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mitigate the noise disruption and significantly improve the safety and security of train, vehicular and pedestrian traffic in their downtowns.

III. Background

Noise exposure to train horns, which are required to be between 96 and 110 decibels, is damaging. That level of noise has been shown in research to pose health risks to those exposed including increased risk of heart attacks in adults to developmental delays in children. Communities such as Nashville, TN, calculated that train horn use at crossings accounted for over 400 hours of dangerous noise exposure per year to their residents and visitors. Unsurprisingly, they since partnered with CSX railroad and successfully established quiet zones.

Additional research shows children in noisy environments have poor school performance which leads to stress and behavior issues. Additional studies show decreased learning, lower reading comprehension, and concentration deficits. Capital Encore Academy, on Hay Street in our downtown district, is almost certainly exposed to such levels of noise given its proximity to several rail lines. The pre-school at Hay Street United Methodist Church is at risk as well. Can more be reasonably done to protect our students? In addition, Highsmith Rainey Hospital, located on the edge of our District's footprint, is a long-term care/rehabilitation facility, with many patients having fragile health conditions. Their one-block proximity to the railway crossing at the depot places them in harm's way as it relates to noise pollution from the trains.

Even conservative advisory institutions such as the National Institute for Occupational Safety and Health recommends exposure to noise over 100 decibels be limited to 15 minutes a day. Much more research exists regarding the harmful effects of noise pollution, as evidenced in this article from psychological researchers with the American Psychological Association: <http://www.apa.org/monitor/2011/07-08/silence.aspx>.

Effective ways to mitigate the disruptive and damaging effects of train horn noise exist. One of the most widely implemented are Federal Railroad Administration (FRA) “Quiet Zones.” The FRA defines a Quiet Zone as “A section of a rail line at least one-half mile in length that contains one or more consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded when trains are approaching the crossings.” As of July 2018, over 815 such zones exist across the country. 7 such zones already exist across North Carolina: Asheville, Apex, Kannapolis, New Bern with two, Rocky Mount, and Salisbury. Two examples (one of a Norfolk Southern freight train and one of an Amtrak passenger train) of a crossing in Kannapolis, NC, is attached with this document, to provide an audio/visual of a successful quiet zone.

The concept of an FRA Quiet Zone is simple: what additional, quieter safety measures can be implemented, in lieu of train horns being sounded for on average 30 seconds, at every point where pedestrian or vehicular traffic cross a rail line? These “Supplemental Safety Measures” (SSMs) ensure equivalent or enhanced safety

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at rail road crossing points and include additional gates, medians, curbs, lights, signals, road markings, and other upgrades.

There is a well-established process to identify prospective FRA Quiet Zones on existing rail line crossings, research prospective SSMs, fund and install the SSMs, and receive FRA approval for Quiet Zones. The challenges most often cited to do so are time and money. Notably, however, between 2016 and 2018, over 100 Quiet Zones were added nationally and 2 were added in our state alone. Regarding the challenge of money, there is no question that local government with regulatory authority over the roadway as well as the railroad involved are not the only sources or even the primary sources of funding. For example, several websites note that the Federal Highway Administration's Section 130 Program sets aside \$230+ millions of federal funding each year to help communities just like ours upgrade rail line crossings. Other websites list multiple funding sources, including Department of Transportation initiatives such as the Grow America Act (~\$478 billion), Operation Lifesaver grants, and state level Departments of Transportation grants.

The challenges of time and money as barriers to overcome in establishing Quiet Zones should not be underestimated, however. A few examples from a UNC School of Government, Community and Economic Development May, 2016 blog are illustrative:

- Columbia, SC is reported as discontinuing the establishment of a Quiet Zone along a six mile stretch of rail line after projected installation costs approached \$1 million.
- Rock Hill, SC is reported as utilizing \$8 million, from unspecified funding sources, to relocate one rail line and to install unspecified safety measures in order to seek to establish a Quiet Zone.
- Kannapolis, NC is reported as officially applying for a Quiet Zone, with an application fee of \$2.5 thousand and an annual maintenance fee of \$15.2 thousand. Previously, the City Council had appropriated funding, from unspecified sources, for enhanced safety measures at four crossing points on both Amtrak and Norfolk Southern rail lines.

In the roughly two years since the UNC School of Government blog mentioned above, both Rock Hill, SC and Kannapolis, NC successfully completed the process and are enjoying Quiet Zones today.

Beyond the reduction in the disruptive and damaging effects of train horn noise, Quiet Zones hold the promise of actually making rail line crossing points safer. According to the Federal Highway Administration, the upgrades that come with an established Quiet Zone are extremely effective, especially when applied to technologically outdated crossings. And per the FRA's own publicly-accessible risk calculator, the implementation of the SSMs required for Quiet Zones increase the safety of the crossings—in some cases by as much as 82%.

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The City of Fayetteville is no stranger to the danger of rail line crossing points—the last fatality occurred in the downtown district in 2017 when a truck sought to go around a single crossing arm, became disabled, and was struck by a CSX train, killing one passenger and injuring another. While hard to know for certain, it is plausible that if that rail line crossing received upgraded SSMs such as a double-crossing arm as part of establishing a Quiet Zone in the District, there would be one less fatal collision in our city’s history as of today.

As of early 2018, local stakeholders within the COF have started to come forward to seek the establishment of a Quiet Zone in the downtown. For example, principals with the Prince Charles Holdings (PCH) engaged leadership of the Cool Spring Downtown District Inc (CSDD) to support the study of this issue with a hopeful aim of installing upgraded safety measures at rail line crossing points in the downtown and enjoying the subsequent decreased noise pollution. Further, some elected leaders have expressed an interest in learning more about cost, funding sources, and the road to implementing Quiet Zones. Several resident stakeholders have advocated for the same, as well as the improved walkability and connectivity within the district via enhanced safety measures at rail line crossing points.

IV. Options

The community could of course take no actions to mitigate the complicated problem. This approach will likely result in reduced economic investment in the downtown area as the noise disruption from the trains will negatively impact market demand for permanent and temporary housing in the district, occupancy rates in downtown hotels, and local and regional tourism to the district.

A second option would be to educate local leaders on the noise problem, identify and propose options for enhanced safety measures at rail line crossings (e.g., SSMs), and review the processes that many communities have taken to establish FRA “Quiet Zones” under prescribed procedures in their downtown areas. Federal, state, and private grants could be explored to support local government’s efforts to help study and mitigate this growing issue.

V. Recommended Action

Embark on a campaign to gather additional research to help educate local leaders on the options available to communities to address the railroad noise and advocate for adoption and implementation of policies that protect human lives and reduces the noise associated with the train activity. At a minimum, the crossings at Russel St., Winslow St., Franklin and Hay St. are a priority as those impact the residential, school, restaurant and entertainment venues of the district.

V. Appendices & References

A. Federal Railroad Administration (FRA) Train Horn and Quiet Zone Fact Sheet.

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