U.S. Department of
Transportation
**Federal Railroad
Administration**

Methodology for Determining the Avoidable and Fully Allocated Costs of Amtrak Routes

Volume III, Appendices B–H

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Appendix B:

Family Cost Distribution

A Note Regarding Family Cost Distribution Data

When Amtrak's Fiscal Year (FY) 2007 data is used as an example, Appendix B shows the total of Amtrak's expenses corresponding to each Amtrak Performance Tracking (APT) Subfamily. The table provides a perspective on the relative sizes of the various Subfamilies and illustrates the extent to which Amtrak's expenses are widely disbursed across the many functional areas and activities involved in operating the enterprise.

The Capital Family is shown with depreciation and interest expenses as a placeholder, pending actual calculation of the synthetic capital charge. The new capital charge will replace both of these expenditures in the methodology for estimating Fully Allocated and Avoidable Costs. The rationale and procedure for the new capital charge is found in Section 7.7.1 and Appendix E.

Expense totals shown as "Operating Costs" represent the Volpe Center's best efforts to extract, from Amtrak's Financial Information System (FIS), accounts that carry through to the expense section of the company's audited income statement. In actual practice, such extraction must be performed by Amtrak, which has the detailed accounting data necessary, particularly for entries requiring separation into capitalized and non-capitalized or expenses portions. Also shown in Appendix B, for each APT Subfamily, are "Operating Costs with Capital Expenditures"—the total FY07 expenditures recorded in these FIS accounts, including those capitalized—are shown in Appendix B for each APT Subfamily with the Capital Family as a placeholder.

Family #999, Nonoperating, is a unique family that contains both revenues and expenses (passenger and other Amtrak revenues are part of Family #000, Revenue). It is listed in this table to show the expenses associated with Subfamily #992 Interest Expenses. The other two Subfamilies in this Family, #991, Interest Income, and #993, Capital Contributions, are listed in the table but contain no expenses. The Revenue Family #000 is not listed in the Table because it does not contain any expenses.

Table B-1. Family Cost Distribution, Fiscal Year 2007						
Family	**Subfamily #**	**Subfamily Name**	**Operating Cost**	**Share of Operating Cost**	**Operating Cost with Capital Expenses**	**Share of Operating Cost and Capital Expense**
MoW #100	101	MoW Track	$53,935,886	1.64%	$156,949,579	3.78%
	102	MoW Communications & Signal	$47,309,035	1.44%	$92,703,108	2.23%
	103	MoW Electric Traction	$27,380,499	0.83%	$65,192,410	1.57%
	104	MoW Bridges & Buildings	$25,478,519	0.78%	$62,545,537	1.51%
	105	MoW Support	$48,698,281	1.48%	$241,800,412	5.82%
MoE #200	201	MoE Turnaround	$111,266,923	3.39%	$113,846,897	2.74%
	202	Loco Maintenance	$54,588,706	1.66%	$54,920,688	1.32%
	203	Car Maintenance	$41,253,350	1.26%	$41,670,396	1.00%
	204	MoE Support	$63,449,025	1.93%	$68,726,659	1.65%
	205	MoE - Multiple	$122,879,284	3.75%	$123,380,062	2.97%
	206	HSR Maintenance	$58,957,244	1.80%	$64,123,907	1.54%
	207	Back Shop	$40,762,525	1.24%	$202,355,059	4.87%
Ops-Transportation #300	301	OBS	$230,855,052	7.04%	$231,443,496	5.57%
	302	T&E	$271,678,355	8.28%	$272,259,681	6.56%
	303	Yard	$55,675,192	1.70%	$55,898,034	1.35%
	304	Fuel	$121,577,472	3.71%	$121,190,393	2.92%
	305	Transportation - Multiple	$34,859,800	1.06%	$35,024,320	0.84%
	306	Train Movement	$68,384,356	2.09%	$69,159,693	1.67%
	307	Train Movement-Host RR	$89,137,459	2.72%	$91,886,409	2.21%
	308	Transportation Support	$75,287,343	2.30%	$80,711,089	1.94%
	309	Power - Electric Traction	$98,203,001	2.99%	$100,184,670	2.41%
Sales & Mktg #400	401	Sales	$15,710,856	0.48%	$23,907,475	0.58%
	402	Information & Reservations	$77,781,880	2.37%	$83,552,237	2.01%
	403	Marketing	$57,249,908	1.75%	$57,528,177	1.39%
Stations #500	501	Stations-Route	$33,929,924	1.03%	$34,048,535	0.82%
	502	Stations-Shared	$150,124,340	4.58%	$155,663,360	3.75%
General & Administrative #600	601	Corporate Administration	$301,963,770	9.21%	$224,771,472	5.41%
	602	Centralized Services	$199,090,991	6.07%	$234,616,950	5.65%
	603	Qualified Mgmt.	$157,264,052	4.80%	$107,428,230	2.59%
	604	Direct Customer (Non-NTS)	$5,123,070	0.16%	$9,421,846	0.23%
	605	Subsidiary	$30,206,098	0.92%	$17,329,020	0.42%
Capital #700	701	Capital	$444,143,445	13.54%	$467,091,492	11.25%
Utilities #800	801	Utilities	$16,181,350	0.49%	$17,025,350	0.41%
Police, Security & Enviro/Safety #900	901	Police	$34,756,249	1.06%	$35,502,547	0.85%
	902	Security Strategy & Special Ops	$6,951,384	0.21%	$8,015,174	0.19%
	903	Environmental & Safety	$7,601,296	0.23%	$9,761,595	0.24%
Nonoperating #999	991	Interest Income	-	-	-	-
	992	Interest Expense	$0	0.00%	$321,099,240	7.73%
	993	Capital Contributions	-	-	-	-
Totals			$3,279,695,919	100%	$4,152,735,198	100%

Appendix C:

Glossary

Account: In Amtrak's general ledger system, the Financial Information System (FIS) is a record related to an asset, liability, owner's equity, revenue, or expense of an entity. In the context of Amtrak, the accounting classification of transactions recorded in FIS. Each account is assigned a six-digit numeric code. One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

Account Code Key (ACK): The unique combination of six codes that is associated with expense records in FIS that form the base costs to be allocated. The six components of the ACK, also called the Primary Account Key, are Responsibility Center (ResCen), Business Line, Account, Function, Location, and User Reserve Field (URA).

Activity Group: A fixed list of trains and other ancillary businesses to which costs are allocated (see Section 5.3.4).

Allocated cost: The shared or indirect cost apportioned among a group of trains and/or other businesses and customers by an Allocation Statistic.

Allocation: The process of distributing shared costs or revenues to individual train services and other businesses and customers.

Allocation Statistic: A **v**ariable used for allocating shared or pooled costs to individual train services and outputs of Amtrak's ancillary businesses. The best allocation statistics are cost "drivers"—activities for which variation in their levels would logically be expected to cause the value of a particular shared cost or cost pool to vary.

Americans with Disabilities Act (ADA): The 1990 law that prohibits discrimination and ensures equal access for persons with disabilities. Access to rail passenger systems is covered by U.S. DOT regulation and rail equipment can be identified as ADA-compliant.

Amtrak Performance Tracking (APT): Amtrak's new cost-accounting system that will replace the legacy Route Profitability System (RPS), using the allocation and avoidable cost methodologies described in this report.

Ancillary Businesses: Business units within the overall Amtrak enterprise that are separate from the core business of operating the National Train Service (NTS). The other businesses are Commuter Infrastructure Access (CIA), Commuter Operations (COP), Freight, Reimbursable, and Commercial.

APT Line: A reporting tool used by Amtrak staff to track specific types of costs within the overall APT system. A particular APT Line corresponds to a specific type of activity.

Assigned Costs: In APT, these costs are directly assigned to trains or other businesses and customers rather than allocated. Examples are some direct train labor and costs linked to ancillary businesses on the basis of their Function or Account codes.

Attributed Costs: A subset of Fully Allocated costs defined for management use in the RPS system. The term is not used in the new APT methodology.

Avoidable Costs: Costs that would cease to be incurred within a specified time period if Amtrak discontinued a given service or activity. These include all direct costs for providing a service or conducting an activity, plus the incremental portion of any indirect or shared costs that is clearly associated with that service or activity. To be meaningful, any reference to avoidable costs must specify both a service or an activity and a relevant timeframe over which costs can be eliminated.

Base-Increment Train: A train with base and increment portions. The base portion is funded entirely by Amtrak, whereas the increment portion is partially funded by an outside party, such as a State government. For example, the portion of Amtrak's northbound Vermonter that operates between Washington, DC, and New Haven, CT, is the base train, whereas the portion that operates from New Haven to St. Albans, VT, is the increment portion.

Below the line (BTL): Costs that are not allocated to the NTS.

Between-effects Model: A model type used for estimating long-run Avoidable Costs. The model shows the effect of varying activity levels on cost when those levels differ among the ResCens that conduct a specific activity.

Business Line: Specific cost object, which can be a train or another Amtrak ancillary business or customer, such as a freight railroad using Amtrak-owned track. A unique customer number is assigned to each. One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

Business type: A broad category of all businesses in the Amtrak enterprise; this includes the core NTS business as well as ancillary businesses, such as Commuter Infrastructure Access (CIA), which refers to all commuter agencies that operate on Amtrak-owned track.

Capital Charge (CC): The measure of the annual costs associated with the capital assets that Amtrak currently employs to operate the NTS and support its other Business Lines.

Change of Residence: New employment at a point (1) in excess of 30 miles from the employee's place of residence, and (2) located farther from the residence than was the former work location.

Chart of Accounts: A listing of Amtrak's ResCen, Business Line, Function, Account, and Location codes and descriptions used in Amtrak's financial accounting systems including FIS and RPS.

Commercial (COM): A category of Amtrak's Business Lines; refers to businesses that operate on Amtrak property under agreements, usually paying Amtrak for the right. Typical Commercial customers are retail businesses in Amtrak stations. Commercial also records costs incurred in performing services related to Maintenance-of-Way (MOW) and structures that originate from

revenue diversification activities. Usually, these costs involve assets that will not be used in providing Amtrak NTS service in the future and are not relevant to classifications related to avoidability.

Commissions: The cost paid to outside travel agencies for the services they provide in selling Amtrak train tickets to the general public.

Commuter: General category of Amtrak's Business Lines, further divided into two subcategories: (1) Commuter Infrastructure Access (CIA), which refers to commuter agencies that operate on Amtrak-owned track, and (2) Commuter Operations (COP), which are commuter agencies for which Amtrak provides services such as operating or maintaining trains under formal contract agreements.

Commuter Contract Operations (CCO): A Business Line through which Amtrak provides services, such as maintenance or operating trains, under formal contract agreements with commuter agencies with Amtrak receiving revenues. These are also referred to as **Commuter Operations,** or **COP.**

Commuter Infrastructure Access (CIA): A Business Line through which commuter agencies operate on Amtrak-owned track under agreements that include payments to Amtrak for this right. The agreements may also cover usage of other Amtrak-owned infrastructure, especially stations and yard facilities.

Commuter Operations (COP): Same as **Commuter Contract Operations,** or **CCO.**

Commuter Trains: Trains operated by an outside commuter rail agency, such as Metra in Chicago or the Massachusetts Bay Transportation Authority (known as MBTA) in Boston.

Cost: Any expense, financial outlay, or commitment or use of economic resources incurred or paid out. In the context of the cost accounting methodology development project, this includes all costs currently allocated by RPS, depreciation costs or a capital charge related to ownership or use of capital assets, and costs related to Amtrak's ancillary businesses.

Cost Group: See **Activity Group.**

Cost Objects: An accounting term for entities to which costs are allocated. In the APT methodology, these refer to Amtrak's NTS and its other ancillary businesses and customers.

Cost Pool: In general terms, it is an accumulation of similar costs associated with a group of activities, services, or other outputs for the purpose of cost analysis or allocation. In estimating Amtrak's Fully Allocated costs, the cost pool is "what is being allocated." For Amtrak, cost allocation is the distribution of accumulated or pooled costs among individual activities, services, or outputs logically associated with specific cost pools through the use of allocation statistics. In the context of RPS, cost pools are associated with either predetermined groups of trains or all trains passing through a particular region or station.

Customer: In APT, the lowest level of cost objects to which costs are allocated; this includes Amtrak's NTS trains, Amtrak-operated commuter systems, commuter agencies using Amtrak infrastructure, and other parties that reimburse Amtrak for services, access, or use of its facilities and infrastructure.

Customer Activity Expense (CAE): In APT, the sum of all direct and allocated costs, including capital charges, that are assigned to the NTS and other ancillary businesses, except for costs of G&A Subfamilies #601–603.

Customer Numbers: Unique identifiers that are associated with each cost object. For Amtrak trains, the customer number is the train number. Each ancillary business customer has a unique alphanumeric code.

Depreciation: A decrease in market value of a capital asset over time, representing the cost of ownership and the consumption of an asset's useful life.

Direct Costs: Costs that are directly expended or committed in the process of producing a service or other output and that can be traced in the accounting system exclusively to that service and output in an economically feasible manner.

Directly Assigned (Cost): The portion of Fully Allocated Costs that is assigned rather than allocated; synonymous with **direct costs.**

Dismissal Allowance: A monthly allowance equal to one-twelfth of an employee's compensation during the last 12 months before the date first deprived of employment as a result of a transaction; it is adjusted to reflect subsequent general wage increases and reduced by unemployment benefits and outside earnings.

Dismissed Employee: An employee who, as a result of a transaction, is deprived of employment because of the abolition of his/her position or the loss thereof is a result of the exercise of seniority rights by another employee whose position is abolished as a result of a transaction[1] and who is unable to obtain another position by exercise of his or her railroad seniority.

Displaced Employee: An employee who, as a result of a transaction, is placed in a worse position with respect to compensation and rules governing working conditions.

Displacement Allowance: The monthly allowance equal to the difference between an employee's average monthly compensation and time paid for during the 12 months before the transaction[1] and the reduced compensation on a new assignment.

Electric Traction: Power source for electrified locomotive service.

Expense (Expenditure): Charges incurred, whether paid or unpaid, which are presumed to benefit Amtrak in the current fiscal year.

Family: The grouping of ResCens into cost categories on the basis of similarity of costs and activities as reflected by Functions, Accounts, and other factors. Examples include Maintenance-of-Way (MoW), Maintenance-of-Equipment (MoE), and Transportation Operations.

FELA (Federal Employers Liability Act): A Federal workers' compensation law for protecting and compensating railroad workers injured on the job.

Financial Information System (FIS): Amtrak's general ledger system that records all financial transactions such as revenues and expenditures.

Fixed Cost: Costs that do not vary within a specified time period in response to changes in the volume or type of a train service or other business activity; this includes costs incurred to provide the capital facilities and organization necessary to do business, such as rent, property taxes, and some interest expenses. These costs typically remain constant until changed by a management decision.

Fixed-effects Model: A model showing the effect on costs of changes in an activity level from 1 period to the period immediately following. Represents a short-run cost function showing how costs change within 1 year of changes in the related activity level.

Freight: Ancillary business that captures costs to Amtrak incurred by freight railroads for operating on Amtrak's network and on freight railroad networks.

Fuel: In APT, this refers only to diesel fuel for trains.

Fully Allocated Costs: Total costs for providing a service or producing an output. This includes all direct costs incurred to provide the service/produce the output, the incremental portion of any indirect and/or or shared costs associated with the service/output, and a portion of corporate general and administrative expenses and other fixed expenses. The sum of Fully Allocated Costs for all services and other outputs will equal the total of all Amtrak corporate-wide costs. This applies to both Amtrak's core NTS passenger rail operations and its noncore business operations. Corporate general and administrative costs are allocated to all Business Lines to avoid inflating the Fully Allocated Costs of Amtrak routes.

Function: In Amtrak's FIS, this is the nature of an activity or type of work performed. Examples include Train Operations (FN1631), Track Maintenance (FN1703), and Sales (FN1201). Each Function is assigned a four-digit numeric code. One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

General and Administrative (G&A) Costs: The costs incurred in operating the entire Amtrak enterprise that cannot be directly associated with a specific service or customer.

Host Railroad: A freight railroad that owns the track over which an Amtrak route operates.

Incremental Cost: The increase or decrease in either a specific cost or a group or pool of costs as a result of increasing or decreasing the level of a service or from changing some attribute of a service or other output. In contrast to Avoidable Costs, which include incremental costs associated with complete cessation of some service or output, incremental costs usually apply to limited changes, particularly limited increases. Certain costs increase or decrease only over large increments of service whereas other costs change continuously.

Indirect Cost: The costs of resources committed or used as a result of the production of a service or other output; these costs cannot be traced in the accounting system exclusively to that service and/or output in an economically feasible manner.

Interest: The fee paid on borrowed capital.

Joint Cost: The cost associated with inputs used to produce more than one type of output or product.

Labor Protection: Collectively bargained financial obligations that are paid to labor in the event of certain reductions in or eliminations of service.

Location: Physical location that is associated with a transaction posted to FIS. Each location is assigned a four-digit numeric code. One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

Long-term: For the purpose of this report, it refers to a period of time after 5 years, beginning in the 6th year.

Marginal Costs: The change in cost associated with a very small change in output.

National Train Service (NTS): Amtrak's core business is that of providing intercity passenger-train service.

Objects: See **Cost objects** and **Outputs or product.**

Operating Costs: The recurring expenses related to operating Amtrak, excluding depreciation and interest costs.

Operation Redblock: Amtrak's drug-and-alcohol-prevention program.

Operations Management System (OMS): Amtrak mainframe-based system that calculates and maintains statistics such as mileage, unit trips, and frequency.

Other Business Lines (OBL): See **Ancillary Businesses.**

Output or Product: An immediate quantity resulting from the internal work performed. Amtrak's core output or product is trains operated.

Overhead Costs: Management and support costs in addition to direct operating costs of producing outputs or products.

PAS/ALMS: Amtrak's Passenger Accounting System/Automated Lift Match System.

Primary Account Key: See **Account Code Key (ACK).**

Profile: A listing of Functions, Accounts, Allocation Statistics, and sometimes ResCens, which together define the allocation rules for a specific Subfamily or Subcategory.

Protective Period: The period of time following a transaction during which an adversely affected employee is eligible to receive labor protection benefits. The length of the period depends on an employee's years of service.

Random-effects Model: A model producing avoidable-cost estimates that are a weighted average of the between-effects model and the fixed-effects model. Its estimates are valid only if they are not statistically different from those produced by the fixed-effects model.

Real Estate: Parcels of land owned by Amtrak that are leased to third parties as part of the Commercial ancillary business.

Recollectable: An expense with a function that indicates it will be reimbursed by a commuter agency; for example, FN 2302, Recollectable MOE, records MOE expenses and is reimbursable by various commuter agencies but is not covered by reimbursable contracts.

Redblock: See **Operation Redblock.**

Reimbursable: All costs incurred under contract for repair work to be subsequently billed to outside parties.

Relocation Expenses: If a change of residence is required during the protective period, the employee is entitled to reimbursement for (1) all moving expenses, (2) travel expenses (including living expenses) for him-/herself and family members, (3) actual wage loss up to 3-working days, and (4) losses arising from the sale of his/her home.

Responsibility Center (ResCen): In Amtrak's FIS, this is an organizational unit for which a specific manager can be held accountable for financial results. In the context of Amtrak's accounting system, the organizational unit responsible for incurring a specific expense recorded in FIS. Each ResCen location is assigned a four-digit numeric code. (There can be more than one ResCen per location.) One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

Revenue Diversification: Amtrak revenues from noncore businesses such as real-estate ventures in the Commercial Business.

Route: A line of travel or common service level offered within a market by a group of trains, as originally defined by Congress and updated by Amtrak's Train Number Committee. Generally, routes provide passenger-rail service between two major locations and to intermediate points between them.

Route Profitability System (RPS): Amtrak's legacy cost-accounting system, which will be replaced by the Amtrak Performance Tracking (APT) system.

Separation Allowance: A lump-sum paid in lieu of all other benefits and protections to a dismissed employee, who is unable to obtain a position within the company and chooses to resign.

Shared Costs: The costs incurred at a ResCen that support more than one service or other output and that cannot be uniquely associated by their Account, Function, or Location Code with an individual service or output. These costs must be allocated among the services and/or outputs associated with the ResCen.

Short-term: Time period beginning 1 year after a change in service.

Special Projects: A project or task with costs that are separately identified and captured; this project could be reimbursable or NTS-related.

Special Trains: Trains operated by Amtrak outside of the normal operating schedule such as chartered trains or other trains without a train number.

Stat Qualifier (SQ): A filter used with some allocation statistics in APT to find a value that corresponds to only a portion of the total activity the statistic measures. For example, a (total) train-mile statistic might be "stat qualified" to measure the portion for a track segment between two intermediate city pairs it serves; this stat qualified train-mile statistic could then be used in allocating costs for maintaining or operating this particular track segment. The use of SQs in APT permits a closer alignment of costs and activity statistics and results in a more accurate allocation of costs. Types of SQs in APT include City/Station Pair, Equipment Type, Station, and ResCen.

State-supported Service: Amtrak trains that receive a portion of operating costs from individual States to provide service to an area not served by the Amtrak network or to add scheduled stops to an existing route.

Strategic Reform Initiative (SRI): A financial analysis and reporting approach focusing on five broad Amtrak Business Lines with costs reported for three types of passenger rail operations (Northeast Corridor, State Corridor, and National Long Distance) and two other Amtrak-owned Business Lines (Infrastructure Management and Ancillary Businesses). The costs associated with overhead support for the entire national system, consisting of all five Amtrak Business Lines, are accounted for separately for each line.

Subcategory: Grouping of ResCens within a Subfamily that perform a subset of overall activity; identified to track specific activity costs.

Subfamily: A more specific grouping of ResCens within a Family that perform a similar function, as reflected by Functions, Accounts, and other factors; unified by a common allocation methodology.

Suboperating Activity: An Amtrak-defined Function for which "sub" refers to intra-Amtrak (intercompany) subsidiary operations.

Subtrain Level: Specific onboard services provided on a train, such as dining, entertainment, and checked baggage, or type of equipment used such as sleeping, dining, and lounge cars.

Total Activity Cost (TAC): A customer's total costs, including those for the MOW, Maintenance of Equipment, Operations-Transportation, Sales & Marketing, Stations, Utilities, and Police (Regional) Families. Excludes G&A, Capital, Police (National), and Environmental/Safety.

Total Boards and Deboards (TBD): Total passengers boarding or deboarding a train at a station.

Total Costs: The sum of avoidable and fixed costs.

Train: A connected set of rail vehicles that travels between two stations, usually stopping at intermediate stations along the way. Most trains have scheduled departure times from the origin station and planned arrival times at destination stations. Trains are directional: a train going in the opposite direction is considered a different train even if it is simply the same equipment returning to a former origin point.

Train Group: Type of Activity Group that contains a specific list of trains to which costs are allocated.

Train Number: Unique numeric code identifying each Amtrak train.

Train Segment: Portion of a train between consecutive stops.

Transaction: In matters involving labor protection, a discontinuance of intercity rail-passenger service to less than three times a week on a route.

Transfer: A shift in cost (or revenue) from one ResCen or Business Line to another, to reflect modification of costs from the initial ACK expense record.

Unallocated (Cost or Expenditure): General ledger costs not allocated by APT to customers.

Unit(s): One or more pieces of rail-rolling stock, including both locomotives and cars.

Unit Cost: The average cost of providing one unit of some measure of service or other output; usually estimated as the quotient of a cost (or cost estimate) and a quantity of output or activity. This is calculated by dividing a cost or cost estimate (e.g., labor, fuel, and all avoidable costs) by an output or activity measure (e.g., train miles and revenue passenger miles). Unit costs are typically used to allocate indirect and/or shared costs. They can also serve as measures of operational performance.

Unit Number: A unique numeric identifier for each piece of Amtrak rolling stock.

Unsettled Wages: FIS expense accrued in anticipation of future costs associated with union contract settlements.

User Reserve Field (URA): Field that allows users to enter additional relevant information, such as Work Element Number, Train Number, Unit Number, and equipment type, for a specific FIS expense record. One of the six elements of the Account Code Key (ACK) associated with each FIS entry.

Variable Costs: Costs that vary in direct proportion to changes in the level of a train service or other output. Semivariable costs (also called mixed costs) vary with changes in the level of service and/or other output, but, unlike variable costs, they do not vary in direct proportion to those changes. Step-variable costs remain constant over limited changes in level of service and/or output but increase instantaneously by a given increment when service or output volume reaches certain thresholds.

Variability: Variation in individual costs allocated to particular trains, routes, and RPS lines, or in the total cost of running a particular service over successive time periods for which cost allocations are conducted. Cost variability should bear some relationship to changes in the level of service provided or to explainable changes in resources used per unit of service provided. Variability of allocated costs should be monitored, and allocations should be adjusted so that unexplainable variability is minimized or eliminated.

Work Element Number: The seven-digit numeric code used for tasks, projects, and detail transactions tracked by Amtrak's Project Cost Management System.

Appendix D:

Definitions of Allocation Statistics

Definitions of Allocation Statistics

Overview

The following is a list of and descriptions of the statistics used in the Avoidable and Fully Allocated Costs methodologies recommended in this report. This list will likely be updated as APT is implemented and refined.

Statistics from other Amtrak information systems, such as FIS, OMS, and PAS/ALMS, are predefined. Manual (MNL) base statistics are user-defined, but, as the name suggests, they are acquired through "manual" entry rather than through a direct automated interface with another Amtrak information system. These "manual" statistics may be calculated with use of other software; generally, they are not calculated "by hand."

Statistics are reported monthly. Unless otherwise indicated, they are reported for individual trains, and, where appropriate, for individual route segments, or "legs," within a given train.

Table D-1. APT Statistics

#	Code	Name	#	Code	Name
1	ACM	Auto Carrier Miles	25	CUT	Car Unit Trips
2	ACU	Auto Carrier Units Used	26	CUU	Car Units Used
3	AEM	AEM7 Locomotive Miles	27	DBD	Deboards Excluding UNK & ZZZ
4	AEU	AEM7 Units Used	28	DCM	Dining Car Miles
5	ALM	Acela Locomotive Miles	29	DLH	Dining Labor Hours
6	ALU	Acela Units Used	30	DLU	Diesel Locomotive Units Used
7	AMU	Amfleet Units Used	31	DPUF	Diesel Power Usage Factor
8	AUU	Amfleet I and II Units Used	32	DRV	Dining Car Revenue
9	AXM	Amfleet Car Miles	33	DSU	Diesel Switcher Units Used
10	AYU	Amfleet II Units Used	34	DUM	Diesel Unit Miles
11	BCM	Baggage Unit Miles	35	DUT	Diesel Locomotive Unit Trips
12	BDS	Boards Excluding UNK & ZZZ	36	ECM	Electric Car Miles
13	BGU	Baggage Units Used	37	EHU	HHP Locomotive Units Used
14	CAC	California Cars Units Used	38	ELH	Enginemen Labor Hours
15	CAE	Customer Activity Expense	39	ELU	Electric Locomotive Units Used
16	CAL	California Locomotives Units Used	40	EPUF	Electric Power Usage Factor
17	CCM	Coach Car Miles	41	EUM	Electric Locomotive Unit Miles
18	CCR	Coach Class Riders	42	EUT	Electric Locomotive Unit Trips
19	CHR	Crew Hours	43	F59	PHI Locomotive Units Used
20	CLH	Coach Labor Hours	44	FCR	First Class Riders
21	CLU	Heritage Units Used	45	FCRV	First Class Revenue
22	CPM	Coach Class Passenger Miles	46	FPM	First Class Passenger Miles
23	CRV	Coach Revenue	47	FTT	Frequency
24	CSM	Coach Seat Miles	48	GEU	GE Locomotive Units Used

Table D-1. APT Statistics (continued)

#	Code	Name
49	GTM	Gross Ton Miles
50	GTT	Gross Trailing Ton Miles
51	HPL	HHP Locomotive Miles
52	HZU	Horizon Units Used
53	LUT	Locomotive Unit Trips
54	LUU	Locomotive Units Used
55	MDC	Mechanical Direct Costs
56	MWDC	Maintenance-of-Way Direct Costs
57	NON	No Statistic Used
58	OLH	Onboard Labor Hours
59	P2U	P42-8 Units Used
60	P3N	P32AC-DM Units Used
61	P3U	P32-8 Units Used
62	PCM	Business Class Car Miles
63	PDM	P32 Loco Unit Miles
64	PPU	Push Pull [Push/Pull?] Units Used
65	PRV	Passenger-Related Transportation Revenue
66	PSM	Business Class Seat Miles
67	PUT	Passenger Unit Trips
68	RSO	Usage Time for RSO Operations
69	SBM	Sleeping Berth Miles
70	SCM	Sleeping Car Miles
71	SFU	Surfliner Units Used
72	SLH	Sleeping Labor Hours
73	SLM	Superliner Car Miles
74	SLU	Superliner I Units Used
75	SM	Seat Miles
76	SUU	Superliner Units Used
77	SYU	Superliner II Units Used
78	TAC	Total Activity Cost
79	TAS	Travel Agent Sales
80	TBD	Total Boards and Deboards
81	TCM	Total Car Miles
82	TEH	Train and Enginemen Hours
83	TLH	Trainmen Labor Hours
84	TLM	Total Locomotive Miles
85	TPM	Total Passenger Miles
86	TRD	Total Riders Including UNK & ZZZ
87	TTC	Total Seat Miles
88	TTM	Total Train Miles
89	TTU	Talgo Equipment Units Used
90	UM	Unit Miles (Base Statistic)
91	UU	Units Used (Base Statistic)
92	UT	Unit Trips (Base Statistic)
93	VLU	Viewliner Units Used
94	WBD	Trip-Length-Weighted Boards and Deboards

Number: 1

Code: ACM

Name: Auto Carrier Miles

Definition: Total miles that Auto Carrier cars on a train travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by an Auto Carrier car on a given train in revenue service in a given month, for a one-way trip, times number of Auto Carrier cars per train, times number of days the train operated in that month.

Amtrak's *National Consist Book* indicates that an Auto Carrier (8 vans or 10 autos) has a code of FN.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 2

Code: ACU

Name: Auto Carrier Units Used

Definition: Auto Carrier Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Auto Carrier cars, including spares, used to operate a train in a given month. Calculated as percentage of a month, in hours, that an Auto Carrier car is assigned to a given train, times number of Auto Carrier cars used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent to one piece of equipment used for the entire month. A train's Units Used statistic is a noninteger value (i.e., a decimal number) and can be less than 1.0.

Units Used are time- rather than mileage-based statistics. The estimation process tries to account for all time spent by each equipment unit, whether in revenue status or not.

Time spent is categorized into the following six categories:

- Time spent moving in revenue service,
- Terminal dwell time before a revenue move,
- Terminal dwell time subsequent to a revenue move,
- Time spent repositioning between cities or "deadheading" (not in revenue service),
- Terminal dwell time before deadheading, and
- Terminal dwell time subsequent to deadheading.

The methodology charges half of the terminal time to the prior move and half to the subsequent move. To avoid extremely large allocations due to shop moves or equipment taken out of service for repair, the total terminal time allocated to trains is limited to 72 or 36 hours each for the prior and subsequent moves.

Only the first three categories of time, which are related to revenue service, are charged to trains in APT. Deadheading, related terminal time, and terminal time in excess of 72 hours are still accounted for so that total Units Used can be reconciled with total fleet counts.

The following is a hypothetical example. In July, a certain train consist runs back and forth between Chicago and Carbondale, IL making one round trip a day; it is not used for any other purpose in that month. It has a P42 locomotive and four type-X coaches. There are no schedule interruptions or changes in equipment; that is, the same consist makes a round trip on each of the 31 days in July. The round trip corresponds to two trains on the schedule. Thus, each train has 0.5 Unit Used for the P42 and 2.0 Units Used for the four type-X coaches.

Amtrak's *National Consist Book* indicates that an Auto Carrier (8 vans or 10 autos) has a code of FN.

Reported APT stats for Units Used by type of car are at the train/leg level.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 3

Code: AEM

Name: AEM7 Locomotive Miles

Definition: Total miles that AEM7 Locomotives on a train travel for all one-way trips.

Units: Locomotive miles

What is being measured: Total number of miles traveled by an AEM7 Locomotive on a given train in revenue service in a given month, for a one-way trip, times number of AEM7 Locomotives per train, times number of days the train operated in that month.

Amtrak's *Northeast Corridor Consist Book* indicates that an AEM7 (Electric Locomotive) has a code of AEM7.

Reported APT stats for Locomotive Miles by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 4

Code: AEU

Name: AEM7 Units Used

Definition: AEM7 Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of AEM7 electric locomotives, including spares, used to operate a train in a given month. Calculated as the percentage of a month, in hours, that an AEM7 electric locomotive is assigned to a given train, times number of AEM7 electric locomotives used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *Northeast Corridor Consist Book* indicates that an electric locomotive has a code of AEM7.

Reported APT stats for Units Used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 5

Code: ALM

Name: Acela Locomotive Miles

Definition: Total miles that Acela power cars travel for all one-way trips.

Units: Locomotive miles

What is being measured: Total number of miles traveled by an Acela train in revenue service in a given month, for a one-way trip, times number of Acela power cars per train, times number of days the train operated in that month.

Amtrak's *Northeast Corridor Consist Book* indicates that an Acela Express power car has a code of LP.

Reported APT stats for Locomotive Miles by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 6

Code: ALU

Name: Acela Units Used

Definition: Acela Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Acela "cars," including spares, used to operate a train over a month. Calculated as the percentage of a month, in hours, that an Acela car is assigned to a given train, times number of Acela cars used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *Northeast Corridor Consist Book* indicates that Acela equipment has the following codes:

Acela Express Café: LB,
Acela Express Middle Business Class: LC,
Acela Express End Business Class: LE,
Acela Express End First Class: LF, and
Acela Express Power Car: LP.

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 7

Code: AMU

Name: Amfleet Units Used

Definition: Amfleet Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Amfleet I cars, including spares, used to operate a train during a month. Calculated as the percentage of a month, in hours, that an Amfleet I car is assigned to a given train, times number of Amfleet I cars used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent

to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Amfleet I cars have the following codes:

Amfleet I All-Table Dinette: MF,
Amfleet I Business Class Car: MC,
Amfleet I Café: AF,
Amfleet I Coach: AO,
Amfleet I Dinette: AD,
Amfleet I Split Club: AC,
Amfleet I "Capstone" Coach: AS, and
Amfleet I Club Dinette: CD.

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 8

Code: AUU

Name: Amfleet I and II Units Used

Definition: The sum of AMU and AYU.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: The sum of AMU and AYU. (Additional explanation about the Units Used statistic is provided in the sections on AMU and AYU , and an example is given in the description of ACU.)

Source: Manual/Derived

Number: 9

Code: AXM

Name: Amfleet Car Miles

Definition: Total miles that Amfleet cars on a train travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by an Amfleet car on a given train in revenue service in a given month, for a one-way trip, times number of Amfleet cars per train, times number of days the train operated that month.

Amtrak's *National Consist Book* indicates that Amfleet cars have the following codes:

Amfleet I All-Table Dinette: MF,
Amfleet I Business Class: MC,
Amfleet I Café: AF,
Amfleet I Coach: AO,
Amfleet I Dinette: AD,
Amfleet I Split Club: AC,
Amfleet I "Capstone" Coach: AS,
Amfleet I Club-Dinette: CD,
Amfleet II Business Class Coach: AJ,
Amfleet II Coach: AI, and
Amfleet II Lounge: AH.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 10

Code: AYU

Name: Amfleet II Units Used

Definition: Amfleet II Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Amfleet II cars, including spares, used to operate a train over a month, calculated as the percentage of a month, in hours, that an Amfleet II car is assigned to a given train, times number of Amfleet II cars used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Amfleet II cars have the following codes:

Amfleet II Business Class Coach: AJ,
Amfleet II Coach: AI, and
Amfleet II Lounge: AH.

Reported APT stats for units used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 11

Code: BCM

Name: Baggage Unit Miles

Definition: Total miles that Baggage cars on a train travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a Baggage car on a given train in revenue service in a given month, for a one-way trip, times number of Baggage cars per train, times number of days the train operated that month.

Amtrak's *National Consist Books* indicate that Baggage cars have the following codes:

Heritage Baggage Car: BA,
F40 Cab/Baggage Car: NPCU or BC, and
Talgo Bike/Baggage Car: TB.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 12

Code: BDS

Name: Boards Excluding UNK & ZZZ

Definition: Total number of passengers boarding at a station.

Units: Passengers

What is being measured: Number of tickets collected from or sold to passengers getting on the train at a given station.

Source: Passenger Accounting System/Automated Lift Match System

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Number: 13

Code: BGU

Name: Baggage Units Used

Definition: Baggage Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Baggage cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Baggage car is assigned to a given train, times number of Baggage cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Baggage cars have the following codes:

Heritage Baggage Car: BA,
F40 Cab/Baggage Car: NPCU or BC, and
Talgo Bike/Baggage: TB.

Reported APT stats for units used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 14

Code: CAC

Name: California Cars Units Used

Definition: California Cars Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of California-owned cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a car is assigned to a given train, times number of cars used on that train—that is, total hours of usage/total hours in the month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Applies to the Capitol and San Joaquin.

Amtrak's *National Consist Book* indicates that California-owned cars have the following codes:

California Baggage Coach: CO,
California Cab Coach: CJ,
California Coach: CK,
California Dining Car: CE, and
California Snack Coach: CS.

Reported APT stats for units used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 15

Code: CAE

Name: Customer Activity Expense

Definition: The sum of all direct and allocated costs, including capital charges, that are assigned to the NTS and other Ancillary Businesses, except for costs of G&A Subfamilies #601–603.

Units: U.S. dollars

What is being measured: The relative sizes, based on the level of resources used as reflected in their directly assigned or allocated expenses (including capital charges but before the allocation of G&A costs from Subfamilies 601, 602, and 603), of individual NTS trains and Ancillary Businesses.

Source: Manual/Derived

Number: 16

Code: CAL

Name: California Locomotives Units Used

Definition: California Locomotives Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of California-owned diesel locomotives, including spares, used to operate a train over a month; calculated as the percentage of a

month, in hours, that a locomotive is assigned to a given train, times number of locomotives used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.) Applies to the Capitol and San Joaquin.

Amtrak's *National Consist Book* indicates that a California F59 Locomotive has a code of CF59.

Reported APT stats for Units Used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 17

Code: CCM

Name: Coach Car Miles

Definition: Total miles that Coach cars on a train travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a Coach car on a given train in revenue service in a given month, for a one-way trip, times number of Coach cars per train, times number of days the train operated that month.

Amtrak's *National Consist Books* indicate that Coach cars have the following codes:

Amfleet I Cafe (52 seats): AF,
Amfleet II Coach (59 seats): AI,
Amfleet II Business Class Coach (59 seats): AJ,
Michigan Push/Pull Coach (60–68 seats): AM,
Amfleet I Coach (74–84 seats): AO,
Amfleet-I "Capstone" Coach (70-72 seats): AS,
Cab Control Car (68–76 seats): CC,
California Cab Coach (72 seats upstairs, 12 downstairs): CJ,
California Coach (76 seats upstairs, 12 downstairs): CK,
California Baggage Coach (76 seats upstairs, 6 downstairs): CO,

California Snack Coach (83 seats): CS,
Horizon Coach (Handicapped) (70 seats): HC,
ATSF High Level Coach (68 seats): HH,
Long Distance Horizon Coach (60 seats): HI,
Horizon Coach (78–82 seats): HO,
North Carolina Coach (64 coach seats, 8 table seats): NC,
Surfliner Cab/Coach-Baggage (82 seats): OB,
Surfliner Coach (90 seats): OC,
Surfliner Coach/Café (83 seats): OF,
Superliner "Kiddie" Coach (62 seats upstairs, playroom downstairs): SB,
Superliner Coach (62 seats upstairs, 12 downstairs): SC,
Superliner Snack Coach (62 seats upstairs, snack bar downstairs): SK,
Superliner Smoking Coach (62 seats upstairs, smoking area downstairs): SM,
Superliner Baggage Coach (62 seats upstairs, baggage area downstairs): SQ,
Talgo ADA[1] Coach (17 seats, 2 wheelchair spaces): TH,
Talgo Business Class Car (26 seats): TK,
Talgo End Power Car: TM,
Talgo ADA Coach (25 seats): TO, and
Talgo Coach (36 seats): TU.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 18

Code: CCR

Name: Coach Class Riders

Definition: Number of riders in Coach Class.

Units: Passengers

What is being measured: Number of Coach Class tickets collected/sold on a train.

Source: Revenue Data Warehouse

Number: 19

Code: CHR

[1] Americans with Disabilities Act compliant equipment.

Name: Crew Hours

Definition: Total train-crew hours.

Units: Hours

What is being measured: Total labor hours of all personnel on a train; calculated as the sum of train, enginemen, and OBS crew hours, or CHR = LH + ELH + SLH + DLH + CLH.

Source: Manual/Derived

Number: 20

Code: CLH

Name: Coach Labor Hours

Definition: Total coach-attendant Labor Hours.

Units: Hours

What is being measured: Labor Hours of OBS coach attendants.

Source: Financial Information System

Number: 21

Code: CLU

Name: Heritage Units Used

Definition: Heritage Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Heritage cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Heritage car is assigned to a given train, times number of Heritage cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to

one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Heritage cars have the following codes:

Heritage Baggage Car: BA,
Heritage Dining Car: DF,
Heritage Dorm Car: SL,
California Dining Car: CE, and
ATSF High Level Coach: HH.

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on basis of their relative share of unit miles.

Source: Manual/Derived

Number: 22

Code: CPM

Name: Coach Class Passenger Miles

Definition: Total miles traveled by Coach Class passengers.

Units: Passenger miles

What is being measured: Total number of Coach Class passengers on a train traveling between each station-pair served, as indicated on tickets collected/sold on the train, times distance between each corresponding station pair.

Source: Revenue Data Warehouse

Number: 23

Code: CRV

Name: Coach Revenue

Definition: Coach-passenger revenue.

Units: U.S. dollars

What is being measured: Revenue derived from the sale of Coach Class tickets for a train.

Source: Financial Information System

Number: 24

Code: CSM

Name: Coach Seat Miles

Definition: Number of Coach Seats on various types of equipment used for service, times miles traveled by that equipment.

Units: Seat miles

What is being measured: Number of Coach Seats on a train, times distance traveled by train.

Source: Operating Management System

Number: 25

Code: CUT

Name: Car Unit Trips

Definition: Number of cars that travel from origin to destination.

Units: One-way trips

What is being measured: Total number of trips made by a car of any type, used to make up a train in revenue service for a given month, from origin to destination in that month.

CUT data are reported at the train/leg level. For multiple-leg trains, it might be expected that CUT at each leg level would equal CUT at the train level unless there were extenuating circumstances, such as cars being added/dropped or deadheaded for one leg and not the other. In those cases, CUT for each leg would be equal to the actual number trips operated per leg. However, there have been no such instances.

Under the current reporting approach, the APT statistic for a train's CUT is distributed to all legs making up the train on the basis of each leg's mileage. The sum of the leg CUT values for a multiple-leg train equals the appropriate monthly CUT for the train.

Source: Operating Management System

Number: 26

Code: CUU

Name: Car Units Used

Definition: Total of all Car Units Used, representing the equivalent of number of hours of usage divided by hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of Auto Carrier, Acela, Amfleet, Baggage, California, Heritage, Horizon, Push/Pull, Surfliner, Superliner, Talgo, and Viewliner cars used to operate a train over a month, or ACU + ALU + AUU + AYU + BGU + CAC + CLU + HZU + PPU + SFU + SUU + TTU + VLU. (Additional explanation about the Units Used statistic is provided in the sections on individual car types, and an example is given in the description of ACU.)

Source: Manual/Derived

Number: 27

Code: DBD

Name: Deboards Excluding UNK & ZZZ

Definition: Total number of passengers deboarding at a station.

Units: Passengers

What is being measured: Number of passengers getting off a train at a given station, as indicated on the destination portion of tickets collected from or sold to passengers getting on the train.

Source: Passenger Accounting System/Automated Lift Match System

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Number: 28

Code: DCM

Name: Dining Car Miles

Definition: Total miles that Dining cars on a train travel for a one-way trip

Units: Car miles

What is being measured: Total number of miles traveled by all Dining cars on a given train in revenue service in a given month, for a one-way trip, times number of Dining cars per train, times number of days the train operated that month.

Amtrak's *National Consist Books* indicate that Dining cars have the following codes:

Amfleet II Lounge (32 table seats, 17 lounge seats): AH,
California Dining Car (49 table/lounge seats): CE,
Heritage Dining Car (48 table seats): DF,
Horizon Food Car (Half Dinette) (16 custom-coach seats, 32 table seats): HF,
Horizon Food Car (Full Dinette) (48 table seats): HF,
Pacific Parlor Car: HG,
Acela Express Cafe (6 nonrevenue seats): LB,
Amfleet I All-Table Dinette (46–50 nonrevenue table seats): MF,
North Carolina Food Car (24 table seats, 22 lounge seats): NF,
Superliner Diner (72 table seats): SF,
Viewliner Diner (48 table seats): VF,
Talgo Table Car (30 table seats): TE, and
Talgo Bistro Car (7 bar-stool seats, 6 table seats): TL.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 29

Code: DLH

Name: Dining Labor Hours

Definition: Total labor hours of OBS chefs, waiters, and lounge-service attendants

Units: Hours

What is being measured: Labor hours of OBS crew (chefs, waiters, lounge-service attendants) associated with onboard food service.

Source: Financial Information System

Number: 30

Code: DLU

Name: Diesel Locomotive Units Used

Definition: Total of all Diesel Locomotive Units Used, representing the equivalent of number of hours of usage divided by hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of F59, P42-8, P32AC-DM, and P32-8 locomotives used to operate a train over a month, or F59 + P2U + PSN + P3U. (Additional explanation about the Units Used statistic is provided in the sections on F59 [PHI Locomotive Units Used], P2U [P42-8 Locomotive Units Used], PSN [P32AC-DM Locomotive Units Used], and P3U [P32-8 Locomotive Units Used], and an example is given in the description of ACU.)

Source: Manual/Derived

Number: 31

Code: DPUF

Name: Diesel Power Usage Factor

Definition: Index of the relative fuel consumption of a train.

Units: None

What is being measured: Fuel-consumption volume of a given diesel-powered train that is derived from unit miles, train tonnage, terrain, hotel power requirements, idle time, and time consumed in excess of schedule. It is derived analytically on a consistent basis for all diesel-powered trains and is thus considered a valid relative measure of fuel usage.

Source: Manual/Derived

Number: 32

Code: DRV

Name: Dining Car Revenue

Definition: Revenue from onboard food services.

Units: U.S. dollars

What is being measured: Food-service revenue collected on a train.

Source: Financial Information System—Fingate

Number: 33

Code: DSU

Name: Diesel Switcher Units Used

Definition: Total of all Diesel Switcher Locomotive Units Used, representing the equivalent of number of hours of usage divided by hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Total of all Diesel Switcher Locomotive Units Used. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Source: Manual/Derived

Number: 34

Code: DUM

Name: Diesel Unit Miles

Definition: Total miles traveled by all Diesel Units for a one-way trip.

Units: Locomotive miles

What is being measured: Total number of miles traveled by a Diesel locomotive on a train in revenue service on a route in a given month, for a one-way trip, times number of Diesel locomotives per train, times number of days the train operated that month.

Reported APT statistics for Diesel locomotive miles are at the route level rather than the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

At the route level, DUM = TLM where only Diesel locomotives are used.

In using stats in an analysis of state-supported routes, the route-allocation process used to report DUM statistics is something to be aware of, to ensure that any use of these statistics in a cost-allocation process is based on a consistent definition of routes, trains, and legs.

Allocation of trains/legs to routes on the basis of timetable and consist data will result in discrepancies in DUM statistics compared with APT-reported values for the following routes/trains: Pennsylvanian, Vermonter, Maple Leaf, Adirondack, Carolinian, Regionals, Empires, Ethan Allen, New Haven-Springfield, and Keystones.

Source: Operating Management System—Fingate

Number: 35

Code: DUT

Name: Diesel Locomotive Unit Trips

Definition: Number of Diesel units that traveled one way.

Units: One-way trips

What is being measured: Total number of trips made by a Diesel locomotive of any type making up a train in revenue service in a given month; total number of Diesel locomotives that traveled from origin to destination on a given train in a specified month.

DUT data are reported at the train/leg level.

Trains outside the Northeast Corridor (NEC) use Diesel locomotives, those within the NEC use electric locomotives, and those with an origin/destination outside the NEC that travel through the NEC use both types of locomotives. Trains that operate with both Diesel and electric locomotives include Trains 19/20 (Crescent), 42–44 (Pennsylvanian), 50/51 (Cardinal), 54–57 (Vermonter), 66/67 (Regional), 76 (Regional), 79/80 (Carolinian), 82–88 (Regional), 89/90 (Palmetto), 91/92 (Silver Star), 93–95 (Regional),

97/98 (Silver Meteor), 99 (Regional), 136 (Regional), 140/141, 143, 145/146, 148 (Regional), 194/195 (Regional), and 640–662 (Keystone). This is sometimes, but not always, accounted for in the train/leg distinction.

Most trains operate with one locomotive; however, Trains 48/49 (Lake Shore Limited) operates with two P42 locomotives from Chicago to Albany and with a single P32DM locomotive from Albany to New York; Trains 1/2 (Sunset Limited), 5/6 (California Zephyr), 8 (Empire Builder), 11/14 (Coast Starlight), 19/20 (Crescent from Washington, D.C. to New Orleans), 29/30 (Capitol Limited), 52/53 (Auto Train), 364/365 (Blue Water), and 798/799 (Pacific Surfliner), with two P42 locomotives; Train 239 (Empire), with two P32DM locomotives; and Trains 3/4 (Southwest Chief) and 7 (Empire Builder), with three P42 locomotives.

Source: Operating Management System

Number: 36

Code: ECM

Name: Electric Car Miles

Definition: Total miles that cars on a train travel over electrified territory for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a car of any type on a given train in revenue service over electrified territory in a given month, for a one-way trip, times number of cars per train, times number of days the train operated that month.

Reported APT stats for car miles are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 37

Code: EHU

Name: HHP Locomotive Units Used

Definition: HHP Locomotive Units Used (formerly Units Demanded in RPS), representing the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of HHP8 electric Locomotives, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that an HHP8 electric Locomotive is assigned to a given train, times number of HHP8 electric Locomotives used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *Northeast Corridor Consist Book* indicates that an electric Locomotive has a code of HHP8.

Reported APT stats for units used by type of Locomotive are at the train/leg level. Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 38

Code: ELH

Name: Enginemen Labor Hours

Definition: Total Enginemen Labor Hours.

Units: Hours

What is being measured: Labor Hours of engineers operating the train.

Source: Financial Information System

Number: 39

Code: ELU

Name: Electric Locomotive Units Used

Definition: Total of all Electric Locomotive Units Used, representing the equivalent of number of hours of usage/hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of AEM7 and HHP Locomotives used to operate a train over a month, or AEU + EHU. (Additional explanation about the Units Used statistic is provided in the sections on AEU [AEM7 Units Used] and EHU [HHP Units Used], and an example is provided in the description of ACU.)

Source: Manual/Derived

Number: 40

Code: EPUF

Name: Electric Power Usage Factor

Definition: Index of relative Electric Power consumption of a given train.

Units: None

What is being measured: Electric Power consumption of a given electric-powered train relative to all such trains, derived from unit miles, train tonnage, hotel power requirements, idle time, and time consumed in excess of schedule. This statistic is used to allocate costs among Amtrak trains over Amtrak segments and requires a stat qualifier, station-pair, to identify segments. RC0738 North uses the stat qualifier ElectricNorth, defined as the station-pairs between Boston and New Haven, CT, and between New Rochelle, NY, and New York. RC0740 Metro-North uses the stat qualifier MetroNorth, defined as the station-pairs between New Haven and New Rochelle, and RC0739 South uses the stat qualifier ElectricSouth, defined as the station-pairs from New York to Philadelphia, Philadelphia to Washington, DC, and Philadelphia to Harrisburg, PA.

Source: Manual/Derived

Number: 41

Code: EUM

Name: Electric Locomotive Unit Miles

Definition: Total Unit Miles of Electric Locomotives of all types.

Units: Locomotive miles

What is being measured: Total number of miles traveled by an Electric Locomotive on all trains in revenue service on a route in a given month, for a one-way trip, times number of Electric Locomotives per train, times number of days the train operated that month.

Reported APT stats for Electric Locomotive Miles are at the route level rather than the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

At the route level, TLM = DUM + EUM in cases where both diesel and Electric Locomotives are used on a route.

In using stats in an analysis of state-supported routes, the route-allocation process used to report EUM statistics is something to be aware of to ensure that any use of these statistics in a cost-allocation process is based on a consistent definition of routes, trains, and legs.

Allocation of train/legs to routes on the basis of timetable and consist data will result in discrepancies in EUM statistics compared with APT-reported values for the following routes/trains: Pennsylvanian, Vermonter, Carolinian, Regionals, and Keystones.

Source: Operating Management System—Fingate

Number: 42

Code: EUT

Name: Electric Locomotive Unit Trips

Definition: Number of Electric Locomotives that travel from origin to destination.

Units: One-way trips

What is being measured: Total number of trips made by Electric Locomotives of any type that are used to make up a train in revenue service for a given month; total number of Electric Locomotives that traveled from origin to destination on a given train in the specified month.

EUT data are reported at the train/leg level.

Trains outside the NEC use diesel locomotives, those within the NEC use Electric Locomotives, and those with an origin/destination outside the NEC that travel through

the NEC use both types of locomotives. Trains that operate with both diesel and Electric Locomotives include 19/20 (Crescent), 42–44 (Pennsylvanian), 50/51 (Cardinal), 54–57 (Vermonter), 66/67 (Regional), 76 (Regional), 79/80 (Carolinian), 82–88 (Regional), 89/90 (Palmetto), 91/92 (Silver Star), 93–95 (Regional), 97/98 (Silver Meteor), 99 (Regional), 136 (Regional), 140/141, 143/145/146, and 148 (Regional), 194/195 (Regional), and 640–662 (Keystone). This is sometimes but not always accounted for in the train/leg distinction.

Most trains operate with one locomotive; however, Train 645 (Keystone) operates with two AEM7 locomotives from Philadelphia to New York, and all Acela Express trains operate with two power cars.

Source: Operating Management System

Number: 43

Code: F59

Name: PHI Locomotive Units Used

Definition: PHI Locomotive Units Used (formerly Units Demanded in RPS), representing the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of F59PH diesel locomotives, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that an F59 diesel Locomotive is assigned to a given train, times number of F59 diesel Locomotives used on that train—that is, total hours of usage divided by total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that a F59PH diesel Locomotive has a code of F59.

Reported APT stats for Units Used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 44

Code: FCR

Name: First Class Riders

Definition: Number of riders in First Class.

Units: Passengers

What is being measured: Number of First Class tickets collected/sold on a train.

Source: Revenue Data Warehouse

Number: 45

Code: FCRV

Name: First Class Revenue

Definition: First Class passenger-ticket revenue for a train.

Units: U.S. dollars

What is being measured: Revenue generated from First Class ticket sales.

Source: Financial Information System

Number: 46

Code: FPM

Name: First Class Passenger Miles

Definition: Miles traveled by First Class Passengers.

Units: Passenger miles

What is being measured: Number of First Class Passengers on a train traveling between each station-pair served, as indicated on tickets collected/sold on the train, times distance between each corresponding station-pair.

Source: Financial Information System

Number: 47

Code: FTT

Name: Frequency

Definition: Number of trips made by a train in a given month.

Units: One-way trips

What is being measured: Actual number of trips made by a train in a given month. Each train (and Train Number) is unique to a given route, direction, and time and day of departure. Frequency will vary by month for a given train, depending on the number of days in the month; days of scheduled operation of the train—for example, Sunday only; and whether the month includes a holiday.

For example, September 2006 contained five Fridays and Saturdays; four Mondays, Tuesdays, Wednesdays, and Thursdays; and a Monday holiday (Labor Day). In determining the frequency of a given train for September 2006, the train's normal days of operation must first be established, along with whether it operated on the holiday, on another day instead of the holiday, on the holiday instead of its normal days of operation, or on the holiday in addition to its regularly scheduled days. For example, Train Number 3, the Southwest Chief, operated daily, resulting in an FTT value of 30; Train Number 42, the Pennsylvanian, normally operated Monday through Saturday but did not operate on Labor Day, resulting in an FTT value of 25 rather than the expected value of 26; Train Number 650, the Keystone, normally operated on Sundays but also operated on Labor Day, resulting in an FTT value of 5 rather than 4; and Train Number 2225, Acela Express, normally operated on Sundays but did not operate on Sunday, September 3. It did, however, operate on Monday, September 4, resulting in no change in the expected FTT value of 4.

For multiple-leg trains, it might be expected that FTT at each leg level would equal FTT at the train level unless there were extenuating circumstances leading to an incomplete trip, in which case FTT for each leg would be equal to the actual number of trips operated on that leg. However, there were no such instances.

Under the current reporting approach, a train's APT FTT statistic is distributed evenly among all legs making up the train. For example, each train/leg record for a train that has three legs and that operates daily in September would have an FTT of 10. The sum of the

leg frequencies for a multiple-leg train would equal the appropriate monthly FTT for the train, as indicated in the published timetable.

Source: Operating Management System

Number: 48

Code: GEU

Name: GE Locomotive Units Used

Definition: Equivalent of number of hours of usage of locomotives of this type divided by hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Portion of a piece of equipment's time spent in service on a particular train/route over a month for all pieces of equipment of that type used on a train; used for locomotives serviced under the GE contract and equal to P2U + P3N + P3U. (Additional explanation about the Units Used statistic is provided in the sections on P2U [P42-8 Units Used], P3N [P32AC-DM Units Used], and P3U [P32-8 Units Used] and an example is provided in the description of ACU.)

Source: Manual/Derived

Number: 49

Code: GTM

Name: Gross Ton Miles

Definition: Total weight of entire train, times miles traveled.

Units: Ton miles

What is being measured: Total tonnage operated on a train, without respect to whether it consists of locomotives or cars, times miles traveled.

Source: Manual/Derived

Number: 50

Code: GTT

Name: Gross Trailing Ton Miles

Definition: Weight of train, less locomotives, times miles traveled.

Units: Ton miles

What is being measured: Total tonnage operated on a train, excluding locomotive tonnage, times miles traveled.

Source: Manual/Derived

Number: 51

Code: HPL

Name: HHP Locomotive Miles

Definition: Total miles that HHP Locomotives on a train travel for all one-way trips.

Units: Locomotive miles

What is being measured: Total number of miles traveled by all HHP Locomotives on a given train in revenue service in a given month, for a one-way trip, times number of HHP Locomotives per train, times number of days the train operated that month.

Amtrak's *National Consist Books* indicate that an HHP (Electric Locomotive) has a code of HHP or HHP8.

Reported APT stats for Locomotive Miles by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Manual/Derived

Number: 52

Code: HZU

Name: Horizon Units Used

Definition: Horizon Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Horizon cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Horizon car is assigned to a given train, times number of Horizon cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Horizon cars have the following codes:

Horizon Club Dinette: HB,
Horizon Coach: HO,
Horizon Coach (Handicapped): HC,
Horizon Food Car (Full Dinette): HF,
Horizon Food Car (Half Dinette): HF, and
Long Distance Horizon Coach: HI.

Reported APT stats for units used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 53

Code: LUT

Name: Loco Unit Trips

Definition: Number of locomotives that travel from origin to destination.

Units: One-way trips

What is being measured: Total number of trips made by a locomotive, of any type, that make up a train in revenue service for a given month, times total number of locomotives that traveled from origin to destination on a given train that month.

Most trains operate with one locomotive; however, Train 48/49 (Lake Shore Limited) operates with two P42 locomotives from Chicago to Albany and with a single P32DM locomotive from Albany, NY, to New York; Trains 1/2 (Sunset Limited), 5/6 (California Zephyr), 8 (Empire Builder), 11/14 (Coast Starlight), 19/20 (Crescent from Washington to New Orleans), 29/30 (Capitol Limited), 52/53 (Auto Train), 364/365 (Blue Water), and 798/799 (Pacific Surfliner) operate with two P42 locomotives; Train 239 (Empire), with two P32DM locomotives; Trains 3/4 (Southwest Chief) and 7 (Empire Builder), with three P42 locomotives; and Train 645 (Keystone), with two AEM7 locomotives from Philadelphia to New York. All Acela Express trains operate with two power cars.

For multiple-leg trains, it might be expected that LUT at each leg level would equal LUT at the train level unless there were extenuating circumstances leading to an incomplete trip, or locomotives were added/dropped or deadheaded for one leg and not the other. However, no such instances have occurred.

Under the current reporting approach, APT statistics for a train's LUT is distributed evenly to all legs making up the train; for example, each train/leg record for a train that had three legs and that operated daily with one locomotive in September would have an LUT value of 10. The sum of the leg LUTs for a multiple-leg train equal the LUT for the train.

Moreover, it might be expected that DUT/EUT on each leg of a given train would equal LUT for that leg; however, because of the way that LUT is reported in APT at the leg level, this is not the case.

Source: Operating Management System

Number: 54

Code: LUU

Name: Locomotive Units Used

Definition: Total of all Locomotive Units Used, representing the equivalent of number of hours of usage/hours per month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of locomotives of all types used to operate a train during a month, or DLU + ELU. (Additional explanation about the Units Used statistic is

provided in the sections on individual locomotive types, and an example is given in the description of ACU.

With the exception of the San Joaquins and Capitols, LUU = DLU, or the sum of ELU and DLU. For these two types of locomotives, DLU does not include CAL, whereas LUU does include it.

Source: Manual/Derived

Number: 55

Code: MDC

Name: Mechanical Direct Costs

Definition: Total of direct individual Mechanical ResCen or group ResCen costs.

Units: U.S. dollars

What is being measured: Total of costs allocated to a train or other business/customer associated with direct-cost mechanical functions.

Source: Manual/Derived

Number: 56

Code: MWDC

Name: Maintenance of Way Direct Costs

Definition: Total of all direct Maintenance of Way costs allocated to a customer.

Units: U.S. dollars

What is being measured: A customer's MWDC is the sum of all direct-function costs allocated to it.

Source: Manual/Derived

Number: 57

Code: NON

Name: No Statistic Used

Definition: Cases in which no proportional allocation occurs in APT, either because associated dollar expenditures are not operating costs (that is, capital expenditures) or because they are assigned directly to a single non-NTS Business Line. In both cases, the "allocation" is 100 percent. The NON statistic appears in certain tables describing the methodology and in APT files used in implementing it.

Units: Index number with a value of 1.0

What is being measured: Not applicable.

Source: Not applicable

Number: 58

Code: OLH

Name: On-Board Labor Hours

Definition: Total labor hours of all OBS personnel on a train.

Units: Hours

What is being measured: OBS crew hours; equal to SLH + DLH + CLH. Excludes engineers, conductors, and assistant conductors.

Source: Manual/Derived

Number: 59

Code: P2U

Name: P42-8 Units Used

Definition: P42-8 Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of P40/P42 Diesel Locomotives, including spares, used to operate a train over a month; calculated as the percentage of a month, in

hours, that a P40/P42 Diesel Locomotive is assigned to a given train, times number of P40/P42 Diesel Locomotives used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that a P40/P42 Diesel Locomotive has a code of P40/P42.

Reported APT stats for units used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 60

Code: P3N

Name: P32AC-DM Units Used

Definition: P32AC-DM Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of P32DM Diesel/Electric Locomotives, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a P32DM Diesel/Electric Locomotive is assigned to a given train, times number of such locomotives used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that a P32DM Diesel/DC Electric Locomotive has a code of P32DM.

Reported APT stats for Units Used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 61

Code: P3U

Name: P32-8 Units Used

Definition: P32-8 Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of P32-8 Diesel Locomotives, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a P32-8 Diesel Locomotive is assigned to a given train, times number of such locomotives used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that a P32-8 Diesel Locomotive has a code of P32.

Reported APT stats for units used by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 62

Code: PCM

Name: Business Class Car Miles

Definition: Total miles that Business Class Cars on a train travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a Business Class Car on a given train in revenue service in a given month, for a one-way trip, times number of Business Class Cars per train, times number of days the train operated that month.

Amtrak's *National Consist Books* indicate that Business Class Cars have the following codes:

Amfleet I Split Club (18 coach seats, and 15–18 rows of 2-1 Business Class seats): AC
Amfleet I Split (Empire) Dinette (16 Business Class seats, 32 table seats): AK
Amfleet I Full Club (29–33 First Class seats): AP
Amfleet I Club Dinette (22 table seats, 15 or 18 Business Class seats): CD
Horizon Club Dinette (14 Business Class seats, 32 table seats): HB
Acela Express End First Class (43 First Class seats): LF
Surfliner Business Class Coach (77 Business Class seats): OM
Talgo ADA Business Class Car (17 Business Class seats, 2 wheelchair spaces): TN

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 63

Code: PDM

Name: P32 Loco Unit Miles

Definition: Total miles that P32 Locomotives on a train travel for all one-way trips.

Units: Locomotive miles

What is being measured: Total number of miles traveled by all P32 Locomotives on a given train in revenue service in a given month, times total miles that a P32 Locomotive travels for a one-way trip, times number of P32 Locomotives per train, times number of days the train operated that month.

P32 Locomotives are used only on the NYP-ALB route segment. P42/F59 Locomotives are used anywhere else that Diesel Locomotives are used. The statistic as reported in APT is a placeholder for Unit Miles for Diesel Locomotives of any type.

Amtrak's *National Consist Books* indicate that Diesel Locomotives have the following codes:

P32-8 Diesel Locomotive: P32,
Diesel/DC Electric Locomotive: P32DM,
P40/P42 Diesel Locomotive: P40/42,
California F59: CF59,
F59PH Diesel Locomotive: F59,
North Carolina Locomotive: NC F59, and
Diesel Locomotive: P42.

Reported APT stats for Locomotive Miles by type of locomotive are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System

Number: 64

Code: PPU

Name: Push-Pull Units Used

Definition: Push-Pull Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Push/Pull cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Push/Pull car is assigned to a given train, times number of Push/Pull cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that F40 Cab/Baggage cars have the code NPCU. The *Northeast Corridor Consist Book* indicates that the "Cab-bag" (nonpowered Control Unit, de-engined F40 with baggage compartment) cars have the code BC.

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 65

Code: PRV

Name: Passenger-Related Transportation Revenue

Definition: Total passenger revenue.

Units: U.S. dollars

What is being measured: Revenue generated from ticket sales of all types.

Source: Manual/Derived

Number: 66

Code: PSM

Name: Business Class Seat Miles

Definition: Number of Business Class Seats on various types of equipment used for a service, times miles traveled by that equipment.

Units: Seat miles

What is being measured: Number of Business Class Seats on various types of equipment used for a service, times miles traveled by that equipment.

Source: Operating Management System

Number: 67

Code: PUT

Name: Passenger Unit Trips

Definition: Number of passenger cars that travel from origin to destination.

Units: One-way trips

What is being measured: Total number of trips made by a passenger car (coach, first-class, or sleeper) used in making up a train in revenue service in a given month, for a one-way trip, times total number of such cars that traveled on that train in that month.

Most station-operations costs are driven by the number of passengers served at a station and are most appropriately allocated by Total Boards and Deboards (TBD). However, at shared stations used by outside commuter agencies, PUT is used because the TBD statistic is unavailable for commuters.

PUT for commuters, or passenger cars times number of trips, is calculated with use of statistics obtained from the Contract Audit and Financial Controls Group in Amtrak's Finance Department.

Source: Operating Management System, Manual/Derived

Number: 68

Code: RSO

Name: Usage Time for RSO Operations

Definition: Reservation Center Talk Time

Units: Hours

What is being measured: Three-month rolling average survey (also known as the Talk Time survey) of calls at the ResCen.

Source: Manual/Derived

Number: 69

Code: SBM

Name: Sleeping Berth Miles

Definition: Berth miles of sleeping-car equipment on a train, analogous to seat miles.

Units: Seat miles

What is being measured: Number of sleeping-car accommodations on various types of equipment used for a service, times miles traveled by that equipment.

Source: Operating Management System

Number: 70

Code: SCM

Name: Sleeping Car Miles

Definition: Total miles that Sleeper cars travel for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a Sleeper car on a given train in revenue service in a given month, for a one-way trip, times number of Sleeper cars per train, times number of days the train operated that month.

Amtrak's *National Consist Book* indicates that Sleeper cars have the following codes:

Superliner Deluxe Sleeper: SD
Heritage Dorm Car: SL
Superliner Sleeper: SS
Superliner Transition Dorm: ST
Superliner Transition Sleeper: ST
Viewliner Sleeper: VS

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the unit miles statistics.

Source: Operating Management System

Number: 71

Code: SFU

Name: Surfliner Units Used

Definition: Surfliner Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Surfliner cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Surfliner car is assigned to a given train, times number of such cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Surfliner cars have the following codes:

Surfliner Business Class Coach: OM
Surfliner Cab/Coach-Baggage: OB
Surfliner Coach: OC
Surfliner Coach/Café: OF

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 72

Code: SLH

Name: Sleeping Labor Hours

Definition: Sleeping-car-attendant Labor Hours.

Units: Hours

What is being measured: Total OBS sleeping-car-attendant labor hours.

Source: Financial Information System

Number: 73

Code: SLM

Name: Superliner Car Miles

Definition: Total miles that Superliner cars on a train travel, for all one-way trips.

Units: Car miles

What is being measured: Total number of miles traveled by a Superliner car on a given train in revenue service in a given month, for a one-way trip, times number of Superliner cars of all types per train, times number of days the train operated that month.

Amtrak's *National Consist Book* indicates that Superliner cars have the following codes:
Superliner "Kiddie" Coach: SB,
Superliner Coach: SC,
Superliner Deluxe Sleeper: SD,
Superliner Diner: SF,
Superliner Snack Coach: SK,
Superliner Smoking Coach: SM,
Superliner Baggage Coach: SQ,
Superliner Sightseer Lounge: SR,
Superliner Sleeper: SS,
Superliner Transition Dorm: ST, and
Superliner Transition Sleeper: ST.

Reported APT stats for car miles by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Manual/Derived

Number: 74

Code: SLU

Name: Superliner I Units Used

Definition: Superliner Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Superliner I cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Superliner I car is assigned to a given train, times number of such cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Superliner cars have the following codes:

Superliner "Kiddie" Coach: SB,
Superliner Baggage Coach: SQ,
Superliner Coach: SC,
Superliner Deluxe Sleeper: SD,
Superliner Diner: SF,
Superliner Sightseer Lounge: SR,
Superliner Sleeper: SS,
Superliner Smoking Coach: SM,
Superliner Snack Coach: SK,
Superliner Transition Dorm: ST, and
Superliner Transition Sleeper: ST

A file, Second Equipment Type List.xls, obtained from Amtrak, was used as the basis of the classification of Superliner I cars. The file indicated that assignation to the SLU category should be used, for reporting purposes, for the following car types:

Superliner Baggage Coach: SQ,
Superliner Coach: SC,
Superliner Diner: SF,
Superliner Smoking Coach: SM,
Superliner Snack Coach: SK,
Superliner Sightseer Lounge: SR, and
Superliner Sleeper: SS.

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 75

Code: SM

Name: Seat Miles

Definition: Summary statistic for Seat Miles of all types.

Units: Seat miles

What is being measured: The sum of CSM, PSM, and SBM.

Source: Manual/Derived

Number: 76

Code: SUU

Name: Superliner Units Used

Definition: Sum of Superliner I and Superliner II units used.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of Superliner I and Superliner II cars used to operate a train over a month; sum of SLU and SYU. (Additional explanation about the Units Used statistic is provided in the sections on SLU and SYU, and an example is given in the description of ACU.)

Source: Manual/Derived

Number: 77

Code: SYU

Name: Superliner II Units Used

Definition: Superliner II Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Superliner II cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Superliner II car is assigned to a given train, times number of Superliner II cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates Superliner cars have the following codes:

Superliner "Kiddie" Coach: SB
Superliner Baggage Coach: SQ
Superliner Coach: SC
Superliner Deluxe Sleeper: SD
Superliner Diner: SF
Superliner Sightseer Lounge: SR
Superliner Sleeper: SS
Superliner Smoking Coach: SM
Superliner Snack Coach: SK
Superliner Transition Dorm: ST
Superliner Transition Sleeper: ST

A file, Second Equipment Type List.xls, obtained from Amtrak, was used as the basis of the classification of Superliner II cars. The file indicated that assignation to the SLU category should be used, for reporting purposes, for the following car types:

Superliner "Kiddie" Coach: SB
Superliner Deluxe Sleeper: SD
Superliner Transition Dorm: ST
Superliner Transition Sleeper: ST

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 78

Code: TAC

Name: Total Activity Cost

Definition: Total expenses for a train.

Units: U.S. dollars

What is being measured: Total costs for Maintenance of Way, Maintenance of Equipment, Operations—Transportation, Sales & Marketing, Stations, Utilities, and Police (Regional). Excludes G&A, Capital, Police (National), and Environmental/Safety.

Source: Manual/Derived

Number: 79

Code: TAS

Name: Travel Agent Sales

Definition: Travel Agent Sales, by route.

Units: U.S. dollars

What is being measured: Tickets sold through Travel Agent Sales.

Source: Manual/Derived

Number: 80

Code: TBD

Name: Total Boards and Deboards

Definition: Total passengers boarding and/or deboarding a train at a station.

Units: Passengers

What is being measured: The sum of BDS and DBD.

Source: Revenue Data Warehouse—Fingate

Number: 81

Code: TCM

Name: Total Car Miles

Definition: Total Car Miles traveled.

Units: Car miles

What is being measured: Actual number of miles traveled by all cars on a given train in revenue service in a given month, or ACM + BCM + CCM + DCM + PCM + SCM.

Reported APT stats for car miles are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the unit miles statistics.

Source: Operating Management System

Number: 82

Code: TEH

Name: Train and Enginemen Hours

Definition: Total of Train and Enginemen crew labor hours.

Units: Hours

What is being measured: Total of all Train and Enginemen crew hours, or TLH + ELH. Excludes OBS crew hours.

Source: Manual/Derived

Number: 83

Code: TLH

Name: Trainmen Labor Hours

Definition: Total Trainmen Labor Hours

Units: Hours

What is being measured: Total of all Trainmen Labor Hours; includes conductors and assistant conductors.

Source: Financial Information System

Number: 84

Code: TLM

Name: Total Locomotive Miles

Definition: Total Locomotive Miles traveled

Units: Locomotive Miles

What is being measured: Actual number of miles traveled by all locomotives on all trains in revenue service on a route in a given month; equal to DUM + EUM. At the route level, DUM = TLM where only Diesel Locomotives are used and TLM = DUM + EUM where both Diesel and Electric Locomotives are used. The Silver Star, Cardinal, Silver Meteor, Palmetto, and Crescent utilize both Diesel and Electric Locomotives on different route segments, and this is explicitly accounted for in reported APT stats. Electric Locomotives are also used on portions of the Pennsylvanian, Vermonter, Carolinian, and Keystones. Electric Locomotive unit miles associated with these electrified operations are associated with the Regionals in reported APT stats.

In using stats in an analysis of state-supported routes, the route-allocation process used to report the TLM statistic is something to be aware of, to ensure that any use of these statistics in a cost-allocation process is based on a consistent definition of routes, trains, and legs.

Allocation of trains/legs to routes based on timetable and consist data will result in discrepancies in TUM statistics compared with APT-reported values for the following routes/trains: Pennsylvanian, Vermonter, Maple Leaf, Adirondack, Carolinian, Regionals, Empires, Ethan Allen, New Haven-Springfield, and Keystones.

Reported APT stats for total locomotive miles are at the route level rather than the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System—Fingate

Number: 85

Code: TPM

Name: Total Passenger Miles

Definition: Total miles traveled by all passengers.

Units: Passenger miles

What is being measured: Total miles traveled by all passengers of all classes.

Source: Revenue Data Warehouse

Number: 86

Code: TRD

Name: Total Riders Including UNK & ZZZ

Definition: Total number of passengers.

Units: Passengers

What is being measured: Total of all passengers for all classes.

Source: Revenue Data Warehouse

Number: 87

Code: TTC

Name: Total Seat Miles

Definition: Total Seat Miles of all classes for a train.

Units: Seat miles

What is being measured: Total number of seats of all types on various types of equipment used for a service, times miles traveled by that equipment; equal to CSM + PSM + SBM.

Source: Manual/Derived

Number: 88

Code: TTM

Name: Total Train Miles

Definition: Total miles that a train travels between origin and destination.

Units: Train miles

What is being measured: Actual number of miles traveled by a given train in revenue service in a given month; equal to the product of miles that a train travels, for a one-way trip, and number of times the train operated that month.

Reported APT stats for train miles are at the train/leg level.

Source: Operating Management System

Number: 89

Code: TTU

Name: Talgo Equipment Units Used

Definition: Talgo Equipment Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Talgo cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Talgo car is assigned to a given train, times number of such cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Talgo cars have the following codes:

Talgo ADA Business Class Car: TN,
Talgo ADA Coach: TH,
Talgo ADA Coach: TO,
Talgo Bike/Baggage Car: TB,
Talgo Bistro Car: TL,
Talgo Business Class Car: TK,
Talgo Coach: TU,
Talgo End Power Car: TM, and

Talgo Table Car: TE.

Reported APT stats for units used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 90

Code: UM

Name: Unit Miles (Base Statistic)

Definition: Total miles that all units (cars and locomotives) on a train travel for all one-way trips.

Units: Unit miles

What is being measured: Actual number of miles traveled by all cars and locomotives on all trains in revenue service on a route in a given month; equal to TCM + TLM for any given route.

In using stats in an analysis of state-supported routes, the route-allocation process used to report the UM stat is something to be aware of to ensure that any use of these stats in a cost-allocation process is based on a consistent definition of routes, trains, and legs.

Allocation of trains/legs to routes based on timetable and consist data will result in discrepancies in UM statistics compared with APT-reported values for the following routes/trains: Pennsylvanian, Vermonter, Maple Leaf, Adirondack, Carolinian, Regionals, Empires, Ethan Allen, New Haven-Springfield, and Keystones.

Reported APT stats for total unit miles are at the route level rather than the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Unit Miles statistics.

Source: Operating Management System—Fingate

Number: 91

Code: UU

Name: Units Used (Base Statistic)

Definition: The sum of CUU and LUU.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Number of cars and locomotives of all types used to operate a train over a month, or CUU + LUU. (Additional explanation about the Units Used statistic is provided in the sections on individual car and locomotive types, and an example is given in the description of ACU.)

Source: Manual/Derived

Number: 92

Code: UT

Name: Unit Trips (Base Statistic)

Definition: Total Unit Trips is the simple sum of Car Unit Trips (CUT) and Locomotive Unit Trips (LUT) for a given train.

Units: One-way trips

What is being measured: Actual number of trips made by all equipment (cars and locomotives) that make up a train in a given month.

Source: Operating Management System

Number: 93

Code: VLU

Name: Viewliner Units Used

Definition: Viewliner Units Used (formerly Units Demanded in RPS) represents the total number of hours of usage of this equipment type, divided by total hours in the particular month.

Units: None, because depending on the number of days in a month, a value of 1 represents a slightly different number of hours.

What is being measured: Average number of Viewliner cars, including spares, used to operate a train over a month; calculated as the percentage of a month, in hours, that a Viewliner car is assigned to a given train, times number of such cars used on that train—that is, total hours of usage/total hours in month. One Unit Used is equivalent to one piece of equipment used for the entire month. Trains are typically assigned fractions of a unit. (Additional explanation about the Units Used statistic is provided in the section on ACU.)

Amtrak's *National Consist Book* indicates that Viewliner cars have the following codes:

Viewliner Diner: VF
Viewliner Sleeper: VS

Reported APT stats for Units Used by type of car are at the train/leg level.

Deadheading equipment (not in revenue service) is omitted from the Units Used statistics.

Units Used is calculated at the route level, then allocated back to trains within a route on the basis of their relative share of unit miles.

Source: Manual/Derived

Number: 94

Code: WBD

Name: Trip-Length-Weighted Boards and Deboards

Definition: Weighted total boards/deboards

Units: Passengers

What is being measured: Average passenger Trip-Length-Weighted TBD at a station level, where average passenger trip length equals TPM divided by TRD. TPM/TRD is calculated to determine an average passenger trip length that is used as a weight to apply to TBD (at the station level) to calculate Trip-Length-Weighted TBD.

Source: Manual/Derived

Appendix E:

Synthetic Capital Charge

Capital Charges for Amtrak's APT System

The Volpe Center's Recommendations

To include a measure of capital costs in its estimate of total costs for providing each train service, Amtrak's Route Profitability System (RPS) allocates total depreciation and interest expenses for train equipment and fixed assets among individual routes. These expenses are intended to represent recurring monthly or annual costs associated with the initial capital investments required to purchase or construct the rolling stock and other equipment, structures, and ROW that Amtrak uses to provide service on that route.

The Volpe Center recommends that the Amtrak Performance Tracking (APT) system now being developed and implemented provide the capability to estimate capital charges for individual services (trains, routes, or ancillary businesses). This document indicates what such capital charges should attempt to measure, outlines how APT should estimate and allocate these charges to individual services, and suggests how the charges should be reported and described within APT.

The document addresses the following issues:

- Should APT's estimated costs for individual services (trains or routes) include costs or charges to reflect their use of capital assets?
- Should the depreciation and interest expenses reported in Amtrak's financial accounts, or some other measure of capital costs, form the basis for capital charges in APT?
- What should capital charges for an individual service attempt to measure, and how should they be calculated in APT?
- What asset values should be employed in estimating the annual charges associated with particular assets?
- Should capital invested in Amtrak by government agencies be required to generate a return? If so, how should the required annual rate of return be established, and specifically, should it include a "real" return on invested capital?
- How should capital charges for assets, used to provide multiple services, be allocated between or among them?
- What elements of a capital charge would be avoidable if the level of service provided by Amtrak on a specific train or route were reduced?

The remainder of this document presents the Volpe Center's recommendation for each of these issues and discusses the underlying reasoning. As such, it provides additional background to the methodology descriptions elsewhere in Volume 1 of this report, especially, Sections 5.3.5, 7.7, and 8.7.

1. The APT cost-estimating methodology should include procedures for calculating annual charges that reflect the costs of Amtrak's capital investments to acquire or construct the assets it employs to operate individual train services. Capital charges are a commonly employed mechanism for spreading expenditures on long-lived production inputs—that is, investments in capital assets—over the extended time period that those assets contribute to the production of a firm's output. Even if they cannot reflect the precise time pattern or duration over which the initial value of specific capital assets is consumed in the firm's production process, capital charges can still provide a useful indication of the equivalent periodic costs associated with the initial investments to construct or purchase the capital assets required to provide a product or service.

Including capital charges in the APT cost-estimating methodology can convey valuable information about recurring annual costs corresponding to the capital investments in equipment, structures, and ROW that Amtrak makes periodically to support each service in the National Train System (NTS). When combined with reliable allocations of operating expenses to individual train services, these capital charges will allow Amtrak to convey to Congress and other stakeholders the equivalent total annual costs required to operate the NTS and each individual train or route that it comprises. Defensible, transparently calculated capital charges can also be used in negotiations by Amtrak to bill individual States or other entities fully and fairly for the services it provides at their request.

2. APT should replace the allocation of Amtrak's general ledger depreciation and interest to individual trains previously used in RPS with a "synthetic" representation of capital costs for assets used to operate each train in the NTS. Amtrak's current practice of assigning all capital-related costs to the NTS should also be replaced by an allocation of total capital costs among the NTS and its other ancillary businesses and customers that reflects actual use of Amtrak's capital assets by each.

The capital charges estimated by APT should reflect reasonable apportionments of the value of each asset (or group of assets) used to operate train services or other Amtrak lines of business to each time period over their expected service lifetimes, plus a return on the value of those assets remaining during each time period. Allocations of these charges to individual train services should be based on statistics that reflect the use of train and other equipment, route facilities, other fixed facilities, and ROW by each train or route that the NTS comprises. Allocations of capital costs to business lines other than the NTS should also be based on reasonable measures of their use of Amtrak's train equipment, fixed facilities, ROW, and other assets.

The primary reason for recommending a synthetic capital charge to replace Amtrak's depreciation and interest expenses is that the interest expense recorded in its general ledger during any fiscal year and allocated by RPS to individual trains represents a return on only the fraction of accumulated capital investment in Amtrak's assets that has been financed by debt. Both the total interest and the amounts allocated to individual routes are sensitive to the particular mix of commercial debt and government grants that has

financed the historical capital investments represented in Amtrak's total asset portfolio during any year. In addition, allocating interest expenses only to specific assets that have been acquired with or used as collateral for debt, which has not been completely repaid arbitrarily increases estimated costs for train services that utilize those assets while leaving costs for services that employ only grant-financed assets unaffected.[2]

As Table E-1 illustrates, whereas debt accounted for a growing portion of the total capital investment in Amtrak during much of the past decade, it continues to represent well under half of that investment. Table E-1 also shows that the portion of new capital investment that is financed by private borrowing varied extensively from year to year over this same period but has declined sharply since 2001. As a consequence, Amtrak's interest payments represent a return on only a relatively modest portion of its total invested capital, and this portion has declined slightly in recent years.

Table E-2 shows that Amtrak's interest expenses also increased significantly, both in dollar terms and as a portion of its total operating expenses, after 2001, while the total value of its net investment declined gradually. Thus, using actual interest payments as a measure of required return on capital invested in Amtrak could produce year-to-year variability in capital charges that is inconsistent with the changing value of total capital investment in Amtrak documented in Table E-1.

A particular problem with using Amtrak's depreciation expense as a measure of required return of capital is the effect of recent sale/leaseback transactions on the recorded asset values of substantial numbers of cars and locomotives, which has been to increase them to levels reflecting the capitalization of the new leaseback contracts. In accordance with generally accepted accounting principles (GAAP), the gain on such sales over the presale net (depreciated) book value of these assets is being amortized to income over the life of the new leases, which has the effect of reducing the post-transaction increase in Amtrak's calculated depreciation expense caused by the now-higher gross value of its asset base. The overall effect of these sale/leaseback transactions on Amtrak's annual net depreciation expense is complicated by any associated changes that have been made in the period over which the assets involved—formerly owned, now leased back—are being effectively depreciated.[3] It is not possible, solely on the basis of Amtrak's audited financial statements, to measure the resulting post-transaction increase in Amtrak's

[2]RPS's procedure for allocating interest expenses appears to spread these expenses incurred by Amtrak to finance the acquisition of any units of a specific locomotive or car model among all train services that utilize that model in proportion to their use of it, as measured by Total Units Demanded.

[3] Amtrak employs a "composite group" method to generate annual depreciation expense for its audited financial statements. Under this method, depreciation expense is calculated by continuously applying a single annual percentage depreciation rate, based on an economic service life that has been estimated, with periodic reviews for the whole group to the total gross asset value of all units of property within the group that have not been retired and are still carried on the books of account. However, Amtrak's capital-leased equipment, including the sold and leased-back cars and locomotives noted here, is not included in such groups and is depreciated over service lives corresponding to the terms of the particular leases.

annual depreciation expense and compare it with the new annual amortization of gain on sale. However, it appears possible that they are not offsetting each other exactly.

As a consequence, combining Amtrak's annual income-statement interest and depreciation expenses to form a capital charge may not reliably measure the annual costs associated with current capital investments in the NTS and Amtrak's other business lines. Thus, allocation of Amtrak's annual depreciation and interest expenses to separate train services and routes seems unlikely to produce reliable estimates of capital costs for equipping and operating those services, and assigning all depreciation and interest expenses to the NTS almost certainly understates Amtrak's capital costs for operating its other lines of business.

The recommendation is Amtrak develop annual capital charges for use in APT that provide a more comprehensive measure of the costs associated with Amtrak's acquisition and use of its complete asset base. These charges should include components of the cost for both acquiring and using those assets: the annual decline in their value due to accumulated usage and passage of time, and a return that reflects the opportunity cost of both the government and private capital invested to acquire them from outside parties or construct them. By relying on recorded purchase values and the service lifetime assumptions used in Amtrak's group depreciation system, plus the initial lease values recorded for its newly acquired capital-leased assets and the lease terms being used as service lives for the purpose of depreciating them, these charges can be calculated without imposing information demands beyond those now required to estimate Amtrak's annual depreciation expenses.[4]

It is further recommended that capital charges allocated to individual trains or routes be displayed separately from allocations of train operating expenses, both within the APT system and in any published reports that it is used to produce. Any differences between the sum of all capital charges allocated to individual trains or routes plus those assigned to Amtrak's other business lines, and the total depreciation and net interest expense shown in its audited income statement for the corresponding reporting period, should be displayed clearly and explained fully.

3. The annual capital charge for each asset group used in Amtrak's group depreciation system should be the level-annualized equivalent of the gross value of assets included in the group. This charge should be determined by applying an annual capital recovery or amortization factor, calculated using the composite lifetime implied by the annual depreciation rate for each asset group and an

[4] Under GAAP, the initial acquisition value of a capital-leased asset is recorded on the lessee's balance sheet as the present value, typically at the interest rate inherent in the lease, of the future stream of payments that the lessee has contracted to pay, subject to a maximum of the present fair market value of the asset. Because Amtrak's sold and leased-back cars and locomotives were rerecorded on its balance sheet as newly capital-leased assets, their particular initial lease values do not represent original acquisition cost, which was the cost recorded at the time of their original purchase, now replaced by the presumably higher values generated by the sale and leaseback transaction. The necessity of recapturing the original purchase values for these assets to calculate a new capital charge according to the method recommended is noted in Section 3 below.

appropriate rate of return, to the total of the initial acquisition costs, which appear on the books of account as the gross values, of all assets included in the group. The annual capital charge for most capital-leased assets carried on Amtrak's books of account should be similarly calculated, using the initial (gross) capitalized lease values and service lives implied by the lease terms over which these values are being depreciated. An exception to this procedure is required for Amtrak assets that were originally purchased and then subsequently sold and leased back; for capital charge purposes, their gross values must be adjusted, as explained below.

These capital charges would substitute for Amtrak's reported depreciation and interest expenses, thus *replacing* the depreciation and interest totals that RPS previously allocated to individual train services. This would require both interest and depreciation expenses to be excluded from the expenses that APT extracts from Corporate Common ResCenter expense data and assigns to cost pools allocated to trains or routes. *Of course, the recommended capital charges would not replace depreciation or interest as a representation of capital costs in Amtrak's audited financial statements, since these serve different purposes from APT and must comply with the requirements of GAAP.*

The recommended capital charge provides a measure of the annual costs associated with the capital assets that Amtrak currently employs to operate the NTS and to support its other business lines. It combines an allocation of the original acquisition or construction cost of each capital asset used to operate train service or another of Amtrak's business lines with each time period of its expected service lifetime, plus a periodic return on the remaining value of that asset. This measure appears to be consistent with the statutory mandate that led Amtrak to develop the APT, which requires it to develop a capability to estimate the costs of its current network of train services. It can also provide a reasonable indication of the annual capital costs, including new investment and the opportunity cost of invested capital, which would be necessary to support continued operation of the level of service that Amtrak currently provides on the NTS as well as continuation of its related business lines.

A capital recovery factor is a widely used method for apportioning the two components of the cost of a capital asset, the decline in its value associated with its use, and the required return on its remaining value over its expected lifetime to produce a constant total value during each year.[5] Annualizing an initial investment with use of a capital recovery factor differs slightly from the similar calculation of a constant annual amount for the purpose of *amortizing* a level-repayment loan.[6] Where the amortization period

[5] For a derivation and discussion of the capital recovery factor, see McCarthy, Patrick S., *Transportation Economics* (Blackwell Publishers, 2001), pp. 358-363. .

[6] In the latter, the amortization period is usually established by the duration of the repayment arrangement for the loan, while a capital recovery factor is intended to annualize an investment over its expected service lifetime, which may differ from the amortization period of a loan used to finance it. Annualization and amortization also differ because the rate of return used in calculating a capital recovery factor is usually intended to represent the "true" opportunity cost of investment capital, while an amortization factor is calculated with use of the actual interest rate specified by a particular loan contract. However, under the method recommended here for calculation of a capital charge annualizing the acquisition cost of Amtrak's

and asset lifetime are identical, however, the two approaches produce identical annual equivalent costs or payments when they employ the same rate of return.

Annualizing initial value with use of a capital recovery factor treats the costs of capital assets that Amtrak purchases or constructs analogously with assets that it acquires through capital leases. In effect, this approach treats the costs of these assets as equal to an equivalent annual lease payment on them every year, assuming that the term of each asset's lease would be identical to its expected service lifetime. The sum of these capital charges allocated to an individual train service or business line provides a comprehensive measure of the equivalent annual cost of the capital invested in the assets that Amtrak employs to operate it.

Annual capital charges for undepreciable property and working capital should be calculated by applying the same rate of return used to determine the annual capital recovery factor to the ledger value of any undepreciable physical property used by Amtrak to operate the NTS or any of its other business lines, and to an allowance for working capital necessary to operate the NTS.[7] This is equivalent to applying a capital recovery factor calculated under the assumption of an infinite lifetime, the usual assumption for undepreciable property (such as land) and working capital.[8]

Capital charges should also be calculated for any specialized assets necessary to operate Amtrak's other business lines. For assets that are employed in more than one line of business, it will be necessary to calculate a total capital charge associated with that asset and to allocate that amount between or among the different business lines. The recommendation is that any property still carried, unretired in Amtrak's accounts but for which it has no expectation of future need to operate the current NTS or its other business lines be excluded from the calculation of annualized capital costs. Any assets that Amtrak has actually retired by sale or formal abandonment will, of course, not enter into calculation of the annual capital charge because—under normal financial accounting practice—their gross values will have been completely removed from the books of account.

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capital-leased assets, the service life for such annualization is based on that being used for their depreciation on Amtrak's audited financial statements—that is, the terms of the capital lease loan contracts.

[7] Following Surface Transportation Board (STB) practice, this allowance would be based on the current balance-sheet valuation of materials and supplies, plus, if positive, an allowance for cash and near-cash balances. Under STB regulations, a working capital investment value base for evaluation of the profitability of Class I freight railroads is constructed by adding to current physical materials/supplies inventory an allowance for cash and near-cash balances in the form of numerous days of cash operating expenses, with such days calculated as the difference between the current days of revenue held as accounts receivable less the days of operating expense obtained as accounts payable (adjusted upward by a 15-day "buffer"), subject to a maximum of actual cash/near-cash held. In the case of Amtrak, which is not significantly dependent on credit sales, such a calculation currently produces an allowance only slightly above the balance-sheet value of materials and supplies.

[8] See McCarthy, *Transportation Economics*, p. 360.

The only information required to calculate the recommended charges for the assets that make up each of Amtrak's depreciation groups is the total initial acquisition costs for these assets and their composite service lifetimes, which can be inferred from each group's depreciation rate. Thus, this information is the same as that already used in Amtrak's group depreciation system. Amtrak's periodic reviews of its group depreciation rates, which are intended to prevent distortions in the accumulated depreciation accounts reported on its balance sheet that might result from systematic differences between actual and projected asset lifetimes, should also prevent any distortion from particular assets remaining in service beyond the time when they would have been fully depreciated if treated as individual units.[9]

Similarly, the only information required to calculate the recommended charges for Amtrak's capital-leased assets is the initial capitalized lease costs and, as service lives, the lease terms over which these costs are being depreciated.[10] In the particular case of Amtrak's sold and leased-back cars and locomotives, however, the effect of the previously mentioned "write-up" of their original balance-sheet values that was effected by those transactions must be eliminated before capital-charge calculation by substituting their correct initial purchase values for their current initial capitalized lease costs. Because these vehicles, being capital-leased, are not consolidated into depreciation groups and individual, original financial data for them are retained in Amtrak's accounting records currently used for generating depreciation for the audited financial statements, extracting the correct initial purchase values would not be difficult or burdensome. In the case of any future such sale/leaseback transactions, initial values recorded and preserved separately for easy availability would be helpful.

Table E-3 illustrates how the annualized capital costs for selected equipment-asset groups used in Amtrak's group depreciation system would be calculated with the use of the recommended approach. The capital recovery factors (CRF) used in the table express the annual equivalent cost of the assets included in each group as a fraction of their total initial acquisition cost and depend on their average or composite lifetime and the assumed return on investment.[11] Group lifetimes are derived from the annual depreciation rates used in Amtrak's group depreciation system; the required return on investment is assumed to be the current interest rate on 10-year U.S. Federal Treasury notes, which is approximately 4.8 percent at the time of this writing. The table shows that the annual capital recovery factors for the sample asset groups range from 0.0480 to

[9] Thus, any property that would show as already fully depreciated if considered as an individual unit rather than as a component of one of Amtrak's asset depreciation groups should not be excluded solely on that basis.

[10] If any asset originally recorded as capital-leased and thus never included in a depreciation group were to have been acquired by Amtrak and retained, fully depreciated, on Amtrak's books of account after expiration of its lease term-based service life, the recommended capital charge calculation method would logically require an adjustment to reflect that life's effectively having extended from the time of original acquisition at least to the present.

[11] Specifically, where i denotes the rate of return and T, the asset group's composite lifetime, the capital recovery factor is equal to $i(1+i)^T/[(1+i)^T-1]$.

0.0789, which implies that each dollar initially invested in the included assets has an equivalent annual cost ranging from $0.0480 to $0.0789, depending on the group's average service lifetime.

The annualized equivalent value of an individual asset's initial acquisition cost is a constant value during each year of its expected lifetime, even though this cost consists of a changing mix of the annual decline in its value assumed to result from usage and the annual return on the capital investment represented by its remaining value.[12] Nevertheless, the annualized capital cost for an *asset group* will normally vary from year to year in response to changes in the aggregate initial cost of the included assets, which result from investment in new assets and removal of others from service.

4. The portion of the capital charge calculated on the part of Amtrak's asset values that represents property acquired with State capital grants should be identified internally by Amtrak for individual States, to allow it to be taken into consideration when negotiating payments for State-supported trains. Similarly, public reports that include the recommended capital charges should identify portions of these charges that were derived from the values of State-granted assets but not necessarily their values for individual States. Public reports should also contain an explanation that their estimates of capital costs do not include those for rolling stock or other property held on States' *own* account books but used in Amtrak operations.

To ensure that any comparison of total costs and revenues on individual routes takes into consideration that capital charges derived from State-granted assets have already been "covered" by virtue of the State's donation, it is recommended that a synthetic form of "revenue" be created for each route in the exact amount of whatever portion of the capital charge for the route derives from such assets. This revenue amount might be labeled "Capital charge offset due to State grants," and it would substitute for any allocation of State-grant amortization revenue, which, unlike the capital charge, constitutes a "return of" but not a "return on" the original expenditure for the assets involved. The difference between the total of such amortization revenue on the audited Amtrak income statement and the total of this synthetic "revenue" offsetting State-granted asset-derived capital charges should be clearly displayed as an APT income-statement-reconciling item for the reporting period.

[12] Annualizing capital costs with use of a CRF implicitly assumes that an asset's value declines (or is returned) only slowly during the early years of its lifetime, so that most of its equivalent annual cost during those years consists of a return on the capital investment embodied in the asset's remaining value. Over subsequent years, however, the annual declines in initial capital value or acquisition cost represent successively larger fractions of the asset's annual cost until virtually its entire annual cost consists of this "return of capital" during the final years of its service life. Amtrak will presumably continue to calculate annual depreciation on its assets with use of the straight-line method that it currently employs, so that the sum of annual depreciation and annual interest expenses reported in its financial statements will differ from the capital charges calculated according to the recommended procedure both in total and for any individual asset group.

5. The recommended capital charge should be reported in four separate components. The portion of the charge calculated on the values of rolling stock should be shown separately from that calculated on the combined value of other equipment, property, and working capital. For each of these two groups of assets, the capital charge should be further subdivided into a component representing the "return of" the capital outlays initially required to construct or purchase them and a component denoting a "return on" the value of these outlays.

Because each asset group includes numerous individual assets of varying ages, estimating precisely the separate contributions of these two components to an asset group's annual capital charge would be impractical or even impossible. Thus, the *average* annual values of these separate components over the estimated lifetime of each asset group should be reported. The average value for the "return of" capital component of each asset group's annual charge will correspond to that group's annual depreciation expense under the straight-line depreciation accounting method, because both must accumulate to an asset's initial value over its lifetime. For a variety of reasons, however, the average value of the "return on" capital component of each asset group's annual capital charge will not correspond to Amtrak's interest expenses on privately financed assets included in that group.

6. The "reference" rate of return used to calculate the capital recovery factors for each asset group should be the U.S. Treasury borrowing rate on 20-year maturity notes prevailing at the time that the capital charge is calculated. This corresponds to the view that the cost of the entire capital investment in Amtrak should reflect the Federal Government's long-term cost of borrowing to finance that investment.

Use of the U.S. Treasury borrowing rate implicitly acknowledges the Federal Government's dominant role in financing Amtrak as well as the cost to the Government of borrowing against future tax revenues or diverting spending from other Federal programs to fund continued reinvestment in Amtrak.[13] The separately displayed portion of the capital charge that represents only the return of capital will indicate the annual capital cost corresponding to the assumption that investments in Amtrak should not be required to generate a financial return, regardless of their source or their financing method.

One plausible alternative rate of return would be the expected rate of future price inflation in the U.S. economy, as obtained from official Government forecasts or a consensus of private forecasting services. Capital charges calculated with use of this rate would approximate the annual amount that the Federal Government would be required to appropriate to allow Amtrak to continue to operate the NTS and its other business lines for an indefinite future. These charges would recognize the need for Amtrak to reinvest

[13] Like all market interest rates, the financial returns demanded by lenders to the U.S. Government incorporate the capital markets' requirements for a real return on initial investment and some degree of protection from inflation.

continuously in its depreciable assets while replacement costs escalated annually at the economy-wide rate of inflation.[14]

7. Amtrak's APT system should allocate capital charges for train and other equipment among individual trains and routes by using the same basis employed by RPS. The APT development effort should also include a basis for allocating capital charges for fixed-asset groups between the NTS and Amtrak's ancillary business lines and among individual routes within the NTS. Capital charges for fixed assets utilized by the NTS should be allocated to individual routes in a manner consistent with the allocation of expenses for operating and maintaining those assets.

Capital charges for asset groups including train equipment (ACC[15] 50, 60, and 70), should continue to be allocated to individual trains, using utilization statistics for specific locomotive and car types, as previously done within RPS. The new APT system rules for allocating operating and maintenance expenses, associated with ROW and structures such as stations, bridges, and communication and power systems, should be used a guide for developing capital charge allocation rules for these asset groups.[16] The new methodology should identify asset locations and allocate the capital charge to those trains, routes, and ancillary businesses served at those locations.

Track-section identifiers and other location information in Amtrak's asset data systems can be used to assign each asset to the route or routes that it serves. For assets serving multiple routes, reasonable allocation statistics for distributing their costs would also need to be identified, although the statistics used to allocate operating and maintenance expenses for those facilities will provide useful guidance.

[14] Development of a composite rate-of-return requirement for Amtrak that attempts to reflect its actual historical or expected future mix of Government-grant and market-rate financing is not recommended. Although Amtrak has acquired much of its long-lived assets using investment capital provided by the Federal and State Governments and has financed investments in other property by borrowing at commercial rates, the specific mix of these financing sources has varied dramatically over its recent history. To reflect this variation, such a composite return would need to vary from year to year, causing the annualized equivalent cost of each of Amtrak's assets calculated with use of this composite rate to appear to change each year. Such a calculation would also require detailed tracking of the sources of capital used to acquire each of Amtrak's assets to allow the relative weights of the Government- and debt-financed components of total investment to be determined each year. Another approach would be to impute a required return on government capital investments in Amtrak but to apply that rate only to the portion of investment financed by Government grants. The resulting dollar estimate of required returns on Government investment in Amtrak would then be added to each year's actual interest payments, thus resulting in an estimate of Amtrak's total required return on investment for that year. Although this approach might be computationally more practical than determining a composite rate of return each year, it would also result in significant year-to-year variation in Amtrak's estimated capital costs because of historical variation in the composition of financing sources for new investment in Amtrak.

[15] Asset Category Code.

[16] For example, some station operating expenses, such as ticketing, cleaning, and utilities, are allocated to trains making shared use of a station on the basis of passenger boardings and alightings for each train. This method may also be useful for allocating station-related capital expenses, such as depreciation of structures and station facilities. For simplicity, the desire is to use similar allocation rules for capital and operating expenses associated with the same asset category (stations, track, and structures).

RPS's current system for disaggregating depreciation and interest expenses for train equipment into subgroups corresponding to individual locomotive and car models, which allows it to allocate capital expenses for each subgroup only to trains that utilize that model, offers some precedent for this approach.

8. Amtrak should establish a "disposition period" for each asset group used in its depreciation system. Up to the end of that period, the capital charges associated with assets in each group would be assumed to be completely (100 percent) fixed, but after that time they would be assumed to be fully (100 percent) avoidable.

The duration of the disposition period established for each asset group should reflect a reasonable time horizon in which unused assets in that group could be sold, transferred to other train services or other business lines, or disposed of otherwise.[17] By considering factors such as the existence of active resale markets or the transferability of assets such as rolling stock among Amtrak routes or business lines, it should be possible to develop realistic estimates of the time period in which different types of assets could be redeployed or sold. Groups containing similar types of assets could be assigned the same disposition period; for example, different periods could be established for broad categories such as train equipment, right-of-way (ROW) preparation (grading, tunneling), roadway structures (bridges, fences, etc.), track structures, train-servicing facilities, and power-distribution systems. Each of these categories could include multiple groups used in Amtrak's depreciation system.

Disposition periods for train and other equipment would presumably be reasonably short (2–3 years), and equipment-related capital costs might be considered avoidable at the level of individual trains or routes within a lesser time horizon depending on whether or not opportunities to reassign equipment to other services existed. At the other extreme, disposition periods for ROW assets, such as grading, tunneling, or bridges, as well as for many road and track assets, such as power and communication systems, signals, and track, would be expected to be quite long in recognition of their immobility and extremely limited alternative uses, so that capital costs associated with these assets would in effect be considered fixed over any time horizon. Passenger and train-servicing stations, maintenance and other buildings, and machinery would be expected to have intermediate disposition periods.

Disposition periods for specific asset categories can be proposed collaboratively by Volpe Center analysts and Amtrak staff but need to be mutually acceptable. The

[17] For example, the Uniform Rail Costing System (URCS) used by the Surface Transportation Board for guidance in rate-regulation cases treats as variable with an individual railroad's service output, during an intermediate time period, all depreciation and return-on-investment allowances for rail rolling stock, computer equipment, and motor vehicles not used for rail-line maintenance, plus half of those same cost elements for rail lines and all other physical property. A simplified application of this principle to Amtrak would be to assume that capital costs for all equipment-asset groups were fully avoidable within 1–2 years at the level of individual trains or routes while capital costs associated with all other asset groups were fixed at the route level as long as service on that route continued.

emphasis in specifying their duration should be on conservatism—that is, estimating longer periods, the exact length of which is unknown—to avoid overestimating the degree of avoidability in capital costs and thus the degree to which savings in those costs can actually be attained by reducing or eliminating services.

9. The recommended capital charges are likely to be of the same order of magnitude as Amtrak's recent depreciation and interest expenses. Although the similarity should not necessarily be the basis for assessing the reasonableness of the recommended charges, it does demonstrate that the recommended approach produces results that are generally consistent with the conventional accounting interpretation of capital costs.

During FY 2005, Amtrak reported depreciation charges (net of amortization) of $557.9 million, and net interest expenses of $124.7 million; it estimated total capital-related charges of $682.6 million. At the end of FY05, Amtrak reported the undepreciated value of its property and equipment investments (net of the original value of deferred gain on its recent sale/leaseback) as $12.3 billion. Using the method proposed here, a rate of return of 4.65 percent would have been required to produce an annualized cost of this investment equal to the sum of Amtrak's reported depreciation and interest expenses for FY 2005, assuming a typical or composite lifetime for Amtrak's property and equipment assets of 40 years.

With the use of the same 40-year composite lifetime assumption, the annualized equivalent cost of Amtrak's total capital investment in property and equipment assets would amount to $697.4 million at the current rate on U.S. Treasury borrowing of approximately 4.8 percent, which is only slightly higher than Amtrak's reported total of $682.6 million. At lower rates of return, the annualized equivalent cost of Amtrak's total capital investment would be less than this figure, while requiring higher rates of return would increase Amtrak's total annual capital costs estimated with use of the annualization approach recommended here. At any reasonable rate of return, however, Amtrak's annualized capital costs are likely to be of the same order of magnitude as the sum of its current depreciation and interest expenses.

Table E-1. Debt Financing as a Fraction of Total Investment in Amtrak

Fiscal Year	Net Investment (1) ($ millions)	Outstanding Debt (2) ($ millions)	Outstanding Debt as % of Net Investment	New Investment (3) ($ millions)	New Debt (4) ($ millions)	New Debt as % of New Investment
1995	$4,468.5	$837.0	18.7%	$431.4	$165.2	38.3%
1996	$4,789.9	$987.0	20.6%	$566.5	$188.5	33.3%
1997	$5,434.2	$1,336.4	24.6%	$899.5	$519.5	57.8%
1998	$6,349.5	$1,637.9	25.8%	$1,208.2	$612.9	50.7%
1999	$7,060.7	$1,887.2	26.7%	$1,040.9	$399.2	38.4%
2000	$7,628.4	$2,133.0	28.0%	$956.1	$234.4	24.5%
2001	$8,054.5	$2,980.6	37.0%	$767.4	$943.2	122.9%
2002	$8,097.3	$3,113.2	38.5%	$485.5	$266.4	54.9%
2003	$7,790.6	$3,055.8	39.2%	$292.4	$22.2	7.6%
2004	$7,622.0	$2,956.8	38.8%	$533.9	$10.7	2.0%
2005	$7,639.0	$2,810.3	36.8%	$596.9	$0	0.0%

(1) Depreciated ("book") value of property, including land and buildings, and equipment including fixed-equipment installations and mobile equipment; net of outstanding deferred gain on sale and leaseback.

(2) Outstanding long-term debt, capital leases, and revolving credit loans; net of escrowed sale and leaseback proceeds.

(3) New cash purchases and (capitalized) refurbishments of property and equipment, plus new capital-leased and other noncash-financed property other than (in FYs 2000 and 2001 only) sold and leased-back existing property.

(4) New cash-borrowing proceeds, plus new capital leases and other noncash-financing, other than (in FYs 2000 and 2001 only) sales/leasebacks of existing property.

Table E-2. Amtrak Interest Expenses

Fiscal Year	Net Interest Expense (1) ($ millions)	% of Total Operating Expenses
1996	$47.7	2.1%
1997	$60.2	2.6%
1998	$75.8	3.1%
1999	$87.6	3.3%
2000	$82.9	3.0%
2001	$54.2	1.9%
2002	$69.4	2.1%
2003	$136.5	4.1%
2004	$144.6	4.3%
2005	$129.6	4.2%

(1) Interest expense net of interest income.

Table E-3. Calculations of Annualized Capital Costs For Selected Amtrak Asset Groups

Asset Category Code	Asset Group	Group Depreciation Rate (%)	Implied Lifetime (1) (yrs.)	Capital Recovery Factor (2)	Acquisition Cost ($ millions)	Annualized Cost ($ millions)
1	Land	0.00%	Infinite	0.0480	$64.6	$3.1
2	Grading	5.00%	20	0.0789	$139.0	$11.0
4	Tunnels and Subways	0.97%	103	0.0484	$227.7	$11.0
5	Bridges, Trestles, and Culverts	1.12%	89	0.0488	$533.9	$26.0
8	Stations and Office Buildings	2.54%	39	0.0572	$1,053.5	$60.2
11	Fuel Stations	3.33%	30	0.0636	$4.6	$0.3
13	Communication Systems	4.00%	25	0.0695	$120.0	$8.3
14	Signals and Interlockers	2.51%	40	0.0567	$965.3	$54.7
16	Power Transmission Systems	2.24%	45	0.0546	$1,201.1	$65.6
41	Rail	3.60%	28	0.0657	$1,287.0	$84.5
42	Ballast	2.50%	40	0.0567	$151.6	$8.6

(1) Assumes that group depreciation rates reflect zero residual values of group assets.
(2) At interest rate of 4.8 percent.

Appendix F:

List of Interviewees

APT Requirement Analysis Meeting and Interview Participants

- Stephanie Audette, Assistant Vice President, Financial Analysis, Amtrak
- Dan Black, Senior Director, Financial Analysis, Amtrak
- John Conlow, Amtrak
- Kay Duggan, Senior Director, Amtrak Technologies
- Steven Emanuel, Chief Information Office, Amtrak Technologies
- James Flanagan, Assistant Vice President, Technology and Operations, Amtrak
- Dharm Guruswamy, Transportation Industry Analyst, Federal Railroad Administration (FRA)
- Janet Kilbarger, Manager, Software Engineering, Amtrak Technologies
- Bill Kotraba, Manager of Route Analysis, Amtrak
- Patrick Leininger, Controller, Amtrak
- Jeff Mann, Senior Director, State Contracts, Amtrak
- Mary Montgomery, Project Manager/Reporting, Amtrak
- Neil Moyer, Principal Transportation Analyst, FRA
- Christena Nielsen, Chief, Program Development Division, FRA
- Paul Nissenbaum, Vice President, Planning and Analysis, Amtrak
- Cathy Peberdy, Senior Director, Route Analysis, Amtrak
- Peter Schwartz, Senior Transportation Industry Analyst, FRA
- Sharyn Seitz, Assistant Vice President, Financial Planning, Amtrak
- William Sheridan, Chief, Business Line Planning/Strategy, Amtrak
- David Smith, Chief Financial Officer, Amtrak
- Muriel Throop, Financial Analyst, Amtrak
- Larry Wenz, Senior Director, Finance, Amtrak
- Christopher Wolf, Financial Manager, Amtrak

Appendix G:

Amtrak Crew Bases

Table G-1. T&E Crew Bases

T&E Crew Base	Route Name	Route #
Albany	Ethan Allen Express	3
Albany	Maple Leaf	7
Albany	Empire Service	15
Albany	Adirondack	40
Albany	Lake Shore Limited	45
Albuquerque	Southwest Chief	28
Baltimore	MARC Commuter	N/A
Boston	Acela Express	1
Boston	Northeast Regional	5
Boston	Lake Shore Limited	45
Brattleboro	Vermonter	4
Buffalo	Maple Leaf	7
Buffalo	Empire Service	15
Buffalo	Lake Shore Limited	45
Carbondale	Illini	23
Carbondale	City of New Orleans	30
Charlotte	Crescent	52
Charlotte	Carolinian	66
Charlotte	Piedmont	67
Chicago	Cardinal	18
Chicago	Chicago-St. Louis	20
Chicago	Hiawatha	21
Chicago	The Wolverine	22
Chicago	Illini	23
Chicago	Illinois Zephyr	24
Chicago	Empire Builder	25
Chicago	Capitol Limited	26
Chicago	California Zephyr	27
Chicago	Southwest Chief	28
Chicago	City of New Orleans	30
Chicago	Texas Eagle	32
Chicago	Blue Water	41
Chicago	Lake Shore Limited	45
Chicago	Hoosier State	54
Chicago	Missouri Routes	56
Chicago	Pere Marquette	65
Denver	California Zephyr	27
El Paso	Sunset Limited	33
Florence	Silver Star	16
Florence	Silver Meteor	19
Florence	Palmetto	48
Fort Worth	Heartland Flyer	29
Fort Worth	Texas Eagle	32
Gilroy	Caltrain Peninsula	N/A

Harrisburg	Keystone Service	14
Harrisburg	Pennsylvanian	57
Huntington	Capitol Limited	26
Indianapolis	Cardinal	18
Indianapolis	Hoosier State	54
Jacksonville	Silver Star	16
Jacksonville	Silver Meteor	19
Jacksonville	Palmetto	48
Kansas City	Southwest Chief	28
Kansas City	Missouri Routes	56
Lajunta	Southwest Chief	28
Lincoln	California Zephyr	27
Little Rock	Texas Eagle	32
Lorton	Auto Train	63
Los Angeles	Southwest Chief	28
Los Angeles	Texas Eagle	32
Los Angeles	Sunset Limited	33
Los Angeles	Coast Starlight	34
Los Angeles	Pacific Surfliner	35
Memphis	City of New Orleans	30
Merced	San Joaquin	39
Meridian	Crescent	52
Miami	Silver Star	16
Miami	Silver Meteor	19
Miami	Palmetto	48
Milwaukee	Hiawatha	21
Milwaukee	Empire Builder	25
New Haven	Acela Express	1
New Haven	Vermonter	4
New Haven	Northeast Regional	5
New Orleans	City of New Orleans	30
New Orleans	Sunset Limited	33
New Orleans	Crescent	52
New York	Acela Express	1
New York	Ethan Allen Express	3
New York	Vermonter	4
New York	Northeast Regional	5
New York	Maple Leaf	7
New York	Keystone Service	14
New York	Empire Service	15
New York	Silver Star	16
New York	Cardinal	18
New York	Silver Meteor	19
New York	Adirondack	40
New York	Lake Shore Limited	45
New York	Palmetto	48
New York	Crescent	52

New York	Pennsylvanian	57
New York	Carolinian	66
New York	Piedmont	67
Oakland	California Zephyr	27
Oakland	Coast Starlight	34
Oakland	Capitol Corridor	37
Oakland	San Joaquin	39
Omaha	California Zephyr	27
Philadelphia	Vermonter	4
Philadelphia	Northeast Regional	5
Philadelphia	Keystone Service	14
Philadelphia	Pennsylvanian	57
Pittsburgh	Capitol Limited	26
Pittsburgh	Pennsylvanian	57
Pontiac	The Wolverine	22
Portland	The Downeaster	9
Portland	Empire Builder	25
Portland	Coast Starlight	34
Portland	Cascades	36
Quincy	Illinois Zephyr	24
Raleigh	Silver Star	16
Raleigh	Silver Meteor	19
Raleigh	Palmetto	48
Raleigh	Carolinian	66
Raleigh	Piedmont	67
Richmond	Northeast Regional	5
Richmond	Silver Star	16
Richmond	Silver Meteor	19
Richmond	Palmetto	48
Richmond	Carolinian	66
Richmond	Piedmont	67
Sacramento	California Zephyr	27
Sacramento	Coast Starlight	34
Sacramento	Capitol Corridor	37
Sacramento	San Joaquin	39
Salt Lake City	California Zephyr	27
San Antonio	Texas Eagle	32
San Antonio	Sunset Limited	33
San Diego	Pacific Surfliner	35
San Francisco	Caltrain Peninsula	N/A
San Jose	Coast Starlight	34
San Jose	Capitol Corridor	37
San Jose	Caltrain Peninsula	N/A
San Louis Obispo	Coast Starlight	34
San Louis Obispo	Pacific Surfliner	35
Sanford	Auto Train	63
Seattle	Empire Builder	25
Seattle	Coast Starlight	34

Shelby	Empire Builder	25
Sparks	California Zephyr	27
Spokane	Empire Builder	25
Springfield	Vermonter	4
Springfield	Northeast Regional	5
Springfield	Lake Shore Limited	45
St. Cloud	Empire Builder	25
St. Louis	Chicago-St. Louis	20
St. Louis	Texas Eagle	32
St. Louis	Missouri Routes	56
Toledo	Capitol Limited	26
Toledo	Lake Shore Limited	45
VRE	VRE Commuter	N/A
Washington	Acela Express	1
Washington	Vermonter	4
Washington	Northeast Regional	5
Washington	Silver Star	16
Washington	Cardinal	18
Washington	Silver Meteor	19
Washington	Capitol Limited	26
Washington	Palmetto	48
Washington	Crescent	52
Washington	Carolinian	66
Washington	Piedmont	67
Washington	VRE Commuter	N/A

Table G-2. OBS Crew Bases

OBS Crew Base	Route Name	Route #
Boston	Acela Express	1
Boston	Regional	5
Chicago	Lincoln Service	20
Chicago	Hiawatha Service	21
Chicago	Wolverine Service	22
Chicago	Saluki	23
Chicago	Illini	23
Chicago	Illinois Zephyr	24
Chicago	Carl Sandburg	24
Chicago	Empire Builder	25
Chicago	California Zephyr	27
Chicago	Texas Eagle	32
Chicago	Blue Water	41
Chicago	Lake Shore Limited	45
Chicago	Kansas City Mule	56
Chicago	Ann Rutledge	56
Chicago	St. Louis Mule	56
Chicago	Pere Marquette	65
Ft. Worth	Heartland Flyer	29
Jacksonville	Silver Star	16
Jacksonville	Silver Meteor	19
Lorton	Auto Train	63
Los Angeles	Southwest Chief	28
Los Angeles	Texas Eagle	32
Los Angeles	Sunset Limited	33
Los Angeles	Coast Starlight	34
Los Angeles	Pacific Surfliner	35
Miami	Silver Star	16
Miami	Silver Meteor	19
New Orleans	City of New Orleans	30
New Orleans	Crescent	52
New York	Acela Express	1
New York	Ethan Allen Express	3
New York	Regional	5
New York	Maple Leaf	7
New York	Empire Service	15
New York	Cardinal	18
New York	Adirondack	40
New York	Lake Shore Limited	45
New York	Palmetto	48
New York	Crescent	52
New York	Pennsylvanian	57
Oakland	Pacific Surfliner	35
Oakland	Capitol Corridor	37
Oakland	San Joaquin	39

OBS Crew Base	Route Name	Route #
Raleigh	Carolinian	66
San Diego	Pacific Surfliner	35
Seattle	Empire Builder	25
Seattle	Cascades	36
Washington	Acela Express	1
Washington	Vermonter	4
Washington	Regional	5
Washington	Cardinal	18
Washington	Capitol Limited	26

Appendix H:

Definition and Use of the Total Activity Cost (TAC) and Customer Activity Expense (CAE) Statistics in APT

Concept and Use of the TAC Statistic

In APT, in cases where a close association exists between costs and activity levels, an activity statistic, such as Total Board and Deboards (TBD) or Total Train Miles (TTM), is used to allocate costs to trains and other outputs.[18] In contrast, in cases where costs are not closely associated with a train or other output, and hence for which specific activity-based statistics are either not available or not appropriate for cost allocation, a different approach is required. These costs are often in the General and Administrative (G&A) area and the generally accepted approach is to allocate them based on the size or scale of the various "outputs" of the enterprise. A typical approach is to develop and employ a comprehensive cost-based measure of scale for this purpose, although sometimes a revenue-based measure is used.

Amtrak's RPS system allocates G&A costs using Total Train Expense (TTE), but doing so is not feasible in the APT system because APT allocates some G&A costs to non-train services or outputs, including the Ancillary Businesses, for which train expenses do not exist, and TTE cannot be calculated. Instead, APT will use a newly created statistic, Total Activity Cost (TAC), to allocate costs of the G&A type for which more appropriate activity-based statistics do not exist. TAC is defined so that it encompasses both train and non-train activities and hence has the needed functionality to allocate costs in APT.

One way to better understand the concept of TAC is to consider the name that was eventually chosen and some alternative names that were not selected. Alternative names for this statistic using the terms "direct" and "operating," for example "Direct Operating Cost" (DOC), were considered. "Direct" is not a good choice because many costs will be included in this statistic that are "indirect" in that they are not coded to particular Amtrak trains, but instead are allocated. Therefore, using the term "direct" would be misleading and arguably incorrect.

The term "operating" is also not a good choice because it is too broad. In fact, the G&A costs to be allocated using TAC are also operating costs and would be excluded from the new TAC statistic. The use of the term "total" is desirable because it reflects the comprehensive nature of the measure. Combing the term "total' with "operating" would, however, be incorrect because not all operating costs would be included. Instead, the term "activity" was ultimately selected because it conveys the concept of the statistic, namely, a measure of costs that are closely associated with an activity that produces an output.

In summary, for allocation purposes in APT, costs are divided into two groups: activity-related costs and general administrative and corporate-level support costs.

[18] The term "output" refers to the "cost object" in APT, such as the entity to which the costs are being allocated. If Amtrak's only business were the operation of the NTS, then the only cost objects would be trains. However, because Amtrak has other customers to whom it provides "outputs" usually in the form of services, a more general term is required. APT uses the convention of reporting its cost allocations to the NTS and other "customers" or "business types."

1. **Activity-related costs** consist of costs that are closely associated with a specific activity and are expected to vary with the amount or scale of that activity. A measure of the relevant level activity is used to allocate such costs unless they are directly linked to the activity by the accounting system.

2. **General administrative and corporate-level support costs** are composed of costs that are fixed or very loosely related to the overall scale of the enterprise, but, for practical purposes, do not vary with levels of activity or output as measured by statistics such as TBD or TTM. These general administrative and support costs are allocated to trains or other outputs based on the outputs' overall contribution to the size of the enterprise as reflected by the total of their activity-related direct and indirect (allocated) costs. A Total Activity Cost (TAC) statistic is constructed and used for this purpose.

Definition of the New TAC Statistic

The TAC statistic for a train or other output should reflect the size or scale of a particular output relative to the total for all Amtrak outputs. A cost-based measure rather than a revenue-based measure is preferred and will include all of the closely associated costs of producing the output, both direct and indirect (allocated). All general administrative and support costs will be excluded that are not closely associated with the output since those costs are, in contrast, the costs that the TAC statistic will be used to allocate. This approach avoids computational circularity errors.

TAC is defined as the sum of all costs allocated by any other statistic or process, such as costs *not* allocated by TAC. This approach is consistent with the general principle that a statistic should reflect the size of a particular output relative to the total output for the enterprise. TAC is the sum of all activity-driven costs, direct and indirect, irrespective of their APT Customer (Business) type, Family, ResCen, Function, Account, or Location classifications.

The general rule defined above for what to include in the TAC statistic provides a simple solution for allocating G&A costs to certain Amtrak "customers" that are included in the G&A Family because their ResCens are classified in this family, such as certain ResCens that focus on real estate and commuter business operations. Costs will be allocated to these customers in a "first round" allocation either directly or by some activity-based allocation process. The sum of the first round[19] costs will be the customers' TAC. Their TAC values will be used to allocate a portion of other G&A costs to them. This method similarly applies to other non-NTS customers such as freight railroads and commercial customers.

The use of this decision rule also will apply to other (non-G&A) Families, Subfamilies, or even costs within a Subfamily that are activity-driven and allocated and that do not use

[19] Where other intermediate rounds or their equivalent are used, their allocated costs would also be included in TAC and thus "used" to allocate costs in the final allocation round.

TAC in their allocation. If regional police costs are allocated without use of TAC, these allocated costs become part of each output's TAC, whereas certain national police costs will be allocated using TAC and thus will not be included in the calculation of TAC. Likewise, if some or all of utility costs can be closely associated with and allocated to specific outputs based on their location or linkage to a ResCen, these allocated costs will be part of TAC.

In developing the procedures for calculating TAC in APT, the issue of whether the APT capital charge should be included in TAC was considered. The decision was that capital charges, which are closely associated with a product or service and allocated to them, should be included in the TAC for that product or service. Several reasons exist for this decision:

1. It is consistent with the general principle of including all costs in TAC that reflect the size or scale of the product or service.
2. A key distinction between capital and other costs of production is that the former occur less frequently than normal monthly or annual reporting time periods and hence they must be smoothed out to identify the portion attributable to the shorter reporting time period. This is what the APT capital charge accomplishes and is the general principle behind the GAAP treatment of depreciation. The APT capital charge is intended to convert "lumpy" capital expenses to periodic expenses, which can then be added together with other costs to achieve a measure of total resources used.
3. The Cost Accounting Standards section of the Federal Acquisition Regulations (48 CFR 9404.410) provides that "…the cost input base used to allocate the G&A expense pool shall include all significant elements of that cost input which represent the total activity of the business unit...the determination of which cost input base best represents the total activity of a business unit must be judged on the basis of the circumstances of each business unit...a total cost input base is generally acceptable...." It goes on to give the following illustration: "…during a cost accounting period (business) Unit D acquires and uses a small building...the depreciation taken on the building would be part of the total cost input base (for Unit D)…." This guidance directly supports a definition of TAC in APT that includes a capital charge.
4. In the FY2006 DOT Appropriations Act, the Secretary of Transportation is directed to determine Amtrak's NEC capital and maintenance costs attributable to commuter rail operations. This again confirms the view that capital and operating costs be given equal treatment in estimating the costs of a specific service.

As noted in the third reason above, in analogous Federal Government contexts where full cost allocation to different sectors of an enterprise is required, it appears that it is an accepted practice to include depreciation within the total of operating costs used as a base for distributing general and administrative expenses.[20] This and other regulatory and

[20] As explained elsewhere, Amtrak, FRA and Volpe have agreed for purposes of APT to expand the representation of capital cost to a specially constructed charge embodying both the consumption of capital

accounting guidance and precedents consistent with this approach are provided as an attachment,[21] notably including Amtrak's following of common U.S. practice in its audited public income statement by presenting depreciation as one of the categories of "operating" expense counted in computing income from continuing operations before interest and income tax expense (if any).

Thus, logic and precedent dictate that, where feasible, capital costs should be treated as part of the total costs of a train or other output for cost allocation purposes. Capital costs that are not closely associated with and allocated to particular trains or other outputs would not be part of TAC. Thus, for example, the capital costs of most computer hardware and software in the Amtrak Automated Technology (AT) department would be excluded from TAC, but a capital charge linked to the equipment used for NTS train service would be included in the relevant TAC statistic.

Two other issues were considered in reaching a decision regarding the question of whether or not to include the Capital Charge in TAC.

1. It was noted that an undesirable distortion of the cost allocation would occur if, in calculating TAC, the procedure specifically and exclusively removed from the total operating expense base for one service any representation of the cost of providing owned or capital-leased equipment, while for some other service, any costs of equipment provision occurring in the form of shorter-term rental expenses or freight railroad access charges, for example, were left in.[22]

2. Because the principle use of TAC in APT is to allocate G&A expenses, a question arose as to whether some G&A expenses had already been allocated to capital accounts. If this were the case, it might be argued that, because a service's allocated

assets (similar to depreciation) and a requirement for earning a return on those assets. An enterprise's GAAP-compliant expense accounts, of course, only include return on capital in the form of interest to the extent any interest-bearing obligations are being serviced and do not include return on capital in profit form at all. However, it is reasonable to interpret typical cost allocation practices in regard to depreciation and interest expenses as representing the cost of providing an enterprise with its necessary capital equipment and logically similar to the APT capital charge. See Appendix E for a full discussion of the capital charge.

[21] "Selected Practices from Financial and Regulatory Accounting in the U.S. Relevant to the Use of Capital Costs in Allocating General and Administrative (G&A) Expenses."

[22] Although by Federal statute (49 USC 24308) such access charge payments are subjected only to a minimum standard of "incremental" cost in any cases where the Surface Transportation Board ("the Board") prescription may be required to resolve disputes over reasonable compensation levels, cost-finding procedures carried out under the authority of the statutes regulating Amtrak have recognized capital elements of incremental rail infrastructure costs. When in 1995 (Finance Docket 32467) the Surface Transportation Board had to prescribe compensation for Amtrak access to then Conrail-owned rails, it specifically noted the requirement to cover incremental maintenance-of-way costs, including replacement (a capital element) of track and related material. Likewise, in 1998 (Finance Docket 33381) the Board specifically provided that Amtrak cover the cost of capital outlays for certain incremental bridge and track work required for its newly established operation on lines owned by the, then, Guilford Rail System.

costs already included some G&A expenses via the Capital Charge, for purposes of allocating G&A expenses, the effect of capital had already been taken into account and excluding the capital charge from TAC would be appropriate. In considering this issue it was established that "capitalizing" a portion of G&A expenses into capital costs is inconsistent with GAAP, and in fact, Amtrak does not take such an approach.

Concept and Use of the Customer Activity Expense (CAE) Statistic

In most cases in APT a close association exists between activity and cost levels, and an activity statistic such as TBD or TTM is used to allocate the costs to customers.[23] In some cases, however, costs are not closely associated with a customer and are often viewed as fixed. In these latter cases, specific activity-based statistics are not appropriate for cost allocation. Instead, a different approach is required. These costs are often in the G&A area[24] and the generally accepted approach is to allocate them based on the size or scale of the various "outputs" of the enterprise. A typical approach is to develop and employ a comprehensive cost-based measure of scale for this purpose, although a revenue-based measure is sometimes used.

Initially, the assumption was that all G&A costs should be allocated uniformly across the entire enterprise to all customers. Examination of the specific costs in the G&A family revealed, however, that some costs should be assigned directly to a single customer, some allocated to a subset of customers, and some allocated to all customers. The APT G&A Family is divided into Subfamilies in part to reflect these different allocation cases. The five G&A Subfamilies are described in Table 1. The Police, Security, and Environmental/Safety (PSE) Subfamilies are included in Table 1 because they share the G&A Family characteristics and also require use of a general activity statistic to allocate their costs.

[23] The term "customer" refers to the "cost object" in APT, such as the entity to which the costs are being allocated. If Amtrak's only business were the operation of the NTS, then the only cost objects would be trains. However, because Amtrak has other customers for whom it provides "outputs," usually in the form of services, a more general term is required. APT uses the convention of reporting its cost allocations to the NTS and other "Customers" or "Business Types." There are five other categories or types of customers, namely, freight railroads that operate over its trackage (Freight), commercial tenants or users of its infrastructure (Commercial), parties for whom it performs maintenance or other work under reimbursable agreements (Reimbursable), commuter railroads for whom it serves as the operator (Commuter Operations), and commuter railroads that operate over its trackage (Commuter Access).

[24] This is referred to in APT as the G&A Family (#600). The Police, Security, and Environmental/Safety Family (#900) is separate but shares the characteristics of G&A and thus is covered by this discussion.

Table H-1. APT G&A and PSE Subfamily Structures

APT Subfamily Number	Subfamily Name	Description
601	Corporate Administration	Amtrak's president and other high level managerial and administrative staff. Costs are allocated to all customers.
602	Centralized Services	Amtrak's corporate services such as automated technologies, payroll, procurement, and human resources. Costs are allocated to all customers.
603	Qualified Managerial and Services	Corporate managerial and administrative services whose activities are focused on a subset of customers. Costs are allocated to a subset of customers.
604	Direct Customer	Corporate managerial and administrative services whose activities are focused on a single customer. Costs are assigned directly to a single customer.
605	Subsidiary Companies	Consolidated costs are either directly assigned or allocated to customers using activity statistics.
901	Police	A mix of ResCens with either national or regional focus. National ResCens cover the entire enterprise whereas regional ResCens are geographically focused. National costs are allocated to all customers and regional costs are allocated to customers in the relevant region.
902	Security, Strategy and Special Operations	Provides planning and capital support for a broad range of security matters corporate-wide. Costs are allocated to all customers.
903	Environmental & Safety	Provides policy and planning oversight on environmental compliance, health, and safety matters corporate-wide. Costs are allocated to all customers.

In APT, Amtrak's general and administrative costs incurred in managing or supporting activities related to only a subset of the Amtrak business, such as a subset of customer types, are in Subfamily 603, Qualified Managerial and Services, and in the Police Family. One example consists of the expenses associated with ResCen 0732 (Chief Corridor Development). The expenses only benefit some customers (in particular, they only affect customers in the NTS, Commuter Access, Freight, and Commercial categories, but not the Reimbursable or Commuter Operations categories). This ResCen is in the G&A Family because its costs do not vary with activity levels among the benefiting customers and are general management or administrative in nature.

Like expenses in the other G&A Subfamilies, expenses in the Qualified Managerial and Services Subfamily and some Police expenses are high-level management expenses that are not closely associated with Amtrak customers, and therefore, specific activity-based statistics are not appropriate for their cost allocation. Because they do not support the entire enterprise they are not considered corporate-wide G&A and therefore need to be included in the base for calculating TAC, which is ultimately used to allocate corporate-wide G&A expenses.

Because these expenses, after they are allocated, are included in each customer's TAC, they must be allocated among customers before the computation of TAC. For this reason they cannot be allocated using TAC. Instead a similar statistic, Customer Activity Expense (CAE) is defined and computed to allocate G&A-type expenses that are not allocated to all customers, such as expenses allocated to only a subset of customers.

Definition of the New CAE Statistic

The CAE statistic is similar to TAC. Both are non-activity statistics that are used to allocate G&A-type expenses because activity statistics would be unfeasible or inappropriate. Like TAC, the CAE statistic for a customer should reflect the size or scale of the particular customer relative to the total for all Amtrak customers to whom the costs are to be allocated, and like TAC, a cost-based measure will be used. It should include all of the closely associated costs of producing the output or product, both direct and indirect (allocated).

CAE will exclude all general administrative and support costs that are to be allocated to all Amtrak customer types. The costs allocated enterprise-wide are in Subfamilies 601 and 602 and are allocated using TAC after allocations are made using CAE.

CAE is defined as the sum of all costs allocated by a process or statistic not involving (i.e., before computation of) the CAE or TAC statistics. This approach is consistent with the general principle that CAE should reflect the size of a particular output or product relative to the total for the enterprise up to the point at which CAE-allocated costs are calculated. It is the sum of all activity-driven costs, direct and indirect, irrespective of their APT Customer (Business) type, Family, ResCen, Function, Account, or Location classifications. CAE will include any G&A costs directly assigned to a single customer, such as Subfamily 604, and costs in the Subsidiary Subfamily (#605) that are allocated using activity-based statistics.

In developing the procedures for calculating TAC in APT, the issue of whether the APT capital charge should be included in TAC was considered. It was decided that capital charges that are closely associated with a customer and allocated to them be included in the TAC for that customer. Accounting guidance and principles provide precedents for this treatment and it is consistent with the underlying purpose of the TAC, namely to provide a measure of a customer's total cost before the use of TAC for allocating G&A costs.

Because the CAE statistic and its purpose and use are so similar to those described above for the TAC statistic, it is appropriate to include the capital charge in CAE for the same reasons noted in the TAC definition. Specifically, both are used in allocating similar G&A-type costs that are not closely associated with a train or other output and are often viewed as fixed relative to activity levels. For these reasons, a comprehensive cost measure that reflects the relative size of the customer to which the G&A costs are to be allocated is desired. The only distinction between TAC and CAE is that the former is used in allocating G&A costs to all customers whereas the latter is used in cases where such costs are allocated to only a subset of customers. Thus, defining them similarly and including the capital charge in both is appropriate.