

## 6. CAPITAL AND OPERATING REQUIREMENTS

This chapter presents the operating, maintenance and capital requirements and costs associated with the phased transit improvements proposed as part of the Transfort Strategic Operating Plan (TSOP) update for Fort Collins. A separate report contains respective requirements for proposed transit improvements for the Loveland-COLT system. Costs for regional services in this chapter reflects only services that originate in Fort Collins. Ultimately, cost sharing arrangements for regional services will be made among participating communities. Chapter 7 of this document addresses anticipated revenues versus planned expenses, and identifies potential funding mechanisms that could allow for implementation of the overall plan.

### 6.1. Existing Operating and Maintenance Requirements

The existing Transfort operating statistics provide a baseline from which to compare the service levels associated with future proposed improvements, and to help determine the additional operational and funding needs that would be required. **Table 22** provides the daily and annual revenue hours for the existing Transfort services.

**Table 22. Existing Transfort 2008 Daily and Annual Revenue Hours**

Day	Service Type				
	Transfort Local	Transfort Regional	Total Fixed Route	Dial-A-Ride	Total Transfort
Weekday Daily Rev. Hours	242	13	255	NA	255
Saturday Daily Rev. Hours	175	13	188	NA	188
Sunday Daily Rev. Hours	0	0	0	NA	0
<b>Total Annual Rev. Hours</b>	<b>66,600</b>	<b>3,800</b>	<b>70,400</b>	<b>25,000</b>	<b>95,400</b>

Source: Transfort

Transfort operates a total of 17 local fixed-routes and one regional route, with 23 vehicles deployed for the fixed-route service during peak weekday operations. Approximately 70,000 annual revenue hours were provided by Transfort in 2008 for the operation of their fixed-route bus services. This includes local routes that are operated all year, plus CSU and PSD school tripper local routes that are operated seasonally. An additional 25,000 revenue hours are associated with the operation of the Transfort Dial-A-Ride services.

**Table 23** provides a summary of the annual operating and maintenance (O&M) costs associated with the existing system. These costs represent salaries for drivers and

mechanics, safety training, marketing, fuel and general administration and overhead. The summary also reflects the average operating and maintenance cost per revenue hour of service.

**Table 23. Existing Transfort 2008 Annual Operating and Maintenance Costs**

	Local Fixed Routes	Regional Fixed Routes	Dial-A-Ride	Total Transfort
Annual Rev. Hours	66,600	3,800	25,000	95,400
Average O&M Cost per Rev. Hour	\$91.99	\$91.99	\$69.47	NA
Annual O&M Costs	\$6,126,550	\$349,550	\$1,736,750	\$8,212,850

Source: Transfort

Total operating costs for Transfort in 2008 were nearly \$8.2 million with approximately 75% associated with fixed-route service, 4% with regional fixed-route service and 21% with the Dial-A-Ride services. Average O&M costs for fixed-routed services are \$91.99 per revenue hour.

## 6.2. Phase 1 Operating and Maintenance Requirements

Phase 1 recommends modest transit service growth over existing service. It assumes the implementation of the MAX service in Fort Collins and the refinement of local routes to coordinate with MAX. It also recommends a Downtown Circulator operating with two variations of bi-directional loop routes throughout the downtown area. **Table 24** provides the daily and annual revenue hours for the proposed Phase 1 Transfort services.

**Table 24. Phase 1 Transfort Daily and Annual Revenue Hours**

Day	Service Type				
	Transfort Local	Transfort Regional	Total Fixed Route	Dial-A-Ride	Total Transfort
Weekday Daily Rev. Hours	314	13	326	NA	326
Saturday Daily Rev. Hours	241	13	253	NA	253
Sunday Daily Rev. Hours	0	0	0	NA	0
<b>Total Annual Rev. Hours</b>	<b>89,400</b>	<b>3,800</b>	<b>93,200</b>	<b>25,000</b>	<b>118,200</b>

Source: Transfort and DEA Project Team

Phase 1 services include a total of 18 local fixed-routes and one regional route, with 26 local vehicles and 1 regional vehicle deployed during peak weekday operations. Over

93,000 annual revenue hours would be required by Transfort for the operation of the fixed-route bus services under Phase 1. This is an increase of nearly one third over existing system operations. A constant 25,000 revenue hours are necessary for the operation of the Transfort Dial-A-Ride services.

**Table 25** provides a summary of the annual operating and maintenance costs associated with the Phase 1 system. The costs reflect an annual inflation rate of five 5% and assume the target year for Phase 1 implementation is over a three year period. The table also provides a comparison against existing 2008 O&M costs.

**Table 25. Phase 1 Transfort Annual Operating and Maintenance Costs**

	Local Fixed Routes	Regional Fixed Routes	Dial-A-Ride	Total Transfort
Annual Rev. Hours	89,400	3,800	25,000	118,200
Average O&M Cost per Rev. Hour	\$101.66	\$101.66	\$80.14	NA
<b>Annual O&amp;M Costs</b>	<b>\$9,088,400</b>	<b>\$386,300</b>	<b>\$2,003,500</b>	<b>\$11,478,200</b>
<b>Change from Existing</b>	<b>+\$2,961,850</b>	<b>+\$36,750</b>	<b>+\$266,750</b>	<b>+\$3,265,350</b>

Source: Transfort and DEA Project Team

Notes:

1. Annual O&M costs reflect an annual inflation rate of 5% over three years. Target year for Phase 1 implementation is a three year horizon.

Total Phase 1 operating costs for Transfort would be approximately \$11.5 million with almost 80% associated with fixed-route service, 3% with regional service and 17% with the Dial-A-Ride service. Average O&M costs for fixed-routed services are estimated to be \$101.66 per revenue hour in a three year horizon. The annual O&M cost increase over existing system operations is nearly \$3.3 million.

### 6.3. Phase 2 Operating and Maintenance Requirements

Phase 2 recommends significant expansion of transit service in Fort Collins, as well as expansion of regional connections to Denver and Longmont. This phase assumes the continued refinement of local routes to coordinate with MAX. Phase 2 introduces a transition to the grid network in Fort Collins and provides greater route coverage, higher service frequencies, and longer daily span of service. **Table 26** provides the daily and annual revenue hours for the proposed Phase 2 Transfort services.

**Table 26. Phase 2 Transfort Daily and Annual Revenue Hours**

Day	Service Type				
	Transfort Local	Transfort Regional	Total Fixed Route	Dial-A-Ride	Total Transfort
Weekday Daily Rev. Hours	477	37	513	NA	513
Saturday Daily Rev. Hours	376	18	394	NA	394
Sunday Daily Rev. Hours	0	0	0	NA	0
<b>Total Annual Rev. Hours</b>	<b>137,300</b>	<b>10,200</b>	<b>147,500</b>	<b>26,000</b>	<b>173,500</b>

Source: Transfort and DEA Project Team

Phase 2 services include a total of 18 local routes and two regional routes, with 38 local vehicles and four regional vehicles deployed during weekday operations. Over 147,000 annual revenue hours would be required by Transfort for the operation of the fixed-route (local and regional) bus services under Phase 2. This is an increase of 110% over the existing system operations. A slight increase to 26,000 revenue hours are necessary for the operation of the Transfort Dial-A-Ride services.

**Table 27** provides a summary of the annual operating and maintenance costs associated with the Phase 2 system. The costs reflect an annual inflation rate of 5% and assume the target year for Phase 2 implementation is over a five year horizon. The table also provides a comparison against existing 2008 O&M costs.

**Table 27. Phase 2 Transfort Annual Operating and Maintenance Costs**

	Local Fixed Routes	Regional Fixed Routes	Dial-A-Ride	Total Transfort
Annual Rev. Hours	137,300	10,200	26,000	173,500
Average O&M Cost per Rev. Hour	\$112.08	\$112.08	\$88.36	NA
<b>Annual O&amp;M Costs</b>	<b>\$15,388,600</b>	<b>\$1,143,200</b>	<b>\$2,297,350</b>	<b>\$18,829,150</b>
<b>Change from Existing</b>	<b>+\$9,262,050</b>	<b>+\$793,650</b>	<b>+\$560,600</b>	<b>+\$10,616,300</b>

Source: Transfort and DEA Project Team

Notes: 1. Annual O&M costs reflect an annual inflation rate of 5% over five years. Target year for Phase 2 implementation is a five year horizon.

Total Phase 2 operating costs for Transfort would be approximately \$18.8 million with 82% associated with fixed-route service, 6% for regional service and 12% with the Dial-A-Ride services. Average O&M costs for fixed-routed services are estimated to be \$112.08 per revenue hour in a five year horizon. The annual O&M cost increase over existing system operations is approximately \$10.6 million.

### 6.4. Phase 3 Operating and Maintenance Requirements

Phase 3 recommends additional transit growth in Fort Collins including longer service hours and limited Sunday transit service, as well as expansion of regional service to Denver, Longmont, and Boulder. This phase assumes the implementation of additional express routes to operate alongside the MAX services, which extend outside of the Mason Corridor. Phase 3 completes the transition to a full grid network in Fort Collins. **Table 28** provides the daily and annual revenue hours for the proposed Phase 3 Transfort services.

Phase 3 services include a total of 19 local routes and three regional routes, with 41 local vehicles and 10 regional vehicles deployed during peak weekday operations. Over 189,000 annual revenue hours would be required by Transfort for the operation of the fixed-route bus services under Phase 3. This is an increase of 169% over the existing system operations. A total of 26,000 revenue hours are necessary for the operation of the Transfort Dial-A-Ride services.

**Table 28. Phase 3 Transfort Daily and Annual Revenue Hours**

Day	Service Type				
	Transfort Local	Transfort Regional	Total Fixed Route	Dial-A-Ride	Total Transfort
Weekday Daily Rev. Hours	537	98	635	NA	635
Saturday Daily Rev. Hours	394	54	448	NA	448
Sunday Daily Rev. Hours	99	33	132	NA	132
<b>Total Annual Rev. Hours</b>	<b>159,800</b>	<b>29,600</b>	<b>189,400</b>	<b>26,000</b>	<b>215,400</b>

Source: Transfort and DEA Project Team

**Table 29** below provides a summary of the annual operating and maintenance costs associated with the Phase 3 system. The costs reflect an annual inflation rate of 5% and assume the target year for Phase 3 implementation is over a seven year period. The table also provides a comparison against existing 2008 O&M costs.

**Table 29. Phase 3 Transfort Annual Operating and Maintenance Costs**

	Local Fixed Routes	Regional Fixed Routes	Dial-A-Ride	Total Transfort
Annual Rev. Hours	159,800	29,600	26,000	215,400
Average O&M Cost per Rev. Hour	\$123.56	\$123.56	\$97.41	NA
<b>Annual O&amp;M Costs</b>	<b>\$19,744,900</b>	<b>\$3,657,400</b>	<b>\$2,532,650</b>	<b>\$25,934,900</b>
<b>Change from Existing</b>	<b>+\$13,618,350</b>	<b>+\$3,307,800</b>	<b>+\$793,900</b>	<b>+\$17,722,100</b>

Source: Transfort and DEA Project Team

Notes:

1. Annual O&M costs reflect an annual inflation rate of 5% over seven years. Target year for Phase 3 implementation is a seven year horizon.

Total Phase 3 operating costs for Transfort would be approximately \$25.9 million with 76% associated with fixed-route, 14% with regional service and 10% with the Dial-A-Ride services. Average O&M costs for fixed-routed services are estimated to be \$123.56 per revenue hour in a seven year horizon. The annual O&M cost increase over existing system operations is approximately 17.7 million.

## 6.5. Capital Requirements

This section describes the capital improvements that would be required to support the phased operational recommendations for TSOP update. This includes both vehicle requirements and facility improvements. Projected needs within each of these categories are summarized in the following sections.

### 6.5.1. Vehicle Requirements

Transfort existing service requires 23 vehicles to operate its fixed-route system during peak weekday service times. An overall fleet of 30 active vehicles currently exists to support fixed-route operations. The mix of vehicle types includes 26 standard 40 ft. transit buses with seated capacities ranging from 37-43 passenger, and 4 mid-sized 35 ft. transit buses with seated capacities of 29-25 passengers. A 60 ft. low floor alternative fuel bus will be used for the Mason Corridor MAX BRT service. Compressed Natural Gas and Bio-Diesel is used for operation of the 30 buses in the existing Transfort Fleet. The proposed phased improvements would require additional vehicles to provide increased service levels.

The proposed phased improvements for the TSOP update will require additional vehicles to provide increased service levels. **Table 30** presents a summary of the vehicle requirements that would be necessary for each phase of implementation. A

spare vehicle ratio of 17% has been used to estimate the minimum number of back-up vehicles that should be retained in addition to the peak weekday vehicle operating requirements. The table also presents the change in vehicle requirements over the existing system.

**Table 30. Bus Fleet Requirements for the TSOP Update**

	Existing System (2008)	Phase 1	Phase 2	Phase 3
Number of Local Routes	17	17	17	16
Number of MAX BRT Routes	NA	1	1	3
Number of Fort Collins Regional Routes	1	1	2	3
<b>Total Routes</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>22</b>
Local Services Peak Vehicles	23	21	33	32
Local Service Spare Vehicles	5	4	6	5
MAX BRT/Mason Express Service Peak Vehicles	NA	5	5	9
MAX BRT/Mason Express Service Spare Vehicles	NA	1	1	2
Fort Collins Regional Service Peak Vehicles	1	1	4	10
Fort Collins Regional Service Spare Vehicles	1	1	1	2
<b>Total Fleet</b>	<b>30</b>	<b>33</b>	<b>50</b>	<b>60</b>
<b>Change from Existing</b>	<b>NA</b>	<b>3</b>	<b>20</b>	<b>30</b>
<b>Percent Change over Existing</b>	<b>NA</b>	<b>10%</b>	<b>67%</b>	<b>100%</b>

Source: Transfort and DEA Project Team

A modest fleet expansion would be required for Phase 1, with three additional vehicles necessary to supplement existing operations. A minimum of 33 vehicles would be required. This accounts for six new buses that would be dedicated to the MAX BRT operations. Under Phase 1, the required standard bus requirements for local fixed-routes other than MAX are slightly reduced. This is due to existing routes that are being replaced by MAX.

Phase 2 would require a minimum of 50 vehicles, representing 20 more vehicles than the existing system. As with Phase 1, six buses are dedicated to the Mason MAX service. Increased requirements are necessary for both local and Fort Collins regional services in Phase 2.

In Phase 3, two additional express routes would operate along portions of the Mason Corridor, along with the original MAX BRT service. A total of 11 vehicles would be dedicated to these express and BRT routes. Overall, Phase 3 improvements would require a fleet of 60 buses, which are 30 more than the existing system. Standard transit buses are assumed to be used for the additional Mason Corridor express routes under Phase 3.

Cost estimates associated with vehicle acquisition assume both the need for fleet expansion and the replacement of older vehicles due to their useful life. The current estimated cost for a standard 40 ft. transit bus is \$400,000, which is assumed for the provision of local and regional services. Alternative bus types such as over-the-road coach buses may be considered for regional services in the future, depending on the specific nature of the travel pattern and regional service characteristics. An annual inflation rate of 5% is applied to future year bus purchase estimates. Buses that would be used for the initial operation of the Mason Corridor MAX BRT service will be procured through the FTA 5309 Small Starts funding program. Estimated bus costs for the expansion of Mason Corridor express service as part of Phase 3 assume the same costs as standard transit buses.

**Table 31** presents the costs associated with fleet replacement and expansion requirements for the TSOP update.

As shown in **Table 31**, replacement vehicles are identified for the existing system and for two future time horizons. New local standard transit vehicles would be necessary for expansion of fixed-route services in Phase 2, and new vehicles to support regional service expansion would be required in both Phases 2 and 3.

Transfort may be able to acquire future funding contributions for up to 80% of vehicle costs through FTA programs such as 5309 Bus Acquisition. If Transfort is successful in securing discretionary federal capital funding, the total local cost of expansion vehicle acquisition could be substantially reduced.

**Table 31. TSOP Update Fleet Acquisition Plan**

	Existing System (2008)	Phase 1 (three year horizon)	Phase 2 (five year horizon)	Phase 3 (seven year horizon)
<b>Replacement Vehicles</b>				
Local Standard Transit Buses	11	17	0	5
Cost for Local Standard Transit Buses	\$4.4 mill.	\$7,9 mill.	\$0	\$2.8 mill.
<b>Expansion Vehicles</b>				
Local Standard Transit Buses		-3	14	-2
Cost for Local Standard Transit Buses		-\$1.4 mill.	\$7.1 mill.	-1.1 mill.
Max BRT Articulated Buses		6	0	5
Cost for Max BRT Buses		FTA Grant	NA	\$2.8 mill.
Regional Coach Transit Buses		0	3	7
Cost for Regional Buses		NA	\$1.5 mill.	\$3.9 mill.
<b>Total Vehicle Acquisition Costs</b>	<b>\$4.4 mill.</b>	<b>\$6.5 mill.</b>	<b>\$8.7 mill.</b>	<b>\$8.4 mill.</b>

Source: Transfort and DEA Project Team

Notes:

1. Eleven new buses are required for the existing fleet due to vehicle age and useful life.
2. Phase 1 time horizon currently assumes the need for seventeen standard transit buses to be replaced, and the purchase of six new 60 ft. low floor buses for MAX BRT. The number of required local standard transit buses is reduced by three vehicles due to the requirements in Phase 1, and therefore reflected in the overall net cost of new vehicle purchases.
3. Phase 3 time horizon currently assumes the need for five standard transit buses to be replaced. The number of required local standard transit buses is reduced by two vehicles due to the requirements in Phase 3, and therefore reflected in the overall net cost of new vehicle purchases.
4. A 5% annual escalation rate is used for the cost of vehicles in each phase.

### 6.5.2. Facility Requirements

#### Bus Storage

Transfort will construct a new outdoor bus storage canopy in 2010 to support the Mason Corridor MAX BRT Improvements. The estimated fleet size associated with Phase 1 improvements could be accommodated within this facility. However, fleet expansion that would be necessary for Phases 2 and 3 would require additional vehicle storage accommodations, service bays and related equipment.

Several options may be available to house the vehicle fleet when future system expansion occurs. This may include maximizing the use of space at the current site through revised parking configurations. Other consideration may include the expansion of the current facility onto adjacent land, purchase or construction of a new or supplemental facility, leased facility arrangements, or utilization of facilities that are provided through a future contractor to Transfort.

### **Bus Stop Shelters and Amenities**

Service improvements and expansion that involves new route coverage will require the need for new bus stop amenities and shelters. These can cost in the range of \$2,000 to \$5,000 for a standard stop with a sign, bench and pad. An enhanced stop with a shelter, bicycle parking and some minimal landscaping may cost in the range of \$5,000 to \$12,500. Major transit stops that support high levels of ridership and may include several unique amenities such as architectural elements, lighting, landscaping and real-time schedule information would require investments over \$12,000. Transfort currently has a contract with Next Media that exchanges advertising rights for construction and maintenance of bus shelters. This contract will provide for new bus shelters that are necessary to support the proposed phased service improvements at no additional cost. Therefore, no additional capital expenses for standard bus stops have been reflected in this plan.

### **Transit Centers and Transfer Stations**

Each phase of improvements involves some form of transit infrastructure improvement to support the proposed service enhancements. Capital components for each service plan phase are as follows:

#### *Phase 1:*

- The full Mason Corridor project is included in this phase.
- A new South Transit Center is proposed as part of the MAX project.
- A University Avenue transitway is proposed through a short segment of the CSU campus (currently dedicated to pedestrian use).
- Modifications to the Transfort maintenance facility may be required to accommodate MAX buses.

#### *Phase 2:*

- A new PVH Harmony Campus transit center is proposed in Fort Collins.
- Expanded maintenance facilities will be needed due to additional vehicle requirements.

#### *Phase 3:*

- Further expansion of maintenance facilities will be needed for Transfort services, if not accommodated in Phase 2 facility expansions.

The magnitude and extent of these improvements will require further definition as the implementation planning is undertaken for each phase. The specific concepts for each element will be dependent on a variety of factors, such as site capacity requirements, land availability, integration with the existing traffic system, funding and partnership opportunities.