

# Changes to the Uniform System of Accounts (USOA) and the National Transit Database (NTD)



# Introduction

In efforts to improve upon the Uniform Systems of Accounts (USOA), better align the reporting guidance with the NTD Internet Reporting system, and be responsive to the accounting guidance and changes thereof, FTA has refined and clarified the NTD reporting guidance provided to transit agencies. Changes from the 1995 version of the USOA are highlighted in the following presentation and summarized below:

- Address inconsistencies in the USOA due to changes in technology and transit organization structure
- Revise accounting principles and object classes in USOA to align with accounting and industry leading practices and standards
- Provide additional cost allocation guidance to enhance consistency in each transit agencies cost allocation model and methodology

We expect to release a Federal Register notice toward the end of October 2015. After responding to comments on the notice, FTA will decide which changes to implement. We expect them to take effect for Report Year 2017.



# Learning Goal

The goal of this training is to communicate the changes that have been made to the USOA and the NTD that impact your NTD reporting.

Updates to the USOA and the NTD reporting requirements are intended to clarify reporting concepts to the reporters and increase the quality of the data that is collected by the NTD.



# Overview

### FTA is proposing the following changes:

- Updated requirements for the IAS-FD Independent Auditor Statement Financial Data.
- Updates to NTD forms
  - RR-20 Reduced Reporter
  - B-30 Contractual Relationship
  - F forms (F-10, F-20, F-30, F-40, F-60)
  - R-10 Employees
- New USOA object class numbering mechanism

Most of the proposed changes do not affect Reduced Reporters or Rural Reporters.



# INDEPENDENT AUDITOR STATEMENT – FINANCIAL DATA (IAS – FD)



# Independent Auditor's Statement – Financial Data

Independent Auditor's Statement – Financial Data

Independent Financial System Review

Renamed "Independent Financial System Review (IFSR)"

Only Full Reporters complete the IFSR and the requirement is to complete it once, at the commencement of NTD reporting. Moving forward, we are proposing that both Full Reporters **AND** Reduced Reporters will be required to complete the IFSR. Additionally, IFSR must be renewed **once every 10 years.** 

This will provide additional confidence that all reporters are conforming to FTA's reporting requirements.



# **RR-20 REDUCED REPORTER**



# RR-20 Reduced Reporter: Change Summary

**RR-20 purpose:** Reduced Reporters report their financial information into this form instead of the F forms

### The changes to the RR-20 form are as follows:

- Reporting of fare revenues by revenue type
- Removal of Donations

#### **Previous RR-20 Form:**

All fare revenues are collected as:

• Passenger Fares



# New RR-20 Form:

Fare revenues are collected as:

- Passenger-Paid Fares
- Organization-Paid Fares



# **RR-20 Reduced Reporter**

**Change:** Passenger Fares has split into New Object Classes:

### Passenger-Paid Fares

Passenger-Paid Fares will now capture the more direct type fares that are traditionally considered as passenger fares

- Full Adult Fares
- Senior Citizen Fares
- Student Fares
- Child Fares
- Fares for Individuals with Disabilities

- Ferryboat Services
- Vanpool Services
- Special Ride Fares
- Handling Fees
- No-show Fines

### Organization-Paid Fares

Organization-Paid Fares will now capture fares earned from organizations for providing transit service

- Universities
- State and Local Government
- Special Route Guarantees
- Other Special Contract Transit Fares

- Reduced Fare Reimbursements
- FEDERAL TRANSIT ADMINISTRATION

# **B-30 CONTRACTUAL RELATIONSHIP**



# B-30 Contractual Relationship: Change Summary

**B-30 purpose:** You report all contractual relationships in the B-30 Forms.

#### **B-30: 3 Versions**

Versions are customized based on the following characteristics:

Non-VP modes: Contractor retains fare revenue

Non-VP modes: Reporter retains fare revenue

VP mode

# The changes to the B-30 form are as follows:

- Customization of the form based on who retains the fare revenues
- Addition of new object classes



#### **B-30: 3 Versions**

\*Non-VP modes: Contractor retains fare revenue

\*Non-VP modes: Reporter retains fare revenue

VP mode

\*Visually, both Non-VP modes form versions look identical. However, the difference in each version is the calculation that completes the auto-populated fields.

### Changes to B-30 Contractual Relationship:

- Object classes for the Non-VP modes:
- Purchased Transportation Fare Revenue
- Direct Payment
- Capital Leasing Expenses
- Other Operating Expenses Incurred by the Buyer
- Other Reconciling Item Expenses Incurred by the Buyer



#### **B-30: 3 Versions**

Versions are customized based on the following characteristics:

Non-VP modes: Contractor retains fare revenue

Non-VP modes: Reporter retains fare revenue

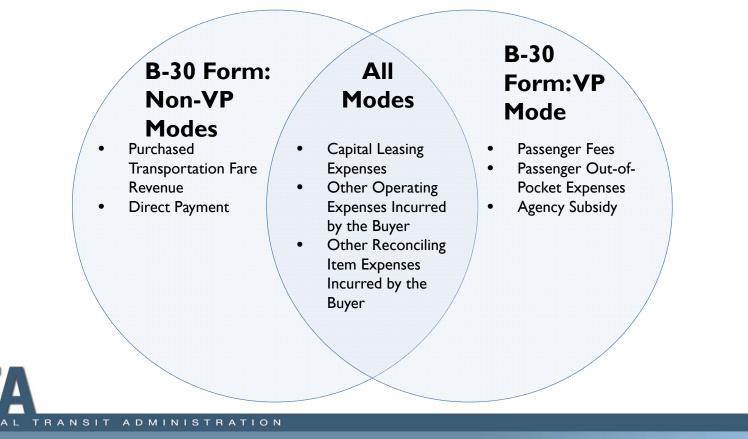
VP mode

### **Changes to B-30 Contractual Relationship:**

- Object classes for the VP mode:
  - Passenger Fees
  - Passenger Out-of-Pocket Expenses
  - Agency Subsidy
  - Capital Leasing Expenses
  - Other Operating Expenses Incurred by the Buyer
  - Other Reconciling Item Expenses Incurred by the Buyer



- The financial portion of the B-30 form is different for the non-VP modes versus the VP mode.
- Each version of the B-30 form has different object classes except for three that are applicable to all modes.



### **Change:** New Object Classes: Non-VP Modes

### Purchased Transportation Fare Revenue (Non-VP modes)

Amount equal to the passenger fares earned for the purchased transportation service.

Direct Payment (Non-VP\_modes)

Amount paid by the buyer directly to the seller during the reporting period.



### **Change:** New Object Classes: VP Modes

### Passenger Fees (VP mode)

Payments from all passengers, including the drivers, to the vanpool provider.

### Passenger Out-of-Pocket Expenses (VP mode)

All costs paid for by the passengers directly, such as fuel and tolls expenses.

### Agency Subsidy (VP mode)

Payments by the transit agency to the vanpool contractor. This often takes the form of a per-van per-month subsidy.



### Change: New Object Classes: All Modes

### Capital Leasing Expenses

Includes the portion of the contract cost that the seller included to cover the capital cost of assets it provided for use.

### Other Operating Expenses Incurred by the Buyer

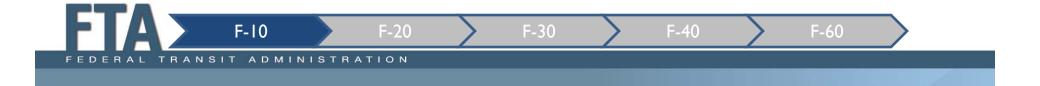
Amount of operating expenses incurred by the buyer.

### Other Reconciling Item Expenses Incurred by the Buyer

Amounts of expenses classified as reconciling items incurred by the buyer.



# F-10 SOURCES OF FUNDS



# F-10 Sources of Funds: Change Summary

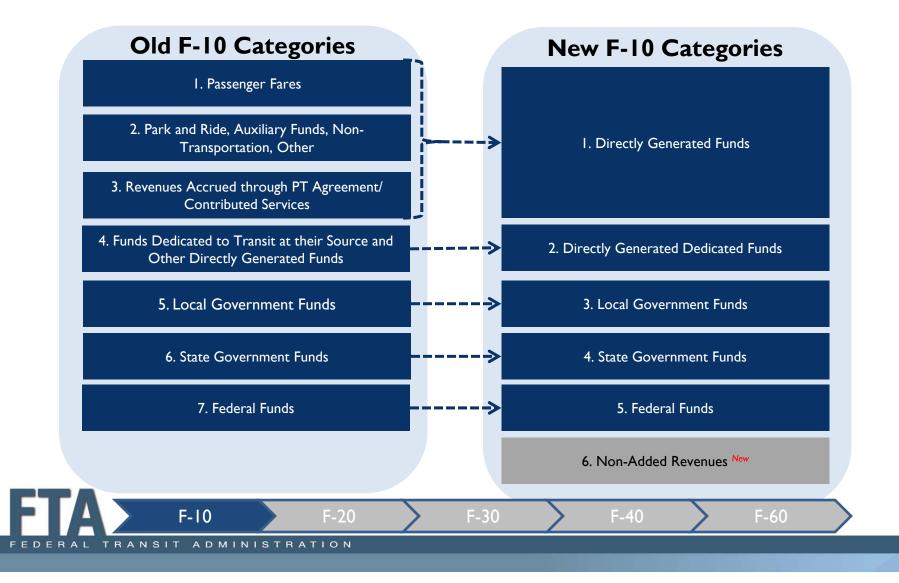
**F-10 purpose:** You report all sources of funds in the F-10 Form

### The changes to the F-10 form are as follows:

- Consolidation, renaming, and addition of Sources of Funds Categories
- Consolidation, renaming, reclassification, and addition of Object Classes
- Simplification of reporting



**Change:** Consolidation, renaming, and addition of Sources of Funds Categories



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# There are no changes to the following Sources of Funds category:

Directly Generated Dedicated Funds





# **Changes to Directly Generated Funds:**

### • Renamed Object Classes

 Non-Transportation Revenues is renamed as Other Agency Revenues

### • New Object Classes:

- Passenger-Paid Fares
- Organization-Paid Fares
- Extraordinary and Special Items
- Total Recoveries



Directly Generated Dedicated Funds Local Government Funds

State Government Funds

Federal Funds

Non-Added Revenues

### **Change:** Passenger Fares has split into new into New Object Classes:

### Passenger-Paid Fares

Passenger-Paid Fares will now capture the more direct type fares that are traditionally considered as passenger fares

- Full Adult Fares
- Senior Citizen Fares
- Student Fares
- Child Fares
- Fares for Individuals with Disabilities

- Ferryboat Services
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- Special Ride Fares
- Handling Fees
- No-show Fines

### Organization-Paid Fares

Organization-Paid Fares will now capture fares earned from organizations for providing transit service

- Universities
- State and Local Government

Reduced Fare Reimbursements

- Special Route Guarantees
- Other Special Contract Transit Fares

FEDERAL TRANSIT ADMINISTRATION F-30 F-40 F-60 23

Directly Generated Dedicated Funds Local Government Funds

State Government Funds

Federal Funds

Non-Added Revenues

# **Change:** New Object Classes in Directly Generated Fund Category

### Extraordinary and Special Items

This object class is used to report funds **received** that are associated with extraordinary and special events or transactions.

- Extraordinary = unusual **AND** infrequent
- Special = unusual **OR** infrequent

### **Total Recoveries**

Funds recovered from insurance companies as a result of an insured event such as a vehicle collision.



# F-10 Sources of Funds: Examples

Directly Generated Funds

Directly Generated Dedicated Loca Funds

Local Government Funds

State Government Funds

Federal Funds

Non-Added Revenues

**Example 1:** You receive fares from local high school students and funds from a local university for providing farefree service to its college students.

Funds	Previously	Moving Forward	
Fare from local high school students	Passenger Fares	Passenger Fares: Passenger-Paid Fares	
Fund from local university	Passenger Fares	Passenger Fares: Organization-Paid Fares	

**Example 2:** You receive insurance recoveries for damages from a natural disaster, such as a hurricane or an earthquake.

Funds	Previously	Moving Forward
Funds received to use for damages	Report according to source of funds	Report as <b>Extraordinary and Special Items</b> within Federal Funds category.

**Example 3:** Amounts recovered from insurance companies for damage claims:

Funds	Previously	Moving Forward
Funds received from insurance companies	Reported this fund by offsetting Casualty and Liability Costs in the F-30 Operating Expenses.	Report as <b>Total Recoveries</b> within Directly Generated Fund category.





# **Changes to Local Government Funds:**

- New Object Class:
  - Extraordinary and Special Items



**Directly Generated Funds** 

Directly Generated Dedicated Funds

Local Government Funds

State Government Funds

Non-Added Revenues

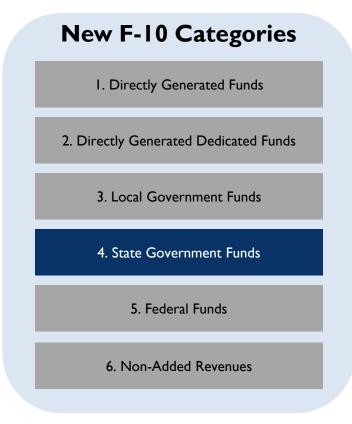
Federal Funds

**Change:** New Object Class in Local Government Fund Category

Extraordinary and Special Items

Extraordinary and Special Items as defined in Directly Generated Funds. Report any such revenues from local sources here.





# **Changes to State Government Funds:**

### Renamed Object Class:

• Funds Allocated to Transit out of the General Revenues of the Government Entity has been renamed as General Revenues of the State Government

### • Consolidated Object Classes:

• All the object classes for Funds Dedicated to Transit at their Source have been consolidated into State Transportation Fund

### • New Object Class:

Extraordinary and Special Items



Directly Generated Funds Directly Generated Dedicated Local Government Funds State Government Funds Federal Funds Non-Added Revenues

**Change:** Consolidated Object Classes to simplify reporting for state government funds

### State Transportation Fund

Income Taxes, Sales Taxes, Property Taxes, Gasoline Taxes, and Other Taxes have been consolidated into a single new object class called State Transportation Fund.





**Change:** New Object Class in State Government Fund Category

**Extraordinary and Special Items** 

Extraordinary and Special Items as defined in Directly Generated Funds. Report any such revenues from state sources here.



# F-10 Sources of Funds: Example

**Directly Generated Funds** 

**Directly Generated Dedicated** Local Government Funds Funds

**State Government Funds** 

Federal Funds

Non-Added Revenues

**Example 1:** You receive the following funds from the state. The table below explains how you reported the funds previously and how you will report them moving forward.

Funds	Previously	Moving Forward
A portion of state general fund that is allocated to transit	General Revenues of the State Government	General Revenues of the State Government
Tolls enacted by the state government on bridges	Bridge, Tunnel, and Highway Tolls	State Transportation Fund
Property taxes levied by state government	Property Taxes	State Transportation Fund
Sales taxes levied by state government	Sales Taxes	State Transportation Fund
Disaster relief funds	According to source	Extraordinary and Special Items





# **Changes to Federal Government Funds:**

- New Object Class:
  - Extraordinary and Special Items



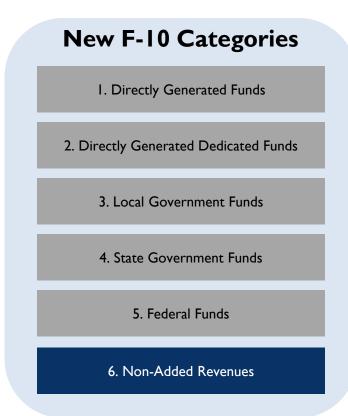


**Change:** New Object Classes in Federal Fund Category

### Extraordinary and Special Items

Extraordinary and Special Items as defined in Directly Generated Funds. Report any such revenues from federal sources here.





New category - Non Added Revenues includes:

### **Reclassification of Object Class:**

Contributed Services

### **New Object Classes:**

- Voluntary Non-Exchange Transactions
- Sales and Disposals of Assets
- Transportation Development Credits



Directly Generated Funds

Directly Generated Dedicated Funds Local Government Funds

State Government Funds

Federal Funds

Non-Added Revenues

### **Change:** Reclassified Object Class in Non-Added Revenues Category

### **Contributed Services**

Contributed services are in-kind services received by your agency from another entity or person where there is no payment for the services.

• Example: a retired accountant volunteers to come in once per week to keep the agency's books. Report the value of her services as Contributed Services.



Directly	Generated	Funds	
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Directly Generated Dedicated Funds Local Government Funds

State Government Funds

Federal Funds

Non-Added Revenues

### **Change:** New Object Classes in Non-Added Revenues Category

### Voluntary Non-Exchange Transactions

Voluntary non-exchange transaction is an event where an agency gives or receives value without directly receiving or giving equal value in return. Agency that **receives** value reports it as a Non-Added Revenues item. This applies only to the value of assets, not to labor or services.

### Sales and Disposals of Assets

Sales and disposals of assets include, but are not limited to: sales of equipment, buildings, real estate, and other property.

### Transportation Development Credits

Transportation Development Credits are funds spent on transportation at the state level that can be used as a non-federal match for federal grants to transit agencies.



## **F-10 Sources of Funds**

#### **Change:** F-10 Reporting Simplification

The F-10 form has been updated so that Funds Expended on Operations and Funds Expend on Capital are reported **only once** for all object classes in each fund category as a total sum amount.

C	Old F-10 F	Reporting	8		1	New F-10	Reportir	ng
Object Classes	Funds Earned During Period	Funds Expended on Operations	Funds Expended on Capital		Object Classes	Funds Earned During Period	Funds Expended on Operations	Funds Expended on Capital
Object Class A	100,000	70,000	30,000		Object Class A	100,000		
Object Class B	50,000	40,000	10,000	Change	Object Class B	50,000		
Object Class C	180,000	180,000	0		Object Class C	180,000		
Object Class D	70,000	70,000	0		Object Class D	70,000	2	
Total	400,000	360,000	40,000		Total	40,000	360,000	40,000
ETA								
	F-10		F-20	F-30		F-40	F-60	37
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## **F-20 USES OF CAPITAL**



### F-20 Uses of Capital: Summary

**F-20 purpose:** You report all capital expenses on the F-20 Form.

Object classes have not changed:

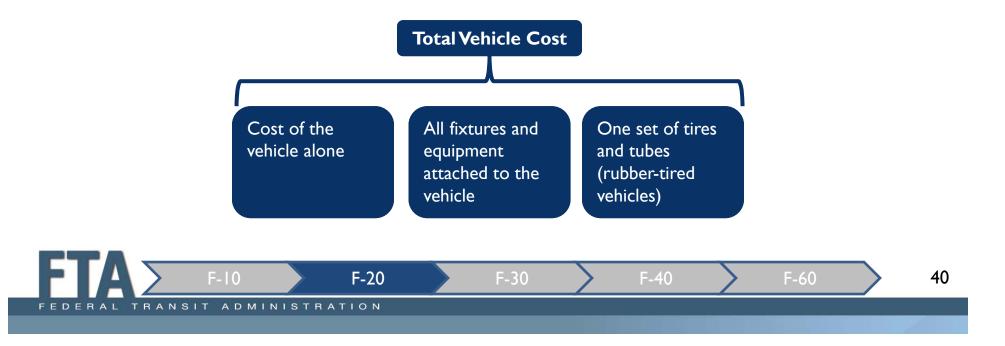
- Guideway
- Passenger Stations
- Administrative Buildings
- Maintenance Buildings
- Revenue Vehicles
- Service Vehicles
- Fare Revenue Collection Equipment
- Communication/Information Systems
- Other



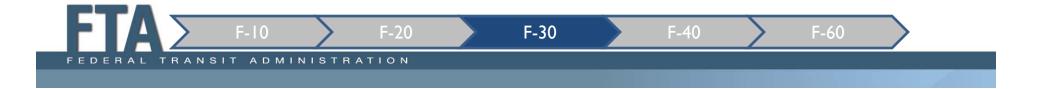
### F-20 Uses of Capital: Change Summary

#### **Change:** Redefine Total Vehicle Cost

- Total cost of a vehicle now includes the following:
  - Vehicle
  - All fixtures and equipment attached to the vehicle
  - One set of tires and tubes (rubber-tired vehicles)



# **F-30 OPERATING EXPENSES**

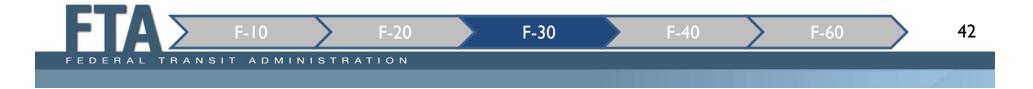


# F-30 Operating Expenses: Change Summary

**F-30 purpose:** You report all operating expenses on the F-30 form (complete one F-30 per mode and type of service provided)

#### The changes to the F-30 form are as follows:

- Renaming of functions
- Reclassification, addition, and simplification of object classes



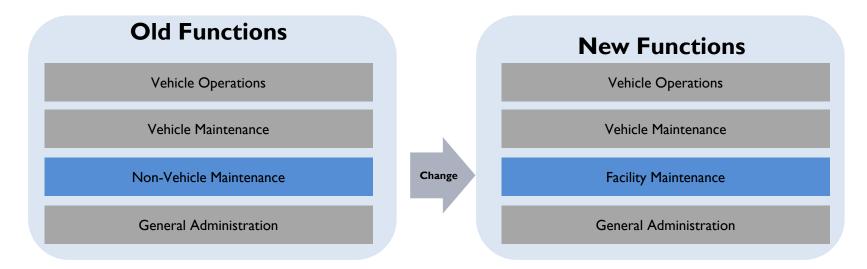
#### **Changes to F-30 Operating Expenses:**

#### • Renamed Function:

- Non-Vehicle Maintenance has been renamed as Facility Maintenance
- New Object Classes:
  - Operators' Paid Absences
  - Other Paid Absences
- Simplification of Object Class Reporting:
  - Casualty and Liability Costs is reported in full under General Administration function



**Change:** Renamed Non-Vehicle Maintenance Function to Facility Maintenance Function





#### **Change:** New Operating Expenses Object Classes

#### **Operators'** Paid Absences

Includes vacation leave, sick time, and other paid time off not contingent on a specific event outside the control of the transit agency for revenue vehicle operators or crewmembers.

#### Other Paid Absences

Includes vacation leave, sick time, and other paid time off not contingent on a specific event outside the control of the transit agency for its employees that are not classified as revenue vehicle operators or crewmembers.



**Change:** Simplification of Causality and Liability Costs Reporting

Currently, you report **Casualty and Liability Costs** for Vehicle Maintenance, Non-Vehicle Maintenance, and General Administration functions. The F-30 form will be updated so that you report **Casualty and Liability Costs** entirely under the General Administration function.

#### Previous: Casualty and Liability Reporting

Vehicle	Vehicle	Non-Vehicle	General
Operations	Maintenance	Maintenance	Administration
	$\checkmark$	$\checkmark$	$\checkmark$

#### New: Casualty and Liability Reporting

Vehicle	Vehicle	Facility	General
Operations	Maintenance	Maintenance	Administration



Change

Operating Expenses Object	Operating Expenses Functions						
Classes	Vehicle Operations (VO)	Vehicle Maintenance (VM)	Facility Maintenance (FM)	General Administration (GA)			
Operators' Salaries and Wages (3110)	Operators' driving time	Operators fueling vehicles	Operators cleaning a garage	Operators taking customer service calls			
Operators' Paid Absences (3111)	Operators' vacation and sick leave (allocated among four functions)	Operators' vacation and sick leave (allocated among four functions)	Operators' vacation and sick leave (allocated among four functions)	Operators' vacation and sick leave (allocated among four functions)			
Other Salaries and Wages (3120)	Dispatching revenue vehicles	Mechanics repairing vehicles	Custodians cleaning offices	Accountants writing a budget			
Other Paid Absences (3121)	Schedulers' vacation	Tow truck drivers' sick leave	Plumbers' holiday leave	General manager's maternity leave			
Fringe Benefits (3130)	Schedulers' health insurance	Shop supervisor's pension	Track workers' Social Security taxes	Customer service representative's unemployment plan			
Services (3200)	Security guard service	Vehicle body work at an independent garage	Independent electrician service of maintenance garage	Independent auditor			
Fuel and Lubricants (3310)	Fuel for revenue vehicles	Fuel for service vehicles	Not applicable	Not applicable			
Tires and Tubes (3320)	Tires for revenue vehicles	Tires for service vehicles	Not applicable	Not applicable			
Other Materials and Supplies (3390)	Fare cards	Vehicle parts	Cleaning supplies	Office supplies			
Utilities (3400)	Electricity used to propel a	Not applicable	Not applicable	Natural gas to heat buildings			
Casualty and Liability Costs (3500)	Consolidated under General Administration function	Consolidated under General Administration function	Consolidated under General Administration function	Vehicle liability insurance			
Taxes (3600)	Revenue vehicle licensing	Fuel tax on fuel for service vehicles	Building permits	Property taxes			
Purchased Transportation – In Report (3710)	PT contractor's employees driving vehicles	PT contractor's employees repairing vehicles	PT contractor's employees maintaining a garage	PT contractor's employees doing human resources work			
Purchased Transportation – Filing Separate Report (3720)	PT contractor's employees preparing schedules	PT contractor's employees refueling vehicles	PT contractor's employees maintaining office space	PT contractor's employees negotiating contracts			
Miscellaneous Expenses (3800)	Highway tolls paid by revenue vehicles	Mechanics' travel expenses going to training	Office building air conditioner repair staff's travel expenses going to training	Dues for membership in professional organizations			
ADA Expenses (3000ADA)	Providing service to disabled passer	igers as required by ADA					
	L						

F-30

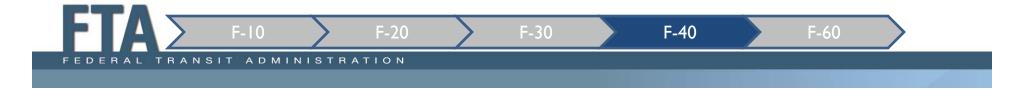


F-10

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F-60

# F-40 OPERATING EXPENSES SUMMARY



## F-40 Operating Expenses Summary: Change Summary

**F-40 purpose:** The F-40 Form pulls in the total operating expenses from all modes; in addition, you report reconciling items on the F-40 form in order to reconcile your revenues to your expenses.

#### The changes to the F-40 form are as follows:

• Renaming and addition of object classes

Note: All changes that are made to the F-30 form are applicable to the F-40 form.



#### **Changes to F-40 Operating Expenses Summary:**

- Renamed Object Classes:
  - Leases and Rentals has been renamed as Operating Lease Expenses
  - Purchase Lease Agreement has been renamed as Capital Leases

#### • New Object Classes:

- Voluntary Non-Exchange Transactions
- Extraordinary and Special Items
- Other Postemployment Benefit Adjustments



**Change:** New Reconciling Items Object Classes

#### Voluntary Non-Exchange Transactions

A voluntary non-exchange transaction is an event where your agency gives or receives an asset without directly receiving or giving equal value in return. The agency that **provides** the asset to another agency reports its value as a Reconciling Item.

#### Extraordinary and Special Items

This object class is used to report funds **expended** that are associated with extraordinary and special events or transactions.

- Extraordinary = unusual **AND** infrequent
- Special = unusual **OR** infrequent



#### **Change:** New Reconciling Items Object Classes

#### Other Postemployment Benefit Adjustments

If you make an OPEB contribution that exceeds your annual required contributions (ARC), you report the difference between your annual OPEB cost and your ARC as a reconciling item in this object class.

Report OPEB adjustments as **Other Reconciling Items** 

Change

Report OPEB adjustments as Other Postemployment Benefit Adjustment



#### **Example: Other Post-Employment Benefits**

Your agency's ARC for FY 2015 is \$1,000,000. In past years you did not fully fund your OPEB obligations and the total difference between your OPEB obligations and the value of the OPEB fund is \$2,000,000. You make an extra contribution to the OPEB fund of \$500,000 in 2015 to begin to catch up on the past deficit.

Report \$1,000,000 as fringe benefits on the F-30 form.

Report \$500,000 in OPEB Adjustments on the F-40 form.



### **F-60 FINANCIAL STATEMENT**



## F-60 Financial Statement: Change Summary

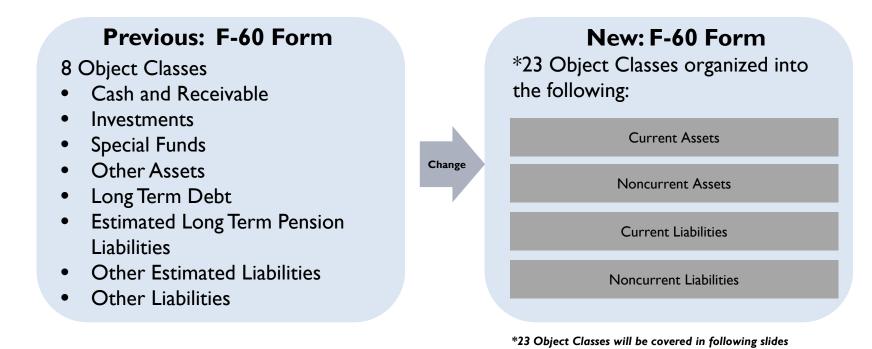
**F-60 purpose:** The F-60 Form includes common assets and liabilities that you report on your financial statements.

#### The changes to the F-60 form are as follows:

- Organization of assets and liabilities into current and noncurrent object classes
- Addition of new object classes



**Change:** Organization of Assets and Liabilities into Current and Noncurrent Object Classes





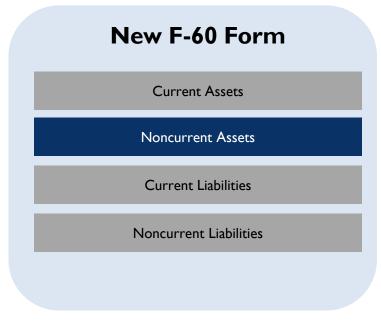
#### **Detailed Summary:** Current and Noncurrent Object Classes

Assets		Cash and Cash Equivalents				
7 (00000	Current Assets	Accounts Receivable				
		Inventory				
		Prepaid Expenses				
		Current Investments and Current Portions of Long-Term Investments				
		Other Current Assets				
		Capital Assets				
	Noncurrent Assets	Intangible Assets				
		Capital Lease Receivable				
		Pension Funds				
		Special Funds				
		Work in Progress				
		Investments				
Liabilities	Current Liabilities	Accounts Payable				
		Short-term Debt and Current Portions of Long-Term Debt				
		Accrued Liabilities				
		Other Current Liabilities				
		Long-Term Debt				
	Noncurrent Liabilities	Accounts Payable				
		Capital Lease Obligations				
		Long-Term Pension Liabilities				
		Estimated Liabilities				
		Other Noncurrent Liabilities				
Net Position	Net Position is the difference between assets, deferred o	utflows or inflows of				
	resources and liabilities and is an indicator of an agency's point in time.					
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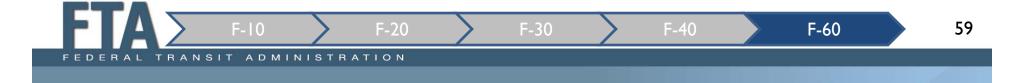


- Restructured Current Assets Object Classes:
  - Cash and Cash Equivalents
  - Accounts Receivable
  - Inventory
  - Prepaid Expenses
  - Current Investments and Current Portions of Long-Term Investments
  - Other Current Assets





- Restructured Noncurrent Assets Object Classes:
  - Capital Assets
  - Intangible Assets
  - Capital Lease Receivable
  - Pension Funds
  - Special Funds
  - Work in Progress
  - Investments





- Restructured Current Liabilities Object Classes:
  - Current Accounts Payable
  - Short-Term Debts and Current Portions of Long-Term Debt
  - Accrued Liabilities
  - Other Current Liabilities





- Restructured Noncurrent Liabilities Object Classes:
  - Long-Term Debt
  - Noncurrent Accounts Payable
  - Capital Lease Obligations
  - Long-Term Pension Liabilities
  - Estimated Liabilities
  - Other Noncurrent Liabilities

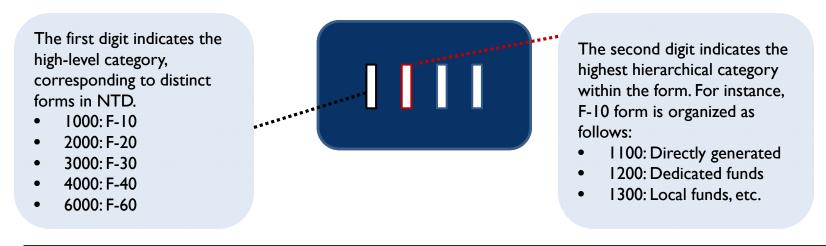


# USOA OBJECT CLASS NUMBERING MECHANISM



## USOA Object Class Numbering Mechanism

The new USOA uses a four-digit numbering scheme for the object classes. The first digit indicates the corresponding NTD form that the object class belongs in. After the first digit, object classes are organized hierarchically and belong within the category identified with the proceeding number.



	Func	tions	
Vehicle Operations	Vehicle Maintenance	Facility Maintenance	General
(VO)	(VM)	(FM)	Administration (GA)

### **R-10 EMPLOYEE**



### **R-10 Employee: Change Summary**

**R-10 purpose:** You report employee information on the R-10 Form.

#### The changes to the R-10 form are as follows:

• Reporting of information by employee type (operator vs non-operator)



Employee Information is collected by whether the employees are:

- Part Time Employees
- Full Time Employees



#### New R-10 Form:

Employee Information is collected by whether the employees are:

- Part Time Operators
- Full Time Operators
- Part Time Non-Operators
- Full Time Non-Operators



## **APC CERTIFICATION**



### **Overview: New APC Certification Guidelines**

- Shorter sampling period
- More definite standards
- Less frequent "maintenance" sampling



# Taking the Sample

How many vehicle trips?

- <30 APC equipped vehicles = 15 Trips
- >30 APC equipped vehicles = At least half the number of APC equipped vehicles (minimum of 15 and maximum of 50)

Which trips?

- Do not have to select them randomly
  - Must include some heavy ridership trips
  - Must distribute over all different vehicle and APC models
  - Can be spread over any convenient period of time

How to sample?

- One ride checker per door
- May use on-board video if available

## Analyzing the Data

How should I process the data?

- Use normal data-processing procedures
  Do not implement extra validation procedures to create a better-than-normal data set.
  - Validate manual data
- -Check for reasonableness, compare ons/offs.
  - Perform side-by-side analysis of manual and APC data for boardings and alightings at each stop.



## **Calculating FTA Metrics**

How do I calculate the metrics that FTA needs?

- Calculate the percent difference between manual and APC counts.
- 2) Calculate the **percent difference** between manual and APC derived passenger miles.
- 3) Calculate **unbalanced error** between manual and APC counts.

Absolute value of the differences between manual and APC ons and manual and APC offs at each stop. Divide the sum of these differences for all sampled trips by the total manual ons + offs



	Manual Counts	Automated Counts		
	Weekday	Saturday	Sunday	Totals
Trips In Manual Sample	129	27	26	182
# of APC Trip Samples	129	27	26	182
UPT	3,486	1,233	621	5,340
Manual Daily Passenger Miles	23,058	8,965	4,650	36,672
UPT	3,319	1,187	601	5,107
APC Daily Passenger Miles	25,789	10,149	4,868	40,806
UPT % Difference	-4%			
PMT % Difference	11%			



Trip 1		APC On	Manual On	Mag. Of Difference		APC Off	Manual Off	Mag. Of Difference
	Stop 1	4	4	0		9	11	L
	Stop 2	1	. 0	1		2	1	L
	Stop 3	9	11	2		8	9	)
	Stop 4	9	9	0		6	7	7
	Stop 5	2	. 2	0		7	8	3
	Stop 6	5	5	0		1	2	2
	Stop 7	7	6	1		2	2	2
	Stop 8	1	. 0	1		5	4	
	Stop 9	5	6	1		5	4	
	Stop 10	2	. 3	1		1	C	)
	TOTAL	45	46	7		46	48	3
Trip 2								
		APC On	Manual On	Mag. Of Difference		APC Off	Manual Off	Mag. Of Difference
	Stop 1	2	. 1	1		4	6	5
	Stop 2	6	4	2		9	10	)
	Stop 3	7	7	0		9	9	)
	Stop 4	8	7	1		2	1	L
	Stop 5	10	9	1		1	C	)
	Stop 6	1	. 1	0		1	2	2
	Stop 7	3	4	1		2	3	3
	Stop 8	3	2	1		3	1	
	Stop 9	1	-1	2		9	9	)
	Stop 10	8	8	0		3	5	5
	TOTAL	49	42	9		43	46	5
GRAND TOTAL (all trips)		94	88	16		89	94	
				(16 + 21)/(88 + 94)	20%			



# **Getting Approved**

What if FTA has already approved my APCs?

- You are still approved.
- You must take a maintenance sample once every 3 years.

What do I need to provide FTA?

- A report describing your APC system.
- A description of your procedure for collecting manual data.
- A list of trips that were flagged and rejected from the sample and the reason.
- A description of the differences (if any) in the set of interstop distances you use to calculate passenger miles using manual and APC data.
- The three metrics: % difference in boardings, % difference in APC, unbalanced error



## **Application Evaluation**

- How does FTA evaluate my report?
  - The three metrics should be under 5%.
  - The report demonstrating the quality of your APC data.
- What if I'm not under 5%?
  - Understand the source of the discrepancies.
  - Revise your manual sampling or APC procedures.
  - Perform the sample and analysis again.



### **Maintenance Sample**

What does this sample involve?

• Same procedures as certification.

When do I take this sample?

• In every third year, starting in Fiscal Year 2019



### **Questions?**

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