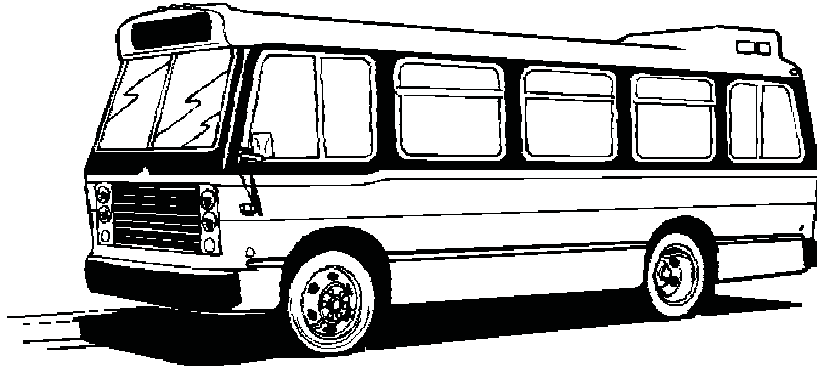


X. Operational Efficiency

Planning



This chapter describes several ways for RVTD to improve the efficiency of the district and its operations beyond staffing levels. Considerations need to be made on a regular basis to the essentials that make transit possible and making investments today that could save money over time. The topics discussed in this chapter are fuel, the type of vehicle that is in service, resource efficiency, service technology, leased space opportunity and paratransit service.

Fuel Security

As the cost of petroleum continues to rise and infrastructure to transport fuel ages or is threatened, RVTD should prepare for diversifying its fuel supply. Relying 100% on one type of fuel could cause a complete operational shut down if the fuel supply becomes stagnant. Several advances in the transportation sector have brought new technologies forward; such as cleaner burning diesel engines, hybrid and electric engines and the use of biodiesel or ethanol either as additives or the primary fuel source. There are advantages and disadvantages to each fuel source. Ideally the district should limit the fuel

types to two in an effort to minimize equipment and maintenance training needs.

The district currently has 23 transit coaches and 25 paratransit vans listed by model year make and fuel source in Figure 10.1 below.

Figure 10.1 RVTD’s Fleet in 2007

Number of vehicles	Model Year	Model make and length	Fuel type
6	1980	GMC 35’	Diesel
2	1990	Gillig 35’	Diesel
3	1995	Bluebirds 29’	CNG 3000 psi
10	2004	New Flyer 35’	CNG 3600 psi
2	2006	New Flyer 35’	CNG 3600 psi

Fuel Equipment Capability

RVTD currently has two electric powered, 100 hp compressors that run independently from one another for the purpose of backup. They were designed to fuel vehicles at 3000 psi capacity. A new CNG fueling facility being installed in 2008 will enhance the psi capacity from 3000 to 3600 psi capability, will add a second fuel dispenser and increase storage. This will increase vehicle range and fueling efficiency as we can currently only fill one bus at a time and have to fill some vehicle types twice a day. If our compressors both fail due to electrical or other type of reliance failure, we can temporarily fuel at the Jackson County Motor Pool using their single compressor. RVTD has the ability to pump diesel fuel manually with an air diaphragm pump in the event of a power outage.

Current cost of fuel for CNG is \$1.77 per gasoline gallon equivalent (includes electricity for compression); Diesel is \$2.21 per gallon.

In previous chapters, a Valley Feeder program is discussed where smaller vehicles are put into service on routes with lower passengers per mile. Using a smaller vehicle on regular routes can cause several issues. The schedule and driver shifts depend on the availability of full size buses throughout the day. This flexibility is necessary for interlining, or a driver operating several different routes with the same bus. An additional consideration needs to be given to passenger demand being unpredictable. Although there are patterns for passenger demand, RVTD experiences several anomalies throughout the year. It is against our policy to leave passengers behind and a smaller type of vehicle in service could heighten this occurrence. To give a comparison of the differences between a smaller vehicle compared to a full size bus we can look at the passenger occupancy and fuel efficiency.

RVTD currently has several vans that are in service for Paratransit, or the Valley Lift operations. These vehicles would work well for fixed-route service because they are accessible for people with disabilities, but this also decreases the number of seats within the vehicle. The average seat capacity of a Paratransit van is 13 occupants with a fuel consumption of approximately 11 miles per gallon of gasoline. The average bus passenger capacity is 60 persons (30 seated and 30 standing). The average bus consumes 4-5 miles per gallon of either diesel or CNG. Although RVTD is considering a Valley Feeder service as part of future expansion, the type of route and system configuration will require adequate planning to ensure quality service is still being provided.

Alternative Fuel Types

With any leading edge technology there will be infrastructure costs associated with its adoption such as larger transformers, charging systems and storage. Adequate planning needs to occur before any new fuel type is adopted.

Compressed Natural Gas (CNG) has been the primary fuel source for RVTD's fleet of buses since 2004. CNG is natural gas, which is comprised primarily of methane, compressed to a pressure at or above 2,400 pounds per square inch and stored in special high-pressure containers. It is used as a fuel for natural gas powered vehicles. Although CNG has served the District well over these past few years, and improved air quality by replacing older diesel buses, it still has its shortfalls. The primary concerns for the District's future CNG fueling needs are the cost and supply of natural gas products.

It is unclear whether the cost of natural gas has risen in recent years due to the industry's capital investments in production facilities or if it is due to market supply and demand issues. According to the Energy Information Administration, wellhead natural gas prices and U.S natural gas vehicle fuel consumption have both nearly tripled in the last decade. RVTD's costs have increased from \$0.59 in 1995 to \$1.77 in 2007 per gallon equivalent including electricity for compression.

Clean diesel technology has come a long way since RVTD committed to CNG several years ago. Diesel engines achieve better fuel economy, have lower carbon dioxide (CO₂) emissions and produce higher levels of power than conventional gasoline engines. However, diesel engines also emit higher levels of oxides of nitrogen (NO_x) and particulate matter (PM) emissions. The use of older diesel buses could exacerbate the Rogue Valley's air quality issues. At the request of several community stakeholders, RVTD started to replace the older diesel buses with CNG buses. Today, RVTD still has six 1980 diesel buses with a grant to replace three in 2008. Clean Diesel Combustion (CDC)

technology is making its way into the market with most diesel engines built after 2000 incorporating some type of the technology. According to the Environmental Protection Agency, “the method of CDC encompasses a series of design changes to the diesel engine, which decrease Nox emissions while maintaining or improving engine efficiency. The key concept of CDC technology is the development of in-cylinder NOx control, where Nox emissions are reduced in the engine combustion chamber without penalizing the engine’s efficiency”. RVTD will likely look to CDC first in its planning to diversify the fleets fuel sources. CDC could also incorporate a blend of biodiesel that has shown to improve emissions even more and provide lubricity that extends the engines life and reduces maintenance costs. CDC could be a great complementary fuel type to CNG, especially due to the infrastructure (storage and fuel pumps) already established on RVTD’s property. RVTD can store up to 45,000 gallons of diesel on site which allows the ability to buy diesel in large quantities when prices are low; enough for an entire year.

A biodiesel blend is an alternative to straight diesel. Biodiesel adds lubricity to the engine and can be used with the new ULSD (ultra low sulfur diesel). This fuel comes in quantities of B5 (a blend of 5% biodiesel/95% diesel), B30, B50 and B99. Biodiesel’s greatest benefit is its ability to further reduce emissions.



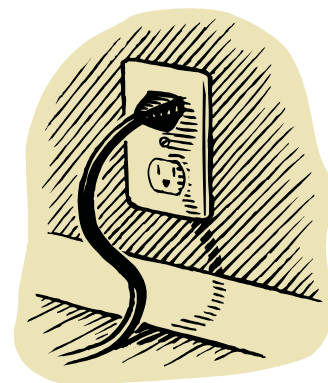
Hybrid and electric technology is still in the infancy stage of its development and after CDC would most likely be the next avenue RVTD would consider as this technology becomes dependable, efficient and affordable. A hybrid electric vehicle combines an internal combustion engine and an electric motor powered by batteries, merging a combustion engine car with an electric vehicle. The combination allows the electric motor and batteries to help the conventional engine operate more efficiently, cutting down on fuel use. According to the

Union for Concerned Scientists however, Hybrid Diesel Buses have not shown major improvements in emissions or fuel economy. Hybrid gas powered transit bus technology is starting to produce higher torque power, seen as the primary shortfall for using this type of bus in the past. The cost of a hybrid bus or electric bus is often twice that of a CDC bus and at this time would not be cost effective for RVTD.

Facilities

Energy Conservation and Efficiency

On June 28th 2007 RVTD, in cooperation with The Energy Trust of Oregon and RHT Energy Solutions, participated in an energy audit of its' Crater Lake Ave location. The purpose of this audit was to identify key areas where energy and natural resources could be used more efficiently.



A list of recommendations with generalized locations, which could benefit from current conservation practices is provided in Appendix L.

Adopt-a-Shelter Program

RVTD has considered establishing an Adopt-a-Shelter/Stop program for several years but has not due to staff limitations. An Adopt-a-Shelter program enlists individuals or groups who volunteer to adopt a bus stop. These volunteers agree to remove litter and report any problems such as vandalism and graffiti at the bus stop. Volunteers receive incentives such as transit passes for each stop they adopt. A program would need to be formalized with an application form, an identification of which stops could be part of the program, purchasing and providing materials to the volunteers, establishing a regular schedule for cleaning the stop and providing limited supervision.

Not only would this program provide cost effective maintenance of the stop facilities it would foster community 'ownership' and potentially reduce graffiti and vandalism.

Leased Space Opportunity

RVTD owns the Front St. Station and 3200 Crater Lake Ave. properties and leases the Valley Lift building. A new building is being planned to replace Front St. Station that will provide space for vendors.

Front St. Station leases parking spaces to the public. Eight spaces are reserved for Park and Ride patrons (three daily and five monthly), people who will be using the transit system. A daily permit costs \$4.00, and if using the bus the patron receives two explorer passes valued at \$2 each making the Park and Ride day parking essentially free. Front St. also has 33 spaces available for monthly lease at \$25 per space. Parking occupancy averages between 15-20 spaces per month. Two bicycle lockers are available at Front St. at \$5 per month (locker must be leased in 3-month increments) with a \$30 refundable deposit and a \$10 non-refundable start up fee.

When Front St. Station is replaced with a new station, conceptually called the Medford Intermodal Transfer Center (MITCh), this will bring the largest lease opportunity for the district. MITCh is conceived to be a two-story building with approximately 16,000 square feet and will have the ability to lease approximately 4,000 square feet. At \$1.50 per square foot per month, this space could generate \$72,000 per year.

RVTD occasionally has an auction for surplus equipment and vehicles. Although the auctions occur infrequently, the sales can generate anywhere from \$1 to \$10,000.

Bus leasing can occur only if the bus will not be taken out of regular service. Bus leases generated \$45,873 in the 2005-2006 FY.

RVTD has advertising space on each of its buses and will be establishing a marketing program for the paratransit vans. Bus advertising generated \$83,236 in non-trade value in the 2005-2006 FY. Many transit agencies also allow advertising at shelters or stops, which RVTD has considered in the past. Management at the time did not want to contribute to 'visual pollution' or the bombardment of signs and ads along the roadway.

Vehicle Improvements

A list of planned vehicle improvements using Information Technology Systems is provided in Appendix M.

Paratransit Service

Travel Trainers

Travel training would allow the District to provide one-on-one, interactive instruction on using the fixed-route bus system. Some people who rely solely on paratransit service may be able to use the fixed-route system for some or all of their trips after having had some basic instruction. In this light, travel training increases the population of empowered and independent riders. The District does not currently have a travel training program. A plan had been coordinated with an area Community Partners Team and a DHS Volunteer program for a travel training program to be instituted in 1998. However, the program was not established as the funding for the DHS Volunteer program was reallocated.

Pierce Transit established a travel training program based on referrals from other agencies. An example of the cost savings experienced by Pierce Transit can be seen through these case studies.

John received 36 hours of personal travel training at a cost to Pierce Transit of \$720. John uses the bus for his work trip only as this has been determined to provide the infrastructure and access he needs that other trips do not have. He uses the bus 6 times per week, or 300 times annually, which is a service hour reduction of 136 hours to the paratransit service. The cost savings are approximately \$7,200 based on a cost of \$24 per trip.



Kelly received 60 hours of personal travel training also for her work commute. She uses the bus for this trip now approximately 15 times per week creating a paratransit service reduction of 339 hours saving \$18,000.

The District would benefit from having a travel training program. Planning is needed to define the program and to identify sufficient and stable resources in order to establish and sustain the program. It would be available for anyone to participate in and participation would be completely voluntary.

Eligibility Process

The ADA eligibility determination process matches riders to the most appropriate transportation service offered by the District. The process employs ADA-specific guidelines regarding eligibility categories which qualify a person for paratransit service. Whether an applicant qualifies for a conditional or an unconditional eligibility category, or if an applicant does not qualify for paratransit service, is based on his/her functional abilities.

In the current system an applicant, or someone on his/her behalf, must submit an application to the District. The application includes a series of

questions regarding the applicant's health and functional abilities and a professional verification section. The professional verification section addresses the applicant's functional abilities and must be completed by a qualified professional who is familiar with the applicant's condition(s). Applications are reviewed by the program coordinator. The coordinator may make contacts to address any questions s/he may have. The coordinator makes an eligibility determination and notifies the applicant by mail. Clients must re-certify every three years.

While the current eligibility determination process is functional it could be improved. The process could stand to be more interactive. The possibilities of in-person interviews and restructuring the professional verification process could be investigated.

Sidewalk Accessibility

An area's sidewalk infrastructure affects the accessibility and often determination of paratransit service. An inconsistent sidewalk infrastructure can make eligibility determinations, on a trip-by-trip basis, difficult at best. Also, it can be the lone barrier, which prevents a person from using the fixed-route bus system.



Currently the area sidewalk infrastructure is inconsistent. As such, some people have had to rely solely upon the District's paratransit service for transportation instead of being able to use the fixed-route system independently and at their discretion.

The District cannot dictate the future of the sidewalk infrastructure. However, the District is conducting in-depth bus stop assessments so that accessibility is better documented and can be more easily ascertained on a trip-by-trip basis.

Vehicle Capacity and Scheduling

Paratransit riders call in and schedule their trips with the District's call center. The District has the ability per ADA to negotiate a time with the client when s/he calls in to schedule a ride. The more information a call taker has about vehicle routes and available capacity at the time of the client's request the greater the call taker's ability to effectively negotiate a reservation time, which will allow for an efficient route.

The District's call center is using software to manage client ride requests and reservations. The reservations are redirected to a contracted provider's system to be placed on vehicle routes. The District call center's current software does not provide the call taker with enough information to enable call takers to effectively negotiate reservation times.

Software which could provide call takers with information regarding vehicle location and availability would allow for more effective negotiation.

Accessibility on Buses

Accessibility on the fixed-route bus system is vital so that the District can truly serve the community as a whole, not just a few select demographics. Having an accessible system means more than just having buses that can load and unload a wheelchair if necessary.

Our buses can become more accessible in many ways, both for people with recognized and unrecognized disabilities.

Persons with visual and cognitive disabilities would be hard-pressed to use the current system. Automated stop announcements would allow access for a whole group of people who, for the most part, have to rely on paratransit service to rejoin the community and regain their independence.

