

ILLINOIS POLLUTION CONTROL BOARD
April 16, 2015

IN THE MATTER OF:)
)
PROPOSAL OF CLIFFORD-JACOBS) R14-22
FORGING CO. FOR AN AMENDMENT TO) (Rulemaking - Noise)
THE SITE-SPECIFIC RULE AT 35 ILL.)
ADM. CODE 901.119)

Proposed Rule. First Notice.

OPINION AND ORDER OF THE BOARD (by D. Glosser):

On June 2, 2014, Clifford-Jacobs Forging Company (Clifford-Jacobs or company) filed a rulemaking proposal to amend the site-specific noise rule at 35 Ill. Adm. Code 901.119. The amendments would extend the allowable operational levels for Clifford-Jacobs' forging facility (facility) located in unincorporated Champaign County. The facility currently is allowed to operate up to all 14 of its forging hammers at any one time from 6:00 a.m. to 11:00 p.m., Monday through Saturday. Clifford-Jacobs' proposed amendments would allow the facility to operate up to 14 hammers at any one time 24 hours a day, Monday through Saturday. Today, the Board proposes the amendments, with the changes noted below, for first-notice publication in the *Illinois Register*. The Board will add to the notice list in this proceeding the owners of Wilber Heights properties who may be subject to noise emissions above the default nighttime sound limit under the proposed amendments. Any person may submit comments or request a hearing on Clifford-Jacobs' proposal within the public comment period ending on June 30, 2015.

In this opinion, the Board first provides the procedural history of this rulemaking. Next, the Board provides the background on the facility and its operations and summarizes the proposal and supporting evidence. The Board then discusses the proposed amendments and, as necessary, makes findings. The proposed amended rule appears in the order following this opinion.

PROCEDURAL HISTORY

As noted, on June 2, 2014, Clifford-Jacobs filed its proposal (Prop.), which, among other things, includes letters supporting the proposed amendments. Also with the proposal, Clifford-Jacobs filed a motion to waive the 200-person signature requirement under Section 28(a) of the Environmental Protection Act (Act) (415 ILCS 5/28(a) (2012)). By order of June 19, 2014, the Board accepted the proposal for hearing and granted the motion to waive the signature requirement. On August 19, 2014, Clifford-Jacobs timely filed its pre-filed testimony.

In a letter dated July 11, 2014, the Board requested that the Department of Commerce and Economic Opportunity (DCEO) conduct an economic impact study of the proposal as required by Section 27(b) of the Environmental Protection Act (Act) (415 ILCS 5/27(b) (2012)).

The Board asked that DCEO determine by August 29, 2014 whether it would conduct such a study. The Board received no response from DCEO.

The Board set a date for hearing and published notice of the hearing in *The News Gazette*. The hearing took place as scheduled on September 23, 2014. The Board received the transcript of the hearing (Tr.) on October 6, 2014. Five persons testified, all on behalf of Clifford-Jacobs: Craig Rost, Executive Director of the Champaign County Economic Development Corporation; Jason Ray, General Manager of Clifford-Jacobs; George Martz, Facilities Manager of Clifford-Jacobs; Laura Weis, President and Chief Executive Officer of the Champaign County Chamber of Commerce; and Paul Schomer, Ph.D., P.E., of Schomer and Associates, Inc.

During the hearing, the hearing officer admitted 11 exhibits into the record:

- Pre-filed Testimony of Craig Rost, Champaign County Economic Development Corporation (Exh. 1)
- Pre-filed Testimony of Jason M. Ray, Clifford-Jacobs (Exh. 2)
- Pre-filed Testimony of George Martz of Clifford-Jacobs (Exh. 3)
- Photograph No. 1 (Exh. 4) (view of forged products being retrieved from a furnace after forging during annealing)
- Photograph No. 2 (Exh. 5) (view of forging hammer and crew in operation)
- Photograph No. 3 (Exh. 6) (view of product being retrieved from forging hammer)
- Pre-filed Testimony of Laura E. Weis, Champaign County Chamber of Commerce (Exh. 7)
- Schomer & Associates, Inc., *Noise Assessment and Feasibility Report* (May 12, 2014) (pre-filed testimony of Paul Schomer, Ph.D.) (Exh. 8)
- Chart showing updated number of residences within noise contours (Exh. 9)
- Updated aerial noise contour map (Exh. 10)
- Aerial map showing Land-Based Classification Standards classifications of Wilber Heights structures (Exh. 11)

The Board received the comments of Representative Chad Hays, 104th District, supporting Clifford-Jacobs' proposed amendments to the site-specific operational level at 35 Ill. Adm. Code 901.119; those were docketed as a public comment (PC 1). On November 3, 2014, the Board received post-hearing comments from Clifford Jacobs (PC 2).

BACKGROUND ON THE FACILITY AND PROPOSED AMENDMENTS

In this section, the Board describes the facility, its operations, the existing site-specific rule, and the proposed amendments. In doing so, the Board relies on and cites the proposal as well as supporting evidence, including pre-filed and hearing testimony of all witnesses other than Dr. Schomer. Because Dr. Schomer's pre-filed and live testimony, and related portions of Clifford-Jacobs' post-hearing comments, are highly technical and concentrate on a discrete subject, *i.e.*, noise emissions from the facility, the Board summarizes this evidence in a separate section.

Facility and Operations

The Facility

Clifford-Jacobs maintains an office and manufacturing complex on approximately 32 acres of land at 2410 North 5th Street in unincorporated Champaign, Champaign County. Prop. at 1, 4 & Exh. A. The facility has been operating at that location since 1923. *Id.* at 4. Originally owned by the Clifford and Jacobs families, the facility was acquired by IMT in 2007 and remains privately held. Exh. 2 at 2; Tr. at 14-15. Clifford-Jacobs employs approximately 108 people and manufactures forged metal products used in the construction, mining, forestry, energy, railway, and aerospace industries, among others.¹ *Id.*; *see also* Exh. 2 at 1; Exh. 7 at 2. According to Mr. Martz, Clifford-Jacobs' forgings become part of a variety of different end products, including "huge Caterpillar tractors, oil and gas drilling equipment, U.S. Defense Department missiles, and Chinook and Apache attack helicopters." Exh. 3 at 1; *see also* Exh. 2 at 1; Tr. at 24-25. Sales in 2014 were expected to exceed \$40 million. Exh. 2 at 2. The facility is a made-to-order or "job" shop, as opposed to a captive or catalog forge, meaning it only makes a product when a customer has submitted an order. Tr. at 20-21; Exh. 2 at 2-3.

Clifford-Jacobs is regarded as a "nationally known defense supplier" that, according to the Champaign County Chamber of Commerce, spends \$2,360,000 per year locally and maintains an annual payroll of approximately \$5,150,000. Exh. 7 at 2; Tr. at 78-79. The average Clifford-Jacobs forging worker earns approximately \$23.74 per hour. Prop. at 6. Clifford-Jacobs witnesses Mr. Rost and Ms. Weis testified about the importance to Champaign County and surrounding areas of retaining industrial employers like Clifford-Jacobs. They stated, among other things, that manufacturing and similar operations are key to maintaining a diverse workforce and adequate property tax revenues in the area, particularly given the large number of tax-exempt entities in the county such as the University of Illinois. Exh. 1 at 1; Tr. at 8-10, 77-78.

Clifford-Jacobs' Forging Process

The forging process begins with solid steel bars, billets, and ingots of varying sizes that are cut to size and then heated to nearly 2,350 degrees Fahrenheit in furnaces located near the forging hammers. Prop. at 3-4; Exh. 3 at 1. The heated metal is then placed into the forging hammer for shaping according to customer specifications. Prop. at 3. Each hammer includes "closed dies" containing the desired pattern, located on the hammer itself as well as in a stationary block above which the hammer is suspended. *Id.*; Exh. 3 at 1; Tr. at 50-51. The hammers' impact makes the metal conform to the shape of the selected die. Tr. at 51, 53. The number of hammer blows required to forge a product depends on the particular product, but varies from as few as 6 to as many as 90 blows. Tr. at 35, 55.

Building 4 of the facility houses the company's steam-driven forging hammers, of which there currently are 10, ranging in size from 1,500 to 25,000 pounds. Prop. at 1; *see also* Exh. 3 at

¹ The proposal states that there are "approximately 108" (Prop. at 3), while in pre-filed testimony the numbers cited are 115 (Exh. 2 at 2) and 114 (Exh. 1 at 1; Exh. 7 at 2).

1. Specifically, the hammers currently in operation have the following assigned numbers and weights:

Hammer No.	Weight (lbs.)
16	20,000
15	8,000
14	25,000
13	8,000
12	12,000
11	6,000
10	6,000
8	3,000
6	2,500
2	1,500

Source: Exh. 3 at 1; Tr. at 61; *see also* PC 1, Att. A (building 4 floor map).

Four additional hammers were also located and operated in building 4 but were subsequently taken out of service: hammers no. 3 (2,000 lbs.); 4 (2,000 lbs.); 7 (3,000 lbs.); and 9 (4,000 lbs.). PC 1 at Att. A; *see also* Tr. at 61-62. The equipment for these hammers is kept in building 4's back lot and "could be put back in" given sufficient market demand. Tr. at 56.

Clifford-Jacobs states that one or more of its forging hammers "currently operate from 7 a.m. to 3 p.m., 5 days a week." Prop. at 4. But, Clifford-Jacobs also maintains, when "economic conditions allow," the company has "operated two [7-hour] shifts, between 6:00 a.m. and 11:00 p.m., Monday through Saturday," as allowed under its site-specific operational level (35 Ill. Adm. Code 901.119). *Id.*; *see also* Exh. 3 at 1. In "virtually" no event are all of the facility's 10 operating hammers in use at the same time, since each hammer is suited to produce a specific range of forged materials. *Id.*; Exh. 3 at 1; *see also* Tr. at 46-47. The greatest number of hammers used during a shift over the past decade was 6 during the first shift and 3 during the second shift, in 2011 and 2012. Tr. at 15, 46-47.

In 2014, Clifford-Jacobs had 4 crews operating the forging hammers, and it had 3 crews doing so in 2013. Tr. at 28-29. The facility produced approximately 120,000, 130,000, and 260,000 forgings in 2013, 2012, and 2011, respectively. Tr. at 34-35. The number of hammer-trained crews available to Clifford-Jacobs is a limiting factor with respect to the number of hammers that may be simultaneously operated. Tr. at 29.

According to Mr. Ray, in the past six and one-half years, Clifford-Jacobs has reinvested more than \$7.3 million in the facility. Exh. 2 at 2. The facility has purchased a new computerized system for production scheduling; new die-making machines; 3-D scanning for forgings and design software; and has spent millions in hammer and furnace "rebUILds" as well as "overall improvements" in the forging area. Tr. at 23.

The 16 furnaces within building 4 necessitate substantial ventilation, both to allow heat to escape and to protect the equipment in the building. Prop. at 7; Exh. 3 at 2; Tr. at 62. Building 4's design provides for natural ventilation through windows and doors on the ground level and

ventilators running along the entire length of the roof, which at its peak is 45 feet high. Prop. at 7; Exh. 3 at 2. The rooftop vents allow steam below the pistons to escape when they are pushed down on to the dies. Tr. at 67. To ensure adequate ventilation, the windows and doors must be kept open for much of the year, particularly during summer. *Id.*; Exh. 3 at 2. Through convection, the furnaces draw cooler air in through the ground-level windows and doors, while heated air rises to and through the windows and ventilators on the roof. Prop. at 7; *see also* PC 1 at Att. B (locations of building 4 doors). In addition, building 4 has roll-open doors to accommodate the forklifts that bring the dies and material to be forged into the building and transport the hot forgings out of the facility. Prop. at 7; Tr. at 63. Because of the forklift traffic, these doors are generally kept open except in subzero temperatures. Tr. at 63.

Character of the Surrounding Area

Most of the area surrounding the Clifford-Jacobs complex is zoned for heavy industry, although farmland lies directly west of the facility. Prop. at 4. North of the facility are two retention ponds owned by Clifford-Jacobs, and further north is an “industrial” park composed of distribution-related businesses. Exh. 3 at 2; Tr. at 18. To the east is a freight switching yard operated by the Canadian National Railway (formerly the Illinois Central Gulf railroad (railroad)). *Id.* South of the facility is industrial property, including a soybean mill. *Id.* Southwest of the facility is a 36-acre unincorporated residential area known as Wilber (a.k.a. “Wilbur”) Heights, which began developing in 1928; many of its residences were built by or for Clifford-Jacobs workers. *Id.* at 4-5; Exh. 7 at 1; Tr. at 19-20. Champaign County re-zoned Wilber Heights in 1973 for heavy to light industry; residences then in existence became “grandfathered” nonconforming uses, a status that proscribes the rebuilding of or substantial repair to any residence in the area. Prop. at 5; Exh. 7 at 1; Tr. at 76-77. According to Clifford-Jacobs, the re-zoning has led to a “gradual reduction in the number of Wilber Heights properties still in use as residences.” Prop. at 5. Wilber Heights also includes a number of businesses such as excavating, recycling, and trucking operations, as well as a fire station. Exh. 3 at 2.

According to Clifford-Jacobs, in and around Wilber Heights are several potentially significant noise sources in addition to the facility. Prop. at 8-9. These include the railroad, a concrete plant, a recycling center, a trucking company, and a fire station. Prop. at 9; Exh. 3 at 2; Tr. at 25, 68-69.

Sound Emissions

As noted in the summary of Dr. Schomer’s testimony below, the forging process generates impulsive sounds that are released through building 4’s open doors and windows. Prop. at 7; Exh. 3 at 2; Tr. at 62, 66. The source of the noise is both the impact of the dies striking metal and of steam passing through the exhaust vents as the hammers drop. Exh. 3 at 2; Tr. at 66-67. According to Clifford-Jacobs, most of the sound released from the building is directed at areas other than Wilber Heights, particularly the non-residential areas east of the facility. Exh. 3 at 2; *see also* Prop. at 8 (claiming “much” of the impulsive sound is directed to areas other than Wilber Heights).

Immediately west of building 4 is a large building that houses die storage and inspection operations; the southern end of building 4 consists of an office addition. Prop. at 7-8. Clifford-Jacobs maintains that these structures act as buffers between the noise-generating area of building 4, where forging occurs, and Wilber Heights. Prop. at 7-8. Clifford-Jacobs states, and witnesses including Mr. Rost and Ms. Weis testified, that no one has ever received a complaint about noise from the facility. Prop. at 9; Tr. at 11, 25, 69, 79. In addition, Ms. Weis cited a 2010 news article that quoted a Wilber Heights resident as remarking that noise from the facility does not bother the residents. Exh. 7 at 1-2; Tr. at 79; PC 2 Att. E (*Wilbur Heights: Neighborhood Hangs on Against the Odds*, Champaign News-Gazette (July 25, 2010)).

Regarding sound control, Clifford-Jacobs claims there are no “viable economically reasonable, technically feasible measures” to substantially reduce noise from the facility. Prop. at 8; Exh. 3 at 2. According to Clifford-Jacobs, this is due in part to the nature of forging itself; “the physical limitations and necessary design parameters” of building 4; and the heavily industrialized character of the area surrounding the facility. *Id.* Mr. Martz explained that it is not “practical” to enclose, air condition, or sound-proof a forge shop because of the tremendous heat generated by the furnaces and the resulting need for adequate ventilation. Exh. 3 at 3; *see also* Tr. at 57-58.

In his pre-filed testimony, Mr. Martz stated that “[y]ears ago” Clifford-Jacobs reviewed several sound control options, but did not find a viable one. Exh. 3 at 3. These included commercially manufactured mufflers or silencers “specific to [the forging] industry”; the company found these to not be an “effective short or long term solution.” *Id.* At hearing, Mr. Martz elaborated that in the 1980s the facility purchased silencers for “five or six” hammers and installed some of them, but that they did not “hold up” because of the hammers’ pounding and impact. Tr. at 65, 68, 73. When those mufflers failed, Clifford-Jacobs did not install the other silencers it had purchased. *Id.* at 73. Mr. Martz stated that he believed at that point that he had exhausted the commercially available sound control options, and he made no further inquiries. *Id.* at 70. Clifford-Jacobs’ post-hearing comments include a copy of a December 1982 letter to Clifford-Jacobs from a manufacturer recommending four steam vent silencers; two of these, circled by Mr. Martz, were installed, but the other two were not. PC 2 at 4 & Att. C. Mr. Martz further testified that he had been to a number of conferences of a forging industry association and had never heard anyone claim to have successfully used any sound mitigation devices on the kind of “impact producing equipment” Clifford-Jacobs has. Tr. at 105.

Clifford-Jacobs Site-Specific Rule

Section 901.105(c) of the Board’s noise regulations (35 Ill. Adm. Code 901.105(c)) specifies sound emission limitations for existing (as of 1982) impact forging operations, including Clifford-Jacobs. The limits vary depending on the use of land that receives sound from a forging facility outside of its property line. That category of land use, in turn, determines the classification of the receiving property—Class A, B, or C—for purposes of the Board’s noise regulations. *See* 35 Ill. Adm. Code 901.Appendix B. For Class A receiving property such as residences, the maximum allowable impulsive sound levels from forgers are 58.5 decibels (dB) (A-weighted Leq) during the daytime (defined as any continuous 16-hour period between 6 a.m. and 11 p.m.), and 53.5 dB (A-weighted Leq) during nighttime (defined as the hours between 10

p.m. and 7 a.m. that are not part of the 16 continuous daytime hours). 35 Ill. Adm. Code 901.105(c); *see also id.* at 901.105(a) (defining daytime and nighttime); *id.* at 901.Appendix B (listing land-based classification standards and corresponding 35 Ill. Adm. Code 901 land classes). For Class B receivers such as commercial facilities, the same numeric limit applies at all times: 64.5 dB. *Id.* at 901.105(c). There is no numeric limit for Class C receiving property, which generally includes land used for industrial purposes. The above limits do not apply, however, to a forging operation for which the Board has adopted a permanent site-specific allowable operational level pursuant to Section 901.105(d). *Id.* at 901.105(c).

In 1985, the Board granted Clifford-Jacobs' petition for a site-specific operational level. Clifford-Jacobs Forging Co. Petition for a Site-Specific Operational Level Pursuant to 35 Ill. Adm. Code 901.105(d), R83-25 (Feb. 20, 1985). That site-specific rule, codified at 35 Ill. Adm. Code 901.119, provides that Clifford-Jacobs and all future owners of the facility

shall comply with the following site-specific operational level:

- a) Operate no more than fourteen hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 11:00 p.m. Monday through Saturday. 35 Ill. Adm. Code 901.119.

This is the rule that Clifford-Jacobs asks the Board to amend here.

Proposed Amendment and Justification

Clifford-Jacobs requests that its site-specific operational level be amended to allow the facility to operate up to 24 hours per day, 6 days a week. Prop. at 6. This would require amending the site-specific rule as follows. Clifford-Jacobs' proposed additions are underlined, and its proposed deletions appear stricken.

Clifford-Jacobs [] and future owners of the forging facility . . . shall comply with the following site-specific operational level:

- a) Operate no more than fourteen hammers at any one time; and
- b) Operate its forging hammers ~~only between the hours of 6:00 a.m. and 11:00 p.m.~~ up to 24 hours per day, Monday through Saturday. Prop. at 2.

As primary grounds for these proposed amendments, Clifford-Jacobs cites the need to be able to meet customers' demand for forging products in a "wildly fluctuating competitive market," and to enhance worker safety by altering starting and ending hours of each shift to move operations away from the hottest hours of the workday. Prop. at 5-6; *see also* Tr. at 23-24; Exh. 3 at 2; Exh. 7 at 2. Clifford-Jacobs adds that the proposed amendment would allow it to employ a third shift and thus enable the hiring of approximately 72 additional workers in periods of increased demand. Prop. at 6; *see also* Exh. 1 at 1; Exh. 7 at 2.

Clifford-Jacobs further maintains that if it is unable to timely meet customer demand, including that of its military customers, it may lose business to other forging companies, including those in other states and countries. Tr. at 27-28; *see also* Exh. 1 at 1. Mr. Ray testified that no other Illinois forging operation makes the full range of products that Clifford-Jacobs does. Tr. at 21. He further stated that in some years, most recently 2012, Clifford-Jacobs has lost business when it was unable to meet customers' demands, including a customer who moved over 70% of its business from Clifford-Jacobs to a forge shop in Texas. Tr. at 27-28. Mr. Ray did not specify why the facility was unable to meet customer demand at that time or in other years, but did state that "there was the need to run a third shift" in 2011-12. Tr. at 46-47.

According to Clifford-Jacobs, the only alternatives to the relief requested here would be to add hammer mills at a new location or outsource production to suppliers, many of which are located in other countries. Prop. at 6. But, Clifford-Jacobs continues, these two options present various problems that expanding production at the existing facility would not. *Id.* In particular, procuring a new location would, between site acquisition, design, and construction, require a "prohibitively expensive capital investment," take years to complete, and would "favor[] lower-cost foreign locations" over local options. *Id.*; *see also* Exh. 1 at 1-2; Tr. at 8-9. And, by acquiring a new facility, Clifford-Jacobs would lose the advantages of its current location, which witnesses considered ideal because of the facility's proximity to interstate highways and railroad access. Exh. 1 at 2; Exh. 7 at 1; Tr. at 10-11, 77. In addition, Mr. Rost testified that an estimated 70% of industrial workforce growth in Champaign County results from the retention and expansion of existing industries and employers rather than from the siting of new facilities. Exh. 1 at 1; Tr. at 8-9. As for outsourcing production, Clifford-Jacobs maintains it would raise quality assurance concerns and deprive Champaign County as well as the State of well-paying jobs and income and property tax revenues. Prop. at 6; Exh. 7 at 2; Tr. at 10, 78-79.

Attached to Clifford-Jacobs' proposal are letters supporting the proposed amendments. Prop. at Group Exh. E. These comments are from Representative Chad Hays, 104th District; Jon Reichard, President of A&R Mechanical Contractors, Inc.; Wilber Heights residents Mr. and Mrs. Jack Gaines; and Ron Stanley, Business Representative, International Association of Machinists and Aerospace Workers, District Lodge No. 8. *Id.* Also included were the comments of Michael Frerichs, who at that time was Senator for the 52nd District but who subsequently was elected State Treasurer. The comments generally cite the need for Clifford-Jacobs to be able to timely respond to the demands of a global market; the well-paying jobs and significant revenues Clifford-Jacobs provides to local governments and businesses; and Clifford-Jacobs' long history of operations at the same location. *Id.* In addition, Mr. and Mrs. Gaines state that they are "familiar with the noises" the facility makes, and that those do not "bother us any more than the noises that other companies and nearby traffic make." *Id.*

Questions Raised at Hearing and Responses

Number of Hammers in Use

As noted, Clifford-Jacobs seeks an amendment that would allow the facility to operate up to 14 forging hammers at the same time from 11 p.m. to 6 a.m., as the facility currently may do from 6 a.m. to 11 p.m. Monday through Saturday. Prop. at 2. However, the proposal and pre-

filed testimony reflect that the facility currently houses only 10 hammers. *Id.* at 1; Exh. 3 at 1; Tr. at 26, 37. At the hearing, Mr. Martz clarified that the additional four hammers were taken out of service and relocated to the facility's back lot. Tr. at 56; *see also* Tr. at 26 (stating that the four hammers were removed before the Board adopted Clifford-Jacobs' site-specific rule). In addition, the proposal states that "in virtually no event" are all of the hammers in the facility in operation at the same time, as each hammer is suited for production of a specified range of products. Prop. at 4. At the hearing, Mr. Ray testified that in the 10 years that he has worked for Clifford-Jacobs, the facility has never operated all 10 hammers at the same time. Tr. at 47. Rather, according to Mr. Ray, the "highest load was the six hammers on the first shift" in 2011 and 2012 and three hammers on the second shift. *Id.* Mr. Martz further stated that "[it] could happen" that Clifford-Jacobs would secure enough additional business to re-install the four hammers removed to the back lot, but "[w]e wouldn't expect" that to happen. Tr. at 56.

In pre-filed questions and at the hearing, the Board sought to clarify whether Clifford-Jacobs seeks an amendment allowing operation of up to 14 hammers or only the 10 hammers currently in service in the facility. *See, e.g.*, Hearing Officer Order of Sept. 9, 2014; Tr. at 27, 30-32, 40, 43. At the hearing, Mr. Ray stated that Clifford-Jacobs seeks authorization to operate up to all 14 hammers at one time, even though the likelihood of this scenario happening is "extremely little." Tr. at 40. According to Mr. Ray, the basis for requesting a 14-hammer maximum is that Clifford-Jacobs needs the flexibility to be able to meet any additional demand that materializes, for example, if another forge shop goes out of business. Tr. at 27, 30, 39-40.

Mr. Ray also cited the need for flexibility as a basis not to adapt the proposed amendments to the "more realistic worst case scenario" posited by Dr. Schomer, *i.e.*, one of the largest hammers operating at 100 percent capacity while the other two larger hammers are operating at 50 percent capacity. Tr. at 32. Mr. Ray explained that because impact forging is a "destructive process" that can result in maintenance issues, it is unlikely that any one hammer would be operating for up to six hours a day, particularly when dies have to be changed. Tr. at 32-33. However, Mr. Ray added, it is "possible" that all of the hammers could be "working at one time for periods of time," requiring operational flexibility. Tr. at 33.

Identification of Wilber Heights residents

With 35 Ill. Adm. Code 102.422 (Notice and Service Lists) in mind, the Board asked if Clifford-Jacobs would consider providing a list to the Board of the owners and addresses of each of the 24 houses used as residences referred to in Prop. Exh. D at 13, for inclusion in the notice list in this proceeding. Hearing Officer Order at 4, Question 10(a) (Sept. 9, 2014). The Board asked if Clifford-Jacobs had been in contact with the owners of the 24 houses shown in Dr. Schomer's report regarding its proposal. *Id.* at 5, Question 10(b).

Mr. Ray explained that residences are located southwest of the facility in Wilber Heights. Tr. at 19-20. Mr. Philip Van Ness, counsel for Clifford-Jacobs, characterized the area surrounding the facility as entirely industrial except for Wilber Heights, which he described as a mixture of houses and industrial facilities. *Id.* Mr. Van Ness also stated that it is generally understood that since Wilber Heights has been zoned for industrial use, the area is "gradually morphing into" such use. Tr. at 102. In addition, asked whether any study had been undertaken

of the makeup of Wilber Heights residents in terms of “social or environmental issues or implications,” Mr. Van Ness responded that he was not aware of any “specific information” that might bear on that issue, and that the company had not undertaken such a study. Tr. at 99-100.

Mr. Van Ness also confirmed at the hearing that Clifford-Jacobs did not know who owns or lives in the residences referred to in the Figure F of Dr. Schomer’s report (Exh. 8 at 13). Tr. at 100, 118. Dr. Schomer explained that the report found that approximately 24 houses would be subject to sound levels exceeding the nighttime standard for existing forges (based on an assumed 1-hour Leq of 65 dB at the control site). *Id.* at 114. He noted that although the company had had “incidental contact” with individuals, it had not done an “organized study” of the residences. *Id.* at 100. He stated that although Clifford-Jacobs could provide information about the residences in Wilber Heights, the owners might not live in those residences, and the residences may be unoccupied. *Id.* at 100, 118. He stated that the company would most likely have to do a property record search and review property tax records. *Id.* He further stated that while identifying the residents would take time, Clifford-Jacobs would make the effort to identify who owns and lives in the affected residences. *Id.* at 100-101. Mr. Van Ness added that the company had not been prepared to do a study of the residences in an “organized fashion” because the “rule didn’t require it”; nevertheless, he added that Clifford-Jacobs and its representatives “can do it and will do it.” *Id.* at 118-19.

In its post-hearing comments, Clifford-Jacobs provides a list, based on Champaign County Assessor records, of the owners of 40 properties in Wilber Heights, by Permanent Index Number (PIN). PC 2 at 4 & Att. D. Specifically, the information relates to properties in the 200-400 blocks of Wallace Avenue; the 300-400 blocks of Paul Avenue; and the 400 block of Wilber Avenue. *Id.* at 4. Clifford-Jacobs represents that these areas “correspond roughly with the areas identified by Dr. Schomer on page 13 of his report” (Exh. 8 at 13 (Figure F)).

Clifford-Jacobs explains that some properties may have more than one associated PIN and the apparent ‘dividing line’ between adjacent properties may not correlate with the actual legal boundaries of the affected lots. PC 2 at 4. Of the 40 listed PINs, 16 are identified as “owner/occupied single family” homes. Of these, 5 are located on Wallace Avenue, 9 on Paul Avenue, and 2 on Wilbur Avenue. PC 2 at Att. D. Six of the 40 PINs are listed as “commercial” properties, all but one of which is on Wallace Avenue, and only one of the 40 is identified as “industrial” property. *Id.* Clifford-Jacobs further states that some lots on the list may not be occupied or developed. *Id.* at 4. The owners of the listed properties are a mix of individuals and entities. *Id.* Of the 40 PINs, 25 are owned by 9 individuals or entities. *Id.* Two of the 40 PINs are owned by Clifford-Jacobs. *Id.*

Noise Classifications of Affected Structures

In pre-filed questions, the Board asked Clifford-Jacobs to provide the land use classification according to the Land-Based Classification Standards (LBCS) of the Wilbur Heights properties—setting aside their classification for local zoning purposes. The LBCS code could then be used to determine the properties’ classification—Class A, B, or C—for purposes of applying the sound level limits under Section 901.105(c). The Board also asked whether Dr. Schomer’s “more realistic ‘worst case’ scenario” for operations at the facility would result in the

emission of sound to any Class B land above the allowable sound levels under 35 Ill. Adm. Code 901.105(c).

At the hearing, Mr. Van Ness explained that the classification of Wilber Heights properties for purposes of 35 Ill. Adm. Code 901.101—Class A, B, and C—are color-coded in Exhibit 11, admitted at the hearing. Tr. at 119. Mr. Van Ness stated that, as far as he could “tell,” the applicable LBCS codes of the properties fall generally within the color codes used in the exhibit. Tr. at 120. Mr. Van Ness further noted that almost all of the structures identified on the map fall within the LBCS 1000 series (*i.e.*, Class A, generally residential land uses) and, in a few cases, the LBCS 3000 series (*i.e.*, Class C, generally industrial uses). Tr. at 119; *see also* 35 Ill. Adm. Code 901.App. B. Thus, according to Mr. Van Ness, the “lion’s share” of the properties are in fact residential, but a “significant percentage” are Class C properties, *i.e.*, “industrial type” uses. Tr. at 120. Exhibit 11 reflects that numerous Wilber Heights structures are Class A properties, but that only 3 buildings fall within Class B and 8 within Class C. Exh. 11.

Mr. Van Ness then addressed the sound levels that would be emitted to Class B properties under Dr. Schomer’s realistic worst case scenario—that is, one of the largest hammers operating at 100% capacity while the other two are operating at 50% capacity. Tr. at 121. Mr. Van Ness stated that his “guess” was that under that scenario there “probably” would not be sound emissions to any Class B land above the allowable levels. *Id.*

Summary of Dr. Schomer’s Testimony and Related Post-Hearing Comments

Dr. Schomer’s Pre-filed Testimony

As noted above, Dr. Schomer prepared a Noise Assessment and Feasibility Report (Schomer Report) dated May 12, 2014 (admitted at the hearing as Exhibit 8, Dr. Schomer’s pre-filed testimony) in which he described the community surrounding the facility, discussed the existence of any sound abatement measures, and examined the sound levels that would exist in excess of the numeric limits for existing impact forging operations.

Dr. Schomer stated that most of the property surrounding the facility is zoned for heavy industry, although farmland is located directly west of the facility. Exh. 8. at 1. He reported that to the southwest of the facility is a “mix of industrial, commercial and residential property; all of the residential property is located within an area zoned for heavy to light industry.” *Id.* Dr. Schomer noted that when the Clifford-Jacobs built the facility in 1923, the property surrounding it was either vacant or farmland with the exception of the railroad. The 54 residential properties now in the vicinity of the facility were constructed in the decades after 1923, thus, Dr. Schomer opines, the residents acquired their land “with knowledge of [Clifford-Jacobs’] operations and at values that already reflect whatever disbenefits, if any, as a result of exposure to sound levels from the operations of the Petitioner.” *Id.*

Dr. Schomer included a series of maps that show the locations of the residences in proximity to the facility, as well as a noise contour map showing “the existing 58.5 dB daytime limit and contours in 5 dB increments above the limit.” Exh. 8 at 1. Dr. Schomer reported that

there are 54 residences in the immediate vicinity of the facility, which is down 12 from thirty years ago. He noted these 12 residences still exist but are now used for commercial or industrial purposes. *Id.* Dr. Schomer also noted that there are 12 of the 54 houses used as residences that are in excess of 58.5 dB, and 2 of these are at or in excess of 63.5 dB. *Id.* at 2.

Dr. Schomer provided information from a door-to-door survey conducted in April 2012 that indicated at least 6 houses, primarily in the eastern half of the residential area, are owned by employees of businesses in the area. Exh. 8 Annex B at 1. This survey was conducted of businesses “that could possibly create noise and were in proximity of Clifford-Jacobs Forging. *Id.* at 2. Ten businesses were surveyed to determine “when the fewest loud noise sources were in operation in the area around Clifford-Jacobs Forging, in order to perform testing” during the quietest times of the day. The survey found that the “hours of noise operation mostly correspond to the hours of a business’s operation,” with the longest hours being 4 a.m. to 6 p.m. Monday through Friday. The only exception was the railroad, which operates at all days and times. *Id.* at B3. As a result of this survey, sound measurements were conducted between 8 or 8:30 p.m. and 11 p.m. *Id.*

The Schomer Report examined the feasibility of designing and implementing noise abatement measures for the facility. Exh. 8 at 2. Before examining possible abatement strategies, Dr. Schomer noted it is important to understand “the manner in which Petitioner’s forge plant is constructed and operated.” *Id.* The forging hammers are located in buildings constructed approximately 90 years ago that are composed of “corrugated sheet metal, windows, roll-open doors that are approximately 10 feet high, and steel to support the walls.” *Id.* There are also windows and ventilators that run the length of the upper portion of the building. The building houses furnaces that can heat up to 3.5 tons of steel per hour to a temperature of 2400° F, which requires tremendous ventilation. *Id.*

According to Dr. Schomer’s report, the heated air and the impulsive sound generated by the forging hammers exits through the building’s many openings. Exh. 8 at 2. As a result, “there is a relationship between adequate and necessary ventilation and sound emitted to the environment.” *Id.*

Dr. Schomer reported that structural limitations and space requirements, in addition to the ventilation requirements, impact various abatement strategies. Exh. 8 at 2. For example, a 1983 study by Hollman Engineering recommended that “no additional load be added to this structure [Clifford-Jacobs’ facility].” Exh. 8. Fig G at 14. This recommendation eliminated the options of sound absorptive wall treatments and mechanical ventilation required to be placed on the walls or roofs. Exh. B at 2. Further, Dr. Schomer reported that “ordinary acoustical barriers are ineffective when the receiver is downwind of the barrier and forge shop.” *Id.*

According to the Schomer Report, Clifford-Jacobs examined exhaust silencers for noise abatement in 1972, 1975, and 1984. Exh. 8 at 3. Clifford-Jacobs found that “the silencers worked to attenuate the noise—about 22 dB—but the few silencers that were installed experienced frequent and repeated breakage, and the use of silencers was finally abandoned.” *Id.* It was noted that the “commercially designed and built silencers were inadequate for the vibration and shock transmitted through Petitioner’s exhaust vent piping.” *Id.*

Dr. Schomer also reported that the relocation of the vent stacks to the east side of the building was examined as a way to create a barrier to mitigate the noise levels reaching the residences located to the west. Exh. 8 at 3. Uncertainties regarding the measurement of the noise, such as the location of the railroad marshaling yard, made it impossible to “conclude that the forge would be benefitted in anyway by relocating the vent pipes.” *Id.*

Dr. Schomer stated that when acoustic emissions from the facility are measured, “there is a clear ‘boom-shis’ sound that can be heard and measured at measurement sites along Wallace Avenue,” but the “shis” sound is not evident in the interior of the community. Exh. 8 at 3. The use of exhaust silencers could improve the noise emitted from building 4 by 3 to 6 dB at 11 of the residences that are currently above the 53.5 dB limit. *Id.* However, Dr. Schomer reiterates the finding that “commercial silencers may not be adequate for the needs of Petitioner.” *Id.* at 4.

The option of installing a sound wall along the east side of 5th street was also examined in the Schomer Report as a means of noise abatement. Exh. 8 at 4. It was found that a sound wall would not be effective. First, sound walls and other barriers are only effective “when they are close to the source or the receiver; the east side of 5th Street is close to neither.” *Id.* Also, the high frequency “shis” sound is emitted from the vent pipes on the roof of the facility, which is high above the ground. According to Dr. Schomer, “no noise wall of reasonable height would even break the line-of-sight from the vent pipes to nearby homes,” thus, a sound wall is not a viable option. *Id.*

Dr. Schomer revealed the “estimated worst case emissions measured at the closest Class A land is 63.5 dB (A-weighted Leq), and about 65 dB at the control point.” Exh. 8 at 5. The control point level is estimated to be “nearly the limiting case and sound levels will vary upward, towards this limit, depending upon atmospheric conditions, particularly wind velocity and direction.” *Id.* Dr. Schomer further noted that because the residences are located to the west and southwest of the forging facility, it would take an east wind for the residences to be downwind of the facility and therefore more affected by the noise. *Id.*

Dr. Schomer opined that “the probability of all three large hammers operating at 100% simultaneously for any period is vanishingly small.” Exh. 8 at 5. He then outlined a “more realistic ‘worst case’ scenario” that would result when “one of the three largest hammers is operating at 100% capacity while the other two largest hammers are operating at approximately 50% of capacity.” *Id.* Dr. Schomer calculated the noise levels in each of three possible scenarios where one of the largest hammers is operating at full capacity and the other two are operating at 50% capacity and found that the noise level rounded to the nearest whole decibel was 65 dB at the control point. *Id.* at 5-6.

Dr. Schomer identified the number of residences that would be exposed to sound levels in excess of the numeric limits under 35 Ill. Adm. Code 901.105(c) if Clifford-Jacobs is granted the proposed amendment to their current site-specific operational level. Exh. 8 at 7. There are “24 houses used as residences that will be at or in excess of the 53.5 dB nighttime limit, and of these, 12 will be at or in excess of 58.5 dB, two will be at or in excess of 63.5 dB.” *Id.* Further, Dr. Schomer reminded that “no improvements can be recommended at this time.” *Id.*

Dr. Schomer's Hearing Testimony

At the hearing, Dr. Schomer testified that the area around Clifford-Jacobs' facility is an industrial area with some houses and "lots of other noise sources and other problems. . . ." Tr. at 82; *see also* Tr. at 95 (identifying truck traffic and the railroad as the area's primary noise sources). Dr. Schomer further stated that he was retained by Clifford-Jacobs to assess the facility's current and prospective noise levels and what noise mitigation, if any, could be accomplished. *Id.* To that end, his first step was to visit the facility to learn what the operations are and the sounds that are emitted. *Id.*

Dr. Schomer described the "stack effect" of building 4's ventilation system, which pulls cool air into the building as heat rises from the hammers. Tr. at 83. Because the building must remain open in so many places to achieve this effect, Dr. Schomer continued, it does not contain the sound indoors. *Id.* The two sounds that may be detected at the facility's perimeter are that of the hammers striking metal pieces—propagating a "boom" sound—and of "steam venting off the hammer," which emits a "shis" sound. Tr. at 87-88. Dr. Schomer's impression was that most of the sound attenuation associated with moving away from the facility into Wilber Heights was of the higher frequency steam noise, emitted from the vents located near the roof, and not the lower frequency hammer sounds. Tr. at 88.

As for the steam-related "shis" sound, Dr. Schomer explained that one possibility he considered for noise mitigation was moving building 4's steam vents from the west side, above the forging hammers—to the east side of the building's roof. Tr. at 90. To assess this option and test whether the roof would act as a sound barrier if the vents were moved from west to east, Dr. Schomer attempted to take noise measurements to the east of building 4. Tr. at 90-91. However, Dr. Schomer testified, he was unable to "get good measurements" because of "continuous noise" from the railroad. Tr. at 91. Accordingly, Dr. Schomer was unable to assess the efficacy of moving the steam vents away from the side of the roof that faces Wilber Heights. *Id.* And taking measurements further east of the railroad would pose other problems; accordingly, Dr. Schomer did not recommend doing such testing. Tr. at 91-92.

In reviewing his findings, Dr. Schomer clarified that "A-weighted," used in reference to sound levels, is a commonly used filter that excludes much of the lower and higher frequencies of sound, leaving the "middle frequencies." Tr. at 87. And a decibel, or dB, is a logarithmic measure of relative power or relative energy. *Id.* Accordingly, the higher the decibel level is, the more energy there is, and the louder the sound is. *Id.*

Dr. Schomer then explained that Figure A in his noise assessment report shows the control position or reference point for the noise measurements he took, which was located just outside the boundary of Clifford-Jacobs complex. Tr. at 84, citing Exh. 8 at 8. From there, Dr. Schomer took measurements at roughly equally spaced distances in the open field along Wallace Avenue, to detect "open field sound attenuation." *Id.* The remaining measurement sites were located along radial lines in Wilber Heights running from the measurement positions along Wallace Avenue. *Id.* Dr. Schomer testified that sound level measurements at the different sites in Wilber Heights were approximately 6 dB lower than the sound level measurement at the same

distance in the agricultural field. Tr. at 86. Thus, Dr. Schomer concluded that noise from the facility was being attenuated by exterior rows of houses facing the facility and shielding the interior rows of houses. *Id.* In addition, Dr. Schomer agreed that “[t]here [will] be some attenuation” of the impact-driven “boom” sounds because of Clifford-Jacobs’ buildings situated between building 4 and Wilber Heights. Tr. at 89.

Regarding Figure F in his report (Exh. 8 at 13), Dr. Schomer explained that it showed three noise contours within Wilber Heights, which represent the presumptive 53.5 dB nighttime sound limit, the 58.5 dB daytime limit, and the 63.5 dB level, a 5 dB increment above the daytime limit. Tr. at 93. Figure F, then, shows in blue, yellow, and green, the houses that fall within one or more of these 3 noise contours. *Id.* Dr. Schomer included in each contour any house that touched the contour at all. Tr. at 94. The houses shown in green in Figure F would, according to Dr. Schomer’s projections, receive noise from the facility at or above 63.5 dB under Clifford-Jacobs’ proposal; those marked in yellow are projected to receive between 58.5 and 63.5 dB; those shown in blue would receive between 53.5 and 58.5 dB; and the houses marked in orange would be “unaffected” because they would receive less than 53.5 dB. *Id.* The unmarked structures in Figure F are either commercial or industrial facilities. Tr. at 94-95.

In preparation for the hearing, Dr. Schomer made a follow-up visit to Wilber Heights to visually survey the neighborhood. Tr. at 95. Dr. Schomer testified that he saw approximately 6 well-maintained houses that had no shrubbery or “roads” or “pathways” out to the street” and that were instead connected to “industrial areas” of Wilber Heights, with pickup trucks, or no vehicles at all, parked next to the houses. Tr. at 96, 101. Dr. Schomer opined that these structures were no longer being used as houses, “or at least not as residences.” *Id.* The other change he noted from his last visit was more truck traffic, including tractor trailers and a “big” garbage truck, on Paul Street, and the absence of young families. Tr. at 96-97, 101.

Dr. Schomer further stated that he prepared a chart, admitted as Exhibit 9, providing adjusted numbers he developed based on his follow-up visit of the houses that still appear to be used as residences that are within each noise contour. Tr. at 97. In addition, Dr. Schomer prepared a revised noise contour map, admitted as Exhibit 10, showing, with solid red circles, the structures that appeared to no longer be occupied residences as well as, with dotted red circles, three houses being used as a residence by the owners of a business also “at that property.” Tr. at 98-99, 102-03. Dr. Schomer confirmed that this exhibit was based purely on his observations when he drove through Wilber Heights in preparation for the hearing. Tr. at 101.

Dr. Schomer then addressed the availability of noise mitigation options for the facility. Tr. at 103. Dr. Schomer concluded it would probably be “easiest” and most beneficial if the facility could find a way to abate the “shis” sound; not much could be done to abate the “boom” sound, in his opinion. Tr. at 103-04. Dr. Schomer noted, however, that while “in theory” the “shis” sound could be mitigated, Clifford-Jacobs had tried twice, unsuccessfully, to do this with silencers. Tr. at 104. Dr. Schomer did not know whether there had been any intervening technological advances in silencers that might offer a meaningful solution. *Id.* In addition, Dr. Schomer testified that there must necessarily be a correlation between the size of a hammer and the “energy” of the “shis” sound. Tr. at 104-05.

In response to a Board question about the possibility of using a sound barrier to reduce noise from the facility, Dr. Schomer stated that he “unequivocally” would not recommend “barriers for this setting,” as they are not “going to work.” Tr. at 106. According to Dr. Schomer, this is because of “geometry”—*i.e.*, it is not feasible to install a barrier close to the source or the receiver—and sound frequencies. Additionally, Dr. Schomer explained, to mitigate sounds emanating from the roof of building 4, a barrier would have to be “something like” 50 feet high, which would not be “reasonable” and had never been done, as far as he knew. Tr. at 106-07.

Dr. Schomer also addressed a Board question about the statement in his report (Exh. 8 at 4) that no sound wall of “reasonable height” would even break the line-of sight from the vent pipes to nearby homes (Tr. at 107). Dr. Schomer explained that he was referring to a sound wall constructed near the forge building, but that he believed it would also apply to a wall erected near the affected residences, which would have to be at least 16 to 20 feet high and might still be ineffective because of the height of the forge building—45 feet, at its peak. Tr. at 107-08. Dr. Schomer further opined that a sound wall constructed close to building 4 that did not break the line-of-sight would not be effective in mitigating noise emitted through the building’s windows and doors. Tr. at 108. Some of the low-frequency sound is emitted through the building’s upper windows, and low-frequency sounds are harder to attenuate, such that a noise barrier of a reasonable height would not work. Tr. at 108-09. And meaningful mitigation would be prohibitively expensive—half a million to a million dollars, according to Dr. Schomer. Tr. at 109-110.

Also in response to a Board question, Dr. Schomer explained why in his report he had characterized as a “more realistic ‘worst case’ scenario” (Exh. 8 at 5) one of the three largest forging hammers operating at 100% capacity and the other two largest hammers operating at the same time at approximately 50% capacity (Tr. at 110). Dr. Schomer testified that this scenario was more realistic because hammers need regular repairs and require sufficient personnel to operate. *Id.* Addressing another Board question, Dr. Schomer stated that there would be a “little bit more noise” from the simultaneous operation of all 10 currently functioning hammers than there would be in his realistic worst case scenario, since the smaller hammers contribute much less to sound levels than the larger hammers. Tr. at 111. The size of the hammers in use is the “primary factor” in how much sound levels increase as hammers are added. Tr. at 112. With all 14 existing hammers operating simultaneously, Dr. Schomer added, the overall sound level would increase by 2 dB as compared to the level of 10 hammers operating at the same time; at the “reference” or control position, this would amount to 67 dB rather than 65 dB. *Id.* at 111-12.

Dr. Schomer also opined, in response to a Board question, that the Board could adopt a numeric sound limit of 63.5 dB from 11 p.m. to 6 a.m.—the worst case sound level identified in his report. Tr. at 112. Dr. Schomer clarified that the worst case scenario assumes a 1-hour Leq of 65 dB, A-weighted, at the control point. Tr. at 113. If that level were higher, there would be more than 24 houses above the nighttime limit of 53.5 dB; a decibel higher would mean 4-5 additional houses would be subject to noise above the 53.5 dB level. Tr. at 114-15. Dr. Schomer added that while it would be “okay” if the presumed level were 66 dB instead of 65 dB, 67 dB seemed “unreasonable” to him. Tr. at 115. Dr. Schomer added that an incremental difference of 1 dB shifted the noise contour by “three or four or five houses.” *Id.* Mr. Ray testified that it

would be acceptable to Clifford-Jacobs if the Board were to impose a numeric limit of 65 dB for the seven additional hours the facility seeks to operate. Tr. at 116.

Related Portions of Post-Hearing Comments

Clifford-Jacobs' post-hearing comments reiterate the relationship between noise and energy, distance, and time, and also that the “shis” sound emanating from the steam vents is generally unmitigated until it reaches the structures on Wallace Street, at which point they become “sharply attenuated. . . .” PC 2 at 2. This is why, according to Clifford-Jacobs, most of the “(apparently) residential” structures that would be impacted above the 53.5 dB (A-weighted Leq) general nighttime limit are on Wallace Street, immediately west of the facility, whereas “only a handful of such structures on Paul and Wilbur Streets” would be since they are separated from the facility by rows of other Wilber Heights structures. *Id.*

Clifford-Jacobs adds that Dr. Schomer explained at the hearing that the facility's smaller hammers combined produce much less noise than the three largest hammers. PC 2 at 2, citing Tr. at 111-12. According to Clifford-Jacobs, Dr. Schomer quantified this relationship in a table in the post-hearing comments, which shows that it takes the following number of forgings on the smaller hammers to produce the noise of one of the 25,000 lb. forgings: 2 (20,000 lb.); 4 (12,000 lb.); 11 (8,000 lb.); 17 (6,000 lb.); and 69 (3,000 lb.). PC 2 at 2-3. Implicit in these figures, Clifford-Jacobs continues, is the point that if all 14 hammers, including those currently out of service, operated at the same time, the incremental contribution of the 11 smaller hammers *combined* would be only approximately 2 dB—“virtually imperceptible.”² *Id.* at 3.

Clifford-Jacobs' post-hearing comments also address a Board question about whether it would be feasible and desirable for the Board to allow the extended hours of operation—11 p.m. to 6 a.m.—but to impose a maximum allowable sound level for those hours rather than an operational limit (currently, no more than 14 hammers at the same time from 6 a.m. to 11 p.m.). PC 2 at 5-7. Clifford-Jacobs states at the outset that its “preference” is for a nighttime operational level, following the “# of hammers/hours per day” protocol that the Board has used since 1985. *Id.* at 5. According to Clifford-Jacobs, imposing a numerical noise limit would “constitute a sharp break” from Board precedent that has developed since the site-specific operational levels were established in 1983-85. *Id.* Clifford-Jacobs adds that the site-specific operational levels, adopted for every Illinois forging operation then in existence, reflected the Board's understanding that requiring these facilities to comply with the generally applicable nighttime limitation of 53.5 dB Leq would “severely damage the industry.” *Id.* In fact, Clifford-Jacobs continues, in every such site-specific rulemaking, the Board has expressly elected not to adopt a specific numerical limit. *Id.*, citing Vaughan & Bushnell Mfg. Petition for a Site-Specific Operational Level, R83-32, slip op. at 3 (Dec. 6, 1984); Clifford-Jacobs Forging Co. Petition for a Site-Specific Operational Level, slip op. at 3 (Dec. 6, 1984). Nor, Clifford-Jacobs maintains, has the Board abandoned that approach in subsequent similar rulemakings. *Id.*, citing

² This appears to be inconsistent with Dr. Schomer's hearing testimony. In particular, Clifford-Jacobs' claim here is that the “incremental contribution” of the 11 smaller hammers to total sound levels in a simultaneous-operation scenario would be 2 dB. But Dr. Schomer testified, as summarized above, that adding the four hammers not currently in place in that scenario would increase sound levels by 2 dB. See Tr. at 111-12.

Proposal of Vaughn & Bushnell Mfg. Co. of Amendment to a Site-Specific Rule: 35 Ill. Adm. Code 901.121, R06-11 (Jan. 4, 2007).

Clifford-Jacobs emphasizes that to realize the “positive outcomes” detailed in its proposal and at the hearing, the company needs “maximum flexibility”; given current market realities, such flexibility is “key” to the facility’s survival. PC 2 at 6. That flexibility, according to Clifford-Jacobs, is more attainable under a site-specific operational level because the market dictates what products are in demand at a given time and which hammers are needed to meet that demand. *Id.* In addition, Clifford-Jacobs adds, an operational rather than numerical noise limit would promote “comprehension, consistency and stability, while protecting the environment.” *Id.*

Nevertheless, Clifford-Jacobs states that if the Board is inclined to extend the facility’s permissible hours of operation but to impose a numerical noise limit rather than an operational level during those hours, a 65 dB Leq standard is “the lowest numerical standard supported by the record.” PC 2 at 6. Clifford-Jacobs asserts that in the “mass” site-specific rulemakings of 1983-85, the Board stated that it did not “foresee any adverse health effects from a 65 [dB] Leq.” *Id.*, citing Vaughan & Bushnell, R83-32, slip op. at 3 (Dec. 6, 1984); Clifford-Jacobs, R83-25, slip op. at 3 (Dec. 6, 1984). Clifford-Jacobs maintains that there is “no reason” to suspect that this assessment is not “equally valid today.” *Id.* This is consistent, Clifford-Jacobs adds, with Dr. Schomer’s hearing testimony as well as the Schomer Report. *Id.*, citing Tr. at 112-16; Exh. 8 at 5.

Clifford-Jacobs notes that Dr. Schomer prepared Attachment F to the post-hearing comments, which sets out eight “Control Site Calculator” models, to demonstrate the operational implications of imposing a 65 dB Leq limit. PC 2 at 6-7. The first of these models, Clifford-Jacobs explains, shows a “simple” operational scenario under a 65 dB Leq limit: the largest (25,000 lb) hammer in operation, producing its design limit of 60 pieces. *Id.* at 7. The resulting percentage of the “reference busy hour” noted in the model is 65%, “meaning that the remaining 35% is available to use.” *Id.* Control Site Calculators 2-6 are based on a scenario in which only one hammer is operating at one time. *Id.* at Att. F. Control Site Calculators 7 and 8 show the sound level and percentage of the reference busy hour available for use associated with operation of a mix of 6 different Clifford-Jacobs hammers ranging in size from 3,000 lb. to 25,000 lb. *Id.* Clifford-Jacobs maintains that, taken together, Control Site Calculators 2-6 demonstrate that under a 65 dB limit, Clifford-Jacobs could produce 70 pieces on the 20,000 lb. hammer, 100 pieces on the 12,000 lb. hammer, and 300 pieces on the 3,000 lb. hammer. *Id.* & Att. F. That scenario assumes that the products made by these hammers are what the market calls for at a given time. *Id.* at 7. If, however, the market demands a different mix of products, such as that reflected in Control Site Calculators 7 and 8, Clifford-Jacobs would be “over budget” under a 65 dB standard and would be unable to meet that market demand. *Id.* Clifford-Jacobs stresses that imposing a nighttime dB-based limit would constrain flexibility to meet the demands of its customers, including “the U.S. Army as well as worldwide commercial clients,” and could act as an “obstacle to growth and continued viability.” *Id.*

Clifford-Jacobs also cautions that while it historically has had no more than 6 trained crews available to operate the hammers, that does not mean it is “unrealistic” for it to request

permission to operate all 14 of its hammers at the same time. PC 2 at 7. The forging industry is “consolidating and shrinking,” Clifford-Jacobs asserts, and Clifford-Jacobs is one of a “very few” forgers with the range of production capabilities afforded by the size and number of hammers that its facility has. *Id.*, citing Tr. at 21-22. Clifford-Jacobs contends it must be “freed to grow” if it is to maintain its ability to compete. *Id.*, citing Tr. at 24. The record, Clifford-Jacobs adds, “provides no basis for hampering that ability.” *Id.*

In summary, Clifford-Jacobs argues that it has demonstrated the need for flexibility afforded by its proposed rule amendment, both based on business necessity and employee safety. PC 2 at 8. Clifford-Jacobs further contends that it has shown there are no economically and technically feasible alternative means of “silencing” its hammers. *Id.* Finally, Clifford-Jacobs states that it has demonstrated its value to the community it serves and its key role in the local, State, and national, economy. *Id.*

DISCUSSION

The Board adopts rules pursuant to Title VII of the Act. *See* 415 ILCS 5/26-29 (2012). The Board’s rulemaking authority 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, 613 N.E.2d 719, 734 (1993). Under the Act, the Board is required to 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) (2012). The Board’s review in rulemakings is the same whether the rule is specific to one region or discharge or the rule is generally applicable statewide. The Board addresses below these factors as they apply to Clifford-Jacobs’ proposal. First, however, the Board takes up a preliminary issue.

Preliminary Matter

The Board notes that there is a discrepancy between the facility’s location as set forth in Clifford-Jacobs’ site-specific rule—North Market Street (*see* 35 Ill. Adm. Code 901.119)—and various parts of the record, including the letterhead on the pre-filed testimony of two Clifford-Jacobs witnesses, which identify the facility’s address as 2410 North Fifth Street (*see* Exh. 2; Exh. 3; Tr. at 13, 48). For the sake of clarity and accuracy, the Board asks Clifford-Jacobs to specify in a comment during the first-notice comment period the correct address of its facility as it should appear in the site-specific rule if amended.

Character of the Affected Area

The Board begins its analysis of the proposal by considering the character of the area involved. The record reveals that the facility has operated since 1923 at the same location in unincorporated Champaign County. Most of the surrounding area is zoned for heavy industry, although there is farmland directly west of the facility, as well as Wilber Heights, the 54-residence community to the facility's southwest that since 1973 has been zoned for heavy to light industry. *See Prop. at 4-5; Tr. at 19-20; Exh. 8 at 1.* When that zoning went into effect, existing Wilber Heights residences were "grandfathered" in as nonconforming uses; as such, they may not be rebuilt or substantially repaired as residences. *See Prop. at 5; Exh. 7 at 1.* This has led to a gradual reduction in the number of houses used as residences. *See Prop. at 5; Tr. at 96, 101; Exh. 10.* Today, Wilber Heights is a mix of industrial, commercial, and residential property. *See Exh. 3 at 2; Exh. 8 at 1.* Building 4 of the facility, which houses the forging hammers and exhaust vents from which impulsive sounds radiate into the surrounding area, is separated from Wilber Heights by another Clifford-Jacobs building to the west and an office addition to the south. *See Prop. at 7-8.* In addition to Wilber Heights, the facility is surrounded by farmland, to the west; a railroad and freight switching yard, to the east; retention ponds and an industrial park, to the north; and other industrial property, including a soybean mill, to the south. *See Prop. at 4; Exh. 3 at 2; Exh. 8 at 1.*

The area surrounding the facility contains several additional sources of sound emissions, including the railroad and switching yard, a concrete plant, a recycling center, a soybean processing plant, and a fire station. *Prop. at 9; Exh. 8 at 6 Annex B at 2-3.* According to Dr. Schomer, several of these sources have primary noise-making hours beginning at or around 4 a.m., *e.g.*, Illini Recycling. *Exh. 8 at 6.* These sources thus begin to emit noise a couple of hours before Clifford-Jacobs is currently permitted to begin operations, and toward the latter part of the nighttime period during which the facility seeks to operate. *See Prop. at 2.* In addition, one noise source (the rail switching yard) emits sound at "[a]ll days and times." *Exh. 8 at 6; see also Tr. at 91 (testimony of Dr. Schomer that he was unable to take sound measurements east of the facility because of "continuous noise" from the railroad).*

Of course, the facility itself emits noise into the surrounding area. The forging process generates impulsive sounds that exit through building 4's many openings. *See Exh. 3 at 2; Exh. 8 at 2; Tr. at 62, 66.* The emitted sounds include both the lower-frequency "boom" of the dies striking metal and the higher-frequency "shis" of steam passing through the exhaust vents when the hammers drop. *See Exh. 8 at 3; Exh. 3 at 2; Tr. at 66-67.* Dr. Schomer determined that the "shis" sound is attenuated when it encounters the rows of houses in Wilber Heights, whereas the "boom," while mitigated by Clifford-Jacobs' buildings situated between building 4 and Wilber Heights, is not readily attenuated. *See Tr. at 88-90.* Dr. Schomer's report and hearing testimony regarding the number of residences that would be exposed to sound greater than the default nighttime limit of 53.5 dB (A-weighted Leq) demonstrate a declining number of houses used as residences, now at 20 to 24. *Exh. 8 at 5-7, 13; Exh. 95-97.* As for commercial properties falling within Class B, the record suggests that no such property would receive sound emissions above the default 64.5 dB (A-weighted Leq) limit for Class B receivers. *See Tr. at 121; Exh. 11; see also 35 Ill. Adm. Code 901.105(c).* Also relevant is that several Clifford-Jacobs witnesses claimed that, as far as he or she knew, there have been no complaints from the facility's

neighbors about the impulsive sounds produced by the facility. *See Prop.* at 9; *Tr.* at 11, 25, 69, 79.

On this record, the Board finds that the character of the affected area supports allowing Clifford-Jacobs to expand its hours of operations as requested, but not necessarily to the full extent sought. The facility is generally surrounded by farmland or industrial property. Moreover, the entire area in which the facility is located, including Wilber Heights, is zoned for industrial use. And the industrial operations that already exist in the surrounding area in addition to Clifford-Jacobs already generate noise beyond their property lines, including one—the railroad and switching yard—that produces steady noise day and night, as well as others whose primary noisemaking hours begin in the early morning, within the period during which Clifford-Jacobs seeks permission to operate.

The Board recognizes, however, that Wilber Heights includes a significant number of residences that would be subject to noise above the default nighttime noise limit if Clifford-Jacobs' request were granted. And while they already are exposed to sound emissions from the facility under Clifford-Jacobs' site-specific rule, that exposure ends before the time when residents arguably would most expect relative quiet. The Board addresses this concern below in reviewing projected sound levels and the issue of whether affected residents have adequate notice of Clifford-Jacobs' proposal.

Technical and Economic Feasibility of Noise Abatement

The Board turns next to whether any technically and economically feasible means exist for Clifford-Jacobs to mitigate the sounds emitted by building 4. Both Dr. Schomer and Mr. Martz testified regarding sound control options available to Clifford-Jacobs. They reviewed the efficacy and feasibility of implementing sound control by enclosing or sound-proofing building 4; installing silencers on the forging equipment; erecting sound barriers between the facility and Wilber Heights; and moving the exhaust vents from the west to the east side of building 4's roof, so that they would face away from Wilber Heights.

Mr. Martz explained that it is not "practical" to enclose, air condition, or sound-proof a forge shop because of the tremendous heat generated by the furnaces and the associated need for adequate ventilation. *Exh. 3* at 3; *see also Tr.* at 57-58. Dr. Schomer opined that structural limitations and space requirements of the forging facility, in addition to its ventilation requirements, impact the feasibility of abatement strategies. *Exh. 8* at 2. He cited a 1983 study recommending that no additional load be added to building 4, which would foreclose using sound absorptive wall treatments and placing mechanical ventilation on the walls or roofs. *Exh. 8* at 2, 14.

Regarding commercial silencers or mufflers, both Mr. Martz and Dr. Schomer made clear that Clifford-Jacobs had attempted, unsuccessfully, to deploy these devices at the facility in the 1970s and the 1980s. *See Exh. 3* at 3; *Exh. 8* at 3; *Tr.* at 65, 68, 73, 104. Mr. Martz testified that in the 1980s the facility purchased silencers for 5 or 6 hammers, installed some of these, and then, when those failed because of the hammers' pounding, did not install the remaining silencers. *Tr.* at 65, 68, 73; *see also PC 2* at 4 & *Att. C.* Mr. Martz believed that he had

exhausted the commercially available sound control options at that point, and does not know of any forging facility that has had success with sound mitigation devices used on the kind of equipment Clifford-Jacobs operates. Tr. at 105. Specifically, Dr. Schomer noted that while commercial silencers did attenuate the noise, they readily broke because of the vibration and shock transmitted through the vent piping. Exh 8 at 3. He concluded that “commercial silencers may not be adequate for” Clifford-Jacobs’ needs. Exh. 8 at 4.

Dr. Schomer also addressed the viability of installing a sound wall west of building 4, along 5th Street, and concluded it was not feasible. Sound walls, he testified, are effective “when they are close to the source or the receiver; the east side of 5th Street is close to neither.” Exh. 8 at 4. Moreover, he explained that since the high-frequency “shis” sound is emitted from the vent pipes on the facility’s roof, a noise wall of reasonable height would not even “break the line-of-sight to nearby homes.” *Id.* Dr. Schomer believed that because of the roof’s height, an effective sound barrier would have to be about 50 feet high—a structure that would be prohibitively expensive and that has never been built, as far as he knew. *See* Tr. at 106-07.

Finally, as for relocating the exhaust vents from the east to the west side of building 4’s roof, Dr. Schomer reported that he was unable to assess the merits of this option because the railroad yard east of building 4 generates “continuous” noise. Exh. 8 at 3; Tr. at 91-92. Dr. Schomer did not recommend further testing of this option because it would be expensive and would have to be investigated over the railroad noise or face “other problems” if measurements were taken further east of the facility. Tr. at 91-92.

This evidence has not been rebutted or otherwise challenged. The Board accordingly finds that Clifford-Jacobs has shown there is no technically or economically feasible means of abating noise emitted by its forging operation. The Board, however, believes that despite the current lack of effective noise control options, Clifford-Jacobs should continue searching for viable measures to control the sounds generated by its forging process and apprise the Board of any future technological advances that might offer abatement solutions. To that end, the Board proposes at first notice to add new subsections (d) and (e) to the site-specific rule. These provisions require Clifford-Jacobs to: (1) investigate new technologies, sound abatement measures, and possible operational changes to mitigate sound emissions from the facility; and (2) file a report on the findings of this investigation with the Clerk of the Board every ten years after the effective date of the amended rule.

Notice to Affected Residents

In this section, the Board addresses the sufficiency of notice to affected residents of Clifford-Jacobs’ proposal and what may be done to bolster what notice has been given. As noted above, in pre-filed questions the Board asked if Clifford-Jacobs would consider providing a list to the Board of the owners and addresses of each of the 24 houses projected by Dr. Schomer to be subject to sound levels exceeding 53.5 dB under the proposal. The Board also asked whether Clifford-Jacobs had been in contact with the affected homeowners regarding the proposal. The Board posed these questions to determine whether there was a need to fill any potential gaps in notice to impacted residents. The Board contemplated that affected residents could be added to the notice list in this matter (*see* 35 Ill. Adm. Code 102.422(a)) so that they would receive notice,

if not of the proposal directly, of Board actions and hearing officer orders describing the proposed amendments.

At the hearing, Mr. Van Ness stated that Clifford-Jacobs did not know who owns or lives in those residences, and that it had not conducted an “organized study” of the residences because the “rule didn’t require it.” Tr. at 100, 118. He stated that the company would undertake the necessary investigation and respond to the Board’s question. *Id.* at 118-19.

In its post-hearing comments, Clifford-Jacobs provides a list, based on property tax records, of the owners of 40 Wilber Heights properties by PIN, which Clifford-Jacobs claims correspond roughly with the 24 affected houses identified by Dr. Schomer. *See* PC 2 at 4 & Att. D. Specifically, the information relates to properties in the 200-400 blocks of Wallace Avenue; the 300-400 blocks of Paul Avenue; and the 400 block of Wilbur Avenue. *Id.* at 4. The listed owners of the 40 PINs are a mix of individuals and entities. *Id.*

Generally a rulemaking proponent is not required under the Act or the Board’s procedural rules to initiate contact with affected persons about the proposed rule or to convene meetings with stakeholders. Nevertheless, some degree of outreach to interested and affected persons is standard in general rulemakings initiated by the Illinois Environmental Protection Agency (Agency). *See, e.g., Standards and Requirements for Potable Water Well Surveys and Community Relations Activities Performed in Conjunction with Agency Notices of Threats From Contamination: Proposed Amendments to 35 Ill. Adm. Code 1600, R14-23* (Feb. 19, 2015). The Agency has not participated in this proceeding, however, and Clifford-Jacobs acknowledges that its contact with Wilber Heights residents has been on an incidental basis rather than through any organized community outreach. Tr. at 100.

The Board provided notice of the public hearing in a local newspaper as required by 415 ILCS 5/28(a) (2012). But that did not ensure that individuals received actual notice of Clifford-Jacobs’ proposal. In addition, Wilber Heights residents Mr. and Mrs. Jack Gaines provided a letter attached to the proposal stating that they are “familiar with the noises” the facility makes, and that those do not “bother us any more than the noises that other companies and nearby traffic make.” Prop. at Group Exh. E.

Under these circumstances, the Board finds it appropriate to more directly notify affected residents about the proposal. The Board will add to the notice list in this proceeding the owners of the 40 Wilber Heights properties that may be subject under the proposal to sound emissions from the facility exceeding the default nighttime sound limit. Doing so will mean that these individuals and entities will receive copies of this and all future Board decisions and hearing officer orders in this rulemaking. *See* 35 Ill. Adm. Code 102.422(a). Although there is no guarantee that this will fully apprise all impacted homeowners of the proposed amendments, doing so increases the chance that such residents will be made aware of this proceeding and the opportunity to participate in it. Any person may submit comments or request a hearing on Clifford-Jacobs’ proposal within the comment period specified below. The Board’s fundamental concern is that persons residing near the facility receive notice of the proposed changes because they would have to live with sound emissions during the proposed expanded hours.

Proposed Site-Specific Operational Level

In this section, the Board provides a brief regulatory background concerning the applicable noise limits for impact forging operations before discussing the merits of Clifford-Jacobs's proposed amendments to its site-specific operational level.

Existing Operational Level

As noted above, the Board adopted the current site-specific operational level under 35 Ill. Adm. Code 901.105(d) for Clifford-Jacobs in 1985 since Clifford-Jacobs was unable to comply with the generally applicable noise standards for existing impact forging operations under Section 901.105(c). *See Clifford-Jacobs*, R83-25, slip op. at 2 (Dec. 6, 1984). As further noted, adoption of the site-specific rule exempted Clifford-Jacobs from the numeric noise limits at Section 901.105(c) from 6 a.m. to 11 p.m., when it may operate up to 14 hammers, six days a week, but did not exempt it from the otherwise applicable Class A nighttime numeric limit of 53.5 dB (A-weighted Leq) under Section 901.105(c). Clifford-Jacobs seeks an amendment allowing it to operate from 11 p.m. to 6 a.m. Monday through Saturday in lieu of complying with the nighttime numeric limit under Section 901.105(c).

History of the Impulsive/Forging Noise Limits

The Board initially adopted the impulsive noise standards, which address noise from forging operations, as Rule 206 (later re-codified as Section 901.105). *See Noise Pollution Control Regulations*, R72-2, slip op. at 29 (July 31, 1973). The general property-line noise standards were set at a daytime limit of 50 dB(A), and a nighttime limit of 45 dB(A) for Class A land (residential). In adopting the noise standards, the Board explained, "the levels are below those causing noise induced hearing loss although the [Class] C to [Class] C Limit of 70 dBA is at the threshold. . . . Instead, protection is against unwarranted annoyance and speech and sleep interference." *Id.* at 27. For impulsive noise, the Board noted that the sound emission limits were stricter by 5 dB(A) due to "relative annoyance of impulsive versus non-impulsive sounds" according to the evidence of record. *Id.* at 29.

The Board amended the impulsive noise standards to specifically address sound emissions from new and existing impact forging operations in July 1982. Proposed Amendment of Rules 101, 205, 206, and 209 of the Noise Regulations, R76-14 (July 21, 1982). In that rulemaking, the Board adopted the currently applicable noise regulations for new and existing impact forging operations, including the nighttime numeric limit of 53.5 dB(A) based on Leq averaging for receiving Class A land. Initially, the Board proposed Class A receiver limits of 66 dB(A) (daytime) and 56 dB(A) (nighttime) for existing impact forging operations, noting there "was evidence that 95% of all plants could meet a limitation of 66 dB(A) with an emission improvement of between 5 and 20 dB(A), and 1% of the plants would have to improve their emission levels by 35 dB(A) to reach this limit" Proposed Amendment of Rules 101, 205, 206, and 209 of the Noise Regulations, R76-14 and R76-19 (cons.), slip op. at 6 (July 24, 1980). Further, the Board noted that a limit of 66 dB (A) would apply during the daytime and a 56 dB(A) limit would apply during nighttime. *Id.* at 13. However, when the amendments were finalized in July 1982, these noise limits were converted from dB(A) to Leq since the Board

found the Leq measurement more appropriate in controlling forging noise. Proposed Amendment of Rules 101, 205, 206, and 209 of the Noise Regulations, R76-14, slip op. at 6 (Mar. 19, 1982) at 6.

In the same rulemaking, the Board added as Rule 206(d), later re-codified as Section 901.105(d), a provision for granting site-specific operational levels for forging operations. The Board explained that “a small number of Illinois forging operations could never achieve compliance for reasons technical and economic. Normally an appropriate standard would be adopted. For these operation[s], however, no one standard or site-specific limitation can be scientifically determined.” Proposed Amendment of Rules 101, 205, 206, and 209 of the Noise Regulations, R76-14, slip op. at 9 (Mar. 19, 1982). The site-specific operational levels were intended to effectively abate noise from the forging facilities, although the Board noted that “actual levels of noise emitted to receiving lands will be determinable only after the required abatement measures and operational levels are accomplished.” *Id.*

Clifford-Jacobs’ petition for a site-specific allowable operational level followed. In granting the proposed site-specific operational level for Clifford-Jacobs, the Board stated that “actual noise measurements” revealed that the maximum sound level emitted to Class A properties from the facility was 65 Leq. Clifford-Jacobs, R83-25, slip op. at 2. As support for permitting operations that could emit this level of noise, the Board cited the assessment of Clifford-Jacobs’ consultant that he did not “foresee any adverse health effects from 65 Leq”, and the Agency’s statement that “there would be no danger of hearing loss” at that sound level. *Id.*

Site-Specific Noise Limit

The default nighttime noise limit on existing forgers for Class A receiving land is 53.5 dB (A-weighted Leq), while the limit for Class B receivers is at all times the same—namely, 64.5 dB—and there is no specified limit for Class C land. 35 Ill. Adm. Code 901.105(c). Given that the record indicates that most of the properties surrounding Clifford-Jacobs fall within Class A or Class C, and the default Class A limit is lowest, the Board’s analysis of the impact of Clifford-Jacobs’ proposed amendments to its operational level focuses on the effect on Class A receivers in Wilber Heights.

As summarized above, Dr. Schomer’s evaluation of the impact of the proposal on Wilber Heights used direct sound measurements and modeling to predict the noise levels at various distances from the facility. Exh. 8, Annex A. Dr. Schomer used 65 dB (A-weighted Leq) at the control site, *i.e.*, the southwest corner of the facility’s perimeter, as representing the “worst case” operational scenario and developed noise contours within Wilber Heights at three levels—53.5 dB (nighttime limit), 58.5 dB (daytime limit) and 63.5 dB. *See* Exh. 8, Fig. F. Dr. Schomer predicted that under the proposal, 24 houses used as residences will be at or in excess of the 53.5 dB (A-weighted Leq) nighttime level, 12 will be at or in excess of the 58.5 dB(A-weighted Leq) daytime limit, and 2 will be at or in excess of 63.5 dB (A-weighted limit). *See* Exh. 8 at 13. Thus, Dr. Schomer’s evaluation suggests that adding a third shift would increase the number of residences above the default sound limit from 12 to 24. And among the affected residences, 12 will be exposed up to 5 dB(A-weighted Leq) above the nighttime limit, 10 will be exposed up to

10 dB(A-weighted Leq) above that limit, and 2 will be exposed to noise levels ranging from 10 to 11.5 dB(A-weighted Leq) above the limit.

The Board is concerned, however, that there is a mismatch between Dr. Schomer's analysis based on his "worst case" operational scenario and the proposed amendments. In particular, Dr. Schomer's assessment was based on the simultaneous operation of the three largest hammers (*see* Exh. 8 at 5), whereas Clifford-Jacobs seeks permission to operate up to all 14 of its hammers—including the 4 it had removed from service—at the same time. In response to the Board's questions at the hearing, Dr. Schomer testified that if all 14 hammers were to operate at the same time the noise level at the control point would be 67 dB (A-weighted Leq). Tr. at 111-112. And Dr. Schomer's control site calculations show that operation of certain combinations of 6 hammers may potentially result in approximately 67 dB (A-weighted Leq) at the control site. PC 2 at Att. F. Dr. Schomer opined that while a noise level of 65 dB (A-weighted Leq) at the control point would be reasonable, a level of 67 would not, as three to five additional residences would be impacted above the 53.5 dB (A-weighted Leq) nighttime limit. Tr. at 115.

Moreover, it is not even clear that the simultaneous operation of all 14 hammers would not result in a noise level higher than 67 dB (A-weighted Leq) at the control point. As noted above, while Clifford-Jacobs claims in its post-hearing comments that that the "incremental contribution" of the 11 smaller hammers to total sound levels in a simultaneous-operation scenario would be 2 dB (*see* PC 2 at 3), Dr. Schomer testified that adding the four hammers not currently in place would, under a full-operation scenario, increase sound levels by 2 dB (*see* Tr. at 111-12). This discrepancy was never resolved. The Board invites Clifford-Jacobs to reconcile this conflicting evidence and to specify without qualification what the projected noise level would be at the control site and the corresponding change in the number of houses used as residences that would be at or in excess of each of the contours in Figure F of the Schomer Report if all 14 hammers were operating at one time.

On this record, the Board finds it appropriate in proceeding to first notice to hold the facility to the worst case scenario posited by Dr. Schomer. Dr. Schomer's assessment was that this would result in nighttime noise levels in Wilber Heights below 65 dB (A-weighted Leq), a level that the Board effectively found protective of health in granting a site-specific operational level to Clifford-Jacobs. *See Clifford-Jacobs*, R83-25, (Dec. 6, 1984) at 2-3. This does not ensure, however, that a 5 to 10 dB(A-weighted Leq) increase in the nighttime noise levels attributable to the facility overnight from Clifford's operational change will not result in unwarranted annoyance and speech and sleep interference. The record includes no direct evidence about the likelihood that it will or will not cause such interference. Nevertheless, Clifford-Jacobs and several witnesses asserted that the facility's neighbors have never complained about noise from the facility (which would include some nighttime operations, until 11 p.m.). And the Board has previously noted that a lack of noise complaints may indicate to some degree a lack of annoyance. Noise Pollution Control Regulations, R72-2, slip op. at 16-17 (July 31, 1973).

Moreover, the area surrounding the facility is affected by a number of significant noise sources, including some operating during the hours Clifford-Jacobs seeks permission to operate,

including the railroad switching yard. According to Clifford-Jacobs, the other noise sources in the area are “much more widely dispersed, pronounced and prolonged than the impulsive sounds generated by Clifford-Jacobs within Building 4.” Prop. at 8-9. Further, because Wilber Heights is located in an area zoned for light to heavy industry, there is no reason to expect noise levels affecting the residences to decrease in the future.

The Board will therefore impose at first notice, as a new subsection (c) in Section 901.119, a condition limiting noise emissions from the facility to 65 dB (A-weighted Leq) from 11 p.m. to 6 a.m. The Board recognizes, as noted above, that Clifford-Jacobs generally opposes the imposition of a site-specific noise limit because, Clifford-Jacobs asserts, it could curtail the facility’s operational flexibility. PC 2 at 5-6. Moreover, the Board appreciates that Clifford-Jacobs seeks to position itself to take on any additional business that it may acquire as other forging operators close. Nevertheless, the record makes clear that the facility has not in any recent year operated anything like all 14 of its hammers—four of which have not been in operation for 30 or more years. The record shows that in the 10 years that Mr. Ray has worked for Clifford-Jacobs, the facility has never operated at the same time all 10 hammers currently in place. See Tr. at 47. Rather, the greatest number of hammers simultaneously operating in that period was 6 hammers on the first shift and 3 on the second shift. *Id.* And Mr. Ray testified that if a noise standard were imposed on the third shift, 65 dB (A-weighted Leq) would be acceptable. Tr. at 116. Thus, the Board believes that requiring Clifford-Jacobs to limit its forging operations as necessary to meet a 65 dB (A-weighted Leq) nighttime standard at the control point should not unduly constrain the facility.

Consistency With Prior Board Decisions

Next, the Board reviews Clifford-Jacobs’ claim that adopting a numerical noise limit would mark a “sharp break” from Board precedent beginning with the site-specific operational levels for existing forgers adopted in 1983-85. PC 2 at 5. Clifford-Jacobs asserts that in every such rulemaking, the Board “expressly elected” not to adopt a numerical standard, and the Board has not abandoned that approach in “subsequent related rulemakings.” *Id.*

The Board addresses first whether adopting a numeric noise limit for extended allowable hours of operation deviates from prior Board decisions. The Board finds the prior site-specific rulemakings on which Clifford-Jacobs relies distinguishable. Each of those proceedings sought a site-specific operational level pursuant to Section 901.105(d) of the Board’s noise regulations (35 Ill. Adm. Code 901.105(d)) on the ground that the petitioner could not meet the numerical sound limits that otherwise apply to existing forgers under Section 901.105(c). That is the express purpose of subsection (d): to allow existing forging facilities that do not comply with subsection (c)’s numerical standards to seek a “permanent site specific allowable *operational level* from the Board.” 35 Ill. Adm. Code 901.105(d)(1) (emphasis added). If approved, that operational level, and any required abatement measures, applies in lieu of subsection (c)’s numerical limits. *See id.*

In the first of the site-specific forge rulemakings, the Board explained the rationale for adopting the rule that later became Section 901.105(c): “a number of small Illinois forging shops could not achieve the necessary noise abatement for reasons technical and economic.” Chapter 8:

Noise Pollution, Rule 206, Site Specific Operational Levels for Forging Shops Amforge Division of Rockwell International, Modern Drop Forge Co., and Wyman-Gordon Co., R82-31, slip op. at 13 (Oct. 6, 1983). Accordingly, the Board added, “instead of a standard noise level the shop’s operational plan,” which could not allow an increase in existing decibel levels, “becomes the rule . . . and the individual shop must comply with it. . . .” *Id.*; *see also* Proposed Amendment of Rules 101, 205, 206, and 209 of the Noise Regulations, R76-14, slip op. at 9 (Mar. 19, 1982).

In this rulemaking, Clifford-Jacobs already *has* a site-specific allowable operational level, permitting operations Monday through Saturday other than between 11 p.m. and 6 a.m., and Clifford-Jacobs seeks an amendment to allow overnight operations. Thus, Clifford-Jacobs does not, as it and the other existing forgers sought in the early 1980s, request a new site-specific operational level under Section 901.105(d), but an amendment to its site-specific operational rule. Beyond that distinction, Clifford-Jacobs requests permission to operate during hours that nearly all existing forgers with site-specific rules are not permitted to operate, and during which no such forger may operate as many as 14 hammers. *See* 35 Ill. Adm. Code 901.110-21. It stands to reason that the Board would consider imposing a maximum allowable sound level in the distinct context of this case, whereas it might not have done so in adopting site-specific operational levels instead of the default numerical sound limits under Section 901.105(c).

Given that the site-specific rulemakings proceeded under an established rule (Section 901.105(d)), it is unsurprising that with the exception of the first decision on site-specific rules for three forgers (*see Amforge Div., et al.*, R82-31), the Board’s opinions on site-specific operational levels for existing forgers state only, in nearly identical language, that no numerical noise levels are being imposed, but the Board assumes noise levels will “approximate” projections. *See, e.g.*, Cornell Forge, Hampshire Division Petition for a Site-Specific Operational Level Pursuant to Chapter 8, Rule 206(D) of the Rules and Regulations of the PCB, R83-26, slip op. at 5 (Dec. 20, 1984) (“[n]o specific numerical noise levels limitations are being imposed, although it is assumed that noise levels will approximate” petitioner’s projections); Rockford Drop Forge Co. Petition for a Site-Specific Operational Level Pursuant to Chapter 8, Rule 206(D) of the Rules and Regulations of the PCB, R83-30, slip op. at 5 (same); *see also, e.g.*, Clifford-Jacobs, R83-25, slip op. at 3 (“[a]lthough no specific numerical noise level limitations are being imposed, it is assumed that noise levels will approximate those testified to” by petitioner); Vaughan & Bushnell, R83-32, slip op. at 3 (Dec. 6, 1984) (same). These decisions reflect that the Board had already concluded that numerical noise limits were unnecessary in a site-specific rulemaking under Section 901.105(d).

In addition, it distinguishes those rulemakings that the Board observed in each case that noise levels under the operational levels should approximate those projected by the petitioner in each case. Here, as the Board has noted, Clifford-Jacobs has offered seemingly conflicting and ambiguous evidence about the projected noise level when all 14 hammers are simultaneously operating.

As for Proposal of Vaughn & Bushnell Mfg. Co. of Amendment to a Site-Specific Rule, R06-11, the only subsequent site-specific rulemaking akin to this rulemaking, that matter does not reflect a Board practice of declining to impose numerical noise standards for forgers operating under site-specific rules. None of the opinions—first and second notice and final

adoption—in that rulemaking makes any mention of eschewing numerical standards or of the notion of imposing such a standard. Moreover, in that proceeding the record “reveal[ed] that . . . sound emissions of 63 decibels” were not emitted by the petitioner’s facility.” Vaughn & Bushnell, R06-11, slip op. at 8 (July 20, 2006). Thus, Vaughn & Bushnell provides no basis to deny the Board authority to impose numerical sound limits for forgers with site-specific rules, particularly where, as here, the petitioner has not specified total sound levels to which residents would be exposed under the proposal.

Regardless, the Board does not believe that the omission of any sound limit in prior rulemakings to establish site-specific allowable operational levels represents a “long-standing practice” that might bind the Board in subsequent related rulemakings such as this one. Central Ill. Pub. Serv. Co. v. PCB, 165 Ill. App. 3d 354, 363, 518 N.E.2d 1354, 1360 (4th Dist. 1988). Further, any departure here, at first notice, is not arbitrary or unexplained: rather, the Board notes above that a numerical sound limit may be warranted in this case because it is unclear what sound levels residents could face under the proposal.

CONCLUSION

The Board proposes amendments to the site-specific rule at 35 Ill. Adm. Code 901.119 for first notice. The Board must allow a comment period of at least 45 days following publication in the *Illinois Register*, during which anyone may file public comments with the Board. Public comments must be filed with the Clerk of the Board on or before June 30, 2015. If filed in paper, comments are to be filed at the following address:

Office of the Clerk
Pollution Control Board
James R. Thompson Center
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601

In addition, public comments may be filed electronically through COOL at www.ipcb.state.il.us. The Board encourages the public to file written public comments on these proposed amendments. Please note this docket number, R14-22, on your public comment.

ORDER

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE H: NOISE
CHAPTER I: POLLUTION CONTROL BOARD

PART 901
SOUND EMISSION STANDARDS AND LIMITATIONS FOR PROPERTY LINE-NOISE-SOURCES

Section	
901.101	Classification of Land According to Use
901.102	Sound Emitted to Class A Land

901.103	Sound Emitted to Class B Land
901.104	Highly - Impulsive Sound
901.105	Impact Forging Operations
901.106	Prominent Discrete Tones
901.107	Exceptions
901.108	Compliance Dates for Part 901
901.109	Highly - Impulsive Sound from Explosive Blasting
901.110	Amforge Operational Level
901.111	Modern Drop Forge Operational Level
901.112	Wyman-Gordon Operational Level
901.113	Wagner Casting Site-Specific Operational Level (Repealed)
901.114	Moline Forge Operational Level
901.115	Cornell Forge Hampshire Division Site-Specific Operational Level
901.116	Forgings and Stampings, Inc. Operational Level
901.117	Rockford Drop Forge Company Operational Level
901.118	Scot Forge Company – Franklin Park Division Operational Level
901.119	Clifford-Jacobs Operational Level
901.120	C.S. Norcross Operational Level
901.121	Vaughan & Bushnell Operational Level
901.122	Ameren Elgin Facility Site-Specific Noise Emission Limitations

901.APPENDIX A Old Rule Numbers Referenced

901.APPENDIX B Land-Based Classification Standards and Corresponding 35 Ill. Adm. Code
901 Land Classes

AUTHORITY: Implementing Section 25 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/25 and 27].

SOURCE: Originally filed as Part 2 of Chapter 8: Noise Pollution, effective August 10, 1973; amended at 2 Ill. Reg. 27, p. 223, effective June 26, 1978; amended at 5 Ill. Reg. 6371, effective June 1, 1981; amended at 5 Ill. Reg. 8533, effective August 10, 1981; amended at 6 Ill. Reg. 10960, effective September 1, 1982; codified at 7 Ill. Reg. 13646; amended at 7 Ill. Reg. 14519, effective October 17, 1983; amended in R83-35 at 8 Ill. Reg. 18893, effective September 25, 1984; amended in R83-33, 26, 29, 30 and R83-34 at 9 Ill. Reg. 1405, effective January 17, 1985; Section 901.105(f)(1), (2) and (3) recodified to Sections 901.110, 901.111 and 901.112 at 9 Ill. Reg. 7147; amended in R83-25, 31 and 32 at 9 Ill. Reg. 7149, effective May 7, 1985; amended in R83-7 at 11 Ill. Reg. 3136, effective January 28, 1987; amended in R04-11, at 28 Ill. Reg. 11910, effective July 30, 2004; amended in R03-9 at 30 Ill. Reg. 5533, effective March 10, 2006; amended in R06-11 at 31 Ill. Reg. 1984, effective January 12, 2007; and amended in R14-22 at 39 Ill. Reg. _____, effective _____.

Section 901.119 Clifford-Jacobs Operational Level

Clifford-Jacobs Forging Company and future owners of the forging facility located at North Market Street, Champaign, Illinois, must comply with the following site-specific operational level and sound limitation:

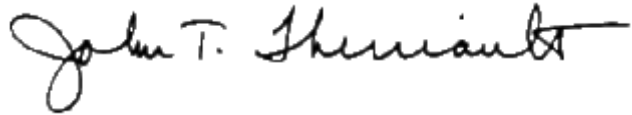
- a) Operate no more than fourteen hammers at any one time;
- b) Operate its forging hammers up to 24 hours per day, Monday through Saturday;
- c) Must not cause or allow the emission of sound from the facility to exceed 65 dB (A-weighted Leq) at the far southwest corner of the facility's property line adjacent to Wallace Avenue between the hours of 11 p.m. to 6:00 a.m., Monday through Saturday;
- d) Must investigate new technologies, sound abatement measures, and possible operational changes to mitigate the sound emissions from its forging operations; and
- e) Must submit to the Board a report on the findings of the investigation pursuant to subsection (d) of this Section, once every ten years after the effective date of this amended Section. The report must be filed with the Clerk of the Board at the following address:

Office of the Clerk
Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601

(Source: Amended at 39 Ill. Reg. _____, effective _____).

IT IS SO ORDERED.

I, John T. Therriault, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on April 16, 2015, by a vote of 5-0.



John T. Therriault, Clerk
Illinois Pollution Control Board