VERMONT SUPERIOR COURT
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Docket No. 127-10-17 Vtec

JSCL, LLC CU Permit	**DECISION ON THE MERITS AFTER REMAND**

I. Introduction and Procedural History

JSCL, LLC ("Applicant") is seeking to construct and operate a fuel tanker dispatching station in the Town of Ferrisburgh. Fuel tankers would be parked and serviced on site and dispatched to filling stations to receive fuel and then onward to retail gas stations to distribute it.

John DeVos, the principal member of JSCL, currently operates a similar business from Mr. DeVos's dairy farm, also in Ferrisburgh, but hopes to operate the fuel trucking business through JSCL and relocate an expanded business at a new proposed site. JSCL proposes to construct a trucking facility at that new site that would include an 8,000-square-foot maintenance and repair garage with offices, an outdoor truck-washing area, an above-ground fuel tank for refueling the trucks, and parking for nine trucks and eleven employees and visitor vehicles ("the Project").[1]

The Project would be located on Tuppers Crossing Road, a Class III Town Highway connecting Route 7 to the East and Botsford Road to the west. Existing uses along Tuppers Crossing itself are entirely residential and agricultural. Just to the east on Route 7, however, there are several existing commercial and retail operations. Furthermore, a substantial portion of the area, including all of the proposed JSCL property, lies in the Industrial Zoning District ("IND-

[1] In our 2020 Merits Decision we imposed a condition that Applicant must either increase the number of personal vehicle parking spaces to twelve or decrease the office space to 2,000 square feet to comply with the Bylaws.

2 District"). Railroad tracks also intersect with Tuppers Crossing Road, running parallel to and between Route 7 and Botsford Road.

JSCL first applied to the Town of Ferrisburgh Zoning Board of Adjustment ("ZBA") for Project approval in September 2016. Ultimately, the ZBA approved JSCL's amended conditional use application with conditions. One of those conditions limited JSCL's hours of operation to 5:00 a.m. to 10:00 p.m. daily. JSCL appealed to this Court, seeking to have that condition removed. Neighbors cross-appealed,[2] seeking to block the project entirely.

In a de novo Merits Decision dated May 29, 2020, we approved the Project with conditions. One of those conditions related to nighttime hours of operation, defining those nighttime hours as between 10:00 P.M. and 5:00 A.M. We concluded that while the project generally met the applicable standards and criteria in the Bylaws, including those concerning noise. We also recognized that noise sensitivities were heightened at night and on holidays. In order to approve the project, we imposed a condition that nighttime truck trips should be minimized and tracked. We also imposed a condition that trips on Sundays and holidays should be limited to emergencies. Neighbors appealed our Decision to the Vermont Supreme Court.

The Supreme Court affirmed our Decision, except on the specific issue of nighttime and Sunday or holiday traffic and noise from the Project. It found that the evidence was insufficient to support an affirmative finding on nighttime noise under the relevant criteria and the permit condition we imposed to support such a finding was too vague to be enforceable. Specifically, the Supreme Court concluded that the nighttime traffic condition that we imposed (Condition 8):

> does not provide a qualitative or quantitative measure of the term "minimize" or define what constitutes an "emergency." Without more specific standards to judge these terms, applicant, neighbors, and zoning officials are left to guess how much nighttime truck traffic is allowed, which will undoubtedly lead to further disputes. We therefore conclude that the matter must be remanded for the environmental court to reconsider the nighttime impacts of the project and revise Condition 8 so that it contains definite standards.

[2] Appellants are David Pierson, Jane Melrose, Aubrey Choquette, and Kenneth Villeneuve. Other neighbors who entered appearances as interested persons are Carol Allen, Andre Emmell, Matthew and Lisa Watkins, and Stephanie Warner. Because rights of participation are the similar, and all these individuals have asked for the same relief, we have followed a practice of referring to the appellants and interested persons collectively as "Neighbors."

In re JSCL, LLC CU, 2021 VT 22, ¶ 43 [hereinafter "JSCL I"] (citations omitted).

The Court remanded the case to us to take new evidence as to nighttime noise, reach the necessary legal conclusions, and formulate the necessary permit conditions on nighttime trips afresh.[3] Pursuant to the Supreme Court's remand directive, we held a hearing on December 14 and 15, 2021, at which both Applicant and Neighbors put on evidence. Following this hearing, Neighbors and Applicant both filed proposed Findings of Fact and Conclusions of Law, as well as responses to each other's proposals. Interested person Carol Allen filed her own proposed Findings of Fact and Conclusions of Law. We then took the matter under advisement, and now issue our Merits Decision After Remand.

As necessary background to our conclusions, we first review some scientific principles of measuring noise and our legal precedents on translating from those measurements to determine an impact on humans. We will then review the evidence we initially had available on noise in 2020 and the conclusions we drew based upon that evidence. We move next to a summary of the Supreme Court's analysis. Finally, we will discuss the new evidence received at our remanded merits hearing and what conclusions may be drawn therefrom. In all cases, we limit our discussion to noise impacts, as our initial Merits Decision was affirmed in all respects by the Supreme Court, other than our conclusions and condition regarding nighttime and holiday noise.

II. Review of Principles of Sound Measurement and Supreme Court Precedents

What humans experience as "sound" is the compression and expansion of air by a physical source. Sound travels as a wave of energy. "Sound power" refers to the inherent intensity of the sound wave generated by a particular source. However, that intensity diminishes over distance, and "sound pressure" refers to the intensity of the sound wave when it reaches a receptor. Sound pressure is typically denoted in decibels ("dB"). Human hearing is also more sensitive to sounds at some frequencies than others. As we described in our prior Decision,

[3] At our remand trial, some testimony was solicited regarding concerns over visual impacts at night, specifically truck lights and lights on the exterior of the proposed building. We indicated our belief that the scope for the remand trial was limited to nighttime *noise* impacts. *See* Domina v. Moore, No. 2001-233, 2001 WL 36140137, at *2 (Vt. Dec. 2001) (unpublished mem.) (citing Coty v. Ramsey Assocs., 154 Vt. 168, 171 (1990)) ("On remand, a trial court must follow this Court's specific directions as interpreted in light of the opinion."). We asked the parties to indicate if they believed otherwise in their post-trial proposed findings of fact and conclusions of law. In those post-trial briefs, both parties indicated that they agreed with our assessment. This opinion therefore solely concerns the issue of nighttime noise impacts.

> Because of this difference in perceived sounds at differing pitches, sound testing authorities have established "frequency weightings" as a filtering mechanism, so that reported sound recordings more closely mimic the sounds perceived by the human ear. While there are several recognized sound frequency weightings, the most commonly used weighting for environmental noise analysis and regulation purposes is referred to as the "A" weighting. When using this "A" frequency weighting, the sound levels are reported as "dBA."

In re JSCL, LLC CU, No. 127-10-17 Vtec, slip op. at 19–20 (Vt. Super. Ct. Envtl. Div. May 29, 2020) (Durkin, J.) (hereinafter "2020 Merits Decision").[4] As we further noted, "[o]ne common way of describing sound levels is the 'Continuous Equivalent Sound Level,' or Leq. This descriptor denotes the *average* sound pressure level over a defined period of time, such as one second, one hour or one day," while "[p]rior court decisions also have referenced the L_{MAX} format, sometimes described as measuring instantaneous noise." Id. at 18 (emphasis added). We determined that an Leq measured over one second was functionally equivalent to L_{MAX}. For a fuller discussion of how sound is experienced, measured, and monitored, we direct the reader to pages 18–20 of our 2020 Merits Decision.

The Supreme Court has affirmed that both Leq and L_{MAX} are important measurements when determining the impact of sound generated by a project. However, the Court has also affirmed the finding of the former Environmental Board that L_{MAX} more closely approximates how sounds are actually experienced by those hearing them. Because of this determination, the Supreme Court overturned a decision of our court for failing to make findings on the L_{MAX} noise generated by a project and instead relying exclusively on Leq averages. See In re Lathrop Ltd. P'ship, 2015 VT 49, ¶¶ 86, 88, 199 Vt. 19. In Lathrop, the Court also affirmed the flexible application of the standard developed by the Environmental Board, known as the Barre Granite standard. Id. at ¶¶ 80–85 (referencing In re Barre Granite Quarries, LLC, No. 7C1079 (Revised)-EB, slip op. at 80 (Vt. Envtl. Bd. Dec. 8, 2000), http://www.nrb.state.vt.us/lup/decisions.htm).

The Barre Granite standard specifies that an instantaneous noise at or above 70 dBA L_{MAX} at the project boundary or 55 dBA at adjacent residences and areas of frequent human use will

[4] Available at: https://www.vermontjudiciary.org/sites/default/files/documents/JSCL%20LLC%20CU%20Permit%20127-10-17%20Vtec%20Merits%20Decision.pdf

generally constitute an adverse effect on aesthetics under Act 250. However, this standard must be flexibly applied, as the Supreme Court recognized in Chaves and affirmed in Lathrop, considering the existing soundscape. Id. at ¶¶ 80–82 (citing In re Chaves A250 Permit Reconsider, 2014 VT 5, ¶ 31 n. 4, 195 Vt. 467). For example, in Chaves, the Court affirmed our decision to approve a project involving truck traffic that would create noises of 69 dBA L_{MAX} as measured at a nearby residence, given that existing traffic already generated comparable noises at the residence. Chaves, 2014 VT 5, ¶ 33.

Nevertheless, even in scenarios where noises of comparable intensity during comparable hours already exist, we must still evaluate the impact of increasing the frequency with which people living or working near a proposed development experience those noises. See Lathrop, 2015 VT 49, ¶ 84 (comparing In re John A. Russell Corp., 2003 VT 93, ¶ 33, 176 Vt. 520). For example, in North East Materials, the Supreme Court affirmed our analysis where we concluded that one valid model for evaluating such an impact is to measure the change in hourly average noise levels ($Leq_{(1\text{-}hr)}$). In re N. E. Materials Grp., LLC/Rock of Ages Corp. Act 250 Permit, 2019 VT 55, ¶¶ 19–22, 210 Vt. 525. However, $Leq_{(1\text{-}hr)}$ is not the only method and may not be appropriate in every context, as we discuss below.

III. Evidence and Conclusions at Previous Trial

a. Existing noise

As we noted in our initial Decision, "this neighborhood's existing soundscape is composed primarily of traffic noise from U.S. Route 7, local traffic on Tuppers Crossing, occasional passing trains, and regular biogenic and geophonic sounds (e.g. bird calls, wind in the trees, etc.)." 2020 Merits Decision at 48.

To quantify those existing noise levels, Applicant's engineering consultant, RSG Consulting, presented data from two "long-term monitors," one on the eastern portion of the JSCL property and one on the western portion of the property. These monitors measured existing sound levels at each site over a four-day period in January 2017. The eastern monitor more closely approximated sounds experienced by neighbors to the east of the property (i.e., those whose houses are on Route 7), while the western monitor approximated sounds experienced by the nearest neighbors to the west. Sounds were recorded every one second. Results of the

monitoring were presented, however, in 10-minute averages ("Leq $_{(10\ min)}$) and as the sound at the tenth percentile of recorded sounds over the 10-minute period (L_{90}). We relied exclusively on the Leq $_{(10\ min)}$ and not the L_{90} measurements in our previous Decision.

As we summarized in 2020, "the reported sound levels ranged between 47 to 55 dBA Leq $_{(10\ min)}$ for the daytime and between 38 to 52 dBA Leq $_{(10\ min)}$ for the nighttime." Id. at 21. At the western monitor, meanwhile, "recorded daytime sound levels [were] between 40 to 74 dBA Leq $_{(10\ min)}$, with train sounds accounting for the levels between 65 and 74 dBA Leq $_{(10\ min)}$. . . . [S]ounds recorded during the nighttime by this western monitor were . . . between 35 to 49 dBA Leq $_{(10\ min)}$." Id. at 20–21. It seems these nighttime Leq $_{(10\ min)}$ averages excluded the periods with train sounds. Id. at 21 n.8. As we noted, those train sounds are a part of the soundscape and should not have been excluded. Id. The Supreme Court agreed and concurred with our decision to consider train noises, whenever they may occur, as part of the existing soundscape. JSCL I, 2021 VT 22, ¶ 30 n.3.

Collectively, over many hours, "[a]verage daytime sound levels in the area are 52 dBA as recorded by the eastern monitor and 56 dBA as recorded by the western monitor. Average nighttime sound levels are 47 dBA as recorded by the eastern monitor and 52 dBA as recorded by the western monitor." 2020 Merits Decision at 21. These longer-term averages do appear to factor in train noise.

Applicant also presented data at our initial hearing from one "short-term" monitor. This monitor was installed only for one morning in the right of way of Tuppers Crossing Road, approximately 165 feet west of Route 7. This monitor was closer to Route 7 and more closely approximated the existing soundscape for neighbors living on Route 7 than the eastern long-term monitor, at least during the 25 minutes when it was actively monitored roughly between 10 and 11 a.m. This monitor also recorded sounds every 1 second and, unlike the long-term monitors, the data it collected were presented at a one second interval (Leq $_{(1\ sec)}$), which we determined was functionally equivalent in how perceived to instantaneous sound ("L_{MAX}"). As we summarized previously, "The current, pre-development sounds recorded by the short-term monitor evidenced existing sound levels of 55 to 75 dBA Leq 1 sec" in the 10–11 a.m. hour. Id. at 20.

One further way of presenting measured noise is through "Day Night Level," or "DNL" for short. This is a measurement of average sound levels over a 24-hour period, with a "penalty" or additional weight of 10 dB applied to sounds occurring at night. The existing DNL at the eastern and western monitors were 54 dBA and 58 dBA respectively. Applicant's Original Ex. 26 at 3, 6.

The evidence presented in 2020 supported a finding that the existing peak maximum sounds picked up by these monitors came from passing trains (western monitor), and traffic on Route 7 (eastern and short-term monitor). The maximum sounds from train noise, as picked up by the western monitor, were likely at least as high as 74 dBA, given that the $Leq_{(10\text{-}min)}$ over a period including those sounds reached that level and neighbors testified that train noises were not experienced for a full 10 minutes. These existing peak maximum sounds exceeded those modeled from the Project, as discussed below.

While the sound study presented by Applicant did not measure the frequency of nighttime train traffic, we noted that testimony by neighbors suggested "about one or two trains between the hours of 9:00 p.m. and 5:00 a.m." 2020 Merits Decision at 8. We also noted evidence collected by Carol Allen, suggesting that "[o]ne or more trains regularly[5] pass by between the hours of 1:00 a.m. and 6:00 a.m." Id. at 9.[6] As discussed below, neighbors testified during our remanded hearing that nighttime train traffic is less frequent today than it was at the time of our previous trial.

b. Projected noise from the Project

RSG Consulting also modeled the sounds that would be produced by the activities for which a permit was sought, in seven different scenarios. Each scenario modeled those noises as

[5] We did not define "regularly." The Supreme Court appears to have interpreted this finding to mean on average one train per night. 2021 VT 22, ¶ 7. We are faced with a bit of a quandary as the Supreme Court decision forms the law of the case on remand, Coty v. Ramsey Assocs., Inc., 154 Vt. 168, 171 (1991). Yet looking back, it does not appear the evidence from the previous trial established that an average of one train passed by each night between the hours of 1:00 and 6:00 a.m. However, even accepting that figure as the nighttime train traffic in 2019, neighbors credibly testified at our remand hearing that nighttime train traffic is less frequent today than was reported in 2019.

[6] To be more precise, and though we did not mention this in the original opinion, on 8 of the 18 days with recordings reported by Ms. Allen, a freight train passed by between the hours of either midnight to 5 a.m. or 10 p.m. to 11:59 p.m. (days were measured from 12:00 a.m. to 11:59 p.m.). On two of the eight occasions, there was both a train recorded between midnight and 5 a.m. and another train reported between 10:00 and 11:59 p.m. See Appellants' Original Ex. 21 (Traffic and Train Counts 18 July – 10 August 2019). However, neighbors at this hearing testified that nighttime train traffic has grown less frequent since then.

they would be experienced at several nearby residences, including Cross-Appellants' residences. We found this testimony to be "credible and uncontested." Id. at 22. In three of these scenarios, RSG relied on field recordings of sound produced by one of the trucks in Mr. Devos's existing fleet. In three corresponding scenarios, with identical assumptions except for the source of the modeled sounds, RSG relied on values used by the Federal Highway Administration (FHWA) to model sounds produced by trucks. We found that measurements of noises produced by actual JSCL trucks were more credible for our analysis than FHWA estimates of noises, since the FHWA estimates were based upon noise readings produced by older trucks. Id. at 24. The Supreme Court held that this finding was "not clearly erroneous." JSCL I, 2021 VT 22, ¶ 35. Therefore, of the seven modeled scenarios by Applicant, four were most credible and most relied upon: the "One-hour Scenario," the "Southern Maximum JSCL scenario," the "Northern Maximum JSCL Scenario," and the "Single Night Truck JSCL Scenario."[7] Each scenario is explained below.

The "One-hour Scenario" was described as "[a] conservative one-hour equivalent (Leq 1 hour) scenario that included nine trucks entering the site, driving around the back of the building, and then exiting, over the course of one hour." 2020 Merits Decision at 22. In other words, this scenario modeled average sound pressure over the course of an hour, assuming nine JSCL trucks enter and exit the property over the course of that hour. The results of this scenario were reported in an hourly average of between 23 and 39 dBA Leq (1-hour) at nearby properties.

The "Southern Maximum JSCL scenario" modeled the instantaneous noise that would be produced by three trucks on the property at once, with "one truck accelerating out of the driveway, another truck driving on the southern side of the site, and another truck idling in the parking area." Id. at 22–23. The Northern Maximum JSCL Scenario was identical to the "Southern Maximum," but the trucks were located towards the northern portion of the property. Id. The "Single Night Truck JSCL" scenario was described as a single truck exiting the property at night. However, the map depicting this scenario (Applicant's Original Ex. 26, fig. 14) depicts a single truck accelerating along the southern boundary of the property, and not at the exit. This discrepancy is discussed in more detail below.

[7] "JSCL" in the title indicates the use of recorded JSCL truck sounds as an input to the model.

We summarized the results of these three "maximum" scenarios as follows: "the maximum sound levels to be experienced outside the nearby residences ranged from 45 to 59 dBA . . . [in the] 'Southern Maximum JSCL Scenario' . . . from 41 to 54 dBA . . . [in the] 'Northern Maximum JSCL Scenario,' . . . and from 45 to 62 dBA when a single truck would be exiting the project site at night." 2020 Merits Decision at 25.

These results presented a puzzle that we did not explore in our 2020 Merits Decision, as to how one truck could create a louder noise at two neighboring properties (specifically, the Warner and Steady residences) than three trucks would. As we explained at the time, while the pressure levels of simultaneous sounds cannot simply be added together to determine the resulting sound pressure, two sounds of roughly equivalent power occurring simultaneously should generally be experienced as louder than either sound in isolation. Id. at 19. Here, the sounds from three simultaneous trucks are modeled as lower at a couple of residences than the sound of a single truck. That discrepancy calls into question the results of either the three-truck or the one-truck scenarios. Several possible explanations for the discrepancy occur to us.

The first explanation would be if the one-truck and three-truck scenarios were not modeled at the same time. The one-truck scenario is specifically labeled as "at night," while the southern and northern maximum scenarios were not specifically labelled as having been modeled either at night or during the day. We asked Applicant's engineer about these labels at our remand hearing, and he did not offer a clear explanation. He testified that the "single nighttime truck" scenario was so labelled because it was assumed that only one truck would ever be on the property at a time at night. Conversely, he explained that he assumed that three trucks would only ever be present on the JSCL property at a single time during the day and thus the southern and northern maximum scenarios were considered daytime scenarios. However, he did not state whether the *model* of sound propagation for either the single truck or the three truck scenarios assumed either daytime or nighttime conditions. The study prepared by RSG Consulting states that *all* scenarios were modeled "under meteorological conditions favorable to propagation from sources of known sound emissions. These conditions are for downwind propagation or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, *such as commonly occurs at night*." Applicant Ex. 26 at 9 (emphasis

added). This is not conclusive but suggests that a difference in timing does not explain the discrepancy.

It seems to us more likely that the discrepancy stems from the location(s) of the trucks in the three-truck and the one-truck models. We heard testimony in 2019 that of the sounds produced by a truck idling, a truck driving at a constant speed, and a truck accelerating, the accelerating truck tended to produce the loudest noise. In the one truck scenario, the single accelerating truck is depicted along the southern boundary of the property, almost directly across from the Warner residence. See Applicant Ex. 26, Fig. 14. In the Southern Maximum three-truck scenario, on the other hand, while we see two trucks almost directly across from the Warner residence, these two trucks are idling or driving at a constant speed. The accelerating truck is depicted further to the east, about to exit the property. Id., Fig. 10. In other words, one could plausibly expect that with a different configuration of trucks, or with more than one truck accelerating, a three-truck scenario would produce louder instantaneous sound levels at the Warner, Steady, and possibly other residences than those modeled in a single nighttime truck scenario.

c. Conclusions in 2020:

This distinction between the one-truck and three-truck scenarios did not factor into our conclusions in 2020. At that time, we found that the instantaneous noises from the Project, as modeled at neighboring properties, were comparable to or less than existing maximum noises in the neighborhood—noises that occurred with some regularity during the daytime hours. Similarly, in the one scenario modeled at an hourly level, which was the worst-case scenario of 9 trucks entering and exiting in a single hour, noise levels experienced by neighbors were consistent with or lower than average daytime noises measured at the two long-term monitors. Moreover, except for the precise instant when a truck was accelerating into or out of the property, modeled noises never exceeded 70 dBA at the property line, which is established as a quantitative limit by the Bylaws. Accordingly, we concluded, "[i]n the context of the existing soundscape, the Project's noise impacts on residential amenities and adjoining properties or districts will be low" and "noise impacts from the Project will not be adverse . . . . For these same

reasons, we conclude that the Project's noise impacts as conditioned here will not adversely affect the appropriate use or development of adjacent property." 2020 Merits Decision at 54.

We noted, however, that the existing background noise levels (measured by the two long-term monitors and reported at Leq (10 min)), were at least 5 to 10 dBA lower at night. While the occasional nighttime train to the west or heavy truck to the east might still generate comparable maximum noises on the site and, presumably, at neighboring residences, the evidence established that those maximum noises occurred much less frequently at night than during the day.

Applicant's noise engineer and expert Eddied Duncan testified during our 2019 hearing that an instantaneous noise at night that is significantly louder than background noise may disrupt sleep. However, no analysis had been performed at that time of whether the instantaneous noises modeled in either the one-truck or three-truck maximum noise scenarios would be likely to disrupt sleep at nearby residences. Mr. Duncan argued at our initial hearing that because the sound monitors detected existing noises of an equivalent volume in this vicinity at night—generated by trains to the west and traffic to the east—nighttime noise from the Project was compatible with reasonable surrounding uses and would not have an undue adverse effect.

There are at least two problems with that logic. First, each additional disruption of sleep is consequential when determining compatibility with surrounding uses. See N. E. Materials Grp., 2019 VT 55, ¶ 17 (favorably quoting OMYA, Inc., No. 9A0107-2-EB, Findings of Fact, Conclusions of Law, and Order at 15 (Vt. Envtl. Bd. May 25, 1999) for the proposition that "each additional instance of a truck passing results in an additional instantaneous loud noise, or an additional annoyance that interferes with sleep and conversations"). Second, as Mr. Duncan testified, people do not experience a new sound in comparison to a comparable maximum sound occurring at a completely different time. They experience the sound as a departure from the current background noise levels. We discuss this in more detail in the next section.

We were therefore cognizant when writing our initial Merits Decision that the same noises generated by the Project during the day posed the potential to be more disruptive if generated during the night, because most neighbors would be asleep during those hours and

might be woken up by the sounds. At the time, Applicant proposed the removal of any restrictions on nighttime trips from the JSCL site. We determined that the evidence did not support such a request. In the absence of concrete evidence on the exact number of trips likely to occur between the hours of 10:00 p.m. and 5:00 a.m., and consequently of the likely nighttime impacts on the residents and character of the area, we imposed a condition that JSCL must "minimize the frequency of truck drivers arriving at the project site before 5:00 a.m. or after 10:00 p.m. No trucks shall operate on Sundays or recognized Holidays, except in the case of emergencies." 2020 Merits Decision at 59. With that condition, we determined the Project in its entirety (including nighttime operations) would satisfy the relevant Bylaws on noise. Id.

IV. Supreme Court Decision on Appeal

On appeal, the Vermont Supreme Court largely affirmed our determinations as to noise. It upheld our findings that using recorded noises from an actual JSCL truck rather than those modeled by the FHWA was more accurate and that an $Leq_{(1\text{-}Sec)}$ was effectively equivalent to an L_{MAX} or instantaneous noise. It also affirmed our legal conclusion that the noises generated by the Project during the daytime were generally compatible with the character of the area and did not violate the performance standards. See JSCL I, 2021 VT 22, ¶¶ 33, 35.

As to nighttime noise, however, the Court held, "[w]hether this amount of noise is adverse or unreasonable for the area depends on how frequently it occurs. We agree with neighbors that in the absence of some quantitative estimate of the frequency of nighttime traffic, the court's analysis of the noise and other impacts caused by such traffic was inadequate to support a conclusion that the project would not have an adverse effect at night." Id. at ¶ 42. It found the condition we had imposed was too vague to guarantee the lack of an adverse effect, while acknowledging the limited evidence we had before us. Id. at ¶¶ 42–43. The Court therefore remanded the matter to us to take further evidence on nighttime noise impacts and to reach any legal conclusions and impose any necessary conditions as to nighttime noise anew.

V. Findings of Fact for Remanded Merits

With this background in mind, we have assessed the credibility of the testimony and other evidence presented during our remand hearing. Based upon that credible evidence, we render the following additional Findings of Fact:

a. JSCL's Proposed Nighttime Operations

1. First, we incorporate by reference all of the Findings of Fact from our 2020 Decision.

2. JSCL now proposes to limit its regular nighttime (i.e., 10:00 p.m. to 5:00 a.m. the following day) truck trips to no more than three trips per night. This new limitation would principally govern the frequency with which JSCL drivers would be allowed to enter and leave the new facility solely due to the drivers' preferences for driving in the middle of the night, due to traffic concerns, or personal schedules.

3. It was unclear to the Court whether this limit would govern the nighttime trips that would occur in response to weather conditions and responding to no or low fuel emergencies called in by the retail fueling stations that JSCL serves. These circumstances are exacerbated in the winter time when winter weather conditions sometimes require early or extra deliveries.

4. In summary, per Mr. Devos, JSCL's principal, there are three general reasons why his company needs to operate during nighttime hours:

    1. Avoiding bad weather, principally in the winter months. Mr. Devos estimated that this reason accounts for 50% to 60 % of the need to operate at night.
    2. Lack of proper dispatching, thereby running the risks of low or no fuel calls.
    3. Driver preference for driving in the early morning hours (i.e., before 5:00 a.m.).

5. The reason Mr. Devos did not want JSCL to be prohibited from making fuel deliveries on Sundays and National Holidays is because retail fuel stations are generally open on Sundays and holidays and that is when those stations experience the most demands.

6. Even with this limitation, Mr. Devos, believes that nighttime trucks "would be the exception and not the rule." For example, Mr. Devos could not recall responding to no or low fuel emergencies during the nighttime in the past year or more. This representation was not contradicted by neighbors' testimony or other evidence.

7. Mr. Devos fears that if he were not able to respond to nighttime low or no fuel emergencies from the stations that JSCL serves, it would suffer the loss of those stations' service contracts. If the retail stations that he served, such as Wesco, chose to "go somewhere else," that "would have a detrimental effect on our business."

8. Currently, JSCL provides fuel delivery services to about forty-three locations in Vermont and New Hampshire.

9. In 2021, JSCL has had no more than nine delivery trucks running. This is a decrease from prior years, due to the lowering of demand for vehicle fuel, principally because of the COVID pandemic and the increase in fuel retail prices. In recent years, it has become increasingly difficult to locate, hire, and retain fuel truck delivery drivers.

10. The daytime traffic schedule at the proposed JSCL facility will follow a general pattern: drivers will arrive at the facility between 5:00 – 8:00 a.m. The driver will then

> (a) open the facility gate;
>
> (b) open up the truck they are assigned to drive and check all of its fluids, lights, tires, and other pre-trip inspection items, as required by federal rule;
>
> (c) start up the truck and allow it to run idle for at least 15 minutes, as required by federal rule;
>
> (d) make any necessary simple repairs, such as replacing burnt-out lights or inflating softened tires; and
>
> (e) activate gate opener, put truck in gear, and leave facility.
>
> (f) the driver would then turn their truck left out of the JSCL facility and onto Tuppers Crossing and accelerate to Route 7, at which point they would need to stop at the stop sign at that intersection before turning and accelerating onto Route 7.

11. These pre-trip activities generally take about thirty minutes, provided that the simple repairs that the driver needs to address do not delay their departure.

12. Mr. Devos defined the holidays when JSCL would not regularly operate as being New Year's Day, Thanksgiving, and Christmas Day. However, he recommended that JSCL be allowed to operate during these holidays to respond to "emergencies, with the proviso that such emergency trips would be limited to no more than three trips during the nighttime."

13. Mr. Devos offered that JSCL would also abide by a condition, during the day time or night, to not use back up audio alarms on their fuel trucks. These audio alarms would be replaced with strobe lights.

14. Drivers who arrive at the facility between 5:00 a.m. and 8:00 a.m. would generally return to the facility between 3:00 p.m. and 5:00 p.m. Drivers who arrive later in the morning, or who complete multiple short-haul trips, would return to the facility no later than 10:00 p.m., other than the nighttime and emergency trips noted above.

15. Mr. Devos currently operates his fuel delivery business from a separate farming operation on Greenbush Road in Ferrisburgh. Those fuel delivery trucks sometimes operate in the nighttime (i.e., between 10:00 p.m. and 5:00 a.m.) from his farm.

16. The Neighbors' attorney inquired during cross examination about why Mr. Devos wouldn't keep one or more trucks at the farming operation, so that emergency and other nighttime deliveries could continue to occur from that facility.

17. Mr. Devos is 80 years old and that, while he hopes "to do this as long as [he] can," he wants to pass the fuel delivery business on to his sons, who currently work with him, and does not want to limit his sons' or a future buyer's ability to have emergency and other nighttime operations from the proposed Tuppers Crossing location.

18. Mr. Davos's farm on Greenbush Road is located north of Tuppers Crossing by about five miles.

19. His current fuel delivery business operates on a timeline similar to what is proposed for the JSCL facility: some drivers arrive before 5:00 a.m., most arrive thereafter; most drivers return to the farm by 4:00 p.m., some return later in the afternoon and evening. There are currently no restrictions on the operation of these fuel delivery truck during the nighttime (i.e., after 10:00 p.m. and before 5:00 a.m.).

20. In his 40 years of operating the fuel delivery business from his farm, Mr. Devos has never received a noise complaint concerning the fuel delivery trucks, either during the day or night.

b. Neighbors' Concerns

21. Nearly all of the properties of the Neighbors who testified at our remanded merits hearing, as well as the proposed JSCL trucking site, are located in the IND-2 District that parallels U.S. Route 7. Despite this zoning designation, per these Neighbors their neighborhood is exclusively residential and agricultural, as well as relatively quiet during the nighttime.

22. The Tuppers Crossing neighborhood that surrounds the JSCL site is currently developed exclusively for residences, most all of which are occupied by their owners. There are also nearby agricultural fields. The only exceptions to this universal rule are the commercial and retail operations that are located on adjacent properties along U.S. Route 7.

23. Tuppers Crossing is a Class III town highway, running approximately 2,300 feet from U.S. Route 7 on the east to Botsford Road to its west.

24. Tuppers Crossing does not have a marked speed limit. However, cars typically travel around 50 miles per hour along most of Tuppers Crossing. This typical travel speed is reinforced by the conventional understanding that unmarked roads in Vermont have an unstated speed limit of 50 miles per hour.

25. Tuppers Crossing is bisected by a railroad track running north/south just westerly of the Warner homeplace.

26. The Warner home is approximately 60 feet from Tuppers Crossing and about 150 feet from the JSCL proposed site.

27. The Allen home is located next to the Warner home to the west, in the Rural Agricultural Zoning District.

28. The JSCL proposed project is to be located directly opposite the Warner home and adjacent to the Choquette/Villeneuve home.

29. During the nighttime, particularly after approximately 10:00 p.m., all traffic along Tuppers Crossing is very light and drops off substantially from the daytime traffic. This is evidenced by testimony and exhibits from both JSCL's expert and Neighbors, which showed that nighttime vehicle traffic averaged about one and a quarter vehicles per hour.

30. Any nighttime vehicles are nearly always passenger cars. Neighbors are not aware of any tractor trailers or other industrial trucks driving on Tuppers Crossing from the hours of 10:00 p.m. to 5:00 a.m. over the course of their collective decades of living on Tuppers Crossing on any regular or even occasional basis. Their representation in this regard was credible and not contradicted by any evidence offered on behalf of JSCL.

31. Any noise associated with this very limited passenger car traffic at night is not disruptive to Neighbors or their sleep.

32. Thus, the Tuppers Crossing neighborhood is characterized as having very little, if any, noise impacts from Tuppers Crossing traffic from 10:00 p.m. to 5:00 a.m., especially in the middle of the night.

33. Further, the Tuppers Crossing neighborhood is characterized as currently having no nighttime truck traffic noise from 10:00 p.m. to 5:00 a.m.

34. Each of the Neighbors testifying at our remand hearing convincingly explained that trains currently pass very rarely through the Tuppers Crossing railroad crossing at night. Nighttime train traffic has dropped off since our initial trial in 2019. Although not expressly stated, we surmise that the drop off in train traffic is likely due, in part, to the ongoing COVID epidemic.

35. Based upon Neighbors' collective decades of ownership and residence along Tuppers Crossing, a single train only rarely passes through the Tuppers Crossing railroad crossing between 10:00 p.m. and 5:00 a.m. each night. Neighbors' representations were not contradicted at our remand hearing.

36. When the train does pass through Tuppers Crossing, day or night, it lasts about 90 seconds, total.

37. The rare occurrences when the train does pass through at night are largely not disruptive and do not disturb Neighbors in their sleep.

38. The Neighbors are uniformly concerned that any noises demonstrably louder during the night will awaken them and disrupt their sleep.

c. Nighttime Noise Estimates

39. Mr. Duncan provided additional expert testimony during our remand hearing in support of JSCL's application, particularly regarding nighttime noises and what the JSCL trucks may add to the nighttime noises.

40. Principally, Mr. Duncan referred to and relied upon his prior testimony in his assessment of the estimated instantaneous noises, established on a $dBA_{(LMAX)}$ or $Leq_{(1\ sec.)}$ scale that would be transmitted by the trucks operating during the nighttime at or near the JSCL project site. We were not provided with updated or additional estimates concerning estimated instantaneous nighttime truck noises.

41. Mr. Duncan provided estimates, based upon noise modeling scenarios, for the one-hour time periods between 2:00–3:00 a.m. and 5:00–6:00 a.m. He chose these time periods because they historically represent the lowest and highest nighttime sound levels.

42. When attempting to understand how noises impact humans, Leq $_{(1\ hr.)}$ can most accurately explain how humans hear constant sounds. The dBA$_{(LMAX)}$ or Leq$_{(1\ sec.)}$ scale most accurately explains how humans hear instantaneous sounds, particularly when there are not equivalent or louder sounds in the background.

43. Relying upon the estimates presented in 2019, the instantaneous nighttime noise from a JSCL truck was estimated to reach as high as 62 dBA Leq$_{(1\ sec.)}$ at the nearest residence (the Warner residence) and as low as 39 dBA Leq$_{(1\ sec.)}$ at the residence farthest away. See Applicant's Original Ex. 26, Fig. 14.

44. We were not provided with readings for existing instantaneous nighttime sounds for the Tuppers Crossing neighborhood, but did receive estimates of the existing sound reading levels, based upon an Leq$_{(1\ hr.)}$ scale: 33 to 35 dBA Leq$_{(1\ hr.)}$ during the hour of 2:00–3:00 a.m. and 38 to 41 dBA Leq$_{(1\ hr.)}$ during the hour of 5:00–6:00 a.m. for the residences with frontage on Tuppers Crossing.[8]

45. Mr. Duncan also provided further estimates of the noises that would be generated at night by the operation of JSCL trucks, established upon a dBA Leq$_{(1\ hr.)}$ scale. As we discussed in our original Merits Decision, such a noise measuring scale provides a reading of noises received by a receptor over a specific one-hour span of time. Such a reading essentially averages the noises experienced during that time period.

46. In this regard, Mr. Duncan provided two hypothetical scenarios for the operation of JSCL trucks at night: the first was premised upon a single JSCL truck operating within the JSCL site, and the second premised upon three JSCL trucks operating simultaneously.

47. These two scenarios represented that, again based upon a Leq$_{(1\ hr.)}$ scale, the single truck hypothetical would generate average sounds for a one-hour period of 33 to 45 dBA Leq$_{(1\ hr.)}$ during the hour of 2:00–3:00 a.m. and 39 to 51 dBA Leq$_{(1\ hr.)}$ during the hour of 5:00–6:00 a.m.

48. After completing our analysis, we found these estimates of nighttime noise to be caused by the JSCL trucks to be of little help in understanding the impacts upon Neighbors, given that these estimates did not predict the instantaneous noises that could be generated. Rather, we

[8] As a reference, we were also provided with the following sound estimates for the nearby properties with frontage on U. S. Route 7, adjacent to the intersection with Tuppers Crossing: 45 dBA Leq$_{(1\ hr.)}$ during the hour of 2:00 a.m. – 3:00 a.m. and 51 dBA Leq$_{(1\ hr.)}$ during the hour of 5:00 a.m. – 6:00 a.m. Applicant's Remand Ex. 1 at 2.

would have found a comparison of instantaneous readings, particularly with the rarity of louder noises during the nighttime in this neighborhood, to be of more help in our analysis.

VI. Discussion

a. Legal standards

As we summarized in our previous Decision, "we must determine whether noise from the Project will 1) represent 'a significant increase in the noise levels . . . so as to be incompatible with the reasonable use of the surrounding area,' 2) 'exceed seventy decibels at the property line,' or 3) adversely affect the character of the area or the use or development of adjacent property." 2020 Merits Decision at 48 (citing relevant Bylaws §§ 8.1, 9.5(A)(2), (6)). The first and third standards quoted are qualitative and holistic. They require that we analyze the Project's impacts on those who live and work in the areas surrounding the Project. JSCL, as the applicant for this municipal zoning permit, carries the burden of persuasion on each standard. See In re Pierce Woods PRD and Subdivision, No. 33-2-06 Vtec, slip op. at 10 (Vt. Envtl. Ct. Feb. 28, 2007) (Durkin, J.) ("[T]he applicant retains the final burden of persuasion" in a de novo zoning appeal).

Our remand hearing was only on the narrow issue of nighttime noise. It is self-evident that qualitatively, the most important potential impact of nighttime noise on nearby residents is disruption of sleep. As the party with the initial burden of proof and ultimate burden of persuasion, we would have therefore expected Applicant to come forward with evidence that would show that their proposed nighttime activities would be unlikely to have a significant impact on neighbors' sleep—especially since it was apparent from the beginning of these proceedings that such an impact was neighbors' chief concern about nighttime noise.

The Supreme Court's Decision in JSCL I, as well as prior decisions of the courts and administrative bodies buttress our understanding of Applicant's burden to provide evidence on likely nighttime impacts on sleep at the remand hearing. The Supreme Court was quite clear about two types of information Applicant needed to provide: 1) a maximum number of trips it was proposing each night (and we note Applicant has provided such a number: three trips), and 2) evidence demonstrating the impact that noises of this magnitude and occurring with this frequency would have on surrounding properties. See JSCL I, 2021 VT 22, ¶ 43 ("We therefore

conclude that the matter must be remanded for the environmental court to reconsider the nighttime impacts of the project and revise Condition 8 so that it contains definite standards.").

Decisions of the former Environmental Board on Act 250 permit applications frequently evinced a concern for *instantaneous* noise impacts upon sleep. In addition to the Environmental Board's statement in OMYA, Inc. that "each additional instance of a truck passing results in an additional instantaneous loud noise, or an additional annoyance that interferes with sleep and conversations," No. 9A0107-2-EB, at 15 (May 25, 1999), the Board repeated this concern about the impact of nighttime noise on sleep in Hannaford Brothers Co. and Southland Enterprises, Inc, No. 4C0238-5-EB, Findings of Fact, Conclusions of Law, and Order (Altered) at 12–13 (Vt. Envtl. Bd. Nov. 27, 2002). In that case, it analyzed the potential for a proposed new store's operations before 6 a.m. to affect sleep.[9]

The Vermont Supreme Court also quoted the OMYA Decision in Lathrop, when it affirmed that "[w]hen evaluating the real effect on people from the noise of passing trucks, *it is more appropriate to consider the instantaneous noise from the trucks as they pass because that is what people experience*." Lathrop, 2015 VT 49, ¶ 86.

In its review of our 2020 Merits Decision, the Supreme Court did not specify *how* Applicant should present impacts of the Project's nighttime noise to account for both the magnitude and frequency of maximum sounds. Applicant's noise expert asserted North East Materials established a precedent for how to accomplish that task. Specifically, in North East Materials, this Court considered whether the quarry's roughly 100–200% increase in truck trips would significantly adversely impact off-site noise on a roadway that already had trucks regularly traveling on it. The new trucks were no louder than the old trucks, and so L_{MAX}, taken alone, was not a satisfactory metric for impact. The Court accepted the applicant's noise expert's model that used an $Leq_{(1\text{-}hr)}$ average to compare the existing sound levels to the sound levels if the

[9] The Board in these two cases referenced various standards, including from the U.S. Environmental Protection Agency and the World Health Organization, about levels of noise (expressed in both Leq and L_{MAX}) that should be maintained to prevent sleep disruption. We do not adopt those standards here, given the lack of any presentation on them in the present case. Rather we cite these decisions for the principle that nighttime noise should be analyzed for its impact on sleep, and that this impact may be determined, at least in part, by looking at changes in instantaneous noise (L_{MAX}).

proposed additional trucks were approved. The Supreme Court affirmed our analysis. N. E. Materials Grp., 2019 VT 55, ¶¶ 19–22.

Extrapolating from that decision, at the remand hearing Applicant presented a new study that modeled on an hourly basis the average noise levels at various neighbors' residences at 2–3 a.m. and 5–6 a.m. The study modeled noise as it currently exists during these hours and as it would exist with the addition of either one or three proposed JSCL trucks. See infra, part IV(*b*) (discussing this study in greater detail).

Neighbors contest the applicability of North East Materials on a number of grounds in their post-trial filings. We agree that North East Materials is distinguishable in at least two important ways. First, in North East Materials, the maximum instantaneous noise generated by the project matched a maximum instantaneous noise already generated frequently in the same neighborhood and during the same hours of operation. New trucks made the same noise, during the same hours, as existing trucks; the only proposed change from the existing operations was the frequency at which that noise would be generated. This was the primary reason why $Leq_{(1\text{-}hr)}$ was deemed appropriate. Here, while it is possible that instantaneous noises with an equivalent sound pressure are experienced at neighboring residences occasionally during the nighttime hours, the evidence makes clear that it is nowhere near the same regularity as in North East Materials. Further, the train noises, while potentially of an equivalent or greater sound pressure level, are characteristically different from the truck noises.

Second, and relatedly, the hours at which the additional trucks passed houses in North East Materials were during the day, when most humans are awake, some of whom are away from their homes at work. Again, at night we are concerned with the potential of loud noises associated with the project to awaken a sleeping person. If, indeed, the sounds produced by JSCL trucks are loud enough to disrupt sleep, then the number of times they recur would be a very important—if not the most determinative—factor in gauging their impact. In other words, L_{MAX} becomes even more important relative to $Leq_{(1\text{-}hr)}$ during nighttime hours, when there is the potential for sleep disruption. We would have therefore expected Applicant to come forward with clear evidence as to the likely impact of all the noises generated by their project on neighbors' ability to sleep.

Again, this expectation is in keeping with Lathrop, as well as with North East Materials, where both this Court and the Vermont Supreme Court emphasized the ongoing relevance of using both L_{MAX} and Leq measurements. N. E. Materials Grp., 2019 VT 55, ¶ 18 ("Lathrop did not limit reviewing bodies to considering only L_{MAX} measurements, nor did it prohibit reviewers from considering other corroborating data provided by experts or laypersons that it found credible. Lathrop merely requires that the reviewer 'assess the evidence with respect to high L_{MAX} events and make findings with respect to the evidence' to ensure that the frequency and noise from those events is accounted for . . . ."). Those cases affirm that the relative importance of instantaneous and average noise measurements changes depending on the unique circumstances of the case and the noises the proposed project would generate.

b. New evidence presented by Applicant at remand hearing

For our remand hearing, Applicant's engineering consultant prepared a new report, which supplements the existing evidence from our original hearing. The report uses what Mr. Duncan referred to as a traffic noise model. Using this model, the report *models* existing hourly average ($Leq_{(1\text{-}hr)}$) noise generated solely by traffic on Tuppers Crossing Road and Route 7, as experienced at the four neighboring residences closest to the JSCL property. Those residences include the Choquette/Villeneuve and Warner properties.[10] The report models existing noise for both the 2:00–3:00 a.m. hour and the 5:00–6:00 a.m. hour. For each hour, it relies on Vermont Agency of Transportation vehicle counts on Tuppers Crossing Road and Route 7 over a period of days in 2015 to calculate the number of passing vehicles. It then uses certain noise factors to estimate the sound generated by that level of traffic, as averaged over an hour. These hourly existing traffic noise levels, as experienced at the four properties, range between 33–45 dBA in the 2:00–3:00 a.m. hour and 38–51 dBA in the 5:00–6:00 a.m. hour.

The report also models the noise that would be experienced with the addition of one JSCL truck or three JSCL trucks in an hour. It again calculates these values on an hourly average ($Leq_{(1\text{-}}$

[10] The residence shared by the other two Appellants, David Pierson and Jane Melrose, was not included in this exercise, nor were the residences of the other interested persons. The residences included were the four closest to the JSCL property, which JSCL trucks will drive past on their way to Route 7. It can be assumed, given how sound propagates and the results in the earlier modeling, that JSCL truck noise experienced at farther-away residences would likely be the same or lower.

$_{hr)}$) basis, and does so at each of the four residences, for both the 2:00–3:00 a.m. hour and the 5:00–6:00 a.m. hour.

It appears that some important noises were left out of this model. From Mr. Duncan's testimony, it is apparent that he included in the model the sound of a JSCL truck driving at 20 mph on the property and 30 mph once on Tuppers Crossing Road and Route 7. Mr. Duncan also mentioned that he included the noise of the truck drivers arriving at the property in their personal vehicles. It was not apparent whether the other noises associated with starting a truck—for example doors being shut or slammed, the engine starting, the truck idling over a period of time, or the brakes engaging or releasing pressure—were included. This absence of certain noises is balanced to some degree by testimony that 20 mph is actually faster than most trucks would drive on the JSCL property, and, given that driving faster tends to produce louder noise, this input to the model actually represents a conservative (i.e., worst case) approach.

Applicant's Remand Exhibits 2 and 3 present the results of the modeling. They show that, again, when averaged over that one-hour period, the *change* in sound levels at neighboring properties resulting from adding the JSCL nighttime trucks range between 0–1 dBA in the single truck scenario and 0–4 dBA in the three-truck scenario at 2:00–3:00 a.m. Smaller differences were detected at 5:00–6:00 a.m., given the louder background noise at that time.

Mr. Duncan testified that the Federal Highway Administration and VTrans both use hourly noise averages when calculating the traffic noise impacts of highway projects. He testified that VTrans's Noise Analysis and Abatement Policy defines a "substantial noise increase" as an increase of 15 dBA or higher on an hourly basis—far higher than the increase projected here. His report references that in all cases, even with the three additional trucks, hourly noise levels fall below the levels specified in the VTrans Noise Abatement Criteria.[11] Id. The highest hourly average noise level reached, even in the 3-truck scenario at 5:00–6:00 a.m., was 51 dBA (Leq$_{(1 hr.)}$) at the properties on Route 7, and the modeled noise reached that level at those properties even without any JSCL trucks.

[11] These criteria can also be found in Applicant's Remand Exhibit 4, page 9 and are 67 dBA Leq$_{(1-hr)}$ in residential areas and 57 dBA Leq$_{(1-hr)}$ on "[l]ands on which serenity and quiet are of extraordinary significance."

c. New evidence presented by Neighbors at remand hearing

The main new evidence presented by Neighbors pertained to existing nighttime noise, especially that from train traffic. Some of this testimonial evidence concerned the frequency of train traffic; other evidence concerned how Neighbors presently experience that noise.

Both Ms. Warner and Ms. Allen testified that nighttime train trips are "rare" and "infrequent" at present. Ms. Warner testified that when the train runs at night it does not really wake her up. Generally, at night, from inside her house she can hear the occasional emergency vehicle on Route 7, and the bass of loud music from the occasional passing car. She said that the light vehicular traffic currently on Tuppers Crossing Road at night does not wake her up either. Ms. Allen also testified, in keeping with her testimony in 2020, that the train does not generally wake her up at night or if it does, she goes right back to sleep.

Aubrey Choquette testified that nighttime traffic on Tuppers Crossing Road is extremely infrequent and has never, that he could remember, included an industrial truck. Neither this noise nor noise from the train has disturbed his sleep that he could remember. He testified that nighttime traffic on Route 7 sometimes includes industrial trucks and that they sometimes disturb his sleep, especially if they are shifting, braking, or idling on the shoulder opposite his residence.

d. Conclusions Based on Cumulative Evidence

As the applicant, JSCL carries the burden to show the compatibility of its proposed new use with the existing character of the area and its lack of an undue adverse impact on neighbors via noise. Again, based on the Supreme Court Decision in JSCL I as well as existing precedents, we would have expected JSCL to present evidence as to the likely impacts (or lack thereof) that their proposed nighttime operations would have on the sleep patterns of neighbors, including estimates of instantaneous readings from the project's expected noises. They have not done so. The new evidence produced by Applicant, namely the hourly averages of increased noise generated by one or three trucks driving on and away from the project site, does not speak directly to such an impact, at least without further explanations not provided by Applicant. While this evidence does demonstrate what we agree would generally be considered a low impact

during daytime hours, considering both frequency and intensity of traffic noise, nighttime noise impacts cannot necessarily be extrapolated from such conclusions.

We can find, however, that the instantaneous noises generated by a truck driving on and from the JSCL property, as experienced at neighboring properties during the nighttime, represent a significant increase over background nighttime noise levels. This is true whether one takes the typical $Leq_{(10\text{-}min)}$ measured at night at the long-term monitors, the average nighttime noise at those monitors, or the modeled $Leq_{(1\text{-}hr)}$ existing traffic noise levels at neighboring properties as one's baseline. For example, the 62 dBA $Leq_{(1\ sec.)}$ in the single night-time truck scenario experienced at Ms. Warner's property is much higher than the background 41 dBA $Leq_{(1\text{-}hr)}$ calculated at her house at 5:00–6:00 a.m. in Applicant's 2021 noise report, the 35 to 49 dBA $Leq_{(10\text{-}min)}$ determined to be the typical sound pressures experienced at the western monitor at night in the 2017 study, or the 52 dBA determined to be the "average" nighttime noise at the western monitor in that study.[12] We note that, as explained in the 2017 study, "for an increase of 10 dB in sound level as measured by a meter, humans perceive an approximate doubling of apparent loudness," Applicant Ex. 26 at 20. Following this guideline, people at the Warner property would experience this instantaneous noise as two or more times louder than the existing typical background noises.

The instantaneous noises in other scenarios and at other properties also represent significant increases over background noise, albeit not as large. For example, the 54 dBA L_{MAX} experienced at the Choquette/Villeneuve residence as a result of the "Northern Maximum JSCL scenario" may be compared to the 47 dBA determined to be the average nighttime noise at the eastern monitor, the 38 to 52 dBA $Leq_{(10\ min)}$ determined to be the typical range of nighttime $Leq_{(10\text{-}min)}$ at this monitor, or the 45 dBA $Leq_{(1\text{-}hr)}$ modeled as the existing traffic noise at 2–3 a.m. at the Choquette/Villeneuve residence. Using any of these figures as the baseline, this represents a perceptible and even significant increase.

Applicant's engineer contested the validity of these sorts of comparisons at the remand hearing. He argued that one could not draw valid conclusions by comparing an instantaneous sound pressure to an average sound pressure calculated over a longer time period. Because

[12] The western monitor being closer to the Warner residence than the eastern monitor.

sound is experienced as a change in pressure relative to what immediately preceded it, he argued that neighbors' experience of JSCL truck sounds would depend on whatever instantaneous sound pressures they experienced immediately preceding the truck noises. He appeared to argue that instantaneous maximum noises could only be compared to other instantaneous maximum noises, even if those noises occurred hours apart. We accept the engineer's exposition of principles and reasoning up to a certain point but need not credit every conclusion he drew from those principles. See State v. Sullivan, 2018 VT 112, ¶ 18, 208 Vt. 540 ("A court is not required to credit an expert witness's opinion whenever the witness is qualified to testify as an expert.").

For example, we credit Mr. Duncan's testimony that instantaneous noise is experienced as a change in sound pressure relative to what immediately preceded it. However, in the absence of the ability to predict the instantaneous sound pressure immediately preceding any future JSCL nighttime truck use, it seems to us eminently reasonable to use a well-founded proxy measure for such background sound pressures when projecting future instantaneous sound impacts. Of the averages discussed above, we believe that both the overall nighttime average sound pressure and the $Leq_{(10\text{-}min)}$ average pressures at night, as measured at the western and eastern monitors, provide reasonable proxies. As averages, they represent a middle ground in terms of background noises, with some instantaneous sound pressures during the measurement period higher than the calculated average and some lower. In other words, these averages are useful comparison points for instantaneous noises experienced from nighttime JSCL trucks at Neighbors' residences, because they represent a best guess of what the local instantaneous noise would be immediately preceding JSCL truck noise.

Under one of the applicable standards on noise, we must determine whether the noise to be generated by JSCL trucks at night "represents a significant increase in noise levels in the vicinity of the [proposed] development so as to be incompatible with the reasonable use of the surrounding area." Bylaws § 8.1. We conclude that JSCL has not met its burden of persuasion to show that the project does not violate this performance standard. As explained above, the evidence produced by JSCL demonstrates that the instantaneous noises produced by its trucks at night will, on any given occasion, almost certainly represent a significant increase over the background sound levels at nearby residences, especially the Warner residence. Nothing could

be a more "reasonable" use of one's residence than sleeping peacefully in it at night. By failing to produce further evidence concerning the likely impact of this significant noise increase upon the ability of neighbors to fulfill that fundamental use of their homes, JSCL has failed to demonstrate that such nighttime trips are compatible with the reasonable use of surrounding areas.

We have considered the evidence put forward by JSCL, including the VTrans standard defining a "significant" traffic noise increase as one of 15 dBA or more on an hourly basis and establishing 67 dBA $Leq_{(1\text{-}hr)}$ as the sound level at which traffic noise abatement must occur in residential areas. However, particularly in regard to determining impacts of new nighttime noises, we conclude that neither standard is dispositive for the question of conformance with the Town of Ferrisburgh Bylaws. Compliance with these VTrans standards does not demonstrate the lack of significant impacts upon sleep that we believe JSCL must show.

Under another applicable standard in the Bylaws, we must determine whether the Project's proposed nighttime operations "adversely affect . . . the character of the area affected" or "the appropriate use or development of adjacent property." Bylaws §§ 9.5(A)(2), (6). As we explained in our 2020 Merits Decision, Ferrisburgh chose to retain the unadorned language "will not adversely affect," which was changed in the statewide enabling statute in 2003 to include a reference to purposes expressed in the town plan. 2020 Merits Decision at 33 (citing ln Rublee 246 White Birch Lane CU, No. 140-11-15 Vtec, slip op. at 8–10 (Vt. Super. Ct. Envtl. Div. Aug. 23, 2016) (Walsh, J.)). We concluded that this reflected Ferrisburgh's choice to have us analyze this project for an impact upon the character of the area both as it exists at present and as that character is defined in purpose and policy statements in the zoning bylaws and municipal plan. Id. Nevertheless, as also explained, we still analyze the project for an *undue* adverse effect. Only if the adverse effect on a protected characteristic is further deemed to be undue, following the Quechee test, are there grounds for denial. Id. at 33–34 (citing ln re Grp. Five |nvs., LLC Conditional Use Application, No. 34-3-11 Vtec, slip op. at 11 (Vt. Super. Ct. Envtl. Div. Dec. 4, 2012) (Durkin, J.) *aff'd sub nom*. In re Grp. Five lnvs. CU Permit, 2014 VT 14, 195 Vt. 625, *overruled in part on other grounds by* Confluence Behavioral Health, LLC, 2017 VT 112 (Vt. Dec. 8, 2017)).

For essentially identical reasons to those discussed in the paragraph above on Section 8.1, we conclude that Applicant has not met its burden of persuasion as to the impact of its proposed nighttime operations under these conditional use criteria. The potential of nighttime operations to interfere with sleep represents at the very least a prima facie possibility of an undue adverse effect on the character of the area and the reasonable use of surrounding properties. Without further evidence, we are unable to conclude that this adverse effect will not exist or, if it does, that it will not be unduly adverse.

This conclusion is not changed by the fact that the portion of the property on which development is slated to occur lies in the Industrial (IND-2) Zoning District, as do the Warner and Steady properties. The Ferrisburgh Bylaws require us to determine impact on the character of the neighborhood as it exists at present and as envisioned by policies and purposes of the Town Plan and Bylaws. See In Rublee 246 White Birch Lane CU, No. 140-11-15 Vtec, slip op. at 8–10 (Vt. Super. Ct. Envtl. Div. Aug. 23, 2016) (Walsh, J.). Testimony from Ms. Warner and others established that, at her residence and further to the West, the area is presently characterized by an absence of loud industrial noises at night, even if such noises may be experienced with greater regularity on Route 7 itself, especially during the day. Traffic from Route 7 is barely audible at the distance of Ms. Warner's residence and nighttime train traffic is relatively infrequent.

Furthermore, the stated purpose for the IND-2 District makes clear that the residential character of properties both within the district and in neighboring districts should be protected. The purpose provision states, "[i]ndustrial use should be subject to review to protect residential amenities" and "[t]he size of the industrial uses should be restricted to protect the residential character in adjoining districts." Bylaws § 4.5(A); see also Ferrisburgh Town Plan § 1.2, Goal E ("Encourage commercial and industrial uses that are low impact and compatible with the rural character of the town").

Thus, Applicant has not met its burden to demonstrate a lack of undue adverse effect from proposed nighttime operations on the character of the area, either as it exists at present, or as envisioned by the policies expressed in the Bylaws and Town Plan.

e. Evidence about purposes behind nighttime trips.

Given our conclusion that Applicant has not come forward with evidence to meet its burden to demonstrate a lack of undue adverse effects via nighttime noise, the reasons Applicant expressed behind its desire for nighttime trips are not important for our conclusions. However, we summarize those reasons here.

Mr. DeVos testified that there were at least three, and more likely four reasons why he sought the flexibility to have some drivers leave the JSCL site during nighttime hours. One was to be able to respond to an "emergency" request from a fueling station that was low on fuel. Another was to finish a day's deliveries ahead of forecasted inclement weather. Finally, he indicated that one of his current drivers prefers to leave before 5 a.m. to avoid traffic, especially around the Albany, New York, area, where one of the two fuel depots DeVos truckers take fuel is located (the other being in South Burlington). On cross-examination, however, the first answer he gave as to why he needed drivers to leave before 5 a.m. was that it was not possible for a driver to make two rounds of deliveries in a day otherwise.[13] Mr. DeVos provided a rough evaluation of the relative importance of each of these three (or four) reasons, but that evaluation was not entirely internally consistent. He testified, however, that without the ability to respond to emergency requests before 5 a.m., he would likely lose business to competitors and would likely be unable to retain one of his current drivers. On cross examination, Mr. Devos advised that he currently dispatches fuel delivery truck from his farm on Greenbush Road, including during the nighttime. When asked why he could not retain one or more delivery truck on his farm for nighttime dispatch, Mr. Devos advised that he did not wish to continue that practice, but he did not give credible reasons for why he could not do so, as an alternative to disturbing the sleep of his Tuppers Crossing neighbors.

While we found Mr. DeVos to be a credible, we conclude that these business purposes do not justify a disregard of the Bylaws' direction to avoid adverse undue impacts.

[13] Mr. DeVos gave conflicting testimony as to whether drivers would need to make two round trips because of JSCL being short-staffed or simply because that was JSCL's long-standing practice.

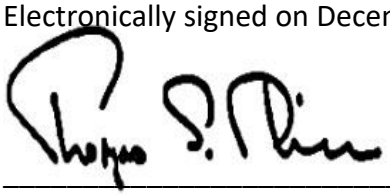
VII. Conclusion

Because Applicant has not demonstrated a lack of undue adverse impacts from nighttime trucking noises on the reasonable use of nearby properties or on the character of the area, its request to allow up to three truck trips (round trips) between the hours of 10:00 p.m. and 5:00 a.m. must be denied. Its request to allow three trips on Sundays, Christmas, and Thanksgiving, is supported by our determinations regarding daytime noise in our 2020 Merits Decision, provided those trips occur between its normal daytime hours of 5:00 a.m. and 10:00 p.m. Condition 8 from our 2020 Merits Decision is therefore stricken and replaced with the following condition:

> 8. Truck operations, including starting up trucks and exiting or entering the property in trucks, may occur only between the hours of 5:00 AM to 10:00 PM daily. A maximum of three trucks may depart and then return to the JSCL site between those hours on Sundays, Thanksgiving, and Christmas. No truck trips may occur during any nighttime hours.

This completes the current proceedings before this Court. A Judgment Order accompanies this Merits Decision.

Electronically signed on December 8, 2022, at Newfane, Vermont, pursuant to V.R.E.F. 7(d).



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Thomas S. Durkin, Judge
Vermont Superior Court, Environmental Division