



U.S. Department of Transportation  
John A. Volpe National Transportation Systems Center

# **Update on the Methodology for Amtrak Cost Accounting Amtrak Performance Tracking (APT)**

## **Volume 1**

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### List of Acronyms

Acronym	Definition
AC	Account
APT	Amtrak Performance Tracking
AUA	Asset Usage Allocation
B&B	Bridges & Buildings
BPC	Business Planning and Consolidation
C&S	Communication & Signal
CAE	Customer Activity Expense
CC	Cost Center
CEP	Customer Electric Percentage
CETC	Centralized Electrification Traffic Control Center
CI	Commuter Infrastructure Access
CM	Commuter Operations
CMSRY	Commissary Direct Expense
CNOC	Consolidated National Operations Center
CO	SAP Controlling
CRF	Capital Recovery Factor
CRH	Crew Hours
CUS	Chicago Union Station Company
CUT	Car Unit Trips
DelDOT	Delaware DOT
DLH	Dining Labor Hours
DLU	Diesel Locomotive Units Used
DPUF	Diesel Power Usage Factor
DRV	Dining Car Revenue
ELU	Electric Locomotive Units Used
EPUF	Electric Power Usage Factor
ERP	Enterprise Resource Planning
ET	Electric Traction
EUM	Electric Locomotive Unit Miles
F&B	Food & Beverage
FCR	First Class Riders
FI	Financial Accounting
FOOD	Food Expense
FRA	Federal Railroad Administration
FTT	Frequency of Train Trips
FY	Fiscal Year
G&A	General and Administrative
GAAP	Generally Accepted Accounting Principles

GTM	Gross Ton Miles
HSR	High Speed Rail
IO	Internal Order
LMS	Labor Management System
LNDRY	Linen and Laundry Expense
MARC	Maryland Area Regional Commuter
MDC	Mechanical Direct Cost
MOE	Maintenance of Equipment
MOW	Maintenance of Way
MP	Mile Post
MWDC	Maintenance of Way Direct Costs
NJT	New Jersey Transit
NON	Straight-Line Allocation
NTS	National Train Service
OBS	Onboard Services
OIG	Office of the Inspector General
OLH	Onboard Service Labor Hours
OMS	Operations Management System
PAS/ALMS	Passenger Accounting System/Automated Lift Match System
PC	Profit Center
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PRIL	Passenger Railroad Insurance Limited
PRV	Passenger Related Transportation Revenue
PSL	Penn Station Leasing, LLC
PUT	Passenger Car Unit Trips
ROW	Right-of-Way
RPS	Route Profitability System
RRDW	Ridership and Revenue Data Warehouse
RSCC	Reservation Sales Call Centers
RSO	Talk Time Allocation Factor for RSCC Operations
SAM	Strategic Asset Management
SAP	Systems, Applications, and Products
SEPTA	Southeastern Pennsylvania Transportation Authority
SQ	Stat Qualifier
SQL	Structured Query Language
SSIS	SQL Server Integration Services
T&E	Trainmen & Enginemen
TAC	Total Activity Cost
TAS	Travel Agent Sales
TASCOM	Travel Agency Sales Commissions
TBD	Total Boards and Deboards

TDC	Transportation Direct Cost
TEH	Trainmen & Enginemen Labor Hours
TLH	Trainmen Labor Hours
TPM	Total Passenger Miles
TRD	Total Riders
TSL	30th Street Limited, L.P.
TTM	Total Train Miles
TUS	Train Unit Statistics
UM	Unit Miles
UT	Unit Trips
UU	Units Used
VRE	Virginia Railway Express
WBD	Trip-length Weighted Total Boards and Deboards
WBS	Work Breakdown Structure
WBSE	Work Breakdown Structure Element
WMS	Work Management System
WTC	Washington Terminal Company

# 1 Introduction

## 1.1 Background

The Consolidated Appropriations Act, 2005 (Act)<sup>1</sup> directed the Secretary of Transportation “to retain a consultant ... to develop ... a methodology for determining the avoidable and fully allocated<sup>2</sup> costs of each Amtrak route.” The Federal Railroad Administration (FRA) met this requirement through an agreement with the Volpe National Transportation Systems Center (Volpe Center, or, Volpe) to closely collaborate with the National Railroad Passenger Corporation (Amtrak) in developing the cost accounting methodology required by the Act.<sup>3</sup>

The Volpe Center and Amtrak jointly developed the methodology for estimating Fully Allocated Costs and FRA published an extensive description of this cost accounting methodology in a three-volume 2009 Report to Congress.<sup>4</sup> As explained in that report, Fully Allocated Costs are the total costs associated with operating an Amtrak route, including direct operating expenses, a portion of shared expenses, and a portion of corporate overhead expenses. It is important to note that Fully Allocated Costs are a retrospective look at the actual expenses incurred during a previous reporting period. Amtrak implemented this methodology in its Amtrak Performance Tracking (APT) system and began using it for reporting route financial performance in 2009.

Subsequent to the 2005 Act and the development of its mandated cost accounting methodology, Section 203 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) required Amtrak to “...implement a modern financial accounting and reporting system.”<sup>5</sup> To satisfy this requirement, Amtrak implemented SAP’s<sup>6</sup> Enterprise Resource Planning software as its primary financial data system in 2012. Implementing SAP impacted the organization and operation of APT. These changes and other organizational and business changes at Amtrak have altered how the allocation methodology documented in the 2009 Report to Congress is implemented and currently operates at Amtrak.

## 1.2 Report Objective

<sup>1</sup> Public Law 108-447. December 8, 2004.

<sup>2</sup> The method for estimating “Fully Allocated Costs” is central to this report and hence the term is capitalized as a technical term with the specific meaning defined and explained below.

<sup>3</sup> The Volpe Center developed a methodology to estimate the “Avoidable Costs” of each Amtrak route, with assistance from Amtrak staff, but this was superseded by a subsequent Congressional mandate under Section 208 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) to develop service planning methodologies, and as a result the avoidable cost method was not implemented.

<sup>4</sup> Methodology for Determining the Avoidable and Fully Allocated Costs of Amtrak Routes: Volume 1, Main Report, U.S. Department of Transportation, Federal Railroad Administration, December 15, 2009 (hereafter referred to as APT Methodology Report, Vol. I or 2009 Report to Congress). Accessed August 2013.  
<http://www.fra.dot.gov/eLib/Details/L04154>

<sup>5</sup> Public Law 110-432. October 16, 2008.

<sup>6</sup> SAP (Systems, Applications and Products in Data Processing) is the general reference for SAP AG, a German-based software corporation best known for its enterprise management and reporting software products. SAP’s primary product is SAP ERP (Enterprise Resource Planning) and is used worldwide. When using the term “SAP,” it can mean the corporation or the SAP ERP product, depending on context.

The objective of this report is to reiterate and expand upon the 2009 report's description of the APT methodology for determining the Fully Allocated Costs and revenues of each Amtrak route and to document Amtrak's current application of that methodology and associated reporting results. APT's financial estimation and reporting continues to fulfill the original Congressional mandates and, in addition, provides additional features and value to both FRA and Amtrak. This report updates the documentation presented in the 2009 Report to Congress including addressing changes to the implementation of that methodology, supplementing that report with elements not included or not yet final at the time of publication, and documenting changes to APT driven by the adoption of SAP as Amtrak's financial accounting system.

### **1.3 Development History of the Amtrak Performance Tracking System**

The APT system described in this report is the culmination of efforts that began in 2005 by Amtrak, FRA, and Volpe to develop an improved methodology and a process for calculating and reporting Fully Allocated Costs and revenues for Amtrak routes and other businesses. APT is an information technology system implemented and managed by the Route Systems & Assessment Department within Amtrak's Finance organization. APT was developed through the synthesis of two parallel efforts to improve the availability of cost information at Amtrak. As noted in Section 1.1, FRA tasked Volpe to help the agency meet its legislative mandate of developing a methodology for determining the Fully Allocated Costs of each Amtrak route. Coincidentally, at about the same time Amtrak recognized the need to develop a robust system that would provide Amtrak management with more accurate and timely financial information to use in analysis, reporting, and decision making. Amtrak initiated an effort to improve its route performance reporting and re-host it in a client-server environment. Recognizing this opportunity, FRA, Amtrak, and Volpe made the decision to pursue these parallel initiatives as an integrated effort. The result of this collaboration is the APT system.

FRA, Amtrak, and Volpe worked together on many levels to develop APT. The FRA provided general oversight and a policy perspective of multiple stakeholders. Amtrak provided detailed knowledge of its passenger rail and other businesses necessary in such an effort, and also was responsible for the system design, programming, and implementation. Volpe provided the Congressionally-mandated outside technical expertise in financial analysis, resource costing, and accounting needed for developing the allocation methodology, and was responsible for documentation. This collaborative approach extended to deciding as a team which new features and functionalities APT would include and how the system's cost methodology would be structured and configured. Because APT integrates with existing financial and reporting systems, it was essential that Amtrak assumed primary responsibility for information system development and implementation. Volpe and Amtrak jointly developed and achieved consensus on the allocation rules used to calculate the Fully Allocated Costs of Amtrak routes (and the need for additional studies or updates where the preferred rules were not immediately feasible or implementable).

APT went into production in Amtrak's Fiscal Year (FY) 2009 and operated in parallel for a year with Amtrak's legacy reporting Route Profitability System (RPS). In FY2010, Amtrak shut down RPS and APT became Amtrak's financial route reporting system of record. This initial version of APT was documented in a 2009 three volume methodology report.

## 1.4 Major Changes to APT since Initial Deployment

Since its deployment and the publishing of the original methodology report in 2009, Amtrak has undergone several changes, necessitating adaptations to APT. From a financial and systems perspective, most notable is the introduction of SAP as Amtrak's general ledger system. The new financial system required a new data transfer process be established between SAP and APT because APT had been designed to use transaction data from Amtrak's previous general ledger system.

Additionally, Amtrak's own organizational structure has and continues to change since APT's development and its underlying financial accounting structure was modified to reflect those changes. As Amtrak reorganizes its business, cost categories and other reporting capabilities of APT have similarly been modified. These changes include but are not limited to:

- Reorganization of the engineering department to align with SAP's treatment of overheads,
- Reorganization to group station operations with Amtrak's other train operating elements,
- Adoption of a new asset management system, and
- Implementation of the APT Asset Usage Allocation<sup>7</sup> as the estimate for monthly and annual costs of long-lived investments.

## 1.5 OIG Review of APT

As required in PRIIA Section 203, the Department of Transportation's Office of the Inspector General (OIG) initiated an audit of APT in 2012. In its audit report published in March 2013,<sup>8</sup> OIG made four recommendations to the FRA:

1. Verify that the software interface enables the data from SAP to work correctly with APT.
2. Work with Amtrak to develop a plan to maintain APT's long-term utility.
3. Work with Amtrak to analyze its business processes to identify changes that would enable it to assign additional costs wherever economically feasible.
4. Evaluate alternatives for addressing the requirement to calculate avoidable costs.

FRA, Amtrak, and Volpe worked together to respond to all four recommendations. In particular, FRA concluded that the data transfer from SAP to APT worked correctly. The OIG accepted this and each of the other FRA responses.

## 1.6 Scope of Report

This report describes the cost accounting methodology and implementing rules for determining Amtrak's Fully Allocated Costs and revenue. It provides information about APT's financial

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<sup>7</sup> The Asset Usage Allocation is the APT term for the synthetic capital charge as explained in Section 4.2.2 below.

<sup>8</sup> Amtrak's New Cost Accounting System is a Significant Improvement but Concerns over Precision and Long Term Viability Remain, U.S. Department of Transportation, Office of the Inspector General, March 27, 2013 (OIG Report, 2013). Accessed July 2015 at <https://www.oig.dot.gov/library-item/29219>.

reporting with an emphasis on Fully Allocated Costs, presents an overview of the general principles of cost allocation, describes the approach for estimating the Fully Allocated Costs and revenues of Amtrak routes and other ancillary businesses, and describes how the methodology is applied in the form of rules for attributing various categories of Amtrak costs and revenues to routes and other businesses.

Appendices present supplementary information relating to the proposed methodology:

- Appendix A: APT Family-Cost Center Structure. Lists the Cost Centers by Subfamily.
- Appendix B: Summary of APT Data. Shows Amtrak's FY 2014 Fully Allocated Costs for each APT Family and Subfamily and other data relevant to understanding the APT methodology.
- Appendix C: Glossary.
- Appendix D: Descriptions of Allocation Statistics. Provides an overview of statistics used in the recommended allocation estimation methodology.
- Appendix E: Capital Usage Charge. Describes the methodology for estimating the capital component of Fully Allocated Cost.
- Appendix F: Definition and Use of the TAC and CAE Statistics.

## 2 General Accounting Principles and Practices

### 2.1 Background

Whether a particular method of allocating costs to a company's different products and services is appropriate or not depends on the managerial task at hand. This section provides context on general accounting terms and methods of cost allocation as background to APT.

#### 2.1.1 *Financial Accounting*

Periodic audited financial statements, such as those prepared by Amtrak, are produced primarily for the use of stakeholders outside of company management. They are an attempt to answer for a company's stockholders and the general public the question of whether, taken as a whole, the company operated profitably during a particular time period. This requires appropriate allocation to the past time period of the total cash inflows and outflows that took place during the period, as well as the proper accrual of noncash revenues and expenses. In turn, the preparation of such financial statements also requires the identifying certain portions of these flows as constituting not the specific period's revenues or expenses, but rather the acquisition of new assets or liabilities that are useable to the enterprise over many time periods. In manufacturing companies, the preparation of public financial statements also requires that some portion of total period expense be allocated to particular products to value end-of-period product inventory as an asset.

Generally accepted accounting principles (GAAP) are intended to prevent exaggeration in these statements by requiring physical assets to be valued at original cost, not subject to markup until sale and subject to markdown only if proven to be no longer useable. This original valuation is preserved when portions of these assets are allocated to future time periods in the form of periodic depreciation expense in future financial statements.

#### 2.1.2 *Managerial Accounting*

A company's internal stakeholders require different information about costs. Within a company, management requires that cash outflows be allocated not only to different time periods, but, in order to make operating and marketing decisions, also to the various products and/or services that the company sells. Managerial accounting asks questions such as: "What expenses are being incurred solely to produce particular products?" and "How much revenue would the company have to receive for each of its products for all its expenses to be covered for this period?"

Managerial accounting is closely related to management's task of reviewing and controlling the expenses incurred by the different production and internal service functions within the company. Managers typically rely on expense budgets that estimate the relationships between the volumes of different products or services produced for sale and the expense incurred by particular functions. APT, which allocates each accounting period's recorded expenses to the different trains and other businesses Amtrak operates, is an example of a managerial accounting system. In a purely private enterprise, such estimates would likely only be included in internal

management planning and control reports. In Amtrak's case, however, as a company receiving public funds, such information is prepared for distribution to its diverse stakeholders including FRA, Congress, business customers,<sup>9</sup> and the general public.

## 2.2 Cost Allocation: Identifying and Attributing Direct and Indirect Costs

Some of a company's operating costs, typically certain labor and materials costs, are directly generated by, and thus can be exclusively identified with and linked to, production of particular products and/or services that it sells. It is appropriate for a company's financial record-keeping system to identify these expenses by direct coding when cost-effective. Where an operating expense is so identified and directly coded to a particular unit of production, then the cost can be straightforwardly directly assigned to each unit of each product.

Still other operating costs are generated by support activities, such as supervisor salaries, employee training, information and communications systems support and legal counsel. The company requires these activities in order to operate but they can only be indirectly associated with specific products and/or services. The company must therefore split them in a logical and reasonable fashion among the products or services in a process called allocation. This process pools the expenses and allocates them to products using "cost drivers" or allocation statistics representing a reasonable estimate of the relationship between the production activity and the size of the particular expense pool. All indirect expenses, grouped within a given cost pool, are then allocated on the same consistent basis. However, some indirect expenses, such as those related to G&A activities that have no reasonably quantifiable relationship to production processes, must be allocated to individual products using percentage markups, or some similar method, of expenses previously either directly assigned or allocated using statistical cost drivers.

In the managerial accounting systems of many manufacturing enterprises, the costs of their internal service departments, whose activities are not directly related to individual products, are typically allocated to their production departments. The total costs of the production departments are then allocated to the different products manufactured for sale to customers. At Amtrak, by contrast, cost allocation stops at the level of trains,<sup>10</sup> which might be viewed as "production activities," even though Amtrak's true "product" or "output" is its transportation of individual customers. In APT, all costs attributed to individual trains, including those of Amtrak's support or G&A activities, are either (1) directly identified with those trains, or (2) allocated to those trains either by cost drivers representing characteristics of the trains themselves (engineman hours, locomotive miles, etc.) or by markup over already-allocated expense. APT treats trains as the products to be costed; it does not currently allocate costs to sub-train level services, such as point-to-point basic transportation, sleeping car service, food and beverages sold to customers on the same train, or to other products provided or used by Amtrak such as rolling stock units or stations.

<sup>9</sup> "Business customers" refers to States, commuter agencies, commuter or freight railroads, and other commercial businesses that pay Amtrak on a contractual basis for its services or use of its system or assets.

<sup>10</sup> "Trains" includes ancillary businesses operated by Amtrak in addition to its core intercity passenger rail service. This distinction is not relevant here but will be explained further in Section 4.3.

Several acceptable alternatives exist for allocating costs to individual products. The simplest method is the single-step approach. Under this approach, all types of costs, such as production department costs, support department costs, and G&A costs, are allocated directly to final products. Where the expenses associated with a company's products throughout the enterprise can be traced by detailed product coding or the pattern of these effects differs little between products, a single-step allocation method is satisfactory. APT employs a single-step approach to cost allocation. As noted above, each expense is either directly assigned or allocated to a final "product," for example, either an Amtrak train or other business, in a single step.

Where the cost burden of service activities is unevenly distributed among products, some of which pass through production processes that require considerable support activities and some of which do not, a multi-step approach may be used. Under a step-down or two-stage method, costs are trickled down from service departments to other service departments and production departments, using cost drivers that reflect the nature of the workload placed on the former by the latter and ultimately to final products. A more complex approach, the reciprocal method, involves setting up a series of equations to allocate costs among all service and production departments simultaneously rather than in a particular sequence as in the step-down method. Given the similarity of Amtrak's trains in the sense of the type, if not the quantity, of cost inputs they require, combined with its extensive collection of statistics describing individual train characteristics and available for use as cost drivers, a multi-step system is not the most appropriate for its cost accounting methodology, and the simpler single-step approach is used.

## **2.3 Defining Fully Allocated Costs**

Amtrak is required by statute to periodically report the "Fully Allocated" costs of its routes. Some confusion can arise over the definition of this term in different applications.

### **2.3.1 *Classic Full Product Costing in the Manufacturing Environment***

Manufacturing firms often value their units of product inventory on the basis of their directly traceable costs of labor and materials plus that portion of indirect manufacturing cost that they believe varies with product volume. This might be thought of as the avoidable cost of production. They then add an allocation of the remaining indirect manufacturing cost to arrive at the typical "full absorption" inventory value that is used for financial statement purposes. Corporate G&A costs are normally not included as they are considered costs pertaining to the particular accounting period on which the statement reports and not suitable to be capitalized as part of inventory asset values.

When projecting the cost of a possible increase in volume, however, manufacturing managers would consider the total incremental costs that would be generated by such an increase, that is, variable manufacturing costs plus the portion of marketing, administrative, and other corporate costs that they believe would vary with volume. If the contemplated volume increase were significant enough to require expanded equipment and facilities, incremental capital charges would have to be considered.

### **2.3.2 *Fully Allocated Costs***

A general definition for Fully Allocated Costs may be taken from the management question posed in the background section above, that is: “How much revenue would the enterprise have to receive for each of its products for all its expenses to be covered for this period?”<sup>11</sup> Allocation of all costs to individual products and services does not imply that each product caused its particular portion of the company's total costs, but rather defines the level of revenue that, for all products taken together, is required for the company to recover all its costs. These include time period allocation of past capital investment costs in the form of depreciation expense and payment in the form of interest expense for remaining outstanding debt used to finance these investments.

In some situations, an allowance for profit is included in the Fully Allocated Cost for a product or service, which, however, is not an expense that appears in the expense section of a company's income statement. For example, government bodies sometimes contract for services on a Fully Allocated Cost basis with the intention that vendors selling under such arrangements be enabled to recover all their costs, including those not directly identifiable with contract performance, plus usually an allowed level of net income. A similar approach is generally taken when government authorities empowered to regulate the prices charged by public utility enterprises evaluate the costs of the services these firms sell to the public.

Two costing definitions are encountered in cost allocation literature:<sup>12</sup>

**Full absorption costing:** The costing method that assigns all types of *manufacturing* costs (direct material, direct labor, fixed and variable manufacturing overhead) to units produced. Full absorption costing excludes nonmanufacturing costs such as marketing, administrative, interest, and other central corporate expenses.

**Full costing (“Fully Allocated” costs):** The total cost of producing and selling a unit; often used in long-term profitability and pricing decisions. Full cost per unit equals full absorption cost per unit plus marketing, administrative, interest, and other central corporate expenses per unit. The sum of full costs for all units equals total costs of the firm and is the concept used in APT's Fully Allocated Cost methodology.

### 2.3.3 Inclusion of an Asset Usage Allocation in Fully Allocated Costs

If calculated on the basis of underlying financial accounting data, the Fully Allocated Costs of all of a company's products should total all expenses shown on its income statement for the time period during which the products were produced and sold.<sup>13</sup> Although presuming that the enterprise will continue to operate in the future and requiring certain projections of future financial obligations it has undertaken, GAAP-compliant income statements intended for

<sup>11</sup> This presumes that those expenses not attributable exclusively to a particular product were allocated to all products on a consistent basis

<sup>12</sup> Glossary of *Cost Management Concepts*, Roman Weil, Chicago: University of Chicago.

<sup>13</sup> However, one would not normally expect these total Fully Allocated Costs to have included any expenses reported on the enterprise's income statement as extraordinary or non-recurring or as income tax expense, the latter only constituting a continuing cost to the extent, under tax liability calculation procedures, other costs are exceeded by revenues. (Amtrak, in any case, is exempt from State and local income taxes and has not been making any income statement provisions for Federal income taxes.)

external financial reporting essentially constitute an evaluation of a company's activities in the past. In particular, depreciation charges are based on the values of physical assets recorded in balance sheet accounts at the time of acquisition and interest expense on the provisions of still-outstanding debt obligations contracted for in the past. For internal decision-making and planning purposes managers may project these capital charges, as well as other expenses, as they will likely appear on future financial statements, when the firm's economic conditions may be different. As explained in Section 4.2.2, however, the capital cost element of Amtrak's route cost (APT) methodology is based on the same "historical" values of physical assets as underlie Amtrak's GAAP-compliant financial statements, which appears consistent with normal practice in external financial reporting and are presumed to respond to the intent of Congress in requiring that the APT methodology be developed. APT's backward-looking approach to capital costs updates the rate of return on a monthly basis to convert past asset acquisition values into capital charges applicable to current periods. As is further explained in Section 4.2.2, the only modification to a "backward-looking" approach to capital costs in APT is use of a continuously-updated rate of return in converting past asset acquisition values into capital charges applicable to current periods.

## 2.4 Recognizing Cost Variability

When managers use product cost information, they often must distinguish between costs that vary directly with production volume and those that are fixed over certain ranges of production. Many indirect costs may vary partially with production volume. Separation of these costs into fixed and variable elements may be performed by inspection of past volume and expense records or by subjecting production and expense data to formal regression analysis.

To the greatest extent possible, this report documenting Amtrak's cost allocation methodology uses costing terms consistent with their general accounting definitions. However, technical distinctions may exist between terms as used in this methodology report and other general costing terms or concepts that are used elsewhere for other purposes. See the glossary for a full definition of these and other terms:

- *Fixed costs* 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.
- *Variable costs* are those that fluctuate directly with the *level* of output, in contrast to fixed costs which do not vary. Total costs are the sum of fixed and variable costs.
- *Incremental costs* are the costs that vary, either positively or negatively, as output changes from a baseline level.
- *Marginal costs* are the differential costs of (only) the *last unit* of production, either added or subtracted.
- *Avoidable costs* are costs that would cease to be incurred after a given service or activity is discontinued.

*Avoidable costs* refer to the specific case in which output is reduced or eliminated. Because it is used in conjunction with specific time horizons, it can include what are referred to as fixed costs in the other cost concept definitions. This gives rise to the succinct statement: "All variable costs are avoidable, but not all avoidable costs are variable."

### 3 Amtrak Information Systems Used in Analysis of Route Financial Performance

APT is the primary information system for financial analysis of Amtrak's business lines, especially its intercity passenger trains and routes. APT assigns and allocates costs, produces reports, and functions as a source of data that can be queried for many managerial and planning purposes. APT does not function in a vacuum. It requires and uses data from a number of other Amtrak information systems. This section provides an overview of APT and the other information systems involved in its implementation, and describes the linkages among these systems.

#### 3.1 APT

The APT system estimates and reports Fully Allocated Costs and revenues for Amtrak train routes and other business activities. APT serves several purposes:

- APT implements Amtrak's cost accounting methodology,
- APT incorporates a process for estimating train and route level cost and revenue data, and
- APT is a database with a post-processor for analysis and report generation.

APT was developed after defining a set of principles for how costs should be allocated. Section 2 provides a general overview of cost accounting principles, and Section 4 describes the detailed methodology followed in APT's implementation. However, the APT system is not static and as Amtrak's operations and organizational structure change, APT appropriately changes too. Still the basic APT cost accounting methodology provides a foundation and basic overarching principles to ensure consistency in allocating costs and revenues as Amtrak's organization and business changes.

From an IT perspective, APT is not a single application but rather a series of individual SQL Server Integration Services (SSIS) packages, or "jobs," that gather and format the information needed to fully allocate Amtrak's monthly expense and revenue transactions to each route and other customers of its ancillary businesses. The jobs gather and prepare statistical information and data from other Amtrak systems, including Amtrak's SAP general ledger. APT and other Amtrak financial systems are housed in SAP's Business Planning and Consolidation (BPC) platform.<sup>14</sup> Thus the BPC platform is used for storing and maintaining APT's allocation rules and its cost and revenue allocations, and it allows that information to be queried. The jobs involved in producing APT's cost and revenue allocations are collectively called the "APT Engine."

##### 3.1.1 APT Interfaces

APT interfaces with several Amtrak systems and databases to obtain data used in developing its cost and revenue estimates. There are two broad types or categories of APT input data. The first type is financial data, largely the revenue and expense transaction data from Amtrak's SAP

<sup>14</sup> BPC is further described in Section 3.3.

general ledger system, but also data on Amtrak's physical assets from its Power Plant asset ledger system. The second broad category of input data is the statistical data that provide measures of train operations and revenues that are used in APT's allocation formulas. The following are the specific systems with which APT interfaces:

- SAP
- Power Plant
- Train Unit Statistics (TUS)
- Operations Management System (OMS) via TUS
- Labor Management System (LMS) via SAP
- Passenger Accounting System/Automated Lift Match System (PAS/ALMS) directly and via SAP
- Revenue and Ridership Data Warehouse (RRDW)

Additional information on the BPC platform and these other systems and how they interface with APT are provided in the remainder of this section.

## **3.2 SAP**

SAP is both the company name and a general reference to its Enterprise Resource Planning (ERP) information technology platform. SAP financial reporting and management software is widely used by companies in managing their businesses. Amtrak acquired SAP ERP as its main financial software as part of the Strategic Asset Management (SAM) initiative that was initiated in 2008. The SAP software database product features an integrated set of systems that serve many of the data processing functions of an enterprise all accessed in real time through a central data repository (see Figure 3-1). Depending on what an enterprise chooses to implement, the SAP modules may include, for example, financial accounting, project accounting, acquisitions, and payroll.

**Figure 3-1. Organization of SAP ERP as Implemented by Amtrak**

Source: “SAM Overview,” Amtrak Presentation, October 2011.

While Amtrak uses several SAP modules, the most important to APT are those that contain financial or project data containing the expense, revenue, and customer information needed for estimating costs and revenues for Amtrak trains, routes and other businesses.

### 3.2.1 SAP Modules

The SAP modules most relevant to APT are:

- **SAP Financial Accounting Module.** SAP's Financial Accounting (FI) module is the core module that contains the General Ledger and other related sub-modules including Accounts Receivable and Asset Accounting.
- **SAP Controlling Module.** In addition to the expense data contained in FI, the SAP Controlling (CO) module is used to enter and provide supplementary information on expenses for the purpose of planning, reporting, and monitoring the operations of the business by Amtrak's management. Information derived using the CO module helps inform Amtrak management decision-making. For example, information derived from CO would be used to track the expenses of a particular capital project, the direct labor costs with a train, or performance of a marketing program.
- **SAP Project System Module.** The SAP Project System module is used to enter and maintain project data that is used to create a project hierarchy that is used in revenue and expense reporting. The Work Breakdown Structure Elements (WBSE), critical to the direct assignment of costs to trains and other businesses, are contained in the Project System module.
- **SAP Human Resources Module.** The SAP Human Resources Module is the source of APT payroll statistical data, specifically labor hours by train crews.

- **SAP Business Intelligence Module.** The SAP Business Intelligence module is the system's core data warehouse module used for querying current financial data and developing management reports. The Business Intelligence module is also used to extract and export data for use by other systems (including APT).

The data from these distinct SAP modules are combined to form the financial records that are uploaded into and attributed by APT to routes and other ancillary businesses.

### **3.2.2 SAP Transaction Code Structure**

All expense and revenue transactions are entered ("posted") using feeder systems into a database, and the data entry, storage, and querying processes are part of SAP. Depending on the type of transaction, each may post in multiple SAP modules concurrently, with their own related data field. SAP contains as many as 40 fields to characterize and determine the type of expense, and the key ones used are described in Section 4 as part of a more complete description of APT's methodology and processes.

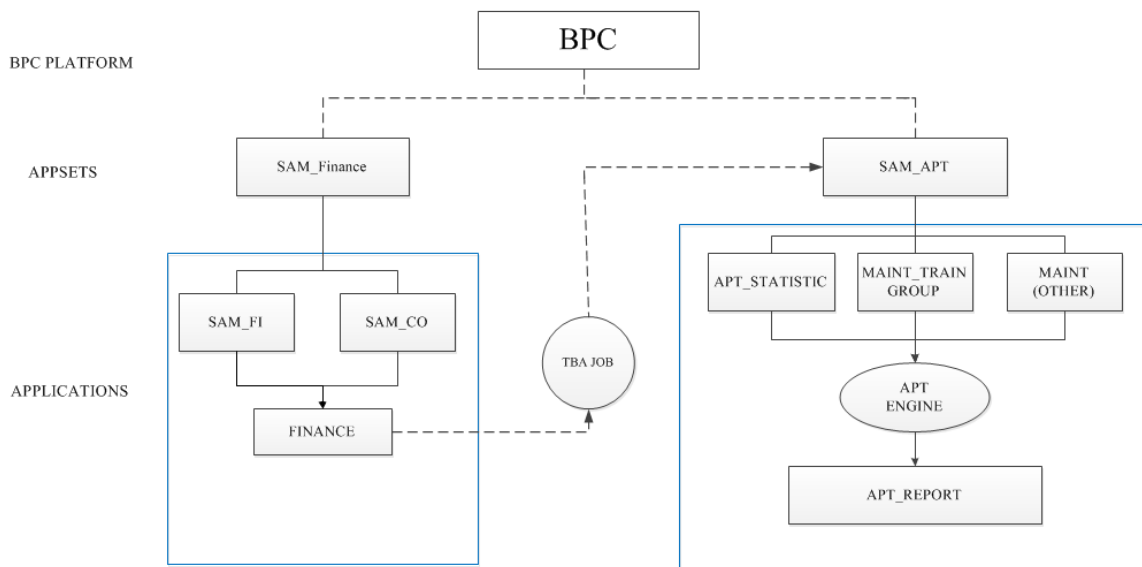
### **3.3 SAP Business Planning and Consolidation (BPC)**

SAP Business Planning and Consolidation (BPC)<sup>15</sup> is a standalone software database system for managing, querying, and reporting data. APT uses the BPC platform for its cost allocation processes, as well as other Applications essential to APT described in the next subsection. Although BPC is not APT, users utilize the BPC application APT\_REPORT to query and view APT results so BPC can be thought of as the portal to APT data. BPC uses the Microsoft Excel structure, and reports that result from BPC queries are Excel spreadsheets allowing users to make use of all Excel functionality for viewing and analysis.

Within BPC are different AppSets, and within the AppSets are a number of Applications that are used to query different databases for information. The individual Applications described below each serve a purpose in the process of transferring SAP data to APT for allocation. That process is described in Section 3.4 below. Figure 3-2 provides an overview of the relationships among the various elements of BPC as implemented by Amtrak for the APT system. These elements are described in the following subsections.

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<sup>15</sup> BPC was acquired by SAP and is currently a separate software system (platform). SAP has indicated BPC may eventually be integrated with their other products. Amtrak's usage of BPC preceded its acquisition by SAP; hence Amtrak's use of two separate SAP software systems is just coincidental.

**Figure 3-2: Implementation of BPC by Amtrak's Finance Department**

### 3.3.1 SAM\_Finance

SAM\_Finance is the AppSet used to input and transform SAP data into a format to be used by APT for allocation. The AppSet contains several Applications with the following three applications having a role in the data transfer process from SAP to APT.

#### 3.3.1.1 SAM\_FI

SAM\_FI is a BPC database Application in BPC's SAM\_Finance AppSet that receives data from SAP's Financial Accounting module. SAM\_FI houses and is used to manage this financial accounting data.

#### 3.3.1.2 SAM\_CO

SAM\_CO is a BPC database Application in BPC's SAM\_Finance AppSet that receives data from SAP's Controlling module. SAM\_CO houses and is used to manage this transaction-related data used for managerial purposes.

#### 3.3.1.3 FINANCE

FINANCE is a BPC database Application in BPC's SAM\_Finance AppSet. FINANCE contains all the combined FI and CO data used in APT and GAAP reporting that together represent Amtrak's consolidated general ledger.

### 3.3.2 SAM\_APT

The SAM\_APT AppSet in BPC is what is often thought of as APT because this is what most users see. This AppSet contains several Applications used to define and manage the allocation rules, import and review statistics, and manage the code structure used to allocate cost in APT. Although there are several supporting Applications that help maintain APT, the main Application used to query and view Amtrak's Fully Allocated Cost data is APT\_REPORT. The source for the transaction data used by SAM\_APT is the TBA ("To Be Allocated") file produced using the SAM\_FINANCE data.

### **3.3.2.1 APT\_REPORT**

APT\_REPORT is a BPC database Application in BPC's SAM\_APT AppSet that is the reporting application for APT's assigned and allocated route data. The APT Engine produces the cost allocations and assignments, and the results can be queried and viewed by users in APT\_REPORT. For example, users can query and view the Fully Allocated Cost of each Amtrak route in APT\_REPORT, and this is the source of the data provided in Amtrak's route revenue and cost reporting available online.<sup>16</sup>

### **3.3.2.2 Other APT Applications**

The allocation statistics, train groups, and other data elements specified in the allocation rules are the inputs used in the APT cost and revenue estimation process. Separate BPC Applications, represented as APT\_STATISTIC, MAINT\_TRAIN GROUP, and MAINT (OTHER) in Figure 3-3, are used to maintain these data, but because they are essentially administrative and not part of the core APT methodology, they are not further discussed in this report.

## **3.4 The SAP-APT Interface: The TBA Job**

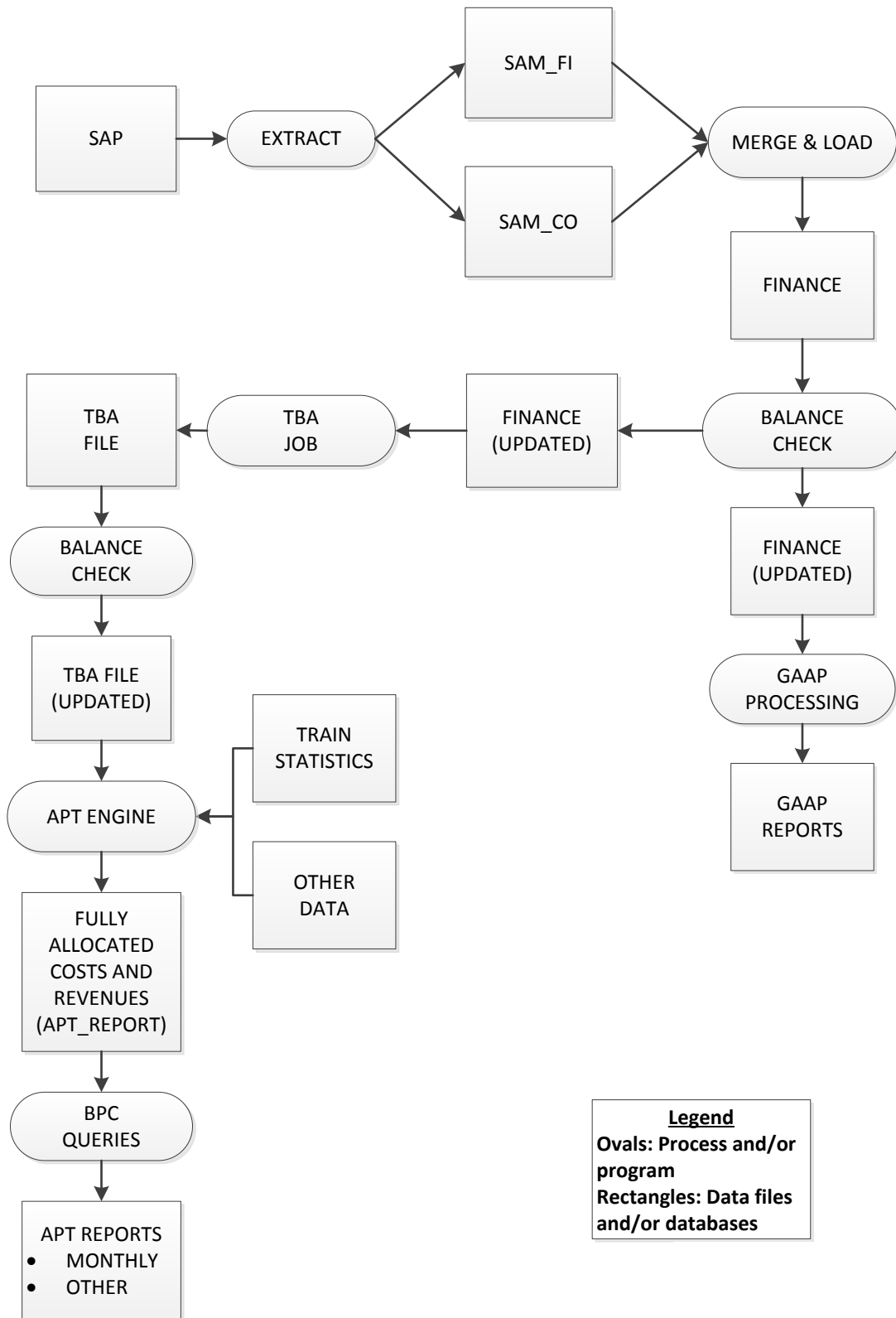
Because of the central role of expense transactions in APT, the SAP-APT interface is a major element in the APT implementation. There is a monthly sequence of jobs used to extract revenue and expense data from SAP, load it into BPC, and, by various transformations, create the TBA ("To Be Allocated") dataset that is used by APT. The APT allocation program was originally designed to use FIS<sup>17</sup> data that had a particular record structure and contained a specific set of codes. The TBA dataset is a set of transaction records that contains all the information about each expense transaction that APT requires.<sup>18</sup> Figure 3-3 provides a schematic overview of the role of the TBA file in the allocation and reporting process. Among its features are "Balance Check" steps in which total and key subtotals of dollar values for source and processed data files are compared to assure that APT allocated costs reflect all SAP expense transactions.

<sup>16</sup> See for example the June 2015 report at: <http://www.amtrak.com/ccurl/494/528/Amtrak-Monthly-Performance-Report-June-2015.pdf> (as accessed August 17, 2015).

<sup>17</sup> FIS or "Financial Information System" was Amtrak's general ledger system prior to the shift to SAP. APT was developed when FIS was still in use, but as noted in Section 3.2, APT now uses SAP as the source of general ledger data.

<sup>18</sup> FRA's Response to OIG Audit Recommendation #1 investigated the TBA job and concluded that it validly performs its intended operation including balance checks throughout the process ensuring that each transaction is accounted for.

**Figure 3-3: Overview Schematic of SAP to APT Interface and Amtrak's Financial Reporting Processes**



### **3.5 Power Plant**

Power Plant is the commercial software system Amtrak uses to record and maintain data on all of its owned and leased capital assets. Power Plant is a complete asset management and accounting software system that was designed specifically for the utility and other asset-intensive industries.

At the time an asset is acquired, a new record containing the asset's original acquisition expense and various description codes is created in Power Plant. When an asset is made available for service, its depreciation for GAAP reporting is derived from Power Plant based on depreciation rates established for groups of similar assets that are updated regularly. Group depreciation is based on the average condition and expected service life of the assets in the group. APT obtains from Power Plant and uses each asset's acquisition cost and service life in its calculation of a capital charge that is referred to in APT as Asset Usage Allocation (see Section 4.2.2).

### **3.6 Train Unit Statistics (TUS) System**

APT obtains data on equipment moves by type and city pair from the Train Unit Statistics (TUS) system. TUS is a mainframe table or data file that obtains and stores data from Amtrak's Operations Management System (OMS). OMS is the primary source of train operating statistics and is a mainframe-based system that collects, calculates, and maintains statistics such as train mileage, vehicle trips by equipment type, and train frequency. TUS is used as APT's source because it can be more easily queried than OMS. Data from TUS is assimilated monthly and used by APT to calculate the statistics on equipment usage used in allocating costs.

### **3.7 Labor Management System (LMS)**

Amtrak's Labor Management System (LMS) is used for scheduling and recording time worked by onboard services (OBS) and trainmen and enginemen (T&E) employees. The data identifies the hours worked by train number. The employee hours worked data are transferred from LMS to SAP Payroll for all pay-related computations and data storage, e.g., calculating earnings, deductions, and actual payments.

The labor hours data for train crews are the source of several allocation statistics. These labor hour data are linked directly to individual trains, and flow into APT through its interface with SAP.

### **3.8 Passenger Accounting System/Automated Lift Match System (PAS/ALMS)**

APT requires two types of detailed passenger data: revenues at the train level and various physical passenger counts at the train and station levels. Both types of data are collected using Amtrak's Passenger Accounting System/Automated Lift Match System (PAS/ALMS) which is also referred to as its "Train Earnings" system. The detailed PAS/ALMS ticket data is transferred to the Ridership and Revenue Data Warehouse (RRDW) for reporting and analysis.

### **3.9 Ridership and Revenue Data Warehouse (RRDW)**

SAP revenue data is derived from Ridership and Revenue Data Warehouse (RRDW) and is the source of revenue data used in APT. APT's use of SAP as its source of revenue data provides assurance that APT revenues are consistent with GAAP and Amtrak's financial reports.

The physical passenger count data used in APT is obtained directly from RRDW via a data extraction and upload process. It includes measures such as a train's passenger-miles and passenger boards and debords at stations.

### **3.10 Amtrak's Maintenance of APT**

Amtrak maintains APT, SAP, the other systems that feed them, and any processes connecting them. In response to the OIG Audit Recommendation #2, Amtrak submitted a plan to maintain APT's long term utility. Included in this plan is a description of monthly maintenance of APT and its rules as well as long term updates to software platforms of both SAP and BPC (see Section 4.6.8).

## 4 APT Methodology for Estimating Fully Allocated Costs

### 4.1 General Approach

The methodology for estimating Fully Allocated Costs for Amtrak's routes<sup>19</sup> observes the established principles of cost allocation outlined in Section 2 of this report, while at the same time reflecting Amtrak's unique circumstances and requirements. APT's method for estimating Fully Allocated Costs involves evaluating all of Amtrak's expense transactions and attributing them to cost objects. Depending on the expenses' characteristics, APT either directly assigns them to a single cost object<sup>20</sup> or allocates them to two or more cost objects. Both cases use pre-defined processes based on information coded as part of each expense transaction's data record. In the cases where costs are allocated, rules define how each particular transaction is allocated based on the coded information about the transaction. Three essential elements are needed to create an allocation rule:

- The expense to be attributed,
- The cost object(s) to which costs are attributed, and
- A mechanism to specify and apportion the percentage of an expense attributed to the cost object(s).

The following subsections explain the APT methodology, including terminology, the data used in the attribution processes, how these three elements are used to create APT's allocation rules, and how the rules and other information function in estimating and reporting allocated costs.

#### 4.1.1 Terminology

As a result of the original Congressional mandate to determine the "fully allocated costs,"<sup>21</sup> the documentation of APT needs to make distinctions among the terms "Fully Allocated Costs," "Allocated" costs, "Assigned" costs and "Attributed" costs.

- "Allocated" costs are the portion of shared or joint expenses apportioned ("allocated") to a particular cost object.
- "Assigned" costs are expenses that can be linked to the production of specific cost objects and hence can be directly "Assigned" to a single cost object as part of the process of developing estimates of "Fully Allocated Costs."

<sup>19</sup> Amtrak's National Train System (NTS) has routes with name and number designations, but in APT's database systems the term "route" has a broader meaning that includes the other ancillary businesses to which costs are attributed.

<sup>20</sup> "Cost object" is the general term for an enterprise's products or outputs to which expenses are attributed, whether assigned or allocated. For Amtrak these are trains, routes, and its other ancillary businesses, including Commuter Operations, Reimbursable, Infrastructure Access (by commuter and freight railroads), and Commercial. See Section 4.3 on Cost Objects for a fuller explanation.

<sup>21</sup> The Consolidated Appropriations Act, 2005 (Act) directed the Secretary of Transportation "...to retain a consultant ... to develop ... a methodology for determining the avoidable and fully allocated costs of each Amtrak route." (Public Law 108-447. December 8, 2004)

- “Attributed” is the general term used to encompass both “Allocated” and “Assigned” costs.
- “Fully Allocated Costs” is the specific name or term for total “Attributed” costs and thus includes both “Allocated” and “Assigned” costs. It is what Congress specified in the Act. In describing the APT methodology there is no distinction between total “Attributed” and “Fully Allocated Costs,” and the total can be for all of Amtrak or any single or group of cost objects.<sup>22</sup>

An important implication for the APT definition of Fully Allocated Cost for a product or service is that it represents the total costs of producing and selling that product or service, including all types of production costs (direct materials, direct labor, and fixed and variable overheads) and also a share of various operational, marketing, capital consumption, and other administrative, financing, and central corporate expenses. As noted in Section 2, allocation of all costs to individual products and services does not imply that each product caused its particular portion of the company's total costs or that its portion of the company's costs would disappear if production stopped, but rather defines the level of revenue that, for all products taken together, is required for the company to recover all its costs. These include time period allocation of past capital investment costs that in standard accounting take the form of depreciation expenses, as well as payment of interest expenses for remaining outstanding debt used to finance these investments.<sup>23</sup> If revenues exactly cover Fully Allocated Costs, the enterprise breaks even, i.e., zero profit and zero loss.

Finally, while this section is focused on the Fully Allocated Cost and the expenses underlying that process, the same general process is used for revenues as well as expenses. Financial transactions may be generally understood to be either expenses or revenues, but this section is exclusively discussing expenses and costs. Unless otherwise specified, in this section use of a neutral phrase such as “transaction,” “posting,” or “record” is intended to mean an expense, and these terms may be used interchangeably. This section also distinguishes, where relevant, between expenses (based on actual financial transactions) and estimated costs (the results of the APT attribution process).

## 4.2 Expense Transaction Data

Expense transactions are the dollar amounts central to the cost attribution process. The “Fully” in Fully Allocated Costs requires that all of the enterprise's operating expenses occurring in a time period are included. APT meets this standard by relying on Amtrak's SAP accounting system that is the source of its audited financial statements. The first steps in APT's monthly processing and reporting process involve extracting and assimilating SAP transaction data—both the dollar values and the identifying codes needed for the APT attribution process. The following sections describe the transaction data used in APT.

<sup>22</sup> The term “Fully Allocated Cost” is treated as a proper noun and capitalized in this document, but the other terms are not since their APT definitions follow their common or conventional English language usage and meanings.

<sup>23</sup> As explained below, APT uses an alternative method for estimating time period allocations of investment costs.

### 4.2.1 Transaction Record Codes Used in Cost Attribution

SAP uses over 40 data fields to provide information about transactions to serve various organizational accounting, management, analysis, and reporting needs, although only a handful of these codes are required for APT attribution. The five SAP codes central to APT's cost attribution process are:

- Cost Center
- Account
- Internal Order
- Work Breakdown Structure Element
- Profit Center

Each of these codes is described below along with examples from APT.

1. **Cost Center (CC).** SAP includes and maintains a database table of Cost Centers. The Cost Centers are hierarchical organizational units in Amtrak's management structure that incur costs. Each Cost Center is identified by a six-character code and an associated name. Most are activity-based, i.e., they identify expenses incurred during the performance of a narrow set of activities or functions required for the operation of the company. Many, but not all, are focused on the operation of Amtrak's core intercity passenger train business. Others are used for Amtrak's non-train ancillary businesses or as virtual Cost Centers to manage overheads and other accounting special cases, such as certain capital projects and fuel purchases. Amtrak has about 1,600 active Cost Centers with recorded expenses in FY 2014. Table 4-1 gives examples of several APT Cost Centers extracted from the APT database system.

**Table 4-1: Examples of APT Cost Centers**

<b>Cost Center Code</b>	<b>Cost Center Name</b>	<b>Cost Center Description</b>
CC3128	CHIEF MECHANICAL OFFICER	The office of Amtrak's Chief Mechanical Officer
CC4171	WIL Wheel Shop	Wheel repair shop in Wilmington, DE
CC2211	Sta Svcs Providence RI	Station services at the Providence, RI station
CC6330	T&E ROAD CREWS FTW-OKC (FLYER)	Trainmen and Enginemen crew for the Heartland Flyer route connecting Oklahoma City, OK and Fort Worth, TX
CC2582	OBS - Silver Service - MIA	On-board service staff based in Miami, FL for the Silver Service routes.

2. **Account (AC).** SAP includes and maintains a database table of Accounts, also sometimes called “Cost Elements.” Account codes identify various types of expenses, revenue sources, and balance sheet items. Each Account is identified by a six digit number and an associated name. Table 4-2 gives examples of several APT Accounts extracted from the APT database system. Amtrak’s accounting systems use about 500 Accounts.

**Table 4-2: Examples of APT Accounts**

Account Code	Account Name
500001	Salary
500010	Wages
500012	Vacation
507144	Personal Computer Equipment and Maintenance
508182	Station Rent
510411	Train Fuel
510417	Electric Power Purchased
530754	Maintenance of Way Equipment Parts
540304	Food Supplies
553201	Advertising
555631	Interest Expense

3. **Internal Order (IO).** SAP includes and maintains a database table of Internal Orders. Internal Orders are used to categorize expenses by purpose, and identify the task, type, or nature of work performed. Internal Orders are identified by a four-digit number and an associated name. In the APT methodology Internal Orders, when they exist for a transaction, are primary factors in defining allocation rules, but under the SAP-SAM implementation, not all expense transactions are coded with specific Internal Orders as SAP considers Internal Order a secondary statistical code and does not universally require the code when entering original transactions into SAP. Allocation rules (see Section 4.6 for a discussion on allocation rules) for transactions without IO codes are based on the information contained in the other codes. For example, the types of work performed in a Cost Center can be inferred from its Subfamily classification, and the Account and Work Breakdown Structure Element also convey information used to select an appropriate allocation statistic and other allocation rule components. Table 4-3 gives examples of several APT Internal Orders extracted from the APT database system. Amtrak’s accounting systems use about 150 IOs.

**Table 4-3: Examples of APT Internal Orders.**

Internal Order Code	Internal Order Name
1121	Corporate Service Centers

1201	Sales
1231	Station Services Ticketing
1321	OBS Dining and Snack
1631	Train Operations
1635	Passenger Train Trainmen
4200	Capital

4. **Work Breakdown Structure Element (WBSE).** SAP includes and maintains a database table of WBS elements (WBSEs). WBSEs have a multi-level coding structure with lower level fields identifying more detail about the expense (for example location, train leg, and specific piece of equipment<sup>24</sup>). The primary character in a WBSE code is a letter that identifies a broad category of “project type.” These are shown in Table 4-4: WBS Project Type Codes. Table 4-5 gives examples of several specific WBSE codes and the two Boston South Station entries illustrate their hierarchical structure.

Every transaction requires a WBSE code in SAP. WBSE codes are used to help define an allocation rule if no specific IO code is available. The WBSE code for a transaction is only entered at one WBS level and higher level WBS codes are not sums of lower level entries.

**Table 4-4: WBS Project Type Codes**

WBS Project Code	WBS Code Description
A	Operating Trains, including Commuters
B	(Non-train) Operating Projects (including overheads)
C	Capital Projects (including Work in Progress or WIP)
D	Financial Projects
E	Fixed Assets (Buildings, except Stations, and Track Structures)
L	Stations
M	Operating Units (Locomotives and Cars)

**Table 4-5: Examples of WBSE Codes**

WBSE Codes	WBSE Code Name	WBSE Code Description
W_A_0007_000	EMPIRE BUILDER CHI-SEA	West-bound Empire Builder trains from Chicago to Seattle (Train #7)

<sup>24</sup> The Maintenance of Way and Maintenance of Equipment departments maintain their own asset management systems, MAXIMO and SPEAR respectively, which add relevant WBSE information for their expense transactions.

W_A_0008_000	EMPIRE BUILDER SEA-CHI	East-bound Empire Builder trains from Seattle to Chicago (Train #8)
W_A_0822_000	HEARTLAND FLYER FTW-OKC	Northbound Heartland Flyer trains from Fort Worth to Oklahoma City (Train #822)
W_B_HR_ALL	All Op Proj - Human Resources	All expenses associated with Human Resources activities and projects
W_C_EN_TOT_100654	TIES MICHIGAN LINE - WOOD TIE PROGRAM	Expenses for tie replacement on the Amtrak-owned portion of Michigan line between Detroit and Chicago
W_L_1252	NEC-BOSTON MA- SOUTH STATION (BOS)	WBSE for highest level projects and expenses at Amtrak's South Station in Boston, MA
W_L_1252_900475	NEC-BOSTON-SOUTH STATION-CETC FACILITY	WBSE for the lower level project and expenses associated with Amtrak's Consolidated Electrification Traffic Control (CETC) Center at Boston's South Station (L-1252)
W_M_25003	Amf II Coach	Amfleet II passenger car (coach)
W_M_188	P42-8	P42 diesel-electric passenger train locomotive

5. **Profit Center (PC).** A Profit Center is an organizational unit in SAP accounting that is used to link revenue and cost values. The Profit Center code plays a minor role in the APT cost allocation process. The Profit Center code is used to assist in defining an allocation rule in cases where the other expense codes do not give enough information about an expense's type, purpose, or linkage to a cost object. Table 4-6 gives examples of several APT Profit Centers extracted from the APT database system.

**Table 4-6: Examples of APT Profit Centers**

<b>Profit Center Code</b>	<b>Profit Center Name</b>
10200	5 - Regional Trains - NEC
10600	9 - Downeaster
11500	29 – Heartland Flyer
15900	Commuter MoW
17020	NEC Freight Access Fees
18900	NEC Infrastructure & Investment Dev

These five SAP codes on transaction data records are all the members of the APT Code Block needed to categorize expenses for the cost attribution process. All expense transactions have

Cost Center, Account, WBSE, and Profit Center codes. Some will also have an Internal Order code. Table 4-7 provides an example of an expense transaction's full Code Block for a Heartland Flyer train crew member's salary.

**Table 4-7: Example of SAP-APT Transaction Codes Used for Cost Attribution**

	<b>Cost Center</b>	<b>Account</b>	<b>Internal Order</b>	<b>WBSE</b>	<b>Profit Center</b>
<b>Code</b>	CC6330	500001	1635	TR_08220	PC_11500
<b>Description</b>	T&E ROAD CREWS FTW- OKC (FLYER)	Salary	Passenger Train Trainmen	HEARTLAND FLYER FTW- OKC	Route 29- Heartland Flyer

Codings that specify other aspects of a transaction are available in SAP and are used in APT for purposes other than cost attribution, e.g., several date codes are used to establish the time period of an expense, and a document number is used to tie together related transactions.

#### **4.2.2 APT Asset Usage Allocation**

Any sizable enterprise, and especially a railroad with large amounts of rolling stock and fixed infrastructure, has expenditures for items that are long-lived relative to the typical monthly, quarterly, and annual financial reporting periods. These expenditures are commonly referred to as capital costs and are given special treatment in the reporting of operating costs under GAAP. Using GAAP guidelines, capital costs, rather than being reflected in the time period in which they are actually incurred, are annualized<sup>25</sup> over the expected time period for which the asset is expected to contribute to the production of output (in the case of Amtrak, the output is mostly the operation of trains). The annualized charge or cost is referred to as depreciation and under GAAP guidelines is one of the operating expenses in an income statement calculation of profit or loss from continuing operations. Under GAAP the interest on funds borrowed to cover capital expenditures is also shown as an operating expense on the income statement in calculating the total net profit or loss of the enterprise in a time period.

In determining how best to incorporate the cost of capital into Amtrak's Fully Allocated Costs, consideration was given to its history of public sector contributions towards capital expenditures, the use of borrowing (and hence interest costs) for the acquisition of certain subsets of its capital assets, and Amtrak's enterprise-wide use of proceeds from leases and sale-leaseback transactions on specific capital assets. Allocating GAAP-defined depreciation and interest to trains and other ancillary businesses could not be done in a manner that properly reflected the relative usage of capital assets for particular trains. Instead, a synthetic Asset Usage Allocation charge provides a more representative measure of the resource cost of capital equipment and property—regardless of how paid for—currently being used by Amtrak to produce its various services and outputs.<sup>26</sup>

<sup>25</sup> Annualization is used in this discussion as a general concept covering all reporting time periods, including months or quarters.

<sup>26</sup> A more detailed explanation for the rationale and approach of the synthetic capital asset usage charge is provided in Appendix E.

However, APT's Asset Usage Allocation is only used in allocating costs to trains and other cost objects and, importantly, does not replace the depreciation and interest expenses in Amtrak's published and audited financial reports which are intended to measure the corporation's overall profitability during particular time periods according to GAAP procedures. Thus, APT costs are the same as Amtrak's reported expenses on its public income statements except for the small differences resulting from the substitution of APT's asset usage allocation for depreciation and interest. Amtrak's monthly route financial reports make this transparent and reconcile the differences.

The Asset Usage Allocation is an annualized value based on the GAAP-defined costs of all capital expenses (original acquisition and betterments/overhauls) and the underlying opportunity cost of capital as reflected in the U.S. Treasury long-term borrowing rate. The Asset Usage Allocation represents both a "return of" capital (analogous to depreciation) and a "return on" capital (replacing interest expenses) used in the production of train services and the outputs of Amtrak's ancillary businesses. It annualizes over an asset's service life the original dollar expenditure for its acquisition and uses an interest rate to reflect the return on capital. The values of these expenditures to be annualized are based on the same original gross asset values that are recorded in Amtrak's asset ledgers used in estimating depreciation for financial accounting purposes. The Asset Usage Allocation also uses asset service lives based on those employed by Amtrak in calculating depreciation expense, including that calculated under its group depreciation system. As such it reflects both depreciation and interest cost factors in a single value.

In APT the descriptive term or label used for the attribution of costs related to capital assets is Asset Usage Allocation and these costs can either be allocated or assigned depending on the particular nature and usage of each specific asset. This approach requires APT to obtain the original asset acquisition expenditures from Amtrak's asset database as a separate input, i.e., not with the basic SAP expenses transactions. An amortization formula is used to create pseudo "expense transactions" for each asset and these are then processed in APT like all other expenses.

The procedure for calculating the Asset Usage Allocation is to apply capital recovery factor (CRF) or amortization factor to the (undepreciated) gross value of each physical asset currently carried on Amtrak's ledgers and in use or held for use. The CRF uses the assumed useful lifetime for the asset and a rate of return based on the Federal opportunity cost of capital. Where  $i$  denotes the rate of return and  $T$  denotes the asset's lifetime, the CRF is computed using the following equation:

$$CRF = i * (1+i)^T / [(1+i)^T - 1]$$

Where the initial acquisition cost of an asset is  $K$ , the Asset Usage Allocation (AUA) formula for the asset is:

$$AUA = K * CRF$$

APT obtains asset records from Amtrak's asset database system, Power Plant, annually. The data has the original acquisition dollar value, its group depreciation rate from which expected life

is derived, and other codes and descriptions that are used in the allocation process. Each asset record becomes another expense transaction in the set of expenses that go through the APT attribution process.

The rate of return,  $i$ , used to calculate CRF is the U.S. Treasury interest rate on 20-year maturity notes prevailing at the time the Asset Usage Allocation is calculated. Using this Federal borrowing rate as the opportunity cost of financing debt reflects the dominant role the Federal government has in providing Amtrak's capital assets. 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. The current rate is published daily by the U.S. Treasury and can be found on its Web site at <http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield.shtml>.

In monthly reporting of Fully Allocated Costs, the rate on the last day available of the reporting month is used. This monthly updating procedure serves to avoid larger discontinuities that could occur if updates are done less often, such as annually, since the rate can sometimes vary considerably over a calendar year. The annual Asset Usage Allocation is the sum of the monthly Asset Usage Allocations.

Because Amtrak's data systems do not link capital assets to Cost Centers, other procedures in APT link them to the trains and other businesses they support. See Section 6.6 for a description of the Cost Centers and other Code Block elements used to allocate these estimated capital costs.

In summary, APT uses this alternative methodology for calculating the Asset Usage Allocation and allocates it to businesses and trains as part of the estimate of Fully Allocated Costs. The Asset Usage Allocation, like other methodological features, is aimed at objectively and comprehensively responding to the original Congressional mandate under which APT was developed, using proper and appropriate methods in the allocation and analysis of the true resource costs of providing intercity passenger rail service.

### 4.3 Cost Objects

A "cost object" is the term used in cost and managerial accounting to refer to the product or service of an enterprise (company) to which costs and revenues are attributed.<sup>27</sup>

For analytical purposes a cost object can be either a single unit or a categorical grouping of multiple units. If Amtrak's only business were the operation of its National Train System (NTS), then the only cost objects would be passenger trains and their grouping or aggregations into routes and service types. However, because Amtrak has other customers of its ancillary businesses to whom it provides "outputs," usually in the form of services, the more general term "cost objects" is used to cover both trains and other customers, and in a given context "train" and "cost object" may be used interchangeably. APT attributes costs to passenger "trains," but the system software, programs, and this documentation use the term "train" more broadly to include

<sup>27</sup> A cost object can also be a customer, though in Amtrak's case comparing costs and revenues of single train rider ("customer") does not address the managerial and financial issues of major concern. Hence the APT focus on trains, routes, and other ancillary businesses.

both actual NTS trains such as the *Acelas* as well as the other “customers” or “business types” of its ancillary businesses.

APT allocation rules link expenses to a cost object or group of cost objects. In the context of allocation, a group of cost objects functions as a cost pool to which a shared expense is allocated. The methods for grouping cost objects in APT for cost allocations is explained below in subsections 4.6.3 and 4.6.4 that describe the creation of allocation rules.

### **4.3.1 Amtrak National Train Service (NTS)**

APT uses trains as the cost objects for its passenger service business. The definition of a train follows common usage, namely one or more locomotives, power cars, and passenger cars linked together and traversing a specific route between two end points, usually with intermediate stops. This simple definition masks the complexities of actual operations where, e.g., sometimes a train splits at an intermediate point and continues to more than one end point, or a portion of the route is considered a separate cost object because it is covered by a contract for state support of costs in excess of revenues. There are also special cases of trains operated once or only a few times, such as tourist trains and extra trains at holiday times. Amtrak uses a system of distinct train numbers to manage such complexities, and APT makes use of Amtrak’s train numbering system in its cost attribution processes. Amtrak operates about 500 such numbered trains per day. For example, train number 821 travels from Oklahoma City, OK, to Fort Worth, TX, and number 822 travels in the reverse direction.

Although APT’s cost attribution and Amtrak’s operational management mainly target the train level, Amtrak’s business management, stakeholder interest, and most reporting focus on the route level. Routes are groups of trains that operate and serve, at least in part, common stations or city pairs. The simplest cases of what defines a route involve one or more trains that regularly operate between the same end point cities in both directions. Other routes have some trains that do not operate over the entire end-to-end route or involve more complex networks with a core “stem” line plus branches or spokes. Amtrak has an identification system for routes that uses both numbers and names. For example, route number 29 is the Heartland Flyer and has two trains (821 and 822 noted above), one in each direction between Oklahoma City, OK, and Fort Worth, TX. Each specific train number is associated with just one route. See Appendix B for a full listing of Amtrak’s current 48 routes. Route level reporting include all trains that are members of that route and is the sum for all daily trips in the reporting time period, typically a month, year to date, or year.

### **4.3.2 Other Ancillary Businesses**

In the APT system, each of Amtrak’s other ancillary<sup>28</sup> businesses is treated like an Amtrak train route and is a cost object/profit center with costs and revenues. A notable feature of this approach is that these other ancillary businesses are allocated a share of corporate overhead expenses, otherwise referred to as general and administrative expenses. A portion of the various corporate overhead activities and expenses incurred at Amtrak are directed to managing and

<sup>28</sup> Ancillary in the sense that they are not included within Amtrak’s core NTS business.

supporting the ancillary businesses and are essential to their existence, and this approach properly attributes a share of those costs to these businesses.

APT's business lines, including its core NTS and ancillary business lines include:

- **National Train Service (NTS):** Amtrak's "core" business of providing intercity passenger train service
- **Commuter Infrastructure Access (CI):** Provision of access to Amtrak's track and other facilities to independently operated commuter railroad agencies
- **Commuter Operations (CM):** Operation of commuter service by Amtrak on behalf of outside commuter railroad agencies
- **Freight Infrastructure Access (FR):** Provision of access to Amtrak's track and other facilities to freight railroads
- **Reimbursable:** Maintenance of infrastructure and equipment performed by Amtrak for outside enterprises, mostly commuter and freight railroads, on a reimbursable cost basis
- **Commercial:** Management of Amtrak's property and assets other than for the provision of intercity passenger train service (e.g. retail space, parking garages, air rights, etc.)

Within each of the ancillary business categories are multiple individual cost objects ("customers").

#### 4.4 Allocation Statistics

As stated above, expenses that are associated directly with a train (or other cost object in the case of the ancillary businesses) are assigned to that train. Often expenses are associated with multiple trains or cost objects, so these expenses must be allocated among those cost objects.

APT uses allocation statistics to calculate the portions of expenses that are allocated to each cost object. Allocation statistics are typically measures of operating activity or other types of statistics retrieved from other Amtrak information systems, although they also may be manually calculated or calculated within the APT system. For an expense to be correctly allocated to trains and other cost objects, it has to be assigned an appropriate allocation statistic, the value of which is then used to calculate the share of that expense that is allocated to a particular train. Each train receives a share of a given expense in proportion to the value of its allocation statistic relative to the total value of that statistic for all trains that share the expense. For example, if an expense was to be allocated by train frequency for a month, and Train 1 traveled daily while Train 2 traveled twice-daily, the allocated cost for Train 2 would be twice Train 1's allocated cost.

##### 4.4.1 Criteria for Allocation Statistics

Two main criteria exist for choosing activity-based allocation statistics. First, an allocation

statistic needs to be logically related to the activity generating the expense, preferably a cost driver. Second, the statistic needs to be available for all trains and other businesses to which the expense is allocated. The statistics used in APT's allocation rules satisfy these criteria. In a few cases, the preferred statistic for allocating a certain expense is not available and an alternate, but still reasonable, statistic is used. For example, while Total Boards and Deboards is the primary cost driver and preferred allocation statistic for many station expenses, Amtrak does not have that statistic for commuter trains operating at its stations; instead, Amtrak uses a substitute measure, Passenger Car Unit Trips,<sup>29</sup> which is available for both Amtrak and Commuter trains, as a proxy in place of Total Boards and Deboards. Lists and descriptions of all the allocation statistics used in APT can be found in Appendices B and D.

#### **4.4.2 Dollar-denominated Statistics**

In APT cases where a close association exists between expenses and activity levels, an activity statistic, such as Total Board and Deboards or Total Train Miles, is used to allocate costs to trains and other cost objects. In contrast, in cases where expenses are not closely associated with the level of train or other outputs, and hence for which specific activity-based statistics are either not available or not appropriate for cost allocation, a different approach is required. These indirect expenses are often in the support, management, or general and administrative (G&A) areas and are often considered fixed for the general scale of the overall enterprise or some part of it. These are relatively fixed management and support expenses and hence cannot be considered driven by the measurable activities of its cost objects (trains and other ancillary businesses). Such expenses still need to be allocated by a statistic and a generally accepted approach is to allocate them based on the size or scale of the various "cost objects" of the enterprise. A typical approach for doing this is to develop and employ a comprehensive cost-based measure of scale for this purpose, although some cost allocation methodologies use revenue-based measures.

The APT methodology uses a set of dollar-denominated cost-based statistics for these cases. First, all direct assignments and allocations using activity based statistics are done. The sum of these attributed costs then become the relative scale measures for the various cost objects. For example, a Total Activity Cost (TAC) allocation statistic is used for allocating the highest level G&A costs. TAC is calculated for both NTS and ancillary businesses and hence satisfies the availability criteria for allocating these high level G&A expenses. TAC is calculated by summing most attributed costs for MoW, Maintenance of Equipment (MoE), Operations-Transportation, Sales & Marketing, Capital (the Asset Usage Allocation charge described in Section 4.2.2), and Utilities and Police, Security and Environmental/Safety. The TAC statistic excludes most attributed costs in the G&A and non-operating areas.<sup>30</sup>

See Appendix F for a full description of the reasoning behind and composition of TAC. Appendix F also describes the Customer Activity Expense (CAE) statistic which is similar in concept to TAC, but is used for G&A expenses that are only allocated to a subset of Amtrak

<sup>29</sup> "Unit" is the Amtrak and APT general term for rail rolling stock, i.e., locomotives, passenger cars, dining cars, baggage cars, etc., so a Passenger Car Unit Trip is a count of passenger cars, excluding locomotives, dining cars, or sleeping cars.

<sup>30</sup> As explained in Appendix F, all national general and administrative costs, including those in the Police, Security and Environmental Safety areas should be excluded from the TAC calculation and instead be allocated by it.

businesses. There are several other lower level dollar-denominated statistics that are used for allocating lower level administrative expenses to narrower sets of cost objects in the Maintenance of Way, Maintenance of Equipment, and the Operations-Transportation areas. In all cases these dollar-denominated statistics are calculated as the sum of closely associated costs that are attributed to cost objects prior to allocation of the general overhead expenses that are not closely associated with the production of the relevant cost objects.

#### **4.4.3 Direct Allocations Using Statistic NON**

Some expense transactions are processed by APT but are allocated directly to a single cost object (customer or APT train). In these cases, no statistic is needed as a single cost object is identified in the allocation rule.<sup>31</sup> APT uses the “NON” statistic essentially as a placeholder as it allocates<sup>32</sup> the entire expense to the identified cost object rather than apportioning the expense among multiple cost objects (described as Straight Line Allocation within APT).

In some cases, the NON statistic is used to allocate to a group of cost objects (rather than a single individual train) by using the route as the cost object (example: TG\_APT\_RT\_09, Downeaster). In this instance, the expense is split evenly among the active Downeaster trains during the month.

See Appendix D for additional details on definitions, sources, and usage of all statistics used in APT allocation rules.

### **4.5 Family Approach to Allocation**

The APT cost allocation process uses allocation rules to define how expenses are allocated to cost objects. In developing and updating APT a key guiding principle is that similar expenses should be similarly allocated. For example, all station operating expenses should be allocated to trains servicing each station and a measure of passenger activity should be used as the allocation statistic. Further, APT should use this same allocation method for such station operating expenses at similar stations. To meet this principle and before creating specific allocation rules, Cost Centers were grouped into Families and Subfamilies based on the similarity of their activities. Thus APT “Families” are groupings of Amtrak Cost Centers having similar responsibilities and performing similar work.

Continuing the station example, all Cost Centers for station operations are grouped into a Stations Subfamily (#310) which is part of the Operations-Transportation Family (#300). Allocation rules are then created based on this organizational family structure so that the same type of expenses, as indicated by the codings on the transaction record, are usually allocated using the same statistic regardless of the specific station Cost Center.

<sup>31</sup> When no allocation statistic is needed, the placeholder code NON is used, as APT requires a non-blank value in the statistic field for all transactions in order to complete the allocation process.

<sup>32</sup> The term “allocate” is used rather than “assign” because it is processed as an allocation using an allocation statistic (in this case the statistic NON).

The following subsection gives the logic and process for creating the APT Family structure and an overview with examples of APT's Family structure.

#### **4.5.1 Cost Center Family Structure**

The grouping of Amtrak's Cost Centers into cost categories or Families based on similarities of costs and activities is a particularly important feature of the APT methodology. Cost Center Families provide a framework both for the consistent allocation of costs to trains and other Amtrak businesses, and also for the purposes of analyzing results and managing operations.<sup>33</sup> A key element of the methodology is that Cost Center Families are mutually exclusive in terms of their members (each Cost Center is assigned to one and only one Family). While not matching a specific organizational structure at Amtrak, Families roughly parallel Amtrak's operation to the extent that T&E Cost Centers are managed within the transportation organization and MoW Cost Centers are managed within the engineering divisions.

The development of the Cost Center Families entailed two steps. First, the overall Family structure, including Subfamilies and Subcategories, was created based on an understanding of railroad operating requirements and conventional organizational structures. Second, Cost Centers fitting the Subfamily and Subcategory descriptions were assigned to those Subfamilies and Subcategories based on an analysis of the codings of each Cost Center's actual expense transactions and discussions with Amtrak field and finance staff. As with Families, each Cost Center is assigned to one and only one Subfamily and Subcategory to prevent duplicating expenses. The result, documented in the 2009 Report to Congress, was one of many possible and justifiable methods of organizing the cost centers into a Family hierarchy. Subsequent updates to APT's Family structure are guided by the same principles used in its original development, and the Family hierarchy documented in this report remains very similar to the original approach.

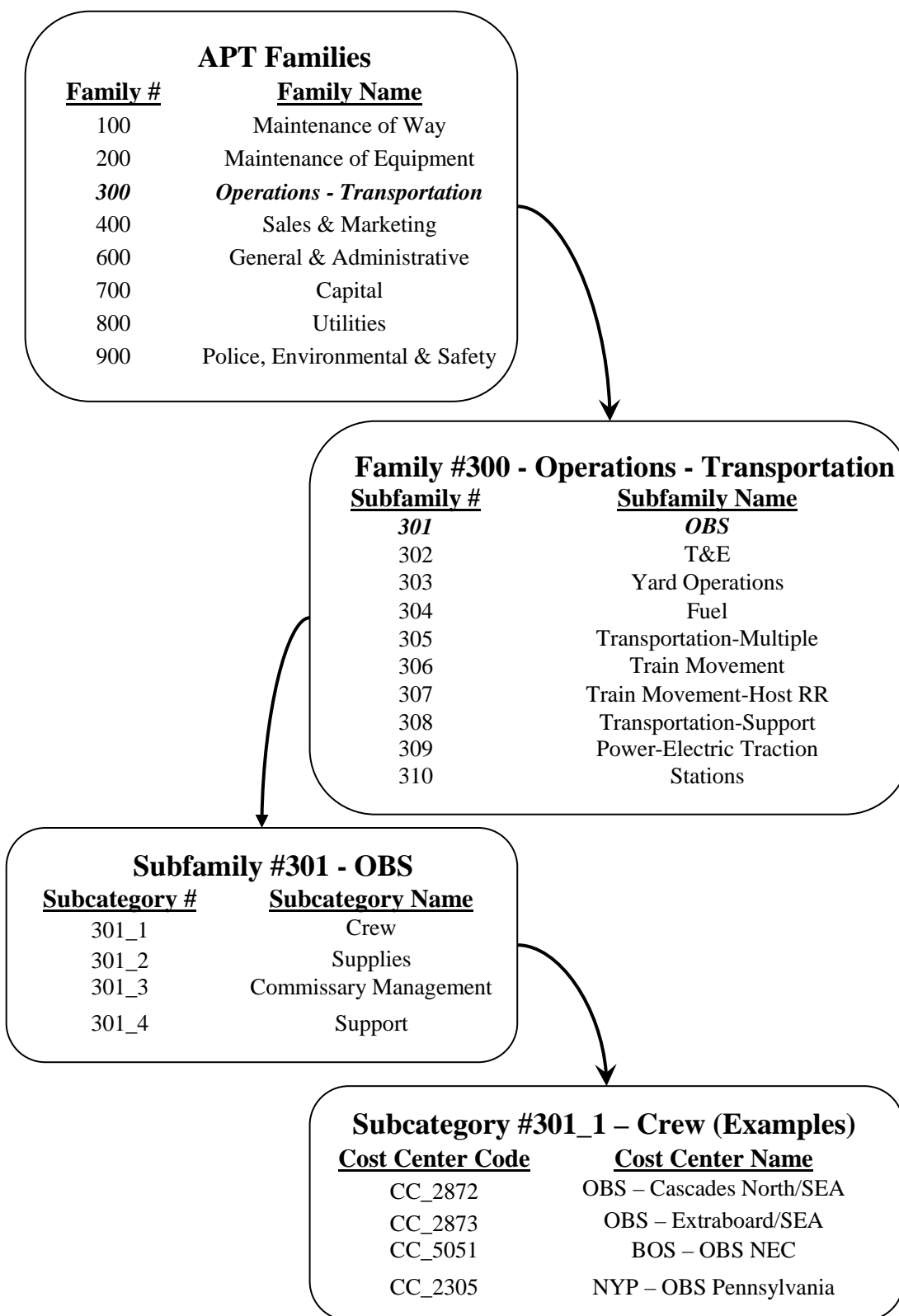
Amtrak Cost Center activity currently falls into eight broad Cost Center Families, broken down for allocation purposes into 39<sup>34</sup> Subfamilies. In a few cases, Subfamilies are further broken down into Subcategories. Figure 4-1 illustrates this hierarchical structure as it currently exists in APT. A full listing of all the currently active Cost Centers in each Family, Subfamily, and Subcategory, roughly 1,600 current Cost Centers in total,<sup>35</sup> can be found in Appendix A.

<sup>33</sup> Due to the current configuration of Cost Centers at Amtrak, a small number of exceptions exist to the rule that costs within a Cost Center single Family, Subfamily or Subcategory are allocated perfectly consistently. For example, CC0202, Corporate Common, is a member of Subfamily 603, Qualified Management and Services; however, because it is extremely broad in the scope of its activities, this Cost Center must be treated differently than example, CC0202, Corporate Common, is a member of Subfamily 603, Qualified Management and Services; however, because it is extremely broad in the scope of its activities, this Cost Center must be treated differently than other Cost Centers within this Subfamily. Rather than create a Subcategory consisting of a single Cost Center, Cost Center 0202 is part of Subfamily 603.

<sup>34</sup> Only 39 Subfamilies are used for cost allocation but APT uses three more to provide a mechanism for treatment of depreciation, interest expenses, and capital contributions from other entities that are not considered costs under this methodology. APT also has a Revenue Family.

<sup>35</sup> The exact number of active Cost Centers changes as Amtrak's organizational structure changes over time and every new Cost Center is assigned to an APT Family and Subfamily. Discontinued Cost Centers remain in the APT databases because their expenses need to be included in historical comparisons, but new expenses are not attributed to these inactive Cost Centers.

Figure 4-1: Hierarchical Structure of APT Families



## 4.6 General Approach for Developing APT Allocation Rules

Whenever the availability of specific and identifying data allow, the direct assignment of costs is the preferred method of attribution. Expenses that are not coded with train numbers and cannot be traced directly to a specific train or other business through other means are shared expenses and need to be allocated. APT relies on allocation rules to perform this function. Simply stated, an allocation rule specifies, for a particular shared expense, how that expense is apportioned and linked to specific cost objects. APT's design requires that there be an allocation rule for all unique Code Block combinations that occur on expense transaction records obtained from SAP that must be allocated, i.e., a rule is needed for all combinations of Cost Center, Internal Order (IO), Account, Work Breakdown Structure Element (WBSE), and Profit Center codings. APT has a "wildcard" feature so that a single rule can apply to multiple coding block combinations, but nevertheless APT has approximately 60 thousand allocation rules.

Each allocation rule was manually created using professional judgment that followed pre-defined general guiding principles. The guiding principles were developed by grouping similar expenses using the Family structure so that the allocation statistics and other rule elements used would be applied consistently. This meant that in creating the APT rules, all Cost Centers in a Subfamily<sup>36</sup> would generally follow the same rule logic for a given type of expense as defined by its IO, Account, WBSE, and Profit Center. By organizing similar Cost Centers together into Families and Subfamilies, their underlying expenses are similarly linked for the allocation process and are typically allocated using the same allocation statistics.<sup>37</sup> For example, Cost Center 2554, Station Services Savannah, GA, and Cost Center 2858, Stations Services Seattle, WA, are both in the Stations Subfamily (#310). Expenses coded to Internal Order 1271, Station Services-Station Operations, at those stations will be allocated to all trains served by those stations using the same allocation statistics, namely Total Boards and Deboards (TBD).

Allocating Cost Center expenses through the mechanism of Cost Center-based Subfamilies has a number of advantages over allocating general ledger expense entries in a less systematic manner. Organizing the allocation methodology around Cost Center Families provides structure and discipline to the allocation process and helps to ensure that similar types of expenses are allocated in a consistent manner and to the correct routes and businesses. It also facilitated APT's implementation process.

In some cases, all or nearly all Subfamily expenses are allocated using a single allocation statistic. In others, several different allocation statistics are required for different types of activities generating expenses as reflected in the Internal Orders and/or Accounts to which the expenses belong.

The guiding principles or meta-rules for each Subfamily also establish whether an expense will be directly assigned to a train or other Amtrak business<sup>38</sup> or be allocated. In the methodology,

<sup>36</sup> If a Subfamily is divided into Subcategories, the consistency of the rule logic would be at this level.

<sup>37</sup> Information specific to a Cost Center, particularly as APT is used and evolves over time, may result in changes to how its expenses are allocated. Amtrak staff have a process for making, approving, and documenting these modifications to allocation rules.

<sup>38</sup> For purposes of conciseness this report refers to costs being allocated to trains although as already noted the APT methodology allocates costs both to Amtrak's NTS trains and to all its other businesses. References to allocating

expenses that are coded with a train number are directly assigned to that train without undergoing any allocation process. The wages of Amtrak onboard service employees, for example, are coded directly to the train on which they work. In addition, in certain cases, the Cost Center, Internal Order, or WBSE indicates the train or other business that should receive the cost. Cost Center 7113, for example, is “Yard Crews Virginia Railway Express (VRE),” which specifies that this Cost Center is responsible for the Yard Crews that handle VRE trains and, therefore, all of its expenses should be assigned to Amtrak’s Commuter Operating business and the VRE customer.

#### **4.6.1 Types of Rules**

Allocation rules are established for common expenses based on the specific nature of the expense. The primary determinant of an allocation rule is the Cost Center which identifies the Subfamily and a general allocation approach. Next is the Internal Order which categorizes expenses by purpose or job classification. In most cases, the Cost Center and Internal order are sufficient to determine an appropriate allocation rule.

Another element of the Code Block used to determine an allocation rule is the Account. Accounts define the type of expense, and the major types, such as wages, salaries, and benefits, are common across Subfamilies. There are some special cases where a specific Account warrants a different allocation treatment from other expenses with the same IO, and so the Cost Center and Account are used to determine the allocation rule. Such rules are identified as “Account-based rules.” For example most train fuel expenses are incurred at about 45 Cost Centers that are grouped in the Fuel Subfamily (#304), and allocated using a measure of train fuel consumption. However, the G&A Family (#600) Cost Centers capture some fuel-related administrative expenses for fuel hedge fund transactions and taxes. These expenses are identified by their Account codes and, rather than being allocated following the standard rules for the G&A Family, expenses with these Account codes are allocated using the same method used in the Fuel Subfamily.

WBSE can also be used in combination with Cost Center to determine allocation rules. As the MoW Family (#100) classifies each asset on the right-of-way with a unique WBSE, WBS-based rules have become central to allocating costs in this family. WBS-based rules are increasingly being used in other Families when the WBSE includes location or other expense characteristics that facilitate it’s linkage to a set of cost objects.

#### **4.6.2 Elements of an Allocation Rule**

Each allocated expense not directly assigned by other means to a particular train needs an allocation rule. An allocation rule dictates how to allocate an expense given a specific combination of SAP expense transaction codes that make up the Code Block, namely Cost Center, Internal Order, Account, Profit Center, and WBSE. The expense transaction codes,

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costs to trains can mean allocation to just NTS trains or to trains and other Amtrak businesses depending on the context.

however, only identify the expense characteristics; each rule needs additional factors or elements. An allocation rule requires each of the following four attributes:

- Statistic – (see Section 4.4)
- Train Group – (see Section 4.6.3)
- Stat Qualifier – (see Section 4.6.4)
- Allocation Ratio – (see Section 4.6.6)

The allocation Statistic was already discussed in Section 4.4. The other three components of an allocation rule are discussed in turn below.

### 4.6.3 Train Group

When creating an allocation rule, Amtrak staff specifies a cost object to which costs are attributed, identifying that cost object in the rule's Train Group field. The cost object selected defines one or the set or group of potential trains and/or other businesses to which a particular type of expense can be attributed.<sup>39</sup> That cost object can be specific and narrow, identifying a single train or route, or it can be broad and identify several. The default value for an allocation rule's Train Group is every train in APT.<sup>40</sup>

Between these two extremes, between one and all trains, lie many Train Groups that specify a subset of cost objects to which expenses may be attributed, i.e., narrowing the universe of total trains to the specified group. APT then attributes an expense exclusively among only these trains using whatever allocation statistic is selected. One Train Group can be used in many allocation rules, i.e., for allocating different types of expenses. Table 4-8 gives examples of several APT Train Groups extracted from the APT database system.

**Table 4-8: Examples of APT Train Groups**

<b>Train Group Codes</b>	<b>Train Group Name</b>	<b>Explanation</b>
TG_APT_RT_09	Downeaster	All trains operating as the Downeaster service in New England
TG_ALBTS	Albany Turnaround Servicing	All trains receiving turnaround servicing at Albany, NY
TG_APT_RT_CMMAR	MARC Commuter Operating	All Maryland Area Regional Commuter (MARC) commuter trains operated under contract by Amtrak
TG_STRATPART_CEN	State Supported - Central Routes	All state supported trains operated in Amtrak's Central Division
TG_WRG	Western Region	All trains operated in Amtrak's Western Region

<sup>39</sup> As already noted, in APT "Train" is also a generic term that covers all cost objects, i.e., passenger trains and the other ancillary businesses. In this document it can have either meaning depending on context.

<sup>40</sup> In a rule the default Train Group wildcard has the designation "TG\_MAP" though it can still be restricted to subset of all trains through the use of a Stat Qualifier as explained in the next subsection.

<b>Train Group Codes</b>	<b>Train Group Name</b>	<b>Explanation</b>
TG_COMMISSARYWEST	TG_CommissaryWest	All trains served by Western Region Commissaries

Train Groups may be defined manually or derived automatically as part of the attribution process.

### Manual Train Groups

A manual Train Group is a fixed list of trains that does not vary unless modified by Amtrak Finance staff. APT has over 900 manually defined train groups though only about 275 are currently being used.<sup>41</sup> A manual Train Group is created when Amtrak staff determines APT needs to allocate an expense to a specific list of trains that would not often change.

One example of why and how a manual train group is used occurs in the #201 Turnaround Servicing Subfamily. Expenses at a maintenance Cost Center should be allocated using the Unit Trips (UT) statistic only to trains serviced there. However, only trains that terminate at a particular station are serviced while other trains pass through that station without incurring any service costs. In both cases, trains would have a valid UT statistic for that area so Amtrak needs to identify the group of trains serviced at that station and assign them to a Train Group. Using that Train Group, APT will then allocate turnaround servicing expenses exclusively to trains serviced there while ignoring the through trains. Amtrak creates and maintains such Train Groups and uses them in creating allocation rules. As part of APT's monthly maintenance (see Section 3.10), Amtrak modifies train groups as its operation changes.

Included among the manual train groups is the special case of "Unallocated." In APT this train group is where the expenses from SAP that are not allocated to the NTS trains and ancillary businesses are placed. The expenses are mainly depreciation, interest, and capital projects for the acquisition of equipment and fixed assets.<sup>42</sup> In APT it is the route APT\_RT\_130 (Unallocated) and contains several specific trains, e.g., train TG\_UNDEP is unallocated depreciation.

### Automatic Train Groups

The second type of Train Group is an automatically derived train group. Amtrak has such a Train Group for each route that includes, on a dynamic basis, trains serving that route in a given month. Prior to a train being added to Amtrak's systems for revenue service, a train number is created in operational databases and is associated with a route and other service-specific characteristics. Once in the database, if a train is active in any month (that is, if the train generates revenue and statistics), it receives cost allocations.

<sup>41</sup> Currently unused train groups must be retained in the event Amtrak needs to produce historical reports from APT on past periods when those train groups were in use. The system must have the "old" train groups available to execute the allocation rules.

<sup>42</sup> See Section 4.2.2 for discussion on why APT excludes these expense types from allocation.

As an example, some expenses are exclusively to the Acela route and Amtrak uses its route-based Acela train group, APT\_RT\_01, for those allocations. However, not every Acela train number is operated every month, so an automatic Train Group identifies only those trains operating during the reporting time period. Importantly, unlike the manual train group case identified above, APT's automatic train group functionality would capture any new train numbers automatically as train numbers must be associated with a specific route when added to the train database. Thus, if a new train was added and was listed with the Acela route number, it would automatically be in the Acela Train Group and no further manual intervention would be required for appropriate cost attribution.

#### **4.6.4 Stat Qualifiers**

Stat Qualifiers rule elements, as indicated by their name, are a mechanism for limiting an allocation to trains with a qualifying statistic. The APT allocation routine looks first to all trains in the specified train group that operated in that time period, but the Stat Qualifier limits the allocation only to trains whose allocation statistic meets the specified limiting factor, or Stat Qualifier. Thus, the Stat Qualifier can best be thought of as a filter to allocate to trains using a more granular component of an allocation statistic. Like Train Groups, Stat Qualifiers are a way to restrict the trains in a given cost pool. However, while Train Groups do that by identifying a list of trains irrespective of their operational characteristics, Stat Qualifiers achieve that by dynamically sorting on a predetermined component of the allocation statistic of a train, allocating only to trains that satisfy that specific criteria.

Stat Qualifiers are used to filter groups of cost objects using several data elements of the train operating statistics. The following are categories of Stat Qualifiers available in APT and how they are used:

- Cost Center: only trains receiving allocation from a specified Cost Center
- Station: only trains that use a specified station
- Station Pair: only trains that operate between two designated points along the right-of-way including stations, interlockings, and other control points
- Railroad: station pair Stat Qualifier based on railroad ownership.
- Equipment Type: only trains that use a specified equipment type

The Stat Qualifier types can only be used with certain types of allocation statistics. For example, a station Stat Qualifier can only be used with a statistic that corresponds with stations, such as Total Boards and Deboards, and an Equipment Stat Qualifier can only be used with equipment statistics like Unit Miles or Units Used. When no Stat Qualifier is needed in an allocation rule, the value "SQ\_NO\_SQ" is entered into the Stat Qualifier field to indicate this.

When a Stat Qualifier is used, only trains that meet the established criterion receive a share of the expense being allocated. The simplest example of a Stat Qualifier is the Station Pair Stat Qualifier which allocates an expense to all trains which have a statistical value between two specified points on the right-of-way. For example, an allocation by the Frequency of Train Trips statistic (FTT) might be used between two points to allocate to trains that traversed that segment. Using FTT with the Station Pair Stat Qualifier SQ\_SP\_WASPHL identifies Washington Union

Station and Philadelphia 30<sup>th</sup> Street Station as its end points and allocates only to trains that had a frequency between the two stations. A New York to Philadelphia train would not be included by the Stat Qualifier and therefore would not receive an allocated cost as it stopped at Philadelphia and did not travel between the specified end points, while a New York to Washington train would be included and receive an allocation.

The group of trains that satisfy a Stat Qualifier is defined dynamically, in that as the operation changes with different trains modifying their service patterns, the list of qualifying trains also changes without need for any manual changes to the Stat Qualifier.

#### **4.6.5 Stat Qualifiers vs. Train Groups**

Both Stat Qualifiers and Train Groups have the effect of limiting the allocation to a subset of cost objects. They may be used as alternatives to each other or in combination, but in general only one is used. If neither is used (SQ\_No\_SQ and TG\_Map), costs are allocated “nationally,” i.e., across the whole enterprise.

In cases where either could be used to give a valid allocation, Stat Qualifiers have the advantage of being automatic. A manual Train Group would need to be updated for service changes, especially if trains or services are added.

#### **4.6.6 Allocation Ratios<sup>43</sup>**

In a few relatively rare cases, the preferred allocation requires that a single expense be allocated using fixed proportions or using more than one statistic. Allocation Ratios are fixed values that are used in some situations to split an expense among two or more cost objects when a suitable allocation statistic is not available. They can have values between zero and 1.0, and cumulatively must sum to 1.0. For the vast majority of expenses requiring allocation among cost objects, the Allocation Ratio is 1.0, i.e., it has no meaningful effect on cost allocation, and the primary factor in the allocation of shared expenses is the activity-based statistic.

The Allocation Ratios are typically determined through studies of the situation and may include investigation of headcounts, billing, or other analyses. If an Allocation Ratio is used to split a percentage of an expense to a group of trains, APT subsequently allocates that share among the group based on relative activity levels. One example occurs at some stations where operating expenses are first split between train services and the commercial ancillary business at the station, and then split or allocated among trains serving that station.

Several Allocation Ratios were utilized in cases when professional judgment and/or other research and analysis demonstrated that a single statistic was inappropriate. One example is in Subsidiary Subfamily #605, where some self-insurance expenses associated with Amtrak’s Passenger Railroad Insurance Limited (PRIL) subsidiary are allocated using an Allocation Ratio. Although expenses share the same Code Block, some arise due to the operation of NTS trains and other are self-insurance expenses covering liabilities related to Amtrak employees

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<sup>43</sup> In APT programs and data files the Allocation Ratio is labelled “Signed Data.”

performing work for third parties. The latter is related solely to Amtrak’s Reimbursable business and needs to be allocated to that business alone. A review of liability claims by Amtrak staff revealed that the majority of insurance claims (66 percent) are related to NTS trains and the remaining (34 percent) are related to the Reimbursable business. Thus the APT methodology uses an Allocation Ratio of 0.66 for NTS and 0.34 for Reimbursable as a first step in the allocation process to achieve the appropriate allocation of these expenses. Similar analyses contributed to the use of Allocation Ratios in other Subfamilies. The use of Allocation Ratios is noted in the Section 6 descriptions of allocation methodology for individual Subfamilies.

#### 4.6.7 Examples of Transaction Codes and Rule Elements

Table 4-9 and Table 4-10 give the actual APT rules to illustrate four cases. The values for the five Code Block elements are in Table 4-9. For example, every expense transaction that matches the five elements in Table 4-9 for rule #1 gets allocated using the rule values specified in Table 4-10.

**Table 4-9: Transaction Code Block Data for Example APT Allocation Rules<sup>44</sup>**

<b>Rule ID<sup>45</sup></b>	<b>Subfamily &amp; Subcategory</b>	<b>Cost Center</b>	<b>Internal Order</b>	<b>Account</b>	<b>WBS Element</b>	<b>Profit Center</b>
#1	FM_201_0	CC_6653	IO_1851	AC_MAP	W_NO_W	PC_MAP
#2	FM_302_1 <sup>46</sup>	CC_6672	IO_1623	AC_Map	W_Map	PC_MAP
#3	FM_304_0	CC_6537	IO_Map	AC_510411	W_Map	PC_MAP
#4	FM_501_0	CC_2913	IO_1241	AC_Map	W_Map	PC_MAP

What rule #1 in Table 4-9 shows is that all expenses with the Code Block values for rule #1 in Table 4-9 are allocated to trains in the Train Group Bellingham using the Statistic ST\_UTx (unit trips) and with no further filtering adjustment using a Stat Qualifier or special Allocation Ratio. The four examples use different allocation Statistics as indicated in the table’s Statistics column. Table 4-10 also shows that Rule #2 and Rule #4 have specific Stat Qualifiers (Cost Center SQ\_CC-6672 and Station SQ\_SN\_ABQ respectively). The Allocation Ratio values are all 1.0 showing that 100 percent of each expense is allocated using just the single indicated rule.

<sup>44</sup> The “Map” and “MAP” terms are the APT program’s designations for wildcards; the allocation rule is the same for all values of that Code Block element. The use of “No” or “NO” applies to transaction records for which no specific value was entered for that Code Block element.

<sup>45</sup> The Rule ID is used in this example to link the information in Table 4-9 and Table 4-10 and is not part of the actual Code Block.

<sup>46</sup> A non-zero value in the last character is used to identify Subcategories.

**Table 4-10: Example APT Allocation Rules**

<b>Rule ID<sup>47</sup></b>	<b>Statistic</b>	<b>Stat Qualifier</b>	<b>Train Group</b>	<b>Allocation Ratio</b>
#1	ST_UTx	SQ_NO_SQ	TG_BELLINGHAM	1
#2	ST_TEHx	SQ_CC_6672	TG_MAP	1
#3	ST_DPUFx	SQ_No_SQ	TG_Map	1
#4	ST_TBDx	SQ_SN_ABQ	TG_XSP	1

#### **4.6.8 Methodology Evolution and APT Rule Maintenance**

APT does not have a static set of allocation rules because as Amtrak's business changes new combinations of expense identifier codes are created. As part of the APT monthly production process, expenses whose identifier codes do not match a specific rule are allocated instead by a general miscellaneous or all-purpose rule for the Family in which the Cost Center is grouped.<sup>48</sup> APT monthly processing includes a step in which staff examine cases for which sizable new allocations are made using these all-purpose rules and create new specific rules where warranted. During this monthly maintenance period, Train Groups, Allocation Ratios, and other aspects of allocation rules are periodically reviewed for applicability. The long term maintenance of APT and its related system, such as SAP, may also require revision of allocation rules (see Section 3.10).

#### **4.7 Direct Assignment of Costs**

Some expenses can be directly assigned to specific trains and not allocated. These expenses include, but are not limited to items such as train labor and food and beverage consumed on a train. All direct expenses have a train identified in the WBSE and are directly assigned to that train. Transactions coded with WBS W\_A\_ prefix are direct to the train or other cost object and no allocation is done. The diesel fuel account AC\_510412 is the only account that comes into APT with a WBS\_A that does not go directly to the train as all fuel expenses are allocated nationally.

The same rules are also used to allocate closely related expenses. For example, T&E labor is assigned, but other T&E expenses for that same employee (such as benefits, extraboard guarantee, etc.) will use the same Internal Order but are allocated and not directly assigned. Finally, as noted in Section 4.4.3 above that describes direct assignment of costs, some transactions exclusive to a single non-NTS train use the statistic NON to assign them in their

<sup>47</sup> The Rule ID is used in this example to link the information in Table 4-9 and Table 4-10 and is not part of the actual Code Block.

<sup>48</sup> An administrative process exists to assign any new Cost Centers to a Family.

entirety to that customer or train, but these expenses are considered “allocated” because they are processed by the APT Engine. The NON statistic is used most often with Unallocated expenses including capital expenses, depreciation, and interest.

## 4.8 Other Methodology Features

### 4.8.1 Allocation Rounds

APT’s use of dollar-denominated statistics requires that the allocation process be done in a sequence of steps referred to as “rounds.” In the first round all direct assignments and allocations by activity-based statistics are performed. The results are summed for each cost object and this becomes the dollar-denominated statistic for the second round. Second round expenses are then allocated by this dollar-denominated statistic. The results of that allocation are added to a cost object’s first round dollar-denominated statistic to create an additional dollar-denominated statistic that is used for expenses allocated in the next round and so on. The final round is allocated by the most comprehensive such statistic, “Total Activity Cost” (TAC).

**Table 4-11: Allocation Rounds**

Allocation Round		Example Statistics
First Round	Direct Assignment Allocations	NO_STAT (no statistic, direct to a train) FTT, UT, TBD
Second Round		MDC, MWDC, TDC
Third Round		CAE
Fourth Round		TAC

Dollar-denominated statistics are used for allocating higher level management and administrative support expenses. The need for extra rounds occurs because some such expenses only get allocated to a subset of cost objects. For example, expenses involving management of track maintenance are properly allocated only to trains that operate over Amtrak-maintained trackage. Very high level G&A expenses that are relevant to the entire enterprise, not a subset of cost objects, are allocated in the final round using the TAC statistic that is the sum of all prior cost attributions.

### 4.8.2 Levels of Allocation

Allocation rules also define the level of allocation, that is, whether expenses at a particular Cost Center will be spread locally or nationally. Most allocations are local, allocating costs to the local direct users of a particular Cost Center or WBSE asset. Station expenses for a particular Cost Center, for example, are allocated locally only to trains or other businesses that actually operate at that Station Cost Center. Fuel expenses, on the other hand, are allocated nationally; expenses recorded at every fuel Cost Center are allocated to all Amtrak trains using diesel fuel whether those trains actually received fuel at that Cost Center or not.<sup>49</sup> This procedure is the

<sup>49</sup> See the methodology description for Subfamily #304–Fuel for further explanation on this subject.

equivalent of pooling all diesel fuel expenses for all Cost Centers and allocating that cost pool to all Amtrak diesel trains.

#### 4.9 Summary of Fully Allocated Cost Methodology

Although Amtrak developed the APT information technology system for implementing the methodology described in this report, both for practical purposes and to maintain consistency with Amtrak's audited financial reports, any methodology used by Amtrak to calculate Fully Allocated Costs must operate within the constraints of the company's other information technology systems and of its recordkeeping structure. These include SAP, the source of the general ledger expense transactions, and its various systems for calculating and maintaining operating and other statistics, such as OMS and PAS/ALMS. Each financial transaction in Amtrak's general ledger is identified by five pieces of information that are collectively referred to as its "Code Block," namely: (1) Cost Center, (2) Profit Center, (3) Account, (4) Internal Order, and (5) WBSE. The methodology for estimating Fully Allocated Costs focuses primarily on the Cost Center by grouping similar Cost Centers together for a common allocation approach.

To appropriately estimate Fully Allocated Costs for Amtrak routes, the methodology must allocate system-wide costs, such as G&A and other overhead costs, to all of Amtrak's businesses in a logical and equitable manner. It must also allocate Amtrak infrastructure-related costs to all users of Amtrak infrastructure.

The APT methodology is designed to be a consistent, logical process through which costs are spread among Amtrak's routes and other businesses and, to the extent possible reduce the system's susceptibility to coding errors. Finally, the methodology ideally should be clear, relatively easy to understand and explain, and flexible enough to accommodate changes in company operations.

To achieve these objectives, the APT methodology for estimating Fully Allocated Costs incorporates the following strategies:

- Maximize the proportion of costs directly coded to (and therefore capable of being directly assigned to) trains. This effort, however, is constrained by certain features of Amtrak's accounting system and operational processes.
- Focus primarily on Cost Centers to allocate shared expenses that cannot reasonably be directly coded to trains.
- Allocate Cost Center expenses described in the bullet above at the more finely grained Internal Order, Account, and WBS levels in order to best match Amtrak train and other business activity with resources consumed.

Most Cost Center expenses are allocated to Amtrak routes and other businesses through a single-step process. Given Amtrak's extremely detailed cost coding system, it was determined that the step-down and reciprocal approaches to cost allocation described in Section 2 of this report would likely add needless complexity to the methodology. Finally, route costs are calculated by allocating costs to trains and then aggregating ("rolling up") these costs to the route level. This

approach has the practical advantage of allowing the utilization of existing Amtrak operating statistics.

#### **4.9.1 Depiction of Fully Allocated Cost Methodology**

An allocation rule answer three questions:

- (1) What expenses are being assigned or allocated (SAP expenses for individual Cost Centers)?
- (2) How will an expense be allocated (that is, what statistic will be used to apportion the expense)?
- (3) To what Amtrak trains and other businesses will the expense be allocated?

Figure 4-2 through Figure 4-5 illustrate the Fully Allocated Cost methodology for several hypothetical SAP transactions.

Figure 4-2 depicts the initial step whereby expenditures are sorted into three categories:

- Operating expenses, which are directly assigned or allocated
- Capital expenditures, which are added to assets in Amtrak’s asset ledger and eventually used to calculate the Asset Usage Allocation
- Other financial transactions which are not operating expenses and therefore are not further considered in the methodology.

The items in parentheses under each expense “record” are the accounting classification codes recorded along with each transaction in SAP.

Figure 4-3 illustrates the case of a hypothetical direct expense (Expense4) and shows that it is assigned directly to Train5 without any need for allocation. Each direct expense is assigned to one and only one train or other ancillary business.

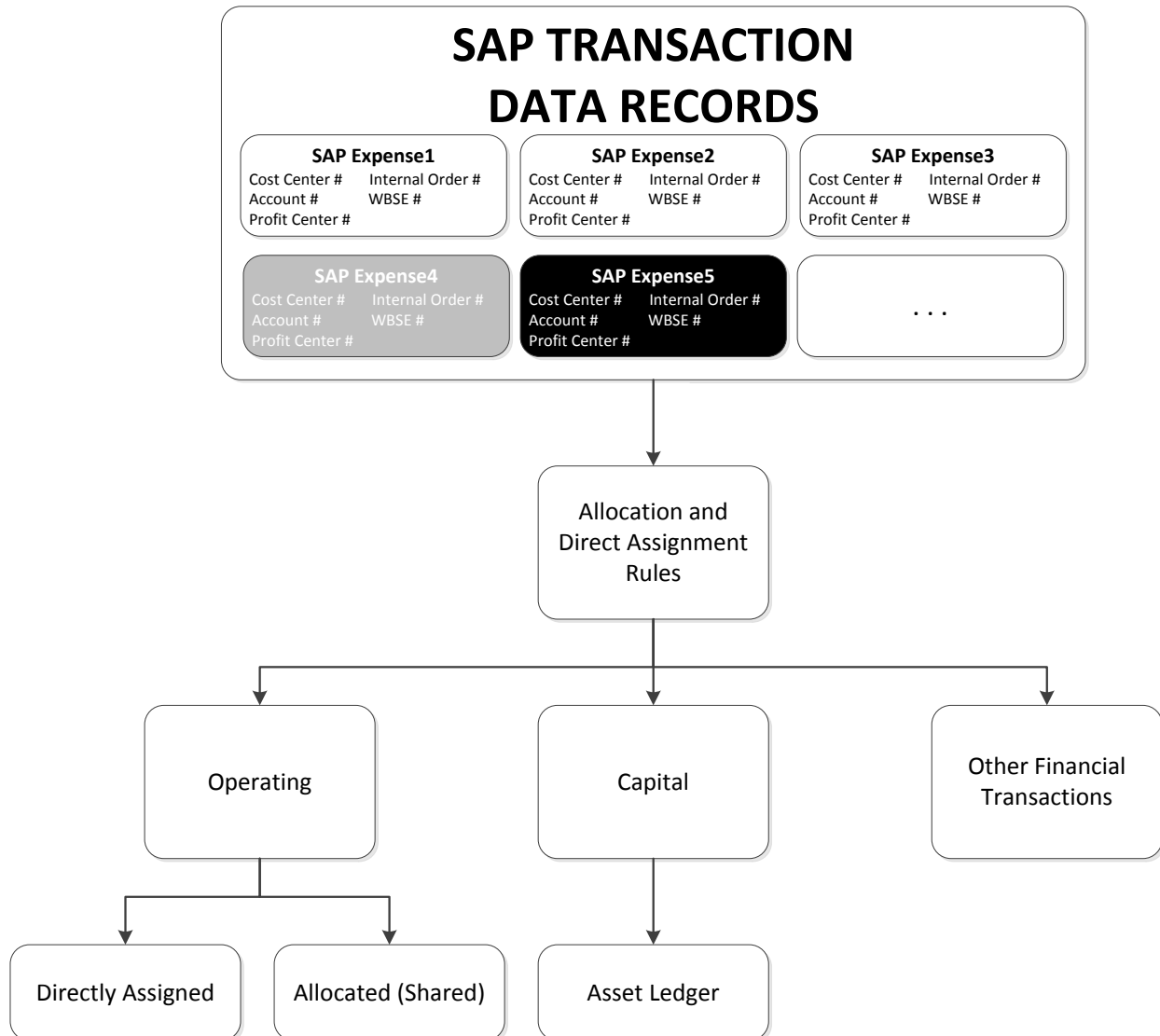
Figure 4-4 illustrates the case of a hypothetical shared expense, in this case an expense within the MoW-New England Division Subfamily. The MoW-New England Division Subfamily is composed of Cost Centers responsible for maintaining the infrastructure systems in in Amtrak’s New England Division. As described in Section 4.6, the allocation rules common to that Subfamily are applied to the specific expense.

Figure 4-4 shows the process for allocating this shared MoW expense (Expense5) to Trains 1, 2, and 5, and also to ancillary business customers MBTA (Commuter Infrastructure Access (CI) business) and CSX (Freight Infrastructure Access business). The Cost Center number (BBBB) specifies that the Cost Center belongs to the MoW-New England Division Subfamily. The Profile for the New England Division Subfamily (see Table A-3 in Appendix A) dictates that expenses recorded with Internal Order Code 1713 (Signal & Interlocker Maintenance) should be allocated to all Amtrak trains and other customers using the section of right-of-way (ROW) for which that Cost Center is responsible based on their relative shares of Frequency of Train Trips (FTT) over that section.

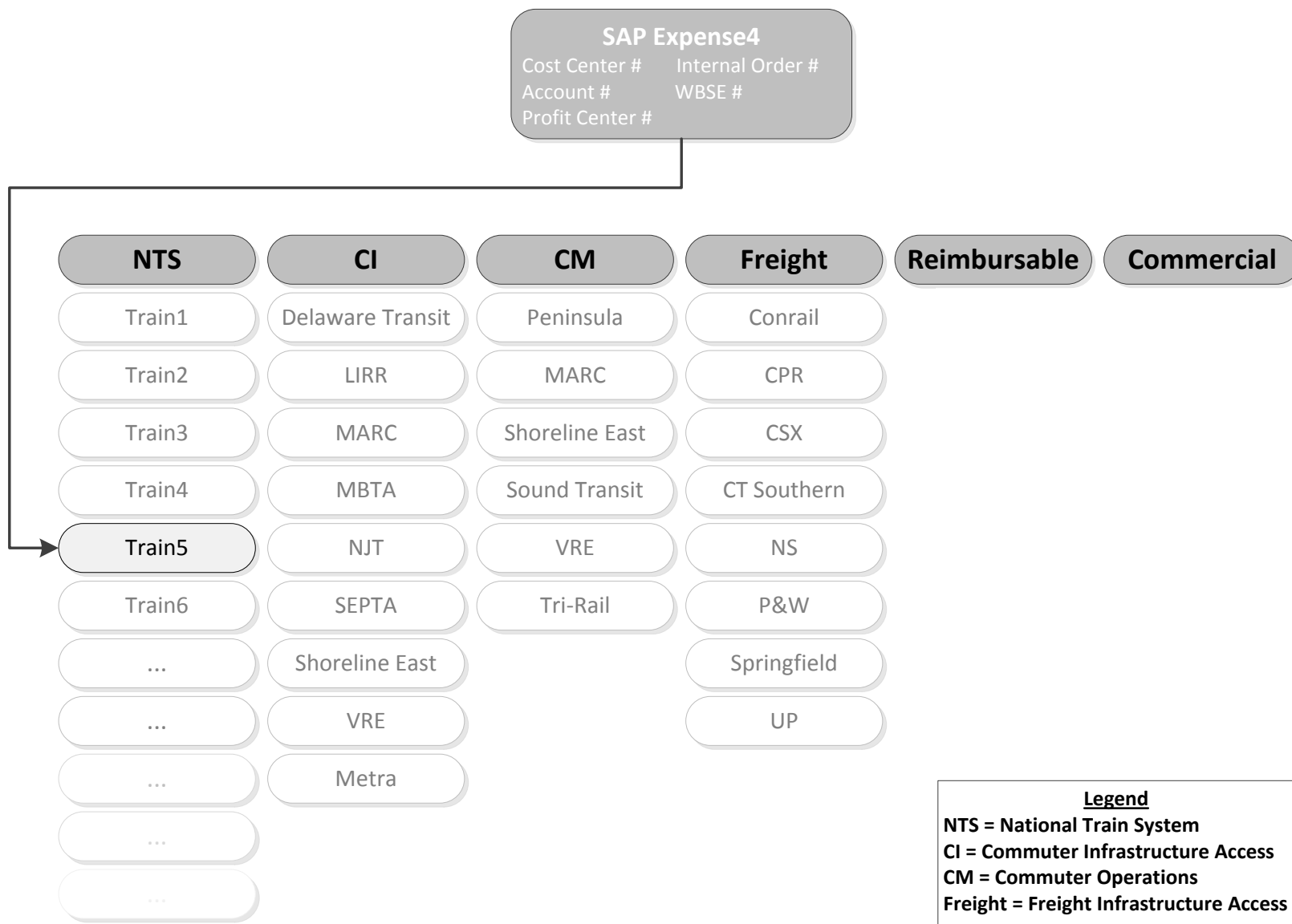
Figure 4-5 summarizes the process for calculating Fully Allocated Costs. In addition to the cases covered in Figure 4-3 (Direct Expense4) and Figure 4-4 (Shared Expense5), it illustrates the conceptual data flow for converting asset acquisitions in prior periods to capital charges allocated to trains and other businesses. The final step is displayed also in which costs are aggregated to Amtrak's routes and ancillary businesses.

The following chapters describe how this methodology is currently implemented in the APT system to estimate route revenues and Fully Allocated Costs.

**Figure 4-2: Allocation Methodology**



**Figure 4-3: Allocation Methodology – Direct Cost Example**



**Figure 4-4: Allocation Methodology–Shared Cost Example**

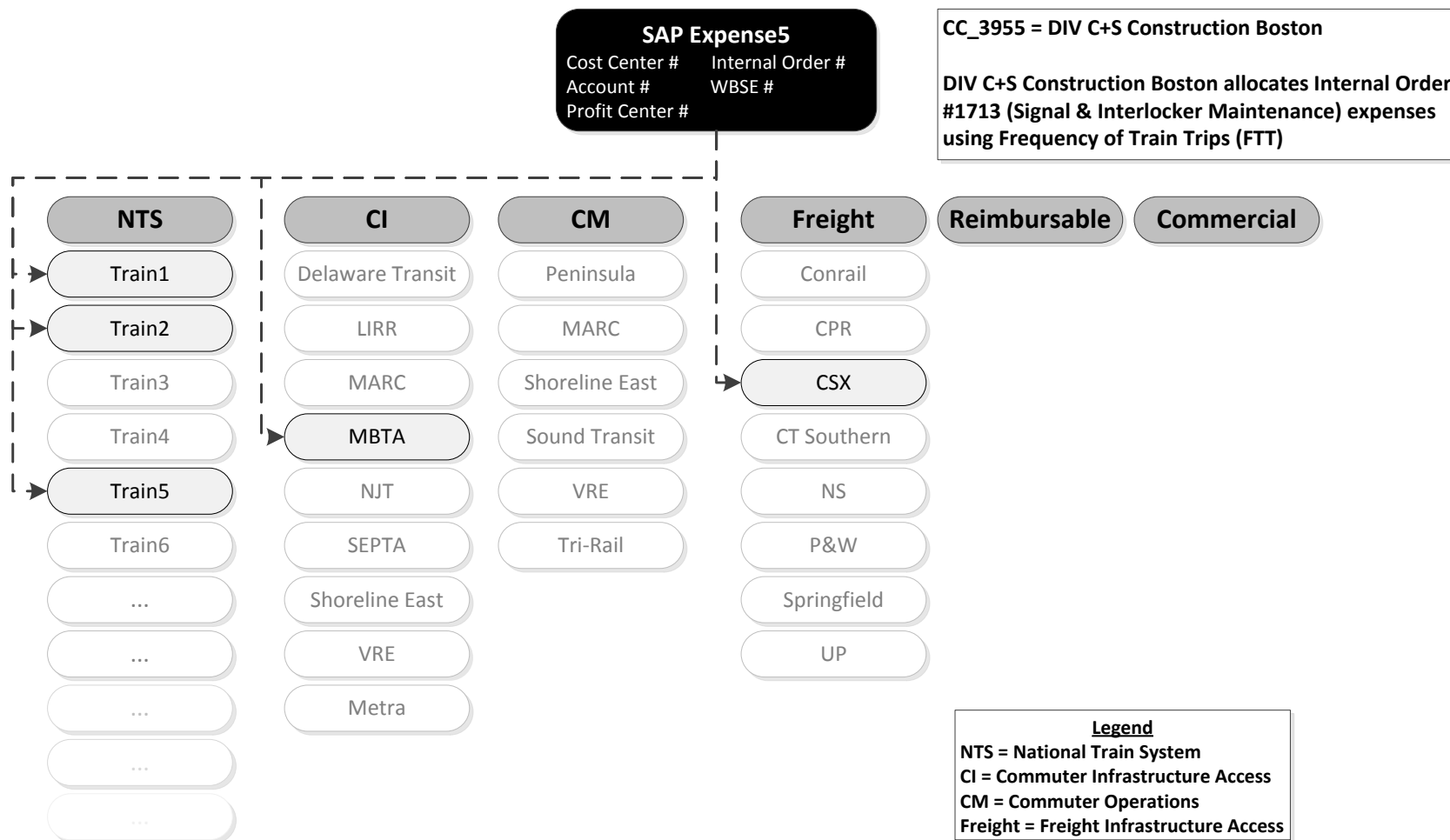
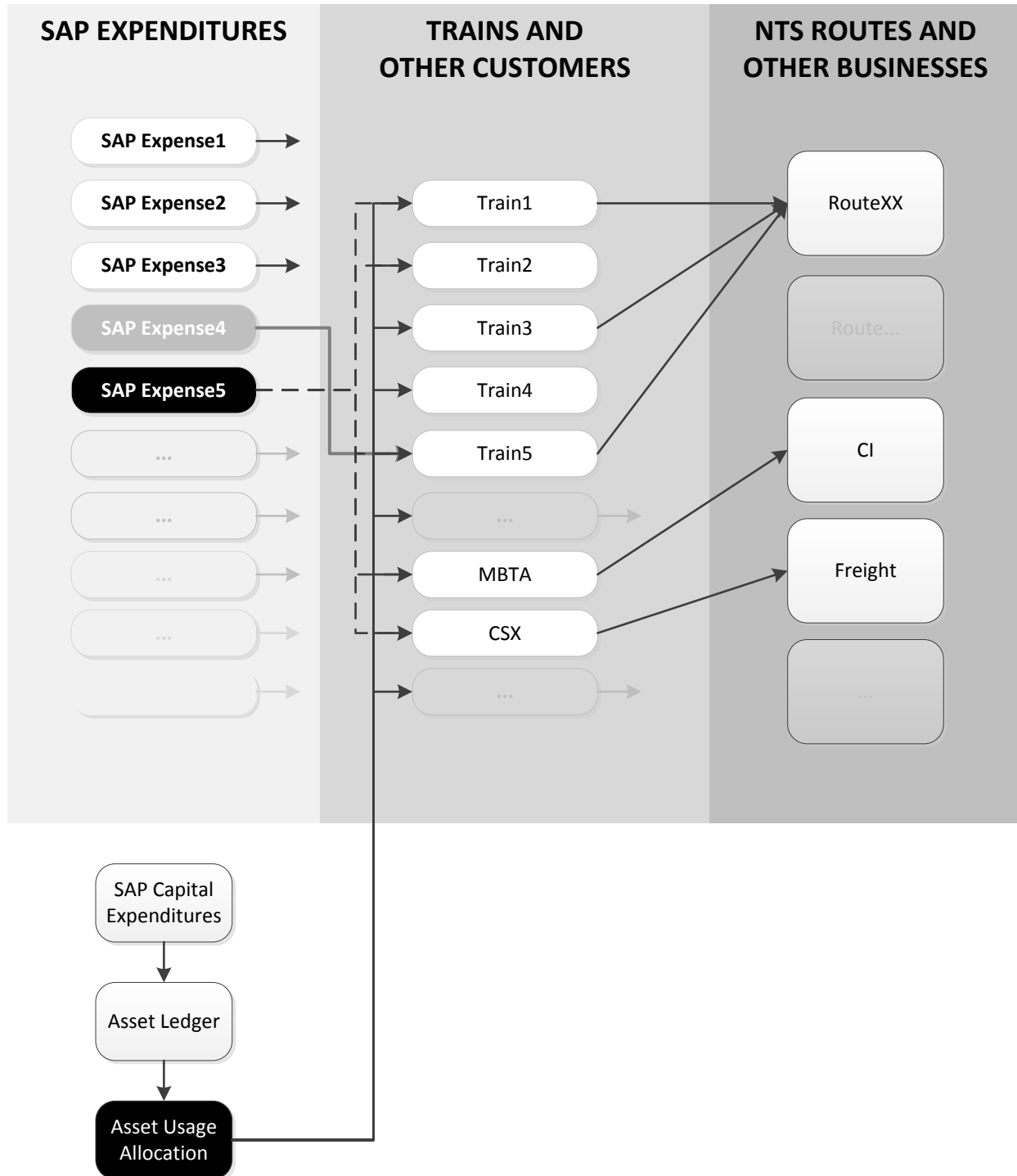


Figure 4-5: Aggregation of Fully Allocated Costs



## 5 Methodology for Estimating Fully Allocated Revenues

In order to see the complete financial result of an Amtrak route or other business, revenues are balanced with costs to determine the net surplus or loss. APT has a revenue Family to attribute revenues to routes, both through direct assignment and allocation. The APT Revenue Family is an extension of the Family structure used for costs and follows its patterns of terminology and usage. Specifically, the Revenue Family is given a three-digit code with the first “0” (zero) digit indicating the Family (000).<sup>50</sup> It has five Subfamilies with codes that utilize the third digit, e.g., 001 or 004.

### 5.1 Revenue Family

As APT is Cost Center focused, the Revenue family consists of seven virtual “Cost” Centers, even though no costs are incurred and they are unstaffed. These Revenue Family Cost Centers serve as a “landing spot” for revenue data in a manner consistent with expense transactions in APT.

While cost Subfamilies are defined by the activities they perform, grouping similar Cost Centers with each other, the Revenue Family doesn’t perform any work and is defined differently. Accounts are the primary characteristic that differentiates revenues and links them to a specific Subfamily. In APT, each revenue account is assigned exclusively to one Subfamily and any revenue with that Account is posted with its appropriate Revenue Cost Center. Revenue accounts are a series of accounts within the SAP Account dimension and are differentiated from expense accounts by the first digit. Revenue account codes start with the digit “4.” A full listing of the accounts that define each subfamily is provided in Appendix A.

While Accounts determine what Subfamily the revenue item is assigned to, other characteristics determine the method of attributing revenue to trains. While approximately 85% of all revenues are directly assigned to trains, including 99% of passenger revenue, some revenues are allocated. When attributing revenues to trains and other ancillary businesses, the WBSE and Profit Center codes on the revenue transaction record are the primary means of determining the applicable allocation rule. The Account identifies the type of revenue, the Profit Center identifies the Amtrak route or ancillary line of business, and the WBSE on the transaction identifies the specific or group of trains or customers to which the revenue is attributed.

The business types that make up the Amtrak enterprise, to which revenues are allocated, are as follows:

- **National Train Service (NTS):** Amtrak’s “core” business of providing intercity passenger train service
- **Commuter Infrastructure Access (CI):** Provision of access to Amtrak’s track and other facilities to independently operated commuter railroad agencies

<sup>50</sup> As seen in Section 4, cost Families are identified by first digits “1” through “9.”

- **Commuter Operations (CM):** Operation of commuter service by Amtrak on behalf of outside commuter railroad agencies
- **Freight Infrastructure Access (FR):** Provision of access to Amtrak's track and other facilities to freight railroads
- **Reimbursable:** Maintenance of infrastructure and equipment performed by Amtrak for outside enterprises, mostly commuter and freight railroads, on a reimbursable cost basis
- **Commercial:** Management of Amtrak's property and assets other than for the provision of intercity passenger train service (e.g. retail space, parking garages, air rights, etc.)
- **Capital:** In APT, the Capital business represents business activity under which Amtrak acquires or produces assets used in the operation of its NTS and ancillary businesses.
- **Unallocated:** Amtrak groups certain expenses from SAP here that are not allocated to the NTS trains and ancillary businesses. The expenses are mainly depreciation, interest, and capital projects for the acquisition of equipment and fixed assets.

The following subsections describe the general purpose of the five Revenue Subfamilies, identify the respective size and share of Amtrak's total revenue, analyze the component revenue accounts, and describe the attribution approach.

### **5.1.1 National Train Service Subfamily**

**Family:** Revenue - #000  
**Subfamily:** National Train Service - #001

#### **Scope**

The National Train Service Subfamily consists of three Subcategories to track NTS revenues: #001\_1 Passenger Revenue, #001\_2 State Revenue, and #001\_3 Other Revenue. Each Subcategory consists of a single Cost Center with accounts associated exclusively with that single Cost Center and Subcategory.

Subfamily revenues for FY14 were \$2,550.2 million and account for 57.9 percent of Amtrak's total revenue.

#### **Subcategory #001\_1 – Passenger Revenue**

The Passenger Revenue Subcategory accounts for roughly 89% of the National Train Service Subfamily revenues. All of the accounts assigned to the Passenger Revenue Subcategory are accounts to capture various types of passenger transportation revenue, including AC\_400102 Passenger Ticket Revenue, AC\_400110 Food and Beverage Revenue, and similar accounts. Approximately 99 percent of revenues in this subcategory are exclusively assigned directly to trains and require no allocation. Allocation of revenue is required in only 3 accounts noted in the

table below, and even in those accounts direct assignment is the primary method of attribution. The following table lists the accounts in the Subcategory:

**Table 5-1: Passenger Revenue Subcategory Accounts**

<u>Account</u>	<u>Account Description</u>	<u>Attribution Method</u>
AC_400102	Passenger Ticket Revenue	Direct
AC_400104	Sleeping Car	Direct
AC_400105	Club and Custom Class Revenue	Direct
AC_400106	Automobile and Bicycle Revenues	Direct
AC_400107	Employee Pass Reimbursable	Direct
AC_400108	Usa Rail Pass	Direct
AC_400109	Special Movements	Direct
AC_400112	First Class Revenue	Direct
AC_400113	Business Class Trans.	Direct
AC_400114	Sleeper Class Trans.	Direct
AC_400115	First Class Accommodations	Direct
AC_400101	Passenger Other	Allocation/ Direct
AC_400103	Food and Beverage Transfer	Direct
AC_400111	Private Car Revenue	Allocation/ Direct
AC_400500	Amtrak Guest Rewards (Contra)	Allocation/ Direct
AC_400110	Food and Beverage Revenue	Direct

### **Subcategory #001\_2 – State Revenue**

The State Revenue Subcategory records all payments to Amtrak from state partners for state-supported routes and accounts for roughly 9% of National Train Service Subfamily revenues. State-supported routes, as defined by PRIIA Section 209, are services operated by Amtrak under contract and financed in part by States. These Amtrak revenues are payments for services from the States themselves and are not transferred passenger revenue; at this time, no States sell their own tickets. All revenues in this Subcategory are associated exclusively with AC\_410017 with the individual WBSE identifying the appropriate state based on its Amtrak route description. There is no direct assignment of revenues in this Subcategory because all revenues with this Account are allocated to the individual state-supported trains associated with each route.

### **Subcategory #001\_3 National Train Service – Other Revenue**

The Other Revenue Subcategory, accounting for 1% of the National Train Service Subfamily revenues, handles all other miscellaneous revenue associated with the NTS. Examples of other revenue include AC\_430002 Package Express & Baggage and AC\_459008 Merchandise Sales. Of these Other Revenues, 12% of FY14 revenues were directly attributed, while the rest were allocated.

### **Revenue Attribution Approach and Results**

For the entire National Train Service Subfamily, roughly 93% of revenues are directly assigned to a train with no need of allocation. However in the remaining 7% of revenues where allocation is required, rules are established based upon the Account, WBSE, and Profit Center on the revenue transaction record. The WBSE and Profit Center contain enough information on the nature of the revenue to determine both which trains should receive an allocation and the best statistic to use. In the National Train Service Revenue Subfamily, five statistics are used to allocate revenue, depending on the nature of the record:

**Table 5-2: NTS Other Revenue Allocation Statistics**

<b>Statistic</b>	<b>Description</b>
DRV	Dining Car Revenue
FTT	Frequency of Train Trips
NON	Straight-Line Allocation
PRV	Passenger Related Transportation Revenue
TBD	Total Boards And Deboards

### Summary

Table 5-3 is an overview of the cost allocation for the National Train Service Subfamily.

**Table 5-3: National Train Service Subfamily Overview**

Subfamily	National Train Service - #001			
Subcategory	National Train Service – Passenger Revenue (001_1), National Train Service – State Revenue (001_2), National Train Service – Other Revenue (001_3)			
FY 2014 Expenditures (Mil.)	\$2,550.6			
Business Types To Which Revenues Are Allocated	NTS, CI, CM, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	3			
Stat Qualifiers Used	Station			
Top Accounts Ranked by Allocations (Dollars, Mil., FY14)				
Account	Code Number	Expenditures	Dominant Statistics <sup>51, 52</sup>	Percent of Subfamily
Passenger Ticket Revenue	AC_400102	\$1,256.5	NO_ST	49.3%

<sup>51</sup> Statistics that generally allocated about 95% of that Internal Order's expenses.

<sup>52</sup> If a statistic was used primarily for credit transactions with an IO, most often for benefits transactions, the negative sign of that statistic will be indicated with parenthesis.

Subfamily		National Train Service - #001		
Subcategory		National Train Service – Passenger Revenue (001_1), National Train Service – State Revenue (001_2), National Train Service – Other Revenue (001_3)		
Business Class Trans.	AC_400113	\$579.4	NO_ST	22.7%
Sleeping Car	AC_400104	\$131.5	NO_ST	5.2%
Food and Beverage Revenue	AC_400110	\$125.8	NO_ST	4.9%
SSR-Route Subsidy Revenue	AC_410030	\$95.9	FTT	3.8%
SSR-Fuel Revenue	AC_410031	\$75.5	FTT	3.0%
First Class Revenue	AC_400112	\$64.2	NO_ST	2.5%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$2,266.8	88.9%	
Frequency of Train Trips	ST_FTTX	\$240.1	9.4%	

### 5.1.2 Infrastructure Revenue Subfamily

**Family:** Revenue - #000  
**Subfamily:** Infrastructure Revenue - #002

#### Scope

The Infrastructure Revenue Subfamily captures the fees paid by freight and commuter railroads for services provided by Amtrak and access to Amtrak-owned rights of way. In addition to the access fee, services may include electric propulsion revenue, third rail access revenue, or similar accounts. Revenues are recorded with WBSE that allow for identification of the appropriate commuter, freight, or private user.

Subfamily revenues for FY14 were \$156.5 million and account for 3.6 percent of Amtrak's total revenue.

#### Revenue Attribution Approach and Results

In FY14, only 1% of revenues in this Subfamily were directly assigned to the ancillary business trains, with the remaining allocated among customers (freight trains, commuter trains, and private cars). Transactions in this Subfamily are recorded with Account, WBSE, and Profit Center, allowing for identification of the particular revenue and the creation of an allocation rule.

Approximately 95% of revenues in this Subfamily are allocated by Frequency of Train Trips, with the remaining allocated to a particular customer using the NON statistic.

### Summary

Table 5-4 is an overview of the cost allocation for the Infrastructure Revenue Subfamily.

**Table 5-4: Infrastructure Revenue Subfamily Overview**

Subfamily	Infrastructure Revenue - #002			
Subcategory	Infrastructure Revenue (002_0)			
FY 2014 Expenditures (Mil.)	\$156.5			
Business Types To Which Revenues Are Allocated	CI, FR, Reimbursable			
Number of Cost Centers	1			
Stat Qualifiers Used	Station Pair			
Top Accounts Ranked by Allocations (Dollars, Mil., FY14)				
Account	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Access and Service Revenue	AC_410000	\$92.0	FTT	58.8%
Electric Propulsion Fee Revenue	AC_410001	\$37.7	FTT	24.1%
Freight Train Operation Revenue	AC_410016	\$26.4	FTT NON	16.9%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Frequency of Train Trips	ST_FTTX	\$147.8		94.5%
Straight-Line Allocation	ST_NONX	\$8.5		5.4%

### 5.1.3 Cost Sharing Revenue Subfamily

**Family:** Revenue - #000  
**Subfamily:** Cost Sharing - #003

### Scope

The Cost Sharing Subfamily records revenues paid to Amtrak by other customers for shared services at jointly-used facilities. Such services include police service revenues, station maintenance and operations revenues, yard operations revenues, or similar shared activity.

Subfamily revenues for FY14 were \$274.3 million and account for 6.2 percent of Amtrak's total revenue.

### Revenue Attribution Approach and Results

Revenue transactions are coded with a Profit Center and WBSE to identify customers for allocation. With specific customers identified in the original revenue transaction record, approximately 95% of revenues in this Subfamily are directly assigned to a customer with no allocation needed. Of the remaining revenues, the majority contain enough transaction data in their WBS and Profit Center fields to identify a specific customer and are allocated to that customer using the NON statistic. As with expenses, there is a distinction to be made between directly assigned revenues (or expenses) and something allocated "directly to" a customer. Direct expenses have a specific train identified in the original transaction and the APT Engine identifies that and immediately assigns that transaction to a train without allocation. In some instances, a transaction itself does not identify a train in the underlying record but using the WBSE field, Amtrak can clearly identify a single customer to which that transaction exclusively applies. In these cases, the statistic NON is used and a customer is specified in the Train Group dimension of the rule. The remaining minor amount is allocated among customers by FTT.

### Summary

Table 5-5 is an overview of the cost allocation for the Cost Sharing Subfamily.

**Table 5-5: Cost Sharing Subfamily Overview**

Subfamily	Cost Sharing Revenue - #003			
Subcategory	Cost Sharing Revenue (003_0)			
FY 2014 Expenditures (Mil.)	\$156.5			
Business Types To Which Revenues Are Allocated	CI, CM, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	1			
Stat Qualifiers Used	Station Pair			
Top Accounts Ranked by Allocations (Dollars, Mil., FY14)				
Account	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Labor Overhead Additive Revenue	AC_460005	\$106.3	NO_ST	39.0%
Labor Benefit Additive Revenue	AC_460002	\$80.5	NO_ST NON	29.5%
Labor Vacation Additive Revenue	AC_460004	\$24.9	NO_ST	9.1%
Material Handling Additive Revenue	AC_460006	\$18.8	NO_ST	6.9%
G&A Revenue	AC_460008	\$15.9	NO_ST	5.8%

Subfamily		Cost Sharing Revenue - #003		
Subcategory		Cost Sharing Revenue (003_0)		
Labor Insurance Additive Revenue	AC_460003	\$12.9	NO_ST	4.7%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$248.9		91.2%
Straight-Line Allocation	ST_NONX	\$23.8		8.7%

#### **5.1.4 Ancillary Revenue Subfamily**

**Family:** Revenue - #000  
**Subfamily:** Ancillary Revenue - #004

##### **Scope**

The Ancillary Revenue Subfamily records revenue from Amtrak's ancillary businesses, including commuter operations, commercial, real estate, reimbursable, and some infrastructure access fees not in Subfamily #002. Ancillary Revenue is Amtrak's second largest revenue subfamily after the National Train Service Revenue Subfamily #001.

Subfamily revenues for FY14 were \$1,422.2 million and account for 32.3 percent of Amtrak's total revenue.

##### **Revenue Attribution Approach and Results**

Over 90% of Ancillary Revenue is directly assigned to trains requiring no allocation. Where not directly assigned, Account, Profit Center, and WBSE are used to create rules to allocate revenues to the appropriate customers. WBSE are critical for revenues and identify the customer and an appropriate allocation statistic. Of the 10% of revenues that are allocated, many have enough information in the other fields to assign that transaction to a single customer using the NON statistic. Other statistics used include Frequency of Train Trips (FTT) and Trainmen and Enginemen Labor Hours (TEH).

##### **Summary**

Table 5-6 is an overview of the cost allocation for the Ancillary Revenue Subfamily.

**Table 5-6: Ancillary Revenue Subfamily Overview**

Subfamily		Ancillary Revenue - #004		
Subcategory		Ancillary Revenue (004_0)		
FY 2014 Expenditures (Mil.)		\$1,432.0		
Business Types To Which Revenues Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		1		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Accounts Ranked by Allocations (Dollars, Mil., FY14)				
Account	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
RE Contract Svcs	AC_419021	\$508.9	NO_ST	35.5%
RE Other	AC_419026	\$382.5	NO_ST	26.7%
RE Materials	AC_419020	\$188.3	NO_ST	13.1%
RE Labor ST	AC_419010	\$146.8	NO_ST	10.2%
Misc Additive Revenue	AC_461001_C	\$63.8	THE NON NO_ST FTT	4.5%
RE Labor OT	AC_419014	\$51.6	NO_ST	3.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$1,301.9		90.9%
Straight-Line Allocation	ST NONX	\$68.8		4.8%

### **5.1.5 Miscellaneous Revenue Subfamily**

**Family:** Revenue - #000  
**Subfamily:** Miscellaneous Revenue - #005

#### **Scope**

The Miscellaneous Revenue Subfamily records revenues not assigned to other Subfamilies. The only two active Accounts in FY14 were training and vehicle repair. It is minor Subfamily, accounting for less than 1/1000<sup>th</sup> of Amtrak's revenue in FY14. In FY15, Amtrak will shift the accounts to the #004 Subfamily and reserve the #005 for future miscellaneous revenue.

Subfamily revenues for FY14 were \$0.1 million and account for 0.0 percent of Amtrak's total revenue.

### Revenue Attribution Approach and Results

Revenues in this Subfamily are almost exclusively (99%) directly assigned to customers, requiring no allocation rules. The remaining portion has enough information in the other fields to allocate that transaction to a single customer using the NON statistic, so in effect, the Subfamily is 100% directly assigned.

### Summary

Table 5-7 is an overview of the cost allocation for the Miscellaneous Revenue Subfamily.

**Table 5-7: Miscellaneous Revenue Subfamily Overview**

Subfamily		Misc. Revenue - #005		
Subcategory		Misc. Revenue (005_0)		
FY 2014 Expenditures (Mil.)		\$0.1		
Business Types To Which Revenues Are Allocated		NTS, Reimbursable, Commercial, Capital		
Number of Cost Centers		1		
Stat Qualifiers Used				
Top Accounts Ranked by Allocations (Dollars, Mil., FY14)				
Account	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
GSA Vehicle Repairs	AC_459024	\$0.1	NO_ST	109.8%
Contractor Safety Training	AC_459018	\$0.0	(NO_ST) (NON)	-9.8%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$0.1	95.9%	

## 6 Application of Methodology for Estimating Fully Allocated Costs by APT Family

This section describes additional methodological detail for estimating Fully Allocated Costs and documents the current approach for the 42<sup>53</sup> individual Subfamilies within APT. Amtrak Cost Centers and costs are divided into eight Families representing the broad categories of activity, such as Maintenance of Way and Maintenance of Equipment, required to operate a passenger railroad such as Amtrak. Within each Family are one or more Subfamilies. The activities within each Subfamily are of a similar nature, and in accordance with the methodology the APT system distributes the costs associated with these activities in a logical and consistent manner.

The report subsections that follow contain separate descriptions of the current methods for calculating Fully Allocated Costs for each of the individual Subfamilies. The descriptions provide information on the type of work performed in the Subfamily, FY14<sup>54</sup> costs and share of Amtrak total costs for the Subfamily to illustrate magnitude, the Amtrak businesses (including the core passenger rail business) to which costs are allocated, and finally, an overview of the allocation rules for allocating costs to Amtrak trains and other businesses. The primary allocation statistic(s) as well as any relevant Stat Qualifiers are also discussed.

In all cases, the cost allocation approach indicates whether costs are allocated nationally or locally. A national level allocation signifies that costs are allocated to a cost object (train or other Amtrak business or customer) based on that cost object's value for the specified statistic relative to the total enterprise-wide value for that statistic for the cost objects in the cost pool. A local, or Cost Center level, allocation signifies that costs are allocated to a cost object based on that cost object's value for the specified statistic relative to the total value of that statistic for all cost objects in the pool served or linked to that Cost Center.

Each Subfamily description includes a table containing a summary of this information, including the total FY14 cost associated with the Subfamily and the main accounting Internal Orders and allocation statistics used.

Importantly, the FY14 costs that are shown for the Subfamilies, except Capital (#701), include all expenditures recorded in SAP for that year, including those that were capitalized. The Capital Subfamily is treated differently from other Subfamilies because the methodology replaces capital costs associated with physical property and equipment with an Asset Usage Allocation, a synthetic measure of capital costs, calculated by Amtrak according to the method described in this report.

The use of the Asset Usage Allocation also does not alter the methodology's assumption that the costs to be reported in APT for route performance purposes—other than the Asset Usage

<sup>53</sup> Only 39 are used for cost allocation but APT uses three more to provide a mechanism for treatment of depreciation, interest expenses, and capital contributions from other entities that are not considered costs under this methodology. Additionally, the Revenue Family adds another five revenue-related subfamilies.

<sup>54</sup> Amtrak's Fiscal Year ran from October 1, 2013 to September 30, 2014.

Allocation—are only those that are treated as expenses on Amtrak’s audited income statement, as has been Amtrak’s practice.

Business types represent the separate businesses within the overall Amtrak enterprise. Each Subfamily table contains a listing of all the businesses to which Cost Center costs within that Subfamily are allocated. For example, a table listing NTS, CI, and CM, indicates that Cost Center costs for the corresponding Subfamily will be allocated to Amtrak trains and to commuter agencies that Amtrak either operates (CM) or to which it provides infrastructure access (CI). The business types that make up the Amtrak enterprise are as follows:

- **National Train Service (NTS):** Amtrak’s “core” business of providing intercity passenger train service
- **Commuter Infrastructure Access (CI):** Provision of access to Amtrak’s track and other facilities to independently operated commuter railroad agencies
- **Commuter Operations (CM):** Operation of commuter service by Amtrak on behalf of outside commuter railroad agencies
- **Freight Infrastructure Access (FR):** Provision of access to Amtrak’s track and other facilities to freight railroads
- **Reimbursable:** Maintenance of infrastructure and equipment performed by Amtrak for outside enterprises, mostly commuter and freight railroads, on a reimbursable cost basis
- **Commercial:** Management of Amtrak’s property and assets other than for the provision of intercity passenger train service (e.g. retail space, parking garages, air rights, etc.)
- **Capital:** In APT, the Capital business represents business activity under which Amtrak acquires or produces assets used in the operation of its NTS and ancillary businesses.
- **Unallocated:** Amtrak groups certain expenses from SAP here that are not allocated to the NTS trains and ancillary businesses. The expenses are mainly depreciation, interest, and capital projects for the acquisition of equipment and fixed assets.

The “Top Internal Orders” are those Internal Orders that recorded the highest FY14 expenses in SAP at the Cost Centers in each Subfamily and in total account for about 95% of total expenses.<sup>55</sup> For each Internal Order, the dominant Statistic(s) that allocate those expenses are also listed. Finally, the “Top Statistics” are the primary allocation statistics that are used at Cost Centers located in each Subfamily, irrespective of Internal Order, and in total account for about 95% of the Subfamily’s expenditures.<sup>56</sup> In many Subfamilies, the ST\_No\_Stx (No Statistic,

<sup>55</sup> Also included are expenses coded to Internal Orders not allocated by APT, such as the capital-related Internal Order.

<sup>56</sup> The expenditures listed in the summary tables are actual FY14 expenditures recorded in SAP. The expenditures associated with each statistic are those that are allocated using that statistic. In some Subfamilies, large credits may be allocated by a statistic that exceed the expenses also allocated by that statistic, creating a negative value. In many

Direct Charge) is a primary statistic. This is not an allocation statistic itself, but the value that APT populates in the Statistic field when an expense is directly assigned to a cost object. This can arise with direct assignment to trains or other business cost objects like capital and reimbursable. It is shown here to depict the share of expenses that are direct in some fashion.

Further details on allocations for each Subfamily are documented in Appendices A and B contained in Volume II of this report. These appendices contains the complete list of currently active Cost Centers in each Subfamily, other supporting tables that list the allocation statistics and indicate their relative importance to the allocation process, and the Internal Orders accounting for at least 0.5% of a Subfamily's work activities as reflected by expenditures.

## 6.1 MoW Family

The Maintenance of Way (MoW) Family is responsible for constructing and maintaining railroad fixed assets, both those owned by Amtrak and, on a reimbursable basis, assets owned by other entities. In the APT system prior to SAP implementation, the Maintenance of Way (MoW) Family was organized by the type of fixed assets serviced and the type of work performed. The original five MoW Subfamilies were:

- Track
- Communication & Signals
- Electric Traction
- Buildings & Bridges
- MoW Support

However, SAP's method for allocating overhead expenses to Cost Centers and cost objects is instead based on geographic regions. In order to properly allocate benefits and overhead transactions in APT, the MoW Cost Centers were reorganized into eight geographic Subfamilies in May 2013. The MoW Support Subfamily (#105) has remained consistent in the APT system through time as it supports the underlying Cost Centers regardless of location or craft.

**Table 6-1. Initial and Current APT MOW Family Structures**

Initial Family Structure		Current Family Structure	
FM_101	MoW Track	FM_101	Central Division MoW
FM_102	MoW Communication & Signal	FM_102	MidAtlantic Division MoW
FM_103	MoW Electric Traction	FM_103	New England Division MoW
FM_104	MoW Bridges & Buildings	FM_104	New York Division MoW
FM_105	MoW Support	FM_105	MoW Support
		FM_106	System Gangs
		FM_107	West Division MoW
		FM_108	Empire District

cases, these negative value statistics are minor, but where credits are a significant share of the overall activity in a Subfamily, they are included.

		FM_109	Michigan Line
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The following subsection describes the overall scope of work for the MoW family and the generalized methodology used to allocate expenses at each of the eight non-support subfamilies. Subsequent subsections include summary tables to describe the size and type of transactions at the Subfamilies, but as the general allocation methodology is consistent across the eight Subfamilies, it is described once in this overview section to avoid redundancy.

### **6.1.1 Generalized MoW Allocation Methodology**

#### **Scope**

APT as originally implemented had four MoW “craft” subfamilies that performed work on similar asset types. Most of this work takes place in the Northeast Corridor, although some work is performed outside the NEC on other Amtrak-owned assets or, on a reimbursable basis, on assets owned by other entities. The Subfamilies and their four types of work are:

- The Track Subfamily performed maintenance and capital work on track assets along the right-of-way, including the roadbed, rails, cross-ties, ballast, and grade crossings.
- The Communication and Signal (C&S) Subfamily performed maintenance and capital work on C&S assets including maintenance of communication systems such as telegraph, telephone, radio systems; train signal and interlocking systems; and communications-related maintenance of buildings, ROW, or other facilities.
- The Electric Traction (ET) Subfamily operated the electric propulsions systems as well as performed maintenance and capital work on the electric transmission assets. These assets included the catenary and support apparatus, transmission systems between power plants and the network, power substations along the corridor, and building and structures that house these systems.
- The Bridges & Buildings (B&B) Subfamily performed maintenance and capital work on various Amtrak physical assets including tunnels, bridges, culverts, overhead highway bridges, signs, buildings that house facilities for the MoW employees, and office buildings for Amtrak administrative staff.

Work on these four types of assets are no longer grouped by craft but rather are combined within geographically based Subfamilies. For example, the New England Division MoW Subfamily (#103) performs all MoW work within Amtrak’s New England Division, including track, C&S, ET, and B&B work previously conducted in one of the craft-specific Subfamilies.

The root cause of the change was Amtrak’s adoption of SAP as its general ledger system and how SAP posts and assigns benefits and overhead expenses. In the former general ledger system, FIS, overhead transactions were posted at the activity-based Cost Center of the underlying employee who incurred the expense, but in SAP these expenses are incurred and recorded as debits at overhead Cost Centers. SAP assigns these overhead, benefits, and other similar expenses to underlying WBS projects which are each associated with Cost Centers in the

geographic divisions. When the expense is posted to a WBS project as a debit, a credit is issued to an overhead-only Cost Center<sup>57</sup> to balance the debit entries at divisional Cost Centers.

However, in MoW where some work is operating maintenance while other work is capitalized, the transactions do not neatly balance. When a project is capitalized, its costs are reported as debits under a virtual “capital train,” APT\_RT\_UNCAP, and the debit is removed from the operating side of the business. As a result, the overhead cost centers do not net to zero but result in a credit balance that is intended to remove capital expenses in the divisions for capital work. Under the old family structure expenses would be overstated in the direct families such as Track, C&S, B&B, and ET while the support would be understated where the overhead cost centers were reported. Reorganizing the Families to match the credits with the group of cost centers they are meant to relieve eliminates the over/under reporting by Family. In the aggregate, the MoW Family results balance and reflect the size of the MoW operating business.

Capital WBSEs are used by these cost centers and make up the majority of the MoW Family expenditures but are not allocated because they are not part of train operating costs. Capital WBSE expenses are assigned to the unallocated Capital Train, TR\_UNCAP. These expenses include any capital improvements to extend the life of the assets. Unallocated capital expenses are identifiable by their WBS and Internal Order and are entered into Amtrak’s asset ledgers and thereby become part of the asset base used in calculating the Asset Usage Allocation. The AUA is then allocated to the trains and other businesses and customers using that asset.

Finally, Reimbursable profit centers in the MoW family are used for allocating expenses of projects associated with MoW work that is paid for by a third party. These are assigned directly to the Reimbursable business line. This could, for example, represent flag work for a state DOT or direct work for a commuter agency or freight railroad.

### **Cost Allocation Approach and Results**

The MoW Family costs are allocated or assigned to the NTS, Commuter & Freight Infrastructure Access, Commercial, and Reimbursable businesses and to the creation of new capital assets. The MoW Family identifies maintenance and capital work almost exclusively at the individual WBSE and cost attributions are at the WBS level by Cost Center. Although the MoW Subfamilies are no longer organized by the similar type of work they perform, individual Cost Centers typically perform a specific craft, i.e., there are track Cost Centers in each of the eight geographic Subfamilies. The combination of Cost Center and WBSE is used to determine the appropriate allocation statistic.

As the MoW family is capital intensive, nearly two thirds of expenses are related to production of capitalized assets and directly assigned to the capital or reimbursable businesses. While directly assigned, the “No Stat” value populates the Statistic column in these situations and is shown below to represent the size of the Subfamily dedicated to these activities. The majority of the MoW operating costs are allocated by Frequency of Train Trips (FTT) and Electric Locomotive Unit Miles (EUM) statistics in the first round, and second round allocations of

<sup>57</sup>Overhead cost centers exist solely to incur overhead expenses and attribute them to projects. The code structure for an overhead cost center is CC\_OHxx where “xx” is a two-digit number corresponding with an overhead cost center.

support expenses are allocated using the Maintenance of Way Direct Costs (MWDC) dollar-denominated statistic.<sup>58</sup> Where the MoW Family incurs costs in support of other families such as the Maintenance of Equipment (for track or buildings at maintenance yards) or OPS-Transportation (stations or crew base facilities), these costs are allocated by statistics normally associated with those families, such as Mechanical Direct Cost (MDC) and Transportation Direct Cost (TDC). FTT is obtained from the TUS (Train Unit Statistic) system that takes the information from OMS (Operating Management System) and calculates this statistic for Amtrak trains. FTT is the primary statistic for track sections, C&S, Bridges, and interlockings. FTT is the dominant statistic because it is available consistently across all businesses including freight.

**Table 6-2: Primary Allocation Statistics for Entire Maintenance of Way Family**

<b>Statistic</b>	<b>Statistic Description</b>	<b>2014 Combined Operating &amp; Capital Expenses</b>	<b>Cumulative Share</b>
ST_NO_STX	No Statistic (Direct Charges)	\$440,295,646	64.0%
ST_FTTX	Frequency of Train Trips	\$102,197,161	78.8%
ST_MWDC_D BX	Maintenance of Way Direct Costs	\$37,319,653	84.3%
ST_MDC_DB X	Mechanical Direct Costs	\$20,648,012	87.3%
ST_EUMX	Electric Loco and EMU Unit Miles	\$16,590,893	89.7%
ST_PUTX	Passenger Car Unit Trips	\$15,845,787	92.0%
ST_UTX	Locomotive and Car Unit Trips	\$15,726,620	94.3%
ST_NONX	Straight-Line Allocation	\$10,761,907	95.8%
all other	all other statistics not shown	\$28,688,341	100.0%
	<b>Total for the #100 Family</b>	<b>\$688,074,021</b>	

Commuter statistics are calculated from manually updated station pair information while freight data is updated with manually calculated statistics using information from freight railroads. The major exception is Electric Traction which is primarily allocated by EUM in combination with defined Allocation Ratio percentages developed by SYSTRA Inc. to determine power usage by the user (Amtrak, SEPTA, NJT, MARC, DelDOT). The SYSTRA study is used to allocate expenses for the power transmission system to supply the NEC with electric power for locomotives.

Indirect MoW costs are not identified by WBSE and are allocated in a second round by MoW direct costs (MWDC) using a Cost Center Stat Qualifier. MWDC is calculated as the sum of all first round costs at a Cost Center allocated to a particular customer. After the direct costs are allocated, MWDC is calculated and indirect costs are allocated to each train or other customer in

<sup>58</sup> The largest “statistic” is ST\_NO\_STX which is largely used for the direct assignment of expenses to the capital and reimbursable businesses.

proportion to its share of MWDC relative to total MWDC for all trains or customers allocated first round costs at that specific Cost Center. All trains traveling on a segment—Amtrak, freight, or commuter—are automatically identified by the city pair Stat Qualifier as having traveled through that segment and that segment's shared expenses are allocated by the appropriate activity statistic and the indirect expenses by MWDC.

Each WBSE is associated with a specific Stat Qualifier, and generally, there is no need for Train Groups. For example, the project identified by WBSE W\_E\_902143 is known to be on the Harrisburg Line between Glen and Thorn and a Station Pair Stat Qualifier SQ\_SP\_THORN is associated with that WBSE project. Allocation rules for Cost Center and WBS combinations identify the Statistic and Stat Qualifier and a self-selecting cost pool where every train (Commuter, NTS, Freight) that has a statistic value for a given month in that Station Pair is automatically included in the group to receive a share of the cost coded directly to that WBSE and Cost Center. The following three tables illustrate the WBSE data, allocation rule, and APT allocated costs for WBSE W\_E\_902143.

**Table 6-3: WBSE W\_E\_902143 Example: Data**

Item	Description
WBSE Description	Harrisburg Line Block Glen-Thorn
WBSE Project Expense	\$4,246.94
Cost Center	CC_3523 – Div Track Supv Lancaster

**Table 6-4: WBSE W\_E\_902143 Example: Allocation Rule Elements**

Rule Element	Selected Item
Statistic	ST_FTTx
Stat Qualifier	SQ_SP_THORN
Train Group	TG_MAP
Allocation Ratio	1.0

**Table 6-5: WBSE W\_E\_902143 Example: Allocated Cost Results**

Cost Object Code	Cost Object Description	Allocated Costs (Dollars)
TR_FRNSR	NS Freight Infrast Access	84.66
APT_RT_CISEP	Commuter Infrastructure - SEP	3,063.44
APT_RT_99	NEC Special Trains	\$8.91
APT_RT_14	Keystone Service	983.82
APT_RT_57	Pennsylvanian	106.11
	WBSE Total Costs	4,246.94

### 6.1.2 Central Division MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** Central Div MoW - #101

### Scope

The #101 Subfamily records and allocates MoW costs from Amtrak's Central Division.

Subfamily expenditures for FY14 were \$15.3 million and account for 0.3 percent of Amtrak's total expenses.

### Cost Allocation Approach and Results

The #101 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

### Summary

Table 6-6 is an overview of the cost allocation for the Central Division MoW Subfamily.

**Table 6-6. Central Division MoW Subfamily Overview**

Subfamily	Central Div MoW - #101			
Subcategory	Central Div MoW - General (101_0)			
FY 2014 Expenditures (Mil.)	\$15.3			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	12			
Stat Qualifiers Used	Cost Center, Station Pair, Station			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics <sup>59, 60</sup>	Percent of Subfamily
No Function	IO_NO_IO	\$3.1	FTT MDC MWDC	20.5%
Roadway Bldg Maint.	IO_1726	\$2.1	MDC MWDC	13.4%
Track Maintenance	IO_1703	\$1.8	MDC UT TBD	11.8%
Signal & Interlocker Maint	IO_1713	\$1.7	UT FTT	10.9%

<sup>59</sup> Statistics that generally allocated about 95% of that Internal Order's expenses.

<sup>60</sup> If a statistic was used primarily for credit transactions with an IO, most often for benefits transactions, the negative sign of that statistic will be indicated with parenthesis.

Subfamily		Central Div MoW - #101		
Subcategory		Central Div MoW - General (101_0)		
			MDC	
Reimbursable - General	IO_4100	\$1.7	NO_ST MWDC	10.8%
M of W Overhead	IO_1751	\$1.4	MWDC MDC	9.3%
M of W Managerial	IO_1701	\$1.1	MWDC	7.1%
Capital	IO_4200	\$0.7	NO_ST	4.5%
Settled Retro Wages - NRPC	IO_9905	\$0.5	MDC UT MWDC	3.6%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
Mechanical Direct Costs	ST_MDC_DBX	\$7.4	48.7%	
Frequency of Train Trips	ST_FTTX	\$4.6	29.8%	
No Statistic (Direct Charges)	NO_ST_STX	\$4.5	29.6%	
Locomotive and Car Unit Trips	ST_UTX	\$1.7	11.5%	
Maintenance of Way Direct Costs	ST_MWDC_DB X	(\$3.7)	-24.4%	

### 6.1.3 Mid-Atlantic Division MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** Mid-Atlantic Div MoW - #102

#### Scope

The #102 Subfamily records and allocates MoW costs from Amtrak's Mid-Atlantic Division.

Subfamily expenditures for FY14 were \$132.8 million and account for 2.5 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The #102 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

#### Summary

Table 6-7 is an overview of the cost allocation for the Mid-Atlantic Division MoW Subfamily.

**Table 6-7. Mid-Atlantic Division MoW Subfamily Overview**

Subfamily	MidAtlantic Div MoW - #102			
Subcategory	MidAtlantic Div MoW - General (102_0)			
FY 2014 Expenditures (Mil.)	\$132.8			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	49			
Stat Qualifiers Used	Cost Center, Station Pair, Station			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
No Function	IO_NO_IO	\$31.5	NO_ST FTT (MWDC)	23.7%
Capital	IO_4200	\$27.7	NO_ST	20.9%
M of W Overhead	IO_1751	\$18.7	MWDC	14.1%
Settled Retro Wages - NRPC	IO_9905	\$8.3	MWDC FTT NO_ST UT	6.2%
Track Maintenance	IO_1703	\$7.7	UT MWDC FTT	5.8%
Signal & Interlocker Maint	IO_1713	\$7.5	FTT MWDC	5.7%
Sta Svcs-Bldg Maint	IO_1281	\$4.9	PUT TAC MWDC	3.7%
Automotive Vehicle Expenses	IO_1844	\$4.2	MWDC NO_ST	3.1%
Reimbursable - General	IO_4100	\$3.9	NO_ST MWDC	2.9%
M of W Spec Proj	IO_1798	\$3.8	MWDC FTT	2.9%
M of W Managerial	IO_1701	\$2.9	MWDC	2.2%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	NO_ST_STX	\$59.9		45.1%

Subfamily		MidAtlantic Div MoW - #102	
Subcategory		MidAtlantic Div MoW - General (102_0)	
Frequency of Train Trips	ST_FTTX	\$25.5	19.2%
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$15.7	11.8%
Passenger Car Unit Trips	ST_PUTX	\$9.7	7.3%
Electric Loco and EMU Unit Miles	ST_EUMX	\$5.0	3.8%
Total Allocated Costs	ST_TAC_DBX	\$4.7	3.5%
Locomotive and Car Unit Trips	ST_UTX	\$4.2	3.1%
Straight-Line Allocation	NO_STNX	\$2.7	2.0%

#### 6.1.4 New England Division MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** New England Div MoW - #103

##### Scope

The #103 Subfamily records and allocates MoW costs from Amtrak's New England Division.

Subfamily expenditures for FY14 were \$70.0 million and account for 1.3 percent of Amtrak's total expenses.

##### Cost Allocation Approach and Results

The #103 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

##### Summary

Table 6-8 is an overview of the cost allocation for the New England Division MoW Subfamily.

**Table 6-8. New England Division MoW Subfamily Overview**

Subfamily	New England Div MoW - #103
Subcategory	New England Div MoW - General (103_0)
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$70.0</b>
<b>Business Types To Which Costs Are Allocated</b>	NTS, CI, CM, FR, Reimbursable, Commercial, Capital
<b>Number of Cost Centers</b>	33
<b>Stat Qualifiers Used</b>	Cost Center, Station Pair, Station
<b>Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)</b>	

Subfamily		New England Div MoW - #103		
Subcategory		New England Div MoW - General (103_0)		
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
No Function	IO_NO_IO	\$14.8	FTT NO_ST (MWDC)	21.2%
M of W Overhead	IO_1751	\$10.6	MWDC	15.1%
Capital	IO_4200	\$9.0	NO_ST	12.8%
Signal & Interlocker Maint	IO_1713	\$6.6	FTT MWDC TDC	9.5%
Track Maintenance	IO_1703	\$4.3	MWDC FTT UM UT	6.1%
Power Transmission Sys Maint	IO_1718	\$3.5	EUM MWDC	5.0%
Settled Retro Wages - NRPC	IO_9905	\$3.5	MWDC FTT NO_ST	5.0%
Automotive Vehicle Expenses	IO_1844	\$3.5	MWDC NO_ST	5.0%
Reimbursable - General	IO_4100	\$3.2	NO_ST MWDC NON	4.6%
M of W Managerial	IO_1701	\$2.0	MWDC	2.9%
M of W Spec Proj	IO_1798	\$1.6	MWDC FTT	2.3%
Training Amtrak	IO_1131	\$1.6	MWDC	2.2%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Frequency of Train Trips	ST_FTTX	\$25.0	35.7%	
No Statistic (Direct Charges)	NO_ST_STX	\$24.3	34.7%	
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$6.9	9.8%	
Electric Loco and EMU Unit Miles	ST_EUMX	\$4.1	5.9%	
Mechanical Direct Costs	ST_MDC_DBX	\$2.2	3.1%	

<b>Subfamily</b>		<b>New England Div MoW - #103</b>	
<b>Subcategory</b>		<b>New England Div MoW - General (103_0)</b>	
Ops Trans Direct Cost	ST_TDC_DBX	\$2.0	2.9%

### 6.1.5 New York Division MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** New York Div MoW - #104

#### Scope

The #104 Subfamily records and allocates MoW costs from Amtrak's New York Division.

Subfamily expenditures for FY14 were \$138.5 million and account for 2.6 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The #104 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

#### Summary

Table 6-9 is an overview of the cost allocation for the New York Division MoW Subfamily.

**Table 6-9: New York Division MoW Subfamily Subfamily Overview**

Subfamily	New York Div MoW - #104			
Subcategory	New York Div MoW - General (104_0)			
FY 2014 Expenditures (Mil.)	\$138.5			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	45			
Stat Qualifiers Used	Cost Center, Station Pair, Station			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reimbursable - General	IO_4100	\$29.4	NO_ST MWDC	21.2%
No Function	IO_NO_IO	\$28.3	NO_ST FTT (MWDC)	20.5%
Capital	IO_4200	\$16.9	NO_ST	12.2%
M of W Overhead	IO_1751	\$14.2	MWDC	10.3%

Subfamily		New York Div MoW - #104		
Subcategory		New York Div MoW - General (104_0)		
Settled Retro Wages - NRPC	IO_9905	\$9.7	NO_ST MWDC FTT UT	7.0%
Track Maintenance	IO_1703	\$8.2	UT MWDC NO_ST	5.9%
Signal & Interlocker Maint	IO_1713	\$7.2	FTT NO_ST MWDC	5.2%
M of W Spec Proj	IO_1798	\$4.1	MWDC FTT	2.9%
Sta Svcs-Bldg Maint	IO_1281	\$3.8	NO_ST PUT MWDC	2.8%
M of W Managerial	IO_1701	\$3.7	MWDC	2.7%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$87.5	63.2%	
Frequency of Train Trips	ST_FTTX	\$24.9	18.0%	
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$8.0	5.8%	
Locomotive and Car Unit Trips	ST_UTX	\$6.2	4.5%	

### 6.1.6 MoW Support Subfamily

**Family:** MoW - #100  
**Subfamily:** MoW Support - #105

#### Scope

The MoW Support Subfamily performs general support activities that support all or some of the other MoW Subfamilies (Track, Communications & Signal, Electric Traction, and Buildings & Bridges). These activities include management and supervision; training; dedicated material control shops and procurement; work, wire, and wreck trains; support work for specific capital projects; and related activities.

Subfamily costs for FY14 were \$142.1 million and account for 2.6 percent of Amtrak's total costs.

### **Cost Allocation Approach and Results**

Cost allocations and assignment are at the Cost Center level using Stat Qualifiers to focus cost at a local or regional level.

Several operating cost types are in the MoW Support Subfamily with varying allocation methods including first round activity expenses, indirect support or overhead costs, costs that are assigned directly to a customer or outside commuter agency, and capital expenditures. First round activity expenses are those coded in SAP to Internal Orders for labor or materials in the MoW Support Subfamily and identifiable to a specific project by a WBS Element. Depending on the type of work, these costs are mainly allocated using Frequency of Train (FTT) or Electric Locomotive Unit Miles (EUM) and mainly use a city pair Stat Qualifier. Where a Cost Center incurs direct Internal Order cost within a given city pair segment, costs are allocated to each train traveling over that segment in proportion to its share of all trains' FTT, or EUM within that segment. City pair Stat Qualifiers are identified for each Cost Center and restrict cost allocations only to trains that travel on that specific segment where the MoW Support work was performed.

Indirect costs are those that cannot be identified by a WBSE and are allocated in a second round by MoW Direct Costs (MWDC) using a Cost Center Stat Qualifier. MWDC is calculated as the sum of all first round expenses at a Cost Center that are attributed to a particular customer. After the first round expenses are allocated, MWDC is calculated and indirect costs are allocated to each customer in proportion to its share of MWDC relative to total MWDC for all customers operating in the area maintained by that specific Cost Center. All trains traveling on a segment, Amtrak, freight, or commuter, will be automatically identified by the city pair Stat Qualifier as having traveled through that segment and will be allocated direct costs by FTT or EUM and indirect costs by MWDC.

Expenditures identifiable that are direct to a specific customer are allocated by the NON statistic. A few Internal Orders that are direct to customer also require a Work Element Number to identify a specific project and customer. The NON statistic is also used to assign these expenditures directly to a single customer.

Capital WBS Elements are used by these support Cost Centers and make up the majority of the Subfamily expenditures but are not allocated and in the data tables are associated with the statistic "ST\_NO\_STX." These expenses include any capital improvements to extend the life of the assets. Unallocated capital expenses using these WBSE are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation. The Asset Usage Allocation is then allocated to the trains and other businesses and customers using that asset.

FTT and EUM for Amtrak trains are automatically available from the TUS system using data from OMS. Overall, the preferred allocation statistic would be Gross Ton Miles (GTM) as MoW structures are degraded and thus require repair and maintenance activity based not just on the frequency of trains traveling on that segment, but also by their weight. However, while GTM is

available for Amtrak trains, it is unavailable for freight or commuter trains. Until GTM is available for all trains, the FTT statistic will be used for allocations. The Audit and Financial Controls group will tabulate and provide FTT for commuters and the Financial Analysis/APT group will manually calculate FTT statistics for freights. Future developments in traffic control systems may automatically incorporate freight and commuter statistics.

## Summary

Table 6-10 is an overview of the cost allocation for the MoW Support Subfamily.

**Table 6-10: MoW Support Subfamily Overview**

Subfamily		MoW Support - #105		
Subcategory		MoW Support - General (105_0)		
FY 2014 Expenditures (Mil.)		\$142.1		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		56		
Stat Qualifiers Used		Cost Center, Station Pair, Station, Railroad		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Capital	IO_4200	\$38.8	NO_ST	27.3%
No Function	IO_NO_IO	\$24.2	NO_ST FTT (MWDC)	17.0%
M of W Managerial	IO_1701	\$23.4	MWDC	16.5%
Reimbursable - General	IO_4100	\$10.3	NO_ST MWDC	7.3%
M of W Material Control	IO_1796	\$7.6	MWDC TAC	5.4%
M of W Overhead	IO_1751	\$7.3	MWDC NON	5.2%
Track Maintenance	IO_1703	\$4.9	UM FTT MWDC	3.5%
M of W Spec Proj	IO_1798	\$4.8	FTT MWDC	3.4%
Corporate Service Centers	IO_1121	\$3.0	MWDC ELH	2.1%
Settled Retro Wages - NRPC	IO_9905	\$2.0	MWDC NO_ST TDC	1.4%

Subfamily		MoW Support - #105		
Subcategory		MoW Support - General (105_0)		
Automotive Vehicle Expenses	IO_1844	\$1.9	MWDC NO_ST	1.4%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$96.0	67.6%	
Frequency of Train Trips	ST_FTTX	\$19.7	13.8%	
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$9.3	6.6%	
Locomotive and Car Unit Miles	ST_UMX	\$3.1	2.1%	

### 6.1.7 System Gangs MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** System Gangs - #106

#### Scope

The #106 Subfamily records and allocates MoW costs from Amtrak's MoW System Gangs. System Gangs are roving crews such as the Amtrak track laying machine that travel among regions.

Subfamily expenditures for FY14 were \$73.9 million and account for 1.4 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The #106 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1. The System Gangs have their own overhead Cost Center and do not role up to the other regional MoW Subfamilies when they are in that territory.

#### Summary

Table 6-11 is an overview of the cost allocation for the System Gangs Subfamily.

**Table 6-11: System Gangs Subfamily Overview**

Subfamily		System Gangs - #106		
Subcategory		System Gangs - General (106_0)		
FY 2014 Expenditures (Mil.)		\$73.9		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		21		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Capital	IO_4200	\$33.4	NO_ST	45.2%
No Function	IO_NO_IO	\$17.5	NO_ST (UM) (MWDC)	23.6%
M of W Overhead	IO_1751	\$7.6	MWDC UM	10.2%
Reimbursable - General	IO_4100	\$3.7	NO_ST	5.0%
Automotive Vehicle Expenses	IO_1844	\$2.8	UM NO_ST	3.8%
EQUIPMENT MAINTENANCE	IO_1733	\$2.5	UM MWDC	3.4%
M of W Spec Proj	IO_1798	\$1.7	UM FTT	2.3%
Settled Retro Wages - NRPC	IO_9905	\$1.7	MWDC UM NO_ST	2.3%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$69.1		93.5%
Locomotive and Car Unit Miles	ST_UMX	\$5.1		6.9%
Maintenance of Way Direct Costs	ST_MWDC_DBX	(\$4.8)		-6.5%

**6.1.8 Western Division MoW Subfamily**

**Family:** MoW - #100  
**Subfamily:** West Div MoW - #107

### Scope

The #107 Subfamily records and allocates MoW costs from Amtrak's Western Division.

Subfamily expenditures for FY14 were \$12.8 million and account for 0.2 percent of Amtrak's total expenses.

### Cost Allocation Approach and Results

The #107 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

### Summary

Table 6-12 is an overview of the cost allocation for the West Division MoW Subfamily.

**Table 6-12: West Division MoW Subfamily Overview**

Subfamily	West Div MoW - #107			
Subcategory	West Div MoW - General (107_0)			
FY 2014 Expenditures (Mil.)	\$12.8			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	6			
Stat Qualifiers Used	Cost Center, Station			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reimbursable - General	IO_4100	\$4.3	NON NO_ST	33.7%
Roadway Bldg Maint.	IO_1726	\$4.0	MDC	31.7%
No Function	IO_NO_IO	\$1.3	MWDC MDC NO_ST	10.2%
M of W Managerial	IO_1701	\$1.2	MWDC MDC	9.0%
Track Maintenance	IO_1703	\$0.8	MDC TBD	6.3%
M of W Overhead	IO_1751	\$0.3	MDC MWDC	2.7%
M of E Shop Facility	IO_1806	\$0.3	MDC	2.0%

Subfamily	West Div MoW - #107		
Subcategory	West Div MoW - General (107_0)		
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)			
Statistic	Code	Expenditures	Percent of Subfamily
Mechanical Direct Costs	ST_MDC_DBX	\$6.0	46.7%
Straight-Line Allocation	ST_NONX	\$2.4	18.5%
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$2.1	16.7%
No Statistic (Direct Charges)	ST_NO_STX	\$2.0	15.7%

### 6.1.9 Empire District MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** Empire District - #108

#### Scope

The #108 Subfamily records and allocates MoW costs from Amtrak's Empire District Division.

Subfamily expenditures for FY14 were \$25.6 million and account for 0.5 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The #108 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

#### Summary

Table 6-13 is an overview of the cost allocation for the Central Division MoW Subfamily.

**Table 6-13: Empire District Subfamily Overview**

<b>Subfamily</b>	<b>Empire District - #108</b>
<b>Subcategory</b>	<b>Empire District - General (108_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$25.6</b>
<b>Business Types To Which Costs Are Allocated</b>	NTS, Reimbursable, Capital
<b>Number of Cost Centers</b>	6
<b>Stat Qualifiers Used</b>	Cost Center, Station Pair, Station
<b>Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)</b>	

Subfamily		Empire District - #108		
Subcategory		Empire District - General (108_0)		
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reimbursable - General	IO_4100	\$17.1	NO_ST	66.7%
No Function	IO_NO_IO	\$2.1	NO_ST (MWDC)	8.1%
M of W Overhead	IO_1751	\$1.3	NO_ST MWDC	4.9%
Capital	IO_4200	\$1.2	NO_ST	4.7%
Track Maintenance	IO_1703	\$1.1	NO_ST MWDC	4.2%
Signal & Interlocker Maint	IO_1713	\$1.0	NO_ST MWDC	3.9%
Automotive Vehicle Expenses	IO_1844	\$0.4	MWDC NO_ST	1.7%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$24.2	94.4%	
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$1.2	4.6%	

### 6.1.10 Michigan Line MoW Subfamily

**Family:** MoW - #100  
**Subfamily:** Michigan Line - #109

#### Scope

The #109 Subfamily records and allocates MoW costs from Amtrak's Michigan Line Division.

Subfamily expenditures for FY14 were \$77.1 million and account for 1.4 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The #109 Subfamily allocates costs in the general MoW methodology identified in Section 6.1.1.

#### Summary

Table 6-14 is an overview of the cost allocation for the Michigan Line Subfamily.

**Table 6-14: Michigan Line Subfamily Overview**

Subfamily		Michigan Line - #109		
Subcategory		Michigan Line - General (109_0)		
FY 2014 Expenditures (Mil.)		\$77.1		
Business Types To Which Costs Are Allocated		NTS, FR, Reimbursable, Capital		
Number of Cost Centers		6		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reimbursable - General	IO_4100	\$66.6	NO_ST	86.5%
M of W Overhead	IO_1751	\$3.0	NO_ST MWDC	4.0%
No Function	IO_NO_IO	\$2.9	NO_ST (MWDC)	3.8%
Automotive Vehicle Expenses	IO_1844	\$1.2	MWDC NO_ST	1.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$72.8		94.5%
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$2.6		3.4%

## 6.2 Maintenance of Equipment (MoE) Family

The Maintenance of Equipment (MoE) Family is charged with keeping Amtrak's rolling stock in working order as well as that owned by other entities on a reimbursable basis, including locomotives, passenger coaches, and other equipment. The family performs several levels of operating maintenance including turnaround servicing between each departure, preventative and scheduled maintenance, bad orders and wreck repairs, as well as capital programs including overhauls and component renewals that extend the service life of assets.

### 6.2.1 MoE Turnaround Subfamily

**Family:** MoE - #200  
**Subfamily:** MoE Turnaround - #201

### Scope

The MoE Turnaround Subfamily performs cleaning, inspections, and minor repairs on Amtrak trains and Amtrak-operated commuter trains before each departure and also enroute. Turnaround facilities can work exclusively on cars, locomotives, or both types of equipment. At some locations, turnaround services are performed by outside contractors rather than Amtrak employees. Additionally, Amtrak employees known as “train riders” accompany trains and perform minor enroute repairs as required.

Subfamily costs for FY14 were \$162.8 million and account for 3.0 percent of Amtrak’s total costs.

### Cost Allocation Approach and Results

Cost allocations are at the Cost Center level to Amtrak trains or Amtrak-operated commuter trains that either begin their trips at or pass through a particular Cost Center. Because trains are not always serviced at each turnaround Cost Center enroute, a train group is necessary for each turnaround Cost Center to identify the specific trains to which costs at a Cost Center are allocated. Several types of costs are in the Turnaround Subfamily (with varying allocation methods for each), including costs directly assigned to trains, shared costs, and overhead or support costs. The Internal Order used to capture “train rider” costs requires a train number to assign costs directly to the appropriate trains and no statistic is used. Internal Orders associated with either car or locomotive servicing are allocated by car unit trips (CUT) or a locomotive activity statistic obtained by using the Units Used statistic (UU) with either diesel locomotive units used (DLU) or electric locomotive units used (ELU) Stat Qualifiers. At locations that utilize outside contractors, direct costs are not differentiated by equipment type and the statistic UT is used to allocate costs.

Overhead or support costs are those that cannot be tied to a particular type of equipment and are allocated in a second round by the Mechanical Direct Cost statistic (MDC) using a Cost Center Stat Qualifier. MDC is calculated as the sum of first round turnaround expenses attributed to a train or other customer at a Cost Center. After first round expenses are allocated, MDC is calculated and indirect costs are allocated to each train or customer in proportion to its share of total MDC for all trains or customers using turnaround services at that specific Cost Center.

### Summary

Table 6-15 is an overview of the cost allocation for the MoE Turnaround Subfamily.

**Table 6-15: MoE Turnaround Subfamily Overview**

<b>Subfamily</b>	<b>MoE Turnaround - #201</b>
<b>Subcategory</b>	<b>MoE Turnaround - General (201_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$162.8</b>

Subfamily		MoE Turnaround - #201		
Subcategory		MoE Turnaround - General (201_0)		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		53		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Train & Consist Turnaround Service	IO_1828	\$49.7	NO_ST CUT (MDC)	30.5%
No Function	IO_NO_IO	\$24.2	MDC CUT	14.9%
M of E Overhead	IO_1814	\$11.9	MDC	7.3%
M of E Supv Cler & Office	IO_1808	\$10.6	MDC	6.5%
Contract Roll Stk Mgt/Maint	IO_1851	\$10.4	UT NON FTT	6.4%
Car Bad Orders	IO_1830	\$10.4	UU UM NON	6.4%
M of E Shop Facility	IO_1806	\$9.2	MDC	5.7%
M of E- Vac/Holiday/Non-Prod Labor	IO_1815	\$7.3	MDC	4.5%
Loco-Diesel Bad Orders	IO_1864	\$5.0	UM	3.0%
Loco-Diesel Turnaround Svc	IO_1862	\$4.6	UU UM	2.8%
M of E Managerial	IO_1801	\$4.1	MDC	2.5%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Mechanical Direct Costs	ST_MDC_DBX	\$66.4	40.8%	
No Statistic (Direct Charges)	ST_NO_STX	\$44.2	27.1%	
Car Unit Trips	ST_CUTX	\$16.2	9.9%	
Average Locos and Cars Used per Day	ST_UUX	\$13.6	8.3%	

Subfamily		MoE Turnaround - #201	
Subcategory		MoE Turnaround - General (201_0)	
Locomotive and Car Unit Miles	ST_UMX	\$10.3	6.3%

### 6.2.2 Locomotive Maintenance Subfamily

**Family:** MoE - #200

**Subfamily:** Locomotive Maintenance - #202

#### Scope

The Locomotive Maintenance Subfamily performs maintenance on Amtrak's diesel and electric locomotives. The work performed in this Subfamily includes both preventive maintenance and as-needed maintenance due to locomotive failures, bad orders, freeze damage, and wrecks. No significant capital work is undertaken in this Subfamily; instead, the Backshop Subfamily performs locomotive capital work. Amtrak's Work Management System (WMS) tracks labor and materials costs, the type of work performed, and the specific unit number and equipment type on which maintenance work is performed.

Subfamily expenditures for FY14 were \$86.3 million and account for 1.6 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Cost allocations are at the national level to all trains that utilize the types of equipment being repaired. Amtrak locomotives are maintained at numerous facilities. Since a particular locomotive could be maintained at several different facilities and used on multiple routes, using the national level allocation approach ensures that the actual location where such equipment is maintained does not affect how maintenance costs for that equipment are allocated to trains. Train activity statistics are used in conjunction with equipment type Stat Qualifiers to ensure that the costs for maintaining a particular equipment type, regardless of where it is maintained, are allocated only to trains using that equipment type.

Several cost types are in the Locomotive Maintenance Subfamily, including first round expenses, indirect support or overhead costs, and costs assigned directly to a customer or outside agency. First round Internal Orders (IOs) are used for labor and materials and identify the specific type of work performed. First round Internal Orders require Work Element Numbers from the MoE Family's Work Management System (WMS) from which specific locomotive types are inferred. Costs coded to these Internal Orders are allocated using Units Used (UU) and Unit Miles (UM) statistics for specific types of equipment. The UU and UM statistics are used in conjunction with an equipment Stat Qualifier which identifies the particular type of equipment. UU is used to allocate costs associated with preventive maintenance because preventative maintenance is largely based on time and UU is a time-based statistic. UM is used to allocate non-preventative maintenance costs because such maintenance is based on usage. These costs are allocated

nationally to all trains that use the corresponding equipment type—these costs are allocated at the national level. Overhead or support costs in this Subfamily are those for which a particular equipment type cannot be identified. These costs are allocated in a second round by Mechanical Direct Cost (MDC) using a Cost Center Stat Qualifier. MDC is the sum of first round costs allocated to a train or to another customer at a Cost Center. After first round expenses are allocated, MDC is calculated and indirect costs are allocated to each train or customer that use the type of equipment maintained at a Cost Center in proportion to its share of total MDC for all trains or customers that use the type of equipment maintained at that specific Cost Center.

Some expenditures are assigned directly to a specific customer identified by a Work Breakdown Structure Element (WBSE), such as a commuter agency. These costs are allocated by NON.

Unallocated capital expenses coded to this Subfamily are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating the Asset Usage Allocation. The asset allocation is then allocated to the trains and other businesses and customers using that asset.

### Summary

Table 6-16 is an overview of the cost allocation for the MoE Locomotive Maintenance Subfamily.

**Table 6-16: MoE Locomotive Maintenance Subfamily Overview**

Subfamily		MoE Loco Maintenance - #202		
Subcategory		MoE Loco Maintenance - General (202_0)		
FY 2014 Expenditures (Mil.)		\$86.3		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		6		
Stat Qualifiers Used		Cost Center, Equipment		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
M of E Spec Proj	IO_1889	\$17.6	UU	20.5%
Loco-Electric Bad Orders	IO_1823	\$9.1	UM	10.6%
Loco-Diesel Bad Orders	IO_1864	\$8.3	UM	9.6%
Loco-Diesel Program Svc	IO_1863	\$8.0	UU	9.3%
Loco-Diesel Turnaround Svc	IO_1862	\$7.0	UU	8.1%
No Function	IO_NO_IO	\$6.7	MDC	7.7%
M of E Overhead	IO_1814	\$4.6	MDC	5.3%

Subfamily		MoE Loco Maintenance - #202		
Subcategory		MoE Loco Maintenance - General (202_0)		
			UU	
M of E Inventory Adjust	IO_1992	\$3.8	MDC	4.4%
Loco-Electric Program Svc	IO_1822	\$3.6	UU MDC	4.1%
M of E Supv Cler & Office	IO_1808	\$3.1	MDC	3.6%
Loco-Electric Turnaround Svc	IO_1821	\$2.6	UU MDC	3.1%
M of E Managerial	IO_1801	\$2.1	MDC UU	2.4%
M of E-Vac/Holiday/Non-Prod Labor	IO_1815	\$2.1	MDC	2.4%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Average Locos and Cars Used per Day	ST_UUX	\$40.7	47.2%	
Mechanical Direct Costs	ST_MDC_DBX	\$24.7	28.7%	
Locomotive and Car Unit Miles	ST_UMX	\$17.6	20.4%	

### 6.2.3 Car Maintenance Subfamily

**Family:** MoE - #200  
**Subfamily:** Car Maintenance - #203

#### Scope

The Car Maintenance Subfamily performs maintenance on Amtrak's cars, including passenger coaches, dining cars, sleeping cars, and baggage cars. The work performed in this Subfamily includes both preventive maintenance and as-needed maintenance due to car failures, bad orders, freeze damage, and wrecks. No significant capital work is undertaken in this Subfamily; instead, the Backshop Subfamily performs car capital work. Amtrak's WMS tracks labor and materials costs, the type of work performed, and the specific unit number and equipment type on which maintenance work is performed.

Subfamily expenditures for FY14 were \$42.9 million and account for 0.8 percent of Amtrak's total expenses.

## Cost Allocation Approach and Results

Cost allocations are at the national level to all trains that utilize the type of equipment being repaired. Amtrak cars are maintained at numerous facilities. Since a particular car could be maintained at several different facilities, using the national level allocation approach ensures that the actual location where such equipment is maintained does not affect how maintenance costs for that equipment are allocated to trains. Train activity statistics are used in conjunction with equipment type Stat Qualifiers to ensure that the costs for maintaining a particular equipment type, regardless of the place where it is maintained, are allocated only to trains using that equipment type.

Several cost types are in the Car Maintenance Subfamily, including first round activity expenses, indirect support or overhead costs, and costs assigned directly to a customer or outside agency. First round Internal Orders (IOs) are used for labor and materials and identify the specific type of work performed. These IOs require Work Element Numbers from WMS from which specific car types are inferred. Costs coded to these IOs are allocated using Units Used (UU) and Unit Miles (UM) statistics in conjunction with an Equipment Stat Qualifier for specific types of equipment. UU is used to allocate preventive maintenance costs as such maintenance is largely based on time and UU is a time-based statistic. UM is used to allocate non-preventive maintenance costs as such maintenance is based on usage. These costs are allocated nationally to all trains that use the corresponding equipment type—these costs are allocated at the national level. Indirect costs in this Subfamily are those for which a particular equipment type cannot be identified and are allocated in a second round by MoE Direct Mechanical Costs (MDC) using a Cost Center Stat Qualifier. MDC is the sum of first round costs allocated to a train or customer at a Cost Center. After first round expenses are allocated, MDC is calculated and indirect costs are allocated to each train or customer that use the type of equipment maintained at a Cost Center in proportion to its share of total MDC for all trains or customers that use the type of equipment maintained at that specific Cost Center.

Some expenditures are assigned directly to a specific customer identified by a Work Breakdown Structure Element (WBSE), such as a commuter agency. These costs are allocated by NON.

Where unallocated capital expenses are coded to this Subfamily, they enter Amtrak's asset ledgers and thereby become part of the asset base used in calculating the Asset Usage Allocation. The asset allocation is then allocated to the trains and other businesses and customers using that asset.

## Summary

Table 6-17 is an overview of the cost allocation for the MoE Car Maintenance Subfamily.

**Table 6-17: MoE Car Maintenance Subfamily Overview**

<b>Subfamily</b>	<b>MoE Car Maintenance - #203</b>
<b>Subcategory</b>	<b>MoE Car Maintenance - General (203_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$42.9</b>

Subfamily		MoE Car Maintenance - #203		
Subcategory		MoE Car Maintenance - General (203_0)		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		5		
Stat Qualifiers Used		Cost Center, Equipment		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Car Program Maint.	IO_1829	\$16.4	UU MDC	38.2%
Car Bad Orders	IO_1830	\$10.8	UM NON	25.3%
No Function	IO_NO_IO	\$5.2	MDC (UU)	12.1%
M of E Overhead	IO_1814	\$3.1	MDC	7.2%
M of E- Vac/Holiday/Non- Prod Labor	IO_1815	\$1.6	MDC	3.7%
M of E Supv Cler & Office	IO_1808	\$1.5	MDC	3.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Mechanical Direct Costs	ST_MDC_DBX	\$15.7		36.7%
Average Locos and Cars Used per Day	ST_UUX	\$15.3		35.7%
Locomotive and Car Unit Miles	ST_UMX	\$9.8		22.8%

#### **6.2.4 MoE Support Subfamily**

**Family:** MoE - #200  
**Subfamily:** MoE Support - #204

#### **Scope**

The MoE Support Subfamily performs managerial, administrative, material control, and other activities in support of turnaround servicing, rolling stock maintenance and repair, and component work performed in the various Amtrak mechanical shops.

Subfamily expenditures for FY14 were \$69.7 million and account for 1.3 percent of Amtrak's total expenses.

### **Cost Allocation Approach and Results**

Cost allocations are at the Cost Center level to the appropriate Amtrak train, commuter train, or other customers. Cost Center and Cost Center Group Stat Qualifiers are used to more closely align costs to trains and other customers. Each MoE Support Cost Center is assigned a Stat Qualifier that identifies a Cost Center or group of Cost Centers that the MoE Support Cost Center supports.

The MoE Support Subfamily also contains all of the Overhead Cost Centers for the entire MoE Family. These Overhead Cost Centers contain large debit and credit transactions accounting for all of the benefits transfer charges between capital projects and Cost Centers. The expenditures are assigned directly to projects with No Stat while the balancing credit transaction is allocated by Mechanical Direct Cost (MDC).

While MDC allocates the majority of total transactions including typical overhead and management expenses, the benefits credits from the Overhead Cost Centers are larger resulting in MDC showing a net credit for the Subfamily. Transactions in this Subfamily allocated by MDC are in conjunction with the assigned Stat Qualifier. Costs at a particular MoE Support Cost Center are allocated only to a train or customer if that train or customer is associated with one of the Cost Center(s) linked to that Support Cost Center through a Stat Qualifier. The train or customer at issue receives a portion of the Support Cost Center's costs in proportion to its share of total MDC for all trains and customers in that Cost Center group.

Some expenditures are assigned directly to a specific customer identified by a Work Breakdown Structure Element (WBSE), such as a commuter agency. These costs are allocated by NON.

Capital expenses are occasionally coded to Cost Centers in this Subfamily but are not allocated or assigned to regular trains and businesses, but instead are assigned to the APT "route" UNALLOC. Unallocated capital expenses coded to this Subfamily are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation. The asset usage is then allocated to the trains and other customers using that asset.

### **Summary**

Table 6-18 is an overview of the cost allocation for the MoE Support-General Subfamily.

**Table 6-18: MoE Support – General Subfamily Overview**

<b>Subfamily</b>	<b>MoE Support - #204</b>
<b>Subcategory</b>	<b>MoE Support - General (204_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$69.7</b>

Subfamily		MoE Support - #204		
Subcategory		MoE Support - General (204_0)		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		78		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
M of E Managerial	IO_1801	\$19.2	MDC UU	27.5%
No Function	IO_NO_IO	\$12.5	NO_ST UU (MDC)	17.9%
M of E Shop Facility	IO_1806	\$9.4	MDC	13.5%
M of E Material Control	IO_1816	\$8.7	MDC	12.5%
Corporate Service Centers	IO_1121	\$3.3	MDC MWDC	4.7%
Reimbursable - General	IO_4100	\$2.5	NO_ST NON	3.6%
M of E Overhead	IO_1814	\$2.4	MDC	3.4%
M of E Supv Cler & Office	IO_1808	\$2.2	MDC UU	3.1%
Training Amtrak	IO_1131	\$1.8	MDC	2.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$112.6		161.6%
Average Locos and Cars Used per Day	ST_UUX	\$29.5		42.2%
Straight-Line Allocation	ST_NONX	\$8.2		11.8%
Mechanical Direct Costs	ST MDC DBX	(\$80.7)		-115.7%

### 6.2.5 MoE Multiple Subfamily

**Family:** MoE - #200  
**Subfamily:** MoE-Multiple - #205

## Scope

Cost Centers in the MoE-Multiple Subfamily do not perform one primary activity, but rather perform multiple mechanical-related activities using various Internal Orders that are typically used in other subfamilies within the MoE Family. The Cost Centers in this Subfamily perform two or more main activities to a degree that precludes their inclusion in a single Subfamily. The types of activities performed at these Cost Centers include turnaround servicing, locomotive maintenance, and car maintenance.

Subfamily expenditures for FY14 were \$184.8 million and account for 3.4 percent of Amtrak's total expenses.

## Cost Allocation Approach and Results

The MoE-Multiple Subfamily relies upon the various allocation methods used in the MoE Turnaround, Locomotive Maintenance, and Car Maintenance Subfamilies. Expenditures at these Cost Centers have Internal Order (IOs) that identify the type of activity. In the case of locomotive and car maintenance activities, cost allocations are at the national level to all trains that utilize the type of equipment being maintained. In the case of turnaround servicing activities, costs are allocated at the Cost Center level using the same method as in the MoE Turnaround Subfamily.

Several types of costs are in the MoE-Multiple Subfamily, including first round activity expenses, indirect support or overhead costs, and costs assigned directly to a customer or outside agency. First round activity expenses are those allocated among an easily identifiable cost group of relevant cost objects. First round IO costs are turnaround servicing or maintenance Internal Orders used for direct labor and materials in the MoE-Multiple Subfamily and identify the specific type of work performed.

When turnaround IOs are used, those expenses are allocated by Unit Trips (UT) or the locomotive activity statistic Units Used (UU) Stat Qualified by either diesel or electric equipment type. At the turnaround servicing locations that utilize outside contractors, direct costs are not differentiated by equipment type and costs are allocated instead by UT.

First round car and locomotive maintenance IOs require Work Element Numbers from the MoE Family's Work Management System from which specific equipment types are inferred. Costs coded to these IOs are allocated by Units Used (UU) and Unit Miles (UM) statistics for specific types of equipment in conjunction with Equipment Stat Qualifiers. UU is used to allocate preventive maintenance costs as such maintenance is largely based on time. UM is used to allocate non-preventive maintenance costs as such maintenance is based on usage. Car and locomotive maintenance costs are allocated nationally to all trains that use the corresponding equipment type.

Indirect support or overhead costs are those for which a particular equipment type cannot be identified and are allocated in a second round by MoE Mechanical Direct Cost (MDC) using a Cost Center Stat Qualifier. MDC is the sum of direct cost allocated to a train or other customer at a Cost Center. After first round expenses are allocated, MDC is calculated and indirect costs are allocated to each train or customer that use the type of equipment maintained at a Cost Center

in proportion to its share of total MDC for all trains or customers that use the type of equipment maintained at that specific Cost Center.

Amtrak maintains trains for several outside commuter agencies, the costs of which are coded to agency-specific Cost Centers or Work Breakdown Structure Elements (WBSEs). In both cases, these costs are allocated by the NON statistic.

Capital expenses are occasionally coded to Cost Centers in this Subfamily but are not allocated or assigned. Unallocated capital expenses coded to this Subfamily are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation. The Asset Usage Allocation is then allocated to the trains and other customers using that asset.

When Turnaround IOs are used in this Subfamily, train groups are needed to identify the specific trains to which costs at a Cost Center are allocated since trains are not always serviced at each turnaround Cost Center enroute. Train Groups are not required when locomotive or car maintenance Internal Orders are used in this Subfamily because costs for these IOs are allocated nationally to appropriate trains based on the equipment types used by each train.

In other Subfamilies, costs associated with the same activity of IOs are allocated using the same or similar statistics and other costs not typically associated with the main Subfamily activity are allocated using a "miscellaneous" rule. In the MoE-Multiple Subfamily however, the diversity of costs within individual Cost Centers requires a finer level of allocation. For instance, MoE-Multiple Cost Center 4753 (Boston MoE Support Shops) performs several activities, including Turnaround Servicing, Car Maintenance, Locomotive Maintenance, and Maintenance Support. Table 6-19 is an overview of the cost allocation for MOE-Multiple Cost Center 4573.

**Table 6-19: MoE-Multiple Cost Center 4753 – Boston MoE Support**

<b>Related Subfamily</b>	<b>FY14 Costs</b>	<b>Share</b>	<b>Allocation Statistic</b>
Maintenance Support	\$10,508,513	54.7%	MDC
Turnaround Service	\$6,717,313	35.0%	UT
Car Maintenance	\$1,059,913	5.5%	UU/UM
Loco. Maintenance	\$915,414	4.8%	UU/UM

In their respective families, Turnaround Servicing Internal Order costs are allocated largely by UT, while Maintenance Internal Order costs are allocated by either UU or UM and Support Internal Order costs are allocated by MDC. If this Cost Center had been assigned to the Turnaround Servicing Subfamily, the remaining majority of maintenance costs would have been allocated by the statistic for the Turnaround Servicing miscellaneous rule, in this case UT. Using a more detailed allocation method within the MoE-Multiple Subfamily allows for a more accurate allocation of costs where Cost Centers perform multiple activities.

## Summary

Table 6-20 is an overview of the cost allocation for the MoE Multiple Subfamily.

**Table 6-20: MoE Multiple Subfamily Overview**

Subfamily		MoE Multiple - #205		
Subcategory		MoE Multiple - General (205_0)		
FY 2014 Expenditures (Mil.)		\$184.8		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		22		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Train & Consist Turnaround Service	IO_1828	\$34.2	NO_ST UT	18.5%
Capital	IO_4200	\$25.3	NO_ST	13.7%
No Function	IO_NO_IO	\$23.5	UU NO_ST (MDC)	12.7%
Car Bad Orders	IO_1830	\$22.7	UM UU	12.3%
M of E Overhead	IO_1814	\$8.2	MDC NON	4.5%
Car Program Maint.	IO_1829	\$8.2	UU NON	4.5%
Reimbursable - General	IO_4100	\$7.6	NON NO_ST MDC	4.1%
M of E- Vac/Holiday/Non-Prod Labor	IO_1815	\$7.5	MDC NON	4.1%
Loco-Diesel Turnaround Svc	IO_1862	\$7.4	UU NON	4.0%
M of E Supv Cler & Office	IO_1808	\$7.3	MDC NON	3.9%
M of E Shop Facility	IO_1806	\$6.8	MDC	3.7%
Loco-Diesel Bad Orders	IO_1864	\$6.1	UM NON	3.3%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				

Subfamily		MoE Multiple - #205	
Subcategory		MoE Multiple - General (205_0)	
Statistic	Code	Expenditures	Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$76.3	41.3%
Average Locos and Cars Used per Day	ST_UUX	\$43.7	23.7%
Locomotive and Car Unit Miles	ST_UMX	\$24.3	13.2%
Straight-Line Allocation	ST_NONX	\$18.6	10.1%
Mechanical Direct Costs	ST_MDC_DBX	\$16.0	8.7%

### 6.2.6 High Speed Rail Maintenance Subfamily

**Family:** MoE - #200  
**Subfamily:** HSR Maintenance - #206

#### Scope

The High Speed Rail (HSR) Maintenance Subfamily performs all activities related to maintaining Amtrak's high speed rail (Acela) equipment, including rolling stock maintenance, turnaround servicing, management, and support activities. Additionally, Amtrak contracts with Alstom to manage material control for Acela trains, including the supply of overhaul packages, scheduled maintenance kits, other maintenance materials, and technical assistance.

Subfamily expenditures for FY14 were \$67.6 million and account for 1.3 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Cost allocations are at the Cost Center level exclusively to Amtrak's high speed Acela trains. Nearly all maintenance costs are allocated based on the Units Used (UU) statistic with the Acela Equipment Stat Qualifier. Because all direct expenses are allocated using a single statistic, indirect and miscellaneous costs also can be allocated at the Cost Center level using the same statistic, UU with the Acela Equipment Stat Qualifier, and no second round allocation is required.

#### Summary

Table 6-21 is an overview of the cost allocation for the HSR Maintenance Subfamily.

**Table 6-21: HSR Maintenance Subfamily Overview**

Subfamily		MoE HSR Maintenance - #206		
Subcategory		MoE HSR Maintenance - General (206_0)		
FY 2014 Expenditures (Mil.)		\$67.6		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		6		
Stat Qualifiers Used		Equipment		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
HST Bad Orders	IO_1854	\$22.0	UU	32.6%
HST Turnaround Servicing	IO_1852	\$17.1	UU	25.3%
No Function	IO_NO_IO	\$9.0	UU NO_ST (FTT)	13.4%
M of E Managerial	IO_1801	\$7.2	UU	10.6%
M of E Overhead	IO_1814	\$4.4	UU	6.5%
M of E- Vac/Holiday/Non- Prod Labor	IO_1815	\$1.9	UU	2.8%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Average Locos and Cars Used per Day	ST_UUX	\$85.7		126.7%
No Statistic (Direct Charges)	ST_NO_STX	\$3.8		5.6%
Frequency of Train Trips	ST_FTTX	(\$21.8)		-32.3%

### 6.2.7 Backshop Subfamily

**Family:** MoE - #200  
**Subfamily:** Backshop - #207

#### Scope

The Cost Centers in the Backshop Subfamily perform major repairs and capital overhauls, and produce and repair components. They also perform some minor car and locomotive maintenance and servicing. Amtrak has three Backshop facilities, located in Beech Grove, Indiana; Bear,

Delaware; and Wilmington, Delaware. These facilities are functionally and geographically separate from the Car and Locomotive Maintenance Subfamily facilities, which focus on preventative maintenance and non-capital repairs. Amtrak's WMS tracks labor and materials costs, the type of work performed, and specific unit numbers and equipment types on which work is performed.

Subfamily expenditures for FY14 were \$94.8 million and accounted for 1.8 percent of Amtrak's total expenses.

### **Cost Allocation Approach and Results**

Several major categories of expenditures are recorded in the Backshop Subfamily corresponding to the varied activities performed in this Subfamily. These expense categories include capital expenditures, component expenses, maintenance and servicing costs, indirect support and overhead costs, and expenses assigned directly to customers or other businesses. The largest share of costs in this Subfamily is coded to the capital Internal Order, IO\_4200 and is not allocated. Capital expenditures in this Subfamily include any expenditure for capital improvements necessary to extend the life of Amtrak rolling stock. Unallocated capital expenses coded to the Backshop Subfamily are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation. The Asset Usage Allocation is then allocated to the trains and other customers using that asset (see Section 6.6).

The next largest category of costs is component expenditures. Component expenditures are costs incurred to rework rolling stock components in preparation for return to the mechanical facilities. If the labor and material costs incurred to rework a component are different from the standard cost used when the component is transferred back to the mechanical facility, a residual balance remains in the Backshop Cost Center that still must be allocated. As components themselves are fungible and can be used on many different pieces of equipment, the costs of component repairs are allocated not as other equipment maintenance costs to trains using that equipment type, but as indirect costs as described below.

Indirect support or overhead costs in the Backshop Subfamily are those that cannot be directly tied to a particular train or equipment type. These costs are allocated in a second round allocation based on total Mechanical Direct Cost (MDC). MDC is the sum of first round mechanical costs allocated to a train or other customer and is calculated after all direct mechanical costs are allocated. Because the majority of costs in the Backshop Subfamily are unallocated capital costs, a portion of indirect costs in the Backshop Subfamily are related to capital work and are also unallocated. Using billing rates established by Amtrak finance staff, an overhead rate is calculated for the capital costs incurred in the Backshop Subfamily. A credit is then issued to Backshop Cost Centers for the overhead associated with this capital work. Both indirect costs in the Backshop Subfamily and this credit are allocated to trains using the same method, which achieves the same effect as crediting total Backshop Subfamily indirect costs by the amount of overhead associated with capital work.

Where non-capital locomotive and car maintenance IOs are used in the Backshop Subfamily, the allocation rules are the same as those in the Locomotive Maintenance and Car Maintenance Subfamilies for the same IOs. Costs for maintaining a certain type of equipment are allocated at

the national level to all trains that utilize that type of equipment. These costs are recorded to first round maintenance IOs. These maintenance IOs identify the specific type of work performed and also are coded with Work Element Numbers from which specific equipment types are inferred. Costs coded to these maintenance IOs are allocated by Units Used (UU) and Unit Miles (UM) statistics with specific equipment Stat Qualifier types. UU is used to allocate scheduled Backshop maintenance costs as such costs typically are based on time and UU is a time-based statistic. UM is used to allocate wreck and accident costs as such costs typically are related to usage. Maintenance costs are allocated nationally to all trains that use the corresponding equipment type.

Amtrak performs Backshop work for several outside commuter agencies, the costs of which are captured using a Work Breakdown Structure Element (WBSE) dedicated to an individual commuter agency. These costs are allocated by the NON statistic.

### Summary

Table 6-22 is an overview of the cost allocation for the Backshop Subfamily.

**Table 6-22. Backshop Subfamily Overview**

Subfamily	MoE Back Shop - #207			
Subcategory	MoE Back Shop - General (207_0)			
FY 2014 Expenditures (Mil.)	\$94.8			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	31			
Stat Qualifiers Used	Cost Center, Equipment, Station Pair			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
No Function	IO_NO_IO	\$30.1	NO_ST MDC (UU)	31.8%
Capital	IO_4200	\$25.9	NO_ST	27.3%
M of E Overhead	IO_1814	\$12.9	UU	13.6%
M of E Shop Facility	IO_1806	\$12.3	UU	13.0%
M of E- Vac/Holiday/Non- Prod Labor	IO_1815	\$8.5	UU	8.9%
M of E Material Control	IO_1816	\$5.4	MDC	5.7%
M of E Supv Cler & Office	IO_1808	\$4.5	UU	4.7%

Subfamily		MoE Back Shop - #207		
Subcategory		MoE Back Shop - General (207_0)		
M of E Shop Equipment	IO_1807	\$3.3	UU	3.4%
Reimbursable - General	IO_4100	\$3.2	NO_ST UU	3.4%
M of E Managerial	IO_1801	\$3.1	UU	3.3%
MofE Component Rebuild and Mfg.	IO_1810	(\$30.9)	(UU) (NON) (UM)	-32.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$70.4	74.3%	
Average Locos and Cars Used per Day	ST_UUX	\$11.8	12.4%	
Mechanical Direct Costs	ST_MDC_DBX	\$10.6	11.1%	

### 6.3 Transportation Operations (OPS) Family

The Transportation Operations Family is charged with the operation of the railroad moving passenger trains. This includes the staffing and support of onboard train personnel (engineers, conductors, dining car attendants, etc.), makeup and breakup of train consists in the yard, station operations and management, train dispatching, host railroad activities, and train fuel and power. Station management and operations was its own distinct family (Stations #500) when APT was first implemented, but in November of 2012 it was moved into the Transportation Operations Family.

#### 6.3.1 Onboard Services (OBS) Subfamily

**Family:** Ops - Transportation - #300  
**Subfamily:** OBS - #301

#### Scope

The Onboard Services (OBS) Subfamily provides customer services onboard passenger trains including ticket validation, passenger interface, food and beverage (F&B), entertainment, and sleeping car services. The Subfamily includes the direct and indirect labor costs of the employees providing such services, the costs of materials and supplies, commissary operation costs, costs for contractors to operate the commissaries, and managerial and overhead costs. The Subfamily consists of four Subcategories: Crew, Supplies-F&B, Commissary/Management-F&B, and Support.

## Cost Allocation Approach and Results

Subfamily expenditures (for all four Subcategories) for FY14 were \$265.7 million and account for 4.9 percent of Amtrak's total expenses.

Many of the costs for this Subfamily are direct labor costs for the OBS crewmembers and are assigned directly to Amtrak trains through the OBS crew Labor Management System (known as LMS). Allocations for indirect labor-related costs are at the Cost Center level to Amtrak trains with the allocation statistics depending on the Internal Order (IO) used. OBS management and crew-related costs that are not directly assigned to trains, such as extraboard guarantee, benefits, crew meals, crew lodging, crew transportation, overhead, vacation, and holidays, are allocated to trains served by that Cost Center using a Cost Center Group Stat Qualified Onboard Service Labor Hours (OLH) for those trains. Craft-specific labor hours, such as Dining Labor Hours (DLH), are used to allocate indirect labor costs with a corresponding craft-specific IO where possible, in this case IO\_1321-OBS Dining & Snack.

Commissary costs, including outsourced contract costs paid to outside contractors as well as Amtrak management and support costs, are allocated at the Cost Center level to the Amtrak trains served by that commissary. Commissary costs are related to the level of food service offered onboard individual trains and are allocated to reflect the levels of items consumed or used on each train. Expenditures for food supplies, beverages, crew meals, condemned food, and non-consumables such as linens are all assigned directly to trains with no need to allocate. Three statistics have been created to aggregate particular directly assigned commissary accounts for the purpose of allocating commissary support costs not directly assigned to trains. These statistics are a Linen and Laundry Expense (LNDRY), Food Expense (FOOD), and Commissary Direct Expense (CMSRY). Each statistic is created using specific accounts that track items directly assigned to trains. A linen and laundry statistic is created by identifying costs associated with directly assigned linen and laundry accounts, a food statistic has been created identifying directly assigned food and beverage accounts, and a commissary direct expense statistic aggregates multiple directly assigned accounts. These statistics are used to allocate commissary support costs that are not otherwise directly assigned to trains.

## Summary

Table 6-23 is an overview of the cost allocation approach for the OBS Subfamily. Greater detail on the four Subcategories within this Subfamily can be found in Appendix A.

**Table 6-23: OBS Subfamily Overview**

<b>Subfamily</b>	<b>On Board Services - #301</b>
<b>Subcategory</b>	<b>OBS - Crew (301_1), OBS - Supplies - F&amp;B (301_2), OBS - Commissary/Mgmt. - F&amp;B (301_3), OBS - Support (301_4)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$265.7</b>
<b>Business Types To Which Costs Are Allocated</b>	NTS, CI, CM, Reimbursable, Commercial, Capital

Subfamily		On Board Services - #301		
Subcategory		OBS - Crew (301_1), OBS - Supplies - F&B (301_2), OBS - Commissary/Mgmt. - F&B (301_3), OBS - Support (301_4)		
Number of Cost Centers		129		
Stat Qualifiers Used		Cost Center, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
OBS Dining & Snack	IO_1321	\$119.0	NO_ST	44.8%
Division Administrative	IO_1002	\$46.4	CMSRY DRV LNLDRY	17.5%
No Function	IO_NO_IO	\$38.4	OLH	14.5%
OBS Services - Overhead	IO_1315	\$18.7	OLH	7.0%
OBS Sleeping Car	IO_1331	\$17.8	NO_ST SLH	6.7%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$140.9	53.0%	
Total OBS Labor Hours	ST_OLHX	\$72.7	27.4%	
Commissary Direct Expense	ST_CMSRYX	\$29.1	10.9%	
Food Service OBS Labor Hours	ST_DLHX	\$7.3	2.8%	
Dining Car Revenue	ST_DRVX	\$3.7	1.4%	

### 6.3.2 T&E Subfamily

**Family:** Ops - Transportation - #300  
**Subfamily:** T&E - # 302

#### Scope

The Trainmen and Enginemen (T&E) Family<sup>61</sup> covers the direct labor and indirect labor-related costs of operating trains. Enginemen are the engineers who operate locomotives, while trainmen

<sup>61</sup> The terms “trainman” and “engineman” are used in a gender-neutral manner to apply to both men and women.

are the conductors who are in overall control of trains. Together, they are referred to as the road crew. T&E are attached to one of about 60 crew bases. A crew base is a road crew's geographic base of operations and may consist of multiple Cost Centers broken down by craft or route. Crew bases are where T&E sign in, obtain their manifests, receive briefings and perform administrative tasks. Amtrak T&E crews work on both Amtrak trains and commuter trains operated by Amtrak and their costs are assigned or allocated to both Amtrak core intercity passenger rail business and its ancillary commuter operations business. The T&E Subfamily consists of two Subcategories: Crew and Support. The Crew Subcategory consists of road crews and their immediate supervisors, whereas the Support Subcategory consists of higher level management and supervisory activities and costs.

Subfamily expenditures (for both Subcategories) for FY14 were \$406.2 million and account for 7.5 percent of Amtrak's total expenses.

### **Cost Allocation Approach and Results**

Most of the costs for this Subfamily are direct labor costs for the T&E road crews and are assigned directly to Amtrak trains through Amtrak's Labor Management System (known as LMS). Every trainman and engineman has a "job symbol," a unique number that identifies the trains, scheduled hours, and pay rate associated with that employee and his position. When a trainman or engineman signs into the LMS system, his or her time is automatically assigned to one or more trains that day (Amtrak, commuter, or Reimbursable business-related trains) based on the schedule.

Indirect costs in this Subfamily are also labor-related. Indirect costs include items such as extraboard guarantee, benefits, crew meals, crew lodging, crew transportation, vacation, holidays, other wages, and overhead management and support. These indirect costs are allocated by the level of crew activity for each train. Cost allocations are at the Cost Center level with the allocation statistics depending on the Internal Order (IO) used. All T&E costs that are not directly assigned to trains, are allocated to trains served by that crew base Cost Center based on total Trainmen and Enginemen Labor Hours (TEH) at that Cost Center or, where appropriate and feasible, craft-specific labor hours, such as IO\_1643 (Qualifying Trainmen) costs that are allocated using only Trainmen Labor Hours (TLH). Indirect costs are allocated to the trains that are served by the T&E attached to a particular Cost Center through the use of Cost Center Stat Qualifiers.

### **Summary**

Table 6-24 is an overview of the cost allocation approach for the T&E Subfamily. Greater detail on the two Subcategories within this Subfamily can be found in Appendix A.

**Table 6-24: T&E Subfamily Overview**

<b>Subfamily</b>	<b>T &amp; E - #302</b>
<b>Subcategory</b>	<b>T &amp; E - Crew (302_1), T &amp; E - Support (302_2)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$406.2</b>

Subfamily		T & E - #302		
Subcategory		T & E - Crew (302_1), T & E - Support (302_2)		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital		
Number of Cost Centers		150		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Psg. Trn Trainmen	IO_1635	\$129.3	NO_ST TLH	31.8%
Psg. Train Enginmen	IO_1633	\$92.7	NO_ST ELH	22.8%
No Function	IO_NO_IO	\$79.8	TEH	19.6%
T&E Overhead	IO_1617	\$57.6	TEH	14.2%
Qualifying Enginemen	IO_1642	\$10.3	NO_ST ELH	2.5%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$204.4	50.3%	
Conductor and Engineer Labor Hours	ST_TEHX	\$164.2	40.4%	
Conductor Labor Hours	ST_TLHX	\$18.8	4.6%	

### 6.3.3 Yard Subfamily

**Family:** Ops-Transportation-#300  
**Subfamily:** Yard-#303

#### Scope

The Yard Subfamily performs activities that support the movement of train equipment in preparation for revenue service. This includes the movement of trains between the yard and station, the makeup and breakup of trains, the movement of equipment to and from mechanical facilities, and the managerial costs related to scheduling the equipment moves and overseeing yard operations. The Yard Subfamily consists of four subcategories, each composed of groups of Cost Centers with similar missions and activities. While all of the Subcategories perform general operations and activities that properly fall in the Yard Subfamily, the Subcategories provide a finer level of detail for reporting and allocation purposes. The four subcategories are:

- Train & Equipment: the general case of yard Cost Centers that perform train makeup and breakup in support of transportation operations,
- Equipment Moves: yards that focus primarily on equipment moves in support of mechanical operations in addition to general yard operations,
- Yard Direct: yard Cost Centers that exclusively support Commuter operations, and
- Terminal Rent/Yard Services: Cost Centers incur costs paid by Amtrak for yard services performed by outside agencies or railroads.

Subfamily expenditures for FY14 were \$75.6 million and account for 1.4 percent of Amtrak's total expenses.

### **Cost Allocation Approach and Results**

All of the costs in this Subfamily are labor-related, but unlike T&E road crews, yard crew labor charges are never directly assigned to specific Amtrak trains. Equipment movements vary daily depending on service changes, mechanical failures, and scheduled maintenance. While most of the costs are allocated to Amtrak trains, several yard Cost Centers are dedicated to an individual commuter operation and their costs are assigned directly to the appropriate customer. Some yard Cost Centers service equipment for both commuter and Amtrak trains, in which case the Train Group for such Cost Centers includes both types of customers. All costs are allocated at the Cost Center level to a cost pool particular to the individual location.

Unit Trips (UT) is the primary allocation statistic in this Subfamily, followed by Frequency of Train Trips (FTT) in cases where UT isn't available. In a typical yard Cost Center, such as in the Train & Equipment Moves Subcategory, costs are allocated by UT because trains with more cars, more locomotives, and more varied types of equipment require more crew time for train makeup and breakup and also are more likely to have mechanical failures. Yards in the Equipment Moves Subcategory require an unusually high level of mechanical support and use an Allocation Ratio to split and allocate costs, using the standard UT statistic for operational activities, and the Mechanical Direct Cost (MDC) statistic to allocate costs for the relatively higher level of maintenance-caused activity. MDC is employed because it is consistent with the method for allocating support in the mechanical Family; the MDC statistic is a measure of the share of first round mechanical expenses incurred by a particular train at a mechanical Cost Center relative to total direct mechanical costs at that Cost Center. An Allocation Ratio is used at yard Cost Centers in Chicago and New York. The Yard Direct Subcategory includes Cost Centers whose costs are allocated exclusively to outside commuter agencies, and the Terminal Rent/Yard Services Subcategory includes Cost Centers whose costs consist largely of terminal rent yard support provided by outside agencies/railroads.

The Yard Subfamily is unique in that the allocation methodology differs depending on the type of activity at a Cost Center. Subcategories are used not only to break out different types of costs and their allocation statistics (as in some other Subfamilies), but, in this case, to define a distinct allocation method that makes use of the Allocation Ratio and statistics.

### **Summary**

Table 6-25 is an overview of the cost allocation approach for the Yard Subfamily.

**Table 6-25: Yard Subfamily Overview**

Subfamily		Yard - #303		
Subcategory		Yard Direct (Commuter) (303_1), Yard - Train & Equipment Moves (303_2), Yard - Equipment Moves (NY & CHI) (303_3), Yard - Terminal Rent/Yard Services (Contract) (303_4)		
FY 2014 Expenditures (Mil.)		\$75.6		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		26		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Yard Trainmen Operations	IO_1623	\$23.6	UT FTT MDC	31.2%
Yard Eng. Crew Ops.	IO_1622	\$18.3	UT FTT MDC	24.1%
No Function	IO_NO_IO	\$13.2	UT FTT MDC	17.4%
T&E Overhead	IO_1617	\$6.3	UT FTT MDC	8.3%
Yardmasters and Clerks	IO_1621	\$2.8	UT FTT MDC	3.6%
Psg. Inconvenience	IO_1291	\$2.5	NO_ST TBD	3.3%
Transportation Ops Railroad	IO_1641	\$2.1	UT	2.7%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Locomotive and Car Unit Trips	ST_UTX	\$34.4		45.4%
Frequency of Train Trips	ST_FTTX	\$22.3		29.5%

Subfamily		Yard - #303	
Subcategory		Yard Direct (Commuter) (303_1), Yard - Train & Equipment Moves (303_2), Yard - Equipment Moves (NY & CHI) (303_3), Yard - Terminal Rent/Yard Services (Contract) (303_4)	
Mechanical Direct Costs	ST_MDC_DBX	\$13.8	18.2%
No Statistic (Direct Charges)	ST_NO_STX	\$2.7	3.5%

### 6.3.4 Fuel Subfamily

**Family:** Ops - Transportation - #300

**Subfamily:** Fuel - #304

#### Scope

The Fuel Subfamily records diesel fuel costs for Amtrak trains used in passenger service and for certain commuters. Costs incurred at Cost Centers in this Subfamily are the costs of fuel only; no labor or other costs are recorded in the Subfamily. Some diesel fuel-related costs are not coded in SAP to the Cost Centers in this Subfamily. For example, costs for diesel fuel purchased from other railroads used to fuel Amtrak trains are recorded in the Ops-Transportation: Train Movement- Host RR Subfamily, while costs associated with fuel hedging activities are incurred in CC\_0802—Treasury Mandatory—located in the G&A Corporate Administration Subfamily.

Subfamily costs for FY14 were \$188.9 million and account for 3.5 percent of Amtrak's total costs.

#### Cost Allocation Approach and Results

Fuel costs are allocated almost exclusively by the statistic diesel power usage factor (DPUF) using a national allocation. Costs are allocated based on train's system wide DPUF, not its DPUF attributable to a particular region or Cost Center because in many cases no available fuel usage statistic for a particular train could be linked exclusively to the location where the fueling occurred. DPUF is a calculated statistic that incorporates factors such as a train's weight, trip length, trip time, locomotive type, and car types, as well as certain track and terrain characteristics. Fuel costs at commuter-specific Cost Centers are assigned directly to the relevant commuter agencies. Although costs for diesel fuel purchased from other railroads and for fuel hedging activities are recorded in other Subfamilies, they are nevertheless allocated using the same method specified for this Subfamily.

In some cases, Amtrak records fuel expenses for other business customers such as outside commuter agencies, the costs of which are captured using a Work Breakdown Structure Element (WBSE) dedicated to an individual commuter agency. These costs are allocated by the NON statistic.

## Summary

Table 6-26 is an overview of the cost allocation approach for the Fuel Subfamily.

**Table 6-26: Fuel Subfamily Overview**

Subfamily	Fuel - #304			
Subcategory	Fuel - General (304_0)			
FY 2014 Expenditures (Mil.)	\$188.9			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial			
Number of Cost Centers	48			
Stat Qualifiers Used	Cost Center, Station Pair			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Train Operations	IO_1631	\$175.9	DPUF	93.1%
Reimbursable - General	IO_4100	\$6.8	NON	3.6%
Trans. Mgmt & Supv	IO_1601	\$6.1	DPUF NON	3.2%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Diesel Power Allocation Factor	ST_DPUFX	\$177.8		94.1%
Straight-Line Allocation	ST_NONX	\$8.3		4.4%

### 6.3.5 Transportation – Multiple Subfamily

**Family:** Ops-Transportation- #300  
**Subfamily:** Transportation-Multiple- #305

#### Scope

Cost Centers in the Transportation-Multiple Subfamily perform various Ops-Transportation activities using SAP Internal Orders that are typically used in other Subfamilies. The Cost Centers in this Subfamily performs two or more main activities to a degree that precludes their inclusion in a single Subfamily. The types of activities performed at these Cost Centers include Internal Orders that would otherwise be located in the T&E, OBS, Transportation Support, Station Operations, Fuel, and Yard Subfamilies.

Subfamily expenditures for FY14 were \$21.5 million and account for 0.4 percent of Amtrak's total expenses.

### Cost Allocation Approach and Results

Allocations in this Subfamily utilize Cost Center, Internal Order (IO), and Account (AC) data. There is no primary allocation statistic for this Subfamily; the statistic used for each allocation is dependent on the IO and AC information coded to the expense record. Statistics used in this Subfamily include, but are not limited to, Trainmen and Enginemen Labor Hours (TEH), Onboard Service Labor Hours (OLH), Crew Hours (CRH), Diesel Power Usage Factor (DPUF), Unit Trips (UT), and Total Boards and Deboards (TBD).

In other Subfamilies, expenses associated with the same activity or IO are allocated using the same or similar statistics and other expenses not typically associated with the main Subfamily activity are allocated using a "miscellaneous" rule. In the Transportation-Multiple Subfamily however, the diversity of expenses within individual Cost Centers requires a finer level of allocation. For instance, Cost Center 2834 (Asst Supt Passenger Svc NW Dist) performs both OBS activities as well as Station operations activities. General transportation support accounted for nearly 40 percent of expenses, OBS-related activity accounted 36 percent of expenses, while Stations-related activity accounted for the remaining 25 percent. Table 6-27 summarizes expenses for MOE-Multiple Cost Center 2834—Asst Supt Passenger Svc NW Dist

**Table 6-27: Cost Center 2834-Asst Supt Passenger Svc NW Dist**

Related Subfamily	FY14 Expenses	Share	Allocation Statistic
Support	\$342,184	38.8%	TDC
OBS	\$317,530	36.0%	OLH
Stations	\$222,822	25.2%	TBD

In their respective families, OBS Internal Order expenses are allocated by OBS crew hours CRH, while Stations Internal Order expenses are allocated by TBD. If this Cost Center had been assigned to the OBS Subfamily, the remaining 25 percent in Stations-related expenses would have been allocated by the statistic for the OBS miscellaneous rule, in this case OLH. Using a more detailed allocation method within the Transportation-Multiple Subfamily allows for a more accurate allocation of costs where Cost Centers perform multiple activities as is evident from the many IO and statistic entries in Table 6-28.

### Summary

Table 6-28 is an overview of the cost allocation approach for the Transportation–Multiple Subfamily.

**Table 6-28: Transportation-Multiple Subfamily Overview**

Subfamily		Transportation - Multiple - #305		
Subcategory		Transportation - Multiple - General (305_0)		
FY 2014 Expenditures (Mil.)		\$21.5		
Business Types To Which Costs Are Allocated		NTS, CI, CM, Reimbursable, Commercial		
Number of Cost Centers		20		
Stat Qualifiers Used		Cost Center, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Trans. Mgmt & Supv	IO_1601	\$4.7	DPUF TEH	21.8%
No Function	IO_NO_IO	\$4.2	CHR TDC TEH	19.7%
OBS Mgmt & Supv. Staff	IO_1301	\$3.6	OLH TDC	16.8%
Division Administrative	IO_1002	\$1.3	CHR TDC PVTREV	6.0%
T&E Overhead	IO_1617	\$1.2	TEH	5.5%
Sta Svcs-Mgmt. & Supv	IO_1241	\$0.8	PUT TDC TBD	3.9%
Yard Trainmen Operations	IO_1623	\$0.8	CHR PUT	3.5%
Psg. Train Enginmen	IO_1633	\$0.7	NO_STELH	3.3%
Training Amtrak	IO_1131	\$0.7	TEH	3.3%
OBS Services - Overhead	IO_1315	\$0.5	OLH CHR	2.1%
Psg. Trn Trainmen	IO_1635	\$0.4	NO_ST TLH	1.9%
Yard Eng. Crew Ops.	IO_1622	\$0.4	UT PUT	1.9%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
T&E and OBS Crew Hours	ST_CHRX	\$4.8	22.3%	

Subfamily		Transportation - Multiple - #305	
Subcategory		Transportation - Multiple - General (305_0)	
Conductor and Engineer Labor Hours	ST_TEHX	\$3.5	16.4%
Diesel Power Allocation Factor	ST_DPUFX	\$3.4	15.6%
Total OBS Labor Hours	ST_OLHX	\$3.3	15.2%
Ops Trans Direct Cost	ST_TDC_DBX	\$2.7	12.8%
No Statistic (Direct Charges)	ST_NO_STX	\$1.2	5.8%
Passenger Car Unit Trips	ST_PUTX	\$0.6	3.0%
Private Car Revenue	ST_PVTRE VX	\$0.4	2.0%
Frequency of Train Trips	ST_FTTX	\$0.4	1.9%

### 6.3.6 Train Movement Subfamily

**Family:** Ops-Transportation - #300  
**Subfamily:** Train Movement - #306

#### Scope

The Train Movement Subfamily performs activities associated with moving passengers from endpoint to endpoint. This includes managing train dispatching, signal or interlocking operations, and connecting bus service. The Subfamily includes the Centralized Electrification Traffic Control Center (CETC) offices, Consolidated National Operations Center (CNOC), block operators at various locations, and staff responsible for setting and enforcing operating rules and standards.

Subfamily expenditures for FY14 were \$89.8 million and account for 1.7 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Other than direct expenses, the primary allocation statistic for the Subfamily is Frequency of Train Trips (FTT), allocating train movement expenses to trains based on the number of trips made on the network. This Subfamily uses a city pair Stat Qualifier to allocate Cost Center expenses to trains operating over particular portions of the Amtrak network. Using a city pair Stat Qualifier allows Cost Center expenses to be allocated to all trains that travel over a specific area (set of city pairs) without the need for Train Groups, which would need to be periodically updated. As each train's FTT is automatically available from OMS at the city pair level, the Stat Qualifier will automatically allocate costs to all trains that travel over a specified segment. Once the city pairs for a Cost Center are defined, the particular trains receiving a share of costs changes dynamically depending on actual monthly operations.

Direct expenses are recorded for reimbursable business customers including connecting bus services. These expenses are assigned directly to related train numbers.

### Summary

Table 6-29 is an overview of the cost allocation approach for the Train Movement Subfamily.

**Table 6-29: Train Movement Subfamily Overview**

Subfamily		Train Movement - #306		
Subcategory		Train Movement - General (306_0)		
FY 2014 Expenditures (Mil.)		\$89.8		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial		
Number of Cost Centers		32		
Stat Qualifiers Used		Cost Center, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reimbursable Bus Services	IO_1648	\$18.3	NO_ST	20.4%
Train Dispatching	IO_1632	\$14.9	FTT	16.6%
Reimbursable - General	IO_4100	\$10.6	NO_ST NON	11.8%
Non-Reimbursable Thruway Services	IO_1649	\$10.5	NO_ST	11.7%
No Function	IO_NO_IO	\$10.4	FTT TDC PUT	11.6%
Trans. Mgmt & Supv	IO_1601	\$7.2	FTT TDC NON	8.1%
Sta Svcs-Station Operations	IO_1271	\$7.0	PUT	7.8%
Sig.& Interlocker Operation	IO_1634	\$6.1	FTT	6.8%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$38.3	42.6%	
Frequency of Train Trips	ST_FTTX	\$38.0	42.3%	
Passenger Car Unit Trips	ST_PUTX	\$8.8	9.8%	

### **6.3.7 Train Movement-Host RR Subfamily**

**Family:** Ops - Transportation - #300  
**Subfamily:** Train Movement - Host RR - #307

#### **Scope**

The Train Movement-Host RR Subfamily captures the costs incurred by Amtrak for services provided by the freight railroads, including infrastructure access, renting or leasing freight locomotives, purchased fuel, repairs to Amtrak rolling stock, dispatching and signal services, and station costs. Also included are incentive payments to host railroads for adherence to scheduled departure and arrival times.

Subfamily expenditures for FY14 were \$95.1 million and account for 1.8 percent of Amtrak's total expenses.

#### **Cost Allocation Approach and Results**

The host railroads bill the majority of their costs coded to specific Amtrak train numbers. These costs enter APT with a train WBSE and are directly assigned with no allocation needed. When host railroads bill for fuel expenses, these are allocated by the Diesel Power Usage Factor (DPUF) in accordance with Amtrak's national fuel allocation.

Other expenses in this Subfamily are allocated by Total Train Miles (TTM), allocating host railroad costs to trains or commuter customers based on their share of train miles traveled over a railroad's territory. This Subfamily uses a railroad-type Stat Qualifier to allocate Cost Center expenses to trains operating over specified portions of each host railroad's network. A railroad Stat Qualifier is the combination of city pairs that make up the geographic area of each host railroad. TTM is available at the city pair level and an individual train's proportion of all train activity over that city pair can be determined. This information is then used to allocate costs to a set of trains for each Cost Center associated with that city pair.

Using a railroad Stat Qualifier allows for the allocation of Cost Center expenses to all trains or commuter customers that travel over a host railroad's network without the need for defining manual Train Groups, which would need to be periodically updated. As TTM is automatically available from OMS at the city pair level, the Stat Qualifier automatically allocates cost to all trains that travel over a specified segment. Once a set of city pairs is defined for a Cost Center, the particular trains receiving a share of cost changes dynamically depending on actual monthly operations.

#### **Summary**

Table 6-30 is an overview of the cost allocation approach for the Train Movement-Host RR Subfamily.

**Table 6-30: Train Movement-Host RR Subfamily Overview**

Subfamily		Train Movement - Host RR - #307		
Subcategory		Train Movement - Host RR - General (307_0)		
FY 2014 Expenditures (Mil.)		\$95.1		
Business Types To Which Costs Are Allocated		NTS, CI		
Number of Cost Centers		26		
Stat Qualifiers Used		Railroad		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Train Operations	IO_1631	\$93.5	NO_ST DPUF	98.3%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$77.2		81.2%
Diesel Power Allocation Factor	ST_DPUFX	\$18.0		19.0%

### 6.3.8 Transportation Support Subfamily

**Family:** Ops -Transportation - #300  
**Subfamily:** Transportation Support - #308

#### Scope

The Transportation Support Subfamily performs supervision and support for the operation of passenger train service. The Subfamily includes the overhead cost centers and related benefits costs for the Ops-Transportation Family, the costs of general and assistant superintendents, railroad foremen, assistant foremen, and other transportation-related activities. Cost Centers in the Transportation Support Subfamily support other Ops–Transportation Cost Centers that directly perform transportation services.

Subfamily expenditures for FY14 were \$103.9 million and account for 1.9 percent of Amtrak’s total expenses.

#### Cost Allocation Approach and Results

The Transportation Support Subfamily contains most of the Overhead Cost Centers for the Ops-Transportation Family. These Overhead Cost Centers contain large, mostly off-setting debit and

credit transactions accounting for all of the benefits transfer charges between projects and Cost Centers. The expenditures are assigned directly to projects with No Stat while the balancing credit transaction is allocated by Transportation Direct Cost (TDC). While TDC allocates the majority of total transactions including typical overhead and management expenses, the benefits credits from the Overhead Cost Centers are larger resulting in TDC showing a net credit for the Subfamily.

The primary allocation statistic for Transportation Support is TDC, a dollar-denominated second round statistic that captures the first round allocation of each cost object from a particular Cost Center. This Subfamily supports train activity, but does not directly provide train operations. For this reason, the Subfamily uses a Cost Center group Stat Qualifier to allocate costs. A Cost Center group Stat Qualifier allocates expenses from a Transportation Support Cost Center to trains that are directly serviced at Cost Centers that are supported by that Transportation Support Cost Center. The Stat Qualifier dynamically creates a pool of trains that are indirectly supported by the Transportation Support Cost Center and allocates costs based on a particular train's share of TDC.

Passenger inconvenience expenses are incurred as compensation to passenger affected by train delays or other customer service issues. When able, Amtrak directly attributes to the expense to the responsible train Work Breakdown Structure Element (WBSE) and most such costs are now attributed in this way. If direct assignment is unavailable, the statistic Total Passenger Miles (TPM) is used to allocate these costs.

Similar to the Multiple Subfamilies, the remaining expenses are allocated by statistics most related to that type of expense including using Total Boards and Deboards (TBD) for stations-related support and Trainmen and Enginemen Labor Hours (TEH) for any T&E support.

### Summary

Table 6-31 is an overview of the cost allocation approach for the Transportation Support Subfamily.

**Table 6-31: Transportation Support Subfamily Overview**

Subfamily		Transportation Support - #308		
Subcategory		Transportation Support - General (308_0)		
FY 2014 Expenditures (Mil.)		\$103.9		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		134		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station, Railroad		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily

Subfamily		Transportation Support - #308		
Subcategory		Transportation Support - General (308_0)		
Trans. Mgmt & Supv	IO_1601	\$41.1	TDC UT TEH	39.5%
No Function	IO_NO_IO	\$23.6	NO_ST TBD (MDC) (TDC)	22.7%
Capital	IO_4200	\$9.3	NO_ST	8.9%
Division Administrative	IO_1002	\$7.6	TDC CHR UT	7.3%
T&E Overhead	IO_1617	\$4.3	TDC TEH UT	4.1%
Corporate Administration	IO_1001	\$3.8	TDC CAE UT	3.7%
Reimbursable - General	IO_4100	\$2.5	NON NO_ST	2.4%
OBS Mgmt & Supv. Staff	IO_1301	\$1.8	TDC UT	1.7%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
No Statistic (Direct Charges)	ST_NO_STX	\$409.1	394.0%	
Total Boards And Deboards	ST_TBDX	\$50.8	48.9%	
Passenger Car Unit Trips	ST_PUTX	\$35.1	33.8%	
T&E and OBS Crew Hours	ST_CHRX	\$18.4	17.7%	
Locomotive and Car Unit Trips	ST_UTX	\$14.8	14.3%	
Conductor and Engineer Labor Hours	ST_TEHX	\$13.8	13.3%	
Frequency of Train Trips	ST_FTTX	\$13.1	12.6%	
Average Locos and Cars Used per Day	ST_UUX	\$8.7	8.3%	
Mechanical Direct Costs	ST_MDC_DBX	(\$35.6)	-34.2%	
Ops Trans Direct Cost	ST_TDC_DBX	(\$434.3)	-418.2%	

### **6.3.9 Power-Electric Traction Subfamily**

**Family:** Ops-Transportation - #300  
**Subfamily:** Power-Electric Traction - #309

#### **Scope**

The Power-Electric Traction Subfamily captures the direct cost of powering electrified train service on the NEC and the Keystone route. The corridor is divided into northern and southern segments (north and south of New York City, respectively) with Amtrak purchasing power from 10 vendors on the entire corridor, as well as from commuter agency Metro North for the portion of the NEC between New Rochelle, NY, and New Haven, CT. In addition to purchasing electric power, Amtrak is reimbursed through agreements by commuter rail agencies for their power consumption on the southern segment, though this is treated as a revenue transaction.

Subfamily expenditures for FY14 were \$99.2 million and account for 1.8 percent of Amtrak's total expenses.

#### **Cost Allocation Approach and Results**

As the three Cost Centers in this Subfamily each serve a particular area, the allocation is regionally-based. Costs at Cost Center 0738 (Northend Propulsion) are allocated to trains on the northern segment of the NEC (except for the 56 miles of Metro North-owned track between New Rochelle, NY, and New Haven, CT) using the statistic Electric Power Usage Factor (EPUF). EPUF estimates power consumed by a train based on distance, car weight, and "hotel" power for onboard services. A station pair Stat Qualifier called "Electric North" is used to allocate costs only to those trains that travel on the individual segments specified by the Stat Qualifier.

Costs at Cost Center 0739 (Southend Propulsion) are allocated to trains on the southern segment of the NEC, including the Keystone Corridor, by EPUF using an Allocation Ratio in combination with a station pair Stat Qualifier. Four commuter agencies operate electric train service on the southern segment, but the limited operational data that they provide to Amtrak does not allow for their allocation by EPUF. A study by SYSTRA Consulting, Inc. simulated electric power usage by NEC users and a Customer Electric Percentage (CEP) for each was estimated from this data. These percentages are used as the factors in an Allocation Ratio that splits Cost Center 0739 costs among Amtrak and the other southern segment commuter operators. Overall, Amtrak receives 49 percent of the total, but specific route percentages were also identified in the latest SYSTRA study and these are used to apportion a fixed share to each Amtrak route, with the EPUF statistic then used to allocate to individual trains within each route using appropriate Station Pair Stat Qualifiers. A station pair Stat Qualifier called "Electric South" is used to allocate costs to only those trains that travel on the individual segments specified by the Stat Qualifier. For the percentage assigned to each commuter agency, the costs are allocated by the Frequency of Train Trips (FTT) statistic. Table 6-32 summarizes CEP by user.

**Table 6-32: Southend Customer Electric Percentages (CEP) by User**

<b>Amtrak</b>	<b>MARC</b>	<b>NJT</b>	<b>SEPTA</b>	<b>DelDOT</b>
0.496	0.036	0.335	0.128	0.006

Costs at Cost Center 0740 (Power Purchased from RR) consists of power expenses paid to Metro North incurred for the Amtrak trains using its 56 miles of track between New Rochelle, NY, and New Haven, CT. Amtrak is billed for these costs based on each train's Unit Miles (UM) and for consistency purposes these expenses are allocated to its trains in the same manner. A "MetroNorth" station pair Stat Qualifier is used to calculate each Amtrak train's UM within the 56 mile Metro North segment.

Some expenses Cost Center 0739 are recorded with Account 510419 (Electricity Hedge Settlement) and are allocated to specific Amtrak passenger trains by EPUF with the Stat Qualifier "AmtrakElectric," which includes all Station Pairs in Amtrak's electrified network.

Because the SYSTRA study calculated CEP using service level estimates at a point in time, the Allocation Ratios used to allocate costs in this Subfamily are updated by SYSTRA periodically as new estimates are made or as commuter agencies adjust service levels.

### Summary

Table 6-33 is an overview of the cost allocation approach for the Power-Electric Traction Subfamily.

**Table 6-33: Power-Electric Traction Subfamily Overview**

Subfamily		Power - Electric Traction - #309		
Subcategory		Power - Electric Traction - General (309_0)		
FY 2014 Expenditures (Mil.)		\$99.2		
Business Types To Which Costs Are Allocated		NTS, CI		
Number of Cost Centers		3		
Stat Qualifiers Used		Station Pair		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Train Operations	IO_1631	\$88.4	EPUF FTT	89.1%
Transportation Ops Railroad	IO_1641	\$10.8	UM	10.9%

Subfamily		Power - Electric Traction - #309	
Subcategory		Power - Electric Traction - General (309_0)	
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)			
Statistic	Code	Expenditures	Percent of Subfamily
Electric Traction Power Allocation Factor	ST_EPUFX	\$50.5	50.8%
Frequency of Train Trips	ST_FTTX	\$37.2	37.4%
Locomotive and Car Unit Miles	ST_UMX	\$10.8	10.9%

### 6.3.10 Stations Subfamily<sup>62</sup>

**Family:** Ops-Transportation - #300  
**Subfamily:** Stations - #310

#### Scope

The Stations Subfamily performs station service activities at station Cost Centers. These activities include ticketing, operating first class lounges, Red Cap and porter services, baggage and express services stationmaster and usher activities, station cleaning and maintenance, snow and ice removal, making passenger inconvenience payments, and training and supervision of staff. The Stations Subfamily includes three Subcategories: (1) Route; (2) Shared-Commuters Present; and (3) Shared-No Commuters Present. Route stations are those that serve a single route, shared stations serve multiple routes, and the Shared-Commuter Subcategory is used for stations that serve a combination of Amtrak and Commuter trains.

A number of routes utilize unstaffed stations without their own distinct Cost Center. These unstaffed stations, identified by a unique WBSE, are frequently combined with other unstaffed stations at a single Cost Center for a geographic region. While a single unstaffed station may serve one route, the combined Cost Center may serve multiple routes and would be listed in one of the Shared subcategories.

Subfamily expenditures for FY14 were \$199.3 million and account for 3.7 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Most station operations costs are driven by the number of passengers served at that station and, as a result, are allocated by Total Boards and Deboards (TBD), a direct statistic maintained in

<sup>62</sup> Stations was previously an independent Family #500 with Subfamily #501 Stations-Route and #502 Stations-Shared. Stations was moved to the Operations-Transportation Family and combined into a single subfamily with 3 subcategories. Family #500 is no longer used but the subsequent families kept their original numbering.

Amtrak's Revenue Data Warehouse that reports the passenger counts at specific stations. However, at those stations also used by outside commuter agencies alongside Amtrak routes, most station operations costs are allocated using Passenger Car Unit Trips (PUT) because the TBD statistic is unavailable for commuter activity. In such cases, PUT for Amtrak trains is calculated automatically within APT using a city pair Stat Qualifier, while PUT for commuters is calculated manually from data provided by the Amtrak Contract Audit and Financial Controls group.

While most Stations costs are allocated using TBD and PUT, other statistics are used to allocate the costs of some specific Internal Orders. Red Cap, porter, and baggage costs, which are driven by activity on long-distance routes and not corridor (commuter type) services, are allocated by Trip-length Weighted Total Boards and Deboards (WBD). This statistic is calculated by dividing Passenger Miles for riders boarding or deboarding from a particular station by the TBD of boarding or deboarding passengers at that station, creating a trip-length weight which is applied to TBD at that station. Costs to operate first class lounges are allocated to trains based on First Class Riders (FCR). Special train expenditures are allocated by Total Riders (TRD). Passenger inconvenience costs are directly assigned to appropriate WBSE when possible and otherwise allocated by Total Passenger Miles (TPM).

Where general Reimbursable or Commercial Work Breakdown Structure Elements (WBSEs) are used in this Subfamily, expenditures coded to these WBSEs are assigned to the appropriate customer by the NON statistic. Where capital WBSEs are used by Cost Centers in the Stations-Shared Subfamily, they are not allocated. Unallocated capital expenses are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating the Asset Usage Allocation. The Asset Usage Allocation is then allocated to the trains and other customers using that asset.

At stations with commercial activity, two percent of the cost of Internal Orders 1241, 1271, 1281, and 1285 is allocated to Amtrak's Commercial business to account for station costs related to operating this business. The two percent default figure was selected because, although no passenger activity statistics exist for Amtrak's Commercial businesses, commercial activity at a station does increase the costs of operating a station, and therefore a method was necessary to account for these costs. A study of commercial costs at Chicago's Union Station resulted in a change to 8 percent, and Amtrak plans to conduct a study to relate commercial activity to station costs and adjust the percentages at other specific stations accordingly.

## Summary

Table 6-34 is an overview of the cost allocation for the Stations Subfamily.

**Table 6-34: Stations-Route Subfamily Overview**

Subfamily		Stations - #310		
Subcategory		Stations - Route (310_1), Stations - Shared (Commuters Present) (310_2), Stations - Shared (No Commuters Present) (310_3)		
FY 2014 Expenditures (Mil.)		\$199.3		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital		
Number of Cost Centers		274		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Sta Svcs-Ticketing	IO_1231	\$70.0	TBD PUT	35.1%
No Function	IO_NO_IO	\$33.7	TBD PUT TDC	16.9%
Sta Svcs-Station Operations	IO_1271	\$27.7	TBD PUT	13.9%
Sta Svcs-Mgmt. & Supv	IO_1241	\$20.2	TBD PUT TDC	10.1%
Sta Svcs-Baggage/Express	IO_1261	\$14.2	UU WBD	7.1%
Sta Svcs-Stationmstrs & Ushers	IO_1266	\$6.3	TBD PUT	3.2%
Sta Svcs-Red Caps & Porters	IO_1251	\$6.2	WBD	3.1%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Total Boards And Deboards	ST_TBDX	\$135.3	67.9%	
Passenger Car Unit Trips	ST_PUTX	\$31.5	15.8%	
Average Locos and Cars Used per Day	ST_UUX	\$10.7	5.4%	
Trip-length-weighted Boards and Deboards	ST_WBDX	\$10.3	5.2%	

## 6.4 Sales Family

The Sales Family is charged with the selling of tickets for Amtrak trains. This includes marketing activities, staffing call centers for information and reservations, and other sales-related activities such as payment of travel agent commissions/fees.

### 6.4.1 Sales Subfamily

**Family:** Sales & Marketing - #400  
**Subfamily:** Sales - #401

#### Scope

The Sales Subfamily is responsible for such activities as field sales, sales administration, travel agent services, and commercial account services and includes expenditures for travel agency commissions, credit card commissions, passenger experience, and airline system access fees.

Subfamily expenditures for FY14 were \$25.6 million and account for 0.5 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

As Sales activities and expenditures are driven by the number of tickets sold for a service, most costs are allocated to all Amtrak trains based in proportion to their share of Total Riders (TRD). Within Internal Order 1201 Sales, Account data is used to separate those expenditures related to travel agent commissions and airline reservation system access expenditures. These expenditures are allocated by Travel Agent Sales (TAS) and Travel Agency Sales Commissions (TASCOM), a manual statistic available from PAS/ALMS that calculates the level of a train's sales by outside travel agents. Some passenger experience costs on passenger cars are allocated based on Units Used (UU).

#### Summary

Table 6-35 is an overview of the cost allocation approach for the Sales Subfamily.

**Table 6-35: Sales Subfamily Overview**

<b>Subfamily</b>	<b>Sales - #401</b>
<b>Subcategory</b>	<b>Sales - General (401_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$25.6</b>
<b>Business Types To Which Costs Are Allocated</b>	NTS, CM, Reimbursable, Commercial, Capital
<b>Number of Cost Centers</b>	7
<b>Stat Qualifiers Used</b>	Station
<b>Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)</b>	

Subfamily		Sales - #401		
Subcategory		Sales - General (401_0)		
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Marketing	IO_4300	\$7.9	TRD TAS UU	30.7%
Sales	IO_1201	\$6.9	TASCOM TRD TAS	26.8%
Reimbursable - General	IO_4100	\$4.4	UU NON (FTT)	17.2%
No Function	IO_NO_IO	\$2.4	TRD	9.3%
Marketing Overhead	IO_1210	\$1.6	TRD TAS	6.3%
Corporate Administration	IO_1001	\$1.6	TRD TASCOM	6.2%
<b>Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)</b>				
Statistic	Code	Expenditures	Percent of Subfamily	
Total Riders	ST_TRDX	\$12.0	46.8%	
Average Locos and Cars Used per Day	ST_UUX	\$4.4	17.3%	
Travel Agent Sales	ST_TASX	\$3.8	14.9%	
Travel Agency Sales Commissions	ST_TASCOMX	\$3.4	13.2%	

#### **6.4.2 Information & Reservations Subfamily**

**Family:** Sales & Marketing - #400  
**Subfamily:** Information & Reservations - #402

##### **Scope**

The Information & Reservations Subfamily provides reservation services to both the general public as well as interacting with outside travel agency reservations and information service systems. The Subfamily captures the costs of reservation sales call centers (RSCC) as well as the costs of the operating information systems required for Amtrak reservation services.

Subfamily expenditures for FY14 were \$87.9 million and account for 1.6 percent of Amtrak's total expenses.

## Cost Allocation Approach and Results

The exclusive allocation statistic for the Information & Reservations Subfamily is the Talk Time Allocation Factor for RSCC Operations (RSO), which assigns Information & Reservations costs to Amtrak routes based on the share of talk time at RSCCs spent booking reservations for each route relative to total talk time. RSO is calculated based on a 3-month rolling average talk time survey of calls at RSCCs.

### Summary

Table 6-36 is an overview of the cost allocation approach for the Information & Reservations Subfamily.

**Table 6-36: Information & Reservations Subfamily Overview**

Subfamily		Information & Reservations - #402		
Subcategory		Information & Reservations - General (402_0)		
FY 2014 Expenditures (Mil.)		\$87.9		
Business Types To Which Costs Are Allocated		NTS		
Number of Cost Centers		7		
Stat Qualifiers Used				
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Reservations	IO_1221	\$31.4	RSO	35.8%
No Function	IO_NO_IO	\$17.9	RSO	20.4%
Resv.Mgmt Admin	IO_1220	\$15.1	RSO	17.1%
Corporate Service Centers	IO_1121	\$11.2	RSO	12.8%
Marketing Overhead	IO_1210	\$6.7	RSO	7.6%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Talk Time Allocation Factor for RSCC Operations	ST_RSOX	\$87.9		100.0%

### 6.4.3 Marketing Subfamily

**Family:** Sales and Marketing - #400

**Subfamily:               Marketing - #403****Scope**

The Marketing Subfamily performs marketing and sales support activities for Amtrak's core passenger rail business. Activities include market research, customer relations, general advertising, telephone directory advertising, production of timetables, and sales promotions. Some marketing efforts are focused on specific Amtrak routes.

Subfamily expenditures for FY14 were \$72.0 million and account for 1.3 percent of Amtrak's total expenses.

**Cost Allocation Approach and Results**

Some Cost Centers in this Subfamily are system wide in scope and are responsible for marketing for all routes, whereas others correspond to broad regions or, in some cases, individual routes. In these latter cases, costs are allocated to specific routes for Cost Centers as appropriate to the specific case by making use of automatic route-based train groups or Work Breakdown Structure Elements (WBSEs) for specific routes and trains.

All Internal Order expenditures in this Subfamily are allocated using the Passenger Revenue (PRV) statistic. The use of PRV allocates more costs to routes with higher passenger revenues on the grounds that more marketing efforts are focused on these services. Although the Cost Centers in this Subfamily vary in their scope, Amtrak marketing staff confirmed that activities and costs at these Cost Centers are roughly proportional to route revenues.

**Summary**

Table 6-37 is an overview of the cost allocation for the Marketing Subfamily.

**Table 6-37: Marketing Subfamily Overview**

Subfamily	Marketing - #403			
Subcategory	Marketing - General (403_0)			
FY 2014 Expenditures (Mil.)	\$72.0			
Business Types To Which Costs Are Allocated	NTS, CM, Capital			
Number of Cost Centers	18			
Stat Qualifiers Used				
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Marketing	IO_4300	\$51.5	PRV	71.5%
Psg. Inconvenience	IO_1291	\$5.1	PRV	7.1%

Subfamily		Marketing - #403		
Subcategory		Marketing - General (403_0)		
Marketing Overhead	IO_1210	\$4.1	PRV	5.7%
No Function	IO_NO_IO	\$3.5	PRV	4.8%
Capital	IO_4200	\$2.5	NO_ST	3.4%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Passenger Related Transportation Revenue	ST_PRVX	\$69.5		96.5%

## 6.5 General and Administrative (G&A) Family

The General and Administrative (G&A) Family contains higher level management activities not closely associated with a particular Family or portion of the business. This includes executive activities such as the president and board activities as well as general administrative activities such as finance and human relations that support the entirety of the enterprise. Activities and transactions related to Amtrak's subsidiary businesses are also located in the G&A Family.

### 6.5.1 Corporate Administration Subfamily

**Family:** General & Administrative - #600  
**Subfamily:** Corporate Administration - #601

#### Scope

The Corporate Administration Subfamily performs managerial and administrative Internal Orders that are properly considered corporate-wide in scope. Expenses included in the Corporate Administration Subfamily are expenses such as the president's salary, expenses of the inspector general's office, and similar costs that support the overall mission of Amtrak rather than a subset of operations.

Subfamily expenditures for FY14 were \$987.6 million and account for 18.3 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Unallocated capital transactions make up the vast majority of expenses in this Subfamily. Capital Work Breakdown Structure Elements (WBSEs) are used at these Cost Centers, and the capital costs are considered direct to capital projects and are not operating expenses subject to cost allocation. The No Stat descriptor in the statistic field is used for these expenses. These WBSE expenses include capital acquisitions as well as any improvements to extend the life of the assets.

Unallocated capital expenses using these WBSEs are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation, which is then allocated to the trains and other businesses and customers using that asset.

For a large share of operating expenses in this Subfamily, the allocation statistic is Total Activity Cost (TAC), the total cost of each "cost object," including all direct costs, earlier round cost allocations, as well as the Asset Usage Allocation. TAC is available for customers of every business type and all customers receive a share of Corporate Administration costs based on their proportion of total Amtrak cost as reflected in the TAC statistic.

Certain expenses in Cost Center 0802, Treasury Mandatory, require a finer level of detail for allocation. These transactions, identified by specified Accounts, are specific in nature and not appropriately allocated to all customers and are thus allocated by a more appropriate statistic. Examples of these Account allocations include credit card commissions, allocated by Passenger Revenue (PRV) or fuel hedging expenses, allocated by the Diesel Power Usage Factor (DPUF). All other expenses at RC 0802 will be allocated similarly to all other Corporate Administration expenses.

Reimbursable expenses are identified with WBSEs are used at these Cost Centers, but are not allocated to all customers. These expenses are directly assigned to the appropriate Reimbursable customer or allocated by NON.

### Summary

Table 6-38 is an overview of the cost allocation for the Corporate Administration Subfamily.

**Table 6-38: Corporate Administration Subfamily Overview**

Subfamily	Corporate Administration - #601			
Subcategory	Corporate Administration - General (601_0)			
FY 2014 Expenditures (Mil.)	\$987.6			
Business Types To Which Costs Are Allocated	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated			
Number of Cost Centers	50			
Stat Qualifiers Used	Cost Center, Equipment, Station Pair, Station			
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Capital	IO_4200	\$767.6	NO_ST	77.7%
Corporate Administration	IO_1001	\$77.6	TAC	7.9%
Sales	IO_1201	\$46.9	PRV	4.8%
No Function	IO_NO_IO	\$39.2	NO_ST PRV	4.0%

Subfamily		Corporate Administration - #601		
Subcategory		Corporate Administration - General (601_0)		
			(TAC)	
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$821.7		83.2%
Passenger Related Transportation Revenue	ST_PRVX	\$67.1		6.8%
Total Allocated Costs	ST_TAC_DBX	\$58.9		6.0%

### 6.5.2 Centralized Services Subfamily

**Family:** General & Administrative - #600  
**Subfamily:** Centralized Services - #602

#### Scope

The Centralized Services Subfamily performs services for other portions of the Amtrak enterprise and is properly considered corporate-wide in scope. These services include computer services, payroll operations, human resources, and employee services available corporate-wide. Centralized Services costs represent services provided to and benefiting all employees and businesses operating under the Amtrak corporate umbrella.

Subfamily expenditures for FY14 were \$288.0 million and account for 5.3 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

The primary allocation statistic is Total Activity Cost (TAC), the total cost of each "cost object," including all direct costs, prior-round cost allocations, as well as the Asset Usage Allocation. TAC is available for customers of every business type and all customers receive a share of Centralized Services costs based on their proportion of total Amtrak cost as reflected in the TAC statistic. In some cases, other expenses not allocated by TAC are allocated by another dollar denominated second round statistic.

Capital Work Breakdown Structure Elements (WBSEs) are used by these Cost Centers, but are directly assigned to capital projects with the No Stat designation and are not operating expenses subject to cost allocation. These WBSE expenses include any capital improvements to extend the life of the assets. Unallocated capital expenses using these WBSEs are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation, which is then allocated to the trains and other businesses and customers using that

asset. Commuter WBSEs are used by these Cost Centers, but are not allocated to all customers. These WBS expenses are assigned to the appropriate Commuter customer by NON.

For reporting and management reasons, the Centralized Services Subfamily includes several subcategories to identify specific costs such as payroll, procurement, and IT. These subcategories are all allocated in the same manner, i.e., using TAC.

### Summary

Table 6-39 is an overview of the cost allocation for the Centralized Services Subfamily.

**Table 6-39: Centralized Services Subfamily Overview**

Subfamily		Centralized Services - #602		
Subcategory		Centralized Services - General (602_0), Centralized Services - Finance (Payroll) (602_2), Centralized Services - Finance (Receivables) (602_3), Centralized Services - Computer Systems (602_6), Centralized Services - Procurement and Purchasing (602_7)		
FY 2014 Expenditures (Mil.)		\$288.0		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		85		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Corporate Service Centers	IO_1121	\$220.0	TAC	76.4%
No Function	IO_NO_IO	\$28.7	MDC NO_ST (TAC)	10.0%
Corporate Administration	IO_1001	\$21.4	TAC	7.4%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Total Allocated Costs	ST_TAC_DBX	\$146.9	51.0%	
No Statistic (Direct Charges)	ST_NO_STX	\$34.8	12.1%	
Mechanical Direct Costs	ST_MDC_DBX	\$31.8	11.0%	
Maintenance of Way Direct Costs	ST_MWDC_DBX	\$23.1	8.0%	

Subfamily		Centralized Services - #602	
Subcategory		Centralized Services - General (602_0), Centralized Services - Finance (Payroll) (602_2), Centralized Services - Finance (Receivables) (602_3), Centralized Services - Computer Systems (602_6), Centralized Services - Procurement and Purchasing (602_7)	
Ops Trans Direct Cost	ST_TDC_DBX	\$23.0	8.0%
Customer Allocated Costs	ST_CAE_DBX	\$11.1	3.9%

### 6.5.3 Qualified Managerial & Services Subfamily

**Family:** General & Administrative - #600  
**Subfamily:** Qualified Managerial & Services - #603

#### Scope

The Qualified Managerial & Services Subfamily performs high-level managerial and supporting activities related to a subset of the total Amtrak enterprise. Although the Cost Centers in this Subfamily perform missions similar to the other G&A Subfamilies, because they do not support the entire operation, they are not considered corporate-wide and their allocation method needs to reflect this.

Subfamily expenditures for FY14 were \$837.0 million and account for 15.5 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Unallocated capital transactions make up the vast majority of cost in this Subfamily. Capital Work Breakdown Structure Elements (WBSEs) are used at these Cost Centers, and the capital costs are considered direct to capital projects and are not operating expenses subject to cost allocation. These WBS expenses include capital acquisitions as well as any improvements to extend the life of the assets. Unallocated capital expenses using these WBSEs are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation, which is then allocated to the trains and other businesses and customers using that asset.

A large share of operating expenses in this Subfamily, the allocation statistic is Total Activity Cost (TAC), the total cost of each "cost object," including all direct costs, earlier round cost allocations, as well as the Asset Usage Allocation. TAC is available for customers of every business type and all customers receive a share of Corporate Administration costs based on their proportion of total Amtrak cost as reflected in the TAC statistic.

Certain expenses in this Subfamily require a finer level of detail for allocation. These transactions, identified by Account, are specific in nature and not appropriately allocated to all

customers or may be allocated by a more appropriate statistic. Examples of these Account allocations include passenger insurance claims that are allocated by Total Passenger Miles (TPM), or diesel fuel taxes that are allocated by the Diesel Power Usage Factor (DPUF).

Included in the Subfamily is the special case Cost Center 0202, Corporate Common. Some of the expenditures within this Cost Center are corporate-wide whereas others are specific to a customer type. As a result, Cost Center 0202 requires an allocation method that uses a finer level of data than the rest of the Subfamily. Although the Cost Center is in the #603 Subfamily, its expenses are allocated by various statistics. The expenditures in Cost Center 0202 will also be allocated before and be included in the formation of each customer's TAC.

### Summary

Table 6-40 is an overview of the cost allocation for the Qualified Managerial & Services Subfamily.

**Table 6-40: Qualified Managerial & Services Subfamily Overview**

Subfamily		Qualified Mgmt. - #603		
Subcategory		Qualified Mgmt. - General (603_0)		
FY 2014 Expenditures (Mil.)		\$837.0		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated		
Number of Cost Centers		40		
Stat Qualifiers Used		Cost Center, Equipment, Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
No Function	IO_NO_IO	\$723.2	NON	86.4%
Corporate Administration	IO_1001	\$68.8	NON CAE MDC	8.2%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Straight-Line Allocation	ST_NONX	\$747.0	89.3%	
Total Allocated Costs	ST_TAC_DBX	\$76.2	9.1%	

#### 6.5.4 Direct Customer (Non-NTS) Subfamily

**Family:** General & Administrative - #600  
**Subfamily:** Direct Customer (Non-NTS) - #604

## Scope

The Direct Customer (Non-NTS) Subfamily performs activities that support only Commercial or Commuter customers such as managing commuter operating contracts, real estate assets, and other support to customers outside of Amtrak's train operations. These Cost Centers are exclusively outside the NTS and have specific non-NTS customers. Their expenses are coded using WBSEs reserved for activities related to non-NTS cost objects.

Subfamily expenditures for FY14 were \$4.2 million and account for 0.1 percent of Amtrak's total expenses.

## Cost Allocation Approach and Results

Costs are directly assigned to a specific customer as determined individually for each Cost Center and Work Breakdown Structure Elements (WBSE). As the expenses are all directly assigned, the Subfamily will exclusively use the No Stat designation. Any allocated expenses not directly assigned will use NON.

The Direct Customer (Non-NTS) Subfamily is a first round allocation and its costs comprise part of a customer's CAE and TAC, statistics that are used in subsequent G&A allocations.

## Summary

Table 6-41 is an overview of the cost allocation for the Direct Customer (Non-NTS) Subfamily.

**Table 6-41: Direct Customer (Non-NTS) Subfamily Overview**

Subfamily	Direct Customer (Non-NTS) - #604			
Subcategory	Direct Customer (Non-NTS) - General (604_0)			
FY 2014 Expenditures (Mil.)	\$4.2			
Business Types To Which Costs Are Allocated	Commercial, Capital			
Number of Cost Centers	7			
Stat Qualifiers Used				
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Rev. Diversification	IO_1009	\$2.3	NO_ST	53.7%
No Function	IO_NO_IO	\$1.1	NO_ST	26.6%
Sta Svcs-Bldg Maint	IO_1281	\$0.4	NO_ST	9.5%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				

Subfamily		Direct Customer (Non-NTS) - #604	
Subcategory		Direct Customer (Non-NTS) - General (604_0)	
Statistic	Code	Expenditures	Percent of Subfamily
No Statistic (Direct Charges)	ST_NO_STX	\$4.2	99.8%

### 6.5.5 *Subsidiary Subfamily*

**Family:** General & Administrative - #600

**Subfamily:** Subsidiary - #605

#### Scope

The Subsidiary Subfamily represents Cost Centers<sup>63</sup> associated with Amtrak's five Subsidiary Companies, which include Chicago Union Station Company (CUS), Passenger Railroad Insurance Limited (PRIL, Penn Station Leasing, LLC (PSL), Washington Terminal Company (WTC), and 30th Street Limited, L.P. (TSL). The subsidiaries and their activities are diverse: CUS owns and operates Chicago Union Station and various nearby real estate parcels; PRIL is an offshore captive insurance company that allows Amtrak to acquire insurance coverage that cannot be readily obtained domestically; PSL is a subsidiary established for the purpose of acquiring New York Penn Station from Amtrak and leasing it back to the parent company; WTC owns various parcels in the vicinity of Washington Union Station, although not the station itself; TSL was established for the purpose of rehabilitating and leasing 30th Street Station in Philadelphia, although the station itself is owned by Amtrak.

Subfamily expenditures for FY14 were \$29.5 million and account for 0.50 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Amtrak's Subsidiary Subfamily includes (1) transactions taking place at the five Amtrak Cost Centers associated with these subsidiaries, (2) the transactions of the subsidiary companies themselves, both vis-à-vis the parent company and external entities, and (3) various elimination transactions necessary to produce consolidated financial statements. The Fully Allocated Costs of Amtrak's subsidiaries need to be calculated in a manner consistent with costs in other Cost Center families. Given that Amtrak has a controlling interest in all of the subsidiaries, Amtrak and the subsidiaries must be treated as a single entity and only expenditures incurred vis-à-vis external entities should be considered costs for the purpose of calculating Fully Allocated Costs. To achieve this result, both expenditures incurred by a subsidiary and all operating transactions (both expenditures and revenues) between Amtrak and its subsidiaries are allocated. This has the

<sup>63</sup> The subfamily includes five Amtrak ResCens and ten "pseudo-ResCens," five of which correspond to the subsidiaries themselves and five to virtual ResCens used to process elimination entries between the parent company and the subsidiaries.

same effect as only allocating operating expenses by the subsidiaries because transactions between Amtrak and its subsidiaries will net to zero due to elimination entries.

One difficulty in allocating subsidiary expenditures is that many are coded to IO\_1004, Subsidiary Operating Activity, which is used to record intercompany operating activities, but gives no indication of the type of activity and how its costs should be allocated. To overcome this problem, many of the expenditures in this Subfamily are allocated at the detailed Account level.

Most Subsidiaries are associated with specific locations, so expenditures are allocated locally to the routes and customers operating at those locations. The exception is PRIL whose expenditures are allocated nationally. The diverse nature of Amtrak's subsidiaries means that the manner in which Subsidiary Subfamily expenditures are allocated depends on the particular subsidiary.

Capital expenses are recorded with Work Breakdown Structure Elements (WBSEs) used at these Cost Centers and are not operating expenses subject to cost allocation. These WBSE expenses include any capital improvements to extend the life of the assets. Unallocated capital expenses using these WBSEs are entered into Amtrak's asset ledgers and thereby become part of the asset base used in calculating an Asset Usage Allocation, which is then allocated to the trains and other businesses and customers using that asset. Where expenditures are unallocated the Subfamily uses either No Stat for direct assignment or NON.

Because CUS owns and operates Chicago Union Station, costs associated with this subsidiary are allocated in a manner similar to costs in the Stations Family. Most station and terminal costs are allocated to both Amtrak trains and the Metra Commuter. Eight percent of Station operations-related costs also are allocated to the Commercial business. The other 92 percent of station operations costs are allocated based on Passenger Car Unit Trips (PUT). Costs coded to IO\_1004, Suboperating Activity, are, in general, allocated in the same manner as Station operations expenses. MoW costs are allocated to Amtrak trains or other customers that use the specific areas of track maintained by the subsidiary, including Freights, using Frequency of Train Trips (FTT) or Unit Miles (UM), depending on the Internal Order. Insurance costs are allocated based on Total Passenger Miles (TPM).

In the case of PRIL, the majority of subsidiary activity is related to insurance purchased on behalf of Amtrak and insurance claims. PRIL provides railroad protection coverage, which covers contractors working on Amtrak property, force account insurance, which covers liabilities related to Amtrak's Reimbursable business (i.e., where Amtrak employees perform work for third parties), as well as coverage for some other activities. Most passenger insurance is no longer processed through PRIL. A majority of the costs for this subsidiary are associated with Amtrak's accrual for self-insurance for passenger claims, insurance policies with outside companies and professional fees. Based on a review of liability claims, the majority of passenger claims insurance expenditures are allocated based on TPM with the remainder going directly to Reimbursable, while purchased insurance expenditures will be allocated based on TPM. Professional services expenditures are allocated based on TPM. Expenditures and

revenues related to PRIL force account insurance and Equity in Subsidiary-PRIL are allocated in the same manner as passenger claims insurance expenses.

In the case of TSL, the majority of expenses represent station rent, interest and depreciation, and professional fees. Station rent and intercompany rent revenue are allocated to Amtrak trains using 30th Street Station based on Total Boards and Deboards (TBD), except that 2 percent of those sums are allocated to the Commercial business. Depreciation and interest, which make up the bulk of remaining subsidiary expenses, and other subsidiary expenses, such as professional fees, go directly to Unallocated.

In the case of PSL, the entirety of the subsidiary's monthly expenses represents interest charges. Therefore, the expenditures go directly to Unallocated. Likewise, in the case of WTC, the entirety of the subsidiary's monthly expenses represents depreciation expenditures and goes directly to Unallocated. No other types of Internal Orders or Accounts are associated with these subsidiaries.

### Summary

Table 6-42 is an overview of the cost allocation for the Subsidiary Subfamily.

**Table 6-42: Subsidiary Subfamily Overview**

Subfamily		Subsidiary - #605		
Subcategory		Subsidiary - General (605_0)		
FY 2014 Expenditures (Mil.)		\$29.5		
Business Types To Which Costs Are Allocated		NTS, CI, CM, Reimbursable, Commercial, Unallocated		
Number of Cost Centers		14		
Stat Qualifiers Used		Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Insurance & Taxes	IO_1181	\$15.0	TPM NO_ST	51.0%
Sta Svcs-Station Operations	IO_1271	\$7.6	PUT NO_ST NON	25.9%
Sta Svcs-Bldg Maint	IO_1281	\$4.2	PUT NON	14.1%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Passenger Car Unit Trips	ST_PUTX	\$14.4	48.7%	

Subfamily		Subsidiary - #605	
Subcategory		Subsidiary - General (605_0)	
No Statistic (Direct Charges)	ST_NO_STX	\$9.0	30.4%
Total Operated Passenger Miles	ST_TPMX	\$5.1	17.2%

## 6.6 Capital Family

### 6.6.1 Capital Subfamily

**Family:** Capital - #700

**Subfamily:** Capital - #701

#### Scope

The Capital Family covers the Asset Usage Allocations for operating Amtrak's NTS and other businesses. Under GAAP the capital costs of an enterprise are reflected in the depreciation and interest expenses developed as part of the corporation's income and capital reporting systems and its audited financial statements. However, because of the financial history of Amtrak and its unique status as a government-assisted enterprise, it was decided that a synthetic Asset Usage Allocation (AUA) provides a more representative measure of the resource cost of all capital equipment and property—regardless of how financed—currently being used by Amtrak to produce its various services and outputs. Thus, in APT the AUA is used instead of depreciation and interest in the methodology for estimating and reporting Fully Allocated Costs.<sup>64</sup>

#### Cost Allocation Approach and Results

Amtrak's asset ledger, Power Plant, is maintained by the Amtrak Asset Group and provided annually to Amtrak's office of Route Strategy and Analysis to calculate the AUA. The ledger contains Amtrak's complete list of assets with fields and descriptions needed to calculate and allocate the AUA including the initial acquisition cost upon which the Capital Recovery Factor and AUA are based. The process for turning an asset record into an allocated AUA is broken down into two components: (a) calculating the AUA for each asset in Amtrak's ledgers, and (b) allocating that figure to the appropriate train or other business type.

When the ledger is provided to the Route Strategy and Analysis group, a critical field is the lifespan of the asset. For assets it owns, Amtrak uses group depreciation that averages the expected asset lifespan of individual assets within the group and uses this average as the single lifespan for all assets in the group. The ledger identifies the asset group and its lifespan for each individual asset record. Where an asset is leased, those records are so identified and the length of the lease for that individual asset is used in the calculation of that asset's AUA and not the

<sup>64</sup> See Section 4.2.2 for a fuller discussion of the rationale and explanation of the use of an AUA in place of depreciation and interest.

group rate for similar assets. If the asset is not disposed of at the conclusion of the lease, it joins the pool of assets in its relevant group.

The AUA is calculated by the Route Strategy and Analysis group in an Excel spreadsheet monthly and loaded into APT. After the assets are copied into a spreadsheet, as part of each month's APT cost attribution process the prevailing interest rate is added and a formula calculates the AUA for each asset.<sup>65</sup> The AUA dollar value and codings are sufficient for allocating the AUA for each asset as part of the APT monthly processing. However, the ledger data fields and codings are not the same as SAP's standard financial transaction fields used in the APT attribution process.

In order to allocate the Asset Usage Allocation, the asset data must be transformed into a format usable by APT. As noted in Section 4, APT uses SAP codes to identify the type of transaction, locate the relevant allocation rule, and allocate the transaction accordingly. To process Power Plant asset ledger records in APT, the asset information needed to calculate and allocate the asset charge is assigned to APT data fields and appended with the appropriate SAP code prefix (CC\_, IO\_, AC\_, etc.). The resulting AUA data records are a simulated data set of SAP transaction records that can be processed by the APT Engine. To distinguish the capital records from standard SAP transactions, an additional prefix (\_CAP) is added to each record. Table 6-43 and Table 6-44 show the Power Plant fields used in the AUA, with the prefixes CC, IO, AC, and PC added, for selected road, land, track, and equipment assets. Table 6-43 shows the coding for a rail asset in the East River Tunnels while Table 6-44 shows the coding for an AEM-7 locomotive overhaul.

**Table 6-43: Example Coding for a Rail Asset in the East River Tunnels**

<b>Power Plant Asset Ledger Field</b>	<b>APT Code Block</b>	<b>Code Block Prefix Added</b>	<b>Example of Result on Record</b>	<b>Example Description</b>
Plant_Account	Cost Center	CC_CAP_xxx	CC_CAP_041	Rail Asset
Depreciation Group	Internal Order	IO_CAP_xxx	IO_CAP_RAL	Rail Asset
Asset ID	Account	AC_CAP_xxx	AC_CAP_200143704	East River Tunnel Rehab
Depreciation or Interest	Profit Center	PC_CAP_XXX	PC_CAP_DEP PC_CAP_INT	Depreciation Interest
Asset Location /Identifier	WBS Element	W_X_CAP	W_L_CAP_7482	NY ROW 7482 (MP 0-E5.3)

<sup>65</sup> Additionally, a 0% interest rate is entered into the spreadsheet and the results simulate the depreciation portion of the AUA, the return of capital. Subtracting the total depreciation portion from the total provides the interest portion, simulating the return on capital. These figures are shown in the Profit Center field for each asset's AUA records. While these separate estimates do not equal GAAP interest and depreciation, they provide Amtrak with a rough approximation useful for internal purposes. The estimates are viewable separately in APT with the total representing the full AUA.

**Table 6-44: Example Coding for an AEM-7 Locomotive**

<b>Power Plant Asset Ledger Field</b>	<b>APT Code Block</b>	<b>Code Block Prefix Added</b>	<b>Example of Result on Record</b>	<b>Example Description</b>
Plant_Account	Cost Center	CC_CAP_XXX	CC_CAP_050	Locomotives
Prim Eqpt Nm <sup>66</sup>	Internal Order	IO_CAP_XXX	IO_CAP_EX	Electric Locomotives
Scnd Eqpt Nm <sup>67</sup>	Account	AC_CAP_XXX	AC_CAP_AE	AEM-7
Depreciation or Interest	Profit Center	PC_CAP_XXX	PC_CAP_DEP PC_CAP_INT	Depreciation Interest
Asset Identifier	WBS Element	W_	W_M_904	AEM-7 AC

Once the records are consistent with APT's Engine requirements, the AUAs are loaded into APT and allocated to trains and other business types. The allocation rules used by APT were developed by the Route Strategy and Analysis group. The AUA record for each asset is matched to the business elements it supports and a suitable statistic is used to assign or allocate it to them. The basic allocation process is the same as that used for expenses in other Subfamilies. Statistics measure the amount of activity accounted for by each business element supported by an asset, and the relative shares based on these statistics are used in allocating the asset's AUA expense. Stat Qualifiers are used to limit the allocation to subsets of business elements based on location. The statistics used for allocation vary based on the type of asset. The asset type determines the allocation statistic used to mimic the allocation of similar operating costs. For example, Station Subfamily #310 expenses are typically allocated by the Total Boards and Deboards (TBD) statistic and so assets identified as station assets are similarly allocated by TBD. The statistics used for capital allocation and their related capital assets are provided below in Table 6-45.

**Table 6-45: Allocation Statistics Used in Asset Usage Allocation by Asset Type**

<b>Statistic</b>	<b>Statistic Description</b>	<b>Related Capital Assets</b>
DRV	Dining Car Revenue	Commissaries
EUM	Electric Loco Unit Miles	Power Plants and Power Transmission Systems
FTT	Frequency of Train Trips	Several
MDC	Mechanical Direct Cost	Mechanical Shops and Related Assets

<sup>66</sup> "Primary Equipment Number." See Glossary.

<sup>67</sup> Secondary Equipment Number." See Glossary.

MWDC	Maintenance of Way Direct Cost	Maintenance of Way Facilities and Related Assets
TDC	Transportation Direct Cost	Physical Assets relating to Transportation Activities
NON	Straight-Line Allocation	Several, Assets not in use
PRV	Passenger Related Transportation Revenue	Ticket Offices
PUT	Passenger Car Unit Trips	Station Assets
RSO	Talk Time Allocation Factor for RSCC Operations	Reservation System Assets
TAC	Total Activity Cost	National Corporate Assets
TBD	Total Boards and Deboards	Station Assets
UM	Unit Miles	Rolling Stock
UU	Units Used	Rolling Stock

The final step in the process of allocating the AUA records involves linking the cost pool to the business elements it supports, i.e., as explained in Section 4.3, cost objects. The process for linking assets to the business elements they support differs for fixed assets and rail equipment. For rail equipment assets, the allocation follows the operating cost allocation process for the same type of equipment. The linkage of equipment to the business elements they support is made by using the primary and secondary equipment codes as Stat Qualifiers for the UU statistic. No location information is needed or relevant because the equipment AUAs are allocated directly to trains using a given type of equipment.

The Asset Usage Allocations for fixed assets are allocated to NTS trains and other business types supported by the asset. For example, the AUAs associated with portions of the NEC ROW are allocated to Amtrak trains and to commuters and freights that also use the infrastructure by using station pair-location Stat Qualifiers. For road, land, and track assets, each Power Plant Asset Identifier is associated with an operating WBSE, with individual WBSEs associated with one or more assets. For most fixed assets the linkage to the business elements they support is made using the Asset Identifier from the ledger by matching it to its corresponding WBSE. In creating the AUA rule, the Route Strategy and Analysis group used the WBSE associated with that Asset Identifier and looked at the operating allocation rules to see what Stat Qualifiers were used to allocate similar operating expenses. That Stat Qualifier was then used for the AUA rule for that asset. There are Stat Qualifiers for ROW (track) segments, stations, and maintenance facilities. This ensures that the AUA is allocated in a similar manner to operating costs at the same location. The exception to the Stat Qualifier-location linkage process occurs for fixed assets that are treated like other G&A expenses, such as general office buildings and computer systems. The AUA for these G&A-type fixed assets are allocated across the entire enterprise using the TAC statistic and thus do not require a location linkage.

Several types of Stat Qualifiers are used to allocate the AUA as noted in Table 6-46 below. In some cases, no Stat Qualifier is used and the asset is either allocated nationally or, in rare cases, a Train Group is identified for that type of asset.

**Table 6-46: Allocation Stat Qualifiers Used with Relevant Assets.**

<b>Stat Qualifier Type</b>	<b>Description</b>	<b>Used for Which Assets</b>
EQ	Equipment	Equipment by Type
NO	None	None Used or with TG
CC	Cost Center	Supporting Assets, Mechanical Shops
SN	Station	Station Assets
SP	Station Pair	Fixed Assets along the ROW
ST	Statistic	Call Center Assets allocated by RSO

## Summary

Table 6-47 is an overview of the cost allocation for the Capital Subfamily.

**Table 6-47: Capital Subfamily Overview**

Subfamily		Capital - #701	
Subcategory		Capital - General (701_0)	
FY 2014 Expenditures (Mil.)		N/A (SAP entries pertaining to this Subfamily will be entirely replaced by the synthetic Asset Usage Allocation – see text.)	
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial	
FY 2014 Estimated Asset Usage Allocation by Business and Asset Type			
Business	Total Asset Usage Allocation	Road, Land, and Track Assets	Equipment Assets
National Train Service (NTS)	\$743,510,057	\$396,495,681	\$347,014,376
Commuter Infrastructure Access (CI)	\$171,223,274	\$168,983,007	\$2,240,267
Commuter Operating (CM)	\$7,425,090	\$5,495,678	\$1,929,412
Freight Infrastructure Access (FR)	\$7,826,487	\$7,667,316	\$159,172
Reimbursable	\$17,088,177	\$12,903,724	\$4,184,453
Commercial	\$8,565,639	\$8,514,281	\$51,358
Unallocated	\$9,674,304	\$8,879,115	\$795,189

## 6.7 Utilities Family

### 6.7.1 Utilities Subfamily

**Family:** Utilities - #800  
**Subfamily:** Utilities - #801

### Scope

The Utilities Subfamily is used to account for utilities expenses including gas, electric, and water provided at various terminals, stations, and support facilities. Most of Amtrak's utilities expenses are recorded at Cost Centers already in another Subfamily and are allocated by that Subfamily method. Cost Centers in the Utilities Subfamily however, support multiple departments and utility costs cannot be attributed to a single Cost Center or activity. The Washington Utilities Cost Center for example, incurs utilities costs for mechanical, transportation, and other operations.

Subfamily expenditures for FY14 were \$6.2 million and account for 0.1 percent of Amtrak's total expenses.

### Cost Allocation Approach and Results

The Unit Trips (UT) statistic is used almost exclusively to allocate Utilities Family expenses, representing the size of trains that utilize a facility. UT is used in conjunction with a station pair Stat Qualifier to allocate costs to the specific geographic area supported by each Utilities Cost Center. The Stat Qualifier dynamically creates a pool of trains that travel over that area and allocates costs based on a particular train's share of activity.

Although Commercial customers are present at some of the locations served by the Utilities Cost Centers, Amtrak has no means to allocate costs to those businesses. However, some costs in this Subfamily are coded with commercial Internal Orders and can be directly assigned to the appropriate business. Amtrak anticipates performing a future study that will determine and quantify commercial costs at stations allowing for a more accurate allocation of utility costs at stations.

### Summary

Table 6-48 is an overview of the cost allocation for the Utilities Subfamily.

**Table 6-48: Utilities Subfamily Overview**

<b>Subfamily</b>	<b>Utilities - #801</b>
<b>Subcategory</b>	<b>Utilities - General (801_0)</b>
<b>FY 2014 Expenditures (Mil.)</b>	\$6.2
<b>Business Types To Which Costs Are Allocated</b>	NTS, CI, FR, Reimbursable
<b>Number of Cost Centers</b>	9
<b>Stat Qualifiers Used</b>	Station Pair, Station
<b>Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)</b>	

Subfamily		Utilities - #801		
Subcategory		Utilities - General (801_0)		
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Sta Svcs-Station Operations	IO_1271	\$6.0	UT	97.8%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Locomotive and Car Unit Trips	ST_UTX	\$6.2	99.9%	

## 6.8 Police, Security, & Environmental/Safety Family

The Police, Security, and Environmental/Safety Family protects Amtrak's network and passengers. The Family handles traditional policing at and around stations as well as broader strategic safety coordination other Federal agencies, environmental health & compliance, and the safety and security of Amtrak's employees.

### 6.8.1 Police Subfamily

**Family:** Police, Security & Environmental/Safety - #900  
**Subfamily:** Police - #901

#### Scope

The Police Subfamily performs traditional patrolling duties in support of Amtrak trains, facilities, and ROW. The Police Subfamily consists of two Subcategories: National and Regional/Local. The Regional/Local Subcategory provides the front line policing duties while the National Subcategory coordinates and supports the operation across the Amtrak network.

Subfamily expenditures for FY14 were \$67.3 million and account for 1.3 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Cost allocations for the Police Subfamily are dependent on the subcategory. National Subcategory Cost Center costs are allocated nationally to all customers including Amtrak trains and other businesses and customers. The allocation statistic is CAE—the sum of all direct and allocated costs prior to this round including the Asset Usage Allocation. CAE is similar to the TAC but the TAC includes CAE as well as costs allocated in this round by CAE. Cost Centers in this Subfamily are therefore included in the base for calculating TAC.

Regional/Local Subcategory Cost Center costs are mostly allocated at the Cost Center level using Unit Trips (UT) with a Station Pair Stat qualifier or Passenger Car Unit Trips (PUT) with a Station Stat Qualifier and where appropriate an Allocation Ratio to spread costs among station pairs or stations. For example, if a Cost Center has police assigned to a number of stations, the allocation ratio would reflect the proportion of police to all police in that Cost Center for each specific station. The key driver of Police costs are passenger levels in and around stations, but as passenger related statistics are unavailable for all customers they cannot be used in the allocation. For that reason where possible, PUT is used to allocate expenses around stations while UT is used in other locations as it is available for freight and commuter customers. The Police Subfamily uses a Station Pair Stat Qualifier to allocate costs to the specific geographic area supported and patrolled by each Regional/Local Cost Center. The Stat Qualifier dynamically creates a pool of trains that travel over that area and allocates costs based on a particular train's share of PUT or UT. PUT and UT are automatically available for Amtrak trains from the TUS system. The Audit and Financial Controls group provides the data that the Route Strategy and Analysis group then calculates these statistics for commuters and freights.

Commercial business customers operate in areas patrolled by the Police Subfamily and deserve a portion of costs; however, commercial customers do not have operational statistics and cannot be allocated costs by activity statistics as in the rest of the Subcategory. Through consultation with Amtrak field personal it was decided to assign 2 percent of Regional/Local subcategory costs to the commercial business using an Allocation Ratio. The remaining 98 percent is allocated to the other cost objects using the allocation methodology described above.

When capital expenses are present, capital Work Breakdown Structure Elements (WBSEs) are used at these Cost Centers to directly assign expenses to capital projects and they are not operating expenses subject to cost allocation. Unallocated capital expenses are entered into Amtrak's asset ledgers and become part of the asset base used in calculating an Asset Usage Allocation, which is then allocated to the trains and other businesses and customers using that asset. Police expenses that are direct to a Reimbursable are identified by specific WBSEs identified in the profile and allocated by No Stat or NON.

## Summary

Table 6-49 is an overview of the cost allocation for the Police Subfamily.

**Table 6-49: Police Subfamily Overview**

<b>Subfamily</b>	<b>Police - #901</b>
<b>Subcategory</b>	<b>Police - National (901_1), Police - Regional/Local (901_2)</b>
<b>FY 2014 Expenditures (Mil.)</b>	<b>\$67.3</b>
<b>Business Types To Which Costs Are Allocated</b>	NTS, CI, CM, FR, Reimbursable, Commercial, Capital, Unallocated
<b>Number of Cost Centers</b>	12
<b>Stat Qualifiers Used</b>	Station Pair, Station

Subfamily		Police - #901		
Subcategory		Police - National (901_1), Police - Regional/Local (901_2)		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Police Security & Enviro Safety	IO_1124	\$35.6	UT CAE	52.9%
Capital	IO_4200	\$14.3	NO_ST	21.2%
No Function	IO_NO_IO	\$10.9	UT CAE PUT	16.2%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures	Percent of Subfamily	
Locomotive and Car Unit Trips	ST_UTX	\$38.0	56.4%	
No Statistic (Direct Charges)	ST_NO_STX	\$14.4	21.4%	
Customer Allocated Costs	ST_CAE_DBX	\$8.8	13.1%	
Passenger Car Unit Trips	ST_PUTX	\$3.3	4.9%	

### 6.8.2 Emergency Management and Corporate Security Subfamily

**Family:** Police, Security & Environmental/Safety - #900  
**Subfamily:** Emergency Management and Corporate Security - #902

#### Scope

The Emergency Management and Corporate Security Subfamily works together with the Police Subfamily to provide traditional patrolling, intelligence, and counterterrorism efforts in support of Amtrak trains, facilities, and right-of-way (ROW). Additionally, the Emergency Management and Corporate Security Subfamily manages all capital and grant projects related to security operations such as the installation of new security cameras on tunnels, bridges, and other ROW as well as all projects funded by the U.S. Department of Homeland Security.

Subfamily expenditures for FY14 were \$27.3 million and account for 0.5 percent of Amtrak's total expenses.

#### Cost Allocation Approach and Results

Cost allocations for Subfamily #902 are allocated nationally to all customers including Amtrak trains and other businesses and customers. The exclusive allocation statistic is Customer

Allocated Costs (CAE), the sum of all direct and allocated costs before this round including the Asset Usage Allocation. CAE is similar to the Total Activity Cost (TAC) but the TAC includes CAE as well as costs allocated in this round by CAE. Cost Centers in this Subfamily are included in the base for calculating TAC.

### Summary

Table 6-50 is an overview of the cost allocation for Subfamily #902.

**Table 6-50: Emergency Management and Corporate Security Subfamily Overview**

Subfamily		Emergency Management and Corp. Security - #902		
Subcategory		Emergency Management and Corp. Security (902_0)		
FY 2014 Expenditures (Mil.)		\$27.3		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital		
Number of Cost Centers		12		
Stat Qualifiers Used		Station Pair, Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Police Security & Enviro Safety	IO_1124	\$13.8	CAE	50.6%
Corporate Administration	IO_1001	\$6.2	CAE	22.9%
No Function	IO_NO_IO	\$4.9	CAE	17.9%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Customer Allocated Costs	ST_CAE_DBX	\$26.7		97.9%

### 6.8.3 Environmental & Safety Subfamily

**Family:** Police, Security & Environmental/Safety - #900  
**Subfamily:** Environmental & Safety - #903

### Scope

The Environmental & Safety Subfamily performs activities to ensure and oversee environmental, health, and safety issues of Amtrak and its employees. These activities include reporting and

safety compliance requirements by State and Federal agencies as well as compliance with environmental regulations.

Subfamily expenditures for FY14 were \$8.8 million and account for 0.2 percent of Amtrak's total expenses.

### Cost Allocation Approach and Results

Cost allocations for the Environmental & Safety Subfamily almost exclusively use Customer Allocated Cost (CAE), the sum of all direct and allocated costs prior to this round including the Asset Usage Allocation. CAE is similar to the TAC but the TAC includes CAE as well as costs allocated in this round by CAE. Cost Centers in this Subfamily are therefore included in the base for calculating TAC. Mechanical Direct Cost (MDC) is used for environmental and safety expenses at mechanical facilities.

### Summary

Table 6-51 is an overview of the cost allocation for the Environmental & Safety Subfamily.

**Table 6-51: Environmental & Safety Subfamily Overview**

Subfamily		Environmental and Safety - #903		
Subcategory		Environmental and Safety - General (903_0)		
FY 2014 Expenditures (Mil.)		\$8.8		
Business Types To Which Costs Are Allocated		NTS, CI, CM, FR, Reimbursable, Commercial, Capital		
Number of Cost Centers		6		
Stat Qualifiers Used		Station		
Top Internal Orders Ranked by Allocations (Dollars, Mil., FY14)				
Internal Order	Code Number	Expenditures	Dominant Statistics	Percent of Subfamily
Police Security & Enviro Safety	IO_1124	\$4.4	CAE	50.1%
No Function	IO_NO_IO	\$2.0	CAE	22.6%
Gen Supt Special Proj.	IO_1198	\$1.7	CAE MDC UU	19.7%
Statistics Used for 95% of Subfamily Cost Attribution, (Dollars, Mil., FY14)				
Statistic	Code	Expenditures		Percent of Subfamily
Customer Allocated Costs	ST_CAE_DBX	\$7.9		89.7%
Mechanical Direct Costs	ST_MDC_DBX	\$0.6		7.3%

## **6.9 Non-Operating Family #999<sup>68</sup>**

The Non-operating Family (#999) is a virtual Family used for non-operating APT expenses and revenues that are extracted from SAP and uploaded to APT. Some are GAAP operating expenses that are replaced by the APT “Asset Usage Allocation” as described in Sections 4.2.2 and 6.6. Others are capital or revenue-related transactions that are not APT “costs” or revenues attributed to any cost object. The Subfamily names provide an indication of the type of transactions involved but no longer indicate the full scope of the transactions included due to changes since APT was first implemented.

The transactions are excluded from the account structure typically used to view APT’s Fully Allocated cost results and are not included in the cost tables in Sections 5 or 6 nor in Appendix B. The following is a description of the scope of each but the transactions and amounts are excluded.

### **6.9.1 Interest Income Subfamily**

**Family:** Non-Operating Family - #999  
**Subfamily:** Interest Income - #991

#### **Scope**

The Interest Income Subfamily is essentially a “revenue” Subfamily used for several interest earned accounts that are not attributed under the APT methodology. Also included are net proceeds of asset sales and a small miscellaneous “Other Income” account.

#### **Cost Allocation Approach and Results**

These transactions, usually net revenues, are not attributed or allocated because either they are replaced by APT’s Asset Usage Allocation or are not linked to any cost object.

### **6.9.2 Interest Expense Subfamily**

**Family:** Non-Operating Family - #999  
**Subfamily:** Interest Expense - #992

#### **Scope**

The Interest Expense Subfamily is used for recording interest expenses on borrowings and equipment sale/leaseback transactions.

#### **Cost Allocation Approach and Results**

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<sup>68</sup> The Non-operating Family (#999) is not a Subfamily under Police, Security, and Environmental/Safety Family even though the two Families share the first digit “9” in the APT numbering scheme.

These transactions are not attributed or allocated because either they are replaced by APT's Asset Usage Allocation or are not linked to any cost object.

### **6.9.3 Capital Contributions Subfamily**

**Family:** Non-Operating Family - #999  
**Subfamily:** Capital Contributions - #993

#### **Scope**

The Capital Contributions Subfamily is used to record capital contributions from the Federal and State governments. The funds involved are used for the acquisition of capital assets and hence are not directly related to operating costs.

#### **Cost Allocation Approach and Results**

These transactions are not attributed or allocated by APT because under GAAP they are not operating costs or revenues.