Oregon's *Amtrak Cascades* Future Alignment:

Oregon Electric or Union Pacific?

Draft Commentary

Introduction

In June 2009 the Rail Division of the Oregon Department of Transportation (ODOT) and Parsons Brinckerhoff issued a draft "ODOT Intercity Passenger Rail Study." The Study purports to evaluate "the feasibility of moving Portland-to-Eugene intercity service from the current Union Pacific Railroad (UPRR) mainline to a somewhat parallel rail route known as the Oregon Electric (OE) alignment."

AORTA (Association of Oregon Rail and Transit Advocates) is a 501(c)(3) nonprofit organization seeking to educate decision-makers and the public about the need for and advantages of safe, efficient, environmentally responsible transportation since 1976. ***AORTA*** promotes increased reliance upon rail for both passengers and freight, and improved public transportation. Its board and membership include persons with extensive knowledge and professional expertise in transportation planning and operations. ***AORTA*** has been involved for many years in the state's rail planning efforts and is familiar with both the UPRR and the OE branch line of the Portland & Western Railroad.

AORTA contends the conclusions and cost estimates of ODOT's June 2009 Draft Rail Study are not credible. This is, in part, because some of the assumptions were incorrect. ***AORTA*** believes the UPRR alignment, a corridor the state has invested in and engaged in extensive planning, is the reasonable corridor and that the cost of moving to the OE far exceeds the estimates published in the Study. Furthermore, the impact of moving to the OE would result in profound social, community and environmental damage that are not easily mitigated.

Note: This is a draft document and subject to revision.

Oregon Cascades: Looking for Solutions

By only looking at a rail map it is easy to see why the Oregon Electric (OE) might be considered as a route for higher speed rail. The OE is a low traffic rail line with only 4-8 trains per day. In the early part of the twentieth century the OE offered frequent passenger train service. It was electrified from Portland to Eugene. OE trains, mostly 1-4 cars, served local communities and growing cities in the Valley, usually with stops in the center of town. OE stations were focal points for development, and much of the railway's urban operation was on or adjacent to the city's main street. Today, part of the underlying real estate of the OE alignment is owned by the State of Oregon.

The track structure and operating rights are owned by Portland & Western Railroad (PNWR) at the northern end of the corridor; the State of Oregon owns the underlying real estate. The southern 76 miles of the line is owned by the BNSF Railway, and is leased to PNWR.

In contrast to the OE, the Union Pacific Railroad (UPRR) includes several locations where rail traffic is congested with freight trains. Traffic control is handled by the host company from its dispatch center in Omaha, Nebraska. The perception of the traveling public is that UPRR gives priority to the freight trains,[1] often causing significant delays and problems with reliability and on-time performance.

The state has had difficulty negotiating for increased passenger train frequency on the UPRR. When the state negotiated for additional passenger trains on the UPRR, it has been obvious that the railroad needs capital investment to increase capacity. New trains come at a cost.

But a closer look reveals that operating Oregon's ***Amtrak Cascades*** on the OE right-of-way from Portland to Eugene to be neither cost-effective nor desirable. And it reveals the UPRR is suitable for the kind of incremental approach Oregon needs to develop the strong public and political commitment for higher speed rail.

The OE was built in the early part of the 20th century to provide electrified interurban passenger train service in the Willamette Valley. The OE snakes its way through neighborhoods in a relatively narrow corridor. Parts of the OE alignment may provide opportunity for increased rail service, particularly freight and commuter rail, but the corridor proposed is ***not feasible*** for higher speed passenger train service. The southernmost part of the alignment (south of Albany) might work for higher speed passenger trains, but the benefits are elusive at best.

About 9.5 miles of OE track improved for TriMet's WES service had to be completely rebuilt for $7-10 million per mile. Prior to the rebuild, this track, grade crossings and alignment were in better condition than many segments of track south of Wilsonville. Significant segments of the OE track is jointed, light weight rail with deteriorating wooden ties and would need to be entirely replaced. It is also "dark territory," meaning that there is no modern automated traffic control system.

Union Pacific Alignment

Comparing the UPRR right-of-way (RoW) to much of the Oregon Electric RoW is like comparing a freeway to a curvy gravel road. Much of the OE RoW is limited to slow speeds (in many locations, under 25 mph). Most of the UPRR alignment, however, is already operating at 50-79 mph. With modest improvements to the UPRR, significantly higher speeds could be realized.

ODOT already has significant investments in the UPRR RoW. Some state investments have been in the form of improvements, most have been in analyzing capabilities/issues, and identifying potential solutions and costs. But the state is not the only party investing in improvements to this corridor. It has been, in fact, a minor participant. The UPRR, a company with ***many*** resources, provides an excellent opportunity for public/private partnerships.

Because of past public/private investments in rail infrastructure and planning for capacity enhancements, Oregon has a strategic advantage over many other regions competing for federal rail stimulus funds. Oregon is far ahead of the Midwest for example, and should leverage these investments to bring federal funds to Oregon for planned, shovel-ready projects on the UPRR.

UPRR Congestion. At a minimum, ODOT's current proposal to shift ***Cascades*** service to the OE continues to depend on UPRR track between Portland and Willsburg Junction (Milwaukie) and in Eugene. The Portland-Willsburg section is the most congested and problematic track in the Portland-Eugene corridor. Moving the trains to the OE fails to avoid the worst points of congestion in the corridor.

According to the June 2009 Draft ODOT Rail Study, the UPRR Portland-Eugene corridor is projected to have only 35 freight trains/day in 2029. That is less than one train per hour in each direction! By comparison, north of Union Station **today**, twelve Amtrak trains a day share the Columbia River crossing with **63 freight trains/day**. The river crossing problems are compounded by nearby junctions, industrial spurs, yard activity, bridge openings and a 30 mph speed limit.

Double-Tracking. The focus should be on improving the capacity of the UPRR alignment. The 2009 draft ODOT Rail Study assumes that "a complete second mainline track between Eugene and Portland will be necessary." While double tracking the entire corridor will be beneficial in the long term, double tracking the entire corridor is not needed now or in the near future. The ODOT/Parsons study appears to also assume that the financial burden would fall on the state. Neither of these assumptions would be correct.

Significant capacity enhancements will be realized by adding or extending passing sidings as needed.

Width of UPRR Right-of-Way (RoW). Most of the UPRR alignment is 100 feet wide, adequate space for double or triple tracking the alignment. ***Because the land is privately owned and available for RoW upgrades, improvements can be realized without going through the costly and time-consuming eminent domain and full environmental impact processes***. In sharp contrast to the OE, opposition to increasing rail frequency and speed from adjacent landowners and tenants is expected to be minimal.

Union Pacific Cooperation. UPRR knows they can benefit from infrastructure improvements funded with federal stimulus money. Statements made at the June 2009 Cascades Rail Conference in Seattle indicated federal dollars for corridor improvements will be welcomed by UPRR. While ODOT may have found working with UPRR challenging in the past, it is in large part because Oregon had very limited funds to bring to the table. And what funds Oregon offered were often tenuous. The UPRR is a business and must be treated like one.

With the dramatic change in federal funding for passenger trains, that picture has changed. With the potential of substantial federal funds to bring to the table, Oregon now has the opportunity to engage in serious negotiations. In California, notably in the Capitol Corridor, UPRR cooperates with state-sponsored passenger train service. The Capitol Corridor's Joint Powers Authority has real negotiating power (funds for improving track), power Oregon has not previously had.

It would cost about $300 million to complete the projects on the UPRR line previously identified by ODOT's Rail Division. These improvements would go a long way in improving frequency, reliability and speed in Oregon. Oregon could

have four roundtrips in three years. Because the price of steel has gone down, the earlier cost estimates should be sufficient to complete all the planned projects. In addition, the funds would likely cover critical highway-railroad separations that would greatly benefit several communities on along the line.

Traffic Control / Dispatch Centers. One important aspect in managing rail operations is traffic control. UPRR operates a high-capacity, highly sophisticated, modern dispatch center based in Omaha, NE.

ODOT's proposal to move ***Amtrak Cascades*** rail service to the OE requires ***Cascades*** trains to continue to use UPRR track at the north and south ends of the line. The need to use UPRR RoW would also be required in Albany, Harrisburg and Junction City. Operation (traffic control/dispatch) is difficult when trains move from the control of one dispatch center (e.g., OE/PNWR) to another (e.g., UPRR). When a train must move from the control of one dispatch center to another it often results in delay, adversely affecting both speed and reliability.[2] This factor alone, not even mentioned in the study, should give significant pause to any consideration of the OE alignment.

On the UPRR alignment, ***Amtrak Cascades*** travels between Portland and Eugene under the jurisdiction of a **single** dispatch center.

When Oregon invests in the UPRR alignment, the state gains both more leverage with UPRR dispatch services and improved freight service to support Oregon's economy. Local communities also benefit as grade crossings are improved on the UPRR. If Oregon moves its rail investment dollars from UPRR to the OE line, the state will have decreased leverage.

Furthermore, most of the cost of signalizing the OE and operating a dispatch center would likely fall on the state of Oregon. The cost impact on the UPRR alignment, given the size of its system, would be relatively insignificant.

Positive Train Control. Positive Train Control (PTC) is a modern form of railway traffic control that allows trains to safely operate closer together then they could using older technology. PTC improves safety and increases track capacity. The Federal Railroad Administration is requiring all Class I railroads with either passenger service or hazardous materials to provide PTC over their mainline.[3] This is a significant cost that UPRR **must** cover. UPRR would welcome the opportunity to have Oregon help share a portion of that cost as the state "buys" more "track time" for passenger train service.

If Oregon were to pay to improve the OE the state would be expected to cover the majority, if not the entire cost, of PTC. Traffic control on the UPRR line is already significantly more advanced than on the OE. UPRR already has 20th century dispatch operations, and is capable of handling **much** heavier traffic and speeds than on the OE line.

Grade Crossings. Nearly all of UPRR's public grade crossings have active signals[4] installed. UPRR has been very aggressive in its effort to eliminate private grade crossings. UPRR also has a full compliment of signal maintainers and would not need to increase the number of maintainers.

Signalization. While needing upgrading, the UPRR alignment already has late 20th century signal system. *See PTC discussion above*.

RoW Maintenance. Another factor which should be included in the evaluation is the potential of the host company to deal with natural disasters and maintenance issues. When the huge landslide hit the UPRR in the Cascade Mountains in March 2008, the company quickly mobilized resources to address the disaster. In the last decade, much smaller problems have struck three Oregon shortlines between the coast and the Valley. None of those rail lines have yet recovered.

Proposed Oregon Electric (OE) Alignment

Construction on the OE Line began July 11, 1906. The OE was designed and built for relatively slow moving electric interurban trains (usually 1-4 cars). The track, especially when passing through local communities, includes much street-running and sharp radius curves, passing close to homes, schools, businesses and farms. In these areas, speeds are often restricted to 25 mph or slower. Increases to even moderate speeds (45 mph) would be expensive and require substantial realignment and condemnation of nearby properties.

OE Right-of-Way. Unlike the UP, most of the OE right-of-way from Salem to Willsburg Junction is only about 50 feet. Adding sidings, double tracking, reducing curve radius and other improvements would be difficult and expensive. In some areas, right-of-way expansion and improvements would be met with strong local opposition and would trigger the need for full scale environmental study.

Today only 4-8 slow moving trains/day travel on most of the OE. Converting this line to fast, frequent passenger service (and increased freight service) will encounter significant opposition from adjacent landholders when frequency is more than tripled and speeds are greatly increased. In stark contrast, neighbors of the UPRR RoW are already accustomed to frequent rail service. Adding 2-4 additional trains over the next few years will not be seen as an irritant. Upgrading the UPRR to meet FRA "quiet zone" standards would also be far less costly than what would be needed on the OE line.

Traffic Control / Dispatch Centers. The Portland & Western Railroad (PNWR) dispatch center for the OE is based in Albany, Oregon. The dispatch center is responsible for the very moderate service levels. Very little CTC[5] track exists on the OE, increasing costs of renovating the line for frequent passenger service.

Signalization. There is no signal system on the OE south of Wilsonville. It remains much as it was from the early in the 20th century.

Grade Crossings. Unlike the UPRR, because there is minimal rail traffic, very little effort has been made to reduce the number of grade crossings on the OE. Many of the public grade crossings on the OE alignment lack train detection circuitry, lights and gates, and are only signed by crossbucks or warning signs. Several dozen expensive upgrades would be required just to reach speeds currently realized on the UPRR. In addition to the public grade crossings, OE has numerous private grade crossings, a serious problem for any railway with fast or frequent rail service. Many grade crossings would have to be closed, an expensive process often resulting in lengthy litigation.

Electrification. Historically rail electrification did not become cost-effective until service frequency approached hourly service. Improved technology for diesel electric motive power has improved their efficiency. Legislation was recently proposed at the national level to electrify mainline railroads throughout the US. While not likely to occur in the near term, in the long term this could impact the UPRR Furthermore, UPRR has substantial resources for research and development of new technology. UPRR and BNSF have pioneered the use of "green" bio-fuels in diesel locomotives. UPRR, like all of the large railroads, can afford high-efficiency locomotives.

Using solar power would require acres of solar panels, which would likely mean a loss of Oregon's most valuable farm land. The catenary (overhead lines) can cost over $2 million a mile to install.

Portland - Willsburg Junction (UP Track)

Between Portland's Union Station and Willsburg Junction (Milwaukie, OR) the proposed "OE alignment" calls for ***Cascades*** service to continue using UPRR track. This stretch of track is one of the most congested in the Willamette Valley corridor**.**

ODOT's proposed OE alignment would require ***Amtrak Cascades*** trains to move between UP and PNWR dispatch centers at Willsburg Junction.

Correcting capacity constraints in this area, necessary *even if* ***Cascades*** service were to be "moved to the OE," would correct one of the primary reasons given in the attempt to justify the expensive move to the OE.

Investment in this pinch point by ODOT would do much to improve performance on the UPRR alignment, and could be used to "purchase" more passenger train track time on the UPRR.

Willsburg Junction - Tualatin (8 miles)

The OE runs through downtown Milwaukie and across a high wooden trestle before crossing one of the oldest bridges over the lower Willamette River. Essentially unimproved since it entered service July 17, 1910, this bridge over Oregon's largest river would need replacement or significant improvement.

In order to cross the Willamette River, the current alignment requires two short radius curves, not suitable for higher speed rail. It then passes through the Lake Oswego central business district and crosses the main highway serving Lake Oswego.

Southwest of the business district, the railway includes another short radius curve to travel along the north shore of Lake Oswego, passing close to some of the most expensive homes in the area. This is an area where trespassing on railroad property is a particularly difficult problem. Any proposal to significantly increase service and operating speeds will generate very strong and powerful opposition from a politically potent part of the region. Overcoming that opposition will be exceedingly difficult, if possible.

Using the OE alignment south of Willsburg Junction eliminates Oregon City as a potential stop.

Tualatin - Wilsonville (7 miles)

Between Tualatin and Wilsonville, ***Cascades*** service on the OE would be sharing track with WES Commuter Service. T**here are more WES trains on the track between Tualatin and Wilsonville on the OE line today than there are passenger and freight trains combined on the UPRR line**. Unlike freight trains which strive to maintain their speed throughout their journey, commuter trains must stop and dwell at each station. Intermixing higher speed rail (HSR) with "stop and go" commuter service is in some ways more problematic than intermixing HSR with freight trains.

Wilsonville - Salem (30 miles)

While today commuter trains do not travel south of Wilsonville, extension to the south is under consideration. If that happens, interference between commuter service and ***Cascades*** service would continue south of Wilsonville.

In North Salem the OE snakes its way through and adjacent the Highland and Grant neighborhoods, in proximity to schools, parks, private homes and businesses. The RoW includes multiple short radius curves, including S-curves, which are unacceptable for even moderate speeds (45 mph). The line includes over a half mile of street running, which was fine for the electric interurban service that operated in the 1920's, but does not allow for long trains or trains operating at even moderate speeds. . Upgrading this alignment to realize 79 mph speeds (current top speed standard) in the North Salem area alone, if politically possible, would most likely exceed the costs required to upgrade the current UPRR alignment for increased capacity and for 90 mph service.

Salem

Today Salem boasts a beautifully restored passenger train station on the UPRR line with a parking area and bus transfer facility. The public has wisely invested in this facility in order to meet projected growth in rail passenger services. Bypassing the Salem Station, in which significant public investments have already been made, will face strong opposition. Moving the existing structure would be very expensive.

The area on the east bank of the Willamette River is Riverfront Park.[6] The park is a popular area attracting many citizens who work in downtown businesses. Accessing the park facility for pedestrians is already difficult because heavy traffic on Front Street. Creating another barrier (an improved rail line) would compound this problem. Sacrificing land in this area to build a new station and parking facilities in the downtown business district would be expensive, and be met with strong public opposition.

Salem – Albany (26 miles)

Just south of Salem (in Orville) the OE passes over geologically unstable track bed immediately adjacent the Willamette River. Not only is the track located on unstable land, the area above the track is prone to landslides. The adjacent roadway is clearly marked, warning motorists of the danger of landslides. Overcoming this problem, if possible, would be difficult and expensive. Because of the long history of track maintenance problems in this area, consideration has been given to transferring PNWR operations to UPRR south of Salem. The alignment is certainly not suitable or safe for high speed passenger operation.

South of Salem the OE line runs by some of Salem's most exclusive neighborhoods, guaranteeing litigation if Oregon attempts to expand service on the line. There are also difficult at-grade and separated crossings that would need to be modernized.

Albany

The most appropriate approach to Albany Station from the north would be for the OE alignment to continue on the UPRR RoW where the tracks currently diverge, about 1.7 miles north of the station as proposed in the draft Study.

Connecting the OE to the Albany Station would require relocation of a new mainline track through Albany.

South of the Albany station the draft "Study" offers two options. Both options would require acquisition of new RoW. While option 6B purports to use existing RoW, the existing alignment includes at least four short radius curves that require very slow operating speeds. Both options 6A and 6B require out-of-direction travel, while the UPRR alignment in this section is very straight track in line with the desired direction of travel.

Albany – Harrisburg (26 miles)

While much of the OE rail and the roadbed appear to be in better condition that north of Albany, the line is plagued with many private and public at-grade crossings without automatic signals or circuitry.

In contrast to the OE line south of Albany, UPRR is already required by the FRA to implement positive train control, and will be capable of handling higher speeds (e.g., 90 mph) service with relatively minor track and grade crossing signal improvements.

Harrisburg

In Harrisburg the OE includes several blocks of street-running through residential neighborhoods and in proximity to businesses, an alignment suitable only for operating streetcars or short freight trains at slow speeds. The OE and the UPRR alignments are only two blocks (500 ft) apart.

Connecting the OE to the UPRR alignment north of Harrisburg is possible, but would require acquisition of new RoW, displacement of one or more businesses, and grade crossing with a major arterial (Highway 99). Given the

problems encountered north of Harrisburg, the feasibility of this connection is highly questionable.

Connecting the UPRR to the OE alignment south of Harrisburg is possible, and would be less problematic than the connection north of Harrisburg.

Harrisburg - Junction City (4 miles)

While approaches to the UPRR bridge across the Willamette River between Harrisburg and Junction City are being rebuilt, approaches to the older OE bridge are on wood pilings and would need significant upgrading. The OE line in this corridor includes many private and public at-grade crossings with only crossbucks or warning signs.

From Harrisburg to Junction City, the OE and UPRR operate in adjacent RoWs.

Junction City

The situation in Junction City is very similar to Harrisburg. The OE includes several blocks of street-running through residential neighborhoods and in proximity to businesses. The OE and the UPRR alignments are only two blocks apart (about 540 ft). The OE alignment is not feasible for higher speed passenger trains.

South of Junction City it would be possible to connect the UPRR with the OE, but not without acquiring new RoW and displacing existing businesses and/or farmland.

Junction City – Eugene (14 miles)

The OE line (Option 8B in the "Study") in this corridor includes many private and public at-grade crossings with only crossbucks or other warning signs. Option 8A proposes to reconnect with the UPRR, creating problems with traffic control, reliability and speed.

Eugene

West-northwest of the Eugene station the OE and the UPRR operate in proximity.

Conclusion Regarding the OE

It would appear that the part of the Portland-Eugene alignment where it ***might*** be considered feasible to divert higher speed rail service to the OE is the track between Harrisburg and Eugene (a mere 18 miles). But the UPRR ***does not have major capacity problems*** between Harrisburg and Eugene, or even between Albany and Harrisburg (26 miles). Even ***if*** the cost of diversion could be justified in ***either*** of these segments, according to ODOT's June 2009 draft rail study, passenger operations would need to ***return to the UPRR RoW*** when traveling through Junction City and Harrisburg and onto UPRR track in Eugene. The "benefits" of diverting higher speed passenger trains from the UPRR to the OE at the south end of the corridor are virtually non-existent. ***The costs and operational problems would not be.***

The costs and difficulties in diverting the line north of Albany are prohibitive.

Improving *Amtrak Cascades* Service

The top priority for improving ***Amtrak Cascades*** passenger train service between Seattle and Portland and in the Willamette Valley should be increased frequency and reliability of service. Higher speeds are beneficial, but frequency and reliability are essential to attract ridership and develop strong political/public support.[11]

Oregon needs to "build out" the service ODOT has been planning for and investing in over the past fifteen years. Much effort and investment has been made by the state to improve the existing UPRR alignment. Oregon needs to develop a transportation system — rail and intercity buses — which serves the entire state, not just the Portland-Eugene corridor. Investment in the UPRR corridor will provide major benefit to both passenger and freight movements.

Corridor's Biggest Problem. The biggest impediment to developing frequent and reliable passenger train service in the federally designated high speed rail corridor is between Portland's Union Station and Vancouver WA. The top priority for rail in both Oregon and Washington should be the Portland Junction (sometimes also referred to as the "Portland Triangle") and the Columbia River Crossing (see "UPRR Congestion"). Focus on a **visible project** of this nature would provide dramatic improvement in corridor performance, and combine the political clout of two states to attract the kind of support needed from both the public and the Obama Administration.

The weakest links in the corridor are the 1908 railroad bridges that span the Columbia. We need to plan for a high level rail bridge[7] to allow frequent and fast passenger trains to bypass this area, congested with freight trains. Building a high bridge for HSR also offers the opportunity for commuter rail, something that would significantly reduce I-5 freeway congestion in this area. Furthermore, providing a separate high level bridge for passenger service eases congestion for freight trains in an area where freight congestion is a serious impediment to the region's economic competitiveness. Track capacity in the cut is probably adequate for expanded passenger service in the near term.

Plans should consider the possibility of developing a new passenger train alignment along the east side of the Willamette and a new station in the Rose Quarter area, eliminating the need for two river crossings.

Oregon's investments in the UPRR between Portland and Eugene will not only benefit passenger train service, it will also significantly improve freight mobility in Oregon, bolstering the state's economy, minimizing heavy truck traffic and highway maintenance costs and improving safety.

Extending sidings, doing minor track work and upgrading UPRR's signal system to allow for higher speed trains will add the capacity needed to handle additional passenger AND freight trains.

Important Note: The ODOT June 2009 Draft Study as prepared by Parsons Brinckerhoff contains many serious problems and fallacies. ***AORTA*** would welcome the opportunity to discuss the study with Parsons Brinckerhoff and ODOT's Rail Division.

Questions for ODOT/Parsons-Brinckerhoff

Was UPRR an active participant in preparing the Study? Has UPRR indicated willingness to relocate their main line and other trackage in order to accommodate state-owned trackage on their RoW? If UPRR has indicated a willingness to consider this, what will the state of Oregon need to pay to the UPRR to accommodate the request?

*Were cost impacts of new RoW acquisition for the "OE alignment" included in the "Study"? **AORTA** believes that, without turning a spade of earth, the cost of land acquisition and legal gymnastics necessary to acquire right-of-way for an OE high speed rail alignment would be close to and possibly exceed the cost of UPRR upgrades necessary to develop service levels projected in the Study.*

*Was Amtrak asked how much they would charge the state in order to staff a second station in Salem? Were the costs of staffing included in the cost comparisons? (**AORTA** believes the answer to both questions is "no.")*

Because the OE alignment involves more out-of-direction travel and more curvature than the UPRR, running time should be expected to be longer when using the same number of station stops. How is it possible that ridership numbers on the OE could be "slightly higher on the OE alternative "?

Endnotes

[1] This perception that UPRR is giving priority to freight trains is often created when, for example, a passenger train is stopped on the siding to allow a freight train to pass in the opposite direction. But it takes a freight train much more time to slow down, stop, and return to speed than a passenger train. It is often faster for both trains if the passenger train moves to the siding. The passenger train can stop and accelerate much faster than the freight train.

[2] UPRR dispatchers will tend to give trains already on UP track first priority. Trains asking to enter the jurisdiction of the dispatch center from the OE will tend to be ignored until entry will not interfere with traffic already on the line.

[3] On December 22, 2008 the FRA announced they were beginning development of positive train control regulations. "We are acting quickly and without delay because railroads will need guidance on how to create plans to deploy PTC systems by the end of 2015," stated the director of the FRA. The first deadline mandated by Congress in a new rail safety law is April 2010, when major freight railroads and intercity and commuter rail operators must submit their PTC implementation plans to FRA for approval.

[4] Detection circuitry and flashing lights

[5]CTC (Centralized traffic control) is a signaling system utilizing a centralized dispatcher's office to control switches and signals that engineers must obey and keeps traffic moving safely and smoothly across the railway.

[6] The National Environmental Priority Act (NEPA) requires an extensive 4-F analysis, including documentation that all other options have been exhausted, before a park can be negatively impacted.

[7] The construction of a railway bridge is much less complex and expensive than building a highway bridge.