Memorandum

TO: Bill Craven
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New Mexico Department of Transportation

FROM: Andreas Aeppli, Erin Kersh, Arun Kuppam

DATE: October 31, 2014

RE: **Amtrak *Southwest Chief* Impact Analysis**

In a memorandum dated August 29, 2014, Cambridge Systematics provided estimates of ridership in New Mexico for Amtrak's *Southwest Chief* (SWC) if it were rerouted over BNSF's Transcon route between Newton, Kansas and Albuquerque, New Mexico.[1] The use of this alternative route would result in the cessation of service at three New Mexico communities – Raton, Las Vegas, and Lamy, while adding three new stations at Vaughn, Clovis, and Belen. This second analysis builds on the 2013 base year ridership estimate. Passenger volumes are forecast through 2023, and a select set of impacts of the SWC on its current and alternative Transcon route are examined as follows:

- The direct and indirect impacts of intra- and interstate SWC transportation service for residents of New Mexico along the SWC's existing and potential routes;
- The likelihood that passengers presently boarding or alighting at stations that would lose service if the train were rerouted would continue to use the SWC;
- The economic impact from out of state visitors traveling to New Mexico destinations on the SWC; and,
- The economic impact on Amtrak and BNSF employment in New Mexico that would be associated with a reroute of the SWC along the BNSF Transcon.

The analysis was developed in a set of six steps, structured around the impacts outlined above. Due to the very short time available to complete the study, the team relied largely on available published data, with the result that some elements of the analysis are rather general by necessity. However, given the importance of at least having a snapshot of the essential characteristics of SWC's New Mexico ridership, CS retained Southwest Planning LLC to

[1] Cambridge Systematics, Inc., *Amtrak Southwest Chief Economic Impact Study: Base Year Ridership Results and Methodology,* submitted August 29, 2014 to New Mexico DOT. The memorandum leads off with some additional background on the potential reroute, and thus is not repeated here.

undertake a brief ridership survey. This survey focused on identifying travel purpose and alternative choices if the SWC ceased serving the community in which passengers started and/or ended their trip.

Quantifying the direct cost impacts on SWC passengers boarding the train in New Mexico was accomplished through the development of a cost impact model. This spreadsheet-based model focused on costs that directly impact travelers and their mode selection, along with the key societal impacts energy use and fatalities. Direct and indirect economic impacts from out-of-state visitors were examined using IMPLAN, a commonly used regional economic model. Tourism expenditures, the key input to this model along with ridership, was compiled by Dean Runyon, a market research firm specializing in travel and tourism.

It is important to recognize that this assessment is limited to these specific impacts that the SWC has on New Mexico, and does not take into account any impacts on through traffic, or other benefits or burdens that a reroute would impose on regions outside of the state. It further assumes that service performance from the standpoint of scheduling, travel time, and reliability at stations that would have service under either the existing or Transcon routes would be similar to or improve over current conditions.

The following sections review the approach and results for each of the elements of the analysis. Results and key findings are summarized in the concluding section of this memorandum.

Ten-Year Ridership Forecast

Approach

As documented in the August 29 memorandum developed by CS, the 2013 ridership on the SWC route was 127,400 along the existing Amtrak stations in New Mexico.[2] The potential re-route eliminates the Lamy, Las Vegas, and Raton stations, while adding the towns of Belen, Vaughn, and Clovis as stops. As per the workplan, two approaches were considered to project ridership of the SWC Amtrak line through New Mexico for the years 2018 and 2023. The first approach involved applying population and demographic forecasts to the regression model that was developed for the ridership forecast. The second involved using a fixed compounded annual growth rate (CAGR) of 2 percent as specified in the most recent version of Amtrak's Fleet Plan.[3] Following a review of the preliminary results from both approaches, the decision was made to adopt the constant 2 percent CAGR used in Amtrak's fleet planning efforts. These results are presented below.

[2] See Table 16 of the August 29 memorandum.

[3] http://www.amtrak.com/ccurl/36/921/2012-Amtrak-Fleet-Strategy-v3.1-%2003-29-12.pdf, pp. 10-11.

Results

Estimates for 2018 and 2023 are presented in Table 1 for all of the New Mexico Amtrak stations. On the present route (shown in the left-hand columns of Table 1), ridership associated with New Mexico is projected to grow by about 10 percent by 2018 and about 22 percent in 2023, a net gain of 27,900 passengers from a base of 127,400 passengers in 2013.

For the reroute scenario (shown in the right-hand columns of Table 1), the base year ridership starts out lower at 114,400, and then increases to a level of 139,453 by 2023, a net gain of 25,053. Though Gallup and Albuquerque stations gain ridership, there is a significant loss as a result of eliminating the Lamy, Las Vegas, and Raton stations that is not made up by the projected gains at Belen, Vaughn, and Clovis. As part of a later task, the assumption made in the base forecast that traffic associated with special generators will not be retained to some degree with a reroute is reconsidered.

In considering these forecasts, future ridership of this route is as much dependent on general demographic trends and economic conditions as it is related to the specific attributes of the service itself. This is evident when examining historic trends of the SWC as well as other Amtrak long distance services, which have experienced considerable fluctuations in ridership. Several specific issues have and will likely influence ridership growth on the SWC as much or more than general economic and demographic trends. These include the following:

- **Operational reliability**. Variations in operational reliability have a major impact on ridership and the economic performance of a service when hour-long delays are a common occurrence.[4] Causes for poor operational reliability are many, but most commonly arise from freight train interference (congestion, breakdowns, etc.), speed restrictions due to track conditions, maintenance-related outages, signal problems, and dispatching errors by host railroads. Of considerably lesser impact are delays under Amtrak's control, which include passenger incidents, late departures from stations, and mechanical problems. On the *Southwest Chief*, deteriorating track conditions along the Newton, Kansas to Albuquerque segment, as well as congestion elsewhere on the route have resulted in frequent service delays. The most notable recent example of the impact of poor reliability has been on the *Empire Builder* in FY 2014, where poor on-time performance has resulted in a loss of over 13 percent of ridership over FY 2013.[5] More generally, following consistent gains since the 2008-2009 recession, Amtrak's FY 2014 long distance train ridership declined 4.5%, attributed in large part to deteriorating on-time performance.[6]

[4] See **Root Causes of Amtrak Train Delays**, Federal Railroad Administration, Report Number CR-2008-076, September 8, 2008. The report noted that overall economic losses to Amtrak resulting from train delays in FY 2006 totaled $137 million, or more than 30 percent of Amtrak's overall cash loss of $452 million that year.

[5] http://www.amtrak.com/ccurl/985/151/Monthly-Performance-%20Report-August-2014.pdf, page 21.

[6] http://www.amtrak.com/ccurl/238/481/Amtrak-FY2014-Ridership-and-Revenue-ATK-14-096%20.pdf

Table 1. SWC Current and Projected Ridership on the Existing and Alternative Routes

Station	Existing Route			Transcon Alternative		
	Total	Origin	Destination	Total	Origin	Destination
2013 Actual and Predicted Ridership						
Gallup	15,600	8,112	7,488	16,800	8,736	8,064
Albuquerque	78,100	39,831	38,269	79,800	40,698	39,102
Lamy	12,600	1,890	10,710	-	-	-
Las Vegas	5,400	2,970	2,430	-	-	-
Raton	15,700	2,669	13,031	-	-	-
Belen	-	-	-	7,800	4,290	3,510
Vaughn	-	-	-	2,600	1,430	1,170
Clovis	-	-	-	7,400	4,070	3,330
Total	**127,400**	**55,472**	**71,928**	**114,400**	**59,224**	**55,176**
2018 Predicted Ridership						
Gallup	17,224	8,956	8,267	18,549	9,645	8,903
Albuquerque	86,229	43,977	42,252	88,106	44,934	43,172
Lamy	13,911	2,087	11,825	-	-	-
Las Vegas	5,962	3,279	2,683	-	-	-
Raton	17,334	2,947	14,387	-	-	-
Belen	-	-	-	8,612	4,737	3,875
Vaughn	-	-	-	2,871	1,579	1,292
Clovis	-	-	-	8,170	4,494	3,677
Total	**140,660**	**61,246**	**79,414**	**126,307**	**65,388**	**60,919**
2023 Predicted Ridership						
Gallup	19,016	9,888	9,128	20,479	10,649	9,830
Albuquerque	95,203	48,554	46,650	97,276	49,611	47,665
Lamy	15,359	2,304	13,055	-	-	-
Las Vegas	6,583	3,620	2,962	-	-	-
Raton	19,138	3,253	15,885	-	-	-
Belen	-	-	-	9,508	5,229	4,279
Vaughn	-	-	-	3,169	1,743	1,426
Clovis	-	-	-	9,021	4,961	4,059
Total	**155,300**	**67,620**	**87,680**	**139,453**	**72,194**	**67,259**

- **Travel time.** The track conditions on the section between Newton, Kansas and Albuquerque have resulted in substantially lengthened schedules. Betweeen 1986 and 2014, end-point SWC schedules have increased by over two hours, with 1:30 and 65 percent or more of this increase associated with the Newton, Kansas to Albuquerque segment in 2014 (See Table 2, below). While long-distance Amtrak travelers are not hugely sensitive to travel times, it does have an impact when hours are added to the schedule.

Table 2: Travel Time Changes on the *Southwest Chief*, 1986, 2010, and 2014

	Westbound *(read down)*			**Eastbound *(read up)***		
	1986	**2010**	**2014**	**1986**	**2010**	**2014**
Entire Southwest Chief Route						
Chicago, IL	17:00	15:15	15:00	14:55	15:15	15:15
Los Angeles, CA	07:45	08:15	08:15	20:10	18:15	18:15
Total Travel Time (HH:MM)	40:45	43:00	43:15	40:45	43:00	43:00
Change Since 1986 (HH:MM)		**02:15**	**02:30**		**02:15**	**02:15**
Alignment Affected by Potential Reroute						
Newton, KS	4:40	3:25	2:45	2:39	2:51	2:59
Albuquerque, NM	16:12	15:55	15:55	13:20	12:45	12:10
Total Travel Time (HH:MM)	12:32	13:30	14:10	12:10	13:06	13:49
Change Since 1986 (HH:MM)		**00:58**	**01:38**		**00:47**	**01:30**

Source: Amtrak fall system timetables

- **Available capacity**. Over the years, the available passenger capacity has fluctuated, with a concomitant effect on ridership. Capacity is driven by the availability of equipment, Amtrak's equipment deployment strategy, and marketing strategies. Maintenance budgets have directly affected the availability of equipment at various times, resulting in cutbacks in capacity during peak travel periods.

- **Marketing strategy**. Marketing and pricing strategies, along with evolving demand among the multiple markets that make up these lengthy routes will affect ridership. Seats can be sold once to a traveler going the entire route, or multiple times to travelers traversing non-overlapping parts of the route.

If one is to assume that future operations on the existing route as well as the reroute option would improve over present conditions, then application of a 2 percent CAGR for the forecast is a realistic, and indeed conservative, option over the 10-year forecast horizon. In the case of the existing route, infrastructure improvements would be undertaken that would result in improved travel times and reliability over current conditions. Likewise, on the Transcon route, investments would need to be made to accommodate the service, with the intent to achieve a similar improvement in travel times and reliability. Furthermore, the 2 percent growth rate is quite reflective of the general growth trend among Amtrak's long distance services between FY 2003 and FY 2013, which amounted to a 23 percent increase and a CAGR of 2.14 percent.

Southwest Chief Passenger Intercept Survey

Approach

The fundamental ingredient underlying an assessment of the economic impacts of staying on the current route versus a reroute across BNSF's Transcon is ridership, and the characteristics of that ridership. With a lack of available data about the characteristics of the SWC's ridership associated with New Mexico, Southwest Planning LLC undertook a passenger survey at each of the existing stations located in the state. This afforded an opportunity to gain some current insights into who travels on the SWC and for what purpose, and how travel patterns might be impacted should it be rerouted, all information that was needed to undertake various elements of the study. Due to the very short timeline for this study, the survey was conducted over a three-day mid-week period on September 24-26, 2014 with each station surveyed twice (once for each direction of travel). During that time, 105 surveys representing a total of 245 travelers were collected from boarding and alighting parties, with the largest response coming from Albuquerque. A summary of the results follows.

Results

Table 3 details the number of responses collected at each of the existing stations. Comparatively, the number of survey responses aligns fairly well with the representation of ridership along the SWC. Albuquerque, while having the most responses, is relatively underrepresented in terms of ridership with only 41 percent of all surveys even though this station handles 61 percent of all ridership in New Mexico. Lamy, on the other hand, had a significantly larger proportion of responses, with 25 percent of all responses taken at a location serving only 10 percent of the ridership. The remaining stations of Gallup, Las Vegas, and Raton are fairly consistent by response percentage and ridership share.

Table 3: Locations of Survey Responses

Station	Responses	Response Share	Ridership (2013)	Ridership Share
Gallup	16	15%	15,600	12%
Albuquerque	43	41%	78,100	61%
Lamy	26	25%	12,600	10%
Las Vegas	8	8%	5,400	4%
Raton	12	11%	15,700	12%
Total	105	100%	127,400	100%

To determine the economic impact of a potential reroute of the SWC, two key elements of this survey are particularly important: the type of passenger and whether or not passengers will still travel to a destination if the route is changed. Table 4 details the survey responses relevant to this first aspect of passenger type by both number of responses and the percentage of the total volume that they represent. During the days that the survey was conducted, the only business travelers using the SWC were associated with the Gallup and Albuquerque stations, with

neither Lamy nor Las Vegas and Raton showing any business travel. At only 10 percent of ridership, both Gallup and Albuquerque shared a characteristic of relatively little vacation/recreation traffic, which is well below the 44 percent average seen at the other three stations.

Table 4: Travel Purpose by Survey Location

Station	Business	Personal[7]	School	Visiting Friends/Family	Vacation/ Recreation	Total
Gallup	2	4	1	8	1	16
Albuquerque	9	5	0	24	5	43
Stations with Continued Service	11	9	1	32	6	59
Lamy	0	2	1	11	12	26
Las Vegas	0	1	1	2	4	8
Raton[8]	0	4	0	3	4	11
Stations with Discontinued Service	0	7	2	16	20	45
Total	11	16	3	48	26	104
Station	**Business**	**Personal**	**School**	**Visiting Friends/Family**	**Vacation/ Recreation**	**Total**
Gallup	13%	25%	6%	50%	6%	100%
Albuquerque	21%	12%	0%	56%	12%	100%
Stations with Continued Service	*19%*	*15%*	*2%*	*54%*	*10%*	*100%*
Lamy	0%	8%	4%	42%	46%	100%
Las Vegas	0%	13%	13%	25%	50%	100%
Raton	0%	36%	0%	27%	36%	100%
Stations with Discontinued Service	*0%*	*16%*	*4%*	*36%*	*44%*	*100%*
Total	11%	15%	3%	46%	25%	100%

Table 5 details the response of passengers as to whether or not they would still make the trip if the SWC no longer served the station where the survey was conducted. Responses at Gallup and Albuquerque were relatively similar for this question at 31 and 33 percent, respectively. At stations that would lose service, however, the responses were a bit more varied. With an average loss of 46 percent of the traffic across these three stations, Lamy passengers were the most likely to still make their trip, with only 38 percent indicating that they would no longer travel. Most likely this is due to the primary destination being Santa Fe, which is only 60 miles distant from Albuquerque, and readily accessible by highway and commuter rail service. On the other hand, Las Vegas and Raton would expect to see a much greater loss of visitors at 63 and 50 percent, respectively.

[7] "Personal" travel consists of activities such as shopping and medical appointments that is not work-related, tourism, or visiting friends and family.

[8] One survey respondent at Raton did not indicate a travel purpose resulting in a total of 104 responses here versus the 105 traveling parties surveyed.

This relationship in travel patterns is expected. The projected decline in visitors to Gallup and Albuquerque would be driven by the loss of passengers traveling from Lamy, Las Vegas, and Raton as well as the stations in Colorado and Kansas that would also lose service. Albuquerque would be less affected, given the presence of a major airport with service to many destinations throughout North America. In 2013, 2,477,783 passengers enplaned at this airport, several orders of magnitude greater than the next largest alternative, Santa Fe Municipal Airport, which handled 65,118 enplanements. Except for Belen, other existing or potential Amtrak served communities in New Mexico do not have the same ease of access to Albuquerque's or another major airport. The most remote is Raton, which is 231 miles distant[9].

Table 5: Change in Travel Patterns

Station	Would Still Travel	Would Not Travel	Total	Loss of Travelers
Gallup	11	5	16	31%
Albuquerque	29	14	43	33%
Stations with Continued Service	*40*	*19*	*59*	*32%*
Lamy	16	10	26	38%
Las Vegas	3	5	8	63%
Raton	6	6	12	50%
Stations with Discontinued Service	*25*	*21*	*46*	*46%*
All Stations	65	40	105	38%

Individuals still making the trip would change mode from rail to commercial air, automobile, or bus. Among intrastate travelers responding to the survey, the vast majority – 88 percent – would switch to automobile, and the remaining 12 percent to bus, presumably with the respondents knowledgeable about whether bus service is available. The survey also showed that among interstate travelers, 46 percent would use automobile, 42 percent would use commercial airline, and 12 percent would use bus (see Table 6). For those switching to air, nearly 50 percent stated that they would fly out of Albuquerque, with the next highest response being Denver, CO.

Table 6 - Mode Shift for Inter- and Intrastate Travel

Mode	Intrastate	Interstate
Auto	**88%**	**46%**
Air	**0%**	**42%**
Bus	**12%**	**12%**

[9] Raton is also equidistant from Denver International Airport at 233 miles. Servicing 25,496,885 enplanements per year, Denver's volume is roughly ten times larger than the Albuquerque's, which is reflective of its status as a major hub and larger local population base.

Surveyed passengers could also specify that they would travel to Albuquerque or another station to access Amtrak if service were no longer available. A total of three respondents selected this option, with two indicating that they would access Amtrak at Denver, and one at Albuquerque. Although the sample is of insufficient size to represent a statistically robust result, it nevertheless indicates that few travelers facing the loss of Amtrak service would divert to an alternative station, and choose to take an alternative mode or not to travel instead.

Overall, the survey found that there is strong support for the SWC to remain on its existing alignment. Many respondents were aware that there is a consideration to reroute the SWC. In particular, travelers from rural areas have limited transportation options and depend on the SWC as an additional mode. A majority (60 percent) traveled alone, and nearly one third reported earning less than $25,000 in annual household income. Most likely, this is because many riders are older and retired, which limits their income but also allows them more flexibility in their travel schedules. With that being said, many of these persons with lower incomes are traveling to see friends and family, and are not going on a vacation. Although these trips are discretionary, rerouting the SWC would create a larger financial hardship for these individuals or cause them to eliminate their trip altogether.

It is important to recognize that the survey results are not likely to be fully representative of passengers on the SWC. The sample size is rather small, and the train experiences substantial seasonality in traffic patterns, such as the campers traveling to the Philmont Ranch near Raton, which only occurs for a three month period during the summer.

Retention of Existing SWC Traffic

Travelers using the SWC will be impacted to varying degrees by a potential reroute. Those boarding or alighting the train at stations that would lose service would have to select an alternative mode(s), travel a longer distance to a location where Amtrak service is still available, or not travel at all. This section examines the potential likelihood of existing SWC passengers using stations that would no longer be served continuing to use the train through alternative stations, and the degree to which such retention might significantly impact the baseline forecast.

With the application of the ridership model from the existing to the alternative route, it is reasonable to assume that the diversion or re-capture of Amtrak traffic at stations along the new route would mirror travel behavior along the existing route. Thus, just like the present SWC may capture some traffic from Belen at Albuquerque, it similarly will capture some traffic associated with Santa Fe that previously accessed the train at Lamy. However, the likely retention rate is going to be modest if the passenger intercept survey results are at all indicative of typical traveler behavior.

In addition to Lamy, which is only 17 miles from Santa Fe, the other station on the existing route with a distinctive mix of traffic is Raton. Traffic is very seasonal, with a high summertime peak, and disproportionately high destination ridership (83 percent). The ridership is due to the proximity of the Philmont Scout Ranch to the Amtrak station, as well as a connecting Amtrak Thruway bus to Denver. Boy Scout treks at Philmont run from early June through late

August. As such, none of the traffic associated with this destination were captured in the survey. However, the Transportation Coordinator for Philmont Ranch offered a detailed look into the travel patterns of scouts visiting the Ranch. In 2013, of the 22,500 campers (children and adults) that visited the Ranch, 21 percent (4,725 campers) arrived by the SWC, 38 percent by private automobile, and 41 percent by chartered motor coach. Campers thus represented roughly 73 percent of the destination SWC ridership at the Raton station. Among those arriving by charter bus, two-thirds came from either the Albuquerque or Denver airports, with the choice of airport varying based on air fares. Other airports that are closer to Raton, including Santa Fe, Amarillo and Colorado Springs, handle little or no Philmont-related traffic. At present, campers rarely utilize the regularly scheduled Greyhound bus services that serve Raton. Camp management believes that using scheduled intercity bus to travel to Philmont would be difficult, due a lack of capacity to handle groups of the size that travel to the ranch, as well as schedule, comfort and safety concerns.

Should the SWC be rerouted, Philmont management indicated that 50 percent of existing visitors which use the train would no longer make the trip, with most of the remaining campers relying on private automobile to access the camp. An important aspect of the typical trek is its 12-day duration that is designed for adult attendees to fit an entire trip into a two-week vacation period. A rerouting of the SWC along the Transcon would result in increased travel times from the east, and make it more difficult to accommodate a trip within an overall two week period. The effects of a potential reroute were experienced when a track outage along Raton Pass caused the SWC to operate over the Transcon a number of years ago. With charter buses meeting the train at Albuquerque, the reroute added nine hours in travel time in each direction (due to circuity and dwell times for transfers). While campers coming from the east could achieve some time savings by alighting at a potential Amarillo station, it would still necessitate chartering a motor coach for the final leg, which will complicate the logistics associated with using Amtrak and increase costs. In addition, given the equidistant proximity of Raton to Denver as it is to Albuquerque (230 miles), the Chicago-Denver-Bay Area *California Zephyr* provides rail service to points east of the Mississippi as an equally viable option to the SWC through Amarillo.

Impacts on New Mexico Passengers

Current and potential passengers affected by a reroute of the SWC will experience a variety of direct and indirect impacts resulting from the change in travel options. These include out-of-pocket costs, such as transportation expenses, along with costs that do not entail a monetary outlay, of which the most important is travel time. A consumer will experience varying direct costs depending on which mode they select for travel. In addition to costs faced by the individual travelers, there are a range of societal impacts, including energy use and fatalities. This section quantifies the direct and indirect costs on individuals starting their trip in New Mexico if the SWC were rerouted to the Transcon. Intra and inter-state traffic is analyzed separately, and the overall impacts absorbed by the current and projected population of SWC users are summarized by communities maintaining, gaining, and losing service from a potential reroute.

Not included in the analysis are the impacts on the 40 percent of travelers who would only make the trip if the SWC were available. While these travelers undoubtedly are affected through a loss or gain of service, the individual impacts of induced travel are not quantified due to the difficulty of placing a value on not making a trip. However, these effects can be examined from a macro-economic perspective, which is done for out-of-state travelers in a later section of this memorandum.

Approach

Using the SWC as the baseline mode, the financial and other impacts of alternative modes were calculated relative to use of the train. Thus, for individuals traveling from or to a station that would lose service with a reroute, if the costs associated with the remaining modal options were higher, then this increased cost would impose an additional financial burden over and above what they were previously spending to use the SWC. Likewise, the introduction of SWC service along the Transcon route adds a travel option (and associated impacts) for individuals contemplating travel to a destination now served by the train.

Quantifying the direct and indirect impacts faced by individuals from alternative modes can be quite complex. For this analysis, the focus was on the primary elements that they would experience, which are as follows:

- Direct for-hire round-trip transportation costs, e.g. Amtrak, air, and bus fares.

- Incremental access costs to reach alternative for-hire modes. If passengers have to travel to a different location to catch a bus or plane, they would incur a cost to do so, most commonly by private automobile. At the destination, the cost of a rental car for one day is included, if the bus or air trip does not end in the same community as the SWC station location. This cost could equally be applied to other destination transportation costs, such as cab fare or being picked up by private motor vehicle.

- For private automobile, costs and other impacts were estimated based on the mileage between origin and destination stations. For multi-day trips, it is assumed that travelers will utilize overnight lodging.

- Travel time is calculated for each mode, but is not monetized. The total travel time includes time spent enroute, dwell times where there is a change of modes, such as the time spent at an airport after driving to it. For auto travel requiring multiple days, travel time is extended to reflect the time that would be spent in overnight lodging.

With 60 percent of survey respondents traveling singly, the analysis adopts a travel party size of one person. However, it is recognized that modal selection is rather sensitive to party size. For automobile, the incremental cost of adding additional passengers is almost zero up to the capacity of the vehicle, while with the for-hire modes, it typically increases in a step-wise fashion with each additional traveler.

At present, scheduled intercity bus service paralleling the SWC is limited to Gallup-Albuquerque and (El Paso) Albuquerque-Raton (Denver). On the Transcon route, service is

available Albuquerque - (Tucumcari) - Amarillo, and Clovis - Amarillo.[10] Neither Lamy nor Las Vegas have service, nor do Belen and Vaughn on the Transcon. Lamy presents a unique case, as many passengers using that station are traveling to or from Santa Fe, which can be accessed from Albuquerque via Rail Runner Express commuter rail. The same commuter rail line also serves Belen; thus, travelers using the SWC on the existing route can reach Belen with a transfer at Albuquerque.

Table 7 shows the direct costs, while Table 8 shows the measures used to calculate travel time for each mode of travel.

Table 7 – Direct Costs Incurred by Traveler

Direct Cost	Approach	Value	Source
Train (Amtrak)			
Train Ticket	Train fare per passenger mile	$0.11	Amtrak staff. Sept. 2014
Commercial Air			
Mileage	One-way mileage from origin/and or destination city to nearest commercial airport. Cost per vehicle mile	$0.51	American Automobile Association. https://exchange.aaa.com/wp-content/uploads/2013/04/Your-Driving-Costs-2013.pdf. Your Driving Costs. How much are you really paying to drive?
Parking	7 days, $10 per day, at Albuquerque International Airport (ABQ)	$10.00	City of Albuquerque. http://www.cabq.gov/airport/parking. Retrieved 9-26-2014.
Commercial Airline Ticket	Domestic Airline Consumer Airfare Report - Market to market	Various	U.S. Department of Transportation - Domestic Airline Consumer Airfare Report. http://www.dot.gov/policy/aviation-policy/domestic-airline-fares-consumer-report. - Quarter 1 - 2014.
Rental Car	Rental fee per day for an average vehicle (1 day)	$66.52	50 market average base rate in 2014, from Auto Rental News, plus 25% airport fees and taxes http://www.autorentalnews.com/channel/rental-operations/news/story/2014/10/flat-airport-rental-rates-continue-in-september.aspx.
Rental Car Fuel	Vehicle average miles-per-gallon 23.5	$3.50	2010 United States CAFÉ Standards – average vehicle mile per gallon. U.S. Energy Information Administration. http://www.eia.gov/oog/info/gdu/gasdiesel.asp.
Auto			
Mileage	One-way trip miles from station to station. Cost per vehicle mile	$0.51	American Automobile Association. https://exchange.aaa.com/wp-content/uploads/2013/04/Your-Driving-Costs-2013.pdf. Your Driving Costs. How much are you really paying to drive?
Lodging	One night per 10 hours traveled.	$110.35	American Hotel and Lodging Association average room rate. https://www.ahla.com/content.aspx?id=36

[10] Raton is also served by a Denver-Amarillo-Dallas service that operates twice daily southbound, and three times daily northbound. Clovis is also served by a daily bus link to El Paso.

Direct Cost	Approach	Value	Source
			332
Greyhound			
Mileage	One-way mileage from origin city to nearest bus station. Cost per vehicle mile	$0.51	American Automobile Association. https://exchange.aaa.com/wp-content/uploads/2013/04/Your-Driving-Costs-2013.pdf. Your Driving Costs. How much are you really paying to drive?
Bus Ticket	Fare from origin/and or destination city to nearest Greyhound station. Cost per rev. mile	Various	Greyhound.com. Retrieved 10-6-2014

Table 8 – Travel Time Measures

Travel Time	Approach	Value	Source
Train (Amtrak)			
Station to Station	Station to station travel time	Various	Amtrak *Southwest Chief* timetable http://www.amtrak.com/train-schedules-timetables. Retrieved 9-2014
Commercial Air			
To Origin Commercial Airport	One-way travel time to ABQ	60 MPH	Google Maps
Airport Ingress/Egress	One-way time spent in airports	2 hours	Standard airline recommendation
Flight Time	One-way ABQ to nearest airport to destination	Various	Standard flight times
From Commercial Airport to Destination	One-way travel time from airport to destination	60 MPH	Google Maps
Auto			
Station to Station	Station to station travel time (includes breaks)	60 MPH	Google Maps
Greyhound			
To Origin Greyhound Station	One-way travel time to nearest Greyhound Station	60 MPH	Google Maps
Station to Station	One-way travel time from origin/and or destination city to nearest Greyhound station	Various	Greyhound.com Retrieved 10-6-2014
From Greyhound Station to Destination	One-way travel time from Greyhound Station to destination	60 MPH	Google Maps

Societal impacts consist of energy consumption, expressed in British Thermal Units (Btu), and fatality rates. Table 9 shows the measures that were used to calculate energy use by mode, and fatalities by mode are shown in Table 10.

Table 9 - Energy Consumption (Btu)

Travel Mode	Approach	Value	Value Forecasted
Train (Amtrak)	Per Passenger Mile - National Average	2,214	Transportation Energy Data Book. Edition 33. 2014. Table 2.12 - Passenger Travel and Energy Use, 2013. http://cta.ornl.gov/data/tedb33/Edition33_Full_Doc.pdf
Commercial Air	Per Passenger Mile - National Average	2,484	Transportation Energy Data Book. Edition 33. 2014. Table 2.12 - Passenger Travel and Energy Use, 2013. http://cta.ornl.gov/data/tedb33/Edition33_Full_Doc.pdf
Auto	Per Passenger Mile - National Average	3,193	Transportation Energy Data Book. Edition 33. 2014. Table 2.12 - Passenger Travel and Energy Use, 2013. http://cta.ornl.gov/data/tedb33/Edition33_Full_Doc.pdf
Intercity Bus	Per Passenger Mile - National Average	797	Transportation Energy Data Book. Edition 19. 1999. Table 2.11 - Passenger Travel and Energy Use, 1997. *Current consumption is higher than shown here, as motor coach efficiency has declined since 1997.*

Table 10 – Fatalities

Travel Mode	Approach	Value	Source
Train (Amtrak)	Per 100,000,000 Passenger Miles - National Average	0.04	AASHTO - High-Speed and Intercity Passenger Rail http://www.highspeed-rail.org/Pages/BasicFacts.aspx
Commercial Air	Per 100,000,000 Passenger Miles - National Average	0.0001	DOT National Transportation Statistics - Table 2-42. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_02_24.html
Auto Interstate	Per 100,000,000 Passenger Miles - National Average	1.10	Traffic Safety Facts 2011 Data - NHTA's National Center for Statistics and Analysis. 2013
Auto Intrastate	Per 100,000,000 Passenger Miles - New Mexico Average	1.24	New Mexico Department of Transportation. Traffic Safety Division - FFY12 Annual Report. December 2012
Bus	Per 100,000,000 Passenger Miles - National Average	0.26	DOT National Transportation Statistics - Table 2-24. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_02_24.html

Results

Interstate Travelers

Moving the SWC to the Transcon will have a net impact of increasing interstate travel originating in New Mexico by 2,519 in 2013. Due to the loss of service at Lamy, Las Vegas, and Raton, 3,613 travelers are anticipated to switch from Amtrak to another mode. In contrast, there is an anticipated increase of 6,131 passengers originating in New Mexico due to the overall higher originations projected for Belen, Vaughn, and Clovis over the existing stations that would lose service.

As passengers at each origin location switch modes, this has an impact on the direct costs that a passenger must pay. Table 11 details the change experienced by each type of station: those retaining service (Gallup and Albuquerque), those losing service (Lamy, Las Vegas, and Raton), and those gaining service (Belen, Vaughn, and Clovis). Passengers boarding at stations with continued service and those gaining service both experience a net savings in total travel costs across all modes of $325,000 and $1.7 million, respectively. Exceptions are bus passengers boarding at stations with continued service.

The largest direct travel cost savings come from those switching from personal vehicles to Amtrak which is expected as a larger portion of riders are anticipated to switch from auto than any other mode. On the other hand, travelers boarding at stations which lose service will need to pay more, regardless of the mode of transport. In total, the passengers who previously traveled from stations which will no longer be serviced by Amtrak will need to spend an additional $1.5 million to continue the same travel patterns. Overall, the net impact of these direct travel costs is a savings of $566,000 in 2013, which increases to $689,000 in 2023 as ridership changes.

Table 11 – Direct Cost Savings (Increases) on Interstate Passengers Originating in New Mexico, by Mode as Compared to the *Southwest Chief*

Station	Personal Vehicle ($1,000)	Flight ($1,000)	Bus ($1,000)	Total ($1,000)	Change
2013					
Stations Retaining Service	$184	$145	($5)	$325	-50%
Stations Losing Service	($890)	($522)	($48)	($1,460)	399%
Stations Gaining Service	$972	$673	$56	$1,701	-77%
Total	**$266**	**$296**	**$4**	**$566**	**-17%**
2023					
Stations Retaining Service	$224	$177	($6)	$396	-50%
Stations Losing Service	($1,085)	($637)	($58)	($1,780)	399%
Stations Gaining Service	$1,185	$821	$68	$2,073	-77%
Total	**$324**	**$361**	**$4**	**$689**	**-17%**

Beyond the direct costs associated with travel, the other primary consideration for travelers is travel time. Table 12 details the anticipated changes in total travel time for interstate passengers. For trips of less than one day in duration, those switching from automobile to Amtrak will experience an increase in travel times due to lag times in stations and potentially less direct routes to the final destination. For longer trips, the need for overnight stops typically results in longer travel times than would be the case with rail. A similar pattern is evident for those switching between air and rail. Those passengers boarding at stations with continued or new service will require longer times to make the same trip, while those leaving from stations losing service will save time over longer distances due to the higher speeds at which aircraft can operate.

Bus travel time is less predictable than the other modes. Buses travel at lower speeds than Amtrak, resulting in a time savings for those switching from bus to Amtrak and a travel time increase for those switching to bus from Amtrak. However, stations with continued service will also experience an increase in travel time for this mode. Overall, the associated travel time that would be incurred by inter-state travelers through a potential route change would add nearly 22,000 hours in 2013, and grow to over 26,500 hours by 2023.

Table 12 –Hours Traveled Reductions (Increases) from Potential SWC Reroute on Interstate Passengers Originating in New Mexico, by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(3,674)	(6,037)	(1,091)	(10,802)	47%
Stations Losing Service	(2,830)	15,220	(1,907)	10,482	-16%
Stations Gaining Service	(2,642)	(21,610)	2,708	(21,543)	33%
Total	**(9,146)**	**(12,427)**	**(290)**	**(21,863)**	**14%**
2023					
Stations Retaining Service	(4,478)	(7,359)	(1,330)	(13,168)	47%
Stations Losing Service	(3,450)	18,553	(2,325)	12,778	-16%
Stations Gaining Service	(3,220)	(26,342)	3,302	(26,261)	33%
Total	**(11,149)**	**(15,149)**	**(354)**	**(26,651)**	**14%**

As detailed previously, each mode of travel consumes differing amounts of energy on a passenger mile basis. Table 13 details the overall impact of modal switching associated with the SWC. For the most part, the net impact is relatively low. However, the largest changes come from personal vehicles. Those passengers at stations losing service and switching to automobile would increase their consumption by 1,688 MMBTU[11]. This is nearly offset by the savings in energy consumption of 1,159 MMBTU by passengers gaining service. The overall net impact on energy consumption is an additional 1,556 MMBTU in 2013, which increases to 1,897 MMBTU by 2023.

[11] 1 MMBTU = 1 million Btu

Table 13 –Energy Consumption Savings (Increase) on Interstate Passengers Originating in New Mexico by Mode (MMBTU)

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(44)	(174)	(240)	(457)	13%
Stations Losing Service	(1,688)	(651)	382	(1,957)	27%
Stations Gaining Service	1,159	464	(764)	859	-8%
Total	**(572)**	**(361)**	**(622)**	**(1,556)**	**7%**
2023					
Stations Retaining Service	(53)	(212)	(293)	(557)	13%
Stations Losing Service	(2,058)	(794)	466	(2,386)	27%
Stations Gaining Service	1,413	565	(932)	1,047	-8%
Total	**(697)**	**(441)**	**(758)**	**(1,897)**	**7%**

One last consideration of modal shifts that would occur through a potential reroute is the impact on transportation-related fatalities, shown in Table 14 below. Given the relatively modest volumes of traffic, the overall annual fatality rates are very low and thus the effects from shifts in mode rather modest. The primary impacts on fatalities are associated with auto travel, which has a fatality rate that is substantially greater than for any of the other modes. The impacts of fatalities for both air travel and bus are negated by the balance among the three station categories. Overall, the net impact from a reroute would be a decrease in fatalities of 19 percent, or an estimated 0.006 lives saved in 2013 and 0.008 in 2023.

Table 14 – Fatality Reductions (Increases) on Interstate Passengers Originating in New Mexico by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	0.004	(0.000)	0.000	0.004	-58%
Stations Losing Service	(0.018)	(0.002)	(0.001)	(0.021)	1,562%
Stations Gaining Service	0.020	0.002	0.001	0.023	-93%
Total	**0.006**	**(0.000)**	**0.000**	**0.006**	**-19%**
2023					
Stations Retaining Service	0.005	(0.000)	0.000	0.004	-58%
Stations Losing Service	(0.022)	(0.003)	(0.001)	(0.025)	1,562%
Stations Gaining Service	0.025	0.003	0.001	0.028	-93%
Total	**0.008**	**(0.001)**	**0.001**	**0.008**	**-19%**

Intrastate Travelers

A potential reroute would result in a decrease in intrastate travel totaling 266 travelers in 2013, and 326 in 2023. Less local traffic is anticipated for the stations along the Transcon at Belen, Vaughn, and Clovis than on the existing stations that would lose service. Due this modest shift

in traffic, the overall impacts associated with intrastate passengers are also rather modest. However, the presence or lack of rail service does have a very strong impact on direct and indirect costs for travelers from the affected communities.

Table 15 shows the effects on direct out-of-pocket costs, with an estimated overall increase of $17,000 in 2013, and $21,000 in 2023, or 9 percent over current conditions. All cost impacts are associated with substantial changes in automobile use, the alternative that would be used by 88 percent of intrastate travelers if the SWC were not available. Notable is a significant volume of intra-state traffic is associated with Gallup and Albuquerque on the one hand, and Lamy, Las Vegas, and Raton on the other.

Table 15 – Direct Cost Savings (Increases) on Intrastate Passengers Originating in New Mexico by Mode

Station	Personal Vehicle ($1,000)	Air ($1,000)	Bus ($1,000)	Total ($1,000)	Change
2013					
Stations Retaining Service	($22)	N/A	($8)	($30)	36%
Stations Losing Service	($50)	N/A	($3)	($53)	521%
Stations Gaining Service	$59	N/A	$7	$65	-71%
Total	**($13)**	**N/A**	**($4)**	**($17)**	**9%**
2023					
Stations Retaining Service	($27)	N/A	($9)	($36)	36%
Stations Losing Service	($61)	N/A	($3)	($64)	521%
Stations Gaining Service	$72	N/A	$8	$80	-71%
Total	**($16)**	**N/A**	**($5)**	**($21)**	**9%**

The impacts on travel time (Table 16) are even more modest, with affected travelers experiencing an overall increase of 4 percent or 583 hours in 2013 with a reroute. Not surprisingly, travelers at stations that would lose service would see larger impacts.

Table 16 – Hours Traveled Reductions (Increases) on Intrastate Passengers Originating in New Mexico by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(86)	N/A	(239)	(325)	5%
Stations Losing Service	983	N/A	8	992	-32%
Stations Gaining Service	(1,446)	N/A	197	(1,249)	38%
Total	**(548)**	**N/A**	**(35)**	**(583)**	**4%**
2023					
Stations Retaining Service	(104)	N/A	(292)	(396)	5%
Stations Losing Service	1,199	N/A	10	1,209	-32%
Stations Gaining Service	(1,762)	N/A	240	(1,523)	38%
Total	**(668)**	**N/A**	**(42)**	**(710)**	**4%**

Experiencing disproportionate effects from a reroute is energy consumption, shown in Table 17. The absence of the SWC would primarily lead to an increase in automobile usage, which consumes over 40 percent more energy on a passenger mile basis than rail. This impact is offset slightly through increased bus usage, which is more energy efficient than intercity rail. Overall, energy consumption is anticipated to increase by 481 MMBTU annually should the SWC switch to the Transcon route based on 2013 ridership.

Table 17 – Energy Consumption Reductions (Increases) on Intrastate Passengers Originating in New Mexico by Mode (MMBTU)

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(281)	N/A	(31)	(312)	49%
Stations Losing Service	(180)	N/A	5	(175)	86%
Stations Gaining Service	41	N/A	(35)	6	-1%
Total	**(420)**	**N/A**	**(61)**	**(481)**	**35%**
2023					
Stations Retaining Service	(343)	N/A	(37)	(380)	49%
Stations Losing Service	(219)	N/A	6	(214)	86%
Stations Gaining Service	50	N/A	(43)	7	-1%
Total	**(512)**	**N/A**	**(74)**	**(587)**	**35%**

Fatalities follow the shifts in mode, with stations losing service experiencing a 4,000 percent increase (Table 18) resulting from increased auto use. However, the overall impact from fatalities is negligible, such that the overall effects can be assumed to be close to zero.

Table 18 – Fatality Reductions (Increases) on Intrastate Passengers Originating in New Mexico by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(0.000)	N/A	(0.000)	(0.000)	29%
Stations Losing Service	(0.001)	N/A	(0.000)	(0.001)	4,004%
Stations Gaining Service	0.002	N/A	0.000	0.002	-95%
Total	**(0.000)**	**N/A**	**(0.000)**	**(0.000)**	**8%**
2023					
Stations Retaining Service	(0.000)	N/A	(0.000)	(0.001)	29%
Stations Losing Service	(0.002)	N/A	(0.000)	(0.002)	4,004%
Stations Gaining Service	0.002	N/A	0.000	0.002	-95%
Total	**(0.000)**	**N/A**	**(0.000)**	**(0.000)**	**8%**

Combined Impacts

The combined direct and indirect impacts from a reroute of the SWC to the Transcon are summarized in Tables 19 through 22. Overall, the impacts associated with traffic originating in New Mexico are mixed. A reroute brings transportation cost savings and reduced fatalities but increased travel time, decreased energy efficiency, and significant regional displacements:

- Reflecting ridership gains for traffic originating in New Mexico, travelers would experience net savings in direct costs of approximately $548,000, a decrease of 16% from a total $4.18 million incurred with the current route. The impacts for travelers using the stations that would lose service total $1.5 million, a 403 percent increase over existing conditions.

- Travel time experiences an increase of almost 23,000 hours in 2013, 14 percent over present conditions. These impacts are primarily brought about by an increased volume of interstate passengers switching from commercial air to rail service, as well as increased use of personal vehicles.

- Energy use increases by 9 percent, or approximately 2,037 MMBTU in 2013. Half of this increase is associated with greater automobile dependence, along with an increase in air and decline in bus usage. With intercity bus being more energy efficient than the other modes, the projected shift in traffic from bus to other modes accounts for one-third of the overall increase in energy consumption.

- Fatalities drop by 16 percent to 0.006 in 2013 and 0.007 in 2023. This starts from a very low level to begin with, even though there are major shifts in risk among regions gaining and losing service.

Table 19 – Direct Cost Savings (Increases) for all Passengers Originating in New Mexico by Mode

Station	Personal Vehicle ($1,000)	Air ($1,000)	Bus ($1,000)	Total ($1,000)	Change
2013					
Stations Retaining Service	$162	$145	($12)	$295	-40%
Stations Losing Service	($940)	($522)	($50)	($1,513)	403%
Stations Gaining Service	$1,031	$673	$62	$1,766	-76%
Total	**$252**	**$296**	**($0.2)**	**$548**	**-16%**
2023					
Stations Retaining Service	$197	$177	($15)	$360	-40%
Stations Losing Service	($1,146)	($637)	($61)	($1,844)	403%
Stations Gaining Service	$1,256	$821	$76	$2,153	-76%
Total	**$308**	**$361**	**($0.2)**	**$668**	**-16%**

Table 20 – Hours Traveled Reductions (Increases) for all Passengers Originating in New Mexico by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(3,760)	(6,037)	(1,331)	(11,127)	38%
Stations Losing Service	(1,847)	15,220	(1,899)	11,474	-17%
Stations Gaining Service	(4,087)	(21,610)	2,905	(22,792)	33%
Total	**(9,694)**	**(12,427)**	**(325)**	**(22,446)**	**14%**
2023					
Stations Retaining Service	(4,583)	(7,359)	(1,622)	(13,564)	38%
Stations Losing Service	(2,251)	18,553	(2,315)	13,987	-17%
Stations Gaining Service	(4,983)	(26,342)	3,541	(27,784)	33%
Total	**(11,817)**	**(15,149)**	**(396)**	**(27,362)**	**14%**

Table 21 – Energy Savings (Increases) for all Passengers Originating in New Mexico by Mode (MMBTU)

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	(325)	(174)	(271)	(769)	18%
Stations Losing Service	(1,868)	(651)	387	(2,132)	28%
Stations Gaining Service	1,200	464	(799)	865	-7%
Total	**(992)**	**(361)**	**(683)**	**(2,037)**	**9%**
2023					
Stations Retaining Service	(396)	(212)	(330)	(938)	18%
Stations Losing Service	(2,277)	(794)	472	(2,599)	28%
Stations Gaining Service	1,463	565	(974)	1,054	-7%
Total	**(1,210)**	**(441)**	**(833)**	**(2,483)**	**9%**

Table 22 – Fatality Reductions (Increases) for all Passengers Originating in New Mexico by Mode

Station	Personal Vehicle	Air	Bus	Total	Change
2013					
Stations Retaining Service	0.003	(0.000)	0.000	0.003	-39%
Stations Losing Service	(0.019)	(0.002)	(0.001)	(0.022)	1628%
Stations Gaining Service	0.022	0.002	0.001	0.025	-93%
Total	**0.006**	**(0.000)**	**0.000**	**0.006**	**-16%**
2023					
Stations Retaining Service	0.004	(0.000)	0.000	0.004	-39%
Stations Losing Service	(0.023)	(0.003)	(0.001)	(0.027)	1628%
Stations Gaining Service	0.026	0.003	0.001	0.031	9%
Total	**0.007**	**(0.001)**	**0.000**	**0.007**	**-16%**

Economic Impact of Out-of-State *Southwest Chief* Passengers

This task entailed examining the economic impact from out-of-state travelers alighting at Raton, Las Vegas, and Lamy on the present alignment, and Clovis, Vaughn, and Belen on the Transcon alignment. The direct and indirect/induced/multiplier economic impacts were examined for the following measures:

- Visitor spending on local businesses,
- Labor income,
- Employment,
- Gross State Product; and,
- State, county, and local tax revenue.

While there are some marginal benefits for passengers originating at a station, such as the cost of transportation to travel to the station, the majority of benefits are derived from out of state passengers traveling to New Mexico. These passengers are likely to spend higher sums of money through a variety of travel-related expenditures, such as hotels, transportation, restaurants, and entertainment.

To estimate the impact on local economies resulting from the SWC, several analytical steps are required. These are as follows:

- Traveler purpose,
- Visitor spending patterns, and
- Estimation of indirect economic impacts.

Each of these elements is discussed in the following sections.

SWC Traveler Purpose

A critical step in the estimation of the economic impacts from visitors is the nature of their visit. During development of the base year ridership forecasts, Amtrak provided data on the breakdown by rider type for the entire SWC route. Ideally, this data would be supplanted by the results from the passenger survey that was conducted as part of this analysis. However, sample sizes were of insufficient size to reasonably depict travel purpose by destination station. Table 23 details the breakdown of visitor types at each station, as developed in the base year (2013) passenger forecast. At the time, specific adjustments were made for both Lamy and Raton due to the large proportion of vacationers these destinations receive. This visitor type breakdown was applied to the current and projected ridership volumes for both the existing and alternative route in order to determine the overall economic impact.

Table 23: Visitor Types at Existing and Alternative *Southwest Chief* Stations

Station	Business	VFR/Personal	Vacation/Recreation
Gallup	7%	71%	22%
Albuquerque	7%	71%	22%
Lamy	5%	45%	50%
Las Vegas	7%	71%	22%
Raton	1%	9%	90%
Belen	7%	71%	22%
Vaughn	7%	71%	22%
Clovis	7%	71%	22%

Source: Cambridge Systematics, Inc., *Amtrak Southwest Chief Economic Impact Study: Base Year Ridership Results and Methodology,* memorandum submitted August 29, 2014 to New Mexico DOT.

Visitor Spending Patterns

The second component of the economic impact analysis is an estimate of typical visitor spending patterns. Efforts were made to contact both state and local tourism bureaus in an attempt to acquire any suitable data. However, many were either unresponsive or only had data at a high level (i.e. total hotel receipts with no visitor count to determine the average hotel rate). In lieu of this, CS contracted with Dean Runyan Associates to develop expenditure estimates using TNS *TravelsAmerica,* which provided average expenditures for Business, Visiting Family and Relatives (VFR), and Vacation/Recreation travelers. Unfortunately, this data only divides the state into two sections: Albuquerque and the Remainder of New Mexico. Tables 24 and 25 detail average per-person spending levels for Albuquerque and the remainder of the state by spending category and visitor type.

Table 24: Average Expenditures per Person per Trip in Albuquerque, 2013

Spending Categories	Business	VFR/Personal	Vacation/ Recreation
Lodging	$232.87	$63.01	$114.41
Food/Beverage/Dining	$103.29	$58.67	$72.45
Groceries	$9.83	$14.88	$14.62
Recreation & Entertainment	$19.53	$14.95	$31.78
Gaming	$18.69	$12.19	$10.62
Shopping/Gifts/ Souvenirs	$20.46	$37.47	$44.05
Miscellaneous Other	$2.99	$3.46	$4.77
Transportation (includes Train/Bus/Auto Rental)	$109.49	$97.61	$76.94
Fuel/Gasoline	$7.19	$6.41	$5.05
Total	**$524.33**	**$308.65**	**$374.72**

Source: Dean Runyan Associates, based on TNS TravelsAmerica

Table 25: Average Expenditures per Person per Trip in the Remainder of New Mexico, 2013

Spending Categories	Business	VFR/Personal	Vacation/ Recreation
Lodging	$201.92	$41.79	$70.44
Food/Beverage/Dining	$70.06	$43.27	$40.09
Groceries	$9.37	$15.83	$20.51
Recreation & Entertainment	$4.21	$9.83	$24.73
Gaming	$0.33	$12.35	$9.42
Shopping/Gifts/ Souvenirs	$5.57	$20.28	$18.16
Miscellaneous Other	$0.16	$4.96	$7.39
Transportation (includes Train/Bus/Auto Rental)	$113.12	$92.83	$73.94
Fuel/Gasoline	$7.43	$6.10	$4.86
Total	**$412.17**	**$247.23**	**$269.53**

Source: Dean Runyan Associates, based on TNS TravelsAmerica

These levels indicate average expenditures for a typical visit, which ranges in length from 4.0 to 5.7 days depending on travel purpose, and is irrespective of mode. From this data, it is evident that there are substantial differences by type of visitor and location. Not surprisingly, business travelers to Albuquerque spend the most, while those on personal travel to the remainder of New Mexico spend the least. As such, the Amtrak ridership by visitor type must reflect this information to yield a realistic impact estimate.

A deficiency of the aggregation provided by *TravelsAmerica* is the far higher level of expenditure associated with visitation to Santa Fe versus the other locations included in the Remainder of New Mexico category. With the very small sample size of the passenger survey and the lack of

more geographically specific expenditure data, it was not possible to separately estimate expenditures for visitors to Santa Fe versus other out-state locations, or adjust average expenditure levels based on visitation patterns.

An exception to using the average Remainder of New Mexico figures was made at Raton. In this instance, it is evident that the average visitor expenditures are substantially lower than those made by Philmont Ranch campers. Fees for the Ranch are set at $855 in 2015 and are anticipated to increase to $870 in 2016. To account for the costs increasing over the years as well as some campers taking shorter treks, spending levels for 2013 were assumed to be $800, exclusive of transportation costs. These fees are inclusive of all food and camping equipment required for the typical 12 day trek, whereas an average visitor elsewhere in the state only spends four nights, which implies lower spending. As such, the average expenditures at this station were adjusted for Vacation/Recreation travelers on account of these longer visits and known expenditures. Table 26 details average per-person per-trip spending levels for Raton visitors. Otherwise, no other adjustments are made for Business or VFR/Personal travelers.

Table 26: Average Expenditures per Person per Trip at Raton, 2013

Spending Categories	Business	VFR/Personal	Vacation/ Recreation
Lodging	$201.92	$41.79	$271.53
Food/Beverage/Dining	$70.06	$43.27	$201.17
Groceries	$9.37	$15.83	$197.37
Recreation & Entertainment	$4.21	$9.83	$4.80
Gaming	$0.33	$12.35	$1.83
Shopping/Gifts/ Souvenirs	$5.57	$20.28	$3.53
Miscellaneous Other	$0.16	$4.96	$1.44
Transportation (includes Train/Bus/Auto Rental)	$113.12	$92.83	$73.94
Fuel/Gasoline	$7.43	$6.10	$0.94
Total	$412.17	$247.23	$756.55

Source: Dean Runyan Associates, based on TNS TravelsAmerica, and Philmont Ranch input.

Economic Impact

The next component to this analysis entailed the use of IMPLAN, an economic impact model. For this study, economic impacts were estimated specifically for the counties which currently contain an Amtrak station or which may contain one in the future. IMPLAN allows for analysis by economic sectors, which do not fully correspond to the visitor spending categories provided by TNS TravelsAmerica. Table 27 shows the correlation between the visitor spending categories and the industry sectors in IMPLAN. As part of this analysis, an activity type must also be defined for each of these categories.

Some spending categories are strongly associated with particular industries while others are not. As such, a combination of activity types was used for this analysis. An "Industry Change" is tied to a group of establishments engaged in the same or similar types of economic activity. On the other hand, a "Commodity Change" reflects spending on goods that may be produced by one or more industries.

Table 27: Correlation between Visitor Spending Categories and IMPLAN Sectors

Visitor Expenditure Type	IMPLAN Sector(s)	Activity Type
Lodging	Hotels and motel, including casino hotels [12]	Industry Change
Food/Beverage/Dining	Food services and drinking places	Industry Change
Groceries	Retail Services - Food and Beverage	Commodity Change
Recreation & Entertainment	Other amusement and recreation industries	Industry Change
Gaming	Amusement parks, arcades, and gambling industries	Industry Change
Shopping/Gifts/ Souvenirs	Retail Services - General merchandise	Commodity Change
Miscellaneous Other	Retail Services - Miscellaneous	Commodity Change
Transportation (includes Train/Bus/Auto Rental)	Transit and Ground Passenger Transportation	Industry Change
Fuel/Gasoline	Retail Services - Gasoline Stations	Commodity Change

Total spending for each category was determined by first applying the visitor type breakdown detailed previously to the overall ridership number at each station in order to determine how many visitors of each type are traveling to each station. The average visitor spending for each spending category by visitor type was then applied to this value. The total change of each spending category (Business + VFR/Personal + Vacation/Recreation) was then entered into IMPLAN. Given the dispersion of travelers to Amtrak-served communities, the economic impact analysis centered on the counties in which the stations are or would be located.

Impacts of Expenditures for the Two Alignments

The economic impact of visitors to New Mexico using the SWC was first examined for each of the two alignments. For this effort, only the destination ridership was considered for these stations, using the adopted growth forecast through 2023. Table 28 details this ridership for both

[12] The exception to this is the Raton station. As many of the visitors are visiting the Philmont Ranch, they are not staying in typical hotels and motels, but rather campgrounds. For this station, the "Other Accommodations" sector was used for lodging expenditures associated with the Philmont Ranch.

routes, corresponding visitor count[13], and the calculated direct expenditures at each stations associated with these visitors.

Table 28: Destination Ridership, Visitors, and Direct Expenditures for the Existing and Alternative *Southwest Chief*

Station	Current Route			Alternative Route		
	Ridership	Visitors	Direct Expenditures (millions)	Ridership	Visitors	Direct Expenditures (millions)
2013						
Gallup	7,488	3,744	$1.0	8,064	4,032	$1.1
Albuquerque	38,269	19,135	$6.5	39,102	19,551	$6.6
Lamy	10,710	5,355	$1.4	-	-	-
Las Vegas	2,430	1,215	$0.3	-	-	-
Raton	13,031	6,516	$4.6	-	-	-
Belen	-	-	-	3,510	1,755	$0.5
Vaughn	-	-	-	1,170	585	$0.2
Clovis	-	-	-	3,330	1,665	$0.4
Total	**71,928**	**35,964**	**$13.8**	**55,176**	**27,588**	**$8.7**
2023						
Gallup	9,128	4,564	$1.2	9,830	4,915	$1.3
Albuquerque	46,650	23,325	$7.9	47,665	23,833	$8.1
Lamy	13,055	6,528	$1.7	-	-	-
Las Vegas	2,962	1,481	$0.4	-	-	-
Raton	15,885	7,943	$5.6	-	-	-
Belen	-	-	-	4,279	2,140	$0.6
Vaughn	-	-	-	1,426	713	$0.2
Clovis	-	-	-	4,059	2,030	$0.5
Total	**87,680**	**43,840**	**$16.8**	**67,259**	**33,630**	**$10.6**

For the existing alignment of the SWC, Table 29 shows the employment associated with visitors arriving by train. Employment is relatively proportional to ridership, with some variance due to

[13] Ridership results for both legs of a visitor's journey are counted as "Destination Ridership". For example, Gallup has a destination ridership of 7,488 which therefore accounts for 3,744 visitors assuming all visitors are both arriving and departing on the SWC. Though a reasonable assumption, this is known to be not quite true, as a sizeable portion of SWC travelers purchase one-way tickets, and may board at a different station for the return trip, or use a different mode for either the inbound or outbound leg of their trip.

local factors. The largest direct[14] employment is seen at Albuquerque and the lowest at Las Vegas. Overall, the employment of 271 persons is attributed to the current alignment of the SWC. Based on a 2 percent annual growth in ridership, this employment is anticipated to increase to 330 persons by 2023 for a total increase of 22 percent. Total Labor Income associated with this employment is estimated at over $8.4 million in 2013 and is expected to increase to nearly $10.3 million in 2023. While these numbers may seem high for some communities, such as Lamy which only has an estimated population around 200, these values represent impacts at a county level, which includes other communities beyond those in which the stations are located.

Table 29: Local Impacts on Employment and Labor Income by Station for the Existing Alignment of the SWC

Station	Direct	Indirect	Induced	Total	Labor Income (millions)
2013					
Gallup	19	1	2	22	$0.5
Albuquerque	102	13	20	135	$4.4
Lamy	21	2	4	27	$1.0
Las Vegas	6	0	1	7	$0.2
Raton	68	5	7	80	$2.4
Belen	-	-	-	-	-
Vaughn	-	-	-	-	-
Clovis	-	-	-	-	-
Total	**216**	**21**	**34**	**271**	**$8.4**
2023					
Gallup	23	1	2	27	$0.6
Albuquerque	124	16	25	165	$5.3
Lamy	26	2	5	33	$1.2
Las Vegas	8	1	1	9	$0.2
Raton	82	6	9	97	$2.9
Belen	-	-	-	-	-
Vaughn	-	-	-	-	-
Clovis	-	-	-	-	-
Total	**263**	**26**	**41**	**330**	**$10.3**

[14]It is important to note the differences in the types of employment. Direct employment is dependent upon the direct expenditures of passengers which are detailed in Table 28 above. The indirect effects are a result of purchases from the directly-affected sector (for instance, a souvenir shop must purchase items to stock shelves in order for visitors to purchase said items). Induced effects are from directly affected employees spending their wages in the local economy.

Similar results are also seen with local, state, and federal taxes[15] (Table 30). The largest impacts are seen in Albuquerque, followed by Raton. Total taxes for 2013 are estimated at $3.2 million and are anticipated to increase to $3.9 million in 2023. For the most part, these taxes are relatively evenly split between state and local, and federal taxes at 52 percent and 48 percent, respectively.

Table 30: Impacts on Local, State, and Federal Taxes by Station for the Existing Alignment of the SWC

Station	State and Local Tax (millions)	Federal Taxes (millions)	Total Taxes (millions)
2013			
Gallup	$0.1	$0.1	$0.2
Albuquerque	$0.9	$0.8	$1.7
Lamy	$0.2	$0.2	$0.3
Las Vegas	$0.0	$0.0	$0.1
Raton	$0.5	$0.4	$0.9
Belen	-	-	-
Vaughn	-	-	-
Clovis	-	-	-
Total	**$1.7**	**$1.6**	**$3.2**
2023			
Gallup	$0.2	$0.1	$0.3
Albuquerque	$1.0	$1.0	$2.0
Lamy	$0.2	$0.2	$0.4
Las Vegas	$0.1	$0.0	$0.1
Raton	$0.6	$0.5	$1.1
Belen	-	-	-
Vaughn	-	-	-
Clovis	-	-	-
Total	**$2.0**	**$1.9**	**$4.0**

Gross regional product[16] follows similar trends, as exhibited in Table 31. Albuquerque once again has the largest values for these factors while Las Vegas remains the lowest. Gross Regional Products (GRP) are over $12 million in 2013 and expected to grow to $14.7 million in 2023.

[15]Taxes include Employee Income, Proprietor Income, Tax on Production and Imports, Households, and Corporations.

[16] Gross Regional Product is considered the value added to the economy. This incorporates some facets of employment income and taxes, so the costs and benefits associated with those indicators should not be added to the GRP.

Table 31: Local Impacts on Gross Regional Product by Station for the Existing Alignment of the SWC

Station	Gross Regional Product (millions)
2013	
Gallup	$0.7
Albuquerque	$6.2
Lamy	$1.3
Las Vegas	$0.2
Raton	$3.6
Belen	-
Vaughn	-
Clovis	-
Total	**$12.0**
2023	
Gallup	$0.9
Albuquerque	$7.6
Lamy	$1.6
Las Vegas	$0.3
Raton	$4.3
Belen	-
Vaughn	-
Clovis	-
Total	**$14.7**

A similar effort was undertaken to determine the total impacts of a potential realignment of the SWC to the Transcon route. Using the predicted ridership numbers presented previously, the effects on employment, wages, production, and taxes were determined. Table 32 details the employment associated with the SWC at each station. As with the existing alignment, the largest impacts of the SWC are seen in Albuquerque. Slight increases are seen at both Gallup and Albuquerque due to an expected increase in destination travelers to these two stations. In addition, the new stations of Belen, Vaughn, and Clovis can expect to see some new employment opportunities associated with visitors from the SWC. Total employment of this alternative line is 182 based on 2013 estimates and is projected to grow to 222 by 2023. In total, labor income associated with this employment is estimated at $5.6 million and is expected to increase to $6.8 million (constant 2013 dollars) by 2023.

Table 32: Local Impacts on Employment and Labor Income by Station for the Alternative Alignment of the SWC

Station	Direct	Indirect	Induced	Total	Labor Income (millions)
2013					
Gallup	20	1	2	24	$0.6
Albuquerque	104	13	21	138	$4.4
Lamy	-	-	-	-	-
Las Vegas	-	-	-	-	-
Raton	-	-	-	-	-
Belen	8	1	1	9	$0.2
Vaughn	2	0	0	2	$0.1
Clovis	8	1	1	9	$0.2
Total	**142**	**16**	**24**	**182**	**$5.6**
2023					
Gallup	25	1	3	29	$0.7
Albuquerque	127	16	25	168	$5.4
Lamy	-	-	-	-	-
Las Vegas	-	-	-	-	-
Raton	-	-	-	-	-
Belen	9	1	1	11	$0.3
Vaughn	3	0	0	3	$0.1
Clovis	10	1	1	11	$0.3
Total	**173**	**19**	**30**	**222**	**$6.8**

As with the other estimates of economic impacts, local, state, and federal taxes follow a similar pattern.[17] The largest impacts continue to be seen in Albuquerque, followed by Gallup as seen in Table 33. Total taxes for 2013 are estimated at $2.2 million and are anticipated to increase to $2.6 million in 2023. For the most part, these taxes are relatively evenly split between state and local taxes and federal taxes at 52 percent and 48 percent, respectively.

[17] Taxes include Employee Income, Proprietor Income, Tax on Production and Imports, Households, and Corporations.

Table 33: Impacts on Local, State, and Federal Taxes by Station for the Alternative Alignment of the SWC

Station	State and Local Tax (millions)	Federal Taxes (millions)	Total Taxes (millions)
2013			
Gallup	$0.1	$0.1	$.3
Albuquerque	$0.9	$0.8	$1.7
Lamy	-	-	-
Las Vegas	-	-	-
Raton	-	-	-
Belen	$0.1	$0.0	$0.1
Vaughn	$0.0	$0.0	$0.0
Clovis	$0.1	$0.0	$0.1
Total	**$1.1**	**$1.0**	**$2.2**
2023			
Gallup	$0.2	$0.1	$0.3
Albuquerque	$1.1	$1.0	$2.1
Lamy	-	-	-
Las Vegas	-	-	-
Raton	-	-	-
Belen	$0.1	$0.0	$0.1
Vaughn	$0.0	$0.0	$0.0
Clovis	$0.1	$0.1	$0.1
Total	**$1.4**	**$1.3**	**$2.6**

Table 34 details the impacts on the gross regional product for the alternative alignment of the SWC. Of the five stations along the alternative route, Gallup and Albuquerque are most influenced by these factors. The 2013 gross regional product is estimated at nearly $8 million in 2013 with an increase to $9.8 million in 2023.

Table 34: Local Impacts on the Gross Regional Product by Station for the Alternative Alignment of the SWC

Station	Gross Regional Product (millions)
2013	
Gallup	$0.8
Albuquerque	$6.4
Lamy	-
Las Vegas	-
Raton	-
Belen	$0.3
Vaughn	$0.1
Clovis	$0.3
Total	**$7.9**
2023	
Gallup	$0.9
Albuquerque	$7.8
Lamy	-
Las Vegas	-
Raton	-
Belen	$0.4
Vaughn	$0.1
Clovis	$0.4
Total	**$9.7**

Net Visitor Economic Impact of a *Southwest Chief* Reroute

While ideally the net impact of a reroute of the *Southwest Chief* would be to compare the economic impact of the existing route to the alternative route, it is not as simple as that. The SWC is only one of several modes that a traveler may use, and thus cessation of rail service will not necessarily result in a complete loss of visitors that have been arriving by train. While some will forego the trip altogether, others will use alternatives, such as different modes and routes. As such, communities that would lose direct rail service may be able to retain some of the economic benefits associated with travelers continuing to make the trip. Similarly, for locations which would gain a new service, visitors may already be traveling to these locations and therefore these destinations would not benefit from the full economic impact of all riders arriving on the SWC.

Using the results from the passenger intercept survey, the impact on travel patterns from a potential reroute can be estimated. On average, 40 percent of respondents stated that they would no longer make their journey should the SWC switch alignment. As the sample size was insufficient to reliably draw conclusions for individual stations, this assumption was applied to

all stations on the existing route. As there is no data for the alternative route, it was assumed that the presence of the SWC would produce a similar level of new trips to newly served communities. It stands to reason that if 40 percent of current SWC passengers would no longer make the trip if the SWC was rerouted, then 40 percent of visitors along the new alignment would be induced to travel. The only exception to this is the Raton station, where the substantial presence and unique characteristics of the Philmont Ranch visitation would result in a lower retention rate. As such, the retention rate of the Raton station was set at 50 percent, which is also consistent with survey responses from this station and discussions with Ranch management.

Table 35: Change in Visitors and Related Direct Expenditures based on Predicted Ridership at Existing and Alternative Amtrak Stations

Station	Total Ridership	Destination Ridership	Total Visitors	Visitor Impact	Change in Visitors	Change in Direct Expenditures (millions)
2013 Predicted Ridership Increases or Decreases						
Gallup	1,200	576	288	40%	115	$0.0
Albuquerque	1,700	833	417	40%	167	$0.1
Lamy	(12,600)	(10,710)	(5,355)	(40%)	(2,142)	($0.6)
Las Vegas	(5,400)	(2,430)	(1,215)	(40%)	(486)	($0.1)
Raton	(15,700)	(13,031)	(6,516)	(50%)	(3,258)	($2.3)
Belen	7,800	3,510	1,755	40%	702	$0.2
Vaughn	2,600	1,170	585	40%	234	$0.1
Clovis	7,400	3,330	1,665	40%	666	$0.2
Total	**(13,000)**	**(16,752)**	**(8,376)**		**(4,002)**	**($2.5)**
2023 Predicted Ridership Increases or Decreases						
Gallup	1,463	702	351	40%	140	$0.0
Albuquerque	2,073	1,015	508	40%	203	$0.1
Lamy	(15,359)	(13,055)	(6,528)	(40%)	(2,611)	($0.7)
Las Vegas	(6,583)	(2,962)	(1,481)	(40%)	(592)	($0.2)
Raton	(19,138)	(15,885)	(7,943)	(50%)	(3,971)	($2.8)
Belen	9,508	4,279	2,140	40%	856	$0.2
Vaughn	3,169	1,426	713	40%	285	$0.1
Clovis	9,021	4,059	2,030	40%	812	$0.2
Total	**(15,846)**	**(20,421)**	**(10,211)**		**(4,878)**	**($3.0)**

Table 35 depicts the predicted ridership along the existing and alternative routes by both total and destination as well as the anticipated change in visitors at each location for 2013 and 2023 and the direct expenditures associates with their visits. The most significant gains in new visitors are unsurprisingly at the new stations of Belen, Vaughn, and Clovis, with some additional visitors at Gallup and Albuquerque. The stations of Lamy, Las Vegas, and Raton

show significant losses in visitors, particularly at Lamy and Raton due to the proximity of Santa Fe and the Philmont Ranch to these locations. The overall impact would be a loss of 4,002 visitors in 2013 and increasing to a loss of 4,878 visitors in 2023. This change in visitors is attributed to a loss of nearly $2.5 million in direct expenditures in 2013 and $3.0 million in 2023.

Using the information detailed above to determine overall spending impacts at each station, IMPLAN was used to estimate the overall impacts on the local economies that would result from a reroute of the SWC. Table 36 details how this impacts employment along the existing and alternative route. Similar to the change in total visitors, the greatest change in employment is seen at the Lamy and Raton stations. Minimal impacts are seen at Gallup and Albuquerque, particularly as many out of state visitors to these locations will be largely unaffected by a potential reroute through New Mexico.

The total impact on employment is estimated at a loss of 44 jobs in 2013, increasing to a loss of 53 in 2023 (an additional loss of 9 from 2013). The majority of these jobs would be direct employment, most significantly from the transportation sector as this is among the highest spending category for visitors. Other industries most heavily impacted by this change are recreational industries and lodging. Should the *Southwest Chief* be rerouted, losses in annual labor income associated with this employment are projected to amount to $1.4 million in 2013, increasing to $1.7 million (constant 2013 dollars) by 2023.

Table 36: Local Impacts on Employment and Labor Income by Station

Station	Direct	Indirect	Induced	Total	Labor Income (millions)
2013					
Gallup	1	0	0	1	$0.0
Albuquerque	1	0	0	1	$0.0
Lamy	(9)	(1)	(2)	(11)	($0.4)
Las Vegas	(3)	(0)	(0)	(3)	($0.1)
Raton	(34)	(2)	(4)	(40)	($1.2)
Belen	3	0	0	4	$0.1
Vaughn	1	0	0	1	$0.0
Clovis	3	0	0	4	$0.1
Total	**(36)**	**(3)**	**(5)**	**(44)**	**($1.4)**
2023					
Gallup	1	0	0	1	$0.0
Albuquerque	1	0	0	1	$0.0
Lamy	(10)	(1)	(2)	(13)	($0.5)
Las Vegas	(3)	(0)	(0)	(4)	($0.1)
Raton	(41)	(3)	(5)	(49)	($1.5)
Belen	4	0	0	4	$0.1
Vaughn	1	0	0	1	$0.0
Clovis	4	0	0	5	$0.1
Total	**(44)**	**(3)**	**(6)**	**(53)**	**($1.7)**

The IMPLAN output also provides estimates for impacts on Local, State, and Federal taxes. Shown in Table 37 below, overall impacts on the State/Local and the Federal level are relatively equal to one another.[18] For State/Local spending, taxes are impacted mostly due to the tax on production and imports. Federal taxes are predominately influenced by employee compensation, which would be tied to the change in labor income previously detailed. The total impact on taxes is a loss of $0.5 million in 2013, which increases to an annual loss of $0.6 million by 2023.

Table 37: Impacts on Local, State, and Federal Taxes by Station

Station	State and Local Tax (millions)	Federal Taxes (millions)	Total Taxes (millions)
2013			
Gallup	$0.0	$0.0	$0.0
Albuquerque	$0.0	$0.0	$0.0
Lamy	($0.1)	($0.1)	($0.1)
Las Vegas	($0.0)	($0.0)	($0.0)
Raton	($0.2)	($0.2)	($0.5)
Belen	$0.0	$0.0	$0.0
Vaughn	$0.0	$0.0	$0.0
Clovis	$0.0	$0.0	$0.0
Total	**($0.3)**	**($0.3)**	**($0.5)**
2023			
Gallup	$0.0	$0.0	$0.0
Albuquerque	$0.0	$0.0	$0.0
Lamy	($0.1)	($0.1)	($0.2)
Las Vegas	($0.0)	($0.0)	($0.0)
Raton	($0.3)	($0.3)	($0.6)
Belen	$0.0	$0.0	$0.0
Vaughn	$0.0	$0.0	$0.0
Clovis	$0.0	$0.0	$0.1
Total	**($0.3)**	**($0.3)**	**($0.6)**

Similar to the impacts on employment and taxes, the local impacts on gross regional product (GRP) at each location follow the same patterns. Again, the large changes in visitation to Lamy and Raton result in an overall negative impact in these categories. Table 38 details how these factors change in each local area based on ridership in 2013 and 2023. Note that these are annual

[18] Taxes shown here represent the net impact on Employee Income, Proprietor Income, Tax on Production and Imports, Households, and Corporations. This does not include any property taxes associated with BNSF's rail line between Colorado/New Mexico and Lamy.

values which change due to anticipated changes in ridership. Similarly, the GRP will be reduced by $2.0 million in 2013 and be further reduced by $2.4 million annually in 2023.

Table 38: Local Impacts on Labor Income, Gross Regional Product, and Industry Production by Station

Station	Gross Regional Product (millions)
2013	
Gallup	$0.0
Albuquerque	$0.1
Lamy	($0.5)
Las Vegas	($0.1)
Raton	($1.8)
Belen	$0.1
Vaughn	$0.0
Clovis	$0.1
Total	**($2.0)**
2023	
Gallup	$0.0
Albuquerque	$0.1
Lamy	($0.6)
Las Vegas	($0.1)
Raton	($2.2)
Belen	$0.2
Vaughn	$0.1
Clovis	$0.2
Total	**($2.4)**

A potential reroute of the *Southwest Chief* would result in negative impacts for employment, gross regional product, and taxes as detailed in Table 39. The majority of these impacts come from the loss of service at Lamy and Raton. These stations are very dependent on destination ridership rather than origin, resulting in a larger volume of visitors. The alternative stations of Belen, Vaughn, and Clovis, on the other hand, are anticipated to have higher volumes of originating passengers. While this signifies greater usage by New Mexico residents, the decrease in visitors from out of state would results in a net loss of economic output for the state as a whole.

However, this loss of economic output from the decrease in destination passengers is not as severe as a direct comparison between the two alignments may suggest. For instance, the total employment associated with the existing alignment is 447 while the alternative alignment supports a total employment of 364, a difference of 83. However, the net impact between the

two alignments is estimated at a loss of only 44 jobs. This is due to the retention effect, whereby visitors currently using the SWC to travel to New Mexico would still make the same trip regardless of the train's availability.

Table 39: Comparison of Impacts for Existing and Alternative SWC Alignments from Out-of-State Travelers

		2013			2023		
		Existing	Alternative	Net Impact	Existing	Alternative	Net Impact
Employment	Direct	216	142	(36)	263	173	(44)
	Indirect	21	16	(3)	26	19	(3)
	Induced	34	24	(5)	41	30	(6)
	Total	271	182	(44)	330	222	(53)
Output (millions)	Labor Income	$8.4	$5.6	($1.4)	$10.3	$6.8	($1.7)
	Gross Regional Product	$12.0	$7.9	($2.0)	$14.7	$9.7	($2.4)
Taxes (millions)	State and Local	$1.7	$1.1	($0.3)	$2.0	$1.4	($0.3)
	Federal	$1.6	$1.0	($0.3)	$1.9	$1.3	($0.3)
	Total	$3.2	$2.2	($0.5)	$3.9	$2.6	($0.6)

Impact of Changes in Railroad Employment

An element that is not captured previously in this assessment is railroad employment associated with the SWC in New Mexico, and how it might be affected by a reroute. The economic impact detailed in the previous section focuses on a change in visitors at these locations, not a change in railroad operations; thus these impacts are distinct. Both BNSF and Amtrak have New Mexico-based employees that would be affected, and these impacts are quantified in terms of the direct effects, e.g. of employees and payroll costs, as well as their indirect economic effects.

Approach

Data on the number of affected employees was obtained through discussion with Amtrak and BNSF personnel. Using compensation data from published sources, the difference in direct rail-related employment and payroll expenditures in New Mexico between the existing SWC and potential Transcon routes was quantified. The multiplier effects associated with the resulting payroll costs were examined using the IMPLAN model described previously.

Results

The light density of traffic on BNSF's line between Lamy and the Colorado border at Raton has commensurately low employment levels. At present, BNSF employs two signal maintainers, one signal inspector, and two track inspectors that are exclusively dedicated to this route. In the

event of a SWC reroute, BNSF managers have indicated that these positions would no longer be necessary, as the track would be abandoned. Other resources that are used to maintain the track are shared with adjoining divisions, and would thus not be affected by discontinuance of the SWC.[19]

For Amtrak, the impact on employment is anticipated to be minimal. Crew size would stay the same, and the train and engine crew base would be moved from La Junta to somewhere along the Transcon in Texas or Oklahoma. The only staffed station along the impacted section of track in New Mexico is Raton, which is staffed seasonally. The likely strategy would be to move existing staffing to the major cities along the Transcon, such as Amarillo and Wichita, and none of the newly served stations in New Mexico would be staffed. Thus, the net effect on Amtrak employment in New Mexico would be the elimination of approximately one-half of a Full-Time Equivalent (FTE) employee.[20]

The 5.5 FTE positions that would be impacted on the Lamy to Raton segment are union jobs with standard rates of pay and benefits. Typical hourly salaries for experienced signal inspectors, track inspectors, and signal maintainers range between $25 and $30 per hour, plus benefits. These benefits are largely comprised of the costs associated with health care, the employer's portion of railroad retirement, and vacation/holiday pay, and total approximately $22,000 per year. Salaries for station staff fall in the same range. Using these figures, the direct annual payroll impacts in 2013 from relocating the SWC from the Raton line to the Transcon would amount to approximately $433,000.[21]

The macroeconomic impacts of this change in employment were assessed through IMPLAN, were it was represented as a decrease of services. Results are shown in Table 40.[22] The total employment impacts are estimated to be seven additional positions beyond the 5.5 directly impacted positions, for a total impact on labor of 12.5 positions with a total income of $722,000. The majority of this impact is due to the discontinued railroad employment. Other secondary impacts include declines in GRP of $1.3 million and $202,000 in taxes.

[19]Telephone conversation and email correspondence with DJ Mitchell, Assistant Vice President, Passenger Operations, BNSF.

[20]Email correspondence with Ray Lang, Senior Director, National State Relations, Amtrak, October 8, 2014.

[21]Track-related rates of pay from http://www.alliedfed.org/images/BNSFWages_BN_2013July.pdf. Benefit package costs from http://www.bnsf.com/careers/explore-team-bnsf/trades/engineering/singal-apprentice.html.
Amtrak station agent pay from http://www.careerbliss.com/amtrak/salaries/station-agent/.

[22] IMPLAN uses state averages for railroad employee compensation, which are substantially higher than the actual compensation costs associated with the affected positions. Thus, for analysis in IMPLAN, the the impacted employment count was adjusted to 4 FTEs instead of the 5.5 actual FTE count.

Table 40: Impact of Affected Railroad Employment on the New Mexico Economy

Employment	Direct	5.5
	Indirect	4
	Induced	3
	Total	12
Output (millions)	Labor Income	$0.7
	Gross Regional Product	$1.3
Taxes (millions)	State and Local	$0.1
	Federal	$0.2
	Total	$0.2

Summary and Conclusions

This analysis undertook to examine a select set of impacts of the Southwest Chief on its present and alternative route using BNSF's Transcon. It is not intended to be exhaustive, but rather illustrative of the effects that the *Southwest Chief* has on the State of New Mexico. Each of the elements examined in this project phase are summarized below:

Ridership: Following examination of different options, an annual growth rate of two percent was applied to the previously developed passenger forecast. On the present route, ridership associated with New Mexico is projected to grow by about 10 percent by 2018 and about 22 percent in 2023, a net gain of 27,900 passengers from a base of 127,400 passengers in 2013. For the reroute scenario, the base year ridership starts out lower at 114,400, and then increases to a level of 139,453 by 2023, a net gain of 25,053. Though Gallup and Albuquerque increase ridership, there is a significant loss as a result of eliminating the Lamy, Las Vegas, and Raton stations that is not made up by the projected gains at Belen, Vaughn, and Clovis. The degree to which the affected stations originate or terminate traffic has a major bearing on the direct and indirect impacts on the state and its residents.

Economic impacts: The economic impacts for travelers from out-of-state and reductions in railroad employment are presented in Table 41. From an overall state perspective, the impacts of a SWC reroute over the Transcon results in gross economic losses for the state of $3.3 million and 56 jobs in 2013, which are expected projected to increase to $3.7 million and 65 jobs in 2023. The majority of these impacts come from the loss of service at Lamy and Raton. Traffic at these stations is very dependent on visitors from out-of-state, which will not be offset by the higher volumes of originating passengers that would be using the alternative stations of Belen, Vaughn, and Clovis.

Table 41: Total Impact on the New Mexico Economy from Out-of-State Visitors

		2013			2023		
		Existing	Alternative	Net Impact	Existing	Alternative	Net Impact
Employment	Direct	222	142	(42)	269	173	(50)
	Indirect	25	16	(7)	30	19	(7)
	Induced	37	24	(8)	44	30	(9)
	Total	283	182	(56)	342	222	(65)
Output (millions)	Labor Income	$9.1	$5.6	($2.1)	$11.0	$6.8	($2.4)
	Gross Regional Product	$13.3	$7.9	($3.3)	$16.0	$9.7	($3.7)
Taxes (millions)	State and Local	$1.7	$1.1	($0.3)	$2.1	$1.4	($0.4)
	Federal	$1.7	$1.0	($0.4)	$2.1	$1.3	($0.5)
	Total	$3.4	$2.2	($0.7)	$4.2	$2.6	($0.8)

Direct impacts on New Mexico travelers. Table 42 shows the direct cost, energy, and fatality impacts from a potential reroute. Modest savings in direct travel costs would accrue to New Mexico travelers totaling approximately $.5 million in 2013 and $.7 million in 2023. These in turn would be offset to some degree by additional travel time, and from a societal perspective, increased energy consumption. Notably, while interstate travel would increase with a reroute, intra-state travel would decline overall.

Table 42: Direct Positive (Negative) Impacts on New Mexico Travelers

Station	Direct Costs ($ millions)	Hours Traveled	MMBTU	Fatalities
2013				
Stations Continuing Service	$.3	(11,127)	(769)	0.003
Stations Losing Service	($1.5)	11,474	(2,132)	(0.022)
Stations Gaining Service	$1.8	(22,792)	865	0.025
Total	**$.5**	**(22,446)**	**(2,037)**	**0.006**
2023				
Stations Continuing Service	$.4	(13,564)	(938)	0.004
Stations Losing Service	($1.8)	13,987	(2,599)	(0.027)
Stations Gaining Service	$2,2	(27,784)	1,054	0.031
Total	**$.7**	**(27,362)**	**(2,483)**	**0.007**

While the impacts at the state level may be modest, the communities and surrounding regions directly affected by the reroute will experience significant displacement. This is most evident among the small communities of Raton and Las Vegas on the current route, and Vaughn and Clovis on the Transcon. In 2013, travelers to locations losing service would incur higher travel

costs on the order of $1.5 million, while the local economic impacts would total $13.3 million. The opposite would apply on the Transcon, with travel cost savings $1.8 million, and economic gains of $7.9 million. Note that the net effects of the reroute from the direct cost and economic impacts should not be considered in an additive manner.

In considering the results of this analysis, it is important to recognize several key limitations:

- Sensitivity of tourism expenditures to traveler demographics and length of stay. Amtrak data indicates that SWC passengers visiting New Mexico from out of state spend several more days in the state than the average visitor as captured in the TravelsAmerica data. While this might imply higher expenditures and thus greater economic impacts, the available information is insufficient to draw any specific conclusions.

- The robustness of the results from the passenger intercept survey. The survey was conducted over a short two-day period in September, and with a statistically small number of responses. The mix of travelers on the SWC varies considerably by season, which affects travel purpose and the likelihood of making the trip if the SWC were not available. The small sample size precludes drawing any conclusions about ridership at particular stations or demographics that may strongly influence estimates of direct spending and the resulting impacts on regional economies.

- The omission of economic impacts of in-state travel. The economic impacts associated with the reduction in in-state travel may offset at least some of the direct cost savings estimated in Table 42. It would also further increase the regional displacement effects in the communities affected by a potential reroute.