Railroad Crossing Congestion
and Its Impacts on Safety and Efficiency

U.S. Senate Committee on
Commerce, Science, and Transportation

Chair Maria Cantwell

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Highway-rail at-grade crossings account for 30 percent of all rail related fatalities. In a 2019 report, the Transportation Research Board (TRB) found that states and municipalities view eliminating highway-rail crossings as not only a tool to enhance safety, but one that relieves traffic congestion by improving freight, commuter, and first-responder mobility. Despite complaints from communities across the country about the impacts that highway-rail crossings have on mobility and safety, there is no federal program that is targeted to specifically address those impacts. Current federal grant programs are either too broad or do not provide adequate funding to address highway-rail grade separation projects.

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Rail plays an essential part in moving goods and people in an environmentally friendly fashion. According to the Department of Transportation, in 2045 it is estimated that the United States will ship 6.8 billion more tons of goods in total than it does today. Moving these goods by rail can reduce emissions and congestion on our highways. In 2018, over 1.5 billion tons of goods worth $613 billion were transported by rail in the United States - and this is expected to increase by 22 percent to over 1.9 billion tons by 2045, or by 0.8 percent annually. At the same time, the Federal Highway Administration estimates the vehicle miles travelled will increase by 0.8 percent annually over the next 30 years. Although commute times and congestion have lightened during the COVID-19 pandemic, as those people begin to return to work these increases in rail freight and road travel will likely mean more conflicts and congestion at grade crossings.

There is a clear need for significant federal investment. In Washington state alone, it is estimated that to address just 23 of the 50 highest-priority crossings in the state, it would cost over $830 million dollars. However, current programs do not provide the support that local communities need to mitigate the safety and economic impacts of at-grade crossings. Significant federal investment that targets highway-rail separation projects is needed to improve safety, ease congestion, and improve the connectedness of communities.

Overview

The U.S. railroad system includes approximately 210,000 highway-rail at-grade crossings (where a public or private road intersects with the railroad tracks at the same level). Incidents at highway-rail grade crossings are one of the leading causes of railroad-related deaths and injuries, accounting for about 30 percent of railroad-related fatalities. While highway-rail grade-crossing safety has improved significantly since 1975, the number of crashes and fatalities has remained at the same level since 2009.

In 2017, the average freight train length was between 1.2 and 1.4 miles.

In addition, as rail and road traffic volumes continue to increase, highway-rail grade crossing crashes and fatalities may also be at risk of increasing. Furthermore, increased rail and road traffic volumes mean that highway-rail grade crossings have more potential to impact their local communities with long and unpredictable travel delays and temporary increases in emergency response times. In some jurisdictions, crossing closures can cause adjoining intersections and corridors to gridlock, magnifying the delay impact.

Lastly, while there is not a comprehensive study on the impact of longer freight trains, they may contribute to delays at highway-rail grade crossings. Data provided to the Government Accountability Office (GAO) suggests that the average freight train length has increased by about 25 percent since 2008, with average lengths between 1.2 and 1.4 miles in 2017. These trains are transporting necessary goods across the United States. However, local community officials have raised concerns that longer trains are creating safety risks by causing emergency response delays and exacerbating dangerous motorist and pedestrian behavior. It is critical that we invest in infrastructure to ensure that railroads and communities can both enjoy unconstrained mobility and safely coexist

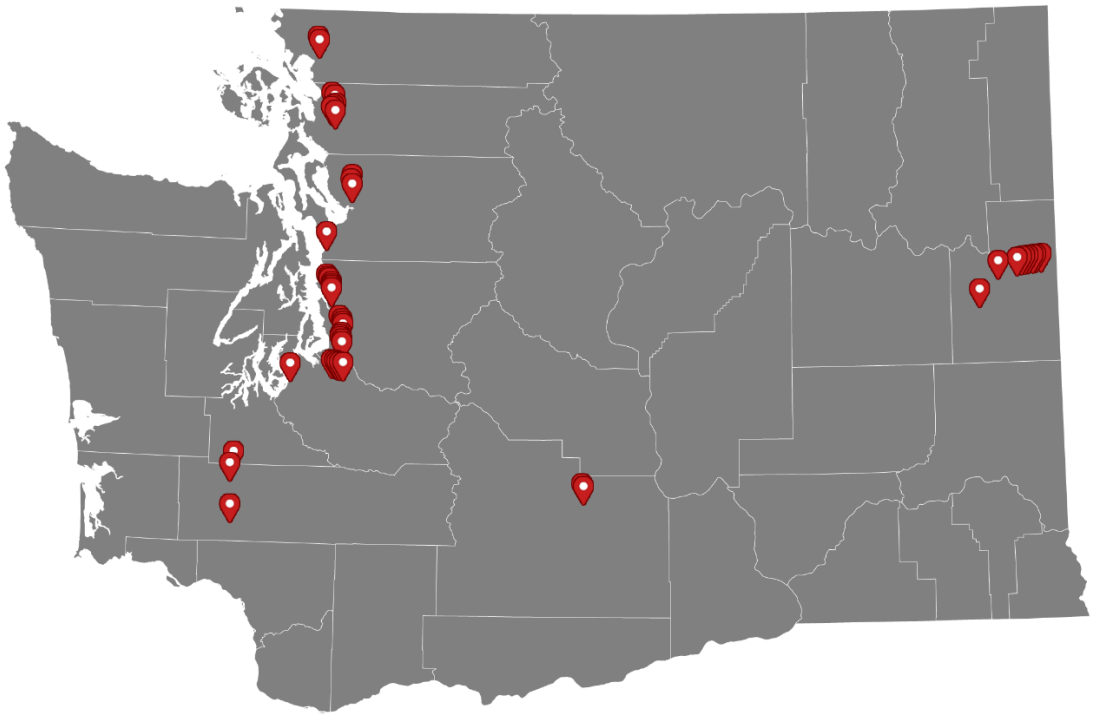
A State in Focus –Washington State

In 2017, the Washington State Department of Transportation (WSDOT) analyzed all 2,180 of the public highway-rail crossings in the state to prioritize the ones with the greatest need. Of 302 prominent crossings in the state, WSDOT found that 84 percent of these crossings are blocked by 10 or more freight trains each day. Of particular concern, 79 percent of these crossing had no nearby alternative route for the community.

79%
of the most affected crossings in Washington state have no nearby alternative route.

Despite a clear need to improve many of these 300 crossings, due to limited resources the state focused further on just the top 50 crossings in the state, and what they found was shocking.

Figure 1. Top 50 Most Problematic Crossings in Washington State



- On average, each one of these 50 high-priority crossings in Washington state see 49 trains and 12,000 cars *each day*.

- The 50 worst crossings are blocked on average for two hours *each day*.
- 62 percent are on designated freight corridors.
- Two-thirds are near emergency service providers making it more likely a blocked crossing will result in delayed response.
- Over half of these crossings have no planned project to address congestion or safety issues, likely due to a lack of planning resources and little opportunity to obtain the necessary funding.
- To fund projects at just 23 of those 50 high-priority crossings, it would cost *$830 million*, and only 20 percent of that funding has been secured.

Why Focus on Grade Crossings?

Safety: Grade crossing incidents account for 30 percent of railroad-related fatalities

Highway-rail crossing incidents remain one of the leading causes of death in the railroad industry, behind trespassing, accounting for about 30 percent of railroad-related fatalities. In the past decade (2010-2019) over 2,500 people have died and 9,100 people have been injured in over 21,000 at-grade crossing incidents. Driver behavior at grade crossings is the main cause of these incidents. While previous decades have seen a significant decrease in railroad crossing incidents and fatalities, progress has stagnated. In fact, the Federal Railroad Administration expects these incidents to continue to grow as rail and road traffic continue to increase.

Economics: Grade crossing incidents cost our communities millions of dollars

It is estimated that highway-rail crossing incidents result in $1.7 billion worth of damages annually.

Not only do these incidents result in the tragic loss of life and lifelong injuries, but there is a significant economic component to these incidents. One analysis from the Nebraska Department of Transportation found that on average each grade crossing incident costs $805,675 – taking into account medical costs, property damage, congestion costs, and loss of productivity. Extrapolating this research nationally, it is estimated that highway-rail crossing incidents result in $1.7 billion worth of damages in 2019 – or more than $17 billion over the last decade.

Crossings can be blocked for long periods of time

Communities all over the nation have complaints about highway-rail crossings. Trains occupy highway-rail crossings for a number of reasons – for normal railroad operations such as a train passing through or because they are located near rail yards where trains are being assembled, but trains can also occupy crossings when they experience mechanical or operational issues. Railroad-highway conflicts at crossings may be the product of poor planning because often a city or town has grown-up around a railroad. Both rail traffic and road traffic are expected to increase in the future, which will likely exacerbate the conflicts at crossings and the frustration communities experience when the free flow of traffic is impeded.

Commerce, Science, and Transportation Committee staff analyzed data from the Federal Railroad Administration's blocked crossing public reporting portal. In 2020, there were nearly 1,800 reported instances of a crossing being blocked for over one hour. Out of these reported instances, there were 85 cases of a train blocking a crossing for an entire day. 2020 was the first full year the public could report data, so there is not yet consistent data to draw conclusions about trends. However, as of March 22, 2021, there have already been 69 reports of trains blocking crossings for more than one day - on pace to reach 310 by the end of the year. While this data is anecdotal, what is clear from the data is that this is a problem nationwide that must be solved.

Emergencies: Blocked crossings can keep first responders from saving lives

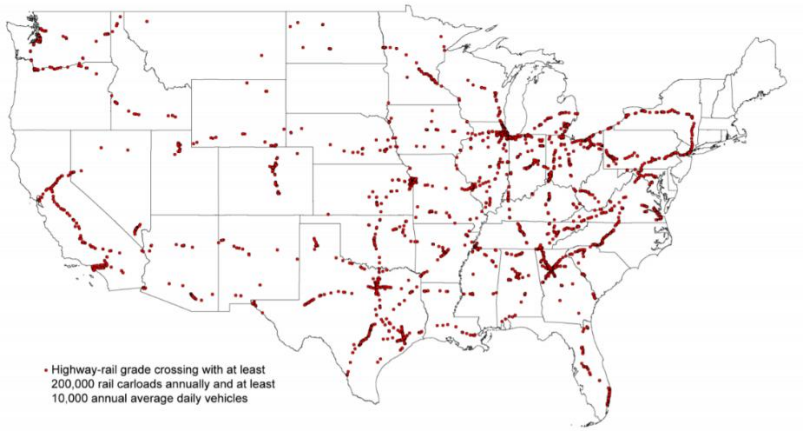
Railroad tracks often run through the middle of neighborhoods and towns. When trains occupy highway-rail grade crossings for long periods of time it can have significant impacts on the quality of life in a community, and can hinder first responders timely access to emergency services. For instance, a couple minute delay of an ambulance that is trying to reach the scene of an accident or person experiencing cardiac arrest can have life or death implications. Additionally, firefighters trying to reach a burning building may arrive too late to prevent a home from burning down or stopping the spread of a fire. The GAO has identified a number of anecdotal examples of how occupied highway-rail crossings have impacted emergency response. There are a number of other concerning examples that have been reported on in the news across the country:

- In Davis, Oklahoma, a town of 2,800 people, it took police about 20 minutes to respond to a person who was threatening suicide, even though the person was less than 3 blocks from the local police station. However, all three highway-rail crossings in town were blocked by a stopped freight train.
- In Edmonds, Washington, a train blocked the only access to the waterfront for three hours. This required first responders to crawl through a rail car to reach a pregnant woman due to give birth and other people who had minor medical emergencies.
- In Valley, Nebraska, on Christmas morning, firefighters were prevented from responding to a house fire for over an hour on because a train blocked access to the home.

Congestion: Blocked grade crossings cost communities time and money

Highway-rail crossings can have a significant impact on congestion and traffic in communities all across the country. In a 2014 report, the GAO analyzed the location of highway-rail crossings with high train and high vehicle traffic (at least 200,000 carloads annually and 10,000 daily vehicle crossings). These are intersections where frequent train travel is most like to cause significant vehicle delay. Nearly every state in the continental United States has one of these high traffic highway-rail grade crossings, and many have a significant number of these crossings. This congestion also results in additional emissions from idling cars.

Figure 2. High Volume Railroad Crossings



Additionally, several localized examples of congestion caused by highway-rail crossings demonstrate just how widespread this issue is:

- In 2017, the Chicago Metropolitan Agency for Planning found that motorists were delayed over 7,500 hours every weekday, costing residents $58 million annually in lost productivity.
- Prior to its completion in 2020, the Lander Street crossing in Seattle, WA was occupied by trains over 100 times every day totaling 4.5 hours every day.
- In Miami, a study found that rail crossings caused 235,000 hours of delay pear year, costing $2.4 million dollars.

Current Federal Programs are Inadequate to Address Highway-Rail Crossings Needs

Grade crossing separations often cost between $5 million and $40 million.

Grade separation and track relocation projects are the most effective way to address the safety and mobility issues caused by highway-rail crossings. However, despite the significant need for federal support for these projects, current federal programs do not adequately address the problem. Grade crossing separations are expensive, often costing between $5 million and $40 million. Some complicated projects can even exceed $100 million. Often times, local communities do not have the resources necessary to undertake these expensive construction projects. In fact, many communities do not even undertake planning or other pre-development actions to address grade crossing separations because there is little hope of obtaining enough funding to see the project through.

Section 130 Program:

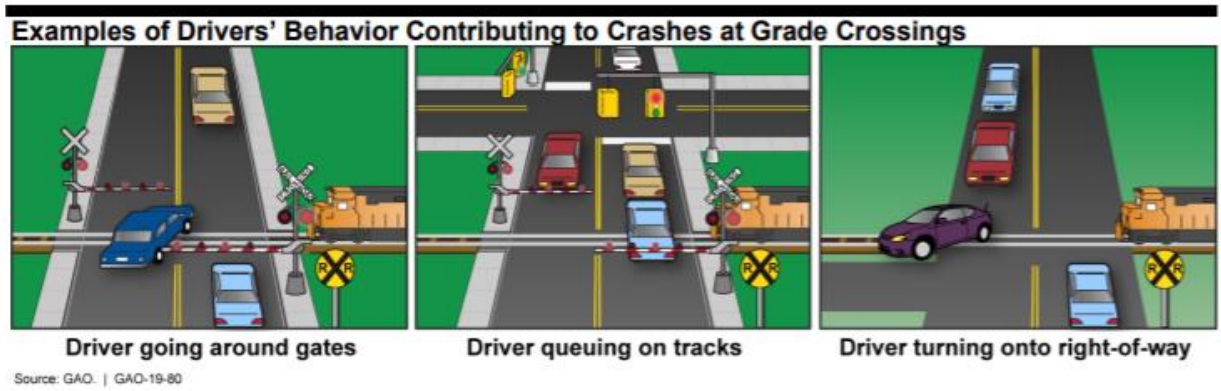
The Federal Highway Administration's (FHWA) Highway Safety Improvement Program (HSIP) provides funding to states with the purpose of achieving a significant reduction in traffic fatalities and serious injuries on all public roads. The FHWA's Section 130 Program sets aside approximately $235 million in annual formula funds to states to fund safety projects at highway-rail crossings. Currently, at least 50

percent of a state's apportionment must go towards adding protective safety devices at crossings, while the remaining 50 percent can be used for any hazard-elimination purpose. The funds received by a state pursuant to this program can range from $1 million to over $19 million per year depending on a number of variables, including the number of grade crossings within the state. Even for those states with a small number of grade crossings, this formula funding is often not enough to cover the cost of certain highway-rail crossing safety improvements, including:

- adding signs to passive grade crossings ($500 to $1,500);
- adding flashing lights and two gates to passive grade crossings ($150,000 to $300,000);
- adding four gates to grade crossings with flashing lights ($250,000 - $500,000); and
- closing a grade crossing ($25,000 to $100,000).

However, driver behavior at grade crossings is the leading cause of crashes; this means that simply adding a gate or warning lights is not always sufficient to address the safety concern. In fact, in 2017, 71 percent of fatal crashes at public grade crossings occurred at those with protective gates. States often report no difference in crashes after these safety improvements were added, and some states have even reported a slight increase in crashes. While there are many factors that may influence unsafe driver behavior at grade crossings, one factor identified in some incidents is that the driver wants to "beat the train" because they know they may have a long wait for the train to pass.

Figure 3.



Discretionary Grants:

Better Utilizing Investments to Leverage Development (BUILD), Consolidated Rail Infrastructure and Safety Improvements (CRISI), and Infrastructure for Rebuilding America (INFRA) are competitive grant programs that fund infrastructure projects. While all three programs make meaningful investments in our nation's infrastructure, they fund many types of projects and transportation needs and, due to heavy competition, are often oversubscribed. These programs are not adequate to address the needs of the nation's 210,000 highway-rail grade crossings.

- **BUILD:** The BUILD program (formerly known as TIGER), is a competitive grant program that provides grants to states and localities to a wide variety of transportation projects. These include transit, road, port, rail, and pedestrian projects. The grant program is highly competitive. Since its creation in 2009, the program has received over 9,700 application requesting $175 billion

in funds. It has only been able to provide $8.9 billion in funding, or 5 percent of all project costs.

- **CRISI:** The CRISI grant program is a competitive rail grant program that funds a number of different freight and intercity passenger rail projects including: the deployment of railroad safety technology; intercity rail capital projects, short-line rail projects, regional rail and corridor service development plans, intermodal rail projects, the development of safety programs, rail research, workforce training and development, highway-rail grade crossings and relocation projects. In FY 2020, the grant program provided $320 million annually to 50 projects. However, only nine crossings were chosen to address safety at highway grade crossings. Additionally, tribes are not eligible for grants under the CRISI program.

- **INFRA:** The INFRA grant program is a competitive grant program that provides funding to freight projects of national and regional significance. Eligible projects include highway projects, bridge projects, intermodal or rail projects, port projects or highway-rail grade separation projects. In FY 2020, U.S. DOT received 173 applications requesting over $7 billion in funds. However, only 20 projects were funded, which was just 14 percent of the total requested funding.

Next Steps

There is a clear gap in federal support to help communities improve or separate crossings that are not safe, create congestion and emissions, and hinder first responders. To keep our economy moving while meeting the nation's environmental goals and reduce congestion on our roads, more goods must be shipped by rail. However, Congress must ensure local communities have the support they need to minimize safety and congestion issues that may result from an increase in rail traffic. To better support local community efforts to solve problematic highway-rail grade crossing problems, specific federal funding is needed to support both the planning and construction of costly of grade separation or track relocation projects that eliminate crossings. Congress must include new funding for railroad-grade separation projects in any upcoming infrastructure or surface reauthorization legislation.

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