GREENHOUSE GAS EMISSIONS AND THE CASE FOR IMPROVED PASSENGER RAIL

Scott Kaiser and Kyle Perata

A trip by train to the American Planning Association’s national conference in Minneapolis served as an opportunity for Scott Kaiser and Kyle Perata to reflect on passenger rail, one of the most important issues in contemporary planning. Besides the intensity of the beautiful American landscape, they also experienced the problems affecting this mode of transportation, and here they and discuss the need for a complete transportation systems approach to close critical gaps in our rail infrastructure.

It’s not often we wake up with picturesque 14,162-foot, snow-covered Mount Shasta out our window. On Amtrak’s northbound Coast Starlight, we awoke to this scene our first morning aboard the train. As night gave way to day, we watched in awe as the train crawled along the base of Mount Shasta and descended onto the Modoc Plateau in northeastern California. Less than twelve hours before, we boarded the Coast Starlight in the San Francisco Bay Area, heading to the American Planning Association’s national conference in Minneapolis and anticipating some of the country’s most beautiful scenery on our way.

President Barack Obama has already begun to shift national policy to reduce the nation’s greenhouse gas emissions. The most recent example is his decision to raise fuel economy standards. Investing in railroads is another strategy for achieving the president’s goal to reduce nationwide greenhouse gas emissions 80 percent by 2050 and make the United States a world leader in combating climate change. Obama has discussed the potential benefits of high-speed rail service between several midwestern and northeastern cities (Brown, n.d; The Office of the President-Elect, 2008). In a conscious attempt to reduce our greenhouse gas emissions, we decided to travel by train to the 2009 national APA conference. In addition to reducing our greenhouse gas emissions, we set out to better understand the current state of the nation’s passenger rail infrastructure and the lessons planners can learn for improving regional and national rail networks.

From the 20th Century Limited to the 21st Century

With the invention of the first steam-powered locomotive in 1830, a new form of transportation was born that was capable of carrying people and goods on a scale never seen before. Rail lines were constructed across the country at a staggering rate, and ridership grew exponentially during the mid-1800s. The transcontinental railroad was completed in 1869, and between 1880 and 1890 more than 70,000 miles of new track were laid. By 1910, approximately 90 percent of intercity transportation in the United States was by passenger train (Itzkoff, 1985).

The success of passenger rail travel in this country was short-lived, however, due in part to the mass production of the automobile. Passenger rail travel peaked in the 1920s, and by the end of the decade people were four times more likely to be traveling in cars than in trains (Itzkoff, 1985).

During World War II, as the country rationed supplies to aid the war effort and commercial production of automobiles was halted, people returned to trains in record numbers. Unfortunately, this second life could not be sustained. Throughout the 1940s and 1950s, passenger rail service was forced to compete with the growing popularity of the personal automobile, the emergence of the commercial airline industry, the passage of the Federal-Aid Highway Act, and the creation of the Highway Trust Fund. By mid-1950, approximately 90 percent of total trips were made by car (Itzkoff, 1985). Over the next two decades, the nation’s passenger rail network slowly disintegrated.

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Scott Kaiser received his BCRP from Cal Poly in 2010. He works as a planner for PMC, San Luis Obispo.

Kyle Perata received his BCRP from Cal Poly in June 2009. He is a planner with the City of Menlo Park, CA.
The decline of passenger rail travel was partially slowed when, in 1962, U.S. Senator Claiborne Pell introduced a plan calling for reinvestment in passenger rail infrastructure along the northeast corridor between Boston and New York as a demonstration project. While the project was limited in scope, the “Pell Plan” served as a model of public and private partnerships funding rail transportation. In the late 1960s, Congress passed the Rail Passenger Service Act. The Act – modeled after the Pell Plan – established Amtrak as the government agency that would operate national passenger rail service. Amtrak began service in the spring of 1971. During the early and mid-1970s, however, less than ten percent of transportation was by passenger rail.

Interest in rail service fluctuated through the 1990s and in the early part of the new century. Amtrak service saw slight reductions during the Clinton and Bush administrations. Near the end of his presidency, however, George W. Bush signed an Amtrak funding bill authorizing $1.5 billion for high-speed rail projects.

A renewed public interest in alternative transportation began catching steam in the summer of 2008, with gas prices reaching almost $5 a gallon in some parts of the country. In the November 2008 elections, 23 out of 32 transit-related ballot measures passed across the nation (Cabanatuan, 2008; TRAC, 2009). In California, voters approved a $9 billion bond measure to fund a high-speed rail line connecting San Francisco with Los Angeles. High-speed rail and other forms of public transportation now have a supportive ear in the White House with the election of President Obama. In addition, the American Recovery and Reinvestment Act of 2009 includes $8 billion for high-speed rail and $1.3 billion in grants to Amtrak for infrastructure improvements. The Act also increases subsidies for transit passes.

All Aboard!

Our train journey from California to Minneapolis identified some of the advantages and disadvantages of rail travel in the 21st century.

Efficiency of Travel

According to Itzkoff (1985), train travel requires one-seventh the amount of energy to transport a load compared with hauling it by truck and is the most efficient form of passenger travel. “A single set of tracks can transport as many as 50,000 persons an hour,” Itzkoff notes. “Performing the same feat on the highway requires more than 12,000 cars traveling in four lanes with four occupants in each car” (Itzkoff, 1985). Several studies conclude carbon emissions are more intensive when released at higher altitudes compared to the same emissions released at ground level. In addition, airplanes release other pollutants (such as nitrogen oxide and sulfur dioxide) that have harmful effects when released in the upper atmosphere (IPCC, 1999). Therefore, we estimate our train trip reduced our carbon emissions by 0.242 tonnes of carbon dioxide compared with traveling by plane.\footnote{Estimate based on calculators available from Carbon Footprint (http://www.carbonfootprint.com/calculator1.html) and TerraPass (http://www.terrapass.com/carbon-footprint-calculator/air). Retrieved November 23, 2008.}

The trip to Minneapolis took approximately 50 hours. In terms of time, airline travel is a far more efficient mode of transportation. In places outside the U.S. such as Europe and Japan, however, high-speed rail lines have been constructed to reduce travel time over longer distances, making the train a more attractive mode of transportation.
The Great American Landscape

It quickly became apparent why some people choose modern-day train travel over flying. Traveling by train offers something the airlines cannot: the stunning American landscape. As we wound down the Cascades into the Willamette Valley and the agricultural heartland of Oregon to Portland, we met a passenger who was photographing the countryside from the train for her photography book. Pulling into Portland late that afternoon, we had stunning views of the Willamette River along with the city skyline and bridges.

We headed east from Portland, and as the late afternoon sun waned, we crossed the Columbia River into Washington and snaked through the Columbia River Gorge along the river. We passed the time playing some intense games of Boggle – loser picked up the beer tab at dinner. We took in the beautiful cliffs and the behemoth river from the viewing car before retiring to our roomette for the night.

We awoke early. With Glacier National Park a little over an hour away, we had enough time for breakfast in the dining car. We were seated across from an older couple who were leading an America By Rail tour group. They shared with us the benefits of seeing the country by rail and stories of train trips past. We said goodbye to our new acquaintances as we pulled into Whitefish, Montana, a quaint little town nestled amongst the Rocky Mountains. A few snowflakes floated through the air as a reminder of the storm that passed through a few hours earlier. With a few extra minutes at the station, we took the opportunity to walk into downtown and purchase famous Montana roasted coffee.

Over the next few hours, the trip from Whitefish toward Glacier National Park and beyond took us through some of America’s most spectacular scenery. We watched from the viewing car as we passed snow-covered mountains, valleys, and rivers still partially frozen. We met a young man traveling from Portland to New York City who makes this an annual journey. He enjoys “seeing the country” and believes train travel is better for the environment. As we sat and talked with our new friend, we marveled at the grandeur of the Rocky Mountains and the beauty of Glacier National Park. Every bend of the track brought a new landscape to be discovered.

A Rail Network Stuck in the 20th Century

Our fellow passengers, experienced in train travel, also told us about some of the downsides of the U.S. passenger rail network. Traveling through Montana, we met a retired teacher from Boston who frequently travels by train along the northeast corridor (Boston, New York, and Washington DC). On this particular trip, he was living a 50-year-old dream: to travel the country by rail. His passion for trains far outdid our own enthusiasm for this trip. He compared his experiences of train travel in the United States and abroad, noting that U.S. train service is inferior to the efficient passenger rail networks of Europe and Japan. When asked what he thought was needed, he had an answer: “more support for rail and other transit must come from the government.” In his opinion, the success of the European and Japanese train networks is a result of government support. He believes that creating a successful passenger rail network at the national level will require cooperation among Amtrak and other state agencies.

Another passenger literally ride a train around the world. He described his passion for train travel and retold stories of his train adventure from Austria to Beijing, which included a portion on the Trans-Siberian Railroad and a stop in Ulaanbaatar, Mongolia.
He mentioned the differences in accommodations among trains across the world. The Amtrak roomette, he said, does not compare in quality to these other trains.

As our last full day came to a close, we packed our belongings, since we were due in to St. Paul at 7:00 AM. When we awoke at 6:30, we were informed by our car attendant that the train was delayed and we had time to enjoy one last breakfast. At 9:00 AM we disembarked at St. Paul.

Train travel offers a unique experience to those who can find the time to ride. People we met spoke positively of their experiences but unanimously identified the need to improve passenger rail to make it a more attractive form of transportation. Unfortunately, the current network is not as time-efficient as it could be. For passenger rail to be successful at the national level, the network must evolve to meet the demands and expectations of the 21st-century traveler.

**Skyscrapers, Skywalks, and Conferences – Oh My!**

It’s not a coincidence the two major themes at this year’s national APA conference were climate change and sustainability. Conference sessions ranged from planning for the predicted impacts of climate change on resources, infrastructure, and health to incorporating sustainability principles and policies within comprehensive plans. Some of the conference sessions discussed planning for climate change using existing approaches while others presented emerging technologies.

Almost every session related to climate change and sustainability stressed the link between land use and infrastructure – a link that keynote speaker Jeff Boothe, in an address titled “Rebuilding America,” called “absolutely a critical piece of the puzzle” in reducing greenhouse gas emissions (Boothe, 2009). And in this particular puzzle, alternative transportation infrastructure is perhaps the key piece. The importance of transit being in place before new development occurs was a key theme in multiple sessions. Jeff Boothe emphasized that planners must begin to shift their focus from reducing congestion to limiting vehicle miles traveled (VMT) by locating development adjacent to existing transit infrastructure. Another speaker called for planners to return to traditional planning along existing rail lines.

Another theme that emerged from conference sessions is a shift from local to regional planning as a way to reduce greenhouse gas emissions. Commuting behavior between municipalities often falls outside local emissions reduction measures. Regional planning is integral in linking local land use efforts with local and regional transportation systems, including bus and train transport.

Throughout the conference, we asked planners about the current state of passenger rail in the U.S. and the future role of passenger rail in reducing greenhouse gas emissions. Lack of funding for rail infrastructure at all levels – local, regional, and national – was identified as a major issue. The planners we talked with believe that passenger rail infrastructure will play a critical role in reducing the nation’s greenhouse gas emissions, but that major investments will be needed at all levels of planning and government. As one planner stated, “it will take a combination of both regional and national agencies” to provide an integrated and successful alternative transportation network. Another planner emphasized the
need to take a “complete systems” or “complete transportation” approach, creating an integrated transportation system with easy connections between high-speed or other national rail lines and local or regional networks. Planners noted a handful of successful networks – including the northeast, Chicago-to-Milwaukee, and Portland corridors – that might serve as examples.

What’s a Planner to Do?

Complete transportation systems are integral to combating climate change and increasing the accessibility of public transportation. Providing links among national, regional, and local networks is critical to creating accessible, alternative forms of transportation. Planners agree it will require a combination of local, state, and federal government efforts to create an integrated network of local, regional, statewide, and nationwide rail transportation systems.

We experienced the gap between the national and local networks when we arrived in Minneapolis. Upon our arrival at the train station, we had no viable transportation option other than the automobile. Our experience illustrated Jeff’ Boothe’s remark in his keynote address that most Americans don’t have the option of using alternative transportation. A complete transportation systems approach could help close these critical gaps in our rail infrastructure.

Funding will be a critical issue. While recent initiatives at the regional, state, and federal levels have allocated dollars to alternative transportation, planners and policymakers must continue to find creative ways to secure funding. Congestion pricing – charging drivers who use roads during peak travel times – is the newest approach to funding alternative transportation and boosting ridership. The stimulus bill, America’s Clean Energy and Security Act, and other recent legislation have laid the framework for increased funding for national transportation infrastructure, but there is still much more work to be done (111th Congress of the US, 2009).

The next generation of planners will play a starring role in climate change planning. We must become advocates for rail transportation and educate the public on the advantages and benefits of a viable rail network. We must demonstrate to the public how we will accomplish these goals and what the end results will be. In addition to being advocates for the rail system, we must give policymakers the information they need to make the appropriate investments in rail infrastructure.

We may be seeing the beginning of a shift back toward investing in trains. Americans have a deep history with the railroads. As planners, we must ensure that this history extends far into the future.

References


