

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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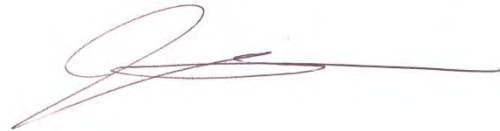
|                           |   |                  |
|---------------------------|---|------------------|
| IN THE MATTER OF:         | ) |                  |
| AMENDMENTS TO             | ) |                  |
| 35 ILL. ADM. CODE 225.233 | ) | R18-20           |
| MULTI-POLLUTANT STANDARDS | ) | (Rulemaking-Air)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

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**NOTICE OF FILING**

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board the attached **PRE-FILED TESTIMONY OF JAMES P. GIGNAC ON BEHALF OF THE ENVIRONMENTAL LAW & POLICY CENTER, ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, RESPIRATORY HEALTH ASSOCIATION, AND SIERRA CLUB**, copies of which are served on you along with this notice.

Respectfully Submitted,



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Dated: December 10, 2018

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**CERTIFICATE OF SERVICE**

I, Jocelyn Castro, do certify that on December 10, 2018, I served the Notice of Filing and the Pre-Filed Testimony of James P. Gignac on behalf of The Environmental Law & Policy Center, Environmental Defense Fund, Natural Resources Defense Council, Respiratory Health Association, and Sierra Club, upon the persons listed in the attached Service List by email for those who have consented to email service, and by U.S. Mail for all others.

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| (MPS)                     | ) |                  |

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**PRE-FILED TESTIMONY OF**

**JAMES P. GIGNAC**

**ON BEHALF OF**

**THE ENVIRONMENTAL LAW & POLICY CENTER,  
ENVIRONMENTAL DEFENSE FUND,  
NATURAL RESOURCES DEFENSE COUNCIL,  
RESPIRATORY HEALTH ASSOCIATION, AND  
SIERRA CLUB**

December 10, 2018

1 **I. STATEMENT OF QUALIFICATIONS**

2 **Q. Please state your name and business address.**

3 A. My name is James P. Gignac. My business address is 1 N. LaSalle St., Suite 1904,  
4 Chicago, Illinois, 60602.

5 **Q. By whom are you employed and in what capacity?**

6 A. I am employed by the Union of Concerned Scientists (“UCS”) as Lead Midwest Energy  
7 Analyst. In this role, I conduct research and analysis to advance understanding of  
8 renewable and other energy technologies, policies, and markets, and to evaluate energy  
9 resource and climate change mitigation options in the electricity sector.

10 **Q. Please describe the Union of Concerned Scientists.**

11 A. The Union of Concerned Scientists was founded in 1969 by scientists and students at the  
12 Massachusetts Institute of Technology. UCS employs scientists, analysts, and engineers  
13 to develop and implement innovative, practical solutions to some of the most pressing  
14 problems that society faces today—from developing sustainable ways of feeding,  
15 powering, and transporting humanity, to reducing the threat of nuclear war. UCS’s  
16 mission is to put rigorous, independent science to work by combining technical analysis  
17 and effective advocacy to create policy solutions for a healthy, safe, and sustainable  
18 future.<sup>1</sup>

19 **Q. Please describe your educational background and professional affiliations.**

20 A. I received a B.A. in History and Political Science from Albion College located in Albion,  
21 Michigan. I earned a Juris Doctorate from Harvard Law School located in Cambridge,

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<sup>1</sup> For more information, including UCS’s history and mission statement, visit: <https://www.ucsusa.org/about-us>.

1 Massachusetts. I have been licensed to practice law by the Supreme Court of the State of  
2 Illinois since 2005.

3 **Q. Please describe your professional background.**

4 A. I am an analyst and attorney with over thirteen years of experience in the environmental  
5 and energy fields. I joined UCS after serving as Environmental and Energy Counsel and  
6 an Assistant Attorney General to the Office of Illinois Attorney General Lisa Madigan.  
7 In this capacity I was responsible for representing the office and the state in  
8 environmental, energy, and utility regulatory matters including rulemakings and  
9 enforcement cases. I began my career as an environmental attorney representing private  
10 sector clients and then worked for a national environmental organization assisting efforts  
11 related to coal-fired power plants in Midwest states including Illinois. My resume is  
12 included as Exhibit JPG-1.

13 **Q. Did you previously provide testimony in this rulemaking docket?**

14 A. Yes. With the Illinois Attorney General's Office, I assisted in preparation of pre-filed  
15 testimony to the Board and appeared for cross-examination as a testifying witness in this  
16 rulemaking proceeding.

17 **Q. Have you provided testimony or comment in other proceedings or venues?**

18 A. With UCS, I have provided written testimony to the Michigan Public Service  
19 Commission regarding Consumers Energy's integrated resource plan and submitted  
20 comments to the Illinois Commerce Commission ("ICC") with respect to distributed solar  
21 power and electric grid modernization issues. With the Illinois Attorney General's  
22 Office, I prepared comments and presentations to the ICC on renewable energy matters  
23 such as net metering and grid integration of wind and solar power and to the Board with



1 respect to various air regulatory dockets involving coal-fired power plants; I assisted with  
2 petitions and comments to the Federal Energy Regulatory Commission (“FERC”)  
3 regarding capacity markets and grid resiliency matters; I prepared comments to the  
4 Illinois Department of Natural Resources’ rulemaking on high-volume hydraulic  
5 fracturing; and I appeared as a witness on behalf of the Illinois Attorney General’s Office  
6 in state legislative hearings with respect to 2016 legislation on the Illinois Renewable  
7 Portfolio Standard.

8 **Q. Are you sponsoring any exhibits?**

9 A. Yes, I am sponsoring the following exhibits:

- 10 • Exhibit JPG-1 Resume of James P. Gignac
- 11 • Exhibit JPG-2 Excel Worksheet of James P. Gignac

12 **II. PURPOSE OF TESTIMONY**

13 **Q. On whose behalf are you providing this testimony?**

14 A. I am testifying on behalf of the Environmental Law & Policy Center, Environmental  
15 Defense Fund, Natural Resources Defense Council, Respiratory Health Association, and  
16 Sierra Club.

17 **Q. What is the purpose of your testimony?**

18 A. The purpose of my testimony is to respond to the Board’s statement that “annual mass  
19 caps at [the revised proposed] levels would limit and *prevent* potential sizeable shifts in  
20 generation and emissions from controlled to uncontrolled plants.” Opinion and Order of  
21 the Board, Proposed Rule, Second First Notice (“Order”), at 53 (emphasis added).

22 **Q. Please summarize your testimony.**

1 A. My testimony presents a scenario in which the proposed caps would allow for a shift in  
2 generation and sulfur dioxide (“SO<sub>2</sub>”) emissions to occur from controlled plants to  
3 uncontrolled and less-controlled plants in the MPS fleet. This scenario is only one of  
4 multiple possibilities of how a shift in generation from plants with scrubbers to plants  
5 without could occur under the proposed caps. This scenario, which I discuss in more  
6 detail below, results in an increase of 12,088 tons of SO<sub>2</sub> emissions compared to 2017  
7 emissions.

8 **III. SCENARIO OF SHIFTED GENERATION AND EMISSIONS**

9 **Q. Have you reviewed the Board’s Second First Notice Order?**

10 A. Yes.

11 **Q. How does the Board describe its proposed mass-based caps?**

12 A. The Board states that “annual mass caps at [the revised proposed] levels would limit and  
13 prevent potential sizeable shifts in generation and emissions from controlled to  
14 uncontrolled plants.” Order at 53.

15 **Q. What is the status of pollution controls at the MPS plants?**

16 A. The status of pollution controls at the MPS plants is set forth on page 19 of the Order.  
17 E.D. Edwards, Hennepin, Joppa, and Newton do not have SO<sub>2</sub> controls; therefore, I  
18 consider these plants to be “uncontrolled” for SO<sub>2</sub>. Coffeen and Duck Creek are  
19 equipped with wet flue gas desulfurization which I classify as “controlled” for SO<sub>2</sub>.  
20 Baldwin and Havana have spray dry absorbers for SO<sub>2</sub> which are not as effective as the  
21 wet flue gas desulfurization installed at Coffeen and Duck Creek as shown through a

1 comparison of the SO<sub>2</sub> emissions rates of the former plants with the latter plants.<sup>2</sup>

2 Accordingly, I consider Baldwin and Havana to be “less-controlled” with respect to SO<sub>2</sub>.

3 **Q. Did you analyze whether the revised proposed caps would allow shifts in generation**  
4 **and emissions from controlled to uncontrolled and less-controlled units?**

5 A. Yes.

6 **Q. Please describe your analysis.**

7 A. I began by downloading 2017 operations and emissions data for the eight MPS plants  
8 from the U.S. Environmental Protection Agency’s Air Markets Program Database<sup>3</sup> and  
9 created the spreadsheet included with my testimony as Exhibit JPG-2. I then obtained for  
10 each unit the operating capacity in megawatts and the 2017 net generation in megawatt-  
11 hours from the S&P Global Market Intelligence Platform.<sup>4</sup> I created a summation of the  
12 total net generation of the plants, which equaled 29,877,599 for 2017. I also calculated  
13 the total SO<sub>2</sub> emissions from the MPS plants for 2017, which resulted in 30,578 tons.  
14 Then I calculated the units’ maximum output in megawatt-hours by multiplying the unit  
15 operating capacity by 8,760 (the total number of hours in a year).

16 **Q. What did you do next?**

17 A. To begin creating a scenario, I selected two plants to remove to reflect potential  
18 retirements.

19 **Q. Which plants did you remove and why?**

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<sup>2</sup> According to U.S. EPA, wet flue gas desulfurization can achieve SO<sub>2</sub> reduction efficiencies as high as 98 percent, and spray dry absorbers achieve between 80 and 90 percent. See <https://www3.epa.gov/ttnca1/dir1/ffdg.pdf>.

<sup>3</sup> <https://ampd.epa.gov/ampd/>

<sup>4</sup> S&P Global Market Intelligence defines “operating capacity” as “[t]he maximum load at which a generator can operate without exceeding approved limits of temperature and stress” and “net generation” as “[t]otal electric power generated by the plant or plant unit, net of any in-plant use or other drain on power delivered for station service or auxiliaries.” <https://www.spglobal.com/marketintelligence/en/>.

1 A. In the scenario I am describing, I modeled Dynegy-Vistra retiring Coffeen and Duck  
2 Creek as these are the best-controlled plants for SO<sub>2</sub> among the MPS fleet. Accordingly,  
3 in the “Scenario” columns in Exhibit JPG-2, the megawatt-hours, heat input, and  
4 emissions for these plants becomes zero.

5 **Q. What did you do next?**

6 A. I then selected capacity factors at which the remaining MPS units could operate in a  
7 scenario where almost all the megawatt-hours from Coffeen and Duck Creek were  
8 replaced by the other MPS units (in other words, all other MPS units increasing output to  
9 “cover” the retirement of Coffeen and Duck Creek). Specifically, in the scenario I  
10 selected the Baldwin units to increase to 85 percent capacity factor; E.D. Edwards Unit 3,  
11 Havana, the Hennepin units, and Newton Unit 1 to increase to 80 percent; and E.D.  
12 Edwards Unit 2 and the Joppa units to increase to 75 percent. Applying these capacity  
13 factors results in a total net generation of 28,806,384 megawatt-hours in the scenario.

14 **Q. Couldn't the output from Coffeen and Duck Creek be replaced by other types of**  
15 **generating units spread throughout the grid?**

16 A. Yes, they could. For the purpose of this analysis, I am only describing a hypothetical  
17 scenario in which only other MPS units make up virtually all the lost generation from  
18 Coffeen and Duck Creek. While this is unlikely, I have made this assumption to provide  
19 an example of one of many scenarios under which generation from controlled units, upon  
20 their mothballing or retirement, could be shifted to uncontrolled or less-controlled units  
21 thereby leading to an emission increase from the MPS fleet under the Board's Second  
22 First Notice Proposal.

23 **Q. What was the next step in your analysis?**

1 A. Next, I assumed that the heat input for the remaining MPS units would increase by the  
2 same percentage as the increase in their megawatt-hours under the scenario. I also  
3 assumed that the SO<sub>2</sub> and nitrogen oxides (“NO<sub>x</sub>”) emission rates for the units stayed the  
4 same; accordingly, SO<sub>2</sub> and NO<sub>x</sub> emissions in tons also increase by the same percentage  
5 for each remaining unit in the scenario I am describing.

6 **Q. What did you conclude?**

7 A. I concluded that the total SO<sub>2</sub> emissions in the scenario add up to 42,666 tons and the  
8 NO<sub>x</sub> emissions to 15,801 tons.

9 **Q. What would the adjusted SO<sub>2</sub> MPS cap be under this scenario?**

10 A. The Board proposes that the MPS caps decline with the retirement of MPS units and  
11 provides allocation amounts per plant and unit upon retirement. *See* Order at 58, 60. The  
12 SO<sub>2</sub> allocation for both Coffeen and Duck Creek is 200 tons per year. Thus, a retirement  
13 of Coffeen and Duck Creek would result in a new SO<sub>2</sub> cap of 44,520 tons (44,920 minus  
14 400).

15 **Q. What would the adjusted NO<sub>x</sub> MPS caps be under the scenario?**

16 A. The NO<sub>x</sub> allocation for Coffeen is 1,800 tons per year and for Duck Creek it is 1,260.  
17 Thus, a retirement of Coffeen and Duck Creek would result in a new NO<sub>x</sub> cap of 19,409  
18 (22,469 minus 3,060). With respect to seasonal NO<sub>x</sub>, the Coffeen allocation is 900 tons  
19 and for Duck Creek it is 630. Thus, a retirement of those plants would result in a new  
20 seasonal NO<sub>x</sub> cap of 9,970 (11,500 minus 1,530).

21 **Q. Would the scenario described in this testimony comply with that adjusted cap?**

22 A. Yes, because the scenario emissions total of 42,666 tons of SO<sub>2</sub> is less than 44,520 tons  
23 and the scenario total of 15,801 tons of NO<sub>x</sub> is less than 19,409. The remaining MPS

1 units would, however, need to ensure that their emissions during the ozone season of May  
2 1 to September 30 do not exceed the adjusted seasonal NOx cap of 9,970 tons as well as  
3 the proposed rate-based NOx emission limits for specified units.

4 **Q. What about plant-specific limits at Joppa?**

5 A. There is a proposed cap of 19,680 tons per year of SO<sub>2</sub> emissions from Joppa units 1-6.  
6 Order at 61. The total SO<sub>2</sub> emissions in the scenario described here is 17,484 tons for the  
7 Joppa plant.

8 **Q. And what about the Data Requirements Rule?**

9 A. Since this scenario entails a 15 percent increase in emissions at each plant other than  
10 Baldwin, the emission increases under this scenario would appear to trigger general  
11 guidelines under the Data Requirements Rule in those cases. *See* 80 Fed. Reg. 51052,  
12 51081 (Aug. 21, 2015).<sup>5</sup> Nonetheless, such increases would presumably not cause  
13 violations of National Ambient Air Quality Standards (“NAAQS”) because the level of  
14 emissions for each plant in this scenario is below the level assumed by Illinois EPA for  
15 purposes of its revised proposed fleetwide cap (*see, e.g.*, Ex. 29 at 2) and/or below the  
16 level analyzed by Illinois EPA for NAAQS compliance (*see, e.g.*, Ex. 29 at 8-11).

17 **Q. What is the SO<sub>2</sub> emissions increase in the scenario you are describing compared to**  
18 **2017 levels?**

19 A. The difference between the scenario total of 42,666 tons of SO<sub>2</sub> and the 2017 emissions  
20 total of 30,578 is 12,088 tons.

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<sup>5</sup> As stated in the Data Requirements Rule: “[T]he [U.S.] EPA recommends as a general guideline that the air agency [*i.e.*, Illinois EPA] should conduct additional modeling (using the most recent actual emissions as inputs) for an area if (1) the original modeling level was equal to or greater than 90 percent of the standard, and there is any increase in emissions in the area; or (2) if the original modeling level was between 50 percent and 90 percent of the standard, and emissions in the area increased by 15 percent or more.” 80 Fed. Reg. 51052, 51081 (Aug. 21, 2015).


1 **Q. What is the value of this analysis to the Board in considering the revised proposal?**

2 A. There are many variables outside the control of the Board, including which plants may be  
3 retired and when. Additionally, when plants do retire, the extent to which other non-MPS  
4 resources replace the generation of the retired plants and their pollution rates is not  
5 currently known. But, as this analysis illustrates, there is at least one possible scenario in  
6 which compliance with the alternative mass limits results in an increase in SO<sub>2</sub> emissions  
7 as generation is shifted from controlled to uncontrolled and less-controlled MPS units. In  
8 proposing the alternative mass emission limits, the Board stated its expectation that the  
9 caps would “limit and prevent potential sizeable shifts in generation and emissions from  
10 controlled to uncontrolled plants” and “foreclose a dramatic increase in annual emissions  
11 over the status quo.” Order at 53, 52. My analysis illustrates a scenario in which the  
12 alternative mass-based caps proposed in the Second First Notice Order does not meet that  
13 objective with respect to SO<sub>2</sub>.

14 **Q. Does this conclude your testimony?**

15 A. Yes.

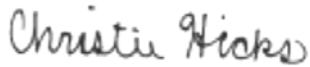
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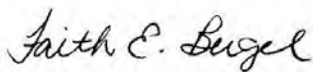
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**Exhibits to Pre-Filed Testimony**

Exhibit JPG 1 – Resume of James P. Gignac

Exhibit JPG 2 – Excel Worksheet of James P. Gignac

# **EXHIBIT JPG-1**

## **JAMES P. GIGNAC**

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### **EXPERIENCE**

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#### **Lead Midwest Energy Analyst, Union of Concerned Scientists, Chicago, IL**

(March 2018-Present). Conduct research and analysis to advance understanding of renewable and other energy technologies, policies, and markets, and to evaluate energy resource and climate change mitigation options in the electricity sector. Write and edit technical reports, fact sheets, and other materials to document and communicate research results; prepare regulatory and legislative comments and testimony; develop policy and legislative proposals; meet with policymakers, regulators, and stakeholders; represent UCS and its positions at public forums.

#### **Environmental and Energy Counsel and Assistant Attorney General to the Office of Illinois Attorney General Lisa Madigan, Chicago, IL**

(Nov. 2011-March 2018). Summary: Served as assistant attorney general in advanced special counsel role; handled select regulatory, legislative, and litigation matters with an emphasis on renewable energy, coal, nuclear, efficiency, and climate change issues; explored and evaluated new matters and cases; served as liaison to external stakeholders and groups; interacted with government officials and decision-makers; frequently appeared before state and regional gatherings to speak and present on energy and environmental issues.

Examples of specific roles/efforts:

- Provided expert advice to the Attorney General and senior staff on environmental and energy policy matters;
- Prepared comments, testimony, and draft language for legislative and state commissions and agencies;
- Spearheaded Illinois participation in multi-state attorneys general matters involving federal issues such as: Clean Power Plan litigation, methane regulation, DOE efficiency standards, and other Clean Air Act rules;
- Advised re: Volkswagen \$3 billion environmental mitigation trust fund and zero emission vehicle program;
- Focused on implementation of new renewable energy programs in Illinois, especially low-income solar.

#### **Midwest Director, Sierra Club's Beyond Coal Campaign, Chicago, IL**

(June 2008-Oct. 2011). Coordinated legal, grassroots organizing, and communications activities to prevent new coal plant projects and to replace existing coal capacity with clean energy

solutions; served as coal working group leader for regional network of foundations and advocacy organizations.

**Associate, Mayer Brown LLP**, Chicago, IL

(Sept. 2005-May 2008). Represented wide variety of private sector clients in environmental litigation, regulatory, and transactional matters, including chemical, railroad, real estate, manufacturing, mining, and wind energy industries.

**Judicial Law Clerk, Alaska Supreme Court**, Anchorage, AK

(Sept. 2004-Sept.2005). Assisted with all aspects of resolving appellate litigation.

**EDUCATION**

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**Harvard Law School**, J.D. (2004) (Dean's Award, Community Leadership)

**Albion College**, B.A., History and Political Science (2001) (*summa cum laude*; Phi Beta Kappa)

**TESTIMONY IN REGULATORY AND LEGISLATIVE PROCEEDINGS**

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- Direct Testimony on Behalf of the Environmental Law & Policy Center, Ecology Center, Union of Concerned Scientists, and Vote Solar Before the Michigan Public Service Commission in *In the Matter of the Application of Consumers Energy Company for Approval of Its Integrated Resource Plan*, Case No. U-20165 (October 12, 2018)
- Pre-Filed Testimony on Behalf of the Illinois Attorney General's Office Before the Illinois Pollution Control Board in *In the Matter of: Amendments to 35 Ill. Adm. Code 225.233 Multi-Pollutant Standards (MPS)*, R18-20 (December 11, 2017)
  - Responses to Pre-Filed Questions (January 12, 2018)
  - Testifying Witness at Hearings (January 17-18, 2018)
  - Responses to Questions (February 16, 2018)
  - Testifying Witness at Hearing (March 7, 2018)
- Testimony Before the State of Illinois House of Representatives Renewable Energy & Sustainability Committee, Hearing on Consumer and Public Health Impacts of Utilizing Renewable Energy Sources and Increased Energy Efficiency Programs (April 29, 2015)

**COMMENTS IN REGULATORY PROCEEDINGS**

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- Illinois Commerce Commission *NextGrid* Process, Multiple Written Comment Submissions and Participation in Working Groups on Behalf of Union of Concerned Scientists (June-September 2018)
- Comments on Behalf of Union of Concerned Scientists, et al. to the Illinois Commerce Commission's Distributed Generation Valuation and Compensation Workshop (July 27, 2018 and March 30, 2018)
- Comments on Behalf of the Illinois Attorney General's Office to the Illinois Commerce Commission Workshops Regarding Resource Adequacy in MISO Zone 4 (January 30, 2018 and November 30, 2017)
- Verified Reply to Responses to Objections to the Illinois Commerce Commission on the *Illinois Power Agency Petition for Approval of the Long-Term Renewable Resources Procurement Plan*, Docket No. 17-0838 (January 25, 2018); Response to Objections (January 11, 2018)
- Comments on Behalf of the Illinois Attorney General's Office to the Illinois Power Agency Regarding the Draft Long-Term Renewable Resources Procurement Plan (November 13, 2017)
- Comments on Behalf of the Illinois Attorney General, et al. to the Federal Energy Regulatory Commission in *Grid Reliability and Resiliency Pricing*, Docket No. RM18-1 (October 23, 2017)
- Comments on Behalf of the Illinois Attorney General's Office to the Illinois Power Agency Regarding Development of Long-Term Renewable Resources Procurement Plan (July 5, 2017)
- Comments on Behalf of the Illinois Attorney General's Office to the U.S. Department of Justice on the Proposed Partial Consent Decree in *In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation*, Case No: MDL No. 2672 CRB (JSC) (August 5, 2016)
- Response Comments on Behalf of the People of the State of Illinois Before the Illinois Pollution Control Board in *In the Matter of Amendments to 35 Ill. Adm. Code Part 214, Sulfur Limitations, Part 217 Nitrogen Oxides Limitations, and Part 225, Control of Emissions From Large Combustion Sources*, R-15-21 (September 11, 2015); Initial Comments (August 28, 2015)
- Verified Initial Comments on Behalf of the People of the State of Illinois Before the Illinois Commerce Commission in *Amendment of 83 Ill. Adm. Code 465 [Net Metering]*, ICC Docket No. 15-0273 (June 24, 2015); Verified Reply Comments (July 27, 2015)

- Complaint to Federal Energy Regulatory Commission, *Challenging the MISO 2015-16 Planning Resource Auction Rate for Zone 4 as Unjust and Unreasonable*, Docket No. EL15-71 (May 28, 2015); Response to Motions to Dismiss and Answer (July 17, 2015); Answer (August 14, 2015)
- Post-Hearing Comments to the Illinois Pollution Control Board in *In the Matter of: Coal Combustion Waste (CCW) Surface Impoundments at Power Generating Facilities: Proposed New 35 Ill. Adm. Code 841*, R14-10 (October 20, 2014)
- Comments to the Illinois Department of Natural Resources on Proposed Administrative Rules for the Hydraulic Fracturing Regulatory Act (62 Ill. Adm. Code 245 and 240.796) (January 2, 2014)
- Comments to the Illinois Pollution Control Board in *Illinois Power Holdings, LLC v. Illinois Environmental Protection Agency*, PCB 14-10 (Variance-Air) (September 24, 2013)
- Comments to the Illinois Power Agency on the 2013 Draft Procurement Plan (September 14, 2012)
- Comments to the Illinois Pollution Control Board in *Ameren Energy Resources v. Illinois Environmental Protection Agency*, PCB 12-126 (Variance-Air) (July 23, 2012); Post-Hearing Comments (August 10, 2012)

## PRESENTATIONS

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- Illinois Climate and Energy Activities: Federal and State, Chicago Bar Association (Chicago, IL) (February 21, 2018)
- Illinois Commerce Commission Renewable Energy Policy Session (Chicago, IL) (July 12, 2017)
- The Changing Electricity Grid: Issues and Opportunities for State Attorney General Offices, National Association of Attorneys General (Charlotte, NC) (March 17, 2016)
- Clean Power Plan Litigation, Chicago Bar Association (Chicago, IL) (March 2016)
- Closing and Redeveloping Power Plant Sites: Lessons from the Chicago Area, American Bar Association (Chicago, IL) (October 29, 2015)
- Clean Power Plan Update, Illinois State Bar Association (Chicago, IL) (October 21, 2015)
- Clean Power Plan Implementation, Air & Waste Management National Conference (Rosemont, IL) (September 2015)
- Air Regulatory Update & Clean Power Plan Implementation, Midwest Environmental Enforcement Association (Madison, MI) (July 1, 2015)

- Nuclear Power Update, Midwest Environmental Enforcement Association (Madison, WI) (July 1, 2015)
- Petroleum Coke Regulation, Illinois State Bar Association (Chicago, IL) (April 2015)
- Climate Adaptation and Environmental Law, Chicago Bar Association (Chicago, IL) (February 24, 2015)
- Illinois Fracking Regulations, Illinois Institute for Continuing Legal Education (Chicago, IL) (January 2015)
- Illinois Air Update, Lake Michigan Association of Air & Waste Management (Oak Brook, IL) (November 12, 2014)
- Moderator to Illinois State Bar Association Panel on Illinois Renewable and Energy Efficiency Portfolio Standards Panel (Chicago, IL) (March 2014)
- Carbon Pollution and the Clean Air Act: Where We've Been and Where We're Going, Chicago Bar Association (Chicago, IL) (February 25, 2014)
- High-Volume Horizontal Fracturing Regulation in Illinois, Illinois State Bar Association (Chicago, IL) (March 2013)
- Update on Clean Air Act Regulatory Activity and Current Events in the Electricity Sector, Midwest Environmental Enforcement Association (Jefferson City, MO) (June 28, 2012)
- Update on Recent Clean Air Act Rulemakings and Litigation, Chicago Bar Association (Chicago, IL) (March 21, 2012)

## **PUBLICATIONS**

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Co-Author, *Achieving a Clean Energy Transition in Illinois: Economic and Public Health Benefits of Replacing Coal Plants in Illinois with Local Clean Energy Alternatives*, The Electricity Journal (Nov. 2018)

Co-Author, *Soot to Solar: Illinois' Clean Energy Transition*, Union of Concerned Scientists (2018)

Blog posts available at: <https://blog.ucsusa.org/author/james-gignac>

# **EXHIBIT JPG-2**



# Electronic Filing: Received, Clerk's Office 12/10/2018

Exhibit JPG-2: Excel Worksheet of James P. Gignac - Pre-Filed Testimony 12/10/18 - R-18-20

| Facility     | Unit ID | Operating Capacity (MW) | Maximum Output (MW-h) | 2017 Net Generation (MW-h) | 2017 SO2 (tons) | 2017 NOx (tons) | 2017 Heat Input (MMBtu) | 2017 SO2 Rate (lbs/MMBtu) | 2017 NOx Rate (lbs/MMBtu) | 2017 Capacity Factor | Scenario Capacity Factor | Scenario Net Generation (MW-h) | Scenario Increase in Output | Scenario Heat Input (MMBtu) | Scenario SO2 (tons) | Scenario NOx (tons) |
|--------------|---------|-------------------------|-----------------------|----------------------------|-----------------|-----------------|-------------------------|---------------------------|---------------------------|----------------------|--------------------------|--------------------------------|-----------------------------|-----------------------------|---------------------|---------------------|
| Baldwin      | 1       | 590                     | 5,168,400             | 3,954,327                  | 1,505           | 1,593           | 38,824,663              | 0.0775                    | 0.0821                    | 76.51%               | 85.00%                   | 4,393,140                      | 11.10%                      | 43,134,201                  | 1,672               | 1,820               |
| Baldwin      | 2       | 595                     | 5,212,200             | 3,920,012                  | 1,617           | 1,638           | 40,385,824              | 0.0801                    | 0.0811                    | 75.21%               | 85.00%                   | 4,430,370                      | 13.02%                      | 45,644,058                  | 1,828               | 1,852               |
| Coffeen      | 1       | 335                     | 2,934,600             | 1,838,358                  | 19              | 699             | 19,939,412              | 0.0019                    | 0.0701                    | 62.64%               | 0.00%                    | 0                              | -100.00%                    | 0                           | 0                   | 0                   |
| Coffeen      | 2       | 580                     | 5,080,800             | 3,728,360                  | 29              | 1,783           | 39,101,271              | 0.0015                    | 0.0912                    | 73.38%               | 0.00%                    | 0                              | -100.00%                    | 0                           | 0                   | 0                   |
| Duck Creek   | 1       | 425                     | 3,723,000             | 1,944,069                  | 25              | 1,478           | 19,985,699              | 0.0025                    | 0.1479                    | 52.22%               | 0.00%                    | 0                              | -100.00%                    | 0                           | 0                   | 0                   |
| E D Edwards  | 2       | 255                     | 2,233,800             | 1,195,940                  | 2,726           | 1,318           | 13,212,705              | 0.4126                    | 0.1996                    | 53.54%               | 75.00%                   | 1,675,350                      | 40.09%                      | 18,509,679                  | 3,819               | 1,847               |
| E D Edwards  | 3       | 330                     | 2,890,800             | 1,908,769                  | 3,666           | 787             | 17,698,112              | 0.4142                    | 0.0890                    | 66.03%               | 80.00%                   | 2,312,640                      | 21.16%                      | 21,443,032                  | 4,441               | 954                 |
| Havana       | 9       | 434                     | 3,801,840             | 2,525,569                  | 1,090           | 1,240           | 30,567,133              | 0.0713                    | 0.0811                    | 66.43%               | 80.00%                   | 3,041,472                      | 20.43%                      | 36,811,998                  | 1,312               | 1,494               |
| Hennepin     | 1       | 68                      | 595,680               | 398,342                    | 1,123           | 327             | 4,508,524               | 0.4984                    | 0.1453                    | 66.87%               | 80.00%                   | 476,544                        | 19.63%                      | 5,393,547                   | 1,344               | 392                 |
| Hennepin     | 2       | 226                     | 1,979,760             | 1,268,067                  | 3,495           | 1,030           | 14,201,402              | 0.4922                    | 0.1451                    | 64.05%               | 80.00%                   | 1,583,808                      | 24.90%                      | 17,737,551                  | 4,365               | 1,287               |
| Joppa        | 1       | 167                     | 1,462,920             | 805,775                    | 2,158           | 522             | 8,983,253               | 0.4804                    | 0.1161                    | 55.08%               | 75.00%                   | 1,097,190                      | 36.17%                      | 12,232,495                  | 2,938               | 710                 |
| Joppa        | 2       | 167                     | 1,462,920             | 741,161                    | 1,955           | 487             | 8,140,886               | 0.4804                    | 0.1197                    | 50.66%               | 75.00%                   | 1,097,190                      | 48.04%                      | 12,051,767                  | 2,895               | 722                 |
| Joppa        | 3       | 167                     | 1,462,920             | 633,899                    | 1,702           | 400             | 7,034,467               | 0.4839                    | 0.1137                    | 43.33%               | 75.00%                   | 1,097,190                      | 73.09%                      | 12,175,959                  | 2,946               | 692                 |
| Joppa        | 4       | 167                     | 1,462,920             | 495,584                    | 1,266           | 304             | 5,244,525               | 0.4826                    | 0.1160                    | 33.88%               | 75.00%                   | 1,097,190                      | 121.39%                     | 11,610,853                  | 2,802               | 673                 |
| Joppa        | 5       | 167                     | 1,462,920             | 573,991                    | 1,547           | 353             | 6,357,587               | 0.4868                    | 0.1110                    | 39.24%               | 75.00%                   | 1,097,190                      | 91.15%                      | 12,152,527                  | 2,958               | 675                 |
| Joppa        | 6       | 167                     | 1,462,920             | 663,844                    | 1,782           | 401             | 7,292,449               | 0.4887                    | 0.1101                    | 45.38%               | 75.00%                   | 1,097,190                      | 65.28%                      | 12,052,959                  | 2,945               | 664                 |
| Newton       | 1       | 615                     | 5,387,400             | 3,281,532                  | 4,873           | 1,538           | 33,298,298              | 0.2927                    | 0.0924                    | 60.91%               | 80.00%                   | 4,309,920                      | 31.34%                      | 43,733,984                  | 6,401               | 2,020               |
| <b>TOTAL</b> |         |                         |                       | <b>29,877,599</b>          | <b>30,578</b>   | <b>15,900</b>   |                         |                           |                           |                      |                          | <b>28,806,384</b>              |                             |                             | <b>42,666</b>       | <b>15,801</b>       |

|                                 |               |
|---------------------------------|---------------|
| SO2 Difference 2017 & Scenario: | <b>12,088</b> |
|---------------------------------|---------------|

|                           |               |
|---------------------------|---------------|
| Joppa Scenario SO2 Total: | <b>17,484</b> |
|---------------------------|---------------|