Provisional Staff Exposure Draft:
PROPOSED METRICS AND STANDARDS
FOR INTERCITY PASSENGER RAIL SERVICE

Executive Summary

  In accordance with Section 207 of the Passenger Rail Investment and Improvement Act of 2008, the Federal Railroad Administration (FRA) and Amtrak are jointly submitting for stakeholder comment the following proposed metrics and standards for intercity passenger rail service. Further explanation appears in the Main Report. The FRA emphasizes that, in the current absence of confirmed appointees to many policy-making and leadership positions in the U.S. Department of Transportation, this Executive Summary and Main Report must be regarded as a provisional staff exposure draft, subject to review and revision by the appointed policy-makers.

Proposed Metrics and Standards

Metric/ Stand-ard Category	Metric/Standard Subcategory	Reported by—	Statutory Require-ment	Added Measure	Proposed Standard; Comments
Financial/ Operating	Percent of Short-Term Avoidable Operating Cost Covered by Passenger-Related Revenue (exclude capital charges)	**route**	✓		Continuous year-over-year improvement
	Percent of Fully Allocated Operating Cost Covered by Passenger-Related Revenue (exclude capital charges)	**route**	✓		
	Long-term avoidable operating loss per PM (exclude capital charges)	**route**		✓	
	Passenger-Miles per Train-Mile	**route**	✓		
	Adjusted (Loss)[1] per passenger-mile	**system**		✓	
On-Time Performance and Train Delays	**On-Time Performance (OTP).** This congressionally-mandated metric/standard will consist of two tests in FY 2009, and three tests beginning in FY 2010. **All tests applicable in a given year must be met for the route to be considered as meeting the OTP standard.**	**route**	✓		
	Test No. 1: **Change in "Effective Speed"[2]**				Effective speed must be equal to or better than the original baseline, based on the Fall/Winter 2007-08 System Timetable plus actual endpoint terminal lateness during FY 2007.

---

[1] The definition of Adjusted (Loss) is: Net Operating Loss (before net interest expense), less Depreciation, Other Post-Employment Benefits (OPEB's) and project costs covered by capital funding.

[2] "Effective Speed" is defined as a route's mileage, divided by the sum of (a) the scheduled end-to-end running time plus (b) the average endpoint terminal lateness. In other words, effective speed is the distance divided by the average time it actually takes for trains on the route to get from one endpoint to the other. Endpoint terminal lateness is reported on a zero tolerance basis—i.e., without any minutes of tolerance.

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

Metric/ Standard Category	Metric/Standard Subcategory	Reported by—	Statutory Requirement	Added Measure	Proposed Standard; Comments
	Test No. 2: Endpoint OTP				In FY 2009, Endpoint OTP[3] must be at least 80% for all routes except Acela (90%) and other Northeast Corridor (NEC) corridor routes (85%). By FY 2013, Endpoint OTP must be at least 95% for Acela, 90% for all other corridor routes (including non-Acela corridor routes on the NEC), and 85% for long-distance routes.
	Test No. 3: All-Stations OTP (Effective as of FY 2010)				Effective FY 2010, All-Stations OTP must be at least 80% for all routes except Acela (90%) and other NEC corridor routes (85%). By FY 2013, All-Stations OTP must be at least 95% for Acela, 90% for all other corridor routes (including non-Acela corridor routes on the NEC), and 85% for long-distance routes. This metric will be published immediately even though the test is not in effect until FY 2010.
	Train Delays—Off Northeast Corridor (NEC). This Congressionally-mandated metric/standard will consist of two tests:				Delays in all years must be less than the standards shown below, which were developed by regression.
	Amtrak-Responsible Delays per 10,000 Train-Miles	**route and host**	✓		250 minutes per 10,000 Train Miles.
	Host-Responsible Delays per 10,000 Train-Miles	**route and host**			700 minutes per 10,000 Train Miles. Direct causes of delay will also be shown for information (with no standard attached to them).
	Train Delays— On NEC Only. This congressionally-mandated metric/standard will consist of four tests:	**route and host**	✓		Delays in all years must be less than the standards shown below, which were developed by regression:
	Infrastructure delays				104 min. Acela; 123 min. other
	Passenger and Commuter Train Interference				67 min. Acela; 116 min. other

[3] A train is considered "late" if it arrives at its endpoint terminal more than 10 minutes after its scheduled arrival time for trips up to 250 miles; 15 minutes for trips 251-350 miles; 20 minutes for trips 351-450 miles; 25 minutes for trips 451-550 miles; and 30 minutes for trips of 551 or more miles. These tolerances are based on former ICC rules. An exception is that all Acela trips, regardless of run length, are considered late if they arrive at their endpoint terminal more than 10 minutes after their scheduled arrival time. A 15-minute tolerance is used for all-stations OTP, which is based on 49 U.S.C. Section 24101(c)(4) (Acela will continue to have a 10 minute tolerance for all-stations OTP).

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

Metric/ Standard Category	Metric/Standard Subcategory	Reported by—	Statutory Requirement	Added Measure	Proposed Standard; Comments
	3rd Party Delays (e.g., police actions)				37 min. Acela; 44 min. other
	All other delays				76 min. Acela; 187 min. other
Other Service Quality	Equipment-caused service interruptions per 10,000 train-miles	**route**	✓		This is an initial metric, intended to reflect objectively the quality of mechanical maintenance as perceived by the passenger. No standard is proposed. The metric would be reported on a route-by-route basis—not for the system as a whole.
	Percent of Passengers "Very Satisfied" [4] with Overall Service	**route**	✓		82 percent in 2009; 90 percent by 2013
	Percent of Passengers "Very Satisfied" with Amtrak personnel	**route**	✓		For each of these line-items: 80 percent in 2009; 90 percent by 2013
	Percent of Passengers "Very Satisfied" with Information Given	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Comfort	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Cleanliness	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Food Service	**route**	✓		
	Future: Percent of Passengers "Very Satisfied" with the overall station experience	**route**	✓		Future; standard to be determined
	Future: Percent of Passengers "Very Satisfied" with the overall sleeping car experience	**route**	✓		Future; standard to be determined
	Presentation of Amtrak passenger comment data by subject matter and major route grouping (NEC, other corridors, long-distance); see discussion	**type of route**		✓	No standard proposed; presented as supplementary information

---

[4] "Very Satisfied" with the service quality is defined as a score in the top three steps on a scale of eleven evaluation ratings that respondents can ascribe to each facet of the service. For a given service factor, "80 percent" means that 80 percent of respondents rated Amtrak in the top three of the eleven steps of the scale

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

Metric/ Stand-ard Category	Metric/Standard Subcategory	Reported by—	Statutory Require-ment	Added Measure	Proposed Standard; Comments
Service Availability/ Connectivity	Connectivity measure(s): Percent of passengers connecting to/from other routes. To be updated annually.	**long-distance route**	✓		No standard possible; improvement could require network changes
	Availability of other modes: Percent of passenger-trips to/from underserved communities.[5] To be updated annually.	**route, system**	✓		No standard possible; improvement could require network changes

---

[5] "Underserved communities" would be defined for this purpose as those more than 25 miles from a place with 50,000 or more inhabitants. This definition is subject to change as research progresses.

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

Provisional Staff Exposure Draft:
MAIN REPORT:
METRICS AND STANDARDS FOR INTERCITY PASSENGER RAIL SERVICE

Section 207 of Division B of Public Law 110-432 (the Passenger Rail Investment and Improvement Act of 2008—"the Act") states as follows:

(a) In General.—Within 180 days after the date of enactment of this Act, the Federal Railroad Administration and Amtrak shall jointly, in consultation with the Surface Transportation Board, rail carriers over whose rail lines Amtrak trains operate, States, Amtrak employees, nonprofit employee organizations representing Amtrak employees, and groups representing Amtrak passengers, as appropriate, develop new or improve existing metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations, including cost recovery, on-time performance and minutes of delay, ridership, on-board services, stations, facilities, equipment, and other services. Such metrics, at a minimum, shall include the percentage of avoidable and fully allocated operating costs covered by passenger revenues on each route, ridership per train mile operated, measures of on-time performance and delays incurred by intercity passenger trains on the rail lines of each rail carrier and, for long- distance routes, measures of connectivity with other routes in all regions currently receiving Amtrak service and the transportation needs of communities and populations that are not well-served by other forms of intercity transportation. Amtrak shall provide reasonable access to the Federal Railroad Administration in order to enable the Administration to carry out its duty under this section.

(b) Quarterly Reports.--The Administrator of the Federal Railroad Administration shall collect the necessary data and publish a quarterly report on the performance and service quality of intercity passenger train operations, including Amtrak's cost recovery, ridership, on-time performance and minutes of delay, causes of delay, on-board services, stations, facilities, equipment, and other services.

(c) Contracts With Host Rail Carriers.--To the extent practicable, Amtrak and its host rail carriers shall incorporate the metrics and standards developed under subsection (a) into their access and service agreements.

(d) Arbitration.--If the development of the metrics and standards is not completed within the 180-day period required by subsection (a), any party involved in the development of those standards may petition the Surface Transportation Board to appoint an arbitrator to assist the parties in resolving their disputes through binding arbitration.

The purpose of this Exposure Draft is to solicit comment, from the stakeholders identified in the Act, on a conceptual framework and proposed set of metrics and standards responding to Section 207.

Conceptual Framework

The metrics described in Section 207 of the Act fall into four basic categories, as follows:

- **Financial and operating.** These metrics would address cost recovery—the degree to which each route covers its operating costs from ticket and on-board food revenue. A related measure, ridership per train-mile operated, would capture

the intensity of use generated by each Amtrak route. These measures would address the **efficiency**—in purely commercial terms—of Amtrak's operations and finances.

- **On-time performance (OTP).** The March 28, 2008 report by the Inspector General of the U.S. Department of Transportation, "Effects of Amtrak's Poor On-Time Performance," found that poor on-time performance costs Amtrak over $100 million per year in lost revenues and increased costs.[6] In appropriation language for Fiscal Years 2008 and 2009, the Congress has emphasized the criticality of on-time performance—particularly the reliability of Amtrak trains on host railroads. Accordingly, the Act's language requires that on-time performance and minutes and causes of delay be reported by host carrier and by route, and that standards be set. This category is all the more important because deficiencies in performance could subject host railroads to fines administered by the Surface Transportation Board (STB), which the Act now endows with limited regulatory authority over passenger train service quality.

- **Other service quality.** In referring to "on-board services, stations, facilities, equipment, and other services," the Act is clearly attempting to characterize the quality of the typical passenger's experience of the intercity rail system. In so doing, the Act is addressing the **effectiveness** of Amtrak in responding to its broader mandate: to serve the public convenience and necessity by providing comfortable and convenient—and certainly, safe and healthful—service. These "other" (i.e., other than OTP-related) service quality factors are of critical importance because any major flaw in their execution—for example, rank discourtesy on the part of an Amtrak employee, plumbing failures in the retention sewage system now mandatory on Amtrak cars, a lack of working heat or air conditioning in a coach, sleeping car, or station, or a shortage of food on excessively-delayed runs—can ruin a passenger's trip and deprive Amtrak of repeat and word-of-mouth business and much-needed revenue. Indeed, every phase of the "passenger experience"—the summation of the traveler's encounter with the line-haul intercity mode and other modes of access and egress as he or she moves from true origin to true destination in a trip—could theoretically enter into the evaluation of Amtrak's performance, as a major flaw may occur at any point. (See Table 1.) Smooth connectivity among intercity and access/egress modes, including reciprocal through-ticketing and information arrangements, would clearly be a desirable element of intercity passenger transportation in the 21st Century. However, Amtrak's current responsibility extends only to a subset of the passenger experience, the number of manageable metrics is limited, and direct quantification of experiential factors may present stiff challenges, as will be discussed below. Thus, the "other" modes listed in the table cannot enter at this time into the metrics and standards under the Act.

---

[6] The report is available at http://www.oig.dot.gov/StreamFile?file=/data/pdfdocs/effects_of_otp_report_FINAL.pdf.

Table 1: Phases of the Passenger Experience[7]

Phase	Activity Location and Responsibility ("A" = Amtrak; "o" = others)			
	At home or office	On access/ egress mode(s)	At station	On train
Information – passenger inquires about intercity services and access/egress to and from them; obtains real-time travel information	**A, o**	**o**	**A, o**	**A**
Reservations/ticketing/ticket verification – passenger plans trip, buys transportation, and has transportation checked	**A**	**o**	**A. o**	**A**
Access – passenger reaches originating station, waits for train, boards		**o**	**A**	
Accommodation – passenger's creature comforts, necessities, and effects are provided for		**o**	**A**	**A**
Movement – passenger undergoes movement		**o**		**A**
Egress – passenger deboards train, traverses station, reaches destination		**o**	**A, o**	

- **Service Availability/Connectivity.** In the Act, the Congress expressed particular concern for the connectivity of long-distance routes with all regions currently receiving Amtrak service, and with the provision of transportation to areas that lack good service from other intercity travel modes. The degree to which Amtrak provides such connectivity and overcomes gaps in other modes' service depends largely on the size and train frequency of the Amtrak network. Expansions of long-distance service—either in route-mileage or in frequency—might well require additional funding from public sources. Thus, while small service adjustments may be possible on a site-specific basis, the availability and connectivity of long-distance services are largely outside Amtrak's short-term control. Even so, it is possible to provide some measures that would indicate to the Congress the degree to which connections are possible among routes, and the availability of service to locations that typically lack good access to other modes.

Application of the Metrics and Standards

As conceived in the Act, the metrics and standards have practical implications, as described in Table 2.

---

[7] Adapted from Neil E. Moyer and Richard M. Michaels, *User-Determined Priorities for Service Quality Control in a Railroad Passenger System,* Research Report of the Transportation Center at Northwestern University, 1972.

Table 2: Implications of the Section 207 Metrics and Standards

Topic	Use of Metrics/Standards	Enforcement Mechanism
Amtrak/Host Railroad Agreements (§207(c))	"To the extent practicable, Amtrak and its host rail carriers shall incorporate the [§207] metrics and standards into their access and service agreements."	
Long-Distance Routes (§210)	Amtrak is to evaluate annually the financial and operating performance of each long-distance route, to triage the routes into three equal groups based on their relative performance [under the §207 Metrics], and to develop comprehensive performance improvement plans (PIPs) over a three-year period.	FRA has enforcement responsibility under §210. If Amtrak falls short of its PIP objectives, FRA shall notify Amtrak, the DOT Inspector General, and the Authorizing Committees of the Congress; shall give Amtrak an opportunity for a hearing; and—if the route in question is among the worst-performing third—FRA may withhold appropriated funding for that route (except for safety/security funds).
Passenger Train Performance [in general] (§213)	The STB *may* initiate an investigation if the on-time performance of any intercity passenger train averages less than 80% for any 2 consecutive calendar quarters, *or* if the service quality of intercity passenger train operations for which minimum standards are established under section 207 fails to meet those standards for 2 consecutive calendar quarters. In addition, the STB *must* initiate an investigation upon the filing of a complaint by Amtrak, an intercity passenger rail operator, a host freight railroad over which Amtrak operates, or an entity for which Amtrak operates intercity passenger rail service.	The STB has the power to "identify reasonable measures and make recommendations to improve" the on-time performance of the train. If the delays, or failures to achieve minimum standards, are found to be attributable to a rail carrier's failure to provide preference to Amtrak as required by 49 U.S.C. section 24308(c), the Board may award damages against the host rail carrier as well as "such other relief to Amtrak" as the STB determines to be reasonable and appropriate.
Alternate Passenger Rail Service Pilot Program (§214)	The §207 metrics would come into play in this program as follows: • FRA is to evaluate bids against the §207 metrics; • Preference is to be given to projects involving one of the five worst- performing long-distance routes under §210, as ranked on the §207 metrics; • Operating and subsidy rights of any winning bidder are conditioned on its compliance with the §207 metrics.	
On-Board Service Improvements (§222)	Within one year from establishment of the §207 metrics, Amtrak shall develop and implement a plan to improve on-board services in accordance with the §207 metrics for such services, and shall report to the Congressional authorizing committees on that plan.	
Capital Assistance for Intercity Passenger Rail Service (§301)	The project's estimated performance against the minimum standards of §207 is a selection factor for project proposals under the State grant program. (49 CFR §24402(c)(2)(A)). "… the project's levels of estimated ridership, increased on-time performance, reduced trip time, additional service frequency to meet anticipated or existing demand, or other significant service enhancements as measured against minimum standards developed under section 207 of the Passenger Rail Investment and Improvement Act of 2008"	
Congestion Grants (§302)	Under 49 CFR §24105(b), "Projects eligible for grants under this section include projects— …(2) Identified by the Surface Transportation Board as necessary to improve the on time performance and reliability of intercity rail passenger transportation under section 24308(f);" Section 24308(f) is the STB process which relies on Section 207 metrics and standards.	

Topic	Use of Metrics/Standards	Enforcement Mechanism
High-Speed Rail (HSR) Corridor Program (§501)	The project's estimated performance against the minimum standards of §207 is a selection factor for project proposals under the HSR grant program. (49 CFR §26106(e)(2)(B)(i)(I))— similar wording as in §301.	

Principles for Selecting Metrics and Setting Standards

The Federal Railroad Administration (FRA) and Amtrak, jointly charged with developing the metrics and standards in consultation with the Surface Transportation Board (STB) and the other stakeholders named in Section 207 of the Act, have applied the following principles in going about their task:

- Metrics and standards should respond directly and transparently to the specific purposes laid out for them by the Congress. Section 213, for example, sets two quarters of OTP or other service quality standards established by Section 207 as benchmarks for future evaluations and potential STB action; therefore, the metrics should readily provide two quarters of OTP and service quality results.

- Metrics and standards must respond, at the very least, to the explicit Congressional requirement:

  - In Section 207(a): the percentage of avoidable and fully allocated operating costs covered by passenger revenues on each route, ridership per train mile operated, measures of on-time performance and delays incurred by intercity passenger trains on the rail lines of each rail carrier and, for long- distance routes, measures of connectivity with other routes in all regions currently receiving Amtrak service and the transportation needs of communities and populations that are not well-served by other forms of intercity transportation.

  - In Section 207(b): the performance and service quality of intercity passenger train operations, including Amtrak's cost recovery, ridership, on-time performance and minutes of delay, causes of delay, on-board services, stations, facilities, equipment, and other services.

- At least at the outset, metrics should be readily obtainable from existing Amtrak data, or through speedy consultation of Amtrak's data warehouse. Major programming efforts and research studies, with their attendant costs in terms of dollars and staff time, should be avoided.

- For the same reason, the establishment and prescribed use of metrics cannot entail the creation and deployment of new staffing and organizational structures, nor can it imply a return to a regulatory regime akin to that of the 1970s.

- Because underlying conditions may change with time, the metric- and standard-setting process will require periodic review and renewal. Changing information systems may, for example, make it possible to obtain previously unavailable categories of data. Similarly, Amtrak and host railroad performance on a given

metric may improve to such a degree that new, higher standards must be supplied to provide motivating goals.

- In general, where this draft proposes higher standards for 2013 than for 2009, the FRA and Amtrak envision that approximately one-third of the resulting increment will be added to the 2009 standard in each of the years 2011, 2012, and 2013. As a known special case with a higher beginning standard in FY09, and due to ongoing investments in the Northeast Corridor (NEC), Acela OTP would not be required to improve over its 90 percent standard until 2013, when the standard would rise to 95 percent.

Reporting Periods

Where data exist, the FRA and Amtrak propose to report on Amtrak's performance under the metrics for the following periods:

- Most recent quarter

- For certain OTP and service quality data: The prior quarter (to satisfy the need for data for "two consecutive quarters" under §213);

- Average of the most recent four quarters (i.e., rolling annual results)

- Each of the periods above versus the same period in the previous year

Schedule for Setting and Reporting On Metrics and Standards

The Congress established a deadline for adoption of final standards 180 days after enactment of the Act, or April 13, 2009. Amtrak and the FRA are working diligently toward that deadline. The FRA adds the proviso that any metrics and standards issued with FRA staff participation prior to the installation of the new Federal Railroad Administrator and other policy-makers reporting to the Secretary of Transportation must be regarded as provisional.

Once the metrics and standards are in place, the first report under Section 207(b) of the Act is intended to be issued at the beginning of the following calendar quarter. Thus (subject to the above proviso from FRA), publication of the standards on April 13, 2009 would be followed by a report on July 1, 2009, covering data for the quarters ending December 31, 2008 and March 31, 2009. Certain data elements—for example, financial performance utilizing Amtrak's new cost accounting system, which is actively in process of implementation—may need to be phased into the quarterly reports as necessary data become available.

Proposed Metrics and Standards

This section discusses each of the topical areas in greater detail, and proposes metrics and standards to be applied to each metric.

Financial/Operating Measures

Measures by route. The Act specifies "the percentage of avoidable and fully allocated operating costs covered by passenger revenues on each route." In strict compliance with this mandate, the FRA and Amtrak are proposing the following measures:

- **Route Revenues divided by Short-Term Avoidable Operating Expenses.** "Route Revenues" is the sum of the following items:

    o Total Passenger Revenue including Food & Beverage;

    o Total Mail & Express Revenue (includes package express and baggage revenue); and

    o Total State Revenue (State operating subsidies).

    All the above revenue elements are most appropriate for inclusion in this ratio, as they are earned through the incurrence of the operating expenses described below. For purposes of these metrics, State operating subsidies are appropriate elements of "Route Revenues" as the States are purchasing services with them: in a sense, they are a supplement to the passengers' ticket payments. [8] Thus, revenues and expenses are well matched.

    "Short-Term Avoidable Operating Expenses" are the operating costs that would cease within one year of a route's cancellation. As the Congress uses the term "operating" costs, capital charges are proposed to be excluded from the calculation of this measure, although such capital costs may appropriately enter into analyses for many other important purposes.

    The source for this and the next measure is intended to be the new "Amtrak Performance Tracking" (APT) system, which will provide short- and long-term avoidable, and fully allocated, costs by route. Because this data source will not be comparable with its predecessor, the "Route Profitability System" (RPS), year-over-year comparisons on these measures will only begin to be available with the fifth quarterly report that includes APT data.

- **Route Revenues divided by Fully-Allocated Operating Expenses.** This would be similar to the prior measure, except that the denominator would be the fully-allocated operating expenses. These are the operating costs that include, for each route, a fully-loaded share of overhead-type costs (for example, information technology at the corporate level) that pertain to more than one route or to the company as a whole.

- **Long-Term Avoidable (Loss) per Passenger-Mile.** Over and above the cost recovery ratios mandated in the Act, a key measure of each route's cost-

---

[8] From a purely economic standpoint, the operating efficiency of a particular route may arguably best be measured without the inclusion of state subsidies in revenues. This is particularly true as the State subsidies are calculated, over time, on the basis of actual (as opposed to State-subsidized) operating deficits, i.e., "revenues excluding State subsidies" minus expenses, among other factors.

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

effectiveness is its near-cash loss per unit of output, i.e., per passenger-mile generated. The loss per passenger-mile most directly identifies what each basic unit of route output (i.e., each passenger-mile of transportation that is generated), costs the public to produce. Use of this measure will facilitate comparisons of the cost-effectiveness of various routes and types of routes.

In addition to these financial measures, the FRA and Amtrak are proposing to include the metric "passenger-miles per train-mile" in response to the Congressional requirement to address "ridership per train-mile operated." The proposed metric reveals the average number of passengers on each of the route's trains.

Standards by route. Amtrak and the FRA are proposing a standard of "continuous improvement" for the three financial metrics: We will expect these metrics to improve each year from FY 2009 (the first year in which APT data will be available) through FY 2013. Because the APT will completely renovate the manner in which fully-allocated costs are calculated, and because Amtrak's accounting systems prior to APT have not generated avoidable costs, there is no historical basis for quantifying the improvement that can be expected each year on these measures.

The change in long-term avoidable (loss) per passenger-mile is intended to be measured on a constant-dollar basis.

. For passenger-miles per train-mile (PM/TM), neither a single nationwide standard nor a PM/TM standard for each major category of routes (e.g., non-NEC corridors, or long-distance routes) would be appropriate, due to route-by-route variances in equipment consists, density of population centers served, and funding sources.[9] Therefore, a "continuous improvement" standard on a route-by-route basis is proposed for PM/TM.

Corporate Measure: Adjusted (Loss) per Passenger-Mile. The numerator of the proposed measure ("Adjusted (Loss)") represents the summary result of the Company's operations, the fundamental purpose of which (according to the Rail Passenger Service Act of 1970) is to provide intercity passenger rail transportation, of which the denominator (passenger-miles) is the best measure. The lower the net cost per passenger-mile (i.e., the lower the "Adjusted (Loss)" per passenger-mile), the more efficiently Amtrak is fulfilling its raison d'être.

While Amtrak conducts other businesses than passenger transportation, such as real estate development, those other businesses exist fundamentally to defray the net cost of the core intercity passenger business by making the highest and best use of assets and capabilities that Amtrak has acquired in the course of its core activities. In other words, the other businesses are by-products. They would not exist, and Congress would likely never have created Amtrak, if their existence were an end in itself. The "Adjusted (Loss)," balancing the income from by-product businesses against the losses of the core passenger business, represents the net outcome of all the corporate activities that either fulfill or cross-subsidize the main purpose of the Corporation. Accordingly, the "Adjusted (Loss) per Passenger-Mile" is proposed as the best single measure of Amtrak's efficiency in accomplishing its basic purpose. This measure would best be presented on a constant-dollar basis, as shown in Figure 1:

---

[9] States are free to negotiate with Amtrak for as many train frequencies as they are willing to support, regardless of density of use.

Figure 1: Adjusted (Loss) per Passenger-Mile, 2002-2008
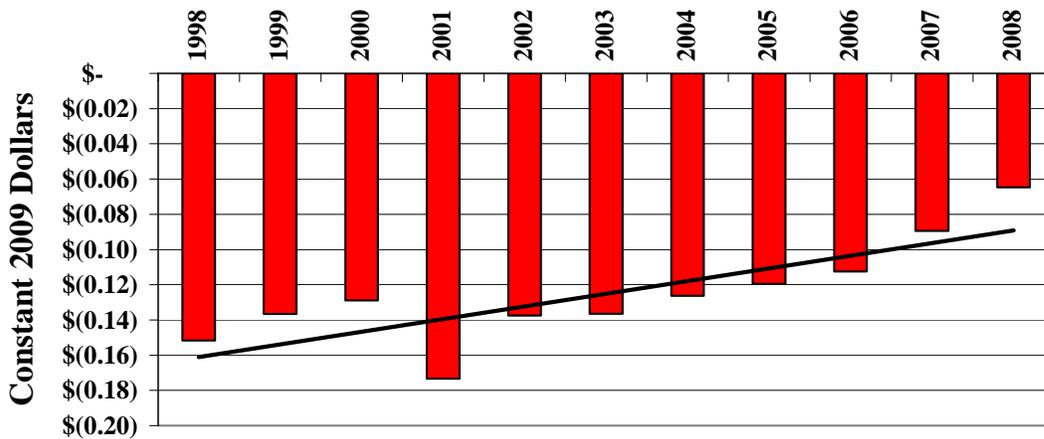
On-Time Performance Measures

Amtrak has been keeping track of, and reporting on, the on-time performance of its trains since its inception in 1971. In recent years, it has been making public very detailed OTP data in its Monthly Performance Reports (available at: http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title_Image_Copy_Page&c=am2Copy&cid=1081442674477&ssid=322. OTP reports are in section E.). As required by the FY 2008 Appropriations Act, the FRA has been setting standards for, and reporting on, Amtrak on-time performance for over a year. In the course of this OTP work, the FRA has described the various means of measuring OTP, and methods for standard-setting in the OTP arena. These materials are available on the following Web Site: http://www.fra.dot.gov/us/content/1996 .

Based on the extensive prior work of both organizations, and in keeping with the provisions of the Act, the FRA and Amtrak are proposing the following metrics and standards for OTP and delays:

On-Time Performance

Amtrak and FRA propose to apply three separate but related metrics to assess whether a route's OTP is satisfactory. These metrics are as follows:

(1) **Effective Speed.** As elaborated in the FRA's OTP reports to Congress, a route's effective speed is its mileage divided by the sum of (a) its scheduled end-to-end running time and (b) the average lateness of its arrivals at its endpoint terminals. *Example:* A route between Cities A and B is 1,000 miles long, Its scheduled trip time is 19 hours. On average, its trains arrive at their endpoint terminals one hour late. The effective speed is 1,000 divided by (19 + 1 = 20), or 50 mph,

(2) **Endpoint OTP.** This is the simple percentage of a route's trains that arrive at their endpoint terminals within a specified tolerance. The tolerance used varies by route length and is based on former ICC rules.[10]

(3) **All-Stations OTP.** This is the percentage of train times at all of a route's stations that take place within 15 minutes[11] of the time advertised in the timetable. (Acela has a tolerance of 10 minutes.) *Example:* A route has, in addition to its endpoints, three intermediate stations for a total of 5 train times per run. There is one round trip daily on the route. Thus, there are ten train times in total daily over the route, for a grand total of 3,650 train times per year. If 3,000 of those train times are within the mandated 15-minute grace period, the train has all-stations OTP of 3,000 divided by 3,650, or 82 percent.

These metrics work in combination to safeguard and advance the OTP of intercity passenger trains. The "endpoint OTP" is the traditional measure that Amtrak has been publishing since its inception. The "effective speed" metric is essential to protect the public, and serve its convenience and necessity, by preventing long-term "schedule creep," in which the running times of a number of routes have lengthened appreciably since 1971, even as OTP has declined. Under the proposed standard, a route's OTP cannot be considered satisfactory if its effective speed has worsened. However, such a standard preserves a modicum of flexibility for Amtrak and the freight railroads to mutually agree to review their passenger train schedules as long as the effective speed stays constant or improves. Finally, the all-stations OTP metric for the first time recognizes that most Amtrak passengers are traveling between, to, or from intermediate stations on the typical route. Moreover, Section 207 of the Act lays great emphasis on the quality of service to less-well-served communities, which are precisely those that are not at the endpoints of their routes. To capture the timekeeping perceived by the average passenger, therefore, it is essential to measure how well Amtrak and its hosts are succeeding in meeting the Congressional mandate to serve "all station stops within 15 minutes of the time established in public timetables." [emphasis added]

Accordingly, the following standards are proposed:

---

[10] A train is considered "late" if it arrives at its endpoint terminal more than 10 minutes after its scheduled arrival time for trips up to 250 miles; 15 minutes for trips 251-350 miles; 20 minutes for trips 351-450 miles; 25 minutes for trips 451-550 miles; and 30 minutes for trips of 551 or more miles. These tolerances are based on former ICC rules. An exception is that all Acela trips, regardless of run length, are considered late if they arrive at their endpoint terminal more than 10 minutes after their scheduled arrival time.

[11] The 15-minute tolerance for all-stations OTP is based on 49 U.S.C. Section 24101(c)(4).

> ***Standard for route-by-route OTP.*** *To meet the standard, a route must meet the first two of the following standards during FY2009, and all three of the following standards for Fiscal Years beginning in 2010:*
> *(1) Maintain an effective speed equal to or faster than that in effect at the time the FY 2008 Appropriation Act was enacted[12];*
> *(2) Meet an endpoint percent-on-time standard that varies by route type. Endpoint OTP must be at least 80 percent in FY 2009 for all routes except Acela (90 percent) and other NEC corridor routes (85 percent). By FY 2013, Endpoint OTP must be at least 95 percent for Acela, 90 percent for all corridor routes including non-Acela corridor routes on the NEC, and 85 percent for long-distance routes.*
> *(3) Beginning in FY 2010, meet an All-Stations OTP standard. All-Stations OTP must be at least 80 percent in FY 2010 for all routes except Acela (90 percent) and other NEC corridor routes (85 percent). By FY 2013, All-Stations OTP must be at least 95 percent for Acela, 90 percent for all corridor routes (including non-Acela NEC corridor routes), and 85 percent for long-distance routes.*

All-Stations OTP metrics will be published in the first quarterly report on metrics and standards. Implementation of the All-Stations OTP *standard* in FY 2010 will allow Amtrak and hosts to examine a potential need to reallocate recovery time in schedules.

Minutes of Delay

The FRA , as mandated by section 207 of the PRIIA, plans to report delays to Amtrak trains incurred over each 10,000 train-miles of operation for each route. This statistic normalizes minutes of delay data between routes and is derived from conductor reports that detail all deviations from a route's "pure run-time"[13] outside the NEC. The deviations from "pure run-time" (i.e. delays) can pinpoint the direct delays experienced by Amtrak trains and parties responsible for declining OTP (e.g., slow orders, freight train interference, and mechanical problems), thereby offering a path toward remedial measures. Use of "pure run-time," in calculating delays, is advantageous for many reasons:

- It is a stable number, which allows train delays to be consistently measured over time;

- It is a normalized, comparable measure across all off-NEC routes and hosts

- It provides a basis for remedial action, as it tracks train number, date, and delay location, duration, type, and responsibility (Host, Amtrak, 3rd Party);

- It is not subject to bias by "padding" schedules (since delays are measured against Pure Run Time);

- It records all direct causes of delays to the Amtrak train, not just selected delays;

---

[12] The benchmark effective speed is based on the Fall/Winter 2007-2008 timetable for scheduled running times, plus the average minutes of endpoint terminal lateness that each route experienced in FY 2007.

[13] The "pure run-time" is the fastest possible trip time for an Amtrak train over a route, with no interference or delays. The established "pure run-time", plus "recovery time" and "station dwell time," yields the published schedule for a route.

- It tracks to a searchable, sortable database with almost a decade of history, that is or can be made accessible to Amtrak, hosts and FRA through Amtrak intranet VPN ;

- It involves established, standardized rules that are applied nationwide; and

- Host railroads and Amtrak have the opportunity to identify and correct any errors for five days after the train origin date.

Amtrak calculates minutes of delay along the NEC using the published run-time ("pure run-time" plus "recovery time") of routes. Amtrak operations along the NEC tend to be stringent in execution, and therefore incorporate less "recovery time" than other routes. This existing variation in the means of calculating delay minutes within and outside the NEC can be normalized through a mathematical adjustment. Specifically, to account for the use of "published run-time" instead of "pure run-time" when calculating delays along the NEC, Amtrak and FRA have proposed tighter delay targets for NEC intercity operations.

In accordance with the legislative mandate, the FRA intends to report "delay minutes per 10,000 train-miles" for each route by both host railroad (e.g. freight railroads, commuter railroads, State agencies, and Amtrak on certain routes) and by direct cause of delay (i.e. freight train interference, slow orders, locomotive failure, etc.). To compliment the percent on time data in the report, "delay minutes per 10,000 train-miles" will be reported on both a rolling four-quarter average basis and for the most recent two quarters. In view of the above-mentioned differences in how Amtrak calculates minutes of delay, "delay minutes per 10,000 train-miles" will be reported on and off the NEC separately. Table 3 provides an example of host railroad and Amtrak delay data off the corridor while Table 4 provides an example for routes on the NEC. The tables account for the different host-responsible delays that affect Amtrak trains on and off the Corridor; trains such as the *Cardinal*, *Carolinian*, and *Crescent* are included in both tables to account separately for their operations both on and off the Corridor.

Table 3: **Amtrak Delay Minutes per 10,000 Train-Miles for Routes OFF the NEC**

(Sample Data)

| Route | Host | Route Miles | Total | Host-Responsible Delays | | | Amtrak-Resp. Delays |
				Slow Orders	Freight Train Interference	Other Host Resp	Total
Minimum Standard - Delays Below:			**700**				**250**
Xxx	XXX	XX	3,019	1,136	596	1,287	229
	XXX	XX	2,498	1,114	179	1,205	222
	XXX	XX	1,354	217	15	1,123	**306**
	XXX	XX	776	165	0	612	124
Xxx	XXX	XX	1,050	334	218	498	212
Xxx	XXX	XX	647	62	25	561	**883**
	XXX	XX	2,376	276	1,343	758	**559**
	XXX	XX	2,935	243	929	1,763	235
Xxx	XXX	XX	1,092	264	364	464	**348**
	XXX	XX	1,278	385	218	675	188
Xxx	XXX	XX	735	111	61	564	232
Xxx	XXX	XX	1,406	531	361	514	**580**
	XXX	XX	958	111	387	461	214
Xxx	XXX	XX	2,400	993	691	715	**695**
	XXX	XX	1,735	617	593	525	**449**
	XXX	XX	628	159	114	355	151
Xxx	XXX	XX	1,349	226	301	822	**305**
	XXX	XX	428	141	51	236	**783**
Xxx	XXX	XX	1,223	180	254	789	**445**
	XXX	XX	1,537	997	227	313	241
Xxx	XXX	XX	1,547	94	870	582	224
Xxx	XXX	XX	881	142	303	435	**288**
Xxx	XXX	XX	1,423	146	795	482	87
Xxx	XXX	XX	815	75	197	542	**742**
	XXX	XX	1,799	62	50	1,687	**974**
	XXX	XX	1,528	618	182	728	**366**
Xxx	XXX	XX	581	155	153	273	162

Table 4: Amtrak Delay Minutes per 10,000 Train-Miles for Routes ON the NEC (Sample Data)

Service	Host	Route Miles	Infrastructure Delays	Passenger+Commuter Train Interference	3rd Party Delays	All Other Delays
Acela Express	*Minimum Standard - Delays Below:*		**104**	**67**	**37**	**76**
	XXX *	XX	**115**	54	**56**	**104**
	XXX *	XX	**168**	**326**	40	**143**
Other Services	*Minimum Standard - Delays Below:*		**123**	**116**	**44**	**187**
Northeast Regional	XXX *	XX	**131**	**125**	77	**264**
	XXX *	XX	**220**	**453**	93	**307**
Keystone	XXX	195	91	100	**73**	166
Cardinal	XXX	226	73	**179**	157	**634**
Carolinian	XXX	226	74	**127**	26	**275**
Crescent	XXX	226	80	**194**	57	**356**
Palmetto	XXX	226	74	43	31	**394**
Pennsylvanian	XXX	195	83	93	19	**245**
Silver Meteor	XXX	226	71	**254**	32	**587**
Silver Star	XXX	226	107	**181**	75	**330**
Vermonter	XXX *	XX	**157**	**120**	50	**226**
	XXX *	XX	**325**	**519**	**119**	**486**

Table 3 and Table 4 show proposed standards for train delays by type. In the tables, historical values that would have exceeded such a standard, had it been in place, are shown in bold face. These proposed standards reflect extensive statistical research performed by Amtrak in 2008. In order to establish standards for train delays, regressions were run to determine the correlation between percent on time and delay minutes per 10,000 train-miles. Separate studies were undertaken for NEC and off-NEC routes, in order to account for the difference in how delays are measured in the NEC as well as the desire to set somewhat tighter standards for NEC operations than for host railroad operations. Details on the statistical basis of the delay standards appear in Annex A.

Table 5 recapitulates the proposed standards for train delays. It shows the proposed standards, which are based on the regressions described in Annex A. The OTP percentages driving the allowable delay minutes are less stringent than those applied in the OTP tests; this slight relaxation implements the basic principle that the standards should be realistically achievable and motivational in nature.

Table 5: Proposed Standards for Train Delays by Route

Route and Delay Category	Proposed Standards for All Years (2009 through 2013)	
	Delays per 10,000 train-miles (min.)	Based on OTP standard
All routes off the NEC		*80%*
Amtrak-responsible delays	*250*	
Host-responsible delays	*700*	
NEC routes:		
Acela		*90%*
Infrastructure delays	*104*	
Passenger/Commuter Train Interference	*67*	
3rd Party Delays	*37*	
All other delays	*76*	
All other NEC routes		*85%*
Infrastructure delays	*123*	
Passenger/Commuter Train Interference	*116*	
3rd Party Delays	*44*	
All other delays	*187*	

Other Service Quality Indicators

Although the establishment of metrics and standards for more subjective features of the intercity passenger rail experience presents challenges, the PRIIA is explicit on the point that standards shall be set—and used for a variety of purposes, including enforcement (Sections 210 and 222). Moreover, these subjective features of the passenger experience have intrinsic importance in view of Amtrak's fundamental responsibility for the well-being of its passengers.

In essence, there are three ways of ascertaining Amtrak's success in providing a satisfactory passenger experience:

- Through survey data, such as Amtrak's Customer Service Index (CSI);

- Through objective data that may shed light on quantifiable features of, or surrogates for, the passenger experience; and

- Through comment letters, such as arrive in Amtrak's customer relations department daily.

Survey Data

The CSI. Since 1995, Amtrak has measured the adequacy of its intercity passenger train service through its Customer Satisfaction Index (CSI), which is based on responses from mailed surveys. Each month, Amtrak sends out 14,300 surveys to previous customers of all Amtrak routes requesting feedback on the quality of service that was provided. The survey, which identifies the origin city, destination city, and the travel date of the previous customer, asks respondents to rate their satisfaction with Amtrak's service on an eleven-step scale. Amtrak considers a response on the top three steps of the scale as being "very satisfied." Amtrak also reports an average which is based on a average of all the responses to a survey. The survey asks

service-specific questions that fall into six basic categories: overall assessment of Amtrak's service; information provided by Amtrak; friendliness/helpfulness of Amtrak employees; comfort of the train; cleanliness of the train; and the food service on the train (see Table 6). In addition, the survey form asks about the passenger's perception of OTP (for which direct, objective measures exist on a daily basis), and his or her impression of the value of service received for the price paid (which mixes marketing with service quality aspects). These survey questions are reviewed every few years by Amtrak to ensure that results remain applicable and insightful. The current survey used for the CSI has been in use without modification for several years.

Table 6: Amtrak CSI Service Quality Assessment Areas

Overall perception of Amtrak Service
Overall satisfaction with Amtrak based on this trip
Willingness to recommend Amtrak to others based on this trip
Information Provided by Amtrak
Accuracy of information received about the train trip prior to boarding the train
Information given on the train about services/features/safety
Information given about problems/delays while on train
Clarity of announcements on the train
Friendliness/helpfulness of Amtrak Personnel
Friendliness/helpfulness of station personnel at boarding station
Friendliness/helpfulness of food service personnel on the train
Friendliness/helpfulness of the train conductors
On-Board Comfort
Comfort of seating area/room on the train
Smooth and comfortable train ride
Air temperature on the train
On-Board Cleanliness
Overall cleanliness of the train interior
Cleanliness of train windows
Cleanliness of the restrooms on the train
Smell of restrooms on the train pleasant/free of odor
On-Board Food Service
Availability of food service on the train
Quality/freshness of food on the train
Variety of food selections on the train

Importantly, the CSI addresses only a part of the passenger experience. The following table again shows those aspects of the passenger experience for which Amtrak is responsible, and counts the number of CSI questions addressing each:

Amtrak Responsibilities Shown in Black

Phase	At home or office	On access/ egress mode(s)	At station	On train
Information – passenger inquires about intercity services and access/egress to and from them; obtains real-time travel information	1*		1*	3
Reservations/ticketing/ticket verification – passenger plans trip, buys transportation, and has transportation checked			1‡	1
Access – passenger reaches originating station, waits for train, boards			1‡	
Accommodation – passenger's creature comforts, necessities, and effects are provided for				11
Movement – passenger undergoes movement (OTP falls in this category)				1
Egress – passenger deboards train, traverses station, reaches destination				
Totals by Location	1	0	3	16

Notes: *Both refer to the same question, "accuracy of information received about the train trip prior to boarding the train." ‡ Both refer to the same question, "friendliness/helpfulness of station personnel at boarding station."

Of the substantive questions on the questionnaire, 16 pertain to on-board information, ticket verification, accommodation, and OTP; three apply to stations, with no questions on station accommodations including basics like heat and restrooms; and one, to pre-trip planning information. There is also no question dealing specifically with sleeping car service, even though it accounts for significant revenue on a number of routes, and imposes a large price differential on its patrons. Of course, no questions deal with areas that are often outside Amtrak's direct control, like modes of access to stations, commuter rail connections, and parking—all of which are, however, critical to many travelers' mode choice decisions.[14] Thus, while offering insights into important aspects of the passenger experience, the CSI is of somewhat limited scope.

Mechanics of the CSI Survey. Amtrak over the past two years has received approximately 4,200 survey responses a month. The responses are summed by service type (i.e. Northeast Corridor, State supported/other corridor trains, long distance trains, and the entire Amtrak system) and are broken out for each individual route. The tabulations for the service types and routes show the percent of "very satisfied" responses (top thress steps on the eleven-step scale), the percent of "very dissatisfied" responses (bottom three steps), the average score

---

[14] See, for example, National Analysts, Inc. for the U.S. Department of Transportation, *The Needs and Desires of Travelers in the Northeast Corridor: A Survey of the Dynamics of Mode Choice Decisions,* February 1970, available at http://www.fra.dot.gov/us/content/1596 .

for each inquiry on the survey, and the percent change from the previous year's scores. The data tables show the most recent monthly data, the most recent three month averages, and the year to date averages. In terms of the survey results, Amtrak usually receives higher scores for the information it provides and the helpfulness of Amtrak employees while the topics of restrooms, food, and clarity of announcements tend to receive lower scores. Table 7 shows Amtrak's CSI for the *Blue Water* service for November 2008.

 Amtrak primarily looks at the CSI's three month averages, which ensures a robust sample size and thus greater statistical validity Amtrak does however, report CSI data on a monthly, three-month rolling average and fiscal year to date basis. CSI data are widely used by Amtrak

Table 7: Amtrak CSI for *Blue Water* Service for November 2008
(Numbers in parentheses in column headings refer to steps on the CSI's eleven-step rating scale.)

Blue Water
FY09 Customer Satisfaction Scores (with change vs year ago)
FY09 Overall Customer Satisfaction Goal (% Very Satisfied): 82%

	November 2008						3 Month Average						Fiscal Year to Date					
	% Very Satisfied (8, 9, 10)		% Very Dissatisfied (0, 1, 2)		Average Score		% Very Satisfied (8, 9, 10)		% Very Dissatisfied (0, 1, 2)		Average Score		% Very Satisfied (8, 9, 10)		% Very Dissatisfied (0, 1, 2)		Average Score	
	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.	CSI	Chg.
Overall CSI	83%	+4	1%	0	89	+6	75%	-2	4%	+2	83	0	77%	-1	4%	+2	84	+1
Friend./Helpful. of Boarding Sta. Personnel	83%	+9	5%	+3	86	+4	79%	0	4%	+1	85	0	82%	+4	3%	-1	86	+3
Friend./Helpful. of Train Conductors	86%	+10	2%	+1	88	+4	78%	-4	3%	+1	85	-2	78%	-1	2%	-1	86	+1
Friend./Helpful. of Food Personnel	82%	-2	1%	+1	88	0	76%	-8	4%	+2	84	-3	78%	-5	2%	0	86	0
Trip Info Prior to Boarding Train	91%	+6	0%	-2	93	+5	87%	+1	3%	+1	89	0	89%	+2	0%	-3	91	+2
Info Given on Services/Safety	80%	+3	1%	0	86	+1	72%	-4	3%	0	82	-2	74%	-3	1%	-2	83	-1
Info Given on Problems/Delays	76%	+8	4%	+2	82	+4	67%	-3	9%	+4	77	-3	70%	-1	6%	+1	79	-1
Clarity of Announcements	68%	+10	3%	-6	80	+9	56%	-4	8%	0	72	-1	60%	+3	5%	-4	74	+2
Comfort of Seating Area/Room	81%	+2	1%	+1	86	0	80%	0	2%	0	85	-1	77%	-1	0%	-2	85	-1
Smooth/Comfortable Ride	84%	+4	1%	+1	87	0	81%	-1	2%	+1	85	-2	81%	-4	1%	-1	85	-3
Air Temperature	81%	+14	4%	0	85	+6	75%	-1	4%	+1	82	0	76%	+2	3%	-1	84	+3
Overall Cleanliness of Train	78%	+3	1%	-1	83	+1	73%	-2	3%	0	80	-2	73%	0	2%	-2	81	0
Cleanliness of Train Windows	62%	-1	1%	-2	78	0	61%	-3	4%	0	75	-3	58%	-6	4%	0	75	-2
Restroom Cleanliness	58%	+5	6%	-1	75	+2	56%	-2	8%	+2	72	-1	55%	-3	7%	+1	73	0
Restroom Odor	62%	+2	7%	-1	74	0	58%	-3	9%	+1	72	-1	60%	-2	9%	0	73	-1
Availability of Food	79%	+6	1%	-4	86	+5	68%	-5	3%	-1	80	-1	70%	-2	3%	-1	80	-1
Quality/Freshness of Food	65%	-4	4%	+1	79	+1	59%	-3	6%	+2	74	-2	59%	-5	6%	+2	75	-2
Variety of Food	49%	-2	5%	0	72	+1	46%	-3	10%	+5	67	-4	44%	-6	10%	+4	67	-4
On-Time Performance	64%	+32	12%	-12	73	+20	48%	+3	21%	-4	61	+3	52%	+12	19%	-6	63	+7
Value of Amtrak Service for Price Paid	91%	+9	1%	0	91	+3	82%	-2	3%	+1	86	-2	85%	+1	1%	-1	88	+1
Number of Responses in Current Period	93						325						206					
Number of Responses Year Ago	92						292						195					

management to both identify service shortfalls and to set targets for improving service on a annual basis. For example, consistently low restroom cleanliness scores on the *Hiawathas* led Amtrak to hire restroom cleaning crews to service the toilets during the day. Amtrak noted that low scores in Amtrak employee service can be helpful in initiating efforts that improve the service of employees.

 CSI Goals. Amtrak's Product Management and Customer Service staff establish fiscal year goals for each route based on previous year performances and future factors that are expected to affect route performance (e.g. the expectation of significant track work in the

upcoming year). The goal is to have continuous improvement on each route, which typically equates to route scores improving by a couple of percentage points per year, although in some cases goals may not be set higher.   For example, the Acela goal for the current fiscal year was actually decreased because an ongoing concrete tie replacement project is projected to reduce OTP and lengthen trip times. Since OTP and the overall CSI are so closely linked, Amtrak management thought it counterproductive to set a goal that the company could not meet Highlighting Amtrak's efforts to continually improve its service, Amtrak's Overall CSI score reached 80 percent in 2008; an increase of eight percentage points since 2004.

Limitations of the CSI. Amtrak's CSI survey has a number of limitations. Passenger responses in all areas correlate strongly with on-time performance: Customers tend to have diminished perceptions of Amtrak's services when trains are late, typically resulting in lower CSI scores from respondents across the board. As a result, Amtrak encounters difficulties in gauging whether a low score for on-board services truly reflects substandard performance by staff and equipment, or whether the score represents passenger anger over the train's lateness. Another limitation is that the survey instrument has no space for a free response, which would allow respondents to specifically identify problems that Amtrak personnel can in turn act upon. Finally, Amtrak differentiates its survey responses by service class on the *Northeast Regional* and *Acela* services for the use of NEC Customer Services. Currently, surveys are sent separately to long distance passengers in coach versus sleeper accommodations, but the results are not reported separately because of significant sample size limitations.

Overview of the CSI. In conclusion, Amtrak's CSI provides only a very high- level overview of customer satisfaction. The survey results are heavily weighted towards the train on-board services and are significantly impacted by the train's on-time performance. In addition, there are a number of limitations in how the data can be analyzed and in the types of improvements that can stem from the survey results. However, collecting data on the adequacy of Amtrak's service is a very resource-intensive effort and Amtrak's CSI is an available, if imperfect, proxy for this important information.

CSI Metrics and Standards. Each of the following metrics would be the simple average of each group of questions. For the groups, see Table 6 above, "Amtrak CSI Assessment Areas."
- Percent of passengers "very satisfied" with <u>overall Amtrak service</u>.
- Percent of passengers "very satisfied" with Amtrak <u>personnel.</u>
- Percent of passengers "very satisfied" with <u>information</u> given.
- Percent of passengers "very satisfied" with <u>on-board comfort</u>.
- Percent of passengers "very satisfied" with <u>on-board cleanliness.</u>
- Percent of passengers "very satisfied" with <u>on-board food service.</u>

As indicated above, there are insufficient CSI data to create metrics regarding stations and sleeping cars, as the entire topic of station accommodations is omitted from the CSI. The FRA and Amtrak intend to remedy this lacuna by adding the following metrics:
- Percent of passengers "very satisfied" with the overall <u>station experience.</u>
- Percent of passengers "very satisfied" with the overall <u>sleeping car experience.</u>

Proposed Standards for CSI metrics. *For FY 2009, Amtrak and the FRA propose to adopt a minimum standard for each CSI-based metric of 80 percent "very satisfied" in FY 2009 and 90 percent in FY 2013; except that the "Overall perception of Amtrak service" would have an 82 percent standard in FY 2009 and 90 percent in FY 2013.*

Objective Data

Insight on the passenger experience can also arise, under certain circumstances, by means of statistical data on the company's operations.   As Section 222 of the Act places special emphasis on on-board services, as a foundation of on-board service is the quality of the coach, sleeper, diner, and lounge equipment, and as the Mechanical Department—responsible for equipment—keeps detailed records of its affairs, Mechanical Department data may offer special opportunities for use in these metrics, as an objective supplement to CSI data.

Amtrak's Mechanical Department has developed a measure, "equipment-caused service interruptions per 10,000 train-miles," that will offer some insight into the reliability and soundness of the fleet **as experienced by passengers**.[15]   In this proposed metric, a "service interruption" is defined as follows:

1. Any late train departure at origin due to an equipment problem with a delay greater than Amtrak's performance standard of service.
2. Any late train arrival at destination greater than Amtrak's performance standards of service due to an equipment problem.
3. Any en-route termination due to an equipment problem.
4. Any unplanned cancellation of any train due to an equipment problem.

Each event will be counted but duplicate or related events will be counted once. An individual train that experiences problems will be counted once as the reporting is repeated for the same issue over the route. A train that leaves on time and arrives at destination on time but experiences minor mechanical delays in-route will be excluded.

All train problem events will be summed over a calendar month period. Amtrak will then take the total mileage operated during the same period and divide the mileage by 10,000 to normalize the metric. Data will be provided on a route-by-route basis.

The FRA and Amtrak intend to provide this metric for information, instead of attaching a standard to it, as insufficient historical data exist on which to base such a standard. In addition, the Mechanical Department is continuing to research methods of focusing more intensively on the quality of the passenger experience aboard Amtrak's rolling stock. As improved measures become possible, they will be considered for incorporation into the regularly reported metrics.

---

[15] Safety—although always of supreme importance—does not enter into these particular Metrics and Standards, and there is no intention to duplicate the exhaustive and ongoing collection of safety data by the FRA's Office of Safety.

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

Comment Letters

The U.S. Department of Transportation's Aviation Consumer Protection Division publishes a comprehensive monthly report on airline service quality. The report contains the following sections[16]:

- Flight Delays;

- Mishandled Baggage;

- Oversales;

- Consumer Complaints;

- Customer Service Reports to the Dept. of Homeland Security; and

- Airline Animal Incident Reports

The Consumer Complaints section tabulates the number of complaints to each air carrier, by cause. It also reports, for each airline, the number of complaints per 100,000 enplanements. This section of the aviation report incorporates, in addition to complaints, "opinions," "comments," and "information requests" that are received.

Amtrak similarly collects and tabulates passenger reactions to its service—both positive and negative—that it receives via letters, e-mails, and telephone calls. While this information cannot possess statistical validity, in that only a motivated subset of passengers (particularly unhappy customers) will share their impressions of Amtrak's service, the data provide an additional prism—beyond the CSI and available objective reports—through which to assess the quality of the intercity rail passenger experience. For this reason, and on the analogy of the airline data that the Department of Transportation already shares with the public, the FRA and Amtrak are proposing to include in the quarterly metrics report a statistical summary of passenger comments received by Amtrak. As a means of reporting and characterizing both lapses and successes in customer service, this summary would provide a tabulation of both the positive and negative comment letters by subject matter. Route-by-route tabulations will not be provided, as such data may be regarded as too volatile— too dependent on specific incidents—to be of indicative value. However, on the analogy of the airline reports that provide data by carrier, it is proposed to break down the data by Amtrak's three major route groupings (Northeast Corridor routes, other corridors, and long-distance routes) as well as the system as a whole. The specific proposal is as follows:

For the System and the three route groupings, the tabulation would provide:

    a. Total comments received
    b. Distribution by type of comment (praise, inquiry, suggestion, or complaint);

---

[16] The report is available at http://airconsumer.ost.dot.gov/reports/index.htm

c. Number of comments, by type, per 1000 passenger-trips (analogous to the "complaints per 100,000 enplanements" in the aviation report); and

d. For complaints, distribution by cause. Annex B provides the list of train- and station-related causes that Amtrak uses to classify complaints. Additional major cause categories include "Bus service," "checked baggage/express," and "marketing and sales."

In view of the lack of statistical validity inherent in the comment letters, the FRA and Amtrak propose to provide these data for information only. We do not propose to set a standard based on the analysis of comment letters described above.

Indicators of Service Availability/Connectivity

Measures of Connectivity with other routes for Long Distance Trains

The reauthorization statute specifies that Amtrak and FRA must include, "For long-distance routes, measures of connectivity with other routes in all regions currently receiving Amtrak service."

Amtrak currently produces an annual report showing connectivity between all its routes each fiscal year, and has agreed to share the data with FRA for long distance routes. As Amtrak's analysis of these numbers shows that there are no significant changes from year to year, it is reasonable to assume that there is no significant variation from quarter to quarter. In addition, the report is data-intensive; to require it quarterly would entail considerable expense with little benefit. Accordingly, the FRA and Amtrak are proposing to use Amtrak's annual data which is updated after the end of each fiscal year. (Applicable data would, however, be included in each self-contained quarterly report.)

Thus, the metric would be, for each long-distance route: "Percent of passengers connecting to and from other routes in the Amtrak network."

With respect to a standard for this measure: Connectivity depends on the service that is offered (routes and frequencies) and the quality of that service (on-time performance especially). Amtrak currently has little flexibility to add routes and frequencies that would enhance connectivity; accordingly, any standards that might be proposed for connectivity improvement *per se* would not be realistically achievable within the planning horizon of the PRIIA authorization Of course, OTP is measured separately and in great detail; and improvements in OTP would provide the best surrogate measure of improved connectivity for the time being.

Transportation Needs of Communities Not Well Served

For long distance routes, the PRIIA requires a metric to measure how long distance trains serve "the transportation needs of communities and populations not well-served by other forms of intercity transportation." If this provision were implemented literally, this requirement would require an in-depth and complicated study which the FRA and Amtrak lack the resources to complete.

The last comprehensive effort to determine where Amtrak trains provide the only scheduled intercity passenger transportation was completed in June 2005 by the Department's Bureau of Transportation Statistics. That study made no attempt to evaluate whether or not a community was "well-served" but rather if it was served at all. To build on this detailed approach would necessitate the creation of a definition of "well-served," followed by a comprehensive study of which of the communities served by Amtrak are not well-served. Such a detailed analysis would require many months and significant resources, and thus would not allow Amtrak and the FRA to meet the Congressional mandate.

Instead, the FRA and Amtrak propose to start with the assumption that all of rural America is underserved by public common-carrier transportation. Then we would identify the proportion of passengers by Amtrak route going to and from rural communities (which we would define, on a preliminary basis, as those places beyond 25 miles of a community of 50,000 or more). To do this, it is necessary to determine which stations serve rural areas before identifying the number of passengers going to/from those stations. The resulting metric would be, for each route, the "percent of passenger-trips involving rural origins and/or destinations."   Preliminary analysis suggests that 132 of Amtrak's 500 stations serve "rural" communities; this analysis, and the definition of "rural" communities, will be refined prior to the issuance of the first report on the Act's Section 207 metrics and standards.

More detailed studies of this important topic might conceivably fall under the purview of the independent entity to be engaged to fulfill Section 208 of the Act ("Methodologies for Amtrak Route and Service Planning Decisions"). For example, such an independent entity could be directed to study the issue of how increasing the number and frequency on Amtrak's long distance routes can improve service to rural communities that are not well served by other modes of scheduled intercity transportation.

It would be premature to set a standard for the "percent of passenger-trips involving rural origins and/or destinations" as this statistic—similar to that for connectivity— would not be under Amtrak's control in the short term. To raise that percentage would require either major changes in Amtrak's route structure and frequencies (for which funds do not exist, and which are the subject of investigation under Section 208 of the Act), or major scheduling changes that would assign better arrival/departure times at rural locations, to the possible detriment of major revenue-producing points.

Annex A:
Standard-Setting for Delay-Minutes per 10,000 Train-Miles

In order to establish minimum standards for train delays, regressions were run to determine the correlation between percent on time and delay minutes per 10,000 train-miles. Separate studies were undertaken for Northeast Corridor and off-Northeast Corridor routes, in order to account for the difference in how delays are measured in the Northeast Corridor as well as the desire to set tighter standards for Northeast Corridor operations than for host railroad operations.

Off the Northeast Corridor, it was determined that 1,030 minutes of delay per 10,000 train miles correlates with an 80 percent endpoint on time arrival rate (see Figure A- 1). After rounding up to 1,050 minutes, this delay must be apportioned between Host, Amtrak, and 3rd Party responsible causes.

Figure A- 1: Total Delays off the NEC Corridor vs. Percent On Time
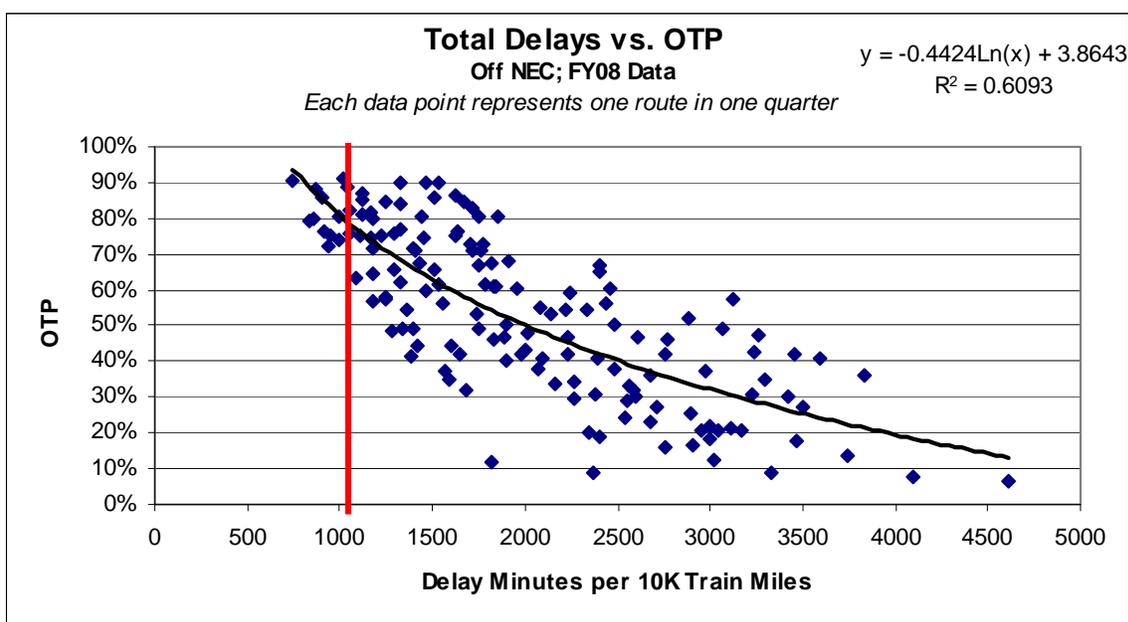
Regressions were then run to determine the relationship between host-responsible delays and OTP. This analysis found that 690 minutes of host-responsible delay per 10,000 train miles correlates with 80% OTP (Figure A- 2). This number was rounded up to generate the standard of 700 minutes per 10,000 train miles.

Figure A- 2: Total Host Responsible Delays off the NEC Corridor vs. Percent On Time
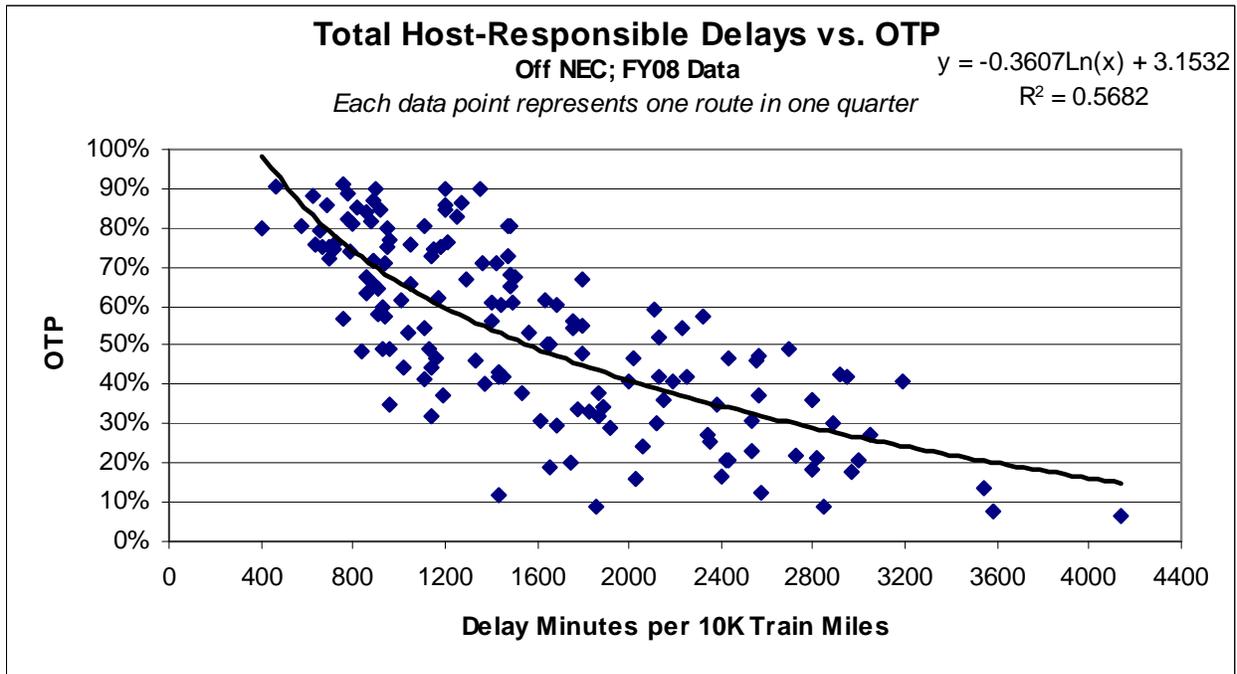
As illustrated in Figure A- 3, Amtrak-responsible delays off the Northeast Corridor are not a large enough portion of total delays to independently drive OTP up or down. Therefore, the non-Host delays (1,050 – 700 = 350 mins) were apportioned between Amtrak and 3rd Party responsibility based on historical experience. During Amtrak's FY 2008, Amtrak delays represented 70% of combined Amtrak and 3rd-Party (i.e., non-Host) delay minutes. The standard for Amtrak-responsible delays is therefore set as 70% of 350 minutes = 245 minutes, rounded up to 250 minutes per 10,000 train miles.

Figure A- 3: Amtrak Responsible Delays off the NEC Corridor vs. Percent On Time
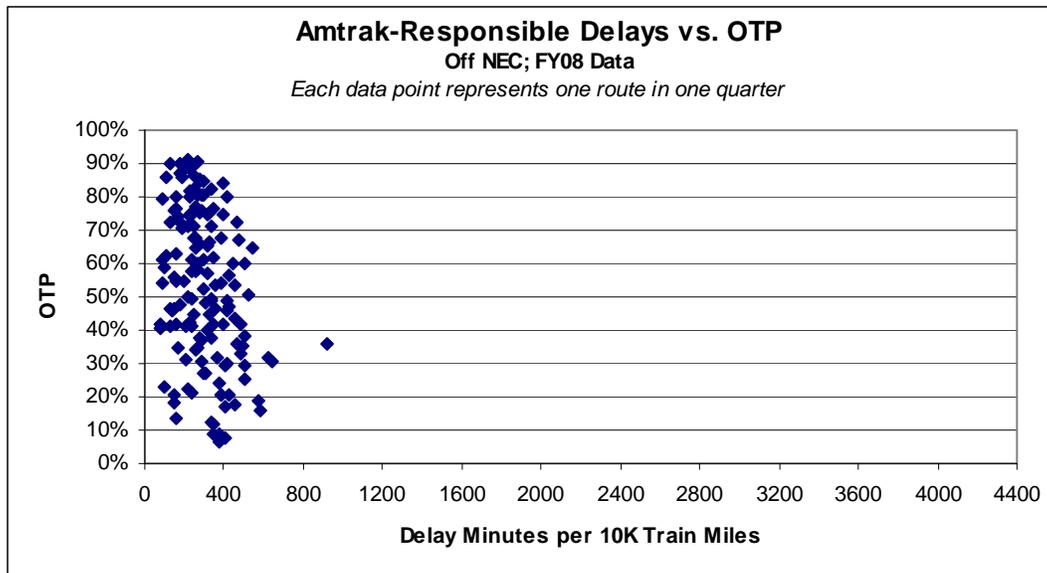
Similar regression studies were undertaken to determine the correlation between endpoint on-time performance and minutes of delay on the Northeast Corridor. Two separate studies were completed, one for Acela Express service using a 90% endpoint arrival rate and one for Northeast Regional/Keystone services using an 85% endpoint arrival rate.

An existing Acela Express mathematical regression model was applied using daily FY08 data to determine the minutes of delay threshold that correlates to 90% endpoint on time performance. It was determined that 285 minutes of delay per 10,000 train miles correlates with a 90% endpoint on time arrival rate. Delays per 10,000 train miles were then apportioned across the delay categories based on minutes of delay incurred by each category in FY08.

The Keystone & Northeast Regionals On Time Performance (OTP)-Delay study used daily performance and delay data from FY08. The study evaluated the relationship between OTP and delays. OTP was defined as the share of trains that arrived at endpoint within their endpoint tolerance for a particular day and delays were defined as total delay minutes incurred normalized to 10,000 miles operated. The OTP and delay data were plotted and the relationship (shape, slope, intercept, R^2) calculated. The total delay target of 470 minutes of delay per 10,000 train miles was derived by finding the total delays incurred on days when endpoint arrival performance was 85% or better. It was determined that 470 minutes of delay per 10,000 train miles correlates with an 85% endpoint on time arrival rate (Figure A- 4). Delays per 10,000 train miles were then apportioned across the delay categories based on minutes of delay incurred by each category in FY08.

Figure A- 4: Total Delays on Northeast Regional & Kestone Service on the NEC Corridor vs. Percent On Time
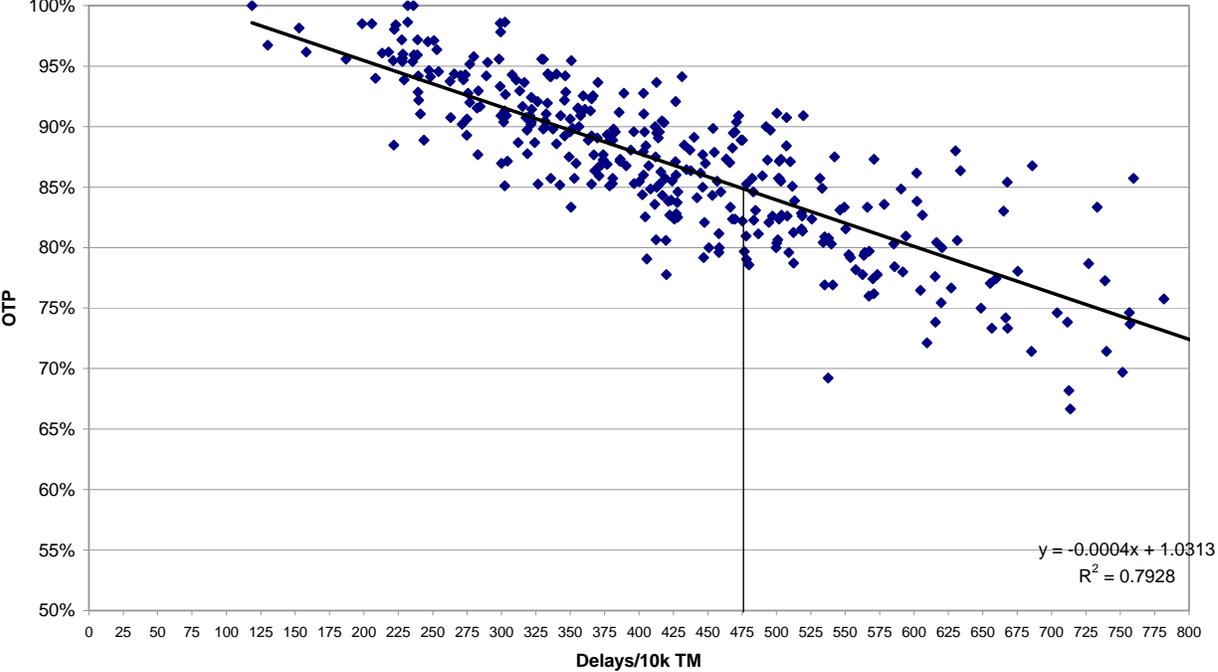
$y = -0.0004x + 1.0313$
$R^2 = 0.7928$

Annex B

Amtrak's System for Classifying
Station- and Train-Related Complaints

STATION	FACILITY	ADA ISSUES
		CLUB ACELA
		ELEVATOR, ESCALATOR UNAVAILABLE
		ENVIRONMENTAL ISSUE
		LOCATION INCONVENIENT
		LOCKERS INADEQUATE
		LUGGAGE SCREENING
		METROPOLITAN LOUNGE
		NO CHECKED BAGGAGE
		PARKING FACILTIES
		PUBLIC TELEPHONE/TTY
		QUIK TRAK
		RESTROOMS DIRTY/UNSTOCKED
		SCHEDULES/BROCHURES UNAVAILABLE
		SECURITY/SAFETY ISSUE
		SIGNAGE
		STATION DIRTY/UNMAINTAINED
		STATION HOURS
		STATION UNSTAFFED
		TAXIS UNAVAILABLE
		TRAIN INFORMATION DISPLAY
		WAITING ROOM UNSATISFACTORY
	PERSONNEL	ASSISTANCE - ADA
		ASSISTANCE - GENERAL
		COMMUNICATIONS PROBLEM
		DIVERSITY ISSUE
		EMPLOYEE ACTIONS UNSAFE
		POOR UNIFORM/GROOMING
		PHOTO ID CHECK
		RUDE
		SLOW/INEFFICIENT/UNHELPFUL
		TICKET PROBLEM
		UNAVAILABLE
		UNSATISFACTORY SERVICE RECOVERY
TRAIN	AMENITIES	BEVERAGE
		BLANKET
		GIFT
		MEAL
		NEWSPAPER
		ON-BOARD ENTERTAINMENT
		PILLOW
		WAKE-UP CALL
	DINING SERVICES	ADA ISSUES
		DINER - TEST

PROVISIONAL STAFF DRAFT—Subject to subsequent review and revision by appointed policy-makers in the U.S. Department of Transportation

	FOOD DEPLETED
	FOOD POISONING
	FOOD SELECTION
	FOOD/ SERVICE UNSATISFACTORY
	FULL DINING SVC NOT OFFERED
	HOURS UNSATISFACTORY
	MENU UNAVAIL FOR MOB IMP
	PRICING
	SLOW SERVICE
	SPECIAL MEAL NOT PROVIDED
	TABLE SEATING UNSATISFACTORY
EQUIPMENT	ACCOMMODATION UNSATISFACTORY
	ADA ISSUES - ACCOMODATIONS
	ADA ISSUES - COACH
	ADA ISSUES - DINER
	ADA ISSUES - LOUNGE
	BED MALFUNCTION
	CALL BUTTON INOPERABLE
	CAR PLACEMENT UNSATISFACTORY
	CLIMATE CONTROL
	DOOR MALFUNCTIONING
	ELECTRICAL POWER NOT AVAILABLE
	ENVIRONMENTAL ISSUE
	HEADREST COVERS
	LIGHTING PROBLEM
	MULTIMEDIA PROBLEM
	COMMUTER EQUIPMENT UNSATISFACTORY
	PUBLIC ADDRESS PROBLEM
	RAILFONE SERVICE
	RESTROOMS - DIRTY
	RESTROOMS - MALFUNCTIONING
	RESTROOMS - NOT STOCKED
	RESTROOMS - ODORS
	RESTROOMS - UNSATISFACTORY
	ROUGH RIDE
	SAFETY ISSUE
	SEAT UNCOMFORTABLE
	SEAT/LEG REST BROKEN
	SHOWER MALFUNCTION
	SUBSTITUTION UNACCEPTABLE
	TRAIN DIRTY - EXTERIOR
	TRAIN DIRTY - INTERIOR
	UNAVAILABLE - ACCOMMODATION
	UNAVAILABLE - DINER
	UNAVAILABLE - LOUNGE
	UNAVAILABLE - SPECIALTY CAR
	UPPER BERTH UNSATISFACTORY
	VERMIN/RODENTS
	WATER - NO HOT WATER
	WATER - NO WATER

	WINDOWS SCRATCHED/DIRTY
CUSTOMER PROBLEM EN ROUTE	ACCOMMODATION SIZE UNSATISFACTORY
	ADA - SERVICE ANIMAL ISSUE
	ADJACENT SEATING
	CAR DAMAGED/PILFERAGE
	CELL PHONE USE
	DAMAGED CARRY-ON/CLOTHING
	DEA INTERDICTION
	EXCLUSIVE OCCUPANCY - GROUP
	CUSTOMER INJURED
	CUSTOMER REMOVED FROM TRAIN
	LOST/STOLEN CARRY-ON
	LOWER LEVEL SEATING
	NO SEATING
	PROBLEM RIDING BACKWARDS
	PROBLEM WITH ANOTHER CUSTOMER
	SEATING CONFIGURATION UNSATISFACTORY
	SECURITY ISSUE
	SSR (SPECIAL SERVICE REQUEST)
	SSR - ADA
LOUNGE SERVICES	FOOD DEPLETED
	FOOD POISONING
	FOOD SELECTION
	FOOD UNSATISFACTORY
	HOURS UNSATISFACTORY
	MENU UNAVAILABLE FOR MOBILITY IMPAIRED
	PRICING
	SLOW SERVICE
PERFORMANCE	ALTERNATE TRANSPORTATION PROVIDED
	ANNULLED/DISRUPTION
	LATE TRAIN
	MISSED TRAIN CONNECTION
	ONBOARD DELAY LETTER
	SERVICE DISRUPTION MISHANDLED
PERSONNEL	ASSISTANCE - ADA
	ASSISTANCE - GENERAL
	CARRY-BY
	COMMUNICATIONS PROBLEM
	DIVERSITY ISSUE
	EMPLOYEE ACTIONS UNSAFE
	ONBOARD TICKET PROBLEM
	POOR UNIFORM/GROOMING
	RUDE
	SLOW/INEFFICIENT/UNHELPFUL
	SMOKING POLICY ENFORCEMNT
	UNAVAILABLE
	UNSATISFACTORY SERVICE RECOVERY