dynegy Group alone was 10,213 tons in 2013, but 8,830 tons in 2017, despite seemingly small differences in virtually all Dynegy Group unit-level rates. *Id.* at Atts. 3, 6. Annual unit-level emission rates vary the most at the MPS plants lacking controls, because these plant’s emissions depend on the sulfur content of the coal consumed. *See* Exh. 37 at 15-16. Unit-specific heat inputs also fluctuate, depending on annual “specific unit usage.” PC 2750 at 8-9.

Variability aside, projections based on unit-level emission rates are also problematic because, under the existing MPS, units are not required to meet any individualized emission rates. Therefore, no regulatory basis exists to restrict a unit to any year’s actual unit-level emission rate. *See* PC 2750 at 8; *see also* 1/17/18 Tr. at 49 (explaining that MPS units are not required to meet emission rates on a “unit or source-specific basis”).

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[8] Vistra represents that Mr. Armstrong agreed at hearing that attachment 6 to his testimony (Exh. 37) shows that the MPS plants’ “actual potential to emit” for SO_2, using 2017 unit-level emission rates, is 53,083 tons. PC 2753 at 17-18, citing 4/17/18 Tr. at 25-26. Although this is a correct summary of that testimony, attachment 6 in fact shows the total as 51,083 tons—the sum of cells H29 (Dynegy Group SO_2 emissions at Max Heat Input) and P48 (Old Ameren Group SO_2 actual potential to emit). The Board accordingly cites this number rather than that in the post-hearing comment and transcript.

For these reasons, the Board finds neither the AGO's "actual potential to emit" nor its "actual annual emissions" analyses to be reliable in assessing environmental impact. The Board further agrees with IEPA that allowable emissions, by contrast, are an objective, logical, and predictable gauge. And, the Board accepts IEPA's calculation of maximum allowable emissions under the existing MPS: 66,354 tpy for SO_2; 32,841 tpy for NO_x; and 13,766 tons for seasonal NO_x. PC 2750 at 3; *see also* TSD at 9-11. IEPA explains that these figures represent full-capacity operations at the MPS plants, consistent with the regulatory definition of "allowable emissions." PC 2750 at 3 n.3. Moreover, no participant disagrees that this is the correct calculation using the inputs upon which IEPA relied; instead, what some participants challenge is IEPA's reliance on maximum allowable emissions to assess environmental impact. The Board has already found, however, IEPA's approach to be reasonable and reliable.

Further, the Board is not bound, as the AGO contends, to evaluate environmental impact based on historical heat inputs because it so evaluated that impact in Mercury Monitoring, R09-10. In that proceeding, the proposal by Ameren to modify its MPS emission rates and schedule was based on what Ameren anticipated it could comply with at the time. Using Ameren's data, IEPA calculated an average heat input based on the three highest years between 2000 and 2008 and applied it to a 2010 - 2020 timeframe to show that the proposed emission rates and schedule would provide a projected environmental benefit over the subsequent 11 years and beyond 2020. IEPA did not use actual emission rates from previous years or actual emissions from a single year in its analysis as were used by the AGO. Mercury Monitoring, R09-10, slip op. at 5 (June 18, 2009).

Finally, the AGO points to no Board ruling or statement in Mercury Monitoring R09-10 that can be fairly read as requiring the use of actual heat inputs, rather than full-capacity data, to evaluate environmental impacts. Indeed, the Board sees nothing in its R09-10 opinions even implying that IEPA's decision to average three years of the highest heat inputs—albeit coupled with allowable emission rates—to assess environmental impacts, and the Board's reliance on that analysis, was intended to become the default standard. The Board accords no preclusive effect to R09-10's use of such data.

In evaluating environmental impact and otherwise considering the proposed amendments here, the Board need not completely ignore historical emissions and trends. Actual emissions from recent years may bear some relationship to future emissions, if only as a baseline for comparing possible scenarios under modified standards. In this rulemaking, the Board recognizes the several recent years of declining SO_2 and NO_x emissions from the MPS fleet, and appreciates the concerns of affected organizations and individuals about potentially reversing those pollution reductions by switching to mass-based limits, particularly if the chosen limits are not sufficiently stringent. *See, e.g.*, PC 2887 (citing report that proposed amendments would allow nearly double the amount of SO_2 emissions from Dynegy plants); *see also* 1/17/18 Tr. at 237 (commenter claiming that Dynegy "wants to pollute more, up to 30,000 tons more"). From 2013 to 2017, total annual SO_2 emissions from the MPS plants peaked at 44,382 tons and declined to a more recent low of 27,621 tons, while NO_x emissions during the same period peaked at 18,849 tons and dropped to 13,925 tons.[9] *See* TSD at 14-15, Tables 5 & 6; Exh. 37 at 10. These amounts are all dramatically lower than the full-capacity numbers: 66,354 tpy for SO_2 and 32,841 tpy for NO_x. *See*, *e.g.*, PC 2750 at 3; TSD at 9-11.

The Board also understands that affected communities and others fear that even with a meaningful reduction in fleetwide annual allowable emissions under mass caps, the transition from emission rates to mass limits would allow Vistra to run controlled units—particularly Coffeen and Duck Creek, but also Havana, and Baldwin stations—less frequently, or not at all, while shifting generation to Vistra plants lacking pollution controls—Edwards, Newton, Joppa, and Hennepin stations. *See, e.g.*, PC 2751 at 29, 33-35; PC 2905; PC 2904 at 1-2; 4/16/18 Tr. at 13-14. The record makes clear that, putting aside other, non-MPS emission standards that restrict the plants' emissions such as the Cross-State Air Pollution Rule, mass caps would allow exactly this shift—including in instances where the existing MPS emission rates would not permit it. *See*, e.g., Exh. 9 at 9-13; Exh. 37 at 11-12; PC 2751 at 33-35; PC 2752 at 10-11. For this reason, the Board relies on evidence in the record pertaining to other ways of assessing potential emissions, such as modeled emissions discussed below, in evaluating localized impacts and setting protective mass limits. The Board also bears in mind the past several years of emissions data cited above.

2. <u>Plant Utilization and Localized Impacts</u>

a. <u>Unscrubbed Plants Utilization</u>

As noted above, the record reflects substantial public concern that if the Board adopts IEPA's proposal to replace MPS's rate-based limits with a mass-based limit, Vistra could close controlled plants and increase use of uncontrolled units, thereby leading to increased emissions from those units.

i. <u>Public Comments and Testimony.</u> The AGO believes that the mass-based limits proposed by IEPA "are set so high as to allow Dynegy and Vistra to immediately increase pollution from their uncontrolled plants." PC 2751 at 1-2. The AGO also believes that IEPA's proposal "would simply allow Dynegy and Vistra to shut down clean plants; increase utilization of dirty plants; avoid installing pollution controls, as promised for over a decade – all contributing to higher pollution than would be allowed by the MPS in its current form." PC 2751 at 7. The AGO contends that IEPA's proposal to switch from rate-based to mass-based limits, coupled with a SO_2 cap of 49,000 tpy, would allow room for significant increases in emissions from uncontrolled units and closure of well-controlled plants. PC 2751 at 34-35. In addition, the AGO continues, the mass-based SO_2 cap allows Dynegy to operate Newton without the sorbent injection controls, resulting in increased emissions, according to the AGO. *Id.* at 34.

The Environmental Groups also believe that the proposed amendments "will allow Dynegy/Vistra to operate its unscrubbed plants more often, likely increasing overall actual emissions . . . ." PC 2752 at 1, 9. The proposed SO_2 cap is "60% higher than the MPS units'

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[9] IEPA maintains that 2016 actual emissions "were lower than usual" and are therefore an outlier. Exh. 29 at 7.

actual SO_2 emissions in 2017," while the proposed NO_x cap is "57% higher than the MPS units' actual NO_x emissions in 2017." PC 2752 at 10, *citing* Exh. 37 at 10. The Environmental Groups maintain that "[u]nder the current MPS, Dynegy/Vistra cannot run exclusively uncontrolled units in the groups of plants previously owned by Ameren and comply with the MPS SO_2 limits." PC 2752 at 12 (referring to Coffeen, Duck Creek, E.D. Edwards, Joppa, and Newton stations, *noted* in SR at 2-3). Rather, "Dynegy/Vistra must also run cleaner units in order to achieve the fleetwide average of SO_2 required by the MPS for that group." *Id*. With the MPS amendments, however, the operator of the MPS units "would be able to run exclusively uncontrolled units in the groups of plants previously owned by Ameren, and any incentive to run cleaner units will have disappeared." *Id*. The Environmental Groups acknowledge that "[t]he same is not true of the Dynegy MPS compliance group of plants—Baldwin, Havana, and Hennepin—because, even without the MPS, their collective emissions rate is governed by a federal Consent Decree." PC 2752 at 12, *citing* Exh. 9 at 4-5, 7, 9.

Both the AGO and Environmental Groups believe, based on Vistra Chief Executive Officer Curt Morgan's statement to company shareholders, that the proposed MPS amendments will allow Dynegy and Vistra to retire controlled plants. PC 2752 at 20-21. Mr. Morgan's statement noted that "they're working on the multi-pollutant standard to basically create flexibility to make decisions about what assets were in, what assets were out":

> [A]t some point, when you don't get the reform and you are successful at doing what you need to do around the multi-pollutant standard and freeing up the assets, we've got a portfolio optimization exercise to do no different than what we did in Texas. And I think that may result in maybe shrinking our size of our generation, whether that means we're trying to sell assets or what, I don't know yet. Exh. 25 Att. D at 24-25.

Vistra later clarified that in Texas, it closed 4,167 MW of uneconomic coal-fired capacity after a year-long, structured evaluation process due to "low natural gas prices, oversupplied generation, including subsidized renewables, and other factors." PC 2749 at 5.

Neither Dynegy nor Vistra confirmed or denied any specific plans to close controlled MPS units and increase utilization of uncontrolled units if the Board dismisses IEPA's proposal. *See e.g.*, 4/17/18 Tr. at 193-201. Vistra's representative, Ms. Vodopivec, testified that Vistra has "no preconceived plans to close any plants" and that Vistra "just assumed control of these plants" and is "reviewing their performance and ways to make them more efficient and more cost effective." 4/17/18 Tr. at 193-201; *see also* PC 2749 at 3. Ms. Vodopivec was unable to comment on Mr. Morgan's statements about plant retirements. 4/17/18 Tr. at 193.

Dynegy also declined to comment on Mr. Morgan's statements. 3/6/18 Tr. at 84. Dynegy's witness, Dean Ellis, testified that "[d]enial of the MPS, the proposed MPS revision, alone wouldn't necessarily put one more—one plant at risk, but it will put greater pressure or continue to exert pressure on the fleet as a whole." 1/18/18 Tr. at 123. Mr. Ellis testified about the circumstances that would likely require retiring stations:

> If the proposal is not adopted, Dynegy anticipates having to retire additional plants in its Downstate fleet. Dynegy has retired approximately 20% of its

> Downstate electric generation (about 2360 MW of capacity) in the last several years, and another 3,000 megawatts in the MPS is at risk of shutdown for the economic reasons I have described. If the energy and capacity market conditions continue in their present states and the MPS remains an emissions-rate based program, Dynegy will likely have to retire more plants. Dynegy cannot say at this time whether and which plants would be retired. Exh. 15 at 12-13.

Mr. Ellis added that "[i]f the proposed rule revision is enacted, Dynegy does not anticipate any unit retirements specifically due to the new MPS. However, Dynegy is constantly evaluating the economic conditions of each unit. If the capacity market in Zone 4 is not reformed . . . and energy market conditions do not change, units will likely need to be retired for economic reasons." Exh. 15 at 14.

Vistra echoes this position. *See* PC 2749 at 3-4. Vistra further notes that "[t]o maintain compliance with the existing rate-based MPS, any decision by Vistra to retire uneconomic, controlled units may force the Company to shut down uncontrolled, economic units as well. Therefore, changing the MPS to a mass-based limit would likely reduce the number of units at risk of shutdown." PC 2749 at 4.

ii. <u>IEPA's Response.</u> IEPA stated that it "is unaware of Vistra Energy's intent regarding retirement of any MPS plants." 3/16/18 Tr. at 136. However, IEPA made two related observations: first, the proposed rules "certainly have nothing to say about whether . . . Dynegy can or cannot shut down a unit," and second, "there is no certainty that shutting down a scrubbed plant would mean that an unscrubbed plant operates more. There are many sources of megawatts within MISO and we can't sit here and say, if you shut down this one, it will definitely come from this other one." 3/6/18 Tr. at 137-138.

IEPA also noted that "if natural gas prices suddenly shot up, if it was a bad summer or winter and they were called upon to operate all of their plants extensively, then, yes, they could go up to 49,000 tons per year." 3/6/18 Tr. at 139. IEPA added, however, that in that situation, "they would also likely be doing that or at least potentially be doing that or more under the existing MPS which does not have a hard emissions cap." *Id*. IEPA acknowledged that, under the proposed amendments, a plant operator could retire the Baldwin and Havana plants, while continuing to operate only the Hennepin plant. 3/6/18 Tr. at 141. At the same time, IEPA also confirmed that the current rate-based MPS rule restricts utilization of unscrubbed units based on operation of the scrubbed units. *See, e.g.*, Ex. 6 at 16.

b. <u>Local Air Quality Impacts</u>

i. <u>Public Comments and Testimony.</u> The Environmental Groups assert that IEPA's proposal will "allow Dynegy/Vistra to operate its unscrubbed plants more often, likely increasing overall actual emissions and causing local increases in pollution." PC 2752 at 9. They argue that local increases in SO_2 emissions can pose a health threat, especially to sensitive subgroups, even if those increases are below the NAAQS. *Id.* at 22-23, citing Exh. 34 at 4. Further, the Environmental Groups contend that "an increase in PM formed from SO_2 would also be expected to cause negative health impacts." *Id.* at 23. They further cite Brian Urbaszewski's testimony that scientific studies have found "significant evidence of adverse exposure to fine particle pollution at levels below" the NAAQS. *Id.* at 22, citing Exh. 34 at 2. Additionally, the Board received many public comments expressing concerns regarding health impacts associated with localized increases in SO_2 emissions. *See, e.g.*, PC 2149; PC 2748; PC 2907; 1/17/18 Tr. at 215-16; 4/16/18 Tr. at 32-33.

The AGO also maintains that IEPA's proposal: allows increased pollution because it does not curtail operation of higher-polluting units or require the use of the new pollution control equipment at Newton; allows shutting down better-controlled units; and provides additional run-time for unscrubbed units. PC 2751 at 23. The AGO contends IEPA's argument—that any increase in emissions would be below the NAAQS—is not sufficient justification for the Board to adopt the proposed amendments. *Id*. at 38. Any increase in emissions, the AGO argues, goes against "the Act's purposes to 'restore, maintain, and enhance the purity of the air of this State', 415 ILCS 5/8, but, instead, would yield a negative environmental impact, which is also contrary to the Board's analysis regarding the MPS it employed in [Mercury Monitoring,] R09-10." *Id*. at 39.

ii. IEPA Response. IEPA asserts that the record demonstrates that its proposal will "not interfere with air quality, specifically the NAAQS, federal air quality standards specifically designed to protect human health within an adequate margin of safety." PC 2750 at 12. Further, IEPA states that the proposed mass limits do not "interfere with Illinois' ability to meet the pollution reduction goals set forth in the State's Regional Haze SIP (the only SIP that relies on the MPS requirements) and that it is sufficient to protect air quality in Illinois to at least the same extent as the current MPS rules." Exh. 29 at 1.

IEPA asserts that the proposed mass emission limitations reflect a lowering of current allowable emissions from affected sources. The proposed mass caps would "lock in" the reductions that have occurred at the affected MPS sources due to the current MPS and other factors, including economic and market conditions. PC 2750 at 22. IEPA explained that the annual MPS limits are not designed or relied on to protect local air quality, because an annual standard covering multiple sources spread over a large geographical area is not a suitable way to ensure short-term air quality in specific locales. *Id.* at 12. Instead, to ensure local air quality is safe, IEPA relies on other SO_2 and NO_x emissions restrictions, including the Acid Rain Program, Cross-State Air Pollution Rule, the MATS Rule, New Source Performance Standards, Part 214 Sulfur Emission Limits, Part 217 NO_x Emission Limits, and consent decrees. *Id.* at 12-13.

Although the MPS was never intended to address NAAQS, IEPA evaluated local air quality impacts of the proposed SO_2 mass limitations at all eight affected MPS sources. IEPA did so by reviewing modeling performed under the DRR or the attainment demonstration for the Pekin nonattainment area. Exh. 29 at 7-8. IEPA notes that the Newton, Hennepin, Joppa, and Baldwin plants were modeled using actual emissions to satisfy requirements of the DRR; and the Edwards, Havana, and Duck Creek plants were modeled at their maximum allowable emission rates for the Pekin nonattainment area attainment demonstration. IEPA's modeling review for all MPS plants is summarized below:

Baldwin. DRR-modeled concentrations at the Baldwin plant, at an operating capacity factor of 72%, was 78.21 μg/m^3 or 39.8% of the SO_2 NAAQS (196.32 μg/m^3). Even if Baldwin can increase to 100% capacity factor in a year, the linear increase in concentration at similar emission rates would correspond only to concentrations around 108 μg/m^3, still only 55% of the standard. Thus, IEPA concludes that the NAAQS in the Baldwin area is not at risk. Exh. 29 at 10.

Hennepin. DRR-modeled concentrations were 94.56 μg/m^3 or 48.2% of the standard at a capacity factor of approximately 69%. If the plant operated at 100% capacity factor, the modeled concentrations would be approximately 137 μg/m^3, which is only 70% of the standard. Thus, the NAAQS in the Hennepin area is not at risk. *Id.*

Newton. Modeled concentrations at Newton were 138.89 μg/m^3 or 70.7% of the standard. These concentrations were modeled for years in which both Units 1 and 2 were operating. Unit 2, which accounted for approximately 47% of the emissions from the source during the years modeled, has since been retired (permit withdrawn). Therefore, even if Unit 1 were operated at a 100% capacity factor, the modeled concentrations would be approximately 73% of the standard. Thus, the NAAQS in the Newton area is not at risk. *Id.*

Joppa. Modeled concentrations from the Joppa source were 168.29 μg/m^3 or 85.7% of the standard. In addition to Joppa, three other significant sources contributed 60% of SO_2 emissions in the study area: Lafarge Midwest Inc.; Honeywell International Inc.; and Tennessee Valley Authority Shawnee Power Plant. Exh. 29 at 11. IEPA explained that under USEPA's recommended guidelines, if the level were 90% of NAAQS limits or greater or if there were an increase in emissions of 15% or more for levels in the 50-90% range, then USEPA's recommended guidelines state that IEPA should conduct additional modeling. TSD at 6-7; Exh. 29 at 12; 80 Fed. Reg. 51081 (Aug. 21, 2015). To ensure that additional modeling would not be needed, and that the area would not become an SO_2 nonattainment area, IEPA proposed a separate SO_2 emissions cap of 19,860 tpy on all units at Joppa station (1, 2, 3, 4, 5, and 6). This limit ensures that the Massac County area will not become an SO_2 nonattainment area due to Joppa's emissions, and that emissions from the Joppa source will not increase more than 15% from the modeled years. SR at 6; TSD at 6-7; Exh. 1 at 3.

Coffeen. IEPA states that Coffeen was not modeled because its emissions were so low that it fell below the threshold for modeling under the DRR. Exh. 29 at 6.

Duck Creek, Havana, and E.D. Edwards. These three plants were modeled for the Pekin nonattainment area attainment demonstration at maximum allowable emissions for every hour, along with 375 other sources. *Id.* at 11. Duck Creek was modeled using an emission rate of 4,455 lb/hr, but typically only emits in a range around 60 lb/hr. Havana was modeled at an SO_2 emission rate of 1,830 lb/hr, but typically emits in a range around 300 lb/hr. *Id*. Regarding Edwards, IEPA notes that the Board recently enacted hourly SO_2 limits for the Edwards plant and other sources in the area to ensure attainment and maintenance of the SO_2 NAAQS. *Id.* at 6. IEPA found it unlikely that Duck Creek, Havana, or Edwards could cause local nonattainment in the future. Also, IEPA notes that the attainment demonstration was recently approved by USEPA.

In summary, IEPA notes that the SO_2 NAAQS were maintained in all these areas even though the modeled annual SO_2 emissions from all eight MPS sources totaled over 91,000 tpy (42,787 tpy for DRR-modeled sources and 48,800 tpy for sources modeled under attainment demonstration), which is significantly higher than IEPA's proposed cap of 49,000 tpy. Exh. 29 at 11-12.

Responding to the AGO's contention that IEPA's proposal allows increased SO_2 emissions at uncontrolled plants, IEPA states that DRR requires IEPA to annually review areas where SO_2 emissions increase by more than 15%. Accordingly, IEPA will evaluate compliance with the NAAQS if emissions near locations of the MPS plants increase beyond the DRR threshold. PC 2750 at 14. Also, IEPA maintains that companies like Dynegy or Vistra would be aware that increasing emissions beyond 15% would result in new restrictions, as well as potential enforcement action if the increases cause a violation of the NAAQS. 3/6/18 Tr. at 170-171.

Regarding NO_x, IEPA indicated that all 18 MPS EGUs have NO_x controls and are subject to Part 217, New Source Performance Standards, or consent decree limitations. 1/12/18 Ag. Resp. at 7, Att. 2. Also, to ensure continued control of NO_x, IEPA's proposal requires Baldwin Units 1 and 2, Coffeen Units 1 and 2, Duck Creek Unit 1, E.D. Edwards Unit 3, and Havana Unit 9 (all currently equipped with SCR to control NO_x emissions) to comply with a combined NO_x average emission rate of no more than 0.10 lb/mmBTU from May 1 to September 30. PC 2750 at 13, citing SR at 7.

Finally, IEPA responded to concerns raised by numerous public comments about air quality near the affected sources. IEPA summarized emission reductions from EGUs and at monitors near the facilities over the last 35 years, showing that emissions have decreased and air quality has improved across the areas near Dynegy facilities. Exh. 29 at 5-6.

Emission Reductions			
	SO_2	**NO_x**	**$PM_{2.5}$**
E.D. Edwards Source	92% from 1997-2016	87% from 1997-2016	71% from 2004-2017
Pekin Area	82% from 1983-2016		
Peoria Area	86% from 1983-2016		53% from 1999 to 2016
East St. Louis Air Monitor	98% from 1999-2017	65% from 1983-2017	39% from 1999-2017
Oglesby Air Monitor	70% from 2006 - 2017		
Wood River Air Monitor	96% from 1997-2017		47% from 1999-2017
Houston Air Monitor			34% from 1999-2017
Granite City Air Monitor			44% from 1999-2017
Alton Air Monitor			46% from 2000-2017

c. <u>Board Findings</u>

The record shows that regardless of whether the Board adopts IEPA's proposal, Vistra might close units it finds to be uneconomical to operate under current electricity market conditions. Exh. 15 at 12-14; 4/17/18 Tr. at 193-201; PC 2749 at 3-4; 3/6/18 Tr. at 137-139; Exh. 25 Att. D at 24-25. The record reveals no plans to retire any specific units, and it is not clear whether or when any units will be retired at all. *See, e.g.*, Exh. 15 at 13; 1/18/18 Tr. at 123. Except for the fleetwide figures provided to the Board, and statements that some plants are operating at a loss from time to time and "at risk" of retiring, as well as examples of when the units could have operated at a loss, Dynegy and Vistra have not tied any specific economic losses to any specific EGUs or the current MPS rule in general. *See, e.g.*, Exh. 15 at 12-13; Exh. 6 at 15-16, 21-22; 1/18/18 Tr. at 123, 129-130.

Instead, the record indicates that Vistra's evaluation of the Illinois fleet's performance operation is pending. *See, e.g.*, 4/17/18 Tr. at 193- 201. It is possible that if the Board replaces the MPS rate-based limit with mass-based limit, lower-emitting MPS plants could be shut down and the generation taken up by less-controlled plants in the fleet. *See, e.g.,* Exh. 6 at 13, 16; Exh. 15 at 14; PC 2749 at 4, at 10; Exh. 14 at 9-10. Vistra would no longer be required to run lower-emitting plants just for the sake of averaging the emission rate, and would therefore be able to retire units that are uneconomical to run and increase generation at the remaining units. 3/6/18 Tr. at 141; PC 2752 at 12. If those uneconomical units retire after the MPS rule changes, Vistra might increase generation at the remaining units if the market requires. 3/6/18 Tr. at 139; Exh. 15 at 14.

However, the Board finds the evidence shows that other restrictions, including those designed to maintain local air quality, exist to determine how much the emissions from each MPS unit, either uncontrolled or controlled, may increase. *See, e.g.*, PC 2750 at 12-13. In addition to these non-MPS emission limits, as part of the MPS revision IEPA proposed additional limits to protect local air quality, such as the SO_2 limit for Joppa, and the NO_x seasonal emission rates for some units. *Id.* at 12. These limits, which will continue to apply whether or not the Board amends the MPS rule, ensure that air quality around the MPS plants and throughout the State of Illinois will not interfere with the attainment or maintenance of the NAAQS.

The Board finds that the NAAQS is the appropriate standard to evaluate potential health and environmental risks of any increased emissions of a pollutant for which USEPA has established a NAAQS. NAAQS is an objective federal standard, well-grounded in extensive USEPA research and public participation. PC 2750 at 12-13. Proposed revised SO_2 cap is almost half of the modeled SO_2 emissions from the MPS fleet, which demonstrated no interference with attaining or maintaining the NAAQS. *See* Exh. 29 at 11-12; SR at 6; TSD at 6-7; Exh. 1 at 3. The results of the DRR and Pekin nonattainment area modeling show that any increase of SO_2 emissions will be significantly below the NAAQS in the areas surrounding the MPS fleet. And, in the unlikely event that emissions from units lacking pollution controls approach levels threatening the NAAQS, IEPA will take appropriate action to control those emissions. *See, e.g.* 3/6/18 Tr. at 165, 168-74. The Board agrees with IEPA that the DRR and area attainment requirements protect against increased SO_2 emissions from uncontrolled MPS sources.

As to concerns about the proposed amendments' health effects, the Board notes that the primary NAAQS, such as the 1-hour SO_2 NAAQS, are required to protect public health "with an adequate margin of safety . . ." 75 Fed. Reg. 35520, 35521 (June 22, 2010) (attached to Exh. 34 as Exh 5); *see also* PC 2750 at 18-20. USEPA establishes a primary standard at the maximum permissible level that will protect the health of any sensitive group of the affected population. 75 Fed. Reg at 35521. While setting the 1-hour SO_2 NAAQS, USEPA determined that establishing a new, short-term standard at 75 parts per billion would protect public health with an adequate margin of safety. Morover, the USEPA found that this new short-term standard, "specifically [would] afford requisite increased protection for asthmatics and other at-risk populations against an array of adverse respiratory health effects related to short term (5 minutes to 24 hours) SO_2 exposure." *Id.* at 35550; *see also id.* at 35541-42. The Board will not substitute its judgment for USEPA's, and we accept that NAAQS is sufficiently protective of public health.

3. <u>Potential to Emit (PTE)</u>

IEPA confirmed that the "potential to emit" (PTE) for the MPS EGUs represents the greatest mass of emissions any given unit would be allowed to emit based on non-MPS restrictions (whether under the current MPS or the proposed annual caps), such as Part 214, New Source Performance Standards, and consent decree limitations. 3/6/18 Tr. at 163-164. IEPA provided annual PTE values for SO_2 and NO_x for all 18 currently-operating MPS EGUs. *See* Exh. 6, Att. 5, Updated Tables 5 and 6. IEPA explained, "the PTE values serve as a mass emission cap, and that emissions from those units cannot legally emit more, cannot exceed the list of PTE in any circumstance." 3/6/18 Tr. at 164. The PTE for the eight MPS sources are summarized below.

Potential to Emit		
Source	**NO_x tpy**	**SO_2 tpy**
Baldwin	8,245	8,245
Havana	2,417	2,417
Hennepin	2,650	9,050
Coffeen	9,664	660
Duck Creek	5,505	26,411
ED Edwards	8,667	21,269
Joppa	15,111	161,469
Newton	8,157	39,152

Asked by the Board whether it would be plausible for Newton Unit 1 to emit up to its PTE amount of 39,152 tpy SO_2 under an SO_2 cap of 49,000 tpy, IEPA stated that it would be "extremely unlikely" for an MPS EGU to increase its emissions up to its PTE level without triggering additional IEPA review. Mr. Bloomberg of IEPA explained that an increase in SO_2 emissions over 15% would trigger the requirements of the DRR, which could include modeling to determine compliance with the NAAQS and additional restrictions on the unit. *Id.* at 164-166, 175. Mr. Diericx of Dynegy added that based on 2014 emissions data for Newton, the 15-percent DRR provisions would be triggered if SO_2 emissions exceeded 18,800 tpy. 3/6/18 Tr. at

177.

Regarding DRR review, Mr. Bloomberg admitted it would take IEPA approximately six months after receiving the previous calendar year's data to determine whether an increase in emissions warranted additional emission restrictions. 3/6/18 Tr. at 168-170. However, he said that a company like Dynegy or Vistra would be aware that increasing emissions beyond 15% would result in new restrictions, as well as potential enforcement action, if the increase caused a violation of the NAAQS. *Id.* at 170-171.

4. <u>Anti-Backsliding</u>

Section 110(l) of the CAA limits approval of SIP revisions to those that would not "interfere with any applicable requirement concerning attainment and reasonable further progress . . ." 42 U.S.C. § 7410(l). IEPA states that its Air Quality Section completes an anti-backsliding analysis under CAA Section 110(l) each time a SIP revision is proposed due to a related rule change or variance. 4/17/18 Tr. at 69.

For the proposed amendments, IEPA's anti-backsliding demonstration relied on the emissions data in Tables l, 2, 7, and 8 of the TSD. Those tables show that the proposed mass emissions limits on NO_x (25,000 tpy) and SO_2 (55,000 tpy) for the MPS EGUs are lower than the allowable NO_x (32,841 tpy) and SO_2 (66,354 tpy) emissions under the current MPS rate-based standards. TSD at 9-10, & 17-18. Additionally, IEPA's analysis demonstrated that the proposed limits are lower than the total projected emissions of NO_x (27,951 tpy) and SO_2 (55,953 tpy) under Illinois Regional Haze SIP. TSD at 19. Further, IEPA notes that although emissions of other criteria pollutants may vary with EGU utilization, the proposed amendments would not change the allowable emissions of carbon monoxide, ammonia, PM, or volatile organic compounds from the affected sources. *Id.*

Mr. Bloomberg of IEPA explained, "[i]n order to demonstrate to USEPA that a regulation does not pose a risk of backsliding, the Illinois EPA must provide information to show that the *allowable emissions* under a new rule are at least as stringent as the allowable emissions under the previous SIP submittal." 1/17/18 Tr. at 22 (emphasis added). According to IEPA, USEPA has indicated that IEPA's anti-backsliding analysis done by comparing allowable emissions is a straightforward way of demonstrating the reductions. 1/17/18 Tr. at 36-37, 137; Exh. 1 at 2; TSD at 3.

a. <u>Public Comments and Testimony.</u> The AGO contends that the CAA does not require IEPA to rely on "allowable" emissions to demonstrate that the proposed amendments will not result in backsliding. Exh. 37. at 5. To the contrary, the AGO argues that USEPA "has long taken the position that an 'anti-backsliding'" analysis under Section 110(l) requires consideration of a proposed SIP amendment's impact on 'actual,' not allowable, emissions." *Id.* at 6, citing <u>Kentucky Resources Council, Inc. v. EPA</u>, 467 F.3d 986, 995 (6th Cir. 2006). The AGO maintains that using "actual" emissions reflects a source's historical operating hours, production rates, and emission rates; and not just the maximum amount of pollution that the source is allowed to legally emit. *Id.* at 7-8. AGO argues that "[a]nalyzing proposed amendments to a rule regulating specifically coal-fired power plants based solely on 'allowable' emissions would paint a particularly distorted picture of those amendments' environmental impact." *Id.* at 8. Thus, the AGO urges the Board to consider actual emissions in its evaluation because using maximum allowable emissions would be unrealistic and unreasonable. *Id*.

b. <u>IEPA Response.</u> IEPA states that it discussed the AGO's position of using "actual" emissions in the anti-backsliding analysis with USEPA Region 5's Doug Aburano, Section Chief Attainment Planning and Maintenance, and Ms. Dubey, USEPA's expert on CAA Section 110(l) analysis. 4/17/18 Tr. at 79-80. IEPA's Exhibit 47, which is an e-mail from Ms. Dubey and Mr. Aburano to IEPA, confirms that a CAA Section 110(l) demonstration relies on a comparison of "allowable emissions" under the existing SIP to the allowable emissions under the proposed SIP revision, and that if the revision allows no greater emissions, CAA Section 110(l) is satisfied. 4/17/18 Tr. at 79-85, citing Exh. 47. USEPA's email notes that an "actuals-to-actuals" comparison is not used because future actual emissions can only be measured after they have happened. *Id.* at 85, citing Exh. 47. Further, USEPA disagrees with AGO's contention that <u>Kentucky Resources Council</u> supports the use of "actual" emissions in a Section 110(l) analysis. *Id.* at 86, citing Exh. 47. USEPA explains that the reference to "actual" emissions in that case "was not in context of actuals versus allowables, but rather, a reference to the status of the air quality." *Id.*, citing Exh. 47.

c. <u>Board Findings.</u>

The Board agrees with IEPA that the proposed mass-based limitations for SO_2 and NO_x meet the goals of Illinois' Regional Haze SIP. Further, IEPA's modeling review demonstrates that the mass caps do not interfere with NAAQS attainment or maintenance, or reasonable further progress toward NAAQS attainment. The Board also finds that IEPA has demonstrated that the proposed amendments do not pose a risk of backsliding under Section 110(l) of the CAA. The Board agrees with IEPA that the use of allowable emissions is consistent with USEPA procedures. Additionally, the Board finds that IEPA's revised proposal, as well as AGO's alternate proposals, satisfy the above requirements because they have mass caps set at levels lower than IEPA's initial proposal.

C. <u>Mass-Based Limits and Combining MPS Groups</u>

1. <u>Participants' Positions</u>

a. <u>IEPA Position.</u> IEPA initially proposed to set mass-based limits just below the emission levels included in Illinois' Regional Haze SIP—55,953 tons of annual SO_2 emissions and 27,951 tons of annual NO_x emissions—that IEPA deemed necessary to achieve the visibility impairment goals set forth in the SIP. PC 2750 at 3, n.4; 1/17/18 Tr. at 129-30; TSD at 18-19. These SIP levels, representing anticipated emissions using a 2002 base year, are "considered to be SIP commitments by the Agency," IEPA explains. The MPS units are, however, not "currently prohibited from emitting" beyond these "anticipated" emission levels, absent a lower mass-based limit. PC 2750 at 3-4, n.3. To keep allowable emissions below the levels included in the SIP, IEPA originally proposed annual mass limits of 55,000 tons of SO_2 and 25,000 tons of NO_x, and 11,500 tons for seasonal NO_x. *Id.* at 4; SR at 6. IEPA further contends it demonstrated that its proposal will not interfere with any federal air quality standard or CAA requirement, "satisfying the anti-backsliding requirements set forth in Section 110(l) of the CAA." PC 2898 at 7-8. IEPA states that these caps "constitute[] a reduction in allowable emissions" for the proposed combined Groups from "full capacity estimates." PC 2750 at 10, 22; *see also* TSD at 9-11.

After the first hearing, IEPA, drawing on the result of the AGO's calculation of maximum allowable emissions (*see* Exh. 9 at 17-18) but continuing to disagree with the AGO's underlying methodology, proposed a reduced annual limit of 49,000 tons for SO_2, as an attempted "compromise." PC 2750 at 4; Exh. 29 at 1-2.

b. <u>Public Comments and Testimony.</u> Vistra maintains that the originally-proposed amendments would provide an "environmental benefit" by reducing allowable emissions while protecting compliance with the Regional Haze Rule and attainment of the SO_2 NAAQS. PC 2753 at 20-22. Vistra supports IEPA's original proposal to cap SO_2 emissions at 55,000 tpy, a proposed limit to which Dynegy agreed "after negotiations with" IEPA. PC 2753 at 2. This cap, according to Vistra, along with the proposed 25,000-ton cap on NO_x emissions, is protective of "all applicable state and federal air quality standards designed to protect human health and the environment." PC 2902 at 12. Adopting these mass limits, Vistra continues, would reduce allowable emissions while "restor[ing]" flexibility and eliminate 'must run' bidding and fuel combustion at controlled units solely to comply with the MPS rate limits. *Id.* at 10, 11. Further reductions in allowable emissions are not required by the Act, which does not require "emissions reductions for the sake of reductions alone." *Id.* at 13. Vistra further states that although "not ideal, justified or necessary," a 49,000 tpy SO_2 emission limit would provide "operational flexibility" and is "preferable to no revision to the MPS at all." PC 2753 at 3.

Vistra asserts that the AGO's methods of projecting maximum emissions are "highly arbitrary" because the AGO offered no basis for selecting any particular comparison time period and its methods generate "drastically different results" depending on the chosen year of actual emissions and heat inputs. PC 2902 at 17, citing PC 2753 at 20.

A number of commenters, including individuals and organizations, oppose IEPA's proposed emission caps. Several rely on a *Chicago Tribune* report that IEPA's proposal, if adopted, would allow Dynegy to emit nearly double the amount of SO_2 that the MPS plants emitted in 2016. *See*, *e.g.*, PC 2889; PC 2887; PC 2727; PC 2713; PC 1855; 4/16/18 Tr. at 23-24.

The AGO maintains that IEPA's proposed caps "bear little relation to the MPS fleet's real-world operations," and would "immediately allow for a significant increase in pollution." Exh. 37 at 10. The caps, according to the AGO, would remove the current MPS emission limits' constraint on IPH Group operations, attributable to the lack of adequate SO_2 controls on operations of those plants, "rewarding the failure to invest in the plants" and allowing increased pollution. *Id.* at 18. Citing the analysis in Mr. Armstrong's pre-filed testimony (Exh. 37), the AGO contends IEPA's proposed caps "compare unfavorably with the MPS's current requirements." PC 2897 at 13-14, citing Exh. 37 at Att. 2. The AGO opines that even if the MPS plants could return to their past-decade peak heat input (from 2011) in compliance with MPS emission rates, the MPS would still limit the units to no more than 47,385 tons of SO_2 emissions and 23,551 tons of NO_x emissions annually. Exh. 37 at 11-12. Further, the AGO asserts that if the current MPS emission rates for SO_2 and NO_x had been in effect during the past

10 years, at no point would the MPS units have been permitted to emit either 49,000 tons of SO_2 or 25,000 tons of NO_x annually, considering actual heat inputs for the Dynegy and IPH Groups for each year in that period. *Id.* The only two years in which Dynegy has complied with the current MPS emission rate limits, the AGO continues, were the past two years; and during that period, the current MPS would have permitted Dynegy to emit no more than 33,630 tons of SO_2 and 16,670 tons of NO_x, across all units. PC 2897 at 14.

Relying upon the current MPS units' heat inputs in 2002, the AGO opines that the current MPS rates would limit the MPS units to no more than 44,920 tons of SO_2 and 22,469 tons of NO_x emissions. PC 2897 at 14-15. IEPA used the 2002 heat inputs to show in its Section 110(l) analysis that the proposed amendments would be consistent with Illinois' Regional Haze SIP. And, the AGO adds, the 2002 heat input levels exceeded group-level and overall heat inputs for the past five years, with the exception of the Dynegy Group's 2013 heat input; the 2002 levels therefore provide an "exaggerated view" of the current MPS units' operations. *Id.* The AGO concludes that IEPA's proposed caps are not as protective as the current MPS emission rates. *Id.* at 14.

The AGO remains opposed to replacing emission rate limits with annual mass caps, arguing that "the MPS is operating exactly as it was intended (*i.e.*, to limit SO_2 and NO_x pollution from the MPS units)" and the switch would permit increased pollution. PC 2897 at 27; *see also* PC 2751 at 39, 46; Exh. 37 at 8, 17; Exh. 9 at 16, 19, 25. But, if the Board decides to amend the MPS as proposed, the AGO recommends that annual fleetwide emissions be limited to no more than 34,094 tpy for SO_2 and 18,920 tpy for NO_x. PC 2751 at 46, citing Exh. 37 at 17-19. The AGO explains that these caps are based on 2002 heat inputs for each of the current MPS units and "actual 2017 unit-level emission rates." Exh. 37 at 17-19. The AGO selected the 2002 heat inputs because IEPA has relied on them to show compliance with the Regional Haze Rule, and because the total 2002 heat input is comparable to total heat inputs from 2008 through 2014, which purportedly are more representative than those from 2015 through 2017. PC 2751 at 46. The AGO "continues to believe" that caps at these levels would be reasonable, as long as the caps are reduced when an MPS units is "mothballed or retired." PC 2751 at 46.

Alternatively, the AGO suggests that the Board consider actual heat inputs and the current MPS emission rates by imposing caps totaling 44,920 tons of SO_2 and 22,469 of NO_x for the two existing MPS Groups, but without combining the Groups. PC 2751 at 46-47. The Board could adopt annual caps of 16,972 tons of SO_2 and 9,000 tons of NO_x for the Dynegy Group and 27,948 tons of SO_2 and 13,469 tons of NO_x for the IPH Group. *Id.* at 47. According to the AGO, combining the MPS Groups under these caps would inappropriately set aside the operational restrictions that the final MPS SO_2 rate imposes on the IPH Group because of Dynegy's failure to install the necessary—and "promised"—pollution control equipment to meet that rate. *Id.* If the Board took this approach, the AGO continues, it should require the emissions caps to decline when an MPS unit is mothballed (temporarily shut down) or retired (permanently shut down). *Id.* These proposed caps are based upon the emissions projected by IEPA for the Regional Haze Rule, based on 2002 heat inputs. *Id.*, citing Exh. 6, Att. 7. The AGO adds that IEPA noted it originally had considered caps of 44,000 tons for SO_2 and around 23,000 for NO_x in developing its proposal. *Id.*, citing Exh. 6 at 32.

Like the AGO, the Environmental Groups oppose switching to mass-based limits, arguing that the reduction in allowable emissions “will take place on paper only,” and Vistra identifies no “concrete improvement” under the proposed amendments. PC 2900 at 5-6, n.19. To the extent the Board seeks to switch the MPS from rate- to mass-based emission limits, the Environmental Groups agree with the AGO that the Board should cap annual fleetwide emissions at 34,094 tons for SO_2 and 18,920 tons for NO_x. PC 2752 at 7. These levels would keep fleetwide emissions at or below the levels “allowed by the current MPS” and would therefore maintain the environmental benefit of the current version of the MPS. *Id.*

c. <u>IEPA Response.</u> IEPA maintains that neither the Act nor Board regulations provide that the Board must find that proposed rule amendments would produce a “net environmental benefit based on actual emissions.” PC 2898 at 4; *see also id.* at 2-3 (citing rules, federally required and otherwise, adopted by the Board that yielded no “actual environmental benefit”). Regardless, IEPA continues, its proposal does offer an “environmental benefit” by reducing allowable emissions and keeping them below “anticipated emissions” under Illinois’ Regional Haze SIP. PC 2750 at 10, 22. Further, IEPA insists its approach to establishing mass-based limitations that “correspond to the current rate-based standards” is “well-reasoned and logical” and not based on “unpredictable factors that change from year to year.” *Id.* at 6.

In contrast, IEPA notes that the AGO’s initial suggestion on appropriate mass emissions caps—34,094 tpy for SO_2 and 18,920 tpy for NO_x—raises significant concerns. PC 2750 at 7-8, citing Exh. 37; *see* also 4/17/18 Tr. at 133-43. IEPA recites that the AGO developed these caps using 2017 unit-specific emission rates and 2002 unit-specific heat inputs. PC 2750 at 7. The use of unit-specific heat input data is problematic, according to IEPA, because the “proportional use” of the current MPS units and the pollution control equipment at those units is “much different” now than it was in 2002. For example, Mr. Davis of IEPA testified that none of the affected units had SO_2 controls in 2002, and there were 26 more MPS units operating in 2002. 4/17/18 Tr. at 134. Further, IEPA finds it inappropriate to use a single year’s actual emission rates, because it may not be representative of normal operations and because it rests on actual rather than allowable emission rates. PC 2750 at 7-8. The AGO admitted that its calculations could generate different numbers if data from different years were utilized. PC 2898 at 9, citing PC 2751 at 44. Using the historical data on which the AGO relies would, according to IEPA, arbitrarily restrict the EGUs proportionately according to specific unit usage from 2002 and “actual” 2017 emission rates. *Id.* at 8.

Another problem with the AGO’s mass caps, according to IEPA, is that the AGO used inconsistent methods in calculating “the contributions” from the Dynegy and IPH MPS Groups. PC 2750 at 8. Although the Dynegy Group’s limit, suggested by the AGO, was based on 2002 and 2017 data, the IPH Group’s contribution was calculated differently by the AGO because using the 2002 and 2017 data would have resulted in the IPH Group’s “theoretical noncompliance” with the existing MPS limit. *Id.* The AGO’s calculations resulted in an emission rate of 0.129 lb/mmBTU for the Dynegy Group and 0.286 lb/mmBTU for the IPH Group; MPS rates are 0.19 and 0.23 lb/mmBTU, respectively. However, under the actual 2017 conditions, both groups complied with the applicable MPS rate.

Mr. Davis testified that instead of using the 2017 unit-specific emission rates and 2002 unit-specific heat inputs, the AGO assumed that the "cleaner" MPS plants would run at capacity, with the other units operating only as much as would allow the fleet to meet the current MPS limits. 4/17/18 Tr. at 137-38. Mr. Davis maintained that the AGO's approach erroneously treats unit-specific heat inputs from 16 years ago—and actual unit-level emission rates—as "de facto" limits. *Id.* at 138-39. The AGO's method used for the Dynegy Group would have instituted a 32% permanent reduction in the Dynegy Group's allowed emission rate under the current MPS. According to IEPA, these problems demonstrate why both the 2002 and 2017 data sets, as well as the AGO's attempt to combine them into a single analysis, are inappropriate. *Id.*

According to IEPA, the AGO's suggested limits—34,094 tpy for SO_2 and 18,920 tpy for NO_x—would restrict operations at the MPS units to about 51% of capacity. PC 2750 at 11; *see also* PC 2902 at 20. IEPA adds that those limits are arbitrary and capricious, as they are not supported by any rational methodology, ignore the economics of the electricity market, the changes in ownership of the MPS Groups, and the retirement of many MPS units—all factors that led IEPA to propose these MPS amendments. PC 2898 at 10. The AGO's suggested limits, IEPA continues, would far exceed what the Board and IEPA have previously considered a "projected environmental benefit" and would limit the sources to the lowest historical utilization, without considering factors that could increase utilization. PC 2750 at 11. For example, IEPA opines, utilization could potentially change if the price of natural gas rises or weather conditions increase demand for electricity. *Id.* at 4; *see also* PC 2902 at 16 (citing weather, economic conditions, competition from other electric generators, and wholesale market rules).

Further, IEPA does not support the AGO's suggestion in post-hearing comments that the Board adopt annual caps of 44,920 tons of SO_2 and 22,469 tons of NO_x but decline to combine the two MPS Groups. PC 2898, citing PC 2751 at 41. IEPA argues that the AGO does not adequately support its new proposal, and IEPA is "uncertain what the ramifications would be" if the Board were to adopt the proposal. PC 2898 at 9; *see also* PC 2902 at 18-19 (arguing that AGO's new proposal would reduce operational flexibility and impose "similar economic constraints" as those under the existing MPS limits).

2. <u>Board Findings</u>

a. <u>Mass-Based Limits.</u> Above, the Board found that allowable emissions are an objective and reliable indicator to assess the environmental impact of the proposed amendments. The Board also accepted IEPA's calculation of maximum allowable emissions—full-capacity operations—under the existing MPS rates: 66,354 tpy of SO_2; 32,841 tpy of NO_x; and 13,766 tons for seasonal NO_x. *See, e.g.*, TSD at 9-11. IEPA's initial proposal, at 55,000 tpy for SO_2, 25,000 tpy of NO_x, and 11,500 tons of seasonal NO_x, self-evidently reduces allowable emissions and maintains IEPA's "commitment" in the Illinois's Regional Haze SIP maintain emissions below "anticipated" levels. PC 2750 at 3-4, n.3; *see also* TSD at 18-19. The Board therefore agrees with IEPA that its proposal reduces allowable emissions, from full-capacity estimates, for the proposed combined MPS Groups. *See* PC 2750 at 10, 22.

From this, it follows that IEPA's revised proposal, to set the SO_2 cap at 49,000 rather than 55,000 tpy, *see* Exh. 29 at 1-2, also lowers maximum allowable emissions for the proposed combined MPS Group and is not inconsistent with federal standards. The lower SO_2 cap is an attempted "compromise" by IEPA maintain emissions below the AGO's initial calculation of maximum allowable emissions (*see* Exh. 9 at 17-18)—49,305 tpy in SO_2 emissions, derived under an analytical approach that IEPA continues to reject. PC 2750 at 4; Exh. 29 at 1-2. Further, under questioning from the Board, IEPA conceded that "no specific evidence" in the record drove it to revise the SO_2 cap proposal. 4/17/18 Tr. at 164. Given this concession, the Board finds IEPA's revised proposal for SO_2 inappropriate, and declines to adopt it.

Regarding environmental impact, the Board is unpersuaded that reductions in allowable emissions should be dismissed, out of hand, as occurring on "paper only." PC 2900 at 5-6. Rather, the Board finds it meaningful, if not necessarily controlling, that the proposed amendments cap SO_2 and NO_x emissions well below full capacity—the "worst-case scenario," in terms of air pollution. *See* Exh. 6 at 9. Absent regulatory relief, emissions under IEPA's original and revised mass limits could not lawfully exceed a "hard cap" that is below SIP commitments. PC 2750 at 3-4; Exh. 6 at 10; 3/6/18 Tr. at 139. Those levels also are reliable because emissions up to these levels would not, as the Board found above, interfere with attainment or maintenance of any NAAQS, including the 1-hour SO_2 NAAQS, and would comply with other CAA requirements like anti-backsliding provisions and the DRR. *See* TSD at 3, 15-19; Exh. 6 at 9; Exh. 29 at 7-12. Accordingly, the Board finds that replacing rate-based emissions limits with annual mass-based limits substantially below maximum allowable emissions and consistent with Illinois' SIP commitments is protective of the environment.

The Board found above that mass-based limits at any of the proposed levels will not interfere with the attainment or maintenance of any NAAQS or reasonable further progress toward NAAQS attainment. *See, e.g.*, TSD at 3, 15-19.

Accordingly, the Board finds that IEPA has shown that switching from rate- to mass-based caps at the originally-proposed levels—and, logically, the lower revised and alternative proposed caps—would protect human health and the environment.

Next, having declined to adopt at substantive first notice the IEPA's revised proposal, the Board must select appropriate annual mass cap levels for SO_2 and NO_x. In addition to IEPA's original and revised caps, the record includes the AGO's suggested limits of 34,094 tpy for SO_2 and 18,920 tpy for NO_x.[10] The Board has already determined that the methodology underlying these numbers—using a combination of 2002 unit-specific heat inputs and 2017 actual unit-level emission rates, *see* Exh. 37 at 17-19—is, like the AGO's "actual potential to emit" approach, fundamentally flawed, for at least two reasons. First, the approach yields divergent results depending on the chosen years' data. Secondly, the approach treats historical unit-level rates as "de facto" emission limits on each MPS unit; but, under fleetwide annual emission rates, no unit is required to meet a rate on a "unit or source-specific basis." 1/17/18 Tr. at 49.

As noted above, IEPA identified further shortcomings in the AGO's "actual annual

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[10] Because the AGO made clear that it "did not propose 49,000 [tpy of SO_2] as a ceiling," 3/7/18 Tr. at 46—that is, to keep emissions below the MPS plants' "maximum allowable" emissions of 49,305 tpy, Exh. 9 at 18—the Board does not treat the AGO's "actual potential to emit" exercise as a methodology for proposing mass limits.

emissions" analysis. PC 2750 at 7-8; *see also* 4/17/18 Tr. at 133-43. In fact, the AGO's suggested 34,094 tpy SO2 mass limit would restrict a combined MPS fleet to an average emission rate of 0.18 lb/mmBTU (34,094 tons/371,304,292 mmBTU), which is lower than even the current 0.19 lb/mmBTU MPS emission rate for Dynegy. Exh. 37, Att. 10. Based on these deficiencies, the Board declines to set mass caps at 34,094 tpy of SO_2 and 18,920 tpy of NO_x as the AGO proposed.

By contrast, the AGO did not consider only actual or historical data to propose alternative mass limits totaling 44,920 tpy for SO_2 and 22,469 tpy for NO_x, with lower individualized caps for the MPS Groups, which would not be combined. *See* PC 2751 at 46-47. These caps track MPS emissions projected by IEPA for the Regional Haze Rule, based on 2002 actual heat inputs. *Id.*, citing Exh. 6, Att. 7. According to the AGO, combining the MPS Groups under these caps would unjustifiably lift the operational restrictions that the final MPS SO_2 rate imposes on the IPH Group—restrictions that reflect a lack of necessary and "promised" pollution control equipment to meet that rate. PC 2751 at 47.

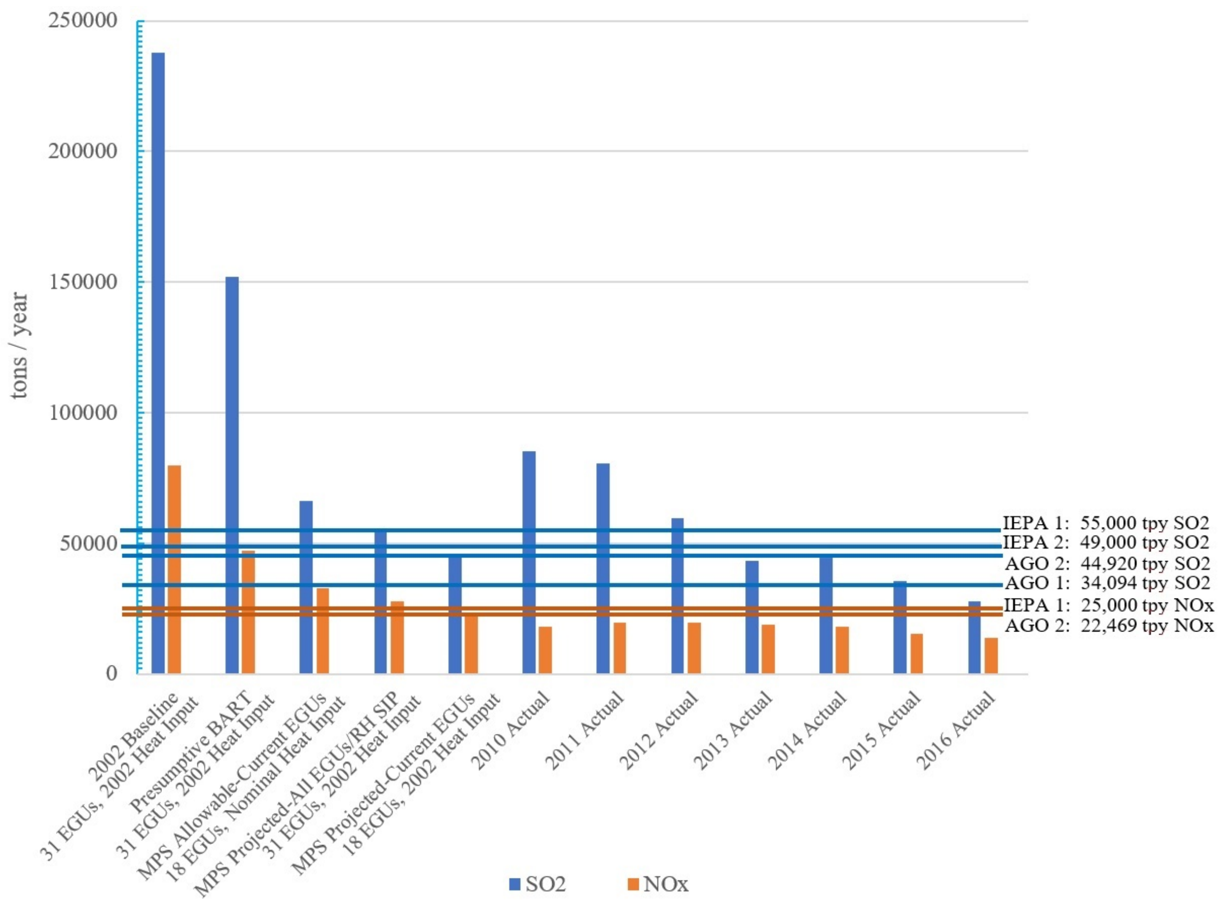
The Board considers first whether these overall caps, applied to a combined MPS Group, represent sound policy. To the extent they do, the Board then addresses the AGO's proposal that the existing MPS Groups remain separate under Group-specific caps that, taken together, equal the overall caps.

The AGO's suggested alternative caps use the methodology that yielded the SIP emissions targets for the Regional Haze Rule SIP—55,953 tpy for SO_2 and 27,951 tpy for NO_x, *see* TSD at 17-18—except that the alternative caps exclude the 13 EGUs in the MPS Groups (out of a total of 31 units operating in 2002) that have been retired since 2002. *Compare* Exh. 6, Att. 7 *with* TSD 17-18. Both calculations rely on 2002 unit-specific heat inputs and the final MPS emission rates applicable to each MPS Group. *See* TSD at 16; Exh. 6 at 9, Att. 7; Exh. 37 at 12. The approach is therefore a hybrid of actual and allowable data: historical heat inputs, on the one hand, and allowable MPS emission rates, on the other. *See* PC 2750 at 10; 3/6/18 Tr. at 159-60. And the data used is data the AGO deems suitable in setting mass limits: "caps totaling 44,920 tons of SO_2 and 22,469 tons of NO_x would reasonably reflect historical heat inputs to the MPS, overall," according to the AGO. PC 2751 at 47. A hybrid approach strikes the Board as a reasonable way grounded in a CAA requirement that IEPA has sought to achieve using the MPS to set mass caps that reflect the MPS plants' actual operations as well as upper bounds on fleetwide emissions. And, to align the calculation with operations, the Board agrees with the AGO that the calculation should use only heat inputs and emissions from the 18 of 31 original MPS units that remain in operation today. *See* 3/6/18 Tr. at 157-59 (in projecting emissions, units that had been contributing emissions and then shut down would still be included, but as "zero").

Notably, setting limits of 44,920 tpy for SO_2 and 22,469 tpy for NO_x would limit future emissions to levels closer to actual MPS plant emission levels over the past five years, which ranged from a high of 44,382 tons in 2014 to a low of 27,621 tons in 2016 for SO_2, and from 18,849 tons in 2013 to 13,925 tons in 2016. *See* Exh. 37 at 10; TSD at 14-15. Thus, the caps would foreclose a dramatic increase in annual emissions over the status quo but still afford the MPS fleet some room for future growth in generation. And, coupled with cap reductions for permanent and temporary shutdowns, as discussed below, annual mass caps at these levels would limit and prevent potential sizeable shifts in generation and emissions from controlled to uncontrolled plants.

The Board prepared the bar graph and key below, drawing on the indicated record sources. As the graph shows, the alternative annual mass limits of 44,920 tons for SO_2 and 22,469 tons for NO_x compare favorably, not just with recent emission levels, but to other projections such as 2002 baseline emissions under Regional Haze and Presumptive BART emissions.

Comparison of SO_2 and NO_x Emissions



<u>Bar Chart Key</u>:

2002 Baseline actual emissions for all 31 operating EGUs in 2002 at 2002 Heat Inputs:
237,761 tpy SO_2; 79,679 tpy NO_x (TSD at 17-18)

Presumptive BART for all 31 operating EGUs in 2002 at 2002 Heat Inputs:
151,949 tpy SO_2; 47,339 tpy NO_x
(Exh. 33, 5-Year Progress Rpt at 10-13; BART technical support document at 27, 29-30)

MPS Allowable emissions for only 18 EGUs operating in 2016 at Nominal Capacity**:**
66,354 tpy SO_2; 32,841 tpy NO_x (TSD at 9-10)

MPS Projected emissions under Regional Haze Rule for all 31 EGUs operating in 2002 at 2002 Heat Inputs:
55,953 tpy SO_2; 27,951 tpy NO_x (TSD at 17-19)

MPS Projected emissions under Regional Haze Rule excluding Retired EGUs at 2002 Heat Inputs:
44,920 tpy SO_2; 22,469 tpy NO_x (Exh. 6, Att. 7; TSD at 17-18)

2010-2016 Actual emissions from 18 operating EGUs (TSD at 14-15)

IEPA 1: IEPA Initial Proposal:
55,000 tpy SO_2; 25,000 tpy NO_x (TSD at 11)

IEPA 2: IEPA Revised Proposal:
49,000 tpy SO_2 (Exh. 29 at 1-2)

AGO 1: AGO Initial Proposal based on 2017 heat input:
34,094 tpy SO_2 (Exh. 37 at 17-19)

AGO 2: AGO Alternative Proposed Overall Mass Cap based on MPS Projected under Regional Haze Rule excluding Retired EGUs at 2002 Heat Inputs:
44,920 tpy SO_2; 22,469 tpy NO_x (PC 2751 at 46-47)

The Board considers the AGO's alternative cap proposal of 44,920 tpy for SO_2 and 22,469 tpy for NO_x to be reasonable, particularly in light of these other relevant data points, and compared to the other proposed emission limits.

The Board recognized that IEPA does not favor the AGO's alternative proposal, citing a lack of sufficient support and adding that "it is unclear to IEPA at this time what the ramifications would be if the Board adopts [those] limitations." PC 2898 at 9. However, IEPA and, for that matter, Vistra, cannot claim surprise simply because the AGO waited until post-hearing comments to formally propose the alternative caps. *See* PC 2751 at 46-47. At the April 17, 2018 hearing, the Board elicited IEPA's position on capping SO_2 emissions at 44,920 tpy. *See* 4/17/18 Tr. at 101-05; *see also* PC 2897 at 23-24. IEPA said it does not know Dynegy's position on 44,920 tpy SO_2 except that it was "not thrilled" about 49,000 tpy SO_2. 4-17-18 Tr. at

105. Mr. Bloomberg of IEPA stated that IEPA does not “see a reason to further reduce” the SO_2 cap below IEPA’s revised 49,000 tpy SO_2 cap. 4/17/18 at 101-02. IEPA contends it is “not necessary” to do so under the Regional Haze SIP or the NAAQS; the alternative proposed SO_2 cap is based “just on 2002 heat inputs” as opposed to “long range heat inputs”; and it is not clear whether the MPS Groups “could meet” an annual cap on SO_2 emissions of 44,920 tons. *Id.* at 102.

The Board is persuaded that the methodology underlying the alternative caps of 44,920 tpy for SO_2 and 22,469 tpy for NO_x is sound. Again, this methodology appropriately updates IEPA’s SIP projections to exclude retired units. *See* Exh. 37 at 12, citing Exh. 6, Att. 7; 4/17/18 Tr. at 100-01. And, this approach takes account of actual data, from a base year with a regulatory basis: demonstrating compliance with the Regional Haze Rule. *See* PC 2751; Exh. 37 at 17. It makes no difference here that IEPA has not yet been required to revise the Regional Haze SIP to incorporate the updated MPS. *See* 4/17/18 Tr. at 102. What matters is that the update is consistent with how emissions are averaged annually under the existing MPS: if “there is no heat input to a unit,” because, for example, a unit is shut down, there is “no allowance for pollution from that unit.” PC 2897 at 28, n.10.

Furthermore, the AGO addresses IEPA’s claim that 2002 heat inputs are unreliable because of substantial differences in pollution control equipment and unit utilization between then and now. *See* PC 2750 at 7. Specifically, the AGO shows that unit-specific heat inputs in 2002 and 2017 for units that have not been retired are in general “very similar,” and, where they differ, heat inputs were higher in 2002. PC 2897 at 23-24. Also, the AGO demonstrates that Group-level heat inputs in 2002 do not significantly diverge from heat inputs over the last decade, and, were, if anything, higher than more recent years’ inputs. *See id.* at 24 (comparing data in attachments 2 and 7 to Exh. 37, and noting “significant reduction of heat input” at the Joppa plant). The Board therefore finds it appropriate to look to 2002 unit-level heat inputs in setting mass emission caps.

For the reasons above, the Board at second first notice proposes mass-based limits of 44,920 tpy for SO_2 and 22,469 tpy for NO_x. The Board invites participants to comment on these mass-based caps.

b. <u>Combining MPS Groups.</u> After deciding the annual mass-based limits, the question becomes whether to combine the MPS Groups under the overall mass caps that the Board proposes at second first notice. In favor of the Groups’ consolidation is the fact that the MPS is a fleetwide rule: it allows owners of eligible EGUs to elect to demonstrate compliance with the Illinois mercury rule using the MPS only if “all EGUs it owns are located in Illinois”—other than any scheduled for permanent shutdown—became subject to MPS requirements. 35 Ill. Adm. Code 225.233(a)(3)(B). According to an Ameren witness in <u>Mercury</u>, R06-25, the MPS does not allow EGU owners to “cherry-pick” units for inclusion in the MPS because it was expected that “you’re going to use your entire system to comply with [the MPS] so that they get sufficient reductions in SO_2 and NO_x system-wide.” <u>Mercury</u>, R06-25, 8/15/16 a.m. Tr. at 285. Thus, combining the MPS Groups would track the MPS’s structure, potentially reducing regulatory burdens without comprising environmental protection.

The Board will not amend the MPS to afford operational flexibility if it comes at the expense of the environment or public health. Along those lines, the AGO fears that combining the MPS Groups will "dramatically increase [] pollution" by allowing Vistra to increase utilization of the IPH Group's "uncontrolled" units—Edwards, Newton, and Joppa EGUs—while "avoiding installing pollution controls that have been promised for over a decade . . . ." PC 2751 at 47. The Board addresses the two points in turn.

On the first issue, were the MPS rates the only constraint on MPS facilities' operations, moving from rate- to mass-based emission limits would allow Vistra to shift generation from well-controlled units in the IPH Group—Coffeen and Duck Creek stations—to units lacking pollution controls such as wet or dry scrubbers, potentially increasing localized pollution. As IEPA states, however, the "MPS was not designed or relied upon to specifically protect local air quality; nor *can* an annual standard covering multiple plants across a wide geographic area be reasonably expected to ensure short-term air quality in specific local areas." PC 2750 at 12 (emphasis in original), citing Exh. 6 at 34; 3/6/18 Tr. at 163. Rather, as the Board found above, other standards, specifically the 1-hour SO_2 NAAQS and the DRR, serve that role. *See, e.g.*, PC 2750 at 12-13; Exh. 6 at 6, 34. As the Board found above that the MPS with annual mass limits will not interfere with attainment or maintenance of the NAAQS—which will continue to apply, as IEPA emphasizes, "even if utilization of specific plants increases" under the proposed MPS amendments. PC 2750 at 12; *see also, e.g.*, Exh. 29 at 6; Exh. 6 at 5, citing 35 Ill. Adm. Code 214.603 (reciting unit-level limits on hourly SO_2 emissions from Edwards plant).

On the second issue, "promised" pollution controls, the AGO cites no MPS requirement to install controls for SO_2 or NO_x emissions, and IEPA stressed that the current MPS "does not require installation of any additional pollution control equipment." TSD at 4. The Board has likewise observed that the MPS "'does not restrict the [IPH] MPS Group from employing any specific method to reach the required emission rates.'" IPH, LLC v. IEPA, PCB 14-10, slip op. at 71 (Nov. 21, 2013), citing Ameren Energy Resources v. IEPA, PCB 12-126, slip op. at 56 (Sept. 20, 2012). Granted, the Board did condition its 2013 grant of a variance to IPH and others in PCB 14-10 on petitioners' meeting construction milestones for flue gas desulfurization controls at the Newton station. *See* IPH, LLC v. IEPA, PCB 14-10, slip op. at 104-05 (Nov. 21, 2013). The Board's subsequent termination of the variance, however, terminated all variance conditions including that one. IPH, LLC v. IEPA, PCB 14-10 (Oct. 27, 2016). In requesting termination of that variance, IPH represented that it was able to meet the final SO_2 emission rate three years early, without the variance and without the Newton flue gas desulfurization project, by retiring Newton Unit 2 and "effective[ly] manag[ing]" the remaining units in the IPH Group. IPH, PCB 14-10, slip op. at 6 (Oct. 27, 2016). The AGO also misplaces reliance on statements by Dynegy and IEPA in the original MPS Rule proceeding Mercury, R06-25. *See, e.g.*, PC 2751 at 47, citing Mercury, R06-25, Corrected Joint Statement of IEPA and DMG (Aug. 23, 2006). The statements cited by the AGO concerned only the Dynegy MPS Group rather than what later became the IPH Group (formerly the Ameren Group)—whose emissions most concern the AGO. The Board therefore does not accept the AGO's position on never-installed pollution controls.

For the above reasons, the Board at second first notice proposes consolidating the MPS Groups under the overall annual mass caps of 44,920 tons for SO_2, 22,469 tons for annual NO_x limits, and 11,500 tons for the NO_x seasonal ozone limit.

D. Mass Cap Reductions for Retirement and Mothballing

The Board next considers whether to reduce the proposed mass caps for SO_2 and NO_x upon permanent shutdown (retirement) or temporary shutdown (mothballing) of one or more MPS EGUs. IEPA proposes reducing the overall mass caps if ownership of an MPS facility is transferred. No participant challenges this part of IEPA's proposal. However, both IEPA and Vistra oppose reducing mass caps for retirement and mothballing of units. For the reasons below, the Board finds that the mass caps for SO_2 and NO_x should be reduced when any MPS facility is transferred or when one or more MPS EGUs are retired or mothballed. Under IEPA's proposal, annual compliance period runs from January 1 to December 31 and the seasonal NO_x compliance period runs from May 1 to September 30.

1. Public Comments and Testimony

Vistra supports IEPA's proposal to reduce the proposed emissions caps for plant transfers but not for unit shutdowns. PC 2753 at 25 & n.104. As Vistra notes, Mr. Bloomberg of IEPA testified as to the rationale for this distinction: although a new EGU owner of a transferred generating station would presumably continue to operate the source—and thus require an allowance for emissions from that source—the retirement of a plant would likely require another source to generate the power that the retired plant previously generated. 3/6/18 Tr. at 186. Because the new source of the "lost megawatts" could potentially be another MPS unit, IEPA sought to leave Vistra a compliance margin for the remaining unit to increase operations. *Id.* at 185; *see also* Exh. 15 at 14 (Mr. Ellis of Dynegy testifying that reducing the emissions caps when an MPS unit retires could jeopardize remaining units' ability to replace the "lost generation"). Vistra further cites Mr. Bloomberg's testimony that reducing the caps upon plant retirement is not necessary to maintain the level of air quality protection under the existing MPS rates or to meet any applicable regulatory requirements such as the Regional Haze Rule. PC 2753 at 25, n.105, citing 3/6/18 Tr. at 188-89; 4/17/18 Tr. at 161.

Nonetheless, Vistra conferred with IEPA, in response to a Board question, to devise a methodology for calculating appropriate retirement allocations. PC 2753 at 25. Vistra believes IEPA's proposed methodology is "appropriate" because it will allow operating MPS units "to operate more frequently to replace a portion of the lost generation from the retired units." *Id.*

The AGO urges the Board to require that any mass limits decline upon the "mothballing or retirement of any MPS unit," to the same extent that they would when a plant is transferred to a new owner. PC 2751 at 24, 41, 47-48. Under the existing MPS, the AGO adds, a unit that is retired or mothballed "simply does not factor into MPS compliance"—without a heat input to a plant, there is no allowance for pollution from the plant. *Id.* at 32. By contrast, IEPA's proposal would "lock in an allowance for pollution for all current MPS units, at all times going forward." *Id.* at 47. According to the AGO, treating a plant retirement or mothballing differently than a transfer would "encourage greater pollution" and "incentivize retirement over sale." Exh. 37 at 19; *see also* 4/17/18 Tr. at 53-56 (Mr. Armstrong of IEPA opining that maintaining emissions caps upon shutdown would allow Vistra to shut down controlled MPS units and increase utilization of uncontrolled units and would not ensure the financial viability of the entire fleet).

The AGO characterizes IEPA's proposed allocation amounts for MPS unit shutdowns as "unsupported, underdeveloped, and inappropriate." PC 2897 at 27-28. For starters, the AGO argues, IEPA fails to propose any emissions reductions when a unit is mothballed, allowing increased pollution. *Id.* at 28. Second, the AGO sees no basis for valuing emission reductions for shutdowns at only 50% of the affected unit's transfer value. *Id.* at 28-29. This approach, the AGO continues, would allow more pollution when a unit is shut down, frustrating the purposes of the MPS. *Id.* at 29. Third and finally, the AGO contends that any emissions caps the Board adopts must be reduced for SO_2 and NO_x emissions from Baldwin Unit 3, which Dynegy took out of service in October 2016. If Dynegy restarts that unit, the SO_2 and NO_x emissions caps could be increased accordingly. *Id.*

2. IEPA Response

As noted above, because an MPS unit may be called on to generate the power lost from a shutdown MPS unit, IEPA did not originally propose reducing the proposed SO_2 and NO_x emissions caps upon shutdown. 3/6/18 Tr. at 184-85; *see also* 1/17/18 Tr. at 81-82, 115. IEPA continues to believe that reducing cap levels when an MPS unit is permanently shut down is unnecessary and does not recommend that the Board include a provision for such reductions. PC 2750 at 24-25.

If the Board is inclined to require emission reductions for retired units, IEPA proposes unit-level allocation amounts corresponding to possible mass SO_2 emissions limits of: 55,000 tons, 49,000 tons, 44,920 tons, and 34,094 tons. PC 2750 at 25-26, Atts. 1-4. IEPA set the shutdown allocation amounts at 50% of the proposed transfer amounts for each plant at each cap level, and then reduced the amounts to the unit level based on each unit's proportion of heat input at that facility. *Id.* at 26. IEPA does not provide different transfer and shutdown allocation amounts for NO_x emissions because the "the Board did not request that IEPA identify [allocation] amounts for any alternative limitations" for NO_x. *Id.* at 25, n.8. IEPA proposes less than the full transfer allocation amounts for "shutdown" units to allow other MPS units to take up the generation lost from the shutdown units. *Id.* at 25-26. IEPA's shutdown allocations are unit-specific, but the transfer allocations are plant-specific. *Id.* at 26. This is because, IEPA explains, although not all units at a facility may be shut down, it is "very unlikely that a single unit" at a facility would be sold by itself to a new owner. *Id.*

3. Board Findings

The Board agrees with the AGO that, in addition to ownership transfer, the proposed mass caps for SO_2 and NO_x must decline with the retirement (permanent shut down) or mothballing (temporary shutdown) of MPS EGUs. "Retirement" or permanent shutdown of an EGU occurs when the owner or operator withdraws its operating permit. *Id.* If the owner or operator wanted to re-start operation of a retired unit or facility, the unit would be subject to permitting as a new source. 1/18/18 Tr. at 121. Unlike retirement, if a unit or facility is "mothballed" or temporarily shut down, an owner retains the operating permits and can decide to resume operation of the unit under existing permits. *Id.*

As noted by the AGO, under the current MPS, a retired or mothballed EGU does not factor into MPS compliance because, without heat input, no allowance is allocated for emissions from the EGU. PC 2751 at 32. Given this aspect of the existing MPS, the Board finds no reason to permanently lock in a retired or mothballed EGU's allowance as part of the mass caps when the unit no longer operates. The Board is not convinced by IEPA's argument that emissions from a retired or mothballed unit must remain part of the mass caps to allow for the MPS units to "pick up" the lost generation. As IEPA acknowledged, the lost generation could be replaced by any number of sources, whether in the MPS fleet or not; there is no guarantee that an MPS plant will pick it up. It could come from a host of non-MPS sources within or outside the State, including nuclear, natural gas, and renewable facilities. In fact, Vistra and Dynegy attribute the retirement of 13 EGUs since the Board adopted the MPS rule to several factors, including "low natural gas prices, environmental regulations, increasing generation from other sources (in part due to subsidies), and a decline in energy and capacity prices in MISO Zone 4." PC 2753 at 7; *see also* Exh. 15 at 6-11. Thus, it cannot be assumed that a retirement of an EGU means that the lost generation would be picked up by other MPS EGUs. Further, the mere possibility that the generation could move to an MPS plant is insufficient, in the Board's view, to warrant allowing increased pollution from less-controlled plants and encouraging retirement or mothballing of MPS units rather than their sale.

For the same reason, the Board finds no merit in limiting the allocation amounts for reducing mass caps at 50% of the transfer allocations, as recommended by IEPA. Accordingly, the Board's proposed second first-notice amendments reduce the mass caps for SO_2 and NO_x when EGUs are retired or mothballed, at the same level (100%) as when plants are transferred.

For mothballed EGUs, the Board proposes that mass caps be reduced only if the units are mothballed for the entire compliance period. This is because IEPA's recommended unit-level "shutdown" allocation amounts for reducing the mass caps are based on an annual or seasonal compliance period. Thus, applying the adjustment for temporary shutdown (mothballing) during the entire compliance period or periods would be straightforward and commonsensical, without requiring prorating. If an MPS unit or facility is mothballed for the entire annual compliance period (and thus does not generate electricity and emissions), the MPS group's seasonal and annual caps would decrease by the allocated amount, and the EGU owner must ensure compliance with the decreased caps.

As noted above, at the Board's request, IEPA provided allocation amounts for ownership transfer of each MPS facility and shutdown (retirement) of each MPS EGU for an SO_2 cap of 44,920 tpy and a NO_x cap of 25,000 tpy. PC 2750, Att. 3. IEPA set the allocation amounts for retirement of EGUs at 50% of the transfer allocations. For transferring MPS facilities, the Board proposes IEPA's SO_2 allocation amounts. For retiring and mothballing EGUs, the Board proposes SO_2 allocation amounts on a unit-level basis equal to 100% of the transfer amounts.

As for NO_x, the Board proposes allocation amounts for the transfer, retirement, and mothballing of units that reflect the revised annual cap of 22,469 tons and an ozone season cap of 11,500 tons. The annual NO_x allocation amounts were calculated by using the same "proportional" methodology used by IEPA for reducing the SO_2 cap from 49,000 tpy to 44,920 tpy. *See* PC 2750 at 25-26. The proposed allocation amounts are set forth in the table below.

	NO_x Allocation Amount (TPY) upon transfer, retirement, or mothballing	NO_x Allocation Amount (TPY) for Ozone Season (May 1 – Sep 30) upon transfer, retirement, or mothballing	SO_2 Allocation Amount (TPY) upon transfer, retirement, or mothballing
Baldwin (entire facility)	5,400	2,700	4,900
Baldwin Unit 1	1,850	920	1680
Baldwin Unit 2	1,710	860	1560
Baldwin Unit 3	1,840	920	1660
Havana (entire facility)	1,620	810	1,225
Hennepin (entire facility)	1,350	675	4,900
Hennepin Unit 1	320	160	1,180
Hennepin Unit 2	1,030	500	3,720
Coffeen (entire facility)	1,800	900	200
Coffeen Unit 1	670	340	80
Coffeen Unit 2	1,130	560	120
Duck Creek (entire facility)	1,260	630	200
Edwards (entire facility)	2,700	1,350	8,200
Edwards Unit 2	1,130	560	3,440
Edwards Unit 3	1,570	780	4,760
Joppa (entire facility)	4,680	2,340	14,700
Joppa Unit 1	780	390	2,450
Joppa Unit 2	780	390	2,450
Joppa Unit 3	780	390	2,450
Joppa Unit 4	780	390	2,450
Joppa Unit 5	780	390	2,450
Joppa Unit 6	780	390	2,450
Newton (entire facility)	2,430	1215	8,200

The Board emphasizes that the annual mass-based caps for SO_2 and NO_x as proposed at second first notice are based upon the 18 currently-operating MPS EGUs. If Vistra transfers or retires any MPS plants or EGUs before the Board adopts final rule amendments, the Board will adjust the mass caps to reflect the transfers or retirements, using the proposed allocation amounts.

The Board invites the participants to comment on reducing mass caps for retired and mothballed EGUs.

E. <u>Technical Feasibility and Economic Reasonableness</u>

Section 27(a) of the Act directs the Board to consider the "technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution" when conducting a rulemaking. 415 ILCS 5/27(a) (2016). For the reasons below, the Board finds today's proposal to combine the two MPS Groups and establish mass-based emissions limitations for SO_2 and NO_x to be technically feasible and economically reasonable.

As required by Section 27(b) of the Act (415 ILCS 5/27(b) (2016)), the Board requested in a letter dated October 19, 2017, that the Illinois Department of Commerce and Economic Opportunity (DCEO) conduct an economic impact study of IEPA's proposed rules. The Board requested that DCEO determine by December 10, 2017, whether it would conduct the study. The Board received no response to this request. No person testified or commented on the Board's request or the lack of a response from DCEO. 3/7/18 Tr. at 107.

1. <u>Technical Feasibility</u>

IEPA asserted that its initial proposal[11] is technically feasible because "the owner/operator of the affected sources has agreed that the emission limits contained in the proposed amendments are achievable." TSD at 8. Regarding its revised annual SO_2 limit of 49,000 tons, IEPA states that Dynegy was "not thrilled" with it. 4/17/18 Tr. at 105. However, IEPA contends that its revised proposal is technically feasible. PC 2898 at 6. Vistra agrees that IEPA's proposed revisions are technically feasible but IEPA urges the Board to adopt IEPA's original, rather than its revised, proposal. PC 2753 at 26.

As discussed above, the Board proposes revised mass-based annual caps for the combined MPS Group of 44,920 tons of SO_2 and 22,469 tons of NO_x. These annual caps, which are based on the current MPS units' heat inputs in 2002 and the current MPS rates, are lower than the caps under IEPA's proposal, by approximately 8% for SO_2 and 10% for NO_x. The Board adopts IEPA's MPS Group ozone season cap of 11,500 tons NO_x, and an annual plant-specific cap of 19,680 tons of SO_2 for Joppa.

a. <u>SO_2 Cap.</u> IEPA contends that its original proposed SO_2 cap allows for greater utilization of MPS units. 1/12/18 Ag. Resp. at 10. Dynegy asserted that annual emissions fluctuate based on many factors, including weather, economy, natural gas prices and scheduled and unscheduled outages. Exh. 14 at 15. Dynegy further argues that, even under the existing MPS, "the current MPS emission levels could increase significantly and far exceed recent year emission levels. As such, the future operation of any given unit may increase regardless of whether the unit is subject to an emission cap or emission rate limit." *Id.*

Since the adoption of the MPS rule, however, the emissions and heat input data in the record (from 2010 thru 2016) clearly show a decreasing trend in annual SO_2 emissions and heat inputs for the current MPS EGUs. *See* TSD at 13-15; Exh. 6, Att. 4 Fig. 1. In fact, annual SO_2 emissions in 2016 was approximately 17,000 tons below the proposed SO_2 cap of 44,920. Thus, the Board finds that its revised SO_2 emission limit is technically feasible.

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[11] Combine the two MPS Groups and establish annual mass-based emissions limitations for the MPS Group of 55,000 tons of SO_2 and 25,000 tons of NO_x, and an ozone season limit of 11,500 tons of NO_x, along with a plant-specific annual SO_2 limit of 19,680 tons for Joppa.

Additionally, as the Board proposes to combine the two MPS Groups, the proposed rule would allow Vistra to comply with the mass emission caps by averaging across its entire MPS fleet of 18 EGUs. Accordingly, to comply with the SO_2 cap, if approved, Vistra would be able to average (1) SO_2 emissions from nine of the IPH EGUs lacking SO_2 emissions control equipment with (2) SO_2 emissions from those units that have installed flue gas desulfurization or spray dry absorber. *See* Exh. 6 at 7. This structure further ensures technical feasibility.

b. <u>NO_x Cap.</u> At second first notice, the Board proposes to adopt an annual NO_x cap of 22,469 tons, which is 10% lower than IEPA's cap, and an ozone season cap at the same level as IEPA's proposal. IEPA's proposed annual cap would be at the same level as the Board's if IEPA had reduced its NO_x cap to correspond with IEPA's reduction of the SO_2 cap from 55,000 tons to 49,000 tons. IEPA did not do so, however, stating that the annual cap of 25,000 was below the level determined using the AGO's methodology and the rules require NO_x controls to be operated year-round. 3/6/18 Tr. at 183-184.

As noted by IEPA, to ensure a "high level" of NO_x control, all 18 MPS EGUs have one or more NO_x controls consisting of over fire air, SCR, or low NO_x burners. Exh. 6 at 7; SR at 7. Additionally, the proposed rule requires seven MPS EGUs currently equipped with SCRs (Baldwin 1 and 2, Coffeen l and 2, Duck Creek 1, E.D. Edwards 3, and Havana 9) to comply with a combined NO_x average emission rate of no more than 0.10 lb/mmBtu from May 1 to September 30. SR at 6-7. The proposed rule also requires SCRs to be operated whenever the EGUs they serve are in operation. *<u>Id</u>*.

In addition, the annual NO_x emissions data from 2010 through 2016 show that the annual NO_x emissions from the MPS EGUs have been consistently under 20,000 tons. TSD at 14. Also, because the Board proposes combining the MPS Groups, Dynegy would be able to comply with the NO_x caps by averaging across its entire MPS fleet of 18 EGUs, including EGUs with SCRs and those without them. Accordingly, the Board finds that its revised NO_x emission limits to be technically feasible.

2. <u>Economic Reasonableness</u>

a. <u>Distinguished from Financial Condition</u>

Section 27(a) of the Act directs the Board, in adopting substantive regulations, to "take into account," among other factors, the "economic reasonableness of measuring or reducing the particular type of pollution." 415 ILCS 5/27(a) (2016).

The Illinois Supreme Court held that "take into account" in Section 27(a) means the Board "is only required to 'consider' or 'weigh carefully' the technical feasibility and economic reasonableness of compliance with proposed regulations in the rulemaking process." <u>Granite City</u>, 155 Ill. 2d at 181. The Court further held that Section 27(a) "does not impose specific evidentiary requirements on the Board . . . Rather, [it] requires only that the Board consider or take into account the factors set forth [in that section]." *Id.* at 183.

The Environmental Groups argue that "[b]ecause the rule change will weaken environmental protections and allow for increased SO_2 emissions, the Board should only adopt [the proposed rule] if the existing rule is economically unreasonable." PC 2752 at 14. Specifically, the Board should adopt IEPA's proposal only if the existing MPS "impose[s] economic hardship on the company by causing economic instability that will jeopardize" the MPS fleet's "ability to remain functional and able to support its operations." *Id*. The Environmental Groups contend that because Dynegy/Vistra's Illinois fleet is "cash flow positive," the current rule is not economically prohibitive, and the Board should reject IEPA's proposed amendments to it. *Id*. at 16.

The Environmental Groups cite the testimony of Ms. Dzubay of ELPC *(*Exh. 42; 4/17/18 Tr. at 58-67) that Dynegy/Vistra did not provide enough information to show that dispatching the "must-run" units to comply with the existing MPS negatively affected the fleet's "gross margin." PC 2752 at 19, citing 4/17/18 Tr. at 60. Further, Ms. Dzubay testified that IEPA never verified whether the current MPS caused Dynegy/Vistra to suffer a financial loss or, if it did, the extent of that loss. 4/17/18 Tr. at 65. She also testified that IEPA failed to verify whether Dynegy/Vistra's claimed loss justifies changing the MPS to increase operational flexibility and economic stability. *Id*. Rather, Ms. Dzubay concluded, the MPS fleet's gross margin *increased* during the years when Dynegy asserted it faced the must-run situation, showing that the must-run situation is "immaterial" to the fleet's viability and economic stability. PC 2752 at 19-20, citing 4/17/18 Tr. at 61-62.

IEPA contends that the Environmental Groups misinterpret Section 27(a), which calls on the Board to take economic reasonableness into account. PC 2750 at 24, citing 415 ILCS 5/27(a) (2016). IEPA further argues that under Section 27(a), the Board has historically employed a cost-benefit analysis, balancing the cost to the regulated entity of implementing pollution controls against the benefit to the public in reducing pollution. *Id*., citing IEPA v. PCB, 308 Ill. App. 3d 741, 751 (2d Dist. 1999). The focus in this analysis, according to IEPA, is not on the regulated entity's "financial history and profit margins." *Id.*

Vistra similarly argues that the Environmental Groups and the AGO incorrectly seek to impose a burden on IEPA to show a current rule is no longer economically reasonable. PC 2902 at 4. And, Vistra continues, the same standards apply whether the Board's substantive involves amendments to existing rules or entirely new rules. *Id*. at 4-5, citing Nitrogen Oxide Emissions, Amendments to 35 Ill. Adm. Code 217, R11-24, slip op. at 36, 39 (July 21, 2011).

The Board disagrees with the argument that an existing rule may not be amended absent a showing that compliance with it is no longer economically reasonable. Section 27(a) of the Act requires that the Board consider the cost, to the regulated entity, of complying with proposed rules or rule amendments. The Board discerns no requirement in the Act that the Board, whilst reviewing proposed rule amendments, must determine whether the existing rule imposes unreasonable financial hardship on the regulated entity. Rather, that determination applies in the context of regulatory relief. This is especially true for petitions for variances from existing rules. *See* 415 ILCS 5/35(a) (2016) (authorizing Board to grant a variance upon finding that compliance with a regulatory requirement "would impose an arbitrary or unreasonable hardship"). In these situations, the regulated entity seeks relief, in an adjudicatory proceeding, from a Board rule. In this general rulemaking, however, IEPA, not Dynegy or Vistra, is the proponent. As such, the regulated entity, Dynegy/Vistra bears no burden to show that it is no longer economically reasonable for the fleet to comply with the MPS. And, in a general rulemaking, the Board must consider whether the *proposed* standard would impose a hardship on regulated entities. "The Board must then use its technical expertise and judgment in balancing any [such] hardship . . . against [the Board's] statutorily mandated purpose and function of protecting our environment and public health." Granite City, 155 Ill. 2d at 183.

Based upon these settled principles, the Board also disagrees with the Environmental Groups' position that the Board must consider, in its review of the proposed MPS amendments, the financial condition and viability of the MPS fleet or Vistra as a whole. Because the Board must consider the economic reasonableness for regulated entities to comply with a proposed rule, it is irrelevant whether, and to what extent, the existing rule affects regulated entities' financial condition, whether represented by cash flow or gross margins by business segment. That is particularly true here, given that IEPA, the amendments' proponent, does not rely on the existing rules' economic impact to the affected entities or regulated facilities. The Board does not comment on the relevance of such factors in contexts beyond this proceeding.

Under the correct standard, the Board next considers whether it is economically reasonable for the MPS fleet to comply with the proposed amendments, as modified by the Board in this second first notice order.

b. Board Finding on Economic Reasonableness

In its initial filing, IEPA stated that the proposal is economically reasonable because, the change to a mass-based cap will provide operational flexibility for the MPS fleet. TSD at 8. Vistra also stresses that the switch to a mass-based cap will afford operational flexibility, thereby eliminating the need to run units at a loss for MPS compliance. PC 2902 at 3. The proposal would "enable Vistra to better supply the energy market" and significantly reduce allowable emissions. *Id.* Vistra concludes that IEPA's proposal is economically reasonable. *Id.*

Based on this record, the Board finds that IEPA's proposal is economically reasonable. Although the Board, in this second first notice order, modifies the IEPA's proposal to reduce the annual mass emission limitations for SO_2 and NO_x, no participant suggests that the modified limits, or other changes such as annual cap reductions for retirements and mothballing, are not also economically reasonable. The Board is convinced that the hybrid approach to setting annual mass caps that the Board is employing—a combination of unit-specific heat inputs from 2002 and allowable emission rates—yields achievable mass limits that track, with appropriate adjustments, IEPA projections of emissions from the MPS fleet.

Although the modified annual caps proposed at this second first notice are lower than those proposed by IEPA, however, when coupled with combining the MPS groups, these modified annual mass caps will allow, like IEPA's proposal, considerable operational flexibility. Thus, Vistra still will be able to operate the MPS units according to "market demands," without "needing to balance emission rates" across the fleet solely for MPS compliance. PC 2902 at 3, 6; *see also* TSD at 8 (arguing that proposed amendments are economically reasonable because they "provide operational flexibility to the affected sources" and will not cause adverse economic impact). Running controlled units at uneconomic prices, solely to comply with MPS rates, may cause problems for more than just Dynegy/Vistra; "must-run" MPS plants may displace electricity generation from other sources, including those that emit less and more economical to operate at lower prices, distorting the wholesale power market. *See* TSD at 5; Ex. 6 at 22-23; 1/17/18 Tr. at 80-82. By contrast, the operational flexibility that the Board's proposed amendments "will help to ensure the viability of the entire Illinois fleet" and allow for the rational economic dispatch of MPS units. Exh. 15 at 15. Therefore, the Board finds that the MPS amendments proposed for second first notice are economically reasonable and will not have an adverse economic impact on the people of the State of Illinois.

III. CONCLUSION

The Board proposes MPS rule amendments for a second first-notice publication in the *Illinois Register*.

Although the Board, based on this record, could proceed directly to JCAR's second-notice review of these proposed rules, the Board finds it appropriate to return to first notice. The Board predicates this decision on the substantive changes that the Board has made to the IEPA proposal that the Board originally sent to first notice publication without substantive comment. The Board withdraws that original first notice and, in order to avoid any potential confusion, will publish a notice of the withdrawal in the *Illinois Register*. *See*, *e.g.*, Procedural Rules for Authorizations Under P.A. 97-220 for Certain Landscape Waste and Compost Applications and On-Farm Composting Facilities: New 35 Ill. Adm. Code 106.Subpart I, R12-11, slip op at 1-2 (June 21, 2012) (given the nature and extent of rule changes, proposed another first notice to allow adequate notice and opportunity to comment; also, to minimize confusion, decided to publish notice of withdrawal of earlier first notice). Interested persons should view the second first notice period to review the Board's reasoning and rule text and file public comments.

As noted above, the Board anticipates holding one additional hearing in this proceeding, but anyone may request an additional hearing. Second first-notice publication in the *Illinois Register* will begin a period of at least 45 days for interested persons to file public comments with the Board.

IV. ORDER

The Board directs the Clerk to cause *Illinois Register* publication of notice of the Board's withdrawal of the original first notice. The Board further directs the Clerk to cause the *Illinois Register* publication of the rule amendments in the addendum to this order for a second first notice. New rule text is indicated by underlining, and deleted rule text by strike-through.

IT IS SO ORDERED.

I, Don A. Brown, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on October 4, 2018, by a vote of 5-0.

Don A. Brown

Don A. Brown, Clerk
Illinois Pollution Control Board