



Workshop: Managing Operating Costs for Rural and Small Urban Transit Systems


Let Us Introduce Ourselves

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- Jonathan Brooks
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Introduce instructor(s). It is important that the instructor(s) describe their experience, background, and qualifications as instructor(s).

For example: "My name is Suzie Edrington, I have been a researcher with TTI for 6 years working on national, state and local public transit research and providing technical assistance to rural and small urban transit districts. Prior to working at TTI, I worked for 16 years at Houston METRO as an analyst in operations and maintenance and as the paratransit administrator. The team that is presenting today worked on the TxDOT RMC project to develop a Guidebook for Managing Operating Costs for Rural and Small Urban Transit that will be published in mid-2013.



Who Are You?

- Name
- Agency
- Tell Us About Your Transit Service
- What interested you about this workshop?



Instructor Notes

Read out the following questions that each workshop participant should answer. If more than 20 people attend the workshop remind participants to be brief. Then let each participant answer the above questions.

Why This Workshop Now?

- Increasing demand for transit
- Balance demand with finite resources
- Rising gap between operating cost and funding
- Necessary to understand and manage cost drivers



The national economy is tight in both the public and private sectors. Transit agencies like everyone else, are trying to do more with less. Ironically, demand for transit services in rural and small urban communities has never been higher. Individuals are relying more on transit to get where they're going. The baby-boomers are hitting age 65 plus. More people are choosing to live farther away – either retiring to scenic areas or because small towns are connected by higher speed roadways making the commute time less. Transit services are vital to access jobs, education, health care and recreation. Yet as demand is rising, the gap between cost for operating transit services and the dollars available to fund is also widening.

Transit managers must balance their decisions to provide the most cost effective service. Service delivery options, demographics and the built and natural environment, road configurations and economic trends all play a factor in operating cost. Having a good understanding of what drives costs and market demand can help managers and staff to make better decisions when it comes to balancing finite resources with providing the best services possible to consumers.

Workshop Purpose

- To provide a toolkit for rural and small urban transit agency managers and staff to better analyze, track, predict and manage operating costs.



Instructor Notes

Explain the purpose for the workshop. **Read the Slide**



Workshop Topics

- Vehicle replacement plans and state of good repair
- Minimizing no-shows and late cancellations
- Contracting for transit service
- Future trends and forward thinking approaches
- Buying fuel, managing consumption
- Managing staff shifts

Instructor Notes

Explain the topics for the workshop. **Read the Slide**



Agenda

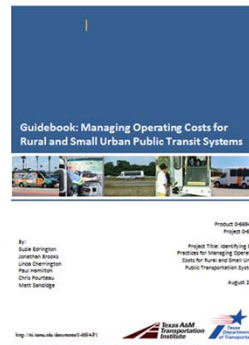
Time	Description
9:00 - 9:45	Opening General Session
9:45 - 10:00	Break – Choose Session Topic
10:00 – 10:50	Maintenance: Vehicle Replacement Plan, State of Good Repair Minimizing No-Shows and Late Cancellations
10:50 – 11:00	Break – Choose Session Topic
11:00 – 12:00	Contracting for Transit Services Future Trends and Forward Thinking Approaches
12:00 - 1:30	Lunch – Choose Session Topic
1:30 – 2:20	Buying Fuel and Managing Consumption Staff: Managing Shifts, Managing Costs
2:20 - 2:30	Break
2:30 - 3:00	Closing General Session




Explain the agenda for the day. Discuss how each participant will choose three of the six sessions offered.

Materials and References

- Participant Workbook
 - Agenda
 - Presentations
 - Evaluation Forms
- Guidebook



Instructor Notes

Describe the participant workbook, sign-in sheet, and the feedback form that participants should fill out at the end of the workshop. Provide additional information about miscellaneous items such as coffee, bathrooms, etc.

Choose A Breakout Session

- Maintenance: Vehicle Replacement Plan, State of Good Repair
- Minimizing No-Shows and Late Cancellations



Explain that each participant will choose one of the two breakout sessions listed and will move to the designated training room.

Maintenance: Vehicles and State of Good Repair



Introduction: Maintenance of vehicles is a crucial component of transit operations responsible for nourishing a healthy fleet and ensuring safety for operators and riders.



Learning Objectives

At the end of this lesson you will be able to...

- Implement proper vehicle database practices
- Identify minimum service-life standards and vehicle retirement points
- Understand the importance of healthy spare-ratios
- Rationalize extending life of vehicles due to budget constraints

Instructor notes: These are the learning objectives which will be addressed as we go along in the presentation. As topics come up try to think about examples that are being used at your own transit agency as well as how ideas found here can be applied.



Reference Materials

- Participant workbook including Power Point
- Handout of example service fleet
- Guidebook: Managing Operating Costs for Rural and Small Urban Public Transit Systems

For this lesson you should have received the participant workbook about the entire course, a packet of power point slides for this specific lesson, and a handout which we will use for the second activity later in the presentation.



Maintenance: Vehicles and State of Good Repair

WHY BE CONCERNED ABOUT MAINTENANCE COSTS WHEN THEY ARE UNAVOIDABLE?

Maintenance costs are an inevitable expense of operating a transit fleet. They arise from sources both internal and external. External factors are uncontrollable and can happen without warning, while internal factors arise from everyday as well as long term decisions. However, both can be planned for in minimizing maintenance costs.



Vehicle Maintenance Is Unavoidable

■ Texas Transit Maintenance Stats (2011)

- Rural agencies spent 6 percent on maintenance (\$0.21 per revenue mile, \$3.82 per revenue hour)
- State-funded urban agencies spent 18 percent on maintenance (\$0.73 per revenue mile, \$10.59 per revenue hour)

Regardless of whether vehicles are owned or leased, vehicle maintenance is an unavoidable operating expense. But like other expenses maintenance costs can be managed and optimized to avoid waste when possible.

Urban agencies tend to spend more money on maintenance than rural agencies, which simply means that there is not a one-size-fits-all plan to anticipating these costs.

Factors Affecting Maintenance

■ Internal

- Fleet condition
- Fleet age
- Level of transit service provided
- Preventative maintenance practices
- Contracts for maintenance

■ External

- Inclement or extreme weather
- Vehicular accidents
- Roadway conditions


Factors affecting these costs are either internal or external. Internal factors are ultimately controllable within the agency and should be optimized. External factors can not be controlled by an agency but should be prepared for by maintaining an adequate spares ratio.

Why Be Concerned About Maintenance Costs?

Table 4-1. Texas Transit District Operating Expenses by Function
(Fiscal Years 2009 to 2011).



Function	FY 2009	FY 2010	FY 2011
Operating	\$97,598,443	\$106,497,995	\$115,276,755
Maintenance	\$20,990,585	\$23,040,572	\$22,945,568
Administrative	\$18,473,477	\$20,361,563	\$21,094,627
Planning	\$2,177,011	\$2,727,457	\$2,476,197
Purchased Transportation	\$18,744,364	\$19,575,641	\$25,081,941
Transit Districts TOTAL	\$157,983,880	\$172,203,228	\$186,875,088

Whether maintenance performed is handled internally or externally, the agency is having to spend dollars towards it which would go to other functions of operation. The table above shows operating costs for small-urban and rural transit agencies in the state from 2009 and 2011. The average over this 3-year period for maintenance is \$22.3 million, which comes out to approximately 12-13% of their annual budgets.



Activity: Identify Current Maintenance Cost-Related Practices

MAINTENANCE CHECKLIST




We will now look at currently maintenance practices being performed or perhaps overlooked by each agency. Please read each question described on the following slide and determine whether your agency is currently using the maintenance practice.

Maintenance Practices

- Do you benchmark maintenance performance against other peer operators?
- Do you track the number of road calls made for your vehicles by vehicle and type of issue?
- Do you periodically adjust your maintenance program due to performance or other issues?
- Do you have an annual vehicle replacement plan?
- Do you have a spare vehicles ratio of at least 10%?
- Do you maintain vehicle equipment according to recommended preventive maintenance schedules?
- Do you maintain a clear record (e.g., spreadsheet) of all vehicle-related data and maintenance activity?
- Do you routinely conduct spot inspections of vehicle cleanliness and operation?
- Do you monitor the performance of systems (e.g., exhaust system) for compliance with noise specifications?
- If contracted, is your maintenance provider contractually bound to adhere to preventive maintenance standards?



Ask participants the questions on the slide. **Wait for responses.**

All of these practices are different opportunities where a transit agency can save money on maintenance of their fleet.



Maintenance: Vehicles and State of Good Repair

GATHER AND USE INFORMATION TO MANAGE MAINTENANCE COSTS



To determine an agency's maintenance program performance the first step is to gather information about your fleet. Regardless of whether paper records, spreadsheet files, or more advanced tracking software is used, it is critical to keep current and accurate information at your disposal.

Gather and Use Information to Manage Maintenance Costs

- Can be done either through paper records, spreadsheet files, or more advanced tracking software
- Determine your fleet condition by keeping an asset inventory with all notable data
- Both revenue and non-revenue vehicles should be included

The first step to measuring your agency's vehicle fleet is to collection information about it. The method used by the transit agency is not as important as how accurate your information is. Whether it's done through paper records, spreadsheet files, or software applications, whatever is chosen should fit the needs and practices of the agency.

Monitor your vehicles with regular checks on maintenance, vehicle condition, and miles driven. One method of doing this is to create a network database which multiple departments can access. This allows data to be shared and edited more openly to keep it more up-to-date and provide a better snapshot of the overall fleet.

Capturing Data

- *Vehicle Unit Number*: Makes the vehicle easily identifiable without having to use the VIN
- *Year Model*: Allows you to keep track of the vehicle's age
- *Vehicle Make/Model*: Helps in quickly identifying vehicles
- *License Plate*: Another quick identifier
- *VIN*: Stays with the vehicle throughout its life
- *Number of Seats*: Assess fleet mix and capacity

These categories are mostly nominal in nature, as most of them are decided before the vehicle is even purchased. It is important to make sure that these characteristics are accurately captured so that data is accurately matched with each other.

A vehicle unit number is a good short-hand way to identify a vehicle without having to resort to complicated or multiple fields.

Capturing Data

- *Vehicle Length*: Useful in assessing fleet mix
- *Vehicle In-Service Date*: Helps determine when the vehicle's useful life will end
- *Vehicle Condition*: Based on criteria defined by your agency
- *Revenue/Non-Revenue*: Separate support vehicles from service vehicles
- *In-Service/Out-of-Service*: Helps you judge your existing fleet

These characteristics are more attributable to vehicle use than those found on the previous slide. From the start of when a vehicle goes into service, its condition is constantly subject to change.

All of these minimum required fields can be found in Table 4-2 of the lesson handout.

Why Networking Databases Is a Good Idea

Table 4-3. Excerpt from Public Transit Services Asset Inventory Database.

Unit	Year	Vehicle	# Seats	Length	Mileage	Vehicle Condition	Status
H25	2010	Ford Senator Bus	10	21'	13,540	Excellent	In-Service
H22	2011	Ford Type III	14	22'4"	4,325	Excellent	In-Service
H23-New	2011	Ford Type III	14	22'4"	6,222	Excellent	In-Service
H24	2011	Ford Type III	14	22'4"	2,639	Excellent	In-Service
H25	2011	Ford Type III	14	22'4"	3,124	Excellent	In-Service
H26	2011	Ford Type III	14	22'4"	7,826	Excellent	In-Service
H27	2011	Ford Type III	14	22'4"	5,452	Excellent	In-Service
B17	2008	Chevy Uplander	3	121"	92,124	Fair	In-Service
B19	2008	Chevy Uplander	3	121"	92,001	Fair	In-Service
B18	2008	Chevy Uplander	3	121"	90,790	Fair	In-Service
B20	2008	Chevy Uplander	3	121"	72,447	Fair	In-Service
B21	2007	GMC Savana	14	21'	127,414	Poor	To be sold
A60	1999	Ford Van	12	17'	127,020	Poor	Sold

While this table does not include all the categories listed on the previous slide, it provides a good visualization of what a fleet database should look like.

It is also common to separate asset-inventory and maintenance databases. The key characteristics to keep track of are total vehicle maintenance expenses to date and when the last preventive maintenance was conducted. Both of these can assist in assessing vehicle condition and in creating a schedule for future maintenance.

Vehicle Inspection Practices and Data

- Vehicles should be inspected before and after each trip
- Should a problem become apparent, operators or maintenance managers must make them known
- Vehicle condition can also be recorded in the asset-inventory database or one of its own
- Mileage-based inspections are also critical

One of the initial ways to monitor vehicles is to have operators conduct pre- and post-trip inspections on the vehicle. These are usually recorded on paper forms before being reviewed and filed, allowing the condition of the vehicle to be monitored on a daily basis and to look for trends.

It is the responsibility of both the operator and the maintenance manager of the vehicle to keep their eyes open for any potential problems and pull that vehicle out for maintenance if something is noticed. Using a database to log information after it is initially recorded can be a much easier way to view this information over time.

Mileage-based inspections should also occur over specified intervals to check for components of the vehicle that aren't as evident to the operator. Typical inspections involve lubrication, filter replacement, inspection for wear and damage, and fluid level checks.

Tracking Road Calls & Vehicle Failures

- Road calls can also indicate declining vehicle performance
- Monitor numbers over specified mile intervals
- Major mechanical failures vs. other mechanical failures
- Calculating the number of miles between vehicle failures can indicate larger problems

If road calls are noticed to be higher for some vehicles than others, it could be an indicator that a vehicle's schedule should be adjusted or brought in for maintenance. A suggested interval of 1,000 miles allows a transit agency to analyze call levels over a couple of weeks and look for spikes in the trends.

Anytime a mechanical problem causes a vehicle to get off schedule it is classified as a "revenue vehicle mechanical failure." A major mechanical failure includes any problems with major parts such as brakes, engine cooling systems, and wheel axles. Other mechanical failures may include wheelchair lifts, heating and cooling, and other problems which are not vital to the operation of the vehicle.

Maintenance Efficiency Performance Measure(s)


- Maintenance cost per revenue mile or hour
- Benefits of the PTN 128 System
 - Can you give example?
- Disadvantages of relying on cost per mile
 - Can you give example?
- Using performance measures for maintenance
- Repairs by cost type

Measuring efficiency can be easily calculated through maintenance cost per revenue mile (or hour if preferred). In the state of Texas transit agencies are required to submit operating expense information to TxDOT through the PTN 128 System. The system is beneficial because this data is readily available.

However, this measure should not be the lone factor in determining vehicle efficiency, because it does not take into account the quality of maintenance performed, the state of good repair, or how ready an agency is to provide service. It should also be noted that circumstances could arise that negatively affect maintenance costs.



Performance measures tailored for the transit agency can allow the maintenance program to be evaluated over a time period. Comparing a maintenance program to other peer programs is another way to look for potential cost savings which may be missed by internal evaluation.

Repairs performed should also be separated by cost type to determine which maintenance costs on a vehicle are more of a cause for concern going forward.



Maintenance: Vehicles and State of Good Repair

POLICIES, PROCEDURES, AND STRATEGIES TO MANAGE MAINTENANCE COSTS



While it's easy to understand why maintenance costs must be managed, it can be more difficult to establish a baseline for how to go about that process. Fortunately there are federal guidelines which can assist in looking at where to start.

FTA Standards for Managing Vehicles

Table 4-4. Transit Vehicle Minimum Service-Life.

	Typical Characteristics			Minimum Life		
				Average Cost	(Whichever comes first)	
Category	Length	Approx. GVW	Seats		Years	Miles
Heavy-Duty Large Bus	35 to 48ft and 60ft artic.	33,000 to 40,000	27 to 40	\$325,000 to over \$600,000	12	500,000
Heavy-Duty Small Bus	30ft	26,000 to 33,000	26 to 35	\$75,000 to \$175,000	7	200,000
Medium-Duty and Purpose-Built Bus	30ft	16,000 to 26,000	22 to 30	\$75,000 to \$175,000	7	200,000
Light-Duty Mid-Sized Bus	25 to 30ft	10,000 to 16,000	16 to 25	\$50,000 to \$65,000	5	150,000
Light-Duty Small Bus, Cutaways, and Modified Van	16 to 28ft	6,000 to 14,000	10 to 22	\$30,000 to \$40,000	4	100,000

These FTA standards have been developed through its “state of good repair” initiative with the goal that transit agencies provide consistently safe and reliable transit service. The categories and service lives can be found in *Useful Life of Transit Buses and Vans*.

The reason a minimum service life exists is to ensure that a vehicle obtains an adequate return on investment when taxpayer money is involved. Usually vehicles are kept in service after their minimum service life marks.

Retirement Compared to FTA Standards

Table 4-5. Actual Average Vehicle Retirement.

Vehicle Category/ Minimum Retirement Age	Average Retirement Age (Years)	Share of Active Vehicles That Are:	
		One or more years past the retirement minimum	Three or more years past the retirement minimum
12 - Year Bus	15.1	19%	9%
10 - Year Bus	8.4*	7%	4%
7 - Year Bus	8.2	12%	3%
5 - Year Bus / Van	5.9*	23%	5%
4 -Year Van	5.6	29%	10%

Lighter weight fleet vehicles are retired at an average age of around 5 or 6 years, past their 4 or 5 year standards, and there are instances when vehicles are kept 3 years or longer past their minimum life. While this practice is not advocated it can be necessary due to unavailability of present funds and the makeup of the entire fleet.

Why Do I Need a Vehicle Replacement Plan?

- Shows accountability
- Project replacement in a given year
- Keeping vehicles useful
- Preparing for capital expenses

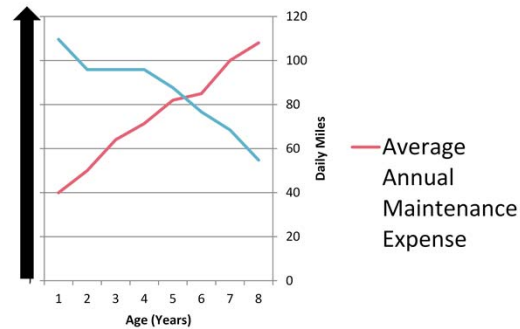



Figure 4-1. Maintenance Expense and Vehicle Usage by Age.

A vehicle replacement plan offers a lot of potential advantages for a transit agency to utilize. Firstly a replacement plan shows accountability to the FTA as well as other stakeholders who can see long-term strategic planning efforts in place. A replacement plan places vehicles on track for proper retirement age and maximum effectiveness. This figure shows how as vehicles age not only are they unable to log as many miles, but the cost to maintain them rises as well, to the point where it is no longer financially sound to keep it in service.





Activity: Replacing your fleet

FLEET DATA

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If you could all take out your Activity 2 worksheet we will now look at an example fleet data sheet and project retirement years for each vehicle with consideration to the entire fleet. We will do this by analyzing miles driven and maintenance performed for the vehicles.

Maximizing Vehicle Effectiveness

VIN	Year	Vehicle	Service Start	Service Months	Actual Mileage	Mileage Per Month	Maintenance per Mile	FTA Retirement	Retirement
1	2005	Aerotech	Oct-04	99	225,619	2,279	\$ 0.15	2013	2013
2	2009	Goshen	Nov-08	51	163,412	3,204	\$ 0.14	2013	2013
3	2009	Goshen	Nov-08	51	174,882	3,429	\$ 0.13	2013	2013
4	2009	El Dorado	Jul-09	42	115,314	2,746	\$ 0.17	2014	2014
5	2009	El Dorado	Jul-09	42	100,512	2,393	\$ 0.27	2014	2015
6	2009	El Dorado	Jul-09	42	131,247	3,125	\$ 0.15	2013	2014
7	2010	Senator	Oct-09	39	130,225	3,339	\$ 0.15	2013	2014
8	2010	Senator	Oct-09	39	95,456	2,448	\$ 0.25	2015	2015
9	2010	Candidate	Jun-10	31	82,486	2,661	\$ 0.20	2015	2016
10	2011	Candidate	Aug-10	29	80,643	2,781	\$ 0.14	2015	2016
11	2011	Candidate	Sep-10	28	87,147	3,112	\$ 0.14	2015	2016
12	2011	Ford	Sep-10	28	72,156	2,577	\$ 0.28	2015	2015

The slide provides an example of a 12-vehicle fleet. All vehicles fall within the FTA minimum life category of 5 years or 150,000. The goal is to replace three of these vehicles per year. FTA guidelines have many vehicles needing to be replaced as soon as possible due to age and miles traveled. The retirement month will be September of the year chosen to coincide with the start of the fiscal year.


Ask participants what they notice on the tables.

Which vehicles should be retired first?

Which vehicles could be held onto longer due to low maintenance?

Preventative Maintenance Practices

- Establish all service intervals as multiples of a common denominator
- Consider seasonal & environmental conditions that can impact maintenance
- Include a regular schedule for washing and cleaning vehicles

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Preventative maintenance is a very important component of maximizing the value of a fleet and a complement to any good replacement plan. Two resources for developing a preventative maintenance program are *TCRP Report 54* and *TCRP Synthesis 81, Preventive Maintenance Intervals for Transit Buses*. Some of the key ways to take care of vehicles are listed above.

Common service marks such as every 3,000 miles for oil changes and 6,000 miles for tire rotations allow the vehicle to be maintained properly, while the common denominator of 3,000 allows for different services to occur at the same shop visit, making for a more efficient process.

Harsh winter weather and poor road conditions can put more than normal wear on vehicles, throwing off a normal maintenance schedule. These differences should be anticipated and factored into the schedule.

Washing and cleaning vehicles is not only useful for aesthetic reasons, it also slows down rusting and aging, which occurs over time due to dirt, grime, and chemicals a vehicle is exposed to. For these reasons vehicles should be cleaned regularly along with other performed maintenance.

Policies, Procedures, and Strategies to Manage Maintenance Costs

- Maintenance contractor oversight
 - Ensure contractor has the most up-to-date vehicle information
 - Store work orders with invoices for comparison to each other
 - Ensure maintenance supervisor has enough time to oversee operations

Using a contractor is a way which some agencies have vehicle maintenance performed regularly. However, even if the maintenance is performed outside of the agency, it is still important to be involved in the process to ensure it is done properly.

Vehicle mileage and other information should be updated and delivered to the contractor on a weekly basis. This helps both sides keep track of changes to the vehicle and monitor maintenance intervals.

Work orders and invoices for maintenance performed should be kept together to compare against each other and make sure scheduled work is actually completed.

Policies, Procedures, and Strategies to Manage Maintenance Costs

■ Fleet spare vehicle ratio

Spares Ratio = $\frac{\text{Total Active Fleet} - \text{Peak Vehicle Requirement}}{\text{Peak Vehicle Requirement}}$

- Should be between 10 to 20 percent
 - Varies depending on specific agency needs
- Operating environment
 - Annual bus mileage
 - Bus operating speeds
 - Ridership fluctuations
 - Planned service/route adjustments
 - Age of fleet
 - Peak-to-base ratio
 - Fleet mix of bus makes and models
 - Road calls
 - Vehicles per mechanic
 - Alternative-fuel buses
 - Management and finance
 - Bus purchase/retirement schedule
 - Inventory management
 - Maintenance training

A spares ratio is very important for a fleet due to unforeseen circumstances which could put a regular in-service vehicle out-of-service, such as breakdowns or accidents. Other factors include the age of the overall fleet and purchasing schedules.

When determining a proper spares ratio, it should be noted not to be overly cautious and have too many operating vehicles. This practice would be wasteful for both inventory and financing, leading to inefficiency of the overall system. Using the ratio formula properly will help determine how many additional vehicles are needed compared to peak usage and achieve balance across the fleet.

What are some of your reasons for maintaining a spares ratio? Do any of these example stick out for you?

Review

- Why is maintaining a vehicle database important?
- Why is networking a database useful?
- What are some good maintenance practices?
- How does maintenance factor in to replacement?
- Give examples of when vehicle life should be extended.

ASK QUESTIONS. Wait for answers, then add to them.


A vehicle database provides you with an up-to-date accurate picture of where a fleet is and where it is headed. It provides data to be used for a schedule for vehicle life.

Networking a database allows data to be more accessible to multiple departments or people in a transit agency. This allows the fleet to be monitored with more ease and regularity, and can allow for data to be adjusted quickly for more accuracy.

Good maintenance practices include benchmarking, tracking road calls, separating incidents and maintenance by type, maintaining a spares ratio, having regular maintenance schedules, and accurate record keeping.

Maintenance adds an additional component to the one-sided approach of only analyzing vehicle miles travelled. This can help identify which vehicles are over-performing and which ones present problems for the fleet.

Vehicle life can be extended when: adequate funding is not available, vehicle performs with relatively low maintenance costs, to maintain a healthy spare ratio.



*Remember, fill out the session review form.
We need to know how we can improve too!*

Todd Hansen

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QUESTIONS? COMMENTS?

Minimizing No-Shows and Late Cancels



Introduction: When a consumer fails to show up for a scheduled demand-response trip (or cancels after it is too late to schedule another consumer in his or her place), your agency has spent its resources on a wasted trip.

No-show events negatively impact on-time performance and service productivity:

First, when the initial event occurs (e.g., when the dispatcher and driver spend time trying to find the consumer, causing the driver to run late and decreasing the number of passengers the vehicle carries in the day).

Second, if another trip must be scheduled to pick up the consumer who initially no-showed.

Obviously, making two trips when one would have sufficed is inefficient for your agency.



Learning Objectives

At the end of this lesson you will be able to...

- Identify factors leading to no-shows/ late cancellations
- Explain how this impacts a transit agency cost
- Identify policies and procedures for managing
- Calculate potential productivity increases or cost saving

Instructor will introduce the learning objectives. **Read slide**



Activity: Determine Factors Influenced by the Transit Agency or Patron

DRIVING FACTORS



No-Shows & Late Cancellations

- Why do they occur?
- What are the driving factors?
- What impacts do no-shows have on service?
- How can you prevent no-shows?
- Why does it matter?

- Please list!

Ask participants the questions on the slide. **Wait for responses.**

The following slides provide answers to these questions.

Examples of Driving Factors


Transit Agency Influenced	Patron Influenced	
Preventable	Preventable	Unpreventable
Late pullout	Decided not to go	Ill or Emergency
Late time	Not ready	Attendant did not show
Late lost	Patron gave incorrect trip information	Mobility aide failure
Dispatcher did not record cancellation or remaining trips	Subscription trip not canceled on holiday	Transportation connection was late
Dispatcher transmitted incorrect information		
Reservation recorded incorrect information		
Dispatch/ driver mistakenly canceled wrong trip		
Patron could not get through telephone line		

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First, the instructor should ask the participants what factors cause no-shows and cancelations.

Record the list on a flip chart. After the participants list factors, show this table.

The table shows the driving factors. Compare the participants list to the table.



WHY MANAGING NO-SHOWS AND LATE CANCELLATIONS MATTER




Ask the participants to think about why managing no-shows and late cancellations matter.

Impact on Productivity and Cost

1. Dispatcher and driver spend time trying to find the patron, causing the driver to run late and decreasing the number of passengers the vehicle carries in the day
2. Scheduling of another pick up to transport the patron who initially no-showed

Results in: Decrease in passengers carried per hour of service, decline in on-time performance, impact to other patrons and increase in the cost per passenger

Explain the impact of no-shows to productivity and to cost.



Agencies that implemented and enforced written no-show and late-cancellation policies decreased rates (as a percentage of total trips) between 1 percent and 10 percent annually, significantly improving productivity and service quality.

TCRP Report 124

Discuss the significance to the operating budget as well as to service quality.



NO-SHOW AND LATE CANCELLATION POLICIES

The transit industry has no one way to manage no-shows and late cancellations, but you can reduce them through positive and negative reinforcement of consumer behavior. To that end, policies can be put in place. Let's talk about key elements to include in a no-show and late cancellation policy.

Policy - Key Items to Include

- Define no-shows and late cancellations
- Determine a value for “the number of excessive events” when consequences apply
 - Can you give examples?
- Establish penalties for consumers with excessive patterns of no-shows and late cancellations
 - Can you give examples?

The transit industry has no one way to manage no-shows and late cancellations, but you can reduce them through positive and negative reinforcement of consumer behavior. To that end, all policies should: **Read Slide.**

Policy Specific Considerations

- Specify number of hours before pick-up time consumer must call to cancel or be labeled a “late cancellation”
- Set threshold for the number of allowable no-shows and late cancellations before suspending a consumer or terminating services for him or her
- Call a no-show/ late patron before infractions reach the penalty threshold to remind him or her of the policy
- Let patron know that agency is tracking their actions, thereby discouraging abusive behavior
- Establish progressive disciplinary policy for repeat offenders

An example of a policy might be to begin with a verbal and advance to a written warning, then enforce a three- or seven-day suspension, and finally move on to termination of service for that patron.

- Specifying a number of hours before pick-up time in which the consumer must call to cancel or be labeled a “late cancellation.”
- Setting a threshold for the number of allowable no-shows and late cancellations before suspending a consumer or terminating services for him or her.
- Calling a no-show or late consumer before infractions reach the penalty threshold to remind him or her of the policy and upcoming penalties.
- Letting consumers know that your agency is tracking their actions, thereby discouraging abusive behavior.
- Establishing a progressive disciplinary policy for repeat offenders (e.g., begin with a verbal and advance to a written warning, then enforce a three- or seven-day suspension, and finally move on to termination of service for that consumer).

Other Policy Considerations to Encourage On-Time Behavior

- Fining or charging for no-shows or late cancellations
- Rewarding responsible patron (proven reliable over a defined period of time) with a free trip or other reward
- Requiring patrons with a history of no-shows or late cancellations to confirm their trips with dispatch at a specified period of time (e.g., a half hour) before the scheduled trip or the trip is canceled without penalty
- Contacting patrons with a problem history each night to confirm the next-day trip

Beyond suspension and termination, other penalties can discourage habitual no-shows and late cancellations, and incentives can encourage on-time behavior. Some examples of these include:

- Fining or charging for no-shows or late cancellations.
- Rewarding responsible consumers (proven reliable over a defined period of time) with a free trip or other reward.
- Requiring consumers with a history of no-shows or late cancellations to confirm their trips with dispatch at a specified period of time (e.g., a half hour) before the scheduled trip or the trip is canceled without penalty.
- Contacting consumers with a problem history each night to confirm the next-day trip.

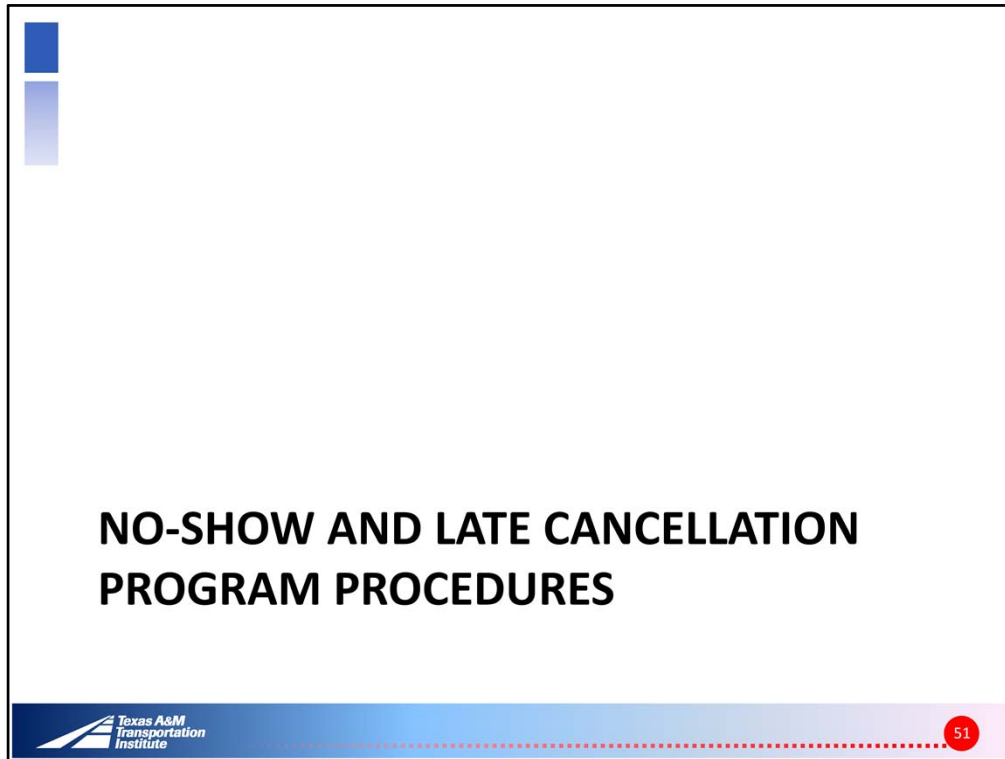
No One Right Answer

Consumer Behavior	Include Suspensions	Include Fines	No Fines or Suspensions
Excessive No-Shows	90.2%	20.3%	7.3%
Excessive Late Cancellations	56.2%	13.2%	40.5%

TCRP Synthesis 60

TCRP Synthesis 60 conducted a survey of transit agencies with written no-show and late cancellation policies. Table shows the results of the survey. **Note:** respondents could check more than one answer.

Discuss with class reasons for survey results.



To account for these, many no-show and late-cancellation policies and procedures include both a method for tracking the reason for the missed trip and a process for consumer appeal.

To determine whether no-shows and late cancellations are excessive (and therefore costly) to your agency, first consistently record and track them. Questions you can ask to determine if you can more efficiently manage costly consumers are included in the Guidebook.

What to Include in a Program

- Realistic expectations
- Consistently applied and monitored
- Means to cancel far in advance
- Good documentation
- Effective computer programs
- System to send letters
- Effective determination of fault
- Public outreach for input and communication

TCRP Synthesis 60 suggests that a comprehensive no-show program requires:

- Realistic expectations of consumers and drivers.
- Consistently applied operating procedures, particularly with respect to dispatch and drivers declaring an apparent consumer no-show.
- A means for consumers to cancel trips as far in advance as possible, including during times when the agency is not open for business.
- Good documentation based on a reliable, consistent method of recording no-shows and late cancellations.
- Effective computer programs that capture accurate information and produce reports that facilitate analysis.
- A system for sending letters to notify consumers about no-shows on a regular—perhaps daily—basis.
- An effective process for determining excused no-shows based on consistently applied criteria.
- A way to monitor no-shows and late cancellations on an ongoing basis and to impose suspensions at the appropriate time.
- Appropriate technological tools, such as computerized scheduling and dispatching, along with AVL and other technologies to manage no-shows and late cancellations.
- Public outreach to solicit input and educate consumers and their caregivers about the negative effects of no-shows and late cancellations.
- A recognition that imposing sanctions must be done with due process and concern for individuals who might rely on paratransit as their only source of transportation.

Driver Procedures

- Direct drivers to:
 - contact dispatch to confirm trip information
 - await instruction
 - attempt contact with patron (if appropriate)
 - confirm the no-show before proceeding (or wait until specified time)

TCRP Synthesis 60 reports that 91 percent of survey respondents said that, for no-shows, “drivers are directed to contact dispatch, either for instructions or to confirm the consumer no-show, before they proceed.” Most are instructed to wait five minutes before contacting dispatch for assistance. Of those agencies requiring dispatch confirmation, 15 percent instruct the driver to leave the vehicle to look for consumers, while 4 percent indicated they leave a door hanger or card. Some 53 percent of respondents indicated that, for no-shows, dispatch would attempt to contact the consumer before instructing the driver to declare the consumer a no-show.

Dispatcher/Reservationist Procedures to Prevent Errors

- Record information and repeat back
- Make same-day changes immediately
- Make future changes when convenient
- Use a trip-change form to record changes to make later
- Use a form to record changes to subscription/standing order trips
- If paper manifest, require drivers to use a form to record trip changes/added trips
- Train dispatchers to dispense trip information in a standard format

Late cancellations and no-shows are not always the fault of the consumer. Dispatchers and reservationists do make errors. To minimize these errors, procedures and forms for recording should be established:

- Record information while talking with the patron and repeat back to the patron to ensure reliability of information gathered
- Make changes and cancellations for same-day trips immediately. Make changes and cancellations for future trips when convenient (e.g., at the time of the call).
- Use a trip-change form to record changes to make later, after terminating contact with the patron. This improves agency efficiency when experiencing a large number of trip changes
- Use a form to record changes to subscription/standing trips that tracks the history of changes. Keep the form in the patron's file documenting the change request
- Use a form to record trip changes or added trip information if your agency requires drivers to record information on paper manifests. Provide the driver with proper instruction regarding the form's use (e.g., recording, in full, all information requested)
- Train dispatchers to dispense trip information in a standard format to facilitate drivers' use of the standardized format
- And consistently recording reservations, cancellations, and no-shows should be developed. Staff should be trained and monitored in using them.

Dispatch Procedures When No-Show Occurs

- Direct dispatchers to:
 - Attempt to contact patron to verify a return trip for that day
 - Call patrons who no-show on first trip of the day to determine if long-term issue
 - Cancel remaining trips for the day (or by policy)
 - Record circumstances using standardized form

TCRP Synthesis 60 reports that 91 percent of survey respondents said that, for no-shows, “drivers are directed to contact dispatch, either for instructions or to confirm the consumer no-show, before they proceed.” Most are instructed to wait five minutes before contacting dispatch for assistance. Of those agencies requiring dispatch confirmation, 15 percent instruct the driver to leave the vehicle to look for consumers, while 4 percent indicated they leave a door hanger or card. Some 53 percent of respondents indicated that, for no-shows, dispatch would attempt to contact the consumer before instructing the driver to declare the consumer a no-show.



Staff Tracking/Monitoring Procedures

- Direct staff tracking/managing no-shows to:
 - Determine whether the patron was at fault
 - Investigate locations causing no-shows and be proactive in canceling trips in advance (workshop holidays)
 - Mail postcards or letters to consumers advising them of the apparent no-show
 - Maintain record of circumstances of the event, recording arrival time, contact attempt, departure time



Example Analysis 1

Example Analysis 2

Category: Range of Weekly Trips Scheduled per Patron	Total No. of Patrons	Total No. of Trips Scheduled	Avg. No. of Trips Scheduled per Patron	Category No-Show Rate
10 Trips or More	20	259	13.0	9%
5 to 9 Trips	51	325	6.4	11%
3 to 4 Trips	42	151	3.6	18%
1 to 2 Trips	68	118	1.7	18%
Total	181	853	4.7	12%
No. of Patrons w/ at least one No-Show	58			
% of Patrons w/ at least one No-Show	32%			



POTENTIAL COST SAVINGS

Decreased No-Shows to Increase Productivity

	Current Service	Service with Reduction in No-Shows
Scheduled Passenger Trips	45,455	45,455
Actual Passenger Trips	40,000	42,728
No-Shows	5,455	2,728
No-Show Rate	12%	6%
Revenue Hours	20,000	20,000
Passengers per Hour	2.00	2.14
Operating Cost	\$1,000,000	\$1,000,000
Cost per Passenger Trip	\$25.00	\$23.40

By reducing the number of no-shows/late cancellations, you might free up a vehicle to provide more passenger trips (increasing productivity) or reduce the vehicle hours needed in service (decreasing service hours).

Ask participants what they notice on the tables.

Ask what is the savings in reducing no-shows per trip.

Ask what is the savings per year?

Decreased No-Shows to Reduce Service

Transit Agency	
No-Show Reduction	2,728
Passengers per Hour	2.00
Estimated Revenue Hour Reduction	1,364
Cost per Hour	\$50.00
Estimated Savings	\$68,200

As shown in Table, reducing no-shows/late cancellations can help you reduce required hours of service. The example shows a best case scenario decreasing service hours. Realistically, a one-to-one savings is unlikely. However the example provides a framework for estimating the financial impact of no-shows.

Review

- What factors lead to no-shows/late cancellations?
- How do no-shows impact a transit agencies cost?
- What are no-show incentives and disincentives?
- Give example policy/procedure for managing no-shows
- How much can you save managing no-shows?


What to Remember

You can reduce no-shows and late cancellations through positive and negative reinforcement of consumer behavior. By reducing the number of these incidents, you can free up a vehicle to provide more passenger trips (increasing productivity) or reduce the vehicle hours needed in service (decreasing service hours), thereby saving money for your agency.

To redress these problems, you must first construct rules defining exactly what no-shows and late cancellations are, what thresholds result in penalties (e.g., three no-shows in a month), and then enforce penalties for consumers with excessive patterns of breaking those rules. To better track reasons for wasted trips, create procedures and forms for accurately and consistently recording reservations, cancellations, and no-shows and train staff in how to use them. By tracking no-shows and late cancellations by category, your staff can target specific improvements for each category. By analyzing no-shows from multiple perspectives, you can even begin forecasting when no-shows are more likely.

Create reports from tracked information that sort no-shows in various ways to identify contributing factors causing the problems and where you might focus your efforts for improvement. Other strategies for reducing no-shows and late cancellations include consistent monitoring through performance measurement and assessment, as well as deliberate, fair enforcement of policies.

Remember, it's not always the consumer's fault; dispatchers and reservationists make errors. To protect consumers, include a method in your policies and procedures for tracking the reason for the missed trip, as well as a process for consumer appeal. To minimize agency costs from no-shows and late cancellations, consider a system for calling consumers who exhibit a pattern of no-show behavior. For example, call to remind consumers about Monday trips if Mondays have the highest no-show rate.



*Remember, fill out the session review form.
We need to know how we can improve too!*

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QUESTIONS? COMMENTS?

Choose A Breakout Session

- Contracting for Transit Services
- Future Trends and Forward Thinking Approaches



Contracting for Transit Services



Introduction: Public transit agencies use different approaches to deliver services, from using their own vehicles and personnel to enlisting outside contractors for some or all services. Agencies contract out services as a way to increase efficiency and reduce operating costs. Other reasons for contracting include more flexibility, improved customer service, better use of technology, and opportunities for regional coordination



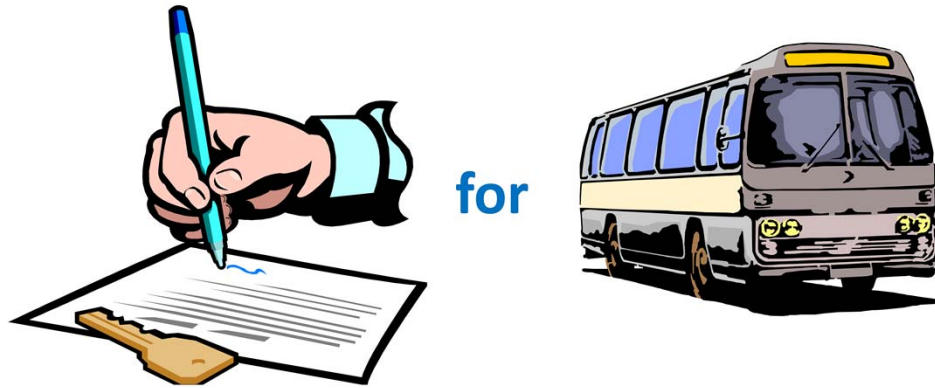
Learning Objectives

At the end of this lesson you will be able to...

- Name reasons why an agency might contract to deliver transit services
- Explain when it is feasible to reduce operating costs
- Identify potential cost savings and savings offsets
- Describe the steps for successful procurement process
- Identify best practices for contract management

Instructor will introduce the learning objectives. **Read slide**

Contracting for Transit Services



Contracting for services does not ensure lower costs. Successful contracting for transit services requires:

- Careful planning.
- A realistic assessment of the market and opportunities to save money.
- An effective procurement process followed by consistent performance monitoring and contractor oversight.



Scope of Contracted Services

- Management contract
- Transit services
- Turnkey contracts
 - Vehicles
 - Operating and maintenance (O&M) facilities

Transit agencies enter into contracts for different purposes and scopes of work. **Discuss types of contracted services.**

Types of Contractors

- Another transit agency
- Human service transportation provider or non-profit agency
- Private for profit transportation company

Discuss types of contractors.

Another transit agency – to take advantage of regional resources, focus on core strengths, or reduce administrative overhead.

Human service transportation provider/non-profit – to serve a niche market, improve customer service, or support the goals of regional coordination.

Private for profit – to reduce costs or improve efficiency. The private company might be a national, regional, or local transportation provider, or a private-for-hire transportation company (taxicab operator).

Activity: Discussion and Examples

- Activity: Group discussion

**Does your agency contract
for transit services? What type of contractor?**

- Examples from across Texas

- ?

Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.



Why? Why not?

REASONS FOR CONTRACTING TO DELIVER TRANSIT SERVICE

Texas A&M Transportation Institute

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According to the Transportation Research Board's (TRB's) *Special Report 258: Contracting for Bus and Demand-Responsive Transit Services*, reducing costs and improving operational efficiency are the most often cited reasons for contracting for transit services.

Why Contract for Transit Services?

- Secure specialized expertise
- Serve a niche market
- Enhance customer service
- Start new service or expand service quickly
- Avoid upfront capital costs by contracting for service and vehicles, especially for new service
- Reduce cost and improve operating efficiency

Transit Cooperative Research Program's *Research Results Digest 46: Supplemental Analysis of National Survey on Contracting Transit Services* supplements *Special Report 258* with other reasons for contracting transit services include: Read slide and discuss possible other reasons.

The National Center for Transit Research's (NCTR's) *Analysis of Contracting for Fixed Route Bus Service* suggests that, in addition to cost savings, contracting for transit services allows a public agency to shift risks associated with new service that can be easily withdrawn or modified if the service is unproductive.



Resources

- Transportation Research Board (TRB)
Special Report 258: Contracting for Bus and Demand-Responsive Transit Services
- Transit Cooperative Research Program (TCRP)
Research Results Digest 46: Supplemental Analysis of National Survey on Contracting Transit Services
- National Center for Transit Research (NCTR)
Analysis of Contracting for Fixed Route Bus Service



A contract for service may or may not reduce operating costs

HOW DOES A PRIVATE CONTRACTOR REDUCE COSTS?

Reasons a Contractor Might Reduce Costs

- Lower payroll costs – wages and benefits
- Work practices
- Lower administrative overhead
- Expertise
- Use of technology
- Cost-effective maintenance procedures
- Flexibility

The primary way that a private contractor can offer transit services at a lower price is through lower payroll costs—both wages and benefits. Traditionally, a privately owned transit operator could achieve economic efficiency because the work force was not unionized. Now, however, a private company is as likely to employ unionized workers as publicly operated agencies, although wages may still be lower. Today, the majority of financial savings are likely to accrue from not having to pay large public sector healthcare and retirement benefits to the contracted employees. Other reasons a private contractor can reduce operating costs include the following:

Work practices – private companies are often able to use labor and assets more efficiently with part-time personnel and flexible scheduling of service throughout the day.

Lower administrative overhead – a contractor might employ less administrative staff and have lower ratios for supervisors-to-drivers or -mechanics.

Expertise – private companies that specialize in a particular type of transit service—ADA complementary paratransit for example—might operate services more efficiently.

Use of technology – if the public agency has not invested in technology or has not achieved a level of proficiency in the use of technology, a private company can contribute not only increased efficiency and productivity but also improved customer service.

Cost-effective vehicle maintenance procedures – private companies might use industry best practices to schedule preventive maintenance inspections, enforce mechanic time for repairs according to standards for particular repair types, and manage parts inventory to limit cost. National companies might have the advantage of lower costs for larger quantities of parts purchased.

Flexibility – a private company might respond to changing situations more quickly, especially when needed to quickly start new service or expand an existing service.

Smaller transit agencies also report cost savings from contractors' assumption of supervisory and administrative burdens (1). A smaller agency might delay or avoid creating or expanding administrative staff by contracting for transit services.

Activity: Discussion and Examples

- Activity: Group discussion

Can you think of additional ways a contractor might be able to reduce the costs of providing transit services?

- Additional ways to reduce costs
 - ?

Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.

Savings Offsets – Possible Costs to Contract for Transit Services

- Transaction costs to procure transit services
- Agency transition costs, especially to change labor structure
- Agency contract management and oversight
- Contractor costs may increase with agency emphasis on performance

Contracting for transit services often results in reduced operating costs, but not always. Significant transaction costs are associated with third-party contracting, including procurement, contractor oversight, performance monitoring, and service coordination. Public transit agencies that have lower wages, less than generous benefit plans, and efficient work rules and administrative processes may find little financial benefit from contracting out because the transaction costs of contracting can be greater than the operational savings. The net financial savings of contracting out services might be minimal for small- to medium-sized agencies. The net financial savings of contracting out services might be minimal for small- to medium-sized agencies. In addition, transit agency needs can change over time in ways that affect the comparative advantages of contracting and operating services directly. Contracting can entail a trade-off between cost savings and service quality. Concerns over ensuring service quality might temper an agency's original desire to contain costs through contracting. Over time, as a transit agency exerts more control over service quality by imposing more stringent performance requirements in contracts, it is reasonable to expect contractor costs to rise.

Activity: Discussion and Examples

- Activity: Group discussion
 - Can you think of additional savings offsets?
- Additional costs to consider before contracting for transit services
 - ?

Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.

Is Contracting Transit Service a Good Option?

Possibly - Contracting might be cost-efficient

- Strong need for flexibility
- Level of service is easy to quantify
- Private agency can provide needed expertise
- Your agency has relatively high costs for...
 - Wages
 - Generous benefits
 - Restrictive work rules

Before making the decision to contract for transit services, weigh costs associated with developing and administering the contract against the expected savings in operating costs and other benefits of contracting.

Whether or not directly operated service or a private contractor is more cost effective will depend on a number of factors such as size of your agency, the type of services you provide, and the competitive market in the geographic area.

Discuss possible reasons why a good option. Read Slide.

Political, social, and institutional conditions as well as economic criteria influence the local decision to contract. A contracting strategy is only a viable option to improve cost efficiency in transit services when a transit agency carefully chooses the service level to contract based on an adequate assessment of conditions.

Is Contracting Transit Service a Good Option?

Probably Not - Contracting might increase cost

- Potential cost savings not easy to calculate
- Estimated costs savings are minimal
- Lower cost may sacrifice effectiveness
- Lack of private sector competition
- Procurement is not transparent
- Agency sacrifices public control

Discuss reasons contracting for transit service may not be a good option. Read Slide.



Activity: Case Study Example

- Please take a few minutes to review information for the case study agency

Should the case study agency considering contracting for transit services?
- Why? Why not?

Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.

Effects on Agency Employees

- Transit agencies must confer with legal counsel to determine the applicability and impact of federal protections for transit workers
- You must assess risk associated with Section 13c of the Federal Transit Act



Existing employees will also be a consideration if your agency directly operates current services and is considering contracting those services to a third party. Procurement specifications can require the private contractor to offer employment to existing agency employees affected by the change as long as each employee meets the required background check and physical examination, including drug and alcohol tests.


Transit agencies must confer with legal counsel to determine the applicability and impact of federal protections for transit workers.

Contracting usually means lower wages and a reduction in benefits for employees. Your agency can set a standard for minimum wages and payroll benefits for employees of contractors; however, such standards can increase the contractor's costs and, thus, offset the savings you hoped to achieve by contracting out services. You must also assess risk associated with Section 13(c) of the Federal Transit Act.





Resources

- U.S. Department of Labor Fact Sheet on Protections for Transit Workers.
http://www.dol.gov/olms/regs/compliance/special_warranty.htm
- Transit Cooperative Research Program, Legal Research Digest, Transit Labor Protection-A Guide to Section 13(c) Federal Transit Act, Transportation Research Board, Washington D.C., June 1995.



Requirements in the contractor scope of services can impact cost savings

DEVELOPING A SCOPE OF SERVICES



The first step of a cost comparison requires a clear and specific statement of the scope of services to be provided by the private contractor and a delineation of the optional services and assets, if any, to be included in the scope. You must also consider savings offsets by administrative and transition costs incurred when engaging a contractor.

Develop a Clear and Specific Scope of Services

- Describe the span of service
- Specify the level of service
- Identify the resources required
- Outline minimum expectation for supervision, management, and administration
- Establish performance standards
- Define link between level of service and performance requirements

A clear and specific scope of services for transit includes: **Read slide.**

Items in Scope of Services that Can Significantly Impact Cost

- Fuel
- Insurance
- Vehicle maintenance
- Reservations & scheduling demand response
- Routing & scheduling fixed route transit
- Dispatch
- Technology
- Vehicles
- O&M facility

Other items in the scope of services can significantly impact costs. The public transit agency could choose to supply the following services and assets (or include one or more of the items in the contract for transit services). This is a sample list of optional services and assets and does not include all options: **Read Slide.**

Is Contracting Turnkey a Good Option for Your Agency?

- Elements of a Turnkey contract
 - Service
 - Maintenance
 - Vehicles
 - O&M Facility
- Benefits
 - Contractor provides capital investment
- Risks
 - Contractor owns the capital assets
 - Increases operating costs to include amortized capital

Discuss the elements of a turnkey contract and potential benefits and risks.

Capital Cost of Contracting

- Contracting for turnkey transit services may permit some expenses to be eligible as capital expenses (80% capital cost reimbursement)
 - Maintenance
 - Vehicle cost
 - Operations facility cost
- Must be a private contractor
- Review the most recent legislation and FTA guidance

Another reason to consider contracting is to leverage as much funding as possible from FTA Section 5307. Public transit agencies that receive funds from the Section 5307 Large Urban program are required to use the funds for capital costs, not operating expenses.

There is some flexibility, however, to recover the capital costs of contracting—the capital investments of the private contractor to deliver the transit services under contract. Public transit agencies are cautioned to review the most recent federal legislation and FTA guidance for Circular 9030.1D Urbanized Area Formula Program: Program Guidance and Application Instructions to understand the applicability of the provisions for funding the capital cost of contracting



Activity: Discussion and Examples

- Activity: Group discussion

**Has your agency had experience applying the
Capital Cost of Contracting benefit for a
turnkey contract?**

- Tell us about your experience

Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.



Resources

- Federal Transit Administration, Circular 9030.1D Urbanized Area Formula Program: Program Guidance and Application Instructions, Last Revision May 10, 2010.



The method matters, affects outcome

CHOOSING THE RIGHT PROCUREMENT PROCESS



Assess Competitive Market

- Research possible contractors
- Issue a request for interest
- Provide an opportunity for open discussion
- Hold a pre-proposal conference

Public agencies need to know, preferably in advance, if they are likely to receive competitive responses to a solicitation for transit services. Prospective vendors can also provide helpful feedback on a draft description of the scope of services to ensure the solicitation can be adequately addressed by vendors. Suggested ways to solicit feedback from contractors include: **Read Slide.**

Types of Procurement

- Invitation for bid (IFB)
- Request for proposals (RFP)
- Two-step procurement
- Best value procurement
- Non-competitive procurement

Competitive procurements include contracts awarded in several different ways: **Read Slide.**

- Solely based on low bid.
- Through a process where price is one of the several factors considered.
- Through a two-phased process in which the lowest price among qualified entries is accepted.
- By best-value negotiation.
- Other negotiated procurements might include sole-source negotiations or interlocal agreements with other governmental agencies.

Since procurement methods are often governed by state and local law, consider conferring with the local procurement officer to select the best type of procurement that conforms to local statutory requirements.

Invitation for Bid (IFB)

One method of competitive procurement is the IFB. This method is used most often for obtaining commonly transacted goods but less frequently for the provision of services. When the IFB is used, the agency usually has a high degree of certainty about the bid price range because of the well-understood nature of the deliverable. Bids are commonly sealed, and the bidders and agency have limited opportunity for communication before and during the bid period.

Final selection of the contractor is usually based on low price. Nevertheless, even many IFBs contain language limiting the award to the lowest *responsive* bidder (i.e., the agency

might refuse to award the contract to a low bidder that does not meet minimum levels of licensing, bonding, and financial wherewithal).

Request for Proposals (RFP)

The RFP is perhaps the most commonly used method to purchase transit services. Usually an agency describes the product or service it is seeking and openly solicits both technical and cost proposals. The RFP is used when the product or service being sought is complex and difficult to describe in detailed specifications, so it typically contains a general description of the desired product or service. Therefore, responding contractors have the opportunity to be creative and convincing about their capabilities.

In the case of an RFP for transit services, an agency might ask the contractor for a technical proposal that describes its startup plans, transition plans, key management personnel, inspection and maintenance programs, and personnel hiring and retention programs. Likewise, you might ask the contractor for a business proposal that gives detailed cost assumptions, including expectations about wage rates and other factors that account for the proposed price.

The soliciting agency might score each of the proposals separately, and the agency might then negotiate the specific contract terms with the winner. Thus, price might not be the primary determinant of the winning proposal—although price typically remains a critical factor, according to FTA's *Best Practices Procurement Manual*.

Two-Step Procurement

Agencies sometimes use a two-step procurement process to limit the pool of respondents to those that meet certain qualifications. Proposers are prequalified through a request for qualifications to ensure technical capabilities, financial capacity, and other qualifications, such as proper licensing and insurability. An agency would only issue the second step to prequalified contractors. Often the second step is an IFB, and the lowest price among the qualified contractors dictates the winning bid. The second step can also be an RFP, with final proposals evaluated based on a combination of qualifications and price (see the discussion of *best value procurement* next).

Best Value Procurement

A variation on the two-step procurement, best value also calls for a two-phase process for contract award. An agency selects a limited group of proposers based on qualifications and general approach to the project, then examines detailed proposals from those short-listed proposers, choosing the ultimate winner on a *best value basis*.

The best value method calls for ranking proposals based on the scores each receives for evaluation factors in the solicitation document. The factors will include cost but might also include qualitative measures such as past performance, management plan, and staff expertise. The agency might award the contract after the initial evaluation, or it might discuss proposals with those considered competitive and then permit the short listed proposers to submit their best and final offers.

Non-Competitive Procurement

Example: Public Provider Competition

The Fort Worth Transportation Authority (The T) responded to an RFP from the Northeast Transportation Services (NETS). NETS selected The T to provide transit services based on:

- Qualifications to supervise transit services.
- The merits of a proposed subcontract to a private non-for-profit to operate transit services.
- Price.
- Negotiated (non-competitive) procurements might apply in the case of sole-source negotiations or interlocal agreements with other governmental agencies. Sole-source procurements are usually for small purchases or in cases where a product or service is sought from another government agency. FTA regulations for third-party contracting prescribe specific steps for documentation and approval of sole-source procurement.

In Texas, the Interlocal Cooperation Act (Government Code, Chapter 791: Interlocal Cooperation Act) encourages the maximum cooperation between local governments to improve their efficiency and effectiveness. This act allows local governments the greatest freedom in contracting to provide governmental functions and services.

Activity: Choosing the Best Procurement Method

- Activity: Please take a few minutes to review the list of procurement methods and contracting opportunities

Match each procurement method to the most appropriate contracting opportunity?

- Discuss the best match and why



Ask participants the questions on the slide. **Wait for responses.**

Use flip chart or white board to record responses for class.



Resources

- Federal Transit Administration, Best Practices Procurement Manual, Issued November 2001, Last Revision October 2005.
- Federal Transit Administration, Third Party Contracting Guidance (FTA Circular 4220.1F), Revised April 14, 2009.
- Federal Acquisition Regulations (FAR), FAR 37.6 Service Contracts.

<https://www.acquisition.gov/FAR/>



Agencies that contract for transit services most often identify the possible negative effects of doing so as:

- Loss of operational control.
- Shortcomings in service quality.
- Problems with customer service.

Transit systems that report successful contracting have found ways to achieve acceptable levels regarding these issues. Factors that correlate with agency satisfaction include:

- Engaging as a team and maintaining communication with the contractor.
- Using a competitive selection process not based solely on cost.
- Assigning a combination of rewards and penalties for the contractor based on performance.
- Flexibility to address issues as they come up and adapt to changing conditions.
- Agencies with the most positive contracting experiences establish a balance between working with their contractors to ensure high-quality service (addressing issues as they come up) and invoking appropriate penalties for unsatisfactory performance.

Agencies with the most positive contracting experiences establish a balance between working with their contractors to ensure high-quality service and invoking appropriate penalties for unsatisfactory performance.

You should define the quality of transit services to be delivered thoroughly and formally in contract documents. However, not all the qualitative aspects of transit service can be articulated in a set of specifications. Contract monitoring, oversight, and management are

also required. Communicate with the contractor frequently and openly about performance expectations

Suggestions for Selecting the Contractor

- Consider cost and qualifications
- Clearly define selection criteria
- Use internal cost estimates as a baseline
- Contact with your peers for references
- Ask contractors to self-identify issues in previous performance
- Research if the issues were remedied

Recommendations for selecting the contractor are covered in more detail in the Guidebook. Highlights are presented here: **Read Slide.**

Ensuring Quality Service

- Maintain public control of strategic planning, service and performance standards
- Outline all duties and roles of all parties
- Establish clear mechanism to make changes
- Define all expectations for service quality
- Use performance measures and reporting practices to monitor quality
- Include penalties & rewards for performance

Do not yield too much public control to the contractor. Maintain overall control of strategic planning, service requirements and levels, and performance standards. For demand-responsive services, maintaining control of service requirements and levels can include retaining responsibility for reservations and scheduling of passenger trips within your agency.

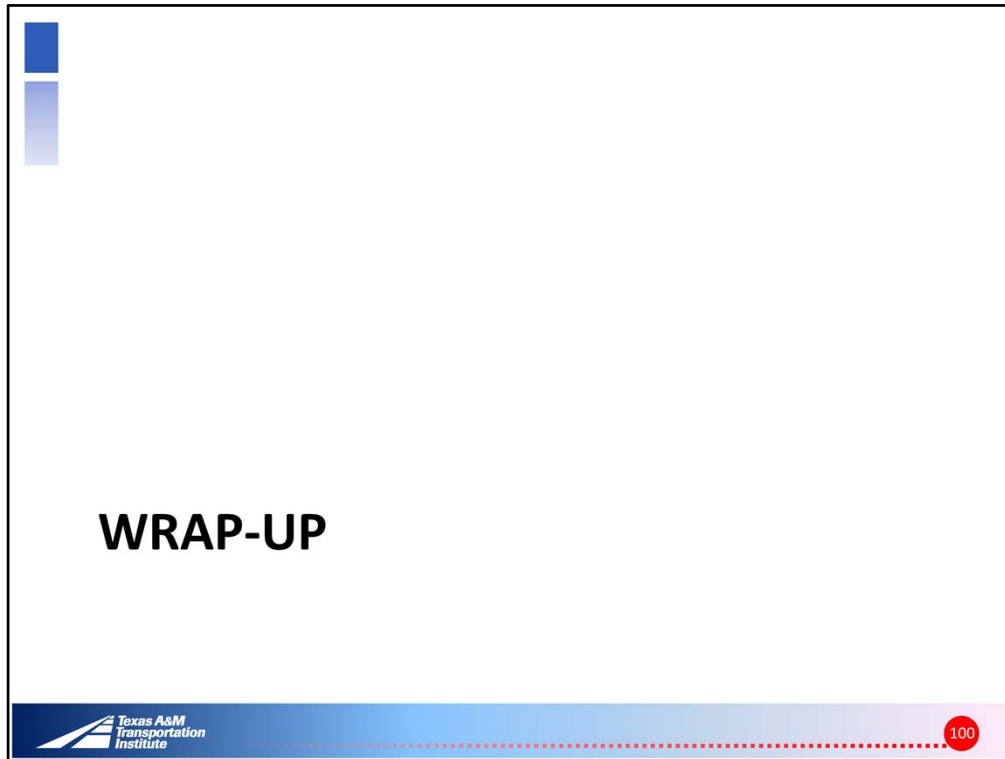
Attributes of Good Performance Measures

- Relevancy
- Understandable
- Comparable
- Timely
- Reliable



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You must monitor contractor performance and enforce the terms of the contract. Identify the performance measures and the standards for performance in the procurement documents.



By and large, agencies contract out transit services to increase efficiency and reduce operating costs. You can enter into agreements with a human service transportation provider or non-profit agency, a for-profit private company, or another public agency via an *interlocal agreement*. Successful contracting requires careful planning, a realistic assessment of the chances to save money, and a good procurement process followed by consistent oversight of the contractor's work.

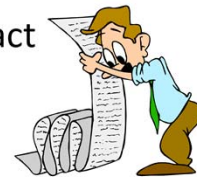
Be aware contracting for transit services does not automatically ensure lower costs. Run the numbers prior to the procurement process to ensure that contracting costs do not outweigh savings. Agencies find it most effective to contract for services when they need flexibility to expand or add new service, the level of service is easy to quantify, agency costs (e.g., salaries and benefits) are high, or the contractor can provide more expertise. Be aware, however, that contracting usually means lower wages and benefits for agency employees. Confer with legal counsel to determine if Section 13c of the Federal Transit Act applies to your agency.

When looking to engage a contractor, be sure to follow federal guidelines for third-party contracting and use best practices during the competitive procurement process. Construct a clear and specific scope of services; ensure the contract term is appropriate for the services scoped; and establish an appropriate basis for payment. Choose the right procurement method for your agency's unique circumstances. When evaluating proposals, ask peers about their experiences with specific contractors.


Maintain overall control of strategic planning, service requirements and levels, and performance standards. Monitor contractor performance and enforce the contract's terms. Identify measures for ensuring performance meets your agency's expectations as stipulated in the contract. Incorporate incentives and disincentives in the payment provisions to encourage compliance with service standards. Contracting services works best for agencies when they work with contractors to ensure high-quality service (addressing issues as they come up) and invoke appropriate contractual penalties when contractors perform unsatisfactorily.

Review

- Why might an agency contract transit services?
- What are some circumstances that make it feasible for a private contractor to reduce operating costs?
- What are the cost savings and savings offsets to consider before contracting for services?
- What are the steps for successful procurement?
- What are best practices for effective contract management?



Instructor verifies learning objectives by asking questions.



*Remember, fill out the session review form.
We need to know how we can improve too!*

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QUESTIONS? COMMENTS?

Future Trends and Forward Thinking Approaches





OVERVIEW: Cost-Saving Categories

- Use of technology.
- Innovative service design
- Fleet mix and fuel efficiency.

With the current economic environment, transit agencies will benefit from fresh perspectives and new thinking in order to face these fiscal challenges. Innovations in **technology**, trends in **multi-modal approaches to service delivery and design** and innovations in transit **fleet mix** are important considerations for transit administrators to consider.

How Demographic shifts are impacting transit service providers:

- The Texas Statewide Long-Range Transportation Plan for 2035 (The Texas Department of Transportation 2010) indicates an “anticipated public transportation capital investment” (SPCI) for rural and small urban transit systems as **5%** of total SPCI between 2006 and 2035.
- During the same period, they project a total increase of **14.7%** in available operating funds for these service areas.
- During a similar period, (2006 – 2040), the Texas Data Center projects that Texans 65 or older will double to 18% of total population.
- Rural and small urban transit service providers will be serving an increasingly transit dependent population who will occupy over 75% of the total land area with a disproportionate portion of available funding to serve their riders. There will be an increasing need for multi-modal integration to increase service effectiveness.

Learning Objectives

At the end of this lesson you will discover how your peers:

- Use Technology and Social Media to connect system information and the customer and contain costs
- Develop service designs that maximize efficiency
- Establish fleet mix characteristics which help reduce cost

Additionally, you will learn:

- Examples of Statewide and National examples which have helped contain costs
- Where/how to research and identify more approaches



UNDERSTANDING AND IMPLEMENTING NEW AND RECENT TECHNOLOGY

Instructor should ask participants to prepare for the next section by marking Technology on the top of a blank sheet of paper. In the next two slides, they will document a brief description of how their transit system documents or provides for:

- How they conduct Fleet Maintenance and track costs;
- How their call takers and/or trip planners schedule trips;
- How they convey Route and Trip Information to drivers;
- How they communicate with their drivers once they are on route

Technology Purposes

Technology Type	Purpose
Fleet Maintenance Software	Able to track repair, capital maintenance and consumables costs by vehicle, across a fleet or disaggregated by fleet type or service purpose.
Dispatch and Scheduling Software	Software designed primarily to dispatch demand-response trips and trip updates. Can be used to dispatch modified fixed-route trips and provide drivers real-time road and schedule information regardless of service type.
Mobile Data Computers and similar devices	Hardware such as on-bus terminals, computer tables with WiFi and smart phones. AVL hardware and GIS software
Communication Systems	Two-way radio systems or Cell tower based phone systems

Participants should now use each of the four job functions previously noted to construct their own brief matrix which outlines how they currently process each of the four tasks:

- How they conduct Fleet Maintenance and track costs;
- How their call takers and/or trip planners schedule trips;
- How they convey Route and Trip Information to drivers;
- How they communicate with their drivers once they are on route

Participants need not share this information with others; their documentation will allow them to take notes on technology noted in the next slide and in discussions with their peers during the Exercise later in the presentation.


Technology Benefits

Technology	Benefits
Fleet Maintenance Software	<ul style="list-style-type: none"> Track and schedule preventive maintenance inspections. Understand actual operating costs through development of periodic reports. Develop centralized maintenance scheduling and repair, including regional maintenance sites shared by multiple transit providers.
Dispatch and Scheduling Software	<ul style="list-style-type: none"> Increase passenger boardings per vehicle trip. Improve real-time information from satellite service centers to centralized dispatch centers. Increase the ability of a central-dispatch facility to update driver schedule information in real-time. Enable planning staff to extract trip reports to help evaluate route performance.
Mobile Data Computers and Similar Devices ³	<ul style="list-style-type: none"> Convey scheduling information directly to drivers, improving communication efficiency re: schedule information. Facilitate driver reassignment (e.g., change trip assignments) on short notice. Enables trip report information to flow directly back to central dispatch in real time. Forecast arrival of buses at locations.
Communication Systems	<ul style="list-style-type: none"> Leverage a regional radio- or cell-tower platform capable of linking your entire service area (allows for centralized control of dispatch and scheduling).

The Instructor should list each Technology and after noting the benefits of each, should ask participants to list products they currently use to meet the needs for each purpose type.

Record participant input of technology their system uses for each purpose on a flip chart. After participants provide examples of technology products, proceed to next technology category.

Post flip chart sheets for technology for reference during Exercise.



The popularity of web-based networking sites such as Facebook, Twitter, and blogs have led private enterprise and government to embrace these channels for communicating with customers.

TCRP Synthesis 99

New and Recent Technology



Social Media (the Other Technology)

Types of Social Media

- Facebook
- LinkedIn
- Twitter
- Blogs

New and Recent Technology



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While no respondents reported that they use social media to communicate with current or potential passengers, rural-service areas across the country are beginning to use social media. Empirical data suggests that transit peers locally and nationally have begun to use sites such as LinkedIn as a way to communicate with their peers in the transit industry.

Social Media

Transit agency uses for social media:

1. Better engage with citizen feedback
2. Enlighten passengers with more detailed route and schedule information
3. Provide prompt updates regarding service changes or disruptions

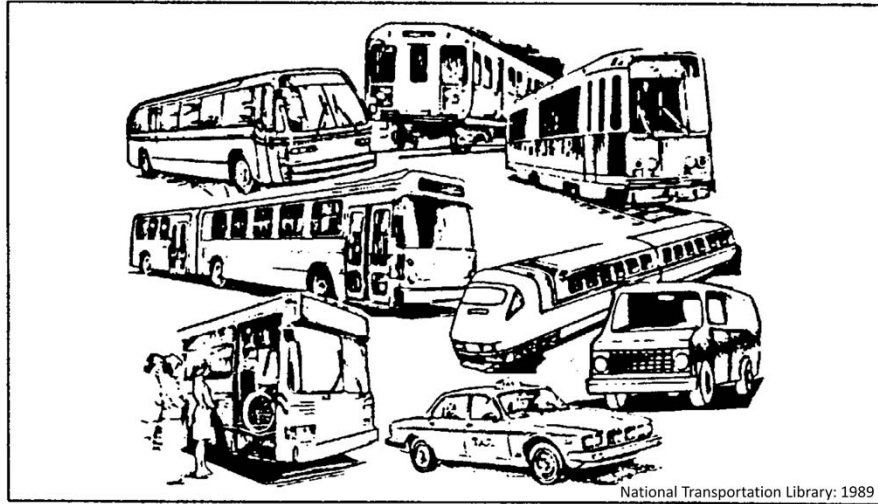
New and Recent Technology



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Points to cover in greater detail:

- Not a panacea, and subscribers can become deaf with information overload: A friend's daughter recently had all her classes dropped due to late payment of tuition. Upon investigation, her father found that she had been sent multiple text messages from the University instructing her as to payment deadlines. When confronted by her father, she indicated that "the University sends me text messages every day; I just delete them. I only listen to voicemail from them".
- Nextbus at Texas State allows the University to send out bus system, route or stop updates. Users see this information when using the real-time bus website or cell phone application.
 - a) To avoid user fatigue, content needs to be fresh and accurate.
 - b) Success needs to come with investment; proper staffing is essential
 - c) Use of sites like Facebook allow customers to post crows of success...and complain about your shortcomings. While it can be used to reach new riders and communicate with existing riders, sites that allow for customer input must be managed and maintained.



National Transportation Library: 1989

INNOVATIVE SERVICE DESIGN AND IMPACT OF CHANGING DEMOGRAPHICS

Tools: Four-Step Model

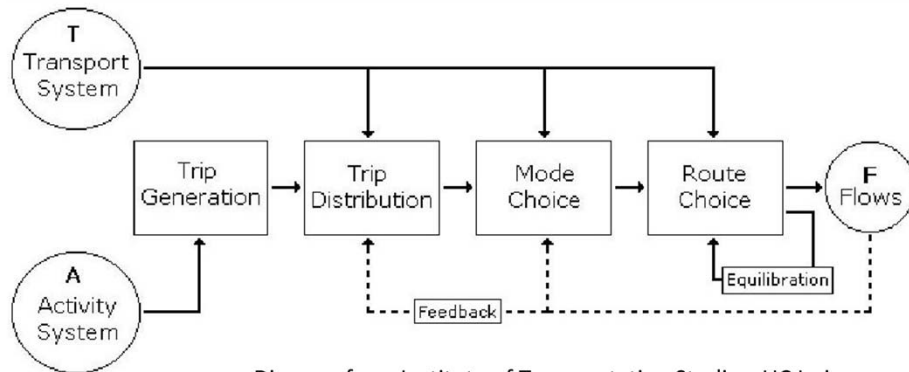


Diagram from Institute of Transportation Studies, UC Irvine

Innovative Service design and impact of changing demographics



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Most transit agencies identify using portions of the four-step transportation model to improve efficiency on both demand and fixed-route systems; this is basic Planning 101 which may not be directly identified by the agency as such, but valuable in terms of developing or modifying service design when challenged by quickly changing demographics and/or a limited operating budget. Primary strategies focus on identifying trip generators and maximizing route assignments using trip-generation and drip distribution data.

Data, (to identify trip generators and trip distribution), come most often from:

- Data sets and GIS files available from local MPOs and COGs
- Data reports available for export from most dispatch and scheduling software, (often available and un or under-utilized where transit operators have computerized dispatch and scheduling software)

Engage participants by asking them to identify data opportunities they may tap into locally.

- Do they use dispatch and scheduling software? (general question)
- Have they used this tool to access data by region to plan or coordinate routes or services? (input from individuals)

Service Innovations

Occur when transit agencies adapt themselves to:

- Changing demographics
- New Technology
- Economic Challenges

Innovative Service design and impact of changing demographics

Common sense is not always common practice.

- Census data available through your MPO or COG can help identify trip demand
- New Technology (dispatch and scheduling software), can help identify the demand for client-based services; repeat ridership; trends in ridership and allow the provider to develop new routes and services. Available technology can help you identify opportunities for trip grouping; out-sourcing, (connecting to other service providers); identify where and when fixed-routes become viable



Coordination vs. Connectivity

- Coordination: implies the ability to maximize resources within a specific service area with service often provided by one agency serving the general public and/or multiple social service agencies

Innovative Service design and impact of changing demographics



Coordination vs. Connectivity

- Connectivity: development of inter-agency or inter-governmental service agreements between service agencies

Innovative Service design and impact of changing demographics

Provides the ability to expand service range to better meet passengers' trip needs. Expansion of service alternatives through connection with other service providers expands the network of routes and destinations available without a corresponding increase in cost.

Connectivity - Advantages

- Seamless fare payment
- Connect rural and urban providers with consistent branding
- Improved service frequency
- Enhanced route information

Innovative Service design and impact of changing demographics



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Fare payment: Operators such as CARTS have worked with urban districts such as Capital Metro to link their fare media and media devices to allow use of one fare card to travel between or on two carriers, CARTS and Capital Metro.

Consistent Branding: CARTS provides service linking rural areas to Austin UZA with Capital Metro branded buses. Passengers seamlessly associate one carrier with trips between Elgin and downtown Austin; use one form of payment.

Improved service frequency: Ability to provide more frequent service from rural areas by limiting route length. Rural service connects to an outer urban service hub; multiple destination points from hub vs. point to point service.

Enhanced route information: Central clearinghouse of information provides links to all trip possibilities in linked network. Riders may seamlessly plan their trips to multiple destinations from more than one service provider when these providers “connect” their services through shared stops; shared or linked web information; and timed service connections.



FLEET MIX AND FUEL EFFICIENCY

Fleet Mix

- Optimal Vehicle Size (demand based)
- Larger Vehicles to enhance ridesharing
- Optimal Vehicle Type (low-floor)

Fleet Mix and fuel efficiency



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Vehicle Size:

- Takes into account current and projected ridership over the useful life of the bus. Variable cost of operating 20-passenger bus is much greater than a 12-passenger bus; ability to coordinate and connect services and service providers may be enhanced with a larger bus.
- Given their relatively small boarding-per-hour ratio, several providers of paratransit or medical transit services indicate a need for a more heterogeneous fleet to give them more deployment choices to meet capacity demands while more effectively allocating agency resources

Larger Vehicles: May be considered by some providers with vans to allow trip matching and trip grouping.

Vehicle Type: Several transit providers reported shifting a substantial portion of their fleet to low-floor vans and buses to speed boarding times for passengers using wheelchairs.

Low Floor: Falls Ride's fleet currently has 14 buses, eight low-floor Gillig and six El Dorado XHF vehicles. All buses are 35' purpose-built transit buses with a mix of low- and high-floor configurations. The agency is transitioning toward one bus type, the Gillig, and was due to replace two XHF buses at the time this guidebook was written. The fleet should be fully transitioned to low-floor by 2016.

Given that Falls Ride's service type is route-deviation, the agency consistently anticipates the need for multiple-lift deployments throughout the service day. **Shifting to the low-floor bus design has sped up passenger boarding times by deployment of a ramp instead of a lift.** Many passengers have limited mobility and benefit from this quick-deployment option; it also facilitates access compared with the high-floor design that, without deployment of the lift, can only kneel to the curb while still requiring passengers to climb the last few steps.

Fleet Mix Criteria

- Maintenance
 - Ability to maintain fleet in-house
 - Standardized components such as engine, drive train, HVAC and other major components



Fleet Mix and fuel efficiency

Since 2006, CARTS began maintaining a small sub-fleet of Crown Victoria automobiles. These vehicles can:

- Transport single passengers or smaller groups while achieving higher gas mileage.
- Lower repair and maintenance costs.
- Burn E85 fuel (i.e., are dual-fuel capable)

Fleet Mix Criteria

- Fleet Mix
 - Lift vs. low-floor ramp equipped
 - Homogenous Fleet Design

Fleet Mix and fuel efficiency



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Lift vs. Ramp: Shift to low-floor ramp equipped by some providers to reduce maintenance costs, (earlier slide); and ease and speed for boarding and debarking passengers; ease of use in training for drivers using ramps.

Homogeneous Fleet Design:

- Reduces Parts inventory
- Less Mechanic training
- Standardized parts inventory
- Standardized PM and inspection process

Fleet Mix - Maintenance

- Development of Regional Maintenance Facility
- Contracting with another Government or transit provider for maintenance
- Expanding in-house maintenance to reduce reliance on third-party providers

Fleet Mix and fuel efficiency



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Regional Maintenance Facility: One agency has finished a regional central maintenance facility that provides service to its urban- and rural-transit systems. Several others are developing a similar arrangement. The two greatest challenges to developing these facilities are funding and distance

• In 2005, Waco Transit became the first Texas agency to fully deploy a regional maintenance facility for their small-urban fleet and the fleet of the Heart of Texas Rural Transit District (HOTRTD, Waco's rural provider). Drawing from the larger combined fleet and two maintenance budgets allowed them to pay mechanics a more competitive wage and distribute the facility's capital costs between two transit systems. Waco received funding from FTA 5309 in 2002. Intended to service both Waco Transit and HOTRTD, the facility was constructed at a cost of \$5.2 million

• One implementation challenge was to ensure all parties understood their fleets' existing state of good repair. Then, each agency had to assess the cost-benefit of bringing those fleets up to an acceptable operating standard by identifying and addressing all repairs and implementing standardized preventive maintenance procedures. As a result, HOTRTD saw an initial increase in maintenance costs, but these costs leveled out after the first 18 months; HOTRTD's fleet reliability has improved

Expanded in-house Maintenance:

Within Killeen and Temple, HCTD developed and has begun to deploy a three-step

process to centralize repairs:

- Bring fleet maintenance in house using industry standards for preventive maintenance inspection and repairs.
- Computerize preventive-maintenance scheduling and reporting to track costs and control quality.
- Merge urban functions into one central urban-maintenance facility to minimize maintenance travel and enable the sharing of fleet resources between its two urban service areas.



Fuel Efficiency

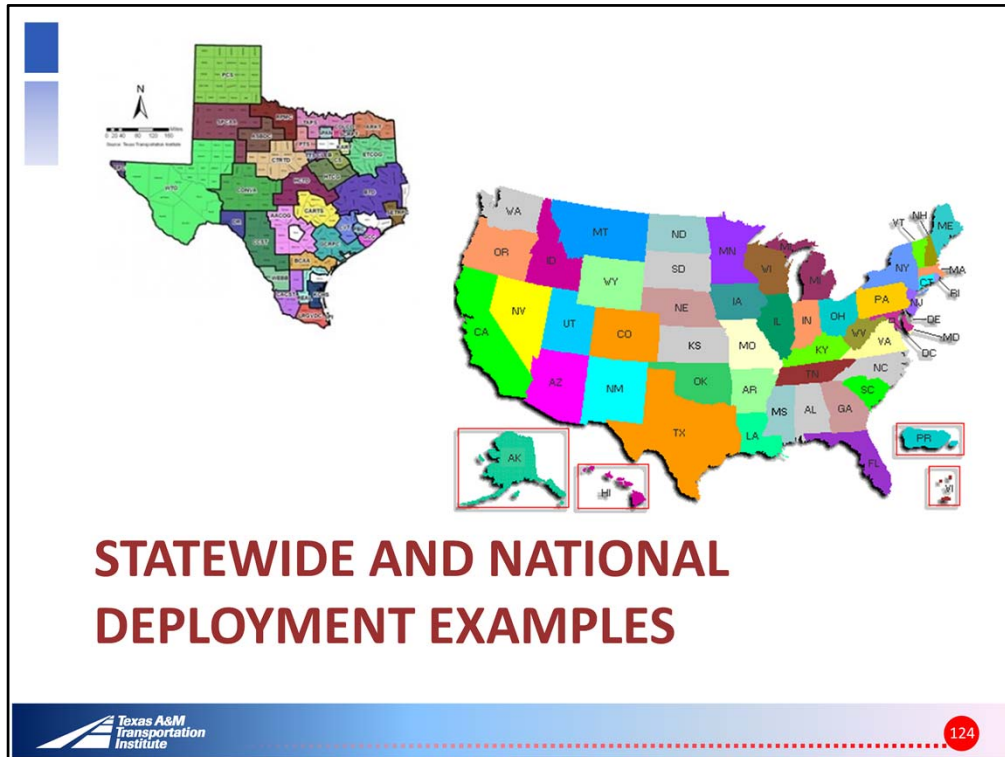
- Negotiating bulk fuel purchases with vendors to reduce cost.
- Providing on-site refilling at local facilities
- Controlling the fuel quality delivered and used

Fleet Mix and fuel efficiency



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CARTS has used propane to varying degrees of success since 1981 and has set an agency goal of eventually having 40 percent of its fleet run on propane. In the last three years, CARTS has developed its own propane fueling stations. This has reduced fuel costs through the ability to provide bulk fuel purchase contracts; reduced deadhead with onsite refilling at local facilities; and increases reliability of fuel quality, (especially important for propane vehicles).



New and Recent Technology

Lessons Learned: Assigning Tablets to Drivers to Capture Trip Information Fort Smith Transit

After assessing MDCs for their demand-response fleet, Fort Smith Transit in Arkansas purchased tablets for each driver for \$700 each (compared to \$3,000 per MDC). The agency purchased extra units for relief drivers and as spares. Drivers have individual email addresses, so schedules are dispatched directly to each driver's tablet instead of an assigned vehicle. Other advantages of the tablets include:

- More accurate tracking of passengers per hour
- Drivers receive updated schedules in real time
- Rapid reprogramming allows for quick replacement or reassignment.
- A low-cost software application allows rich data entry
- Language translation abilities
- Individually assigning tablets allow after hours driver contact
- Using off-the-shelf applications
- Monthly operational costs are limited to the cell data plans for each tablet.
- Using a locator application enables dispatchers to find specific vehicles on duty.

Fort Smith Transit employed drivers who had "never turned on a computer," but the agency trained and transitioned all drivers to this paperless system using multiple applications installed on the tablets.

Statewide and national deployment examples



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Lesson Points for Fort Smith in deployment of tablet technology:

- More accurate tracking of passengers per hour and more efficiently scheduling trips per driver, resulting in an average savings of 2.5 hours per route/day.
- Drivers receive updated schedules in real time and return information back to central dispatch upon trip completion.
- Rapid reprogramming allows for quick replacement or reassignment.
- A low-cost software application enables fixed-route drivers to submit ridership, stop, mileage, and fuel data directly to dispatch.
- Installing a language translator allows drivers to conduct basic communication with Spanish-speaking riders.
- Individually assigning tablets means drivers can take them home, providing low-cost, efficient communication between dispatch and drivers after hours.
- Using off-the-shelf applications has limited agency costs to the up-front investment of the tablet and applications (and new applications are continually being developed...be cautious of Beta development).
- Monthly operational costs are limited to the cell data plans for each tablet; those not required for several months may be temporarily deactivated.
- Using a locator application enables dispatchers to find specific vehicles on duty. Though not as robust as an AVL/GIS package—which can locate all vehicles in a system or track specific routes—the app provides an effective low-cost starter system.

Fort Smith Transit employed drivers who had “never turned on a computer,” but the agency trained and transitioned all drivers to this paperless system using multiple applications installed on the tablets. Tablet technology is still new, so **long-term hardware reliability is still unknown**. However, this relatively low-cost solution for tracking trip information can serve as a first step toward a paperless dispatch system.

New and Recent Technology

Lessons Learned: Mash-Up and GTFS Use Brazos Transit District (BTD)

BTD developed a fixed-route mash-up that displays route corridors in each of their serviced urban areas. Users type in their street address and street name, then select "Find Address." The map zooms automatically to identify the route closest to that address point.

Adding GTFS data to this platform can benefit end-users by:

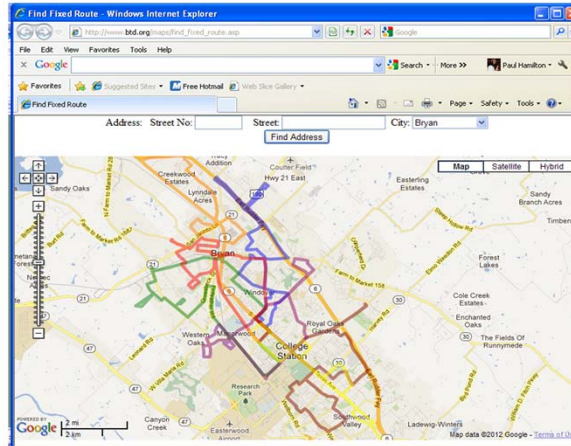
- Displaying text-based navigation enhancements (e.g., a table of contents).
- Providing schedule table links to each bus stop within a fixed-route system.
- Enhancing the overview (provided by the mash-up) to provide route-specific information on a large scale as end-users zoom in on a given service area.

You can develop maps for defining service routes similar to BTD's using free Google tools online

Statewide and national deployment examples

New and Recent Technology

Mash-Up and GTFS Use Brazos Transit District (BTD)



Statewide and national deployment examples

Developed by Google and others, General Transit Feed Specification (GTFS) provides a layer of map-based information specific to transit, and is used by Google Transit Mash-ups are created when two or more sources of data, (in this case a Google Map and transit system route information), are used to develop new and more useful information

Adding GTFS data to this platform can benefit end-users by:

- Displaying text-based navigation enhancements (e.g., a table of contents).
- Providing schedule table links to each bus stop within a fixed-route system.
- Enhancing the overview (provided by the mash-up) to provide route-specific information on a large scale as end-users zoom in on a given service area.

You can develop maps for defining service routes similar to BTD's using free Google tools online available through the resources provided here.

- Start at Google Support to learn how mapping tools work and set up an account.
- Go to Google Maps to set up your user-specific maps to define each of the fixed routes in your service area.
- Use GTFS to define stop locations, which can include more detailed route tables, stop numbers, and photos of each stop location.



Innovative Service design and impact of changing demographics

Lessons Learned: Future Trends Wichita Falls - Falls Ride

Sharp Lines provides intercity bus and rural service into Wichita Falls, but Falls Ride had no location to conduct passenger transfers between bus systems. Falls Ride is currently building an intermodal transfer center to allow intercity operators, the rural provider, and city bus service to leverage ridership via a common transfer point. This will increase convenience for riders and operators.

Statewide and national deployment examples

...and add:

Transfer facilities will encourage more efficient service alternatives (e.g., fixed-schedule designs, such as those used by CARTS), enable the rural provider to increase passenger trip effectiveness via additional low-density trips in the urban area before picking up outbound transfers.

Fleet Mix and fuel efficiency

Lessons Learned: Regional Maintenance and Fleet Mix - Waco Transit

In 2005, Waco Transit became the first Texas agency to fully deploy a regional maintenance facility for their small-urban fleet and the fleet of the Heart of Texas Rural Transit District (HOTRTD, Waco's rural provider). Drawing from the larger combined fleet and two maintenance budgets allowed them to pay mechanics a more competitive wage and distribute the facility's capital costs between two transit systems. Waco received funding from FTA 5309 in 2002. Intended to service both Waco Transit and HOTRTD, the facility was constructed at a cost of \$5.2 million.

- Interlocal agreement finalized in 2010 to form the regional maintenance system
- Performance metrics are beginning to show results
- Implementation Challenges
- Standardized urban fixed-route fleet

Statewide and national deployment examples



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Regional Maintenance and Fleet Mix – Waco Transit

In 2005, Waco Transit became the first Texas agency to fully deploy a regional maintenance facility for their small-urban fleet and the fleet of the Heart of Texas Rural Transit District (HOTRTD, Waco's rural provider). Drawing from the larger combined fleet and two maintenance budgets allowed them to pay mechanics a more competitive wage and distribute the facility's capital costs between two transit systems. Waco received funding from FTA 5309 in 2002. Intended to service both Waco Transit and HOTRTD, the facility was constructed at a cost of \$5.2 million.

An interlocal agreement was not finalized between the agencies until September 2010, at which point a regional maintenance system was formed. Benefits have only just begun to accrue to the rural provider, so not enough data yet exists to quantify exact savings. However, this holistic approach to maintenance has allowed HOTRTD to identify and address capital maintenance processes that have increased its fleet's state of good repair.

Waco Transit's performance measure for its maintenance program is "miles between road calls." Though, again, the facility has not operated for long, Waco Transit already reports a 117 percent increase in miles traveled *between* road calls (TxDOT 2009 and 2010 report data).

One implementation challenge was to ensure all parties understood their fleets' existing state of good repair. Then, each agency had to assess the cost-benefit of bringing those fleets up to an acceptable operating standard by identifying and addressing all repairs and implementing standardized preventive maintenance procedures. As a result, HOTRTD saw an initial increase in maintenance costs, but these costs leveled out after the first 18 months; HOTRTD's fleet reliability has improved.

Waco Transit identified the Opus low-floor vehicle model as best suited for all its urban fixed-route services. Standardizing to this vehicle lowered maintenance costs via fleet uniformity, mechanic training, and the reduction in maintenance and repair costs inherent to the ramp vs. lift design. The ramp system on low-floor has also reduced boarding times for wheelchair-bound and ambulatory passengers (formerly limited in their ability to board high-profile vehicles with steps).

Both agencies have worked together to limit the number of vehicles types used in demand-response and medical transportation to reduce the need for mechanic training and spare parts inventory.



Other Fleet Considerations

Lessons Learned: Pedestrian and Bicycle Considerations Longview Transit

Longview Transit identified pedestrian and bicycle access as an important aspect of route development. During route evaluation, the agency has collected data on bus-stop inventory including amenities such as benches, signage, bike racks, and pedestrian access. These are seen as important elements to help grow access to transit routes for more persons living along route corridors.

Statewide and national deployment examples

Other Fleet Considerations

Lessons Learned: Bicycle Racks on Buses (BOB) – CARTS

- CARTS installed BOBs on all fixed-route buses and commuter-bus routes. These amenities currently receive light use, but have a growing presence in the growing San Marcos campus community.
- BOB overloads or left-behinds are already common.
- Over time, risk-averse will leave their bicycle at their trip origin.



Statewide and national deployment examples



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Lessons Learned: Bicycle Racks on Buses (BOB)

- CARTS installed BOBs on all fixed-route buses and commuter-bus routes. These amenities currently receive light use, but their presence in the growing small-urban San Marcos market—which includes Texas State University with an enrollment of over 34,000 students and CARTS' commuter link to Austin and Round Rock—provide service links likely to see increased use in the near future.
- BOB overloads or left-behinds are already common for Texas State's commuter-bus route between Austin to San Marcos. Passengers, predominately students, commonly use their bicycles to get to bus stops in Austin. They sometimes find themselves waiting for the next bus to depart campus in the afternoon, if all bus bicycle rack positions are taken.
- Over time, risk-averse passengers who don't need a bicycle at their destination will likely park them at an Austin bus stop. As CARTS and other rural and small-urban providers continue to connect their passengers to larger systems, they will likely see an increase in rack use on their buses and at connecting bus stops. Ensuring these amenities are available at connections will be an important aspect of customer service as agencies seek to increase ridership.



Activity: Localizing Savings from Implementation

IDENTIFICATION AND IMPLEMENTATION OF NATIONAL TRENDS (TECHNOLOGY)

Technology Activity

- What technology to consider?
- How can our system benefit?
- What is our current status...goals?
- Identify new technology to deploy
- Develop deployment plan
- Identify metric to evaluate deployment
- Identify deployment concerns

Technology Activity:

1. Divide the group in to manageable sizes of 4-6 members each
2. Provide a hand-out of the Issue and Technology Deployment strategy
3. Have each group appoint a representative who will be designated as the Regional Service Provider
4. Another member should be appointed to serve as scribe for the process they will develop

Issue:

Your transit system has 23 vehicles;

- 1 passenger car,
- 2 mini-vans,
- 7 lift-equipped 12-passenger vans
- 10 lift-equipped light duty buses
- 3 20-passenger medium duty buses.

The average age of your fleet is 8 years old; the average mileage on each vehicle is 80,000. You do not anticipate having funds available for vehicle replacement for 3-4 years. One of your light-duty buses is down with a blown engine (bake sale?); another appears to be in nearly the same shape. You also have four buses with recurring lift problems, (one is not functional), lifts are of three types and from two manufacturers.

Your maintenance “guy” keeps your vehicle maintenance files in a single folder buried on a desk filled with other paperwork, (you’re not sure what) and boxes of oil filters. Only your “guy” knows what bus is to come in and when; each week, he tells your dispatcher when vehicles are due for an oil change and/or routine PM checks. He uses a form that you believe he obtained from Jiffy Lube to PM each vehicle in your fleet. Files for completed work are kept chronologically in a single folder by ¼ for each fiscal year.

You are aware your peers have vehicle road-calls about once every 70,000 miles; you consider you’ve had a good month when you can achieve one road-call every 10,000 miles, (which only takes about 2-3 days). Towing runs about \$200 -300 per occurrence depending on the vehicle and how far away from a repair facility the breakdown occurs. You provide none of your major repair, but have an indoor storage facility where you currently have your “guy” perform light maintenance and oil changes.

Additional elements for each break-out group:

If time allows, you may interject additional (different) parameters to each group such as:

1. There is a larger urban provider with a regional maintenance facility within 10 miles of 70% of your fleet night-stations. The remainder of your fleet are stationed in small communities at least 30 miles from this facility
2. There is a large urban provider with a regional maintenance facility within 30 miles of 25% of your fleet. The remainder of your fleet is stationed at least 50 miles from this facility.
3. You are in a very rural portion of the State. There are no other major transit service providers or large urban areas within 100 miles of your service area. Most of your fleet is stationed in 5 small urban communities; all station points are within 20 miles of one small urban center. That small urban center contains a Community college which trains mechanics in gasoline and propane engine repair; your fleet is Propane.
4. You are in a very rural portion of the State. There are no other major transit service providers or large urban areas within 100 miles of your service area. Most of your fleet is stationed in 5 small urban communities; all station points are within 20 miles of one small urban center. That small urban center contains a Community college which trains mechanics in gasoline and propane engine repair; your fleet is Propane. TCEQ is offering 100% grant funding to re-power gas and diesel vehicles with alternate fuel which are greater than 5 years old.

Final Instructions:

- Remind team of time constraints. They should briefly discuss the activity assignment and determine what one technology might assist in increasing the service reliability of their fleet. They may also want to set a goal or metric during this discussion. They are to work together and document:
- What are the primary issues with their fleet?
- What system benefits do they hope to achieve through deployment of their selected technology, (identify technology)
- What additional Element was your team given?
- A brief Deployment Plan for their technology, (chronological steps to successful deployment)
- Goals of Technology – What metric(s) will you use to evaluate your success. Why?
- Identify deployment concerns – What are the challenges or barriers to successful deployment?

Technology Activity

- Technology Used?
- System Benefit(s)?
- Deployment Plan elements (chronologically)
- Identify metric to evaluate deployment
- Identify deployment concerns

Technology Activity:

1. Time will not likely allow for delivery of more than on group report
2. Note: The Activity is designed to engage group members in a fictitious system which they may openly critique while developing solutions they may be able to deploy locally
3. Have a group who appears to have been particularly active report their:
 1. Technology
 2. System Benefit
 3. Additional Elements of team, (if used)
 4. Deployment Plan Elements: for selected technology, (what comes first???)
Proper paper tracking? Development of vehicle maintenance files for major components/warranties/maintenance cycles/ Software selection?
 5. Goals of Tech Plan - Metric(s) to evaluate success?
 1. Reduce road-calls from once every 10,000 miles traveled to once every 50,000 miles traveled in the first year
 2. Increase Engine life from CM-R&R every 100,000 miles to CM-R&R every 125,000 miles.
 6. What concerns were identified which might limit or challenge successful deployment
4. Where more time is available, or where it might be advantageous to engage group discussion, you may consider reporting back from more than one group.
5. Where time is limited or group is small, you may select a group leader and scribe from the whole group and conduct the activity outloud with the group; if you choose to select an additional element for the task, ask the group to choose a number between 1-

4 and use that element number.

Review Technology

■ Technology

- Fleet Maintenance
- Dispatch and Scheduling
- Mobile Data Computers
- Communication Systems

Technology:

- Fleet Maintenance software which has allowed transit systems to better track and schedule Preventive Maintenance inspections; understand actual operating costs through development of periodic reports; and has been an aid in development of centralized maintenance scheduling and repair, (including regional maintenance sites shared by multiple transit providers).
- Dispatch and Scheduling software which has allowed several providers to increase passenger boardings per vehicle trip; Provided better real-time information from satellite service centers to centralized dispatch centers; increased the ability of a central dispatch facility to update driver schedule information in real-time; and provided the ability of planning staff to extract trip reports to help evaluate route performance.
- Mobile Data Computers and similar devices have been installed in vehicles, (and in some cases dispatched as computer tablets directly to drivers), to convey scheduling information directly to drivers. This has allowed a more efficient communication of schedule information; made it easier to reassign drivers, (remove or cancel trips and add new trips), on short notice; and has allowed trip report information to flow directly back to central dispatch as trips are performed. Most transit providers using this technology have the ability to see where their driver is in real-time; one provider indicated they are pushing this information out to their riders so they can automatically

check to see how soon a scheduled bus will arrive at their location.

•Communication systems are the backbone for many other forms of technology.

- The transit providers which have developed the richest use of available technology have built on a regional radio or cell tower platform capable of linking their entire service area to allow for centralized control of dispatch and scheduling.
- The proliferation of mobile phones, smart phones, and access to the internet has resulted in a high reliance on these devices to provide basic and personalized communications. Their increased use and access by the general public; and the computerized integration of basic route and schedule information by most rural and small urban transit providers make Real-time route and schedule technology and social media the next logical platform to disseminate this information.

Review Service Design

- Service Design
 - Planning Elements (four-step model)
 - Data collection from Technology Devices
 - Coordination to Connectivity

Service Design:

Planning and Modeling

- Most transit systems that were a part of the Fact Finding process identified using portions of the four-step transportation model to improve efficiency on both demand and fixed-route systems
- These primarily focused on identification of trip generators and maximizing route assignments using trip generation and trip distribution data

Data Collection:

- Data reports now available from dispatch and scheduling software; most provide easy export options of this data.
- Most transit systems using computerized dispatch and scheduling software have begun to rely more on the reports which can be generated to help them increase route efficiency, from increased trip pairing for demand response systems to route modifications for fixed-route providers.
- Use of data available to providers on lower tech web-based systems provided by Google and others to high-tech GIS applications could be the further as the cost and ease of use or training to these technologies develops

Coordination to Connectivity:

- *Coordination* implies the ability to maximize resources within a specific service area. However, funded service areas cannot always provide essential trips between desired origins and destinations inside the neat confines of their service area; often

times they involve traveling across boundaries between rural service areas or more commonly between rural and urban service area

- Connectivity* was identified by one service provider as a more accurate representation of how service design should be developed to consider the needs of their riders. This includes the ability to assure that the entire transit network of trip origins and destinations is accessible to riders in an affordable and accessible and easy to use manner. While not all transit providers identified their development of service in this way, many used tools which were designed to reach this objective

Review Fleet Mix

■ Fleet Mix

- Homogenous or Standardized (hybrid)
- How service type and maintenance play a part
- Regional Maintenance
- Multiple Maintenance facilities

Fleet Mix

- Homogenous or Standardized vehicles infer more than one vehicle type; they include major component standardization
 - Savings may accrue for service providers through reduced parts inventory for major components and training required to service maintain fewer component types
 - Standardized components also allow for standardized PM cycles and forms and PM training allowing for further cost reduction
- Service providers boarding high numbers of passengers using W/C may find low-floor vehicles with ramps instead of lifts more time efficient and effective
- Providers have also reported the use of ramps as a way to lower maintenance and training costs
- Regional Maintenance facilities have begun to show promise for some service providers
 - Where large providers have good proximity with service of smaller providers, regional facilities have provided professional affordable access to maintenance staff for their transit fleet
 - Infrastructure, including computerized PM, have increased proper tracking of PM and scheduled service, and raised the reliability for those providers
 - Cash outlay for sharing in the marginal cost of a large facility is beneficial for smaller systems unable to fund such a facility

- Rural providers operating over large distances have reported working to develop a network of smaller maintenance facilities capable of basic maintenance and PM
 - Provides less vehicle down time and deadhead
 - Increases opportunity of on-time PM cycles
 - Challenge of acquiring funding for multiple facilities

Review Funding

■ Limited Federal and State funding

According to the American Association of State Highway Officials, the average State funding for transit in 2008 was \$42.50/person while Texas transit funding stood at \$1.18. (The Texas Department of Transportation 2010).

HB 3588, Article 13 mandated the coordination of public transportation and tasked TxDOT with identifying inefficiencies in public transportation services.

Limited Federal and State funding


- AASHTO indicated relatively high average national funding by States (\$42.50/person)
- TxDOT indicates State funding in Texas is closer to \$1.18/person

HB 3588, Article 13 mandated coordination

- However, this State mandate had been locally and regionally applied by many public transit service providers in advance of the legal requirement
- With demographic shifts that include an increasingly aging-in-place rural population, (increasingly rural transit dependent populations); service providers continue to work look for ways to maximize their spending power



Questions?



*Remember, fill out the session review form.
We need to know how we can improve too!*

Paul Hamilton

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QUESTIONS? COMMENTS?

Choose A Breakout Session

- Buying Fuel and Managing Consumption
- Staff: Managing Shifts, Managing Costs



Buying Fuel and Managing Consumption



Fuel is a significant driver of every transit agency's operating budget. In fact, fuel is the highest transit agency cost after labor and fringe benefits. This session provides strategies and lessons learned for purchasing and managing fuel consumption.



Why Manage Fuel?

“Fuel is the highest transit agency cost after labor and fringe benefits”

Fuel and lubricants represent approximately 10 to 20 percent of Texas transit agency operating expenditures on average.

% of Budget That is Fuel

Operating Expense Category	Transit Agency Types in Texas			
	State-Funded (10 Agencies)	Urban (5 Agencies)	Dual Rural/Urban (2 Agencies)	LEP (10 Agencies)
Salaries and wages	44%	44%	57%	52%
Fringe benefits	20%	16%	20%	14%
Services	11%	13%	2%	2%
Fuel and lubricants	10%	12%	13%	17%
Tires and tubes	1%	1%	2%	2%
Other materials/ supplies	9%	4%	4%	3%
Utilities	2%	1%	1%	2%
Casualty and Liability Costs	3%	2%	1%	4%
Purchased Transportation	0%	0%	0%	0%
Miscellaneous Expenses	1%	7%	0.2%	4%
Leases and Rentals	0.1%	0.1%	0%	0%
Total Operating Expense	100%	100%	100%	100%

Texas Transit District fiscal year 2010 expenses based on National Transit Database (NTD) urban-reported expenses and a sample of rural agencies. In 2010, fuel and lubricants represented an average of 13 percent of Texas transit-agency expenditures (an estimated \$18.3 million statewide).

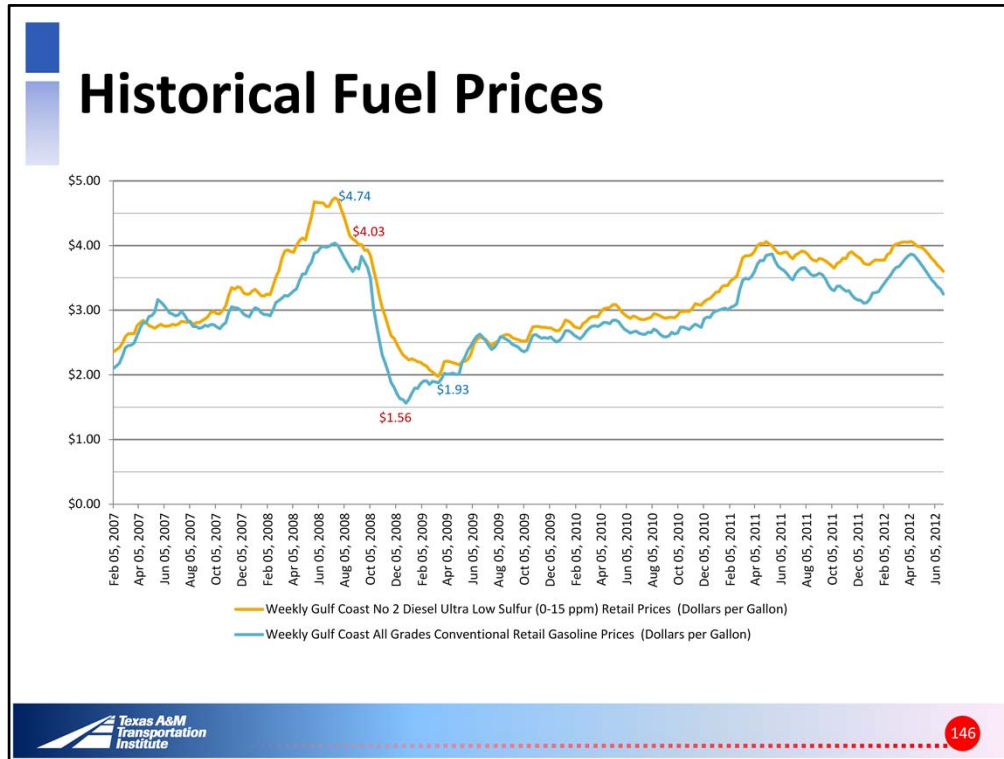


Learning Objectives

At the end of this lesson you will be able to...

- Identify controllable/ uncontrollable factors of fuel cost
- Describe fuel purchasing strategies
- Describe management of fuel consumption strategies
- Describe impact of fuel efficiency improvements


Instructor introduces the session learning objectives.



Market-driven costs, such as fuel, are difficult and often impossible to control. Figure 5-1 shows the volatility of fuel costs in recent years. Costs peaked in July 2008 at \$4.03 for Texas retail gasoline and \$4.74 for No. 2 Diesel Ultra Low Sulfur fuel.



How you purchase and manage the consumption of fuel can also significantly impact overall costs, however—and those are aspects you *can* control. Efficient purchasing methods, monitoring, service planning, pairing vehicle types with services need (vehicle fleet mix), in-vehicle mapping, efficient scheduling, and quality maintenance are all strategies that can reduce the overall impact of fuel prices on your operational budget.

Map of gasoline and diesel fuel prices from 2007 to June 2012. Price of fuel has fluctuated peaking in July of 2008. January 2013 is about \$3.30. Market driven costs are not controllable however how you purchase and managing fuel consumption is controllable. A volatile fuel market makes it difficult to accurately budget.



Activity: Determine Uncontrollable and Controllable Cost Factors

FUEL COST FACTORS



Instructor to lead brainstorming activity to list controllable and uncontrollable factors of fuel cost. Using a flip chart or white board.

Factors That Drive Fuel Cost

- Distance to fueling station
- Fuel purchasing methods
- Monitoring fuel usage
- Monitoring excess idling
- Driver speed and smooth vehicle training
- Adequate tire pressure
- Transmission, front-end alignment and steering control
- Fleet mix to meet service demand

Review Factors:

Consider the distance vehicles travel to fuel?

Consider different fueling strategies (fuel tanks, fuel cards, city/county agreements, contractor-provided fuel) based on service characteristics?

Dedicate a staff member to monitoring fuel usage?

Take advantage of fuel discounts or rebates?

Have detailed fueling reports for monitoring purposes?

Forecast fuel costs based on projected service miles to include deadhead (miles to move vehicle in and out of service)?

Have controls in place for limiting individual fuel purchases?

Monitor excess idling (over 3 to 5 minutes)?

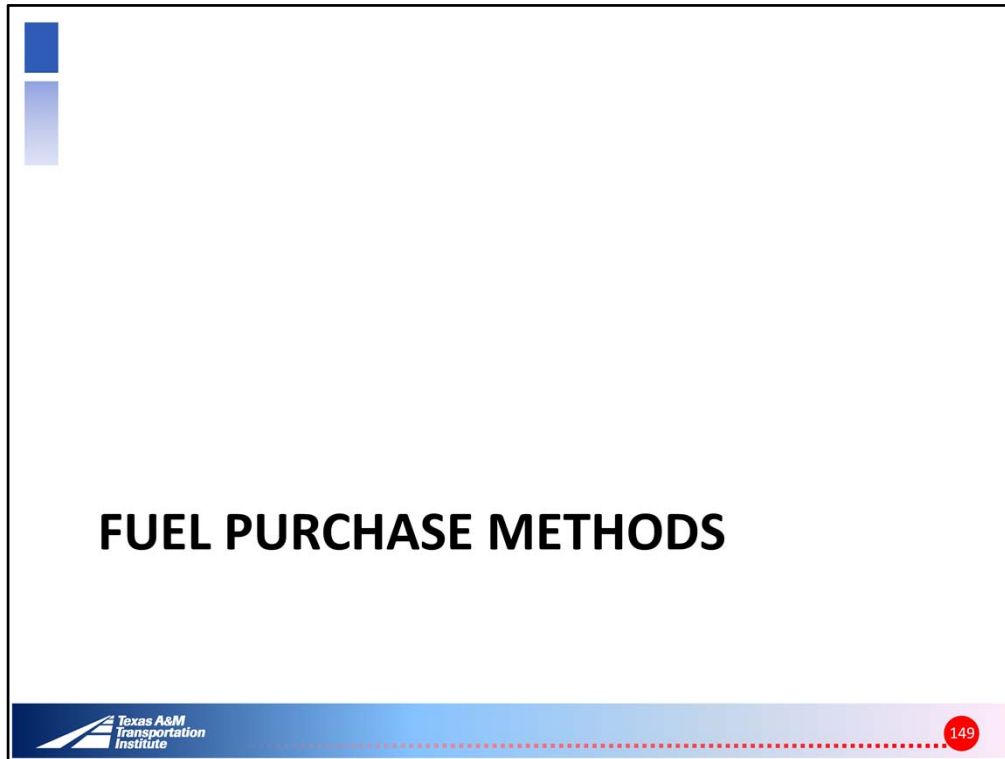
Train drivers to maintain speeds and smooth vehicle operation to reduce fuel cost?

Check tire pressure daily to improve fuel efficiency?

Adjust transmissions, front-end alignments, and steering control to improve fuel efficiency?

Determine service demand requirements in the decision to purchase fleet types?

Consider vehicle-required fuel type and fuel efficiency vs. the cost of the vehicle when making vehicle purchasing decisions?



Texas small-urban, rural, and limited-eligibility transit providers purchase fuel in several ways: fuel cards, city/county fueling agreements, local fuel-station agreements, and contractor-provided fuel. Some agencies store fuel locally in their own facilities.

Texas Transit Districts Fuel Purchase Methods

Transit Provider Type	Transit Agency Response	Maintain On-Site Fuel Tank(s)	State Fuel Cards	Private-Company (Non-State) Fuel Cards	City and/or County Agreements	Local Fuel Station Agreements	Contractor Provided Fuel
Dual Rural and Small Urban	8 of 8	3	0	5	4	2	2
Limited Eligibility Provider	3 of 4	2	0	1	0	0	1
State-Funded Urban	14 of 14	14	0	4	2	3	4
Rural	29 of 30	5	4	21	9	6	5
Total	54 of 56	24	4	31	15	11	12

Notice the tendency for urban agencies to maintain their own fuel tanks on site versus rural agencies, which prefer third-party providers. Reasons for these differences will become apparent as we discuss each method in more detail.

On-Site Fuel Tanks

Considerations:

- Purchase fuel in bulk
- Geographically concentrated service area
- Utilizing alternative fuels – no local alternative
- Taking advantage of conducting routine maintenance while fueling
- Environmental impact if spillage
- Cost of tank
- Security and monitoring of fuel

Advantage is the ability to purchase fuel in bulk

In Texas, a majority of urban transit providers possess on-site fuel tanks and fueling capabilities. Transit agencies typically use on-site fuel tanks when:

- Operating urban services.
 - Providing services in a geographically concentrated service area.
 - Utilizing alternative fuels (such as compressed natural gas).
 - Operating fixed-route services with complementary paratransit.
- A principal advantage of on-site fuel storage is the ability to purchase fuel in bulk.

Consider environmental impact if fuel spillage, cost of tank and security issues.

Fuel Cards

Provide:

- Means to electronically manage fuel consumption
- A backup means to purchase fuel
- Convenient fueling locations
- Diesel fueling facilities
- Access to discounted fuel

*Provides convenient means to operate efficiently
in the dispersed areas*

Unless rural-transit agencies serve concentrated areas of consumers, storing fuel on site is not practical for the majority of rural transit agencies covering large service areas. The on-site cost savings provided by purchasing in bulk is lost by the long distances vehicles must travel in these areas to be refueled at a single location.

Advantages:

- Net-out (or rebate) of federal taxes (CCG).
- Discounts on fuel.
- Rebates on all transactions.
- Coverage of fuel payments under a single invoice.
- Payment of maintenance on the same card.
- Acceptance of cards across the state.
- Ability to tailor retail fuel cards to meet the needs of agencies.
- Customized purchasing limits.
- Restricted transaction to locations, hours of the day, and days of the week.
- Authorized groups, sub-groups, or individual employees for specific purchases.
- Access to real-time transaction data.
- Access to information to resolve a declined fuel card.
- Ability to view and download transaction detail to analyze each driver's spending behaviors.
- Ability to track purchasing exceptions for each cardholder.
- Ability to block and unblock cards instantly.
- Ability to change purchasing authorization and spending limits in real time.
- Options to authorize one-time and emergency purchases.

Fueling Agreements

Considerations:

- Agency is a division/dept. of city/county and can take advantage of bulk fuel purchase
- Local service stations provide convenience, especially in remote areas
- Local service station provides alternative fuels
- City and county agreements throughout service areas provide access to bulk prices
- Ability to track use

Transit agencies sign fueling agreements with cities, counties or local service stations when:

- The agency is a division/department of the city or county and can take advantage of the organization's bulk fuel purchase price.
- Local service stations provide convenience, especially in remote areas.
- Local service station provides alternative fuels.
- City and county agreements throughout service areas provide access to fuel at bulk prices.

Agencies found that the main advantage of using fueling agreements with fueling stations is not in the fuel price but in the convenience, consistency, and ability to track fuel use, especially in rural areas where other fueling options are not a viable option. Drivers fuel the vehicles, and HCTD controls potential fraud by requiring them to submit signed credit-card receipts, which are then matched to statements and cross-checked with data from the fuel usage database.

Contractor-Provided Fuel

Considerations:

- No tax savings
- May have bulk purchase advantage
- Removes administrative monitoring burden
- Removes some volatility of monthly rate change
- May meet small- or disadvantaged business requirement of your agency

Although disadvantages exist in contractor-provided fuel (e.g., unrealized tax savings), advantages also exist. These include when your agency:

- Prefers not to shoulder the administrative burden for monitoring fuel use and potential fraud from your agency.
- Relies on fixed-price fuel, wherein the fuel price is standardized (like a fixed-rate mortgage, for example), removing some of the volatility of monthly rate changes. Vendors will usually set a threshold beyond which prices can vary in these kinds of agreements.
- Must meet a small- or disadvantaged-business requirement, and the contractor qualifies.



REDUCING FUEL CONSUMPTION

Fuel Efficient Driving Techniques

Can Improve Fuel Efficiency by 5 to 10 Percent

- Reducing excess idling (over 3 to 5 minutes)
- Maintaining consistent vehicle speed
- Accelerating and decelerating smoothly
- Using vehicle momentum to maintain speed
- Avoid filling the gas tank to the very top
- Avoid pumping the accelerator pedal
- Avoid riding the brakes
- Avoid hard turning

Fuel economy is affected by many factors including fleet type and age, driver behavior, and idling policies. You can likely reduce fuel expenditures by improving fuel economy with a program of driver training and oversight. Identifying poor driving habits and rewarding efficient driving habits can improve performance and reduce fuel cost. In fact, driver-training programs can improve fuel economy by 5 to 10 percent for your agency. On-the-road training yields the best results for training drivers to conserve fuel. Driver training programs typically focus on safe-driving habits and on-time performance. When finalizing your driver-training curriculum, incorporate driving techniques to improve fuel economy.

Training might include classroom review, driving simulators (if available), instructional videos, and on-the-road training with an instructor, which yields the best results for teaching drivers to conserve fuel. Most drivers are aware of good driving practices but might have developed fuel-inefficient habits. Fuel-efficient driving techniques include the following:

- Reducing excess idling (over 3 to 5 minutes).
- Maintaining consistent vehicle speed (keeping engine RPMs at optimum levels).
- Accelerating and decelerating smoothly.
- Using vehicle momentum to maintain cruise speed.
- Avoiding filling the gas tank to the very top (especially in summer months).
- Avoiding pumping the accelerator pedal.

- Avoiding riding the brakes.
- Avoiding hard turning.



Fuel Efficient Maintenance

- Bus tires properly inflated and maintained
- Adjust transmissions
- Front-end alignments
- Steering control arms

According to *TCRP Synthesis 84: Current Practices in Greenhouse Gas Emissions*, routine vehicle maintenance programs can improve vehicle efficiency. For example, keeping bus tires properly inflated is a simple maintenance measure that improves fuel efficiency. “In 2005, TriMet maintenance crews (in Portland, Oregon) boosted gas mileage on buses by approximately 10 percent by adjusting transmissions, front-end alignments, and steering control arms, and maintaining a set tire pressure.”

Create a Culture that Values Fuel Efficiency

- Post average fuel economy (by driver, by route, by vehicle)
- Set goals for fuel economy
- Reward good performers
- Retrain poor performers
- Focus technical-support interventions on the 10 percent of the fleet showing the lowest fuel economy

Transit agencies that have processes and procedures in place to ensure their vehicles are maintained at optimal levels—where management shows commitment to monitoring fuel efficiency and where benchmarks and targets are set for fuel economy—are most likely to realize fuel-cost savings.



From small sedans (used for ambulatory needs) to vans to a variety of bus sizes, most transit providers use a mix of vehicles types and sizes. The main advantage in using a fleet of mixed vehicles is the cost effectiveness in dealing with variation-in-seating requirements.

Service Design Considerations

- Minimizing deadhead miles
- Scheduling to maximize productivity (reduce number of vehicles on road)
- Vehicle storage sites (home storage)
- Policies to control no-shows and late cancellations (avoid unnecessary trips)

Fixed-route schedulers can reduce fuel costs by minimizing deadhead miles on routes or redesigning routes to reduce total vehicles needed (e.g., reducing trip frequency). Any change in service must be balanced with service quality and market demand.

Rural demand-response systems might design a route to begin near a selected driver's home, allowing the driver to take their assigned transit vehicle home at night. This reduces deadhead miles and their associated fuel and maintenance costs.

Other considerations in service design and policies that impact fuel consumption include:

- Providing service over large service areas.
- Serving areas of low-population density.
- Traveling to destinations outside the service area.
- Scheduling practices (e.g., ridesharing) to minimize individualized trip-making. (For more on ridesharing, see Chapter 3).
- Implementing policies to control no-show and late cancellations resulting in unnecessary trips.
-

Fleet Mix Considerations

- Match service needs with fleet size and specifications
 - Small sedans for ambulatory needs and greater maneuverability
 - Vans for vanpools, circulators
 - Commuter bus for longer distance work trips
 - Wheelchair equipped buses for wheelchair users

*Maximize fuel efficient vehicles
as service demand allows*

From small sedans (used for ambulatory needs) to vans to a variety of bus sizes, most transit providers use a mix of vehicles types and sizes. The main advantage in using a fleet of mixed vehicles is the cost effectiveness in dealing with variation-in-seating requirements (1). A high-demand commuter service might require a large vehicle with maximum ambulatory seating to provide higher productivity (through, for example, fewer trips) and fewer vehicles with overall lower operating costs. A larger vehicle does not automatically yield higher productivity, however. The use of larger vehicles means higher fuel costs (per vehicle) and lower maneuverability. In a shared-ride general-public demand-response service, trips are constrained by travel time as well. Filling the vehicle might be impractical due to passenger travel-times requirements. Smaller, more fuel-efficient vehicles might prove optimal in serving low-density areas with lower demand (1) and directly influence the amount of fuel consumed.



Fleet Mix: Resource

TCRP Report 146: *Guidebook for Evaluating Fuel Choices for Post-2010 Transit Bus Procurements* is a good source for evaluating

For each fuel and supporting technology, this report provides the state of the fuel/technology for potential transit application, emissions information, capital and operating cost information, impacts on operations and facilities, and other information (2). This resource can help you evaluate options regarding an alternative fuel fleet (e.g., liquefied natural gas, compressed natural gas, electric vehicles, bio-diesel, propane).

Alternative Fuel Considerations

- Unavailability or interruption in fuel supply
- Fuel-specific equipment and parts
- Maintenance and warranty
- Retrofitting garages
- Training employees
- Fuel price per diesel gallon equivalent

TCRP Report 146 provides a spreadsheet tool, “FuelCost2,” for making decisions regarding lifecycle costs of vehicles with differing fuel types.

In addition to fuel pricing and consumption considerations, *TCRP Report 146: Guidebook for Evaluating Fuel Choices for Post-2010 Transit Bus Procurements* can help you evaluate options regarding an alternative fuel fleet (e.g., liquefied natural gas, compressed natural gas, electric vehicles, bio-diesel, propane). Alternative fuel choice considerations are based on capital and operating costs, environmental concerns, reliability of fuel and technology suppliers, popularity (including political support), transit agency experience, and risk associated with fuel change. In making choices about alternatively fueled vehicles, consider the following factors that affect costs:

Establish a Culture of Fuel Efficiency

Remember:

- Fuel is 10 to 20% of operating budget
- Controllable factors: efficient purchasing methods, monitoring performance, pairing vehicle types with services need (vehicle fleet mix), efficient scheduling, and quality maintenance
- On-site fuel provides pricing advantage of purchasing in bulk
- Fuel agreements are beneficial for operating across wide service areas
- Fuel cards can streamline transactions and removing administrative costs and carry risk—including the potential for waste, fraud, and abuse—so proper monitoring is necessary.
- Are alternative fuels right for your agency? Consider purchase of new vehicles or the conversion of existing vehicles to fuel-specific needs, employee training, additional infrastructure
- Schedulers can minimize deadhead miles or redesign routes
- Properly training drivers and maintaining vehicles routinely

Fuel is likely your highest agency cost after staff expenses

Controllable factors include efficient purchasing methods, monitoring performance, pairing vehicle types with services need (vehicle fleet mix), efficient scheduling, and quality maintenance

On-site fuel provides pricing advantage of purchasing in bulk

Fuel agreements are beneficial for fleets operating across wide service areas

Fuel cards can streamline transactions and removing administrative costs and carry risk—including the potential for waste, fraud, and abuse—so proper monitoring is necessary.

Are alternative fuels right for your agency? Consider purchase of new vehicles or the conversion of existing vehicles to fuel-specific needs, employee training, additional infrastructure

Schedulers can reduce fuel costs by minimizing deadhead miles or redesigning routes

Varying your fleet mix can increase efficiency by optimizing vehicle size


Establish a culture of fuel efficiency. Properly training drivers and maintaining vehicles routinely can improve vehicle efficiency by up to 10 percent each.



Review: Learning Objectives

- What are some of the fuel cost controllable/uncontrollable factors?
- What are some ways to purchase fuel?
- How can you manage fuel consumption?
- What might be the impact of managing fuel consumption and implementing procedures?

Instructor review the learning objectives by asking questions.



*Remember, fill out the session review form.
We need to know how we can improve too!*

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QUESTIONS? COMMENTS?

Staff: Manage Shifts, Manage Costs



What are the following %'s?

- 44% State-Funded Urban
- 44% Dual Rural/Urban
- 57% LEP
- 52% Rural

Salaries and Wages as % of Operating \$'s

Ask participants the questions on the slide. **Wait for responses.**

Salaries and wages, followed by fringe benefits, are the two largest categories of operating expenses for all types of transit agencies in Texas.

The following slides provide information related to labor costs, productivity, and savings.

Learning Objectives

At the end of this lesson you will be able to...

- Evaluate current management practices
- Employ information to manage operator and dispatcher shifts
- Recall basic issues and strategies surrounding costs for transit operations staff



Describe learning outcomes for participants.



The purpose of managing staff shifts

PRODUCTIVITY VS. COST-SAVINGS

Productivity vs. Cost-savings

- What is productivity?

Typically, productivity is defined as the number of passenger trips per hour or mile carried by revenue vehicles.

- What is the impact of productivity?

Ask participants the questions on the slide. **Wait for responses.**

The following slides provide answers to these question and others.

Productivity is a measure of service effectiveness when referring to transit agencies. Typically, productivity is defined as the number of passenger trips per hour or mile that revenue vehicles handle (“revenue vehicle hour” or “revenue vehicle mile”). Passenger trips per revenue vehicle hour are often considered to be the most important measure of demand-response transit productivity. “Productivity captures the ability of demand response transit systems to schedule and serve passenger trips with similar origins, destinations, and time parameters, using the least number of in-service vehicles and revenue hours”.

How Can Dispatch Affect Productivity and Operator Shifts?

A transit dispatch center staffed effectively and that fully leverages technology can maintain operational efficiency by making appropriate routing decisions to begin with and responding proactively when necessary service changes occur. A modest improvement in service productivity can significantly impact the cost effectiveness of your agency’s demand-response transit service.

Impact of Productivity

- Decrease resources needed to provide service
- OR**
- Increase service level using same resources

Table 3-2. Increased Productivity Scenarios.

Scenario "A" or "B"	Annual Revenue Hours	Annual Passenger Trips	Passengers per Revenue Hour	Operating Cost for Revenue Hours	Operating Cost per Revenue Hour	Operating Cost per Passenger Trip
Existing Service and Productivity	62,500	125,000	2.00	\$ 2,250,000	\$ 36.00	\$ 18.00
<i>Increased Productivity</i>						
A Save Money (↑ Productivity) = (↓ Revenue Hrs)	- 1,820 60,680	125,000	+ 0.06 2.06	- \$65,534 \$ 2,184,466	\$ 36.00	- \$0.52 \$ 17.48
B Serve More Passengers (↑ Productivity) = (↑ Pass Trips)	62,500	+ 3,750 128,750	+0.06 2.06	\$ 2,250,000	\$ 36.00	- \$0.52 \$ 17.48

Table 3-2 provides an example of a typical rural Texas transit agency that provides 125,000 passenger trips per year with 62,500 revenue hours at a cost of \$2,250,000 annually. Increasing productivity by a modest 3 percent—for example, from 2.00 to 2.06 passengers per revenue hour—would provide the following options:

A. Save money: A productivity increase of 3 percent would allow the agency to achieve the same number of passenger trips (125,000) in 1,820 fewer service hours, saving \$65,534 in operating costs (see Table 3-2, Scenario A). The operating cost per passenger trip would decrease from \$18.00 to \$17.48.

B. Serve more passengers: A productivity increase of 3 percent would allow the agency to increase the number of passenger trips annually by 3,750 within the existing service hours of 62,500 and operating costs of \$2,250,000 (see Table 3-2, Scenario B). The operating cost per passenger trip would decrease from \$18.00 to \$17.48.



Tools and information to help agencies self-evaluate.

EVALUATE CURRENT PRACTICES

Chances are you already strive to efficiently manage agency staff, but even great practices can usually be improved. Here is a list of questions to get you started on self-assessment regarding how well you're currently managing your staffing costs.

Note: All questions might not apply to your particular agency.

Looking in the Mirror

- Activity: refer to materials packet
- Take ~3 minutes, answer each question

Question	Yes	No
Does your agency have key performance indicators to monitor operator performance?	<input type="checkbox"/>	<input type="checkbox"/>
Does your agency have key performance indicators to rate dispatcher performance?	<input type="checkbox"/>	<input type="checkbox"/>
Does your agency ever compare performance with peer agencies?	<input type="checkbox"/>	<input type="checkbox"/>
Do you strategically manage the amount of full- and part-time staff to control labor costs?	<input type="checkbox"/>	<input type="checkbox"/>
Do you cross-train operators to cover routes other than their own when needed?	<input type="checkbox"/>	<input type="checkbox"/>
Do you cross-train supervisors or operators to adequately back up dispatchers when needed?	<input type="checkbox"/>	<input type="checkbox"/>
Do you have policies for staff tardiness, absences, vacations, holidays, and lunch or other breaks?	<input type="checkbox"/>	<input type="checkbox"/>
Do operators and dispatchers understand and comply with policies most of the time?	<input type="checkbox"/>	<input type="checkbox"/>
Do managers consistently hold staff appropriately accountable for following internal policies?	<input type="checkbox"/>	<input type="checkbox"/>

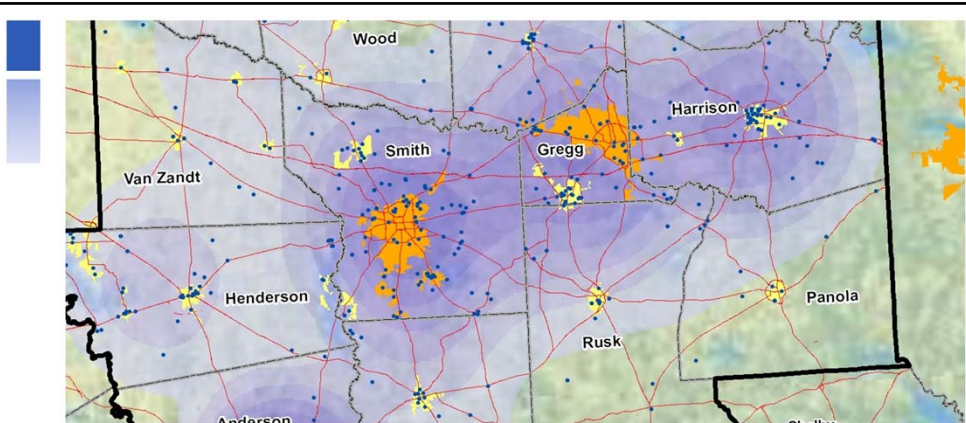
Instruct participants to locate first activity handout and take a few minutes to respond to each question. Tell participants, “It is okay to leave a question blank as the form is for your personal reflection only”.

Results, Thoughts, Discussion?

- “NO” to any of the questions?
 - May be opportunity for productivity/cost-savings
- “YES” to all questions?
 - Great!
 - But, room for improvement may still exist




Answer “No” to any of the above questions? There may be opportunities for you to improve efficiency and control operating costs by managing staff more effectively. Answer “Yes” to every question above? You’ve got the right system in place for properly managing staff, but there might still be opportunities for improvement.



Information is the basis of informed management decisions.



INFORMATION & ANALYSIS USEFUL FOR MANAGING STAFF LEVELS



Types of Analysis

- Operator related . . .
 - Productivity by driver or vehicle
 - Slack time by vehicle (unused revenue time)
 - Overlap in service, potential for more ridesharing
- Dispatcher related . . .
 - Shifts based on call volume trends
 - Call answering performance

What do all of these have in common?



Briefly describe the types of analysis in each of the two categories.

Ask participants the question on the slide. **Wait for responses.**

“Dispatch is the common link”.



Dispatch's Central Role

Dispatch staff have the most impact on a transit agency's productivity, followed closely by the impact of drivers.

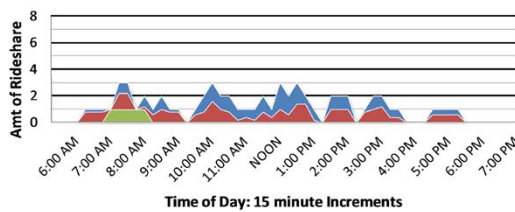
Productivity affects both quality and cost of transit service.

Delivering public transportation is a team effort. The dispatcher, scheduler, reservationist, driver, and passenger must each understand his or her responsibilities in making the overall system work efficiently.

Communicating expectations and delineating responsibilities through, for example, well-written job descriptions and a rider's guide. Dispatch staff have the most impact on a transit agency's productivity, followed closely by the impact of drivers.

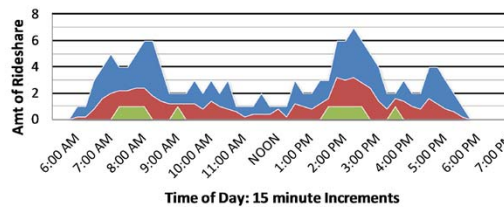
Example: Slack Time Analysis

Which vehicle's manifest is more productive?



(A)

■ Maximum
■ Mean
■ Minimum



(B)

■ Maximum
■ Mean
■ Minimum



Briefly describe slack analysis.

Ask participants the question on the slide. **Wait for responses.**

“B” is more productive as there is more ridesharing and fewer times where slack was present at one point during the week.

Example: Productivity by Driver

$$\text{Productivity} = \frac{\text{Number of passenger trips}}{\text{Number of revenue hours or miles}}$$

Table 3-3. Example of Productivity by Driver.

Driver	Revenue Hours	Passenger Trips	Productivity
Driver A	19	59	3.1
Driver B	18	30	1.7
Driver C	13	31	2.4
Driver D	13	47	3.6

Briefly describe how to calculate productivity by driver.

Ask participants, “Which driver was most productive?” **Wait for responses.**

Explain that agency management should “Measure manifest productivity over time to determine if the dispatcher can aid the driver in being more productive, if retraining is needed, or if you should revise the schedule or fleet distribution to increase productivity, improve how staff are utilized, or reduce costs.”

Example: Dispatch Concept

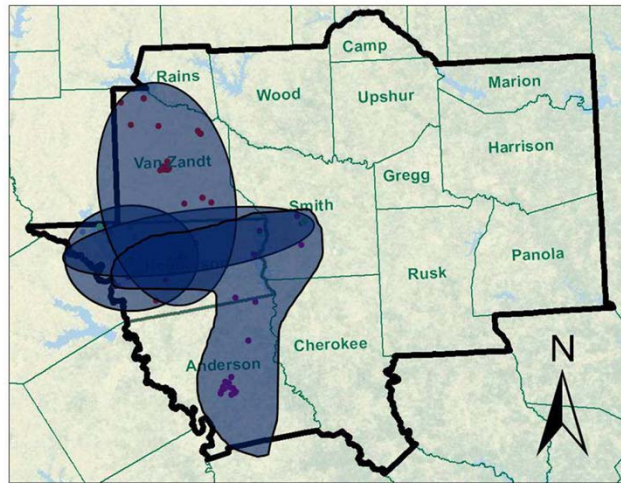


Figure 3-4. Identifying Data by Vehicle.

Activity 2

“How many dispatchers do we need?”

- Locate materials for activity
- Form groups of 2 or 3
- Use 7-8 minutes to work through handout
- Afterward, we will discuss as a group

Instruct class how to begin activity. Visually judge the progress of class. Briefly walk through the steps of the activity to calculate dispatch staffing needs in hypothetical situation. Engage groups in room discussion about the process of this activity; and its utility in managing labor costs.



Many best or better-practices are easy to implement, but require diligence to sustain and realize the full benefit of the change.

PRACTICES TO REDUCE LABOR COSTS AND IMPROVE SERVICE



Best or Better Practices

- Require operators to turn in manifest information daily, reporting anomalies etc.
- Track attendance and on-time arrival to work
- “Extra-board” backup for operations staff
- Staff based on demand (call volume, trip requests)
- Monitor performance by operator

Briefly describe slide contents with class.

Best or Better Practices, contd.

- Communicate expectations clearly
 - Clear job descriptions and understanding of roles
 - Rider's guide
- Reduce slack-time or use it more effectively
- Assign operators & dispatchers to similar geographies etc.
- Assign operators to the same vehicle

Briefly describe slide contents with class.

Other thoughts or practices?

- The people in this room possess a great deal of collective experience...
- Activity 3
 - Each table take 5 minutes to discuss ideas for best or better practices for managing operations staff
 - Try to come up with one or two ideas or thoughts to share with the class

Briefly describe activity process and intent. Judge remaining time in session and allow 3-5 minutes for groups to form and brainstorm.

Ask representatives from each group, “What best or better practices would your group like to share?” **Wait for responses.**




Review: Learning Objectives

Now that we are at the end of this lesson, can you...

- Evaluate current management practices
- Employ information to manage operator and dispatcher shifts
- Recall basic issues and strategies surrounding costs for transit operations staff

Review learning outcomes with attendees.



Remind the class that the RMC 6694 guidebook will contain all of today's discussion and more, will be available soon—a rough final draft is in their hands today.



***Remember, fill out the session review form.
We need to know how we can improve too!***

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QUESTIONS? COMMENTS?



“Thank you all for your time and attention. Please use the session review form to provide feedback about the session content and instructor.”



Closing General Session

What Did You Learn?



Workshop Review

- Purpose: To provide a toolkit for rural and small urban transit agency managers and staff to better analyze, track, predict and manage operating costs.

Instructor Notes
Review purpose.



Workshop Topics

- Vehicle replacement plans and state of good repair
- Minimizing no-shows and late cancellations
- Contracting for transit service
- Future trends and forward thinking approaches
- Buying fuel, managing consumption
- Managing staff shifts

Instructor Notes

Ask participants if they can better analyze, track, predict and manage operating costs for each of the topics.



Workshop Feedback

- What will you do with the information when you return to your transit agency?



Thank You

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