9.0 Alternatives Considered

No FRA Action: This alternative would preserve the status quo: states and municipalities could try to regulate the sounding of locomotive horns while railroads could continue to resist such regulation through litigation and other means. FRA lacks the authority to implement the No-Action Alternative, and adoption of the No-Action Alternative would involve congressional action to reverse its mandate to regulate the use of locomotive horns at highway-rail grade crossings as set forth in 49 USC 20153. FRA rejected seeking repeal of the statutory requirement because it would represent a default by the agency charged with addressing this issue. FRA believes that taking such a course would almost certainly lead to a further reduction in safety over time as State-level officials, many of whom today oppose bans imposed without safety consideration, found the ground cut out from underneath them with the retreat of Federal leadership. In the short term it could further frustrate communities seeking quiet zones that are unable to realize them under existing State laws.

No Exceptions to Sounding the Train Horn: at all public highway-rail grade crossings. It would result in a high level of safety at highway-rail crossings, and the costs of administration would be negligible. However, the great majority of commenters and their elected representatives have urged FRA to provide a means for communities to quiet train horns. Taking this course would probably cause many residents of communities with existing whistle bans to relocate and create unnecessary conflict between commuter rail service and the communities served.

Make The Requirements Contained in the NPRM Final: The Notice of Proposed Rulemaking proposed requiring that trains horns be sounded at all public grade crossings; set a maximum sound level for locomotive horns; and provided an opportunity for any community to establish a quiet zone where all public grade crossings are equipped with gates and lights and data and analysis show that implementation will reduce risk in the quiet zone to sufficiently compensate for the absence of the horn sounding: by implementing one or more SSMs at each crossing; or by implementing a combination of SSMs and ASMs at some or all crossings within a proposed quiet zone with FRA approval. Communities with present whistle bans would have up to three years in which to implement SSMs and ASMs. Crossings with track speeds of 15 mph or less at which train movements are protected by flagmen would not need SSMs.

This option would be unresponsive to those who commented in response to the NPRM. FRA agrees with those who commented that the proposed rule offered insufficient time for implementation. FRA agrees with the tenor of many comments that the proposed rule would have required compensation for loss of the train horn even where risk is very low (or would be projected to be low even after the horn was silenced) when compared to the national average at gated crossings where horns are sounded regularly. The result of maintaining that requirement would have been poor cost-benefit tradeoffs for many communities. Staying with the literal text of the NPRM would not allow the noise reductions associated with the shift from distance- to

time-based horn use.

Grandfather All Whistle Bans Existing As Of 10/9/96: This alternative would allow communities that had whistle bans in effect on October 9, 1996 to retain those bans as long as the level of risk does not increase. FRA would essentially be accepting the level of risk the community itself has determined to be acceptable. If a whistle ban community exceeded its risk threshold, it would have three years to implement changes (e.g. install SSMs) sufficient to reduce risk to below its risk threshold. Changes related to use of train horns, including the maximum sound level, could be accommodated within this option.

This option was rejected for various reasons. It would not provide a uniform level of safety across the Nation; it did not afford New Quiet Zones the same exceptions allowed for pre-rule quiet zones, thus undermining uniformity of application and requiring local authorities to expend funds on improvements for which the safety pay-back could not be reasonably assured at the system level. Factors other than silencing the train horn are typically responsible for the growth in calculated risk in the subject communities (e.g., increase in motor vehicle traffic as a result of residential or commercial development in an adjoining jurisdiction; growth in rail traffic). It did not seem sensible to permit excess risk to continue, provided nothing changes in a community, while requiring new increments of risk in other communities to be addressed without regard to whether the current level of risk is excessive.

Grandfather All Whistle Bans Existing As Of 10/9/96 – Combine Collision-Free Exemption With Severity-Weighted Single Threshold: FRA considered allowing communities with whistle bans in effect on October 9, 1996 to retain those for the first 5 years following publication of the interim final rule. Thereafter such communities could retain bans as long as: there have been no collisions within the past 5 calendar years ***or*** risk has not increased above a pre-established threshold calculated using the FRA Accident Prediction Formula (APF) for the past 5 years; ***and*** at least flashing lights and gates have been provided at all such crossings. The option included a severity element in the risk computation for the threshold. A corridor risk index and national threshold would be used, as in the interim final rule. The option provided further flexibility for retaining whistle bans during the transition period as follows: a State Department of Transportation (or other authorized state-level body) could request extended implementation beyond the 5-year period on the basis that the State is assisting local jurisdictions in implementing quiet zones and requires additional time due to funding and/or administrative constraints. The following would apply: each project must be the subject of a filing with FRA (i.e., the rule otherwise applies as revised); actual implementation of initial projects will begin not later than year four; consistent with efficient completion of required work and corridor-related safety considerations, improvements will be implemented at the most hazardous crossings first (where risk reduction opportunities are greatest) and then proceed to less hazardous crossings; no less than 25% of identified excess risk must be abated by the end of year five, 50% by the end of year six, 75% by the end of year seven, and 100% by the end of year eight; and this relief will expire eight years following publication of the interim final rule (seven years from the effective date). If a community exceeded the severity threshold in any annual review thereafter, actions would be taken as necessary to fall back below the threshold within a

three-year period or the train horn would be required to sound; or actions sufficient to compensate for the loss of the train horn would have to be taken. Communities establishing New Quiet Zones would be required to follow the standards set forth in the NPRM (and would not be able to take advantage of low baseline risk, even after adjustment for loss of the train horn).

FRA rejected this option principally because it did not afford New Quiet Zones the same exceptions allowed for pre-rule quiet zones, thus undermining uniformity of application and requiring local authorities to expend funds on improvements for which the safety pay-back could not be reasonably assured at the system level. The costs of flashing lights and gates in existing ban areas would be substantial, in some cases prohibitively expensive. Again, in many cases costs would probably not be fully recovered through safety benefits. FRA also concluded that excepting pre-rule quiet zones from the requirement to make safety improvements solely on the basis of no accident history could not be supported as based on sound safety analysis (and opted, instead, for a limited exception based on both accident history and underlying estimated risk).

Require Horns be Sounded Or SSMs Implemented At Highest Risk Crossings: This alternative would have required that train horns be sounded at all grade crossings except those where (1) maximum train speed is 15 m.p.h. or less and flaggers are provided or (2) a whistle ban permitted under the rule is in effect. Existing whistle bans could continue provided high-risk crossings are addressed within three years. New whistle bans could be created only if crossings within them were equipped with gates and lights. No whistle ban could include a grade crossing categorized as high risk, except crossings within existing whistle bans that are remedied within three years. High-risk crossings are those with a collision probability greater than or equal to .05 (i.e., a five percent chance of an accident occurring at that crossing in a year) based on the APF. Where train horns are now sounded, the crossing's collision probability would be increased to account for the absence of the train horn. Within one year of the rule's issuance, any community with an existing whistle ban would have to certify that it has reviewed FRA data on effectiveness of horns, whistle ban effects, and relative merits of SSMs and consulted with affected railroads and state officials about possible safety improvements. Any community imposing a new whistle ban must first provide the same certification. Communities with existing whistle bans would continue to include crossings lacking gates and lights unless and until the crossing has an APF of .05 or more. Once a whistle ban is in effect, any crossing that reaches an APF of .05 would have to implement remedies within two years to retain their bans.

This option was rejected because: it does not directly take into account predicted accident severity, and therefore does not truly consider risk (severity times probability)[1]; it does not permit sufficient flexibility to reduce risk within a quiet zone by dealing with crossings other than ones with the highest collision probability and, therefore, does not adequately take into account the interest of communities with existing whistle bans. The statute addresses all

[1] The Accident Prediction Formulas were originally developed for purposes that will not in all cases reveal actual risk levels at the individual crossing level. The risk index methodology that FRA developed for purposes of this final rule modifies the accident prediction formula collision probability methodology to include the additional risk posed by not sounding horns by (1) considering the five-year relevant collision history and (2) including severity measures for the predicted casualty probabilities.

crossings, not merely the most hazardous. The option does not focus sufficiently on compensation for loss of the train horn warning (the focus of the law). This crossing-by-crossing based approach could result in a patchwork of whistle-ban areas, adding to burden on locomotive engineers to determine, crossing by crossing, where the horn must be sounded and thus detracting from the engineer's other safety related functions. This option could be more costly per unit of risk reduced because the community is required to take risk reduction at specified crossings rather than where means and need best correspond (e.g., foreclosing the option of putting in medians at two moderate-risk crossings for a total cost of $30,000 rather than installing four-quadrant gates at one higher risk crossing for an incremental cost of $100,000-$128,000, even though the resulting risk reduction could be the same).

Articulated Gates: FRA considered including as an SSM articulated gates that would descend from a single apparatus to block the approach to the crossing in the normal direction of travel and continue to block the exit lanes from the crossing. The State of North Carolina tested articulated gates and indicates in their comments to this rulemaking that they are a maintenance challenge for railroad signal crews. Furthermore, the mechanical design of the articulated gates makes the articulated portion of the gate susceptible to failure of operation. If these problems are resolved satisfactorily, articulated gates may be approved as SSMs in the future.

Nighttime Whistle Bans: Because motor vehicle exposure is greatly reduced at nighttime, FRA also considered allowing nighttime only whistle bans without requiring added safety measures. Different treatment during daylight and nighttime hours would limit community disruption caused by the sounding of locomotive horns during hours at night. Some communities currently have nighttime only locomotive horn bans in place. However, without the use of additional safety measures, FRA fears that a nighttime only ban could lead to motorist confusion and result in collisions. One way of achieving a nighttime only ban under the final rule is to install mechanisms for temporary closures. Communities may also consider other SSMs for achieving nighttime only bans.

Passenger Train Stations: FRA considered allowing whistle bans without requiring additional safety measures at crossings adjacent to passenger train stations with no through train traffic. If train orders limiting speeds entering these crossings to 15 mph are in place, the level of risk at these crossings is likely very similar to that of a crossing with a track speed limit of 15 mph with flaggers that is not equipped with lights and gates.

FRA believes that the low risk level exceptions provided in the rule for establishing quiet zones will properly address such situations.

Alternative Maximum Horn Sound Levels: Finally, FRA considered establishing two alternative maximum horn sound levels 104 dB(A) and 111 dB(A) as well as a third concept. The first is believed to be sufficient in most circumstances to provide adequate warning at crossings using automated warning devices (where the motorist makes a decision while at rest near the crossing, expecting the train to arrive). The second option is believed to be effective under many circumstances at passively signed crossings (where the motor vehicle is in motion at the decision

point and the motorist has been provided no contemporaneous reason to expect to see a train). The third concept involved 2 variable maximum sound levels depending on the type of warning device present at the crossing. This concept, however, raises concerns regarding the additional burden placed on the crewmember in charge of sounding the horn and the feasibility where crossings are closely spaced yet not uniformly treated with warning devices. FRA research indicates that a high likelihood of detection will occur when the horn is producing 108dB(A) at the measurement location, 100 feet in front of the locomotive and at 15 feet in height. FRA added a margin to this level to account for variability in the sound level meters and other factors and set the maximum permissible level at 110dB(A).

When to Use Locomotive Horns: FRA is not aware of any crossings in non-positive train control territory where locomotive horns are sounded and there are no whistle boards or other means of notifying locomotive engineers when to commence sounding of the horn, therefore there are only nominal costs associated with informing train crews of this requirement. Any safety benefits that occur as a result would certainly exceed the estimated cost level.