

## Steve Morgan on: The Missed Intent of Noise Regulations

In spite of the good intentions that motivate the development of industrial noise regulations, the reality is that these regulations frequently fall short of meeting their fundamental goals.



For residents living near industrial operations, the added noise can have a very damaging impact on quality of life. It only makes sense for regulatory bodies to attempt to mitigate this impact by imposing certain noise standards on Industry that will promote a balance between the productivity of industrial operations and the wellbeing of the surrounding community.

Ultimately, the purpose behind a noise regulation is to ensure that the noise generated by an industrial presence has minimal negative impact on the quality of life of those in the community.

However, like so many well-intentioned environmental policies, the theory behind noise regulations is solid, but something integral to their success is lost in practice. This discrepancy is due, in no small part, to the misunderstanding that surrounds the two primary types of noise regulations: Property-Line-Based Regulations (PLBRs) and Receiver-Based Regulations (RBRs).

Most first-draft regulations or regulations that are in place but focused on other industries are property-line-based or distance-based. This results in the expectation that industrial facilities will meet certain noise regulations at a specified distance or, as is more often the case, at the property line of a given facility.

In comparison, receiver-based or resident-based regulations require that noise standards be met at the residences (receivers) nearest to a particular facility, and take into consideration the noise specifically contributed by that facility. The Alberta Energy Regulator (AER) *Directive 038* of Canada and the Federal Energy Regulation Commission (FERC) *Section 7 Regulations for Noise* of America are both examples of RBRs.

Though the intentions behind PLBRs remain the same as those of RBRs, the outcome of PLBRs often falls vastly short of the goal of industry-and-community harmony. In theory, PLBRs should work just as well as RBRs, but a number of assumptions are being made with PLBRs that hinder their efficacy.

The most problematic of these assumptions is that there will be an affected resident located at just the right distance from the facility to benefit from the type of noise control that tends to be applied in property-line-based situations. Sometimes, this is the case. More often, it isn't.

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The *type* of noise regulation in place in a given jurisdiction influences the method of noise control typically applied to a facility. PLBRs tend to encourage the implementation of sound walls as a noise-control measure. Sound walls are generally a cost-effective and easy solution. For these applications, sound walls are admittedly effective for meeting regulations. If a sound wall is constructed near the property line of a facility, noise regulations can generally be met at that line and will be effective at mitigating the industrial noise within a limited distance beyond the wall, known as the wall's *sound shadow*.

A sound wall, however, is only effective at abating noise for those residents that fall conveniently within this sound shadow. In this manner, a facility can meet noise regulations at their property line with the use of a sound wall while not actually having any discernable effect on the community the regulations are intended to protect. Despite having now invested the time and money to have this noise-control measure put in place, the facility may still be at risk of noise complaints and the local residents are no better off than they were before the measures were implemented.



Additionally, if there are *no* impacted residents nearby, a facility may still be expected to meet a certain decibel level at their own property lines that will serve no purpose, resulting in unnecessary expenses and possible delays to operations. Noise-control measures become entirely unnecessary but still costly. In these situations, noise regulations speak to neither the needs of residents nor Industry.

RBRs, conversely, tend to encourage more focused noise-control measures that rank according to contribution at the receiver and directly attenuate the sources of the noise while ensuring that the decibel level of the facility at nearby residences meets acceptable standards. In this case, RBR noise-control measures effectively meet the needs of residents as well as Industry, while avoiding the sunk-costs of an ineffective sound wall that may later need to be replaced by more focused noise control anyway, due to ongoing community complaints.

PLBRs also do not tend to take into account landscape or terrain, the presence of additional industrial facilities, or other contributors to ambient noise (e.g., highways, factories, railroads, etc.)—all factors that significantly influence the impact of noise.



A facility located on flat terrain that is highly conducive to noise will require more noise control than a facility located somewhere that noise does not easily travel, making the idea of a generic distance-based regulation too arbitrary and generalized to be effective. The presence of other industrial facilities or contributors to ambient noise can result in a facility being unable to meet a required decibel level at their property line, not due to their own noise generation, but due to an inability to attenuate noise sources that are entirely out of their control. In contrast,

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RBRs account for the footprints of all contributing noise sources in a landscape or terrain, ensuring that a facility need only address its own noise contribution.

The assumptions underlying PLBRs result in ineffective environmental noise regulations. PLBRs promote noise-control measures that use sound-shadow-based remedies to meet compliance. If a receiver is in the sound shadow, this is effective. If the receiver is not in the sound shadow, there is minimal to no positive effect on the noise footprint of an industrial facility.

As such, RBRs are a considerably more appropriate match for the intent of noise regulations to improve or maintain the quality of life of residents impacted by an industrial presence. They provide a more effective and, ultimately, more economical solution for industry and community alike.

Taking into consideration the shortcomings of Property-Line-Based Regulations and the benefits of Receiver-Based Regulations, it is apparent that Receiver-Based solutions work best to promote harmony between Industry and community.

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### Resources

Alberta Energy Regulator (AER), *Directive 038: Noise Control (February 16, 2007)*:  
<http://www.aer.ca/documents/directives/Directive038.pdf>

County of Lycoming, Pennsylvania, *Lycoming County Zoning Ordinance (Update March 2014)*:  
<http://www.lyco.org/Departments/PlanningandCommunityDevelopment/Zoning.aspx>

County of Susquehanna, Pennsylvania, *County Subdivision and Land Development Ordinance (2011)*  
*Article VII – Commercial & Industrial Land Development*:  
[http://www.susqco.com/subsites/gov/pages/planning/Subdivision\\_Ordinance\\_PDF/07\\_Article\\_VII\\_Commerical\\_&\\_Industrial.pdf](http://www.susqco.com/subsites/gov/pages/planning/Subdivision_Ordinance_PDF/07_Article_VII_Commerical_&_Industrial.pdf)

Federal Energy Regulatory Commission (FERC), *Environmental Guidelines*:  
<http://www.ferc.gov/industries/gas/enviro/guidelines.asp>

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