Chapter 6 – Draft Plan for Smart BRT for Northwest Arkansas: Virtual Dedicated Lane Service

**INTRODUCTION**

The Northwest Arkansas urban area has a distinct shortage of transit service with much of that shortage centered on connectivity between cities. Unfortunately, this shortage is all too common in urban areas like Northwest Arkansas without a “transit dominant city.” This vagary of geography puts Ozark Regional Transit (ORT) at a significant disadvantage in funding and the provision of service.

At the same time:

1. Northwest Arkansas is one of the fastest growing regions in the nation,
2. The area attracts people from all around the world and
3. This is a dynamic region driven by major corporations and a major university.

The analysis conducted in support of this planning process indicates that demand for service is significant and a quality service would generate over 5,000 one way trips per day after 2 – 3 years of operation. This also accounts for the legendary traffic in the region.

The route will follow US 71B from the south side of Fayetteville to the northern points of Bentonville, 27 miles in distance. Figure 6-1 illustrates the route that will be utilized.

**BRT - ONE SIZE DOES NOT FIT ALL**

There are a variety of strategies that can be deployed in the name of Bus Rapid Transit. The study team considered the options based on: the understanding of demographics and travel patterns, need, funding, sustainability and suitability for the service area.
Figure 6-1: Smart BRT Route
This is a feasibility study and as part of feasibility, the study team considered need, practicality and sustainability:

- **Need**, while there is significant need for a BRT type service, the densities do not yet support dedicated lane (or full) BRT.

- Foremost in terms of **practicality**, the public and local governments made it clear that a dedicated lane on US 71B at this time was impractical. During peak hours, eliminating one of two lanes in each direction for a bus every 10 minutes would be problematic.

- **Sustainability** is required to implement a project of any size. Unlike most BRT projects, there is no dominant transit city that can ensure sustainability. Unless Ozark Regional Transit (ORT) is able to generate dedicated funding source(s), sustainability will be the overriding issue and will dictate the level of service.

**SMART BRT: A TRULY INNOVATIVE APPROACH**

Smart BRT with a virtual dedicated lane is an innovative new approach designed to combine detailed planning, highly trained staff and appropriate vehicles with an infusion of technologies and proper signage to ensure that the buses can offer equivalent to a personal auto (or close to it) door to door travel time in comfort and convenience.

This approach proposes to use most elements of the BRT to enhance service. This will all be done without dedicated lanes which are not feasible at this time. This Smart BRT can also serve as a **precursor** to full dedicated lanes when demand warrants and funding is available as all other elements will already be in place.

Most realistic for an area such as Northwest Arkansas is a Smart BRT with virtual dedicated lanes where the vehicle operates in traffic, but has most of the BRT features to ensure rapid service with higher frequency:
a. **Frequency**: Typically in BRT service during the peak hours a bus arrives every 7.5 to 10 minutes, off peak hours will see a bus every 15 – 30 minutes.

b. **Vehicles**: All use large capacity vehicles with large doors for ease of access.

c. **Stations** – Limited stops (typically every mile) with permanent shelters, raised platforms, using electronic signage and fare payment systems for the most patronized stations.

d. **Signal Prioritization** – The ability of a bus to sustain a green light when the bus is behind schedule.

e. **Technology** - Full use of a variety of other technologies designed to minimize bus dwell time (when the bus is sitting at a station).

f. **The People** - Well trained and skilled bus operators and supervisors are always critical to success.

g. **Branding** - Service is typically branded separately
h. **Connections** - Connecting routes with timed meets.

i. **Park and Ride** - Strategically located park and ride lots.

Please note that this plan is the culmination of analysis and research detailed in four technical memoranda issued previously. For in-depth analysis of needs, review of existing services, calculations of service levels and potential strategies, the reader is directed to Technical Memora nda 1, 2, 3 and 3A. The data used and modified in this review (where appropriate), were developed and calculated in Technical Memorandum No. 3.

**The Nature of the Pilot Project**

As with many businesses, a new service takes time to mature. A pilot project such as this also needs time to mature, given the investment in infrastructure and vehicles. At the same time success must be properly defined in terms of performance. Expectations should be tempered with the understanding that the system will take time to reach its goals and many factors will influence the ridership.

**Timeframe for a Pilot**

Typically, a pilot project should last at least one year and up to three years, particularly if there are extensive infrastructure costs. Supported by a strong marketing campaign, the consultants recommend a 2 year pilot project with the ability to make adjustments as needed to ensure success.

**Performance Measures**

Defining expectations and success is essential to evaluation. While there are a number of key performance measures that should be monitored by the system, there are just a few needed to define and measure success for the pilot project:

- **Ridership and Productivity** – Productivity measures ridership per hour, typically called one way passenger trips per vehicle hour. This is the key performance measure to determine ridership success. Ultimately this service should be averaging about 25 – 30 one way trips per vehicle hour during most of the day. A more modest goal for the first year should be between 10 and 15 one way trips per vehicle hour. This productivity level assumes low or no fare for the pilot.

- **Sustainability** – Sustainability is required for success if the service is to continue past the pilot. Sustainability is measured by the level of financial commitment each community is willing to make. Prior to and after implementation, commitments should be sought for the future (assuming the system meets the
minimum acceptable service level). Targets should be set – for example, 50 percent of the future local funding commitment should be secured in the first year.

The exact performance measures will be determined once all issues that affect ridership are settled. For example, fares will have a significant impact on ridership and revenue.

**SMART BRT – THE NEED FOR SPEED**

The objective of this Smart BRT service is to ensure that the bus can travel as rapidly as possible through the corridor in a safe and comfortable manner, while ensuring equitable service for all. There are a number of elements that are used to meet the demands of this rapid service.

**Technology**

This approach combines a variety of actions and technologies. Each activity or technology by itself is capable of reducing travel time – some can have a considerable impact, while others may only reduce round trip time by one minute (still important). Combined, they should improve operating speed considerably.

**Meticulous Planning and Testing**

The peer review tells us that planning and testing are critical elements to success. More than one system stumbled at the start. To avoid that, planning and testing will be essential:

1. Accurate schedules that are properly tested.

2. Assurance that the signal prioritization system is working and not negatively affecting any other roads (other than occasionally). This also requires extensive testing.

**Highly Trained Staff**

Just as important as flawless technology is well trained and experienced vehicle operators, road supervisors and dispatchers. They will be trained in all aspects of safety and vehicle operation in the BRT environment. Dispatchers will also be trained in the proper use of the technology to ensure that all service is operating on schedule. These skilled staff will ensure that the technology is maximized and that the vehicles average speed is maximized without ever compromising safety.
General Public Education

While marketing of the service will be critical to success, there should also be an education program so that the general public can understand how the service works and what the appropriate protocols include. For example:

1. The public needs to be informed that there should be no stopping or standing on the outer lanes. Signage may also be needed.

2. Buses will stop at stations just past the intersections (far side) as required with signal prioritization – it will be important for drivers of autos and trucks to stay back at least 75 feet or they may get stuck blocking an intersection. Buses should have appropriate signage on the back of each bus.

3. Understanding that this service can save time, be comfortable and allow passengers to be productive or to relax at the end of a long day.

Potential Ridership

Using our three ridership models, the potential ridership based on 10/30 minute headways is between 5,300 – 6,000 daily one way trips and between 1.35 Million and 1.5 Million riders annually, bringing Northwest Arkansas ridership numbers more in line with peer cities.

Smart BRT - The Service

The Route

As illustrated in Figure 6-1 above, the route will follow US 71B from the area around Martin Luther King Jr. Boulevard in Fayetteville to the vicinity of NW 3rd St. in
Service Levels

The estimated service costs are based on the analysis conducted in Technical Memoranda Nos. 3 and 3A. For details on the calculations, see Technical Memorandum 3A. The costs are dependent on:

1. **The hours and days of service** – proposed for 6 a.m. to 10 p.m. Monday through Friday to start.

2. **The headways** - which will determine the operating costs, the number of buses and on board technologies. The buses will operate on 10 minute headways during peak hours 6:00 a.m. to 10 a.m. and 3:30 p.m. to 7 p.m. The buses will operate on 30 minute headways during all other hours.

3. **Station infrastructure** – the level of improvements and the number of ticket vending machines.

Much of the costs are driven by the vehicle headways. The study team looked at four sets of costs based on the number of peak vehicles, including a mandatory 20 percent spare ratio. The most effective approach for this time is the 10 minute/30 minute headway scenario. Table 6-1 details this service level.

Table 6-1: Smart BRT Operating Service Levels

<table>
<thead>
<tr>
<th>Headways</th>
<th>Peak Vehicles</th>
<th>Spare Vehicles</th>
<th>Annual Revenue Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart BRT</td>
<td>10 Minute (Peak)</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>30 Minute (Off-Peak)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Vehicles

The higher capacity, low floor buses combined with wide front and rear doors will allow for rapid boarding and alighting and ensuring that each bus has a minimum dwell time at each station. The bottom line: Saving a few seconds at each stop can reduce running time by 6 – 8 minutes per round trip.

Most passengers will purchase their ticket before boarding. Fare boxes and/or card readers will be able to scan smart cards or any type of tickets or telephone payment app. For those using cash, exact fare will be required – bills and coins. This will be done rapidly to reduce dwell time.

It will also be important for the buses to accelerate rapidly – again to save time on the road. The engine/transmission option that produces the most rapid acceleration should be procured.

The Stations

The station is transit’s front door and as such needs to be safe, accessible and welcoming. There are three types of stations proposed, based on number of riders, transfers and park and ride.

The plan for Smart BRT is a high level of stations to more closely match that of the full BRT with many stations having fare vending kiosks and all having real time information. The pilot project nature of this effort may call for a lower level of infrastructure at this time. In the future, as the service continues to grow and communities have committed to sustainability, funding should be available to allow the service to expand to keep up with the needs.

Figure 6-1 above illustrates the stations on the route map and Table 6-2 depicts the basic requirements and costs of each station.
### Table 6-2: Station Details

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Distance from MLK Blvd. in Fayetteville (Miles)</th>
<th>Type of Station</th>
<th>Accessibility Needs</th>
<th>Other Improvements</th>
<th>Comments</th>
<th>Potential Station Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 71B and MLK</td>
<td>0</td>
<td>Park and Ride, Transfer</td>
<td>If in the street, a landing pad will be needed. If in the parking lot, pathways will be needed</td>
<td>Shelter, parking</td>
<td>Potential connection to Rte. 1 and 2 , Greenway</td>
<td>$75,000, Full transfer stop option available ($240,000)</td>
</tr>
<tr>
<td>Dickson and West</td>
<td>1</td>
<td>Destination, transfer</td>
<td>Landing pads</td>
<td>Shelter northbound only</td>
<td>Potential connection to Rte. 4 and RT. One or two sides of the street to be determined</td>
<td>$70,000</td>
</tr>
<tr>
<td>UAMS and VA</td>
<td>2</td>
<td>Destination</td>
<td>Landing pads</td>
<td>Shelters</td>
<td>Station location can be either on US 71B or on North St.</td>
<td>$70,000</td>
</tr>
<tr>
<td>US 71B and Township</td>
<td>3.1</td>
<td>Origin and Destination</td>
<td>Landing pads on both sides to overcome verge</td>
<td>Shelters</td>
<td>Station pair with kiosks. $110,000</td>
<td>$110,000</td>
</tr>
<tr>
<td>US 71B and Rolling Hills</td>
<td>3.8</td>
<td>Park and Ride, Transfer</td>
<td>Landing pads on both sides to overcome verge, sidewalk to park and ride lot</td>
<td>Shelters</td>
<td>Potential connection to Rte. 4, and Razorback Rte. 61</td>
<td>$110,000</td>
</tr>
<tr>
<td>Station Location</td>
<td>Distance from MLK Blvd. in Fayetteville (Miles)</td>
<td>Type of Station</td>
<td>Accessibility Needs</td>
<td>Other Improvements</td>
<td>Comments</td>
<td>Potential Station Costs</td>
</tr>
<tr>
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</tr>
<tr>
<td>US 71B and Joyce Blvd.</td>
<td>5.1</td>
<td>Destination</td>
<td>Landing pads, crosswalks and sidewalks on both sides.</td>
<td>Shelters</td>
<td>Potential connection to Rte. 4, and 61.</td>
<td>Station pair with kiosks. $110,000</td>
</tr>
<tr>
<td>US 71B and Zion near Mall</td>
<td>5.4</td>
<td>Destination</td>
<td>Sidewalks connecting to mall</td>
<td>Space for at least two buses</td>
<td>Potential connection to Rte. 3, 4, 61. Greenway crosses 1/4 mile north of Zion simple connection</td>
<td>Potential to use the existing mall stop with just the addition of a kiosk ($40,000) or a station pair on 71B with significant infrastructure improvements $110,000 not including crosswalks</td>
</tr>
<tr>
<td>US 71B and Tyson Dr.</td>
<td>7</td>
<td>Destination and Origins</td>
<td>Landing pads to overcome verges.</td>
<td>Shelters</td>
<td>Need shuttle to Tysons</td>
<td>Station pair with kiosks. $110,000</td>
</tr>
<tr>
<td>US 71B and Robinson - Walmart</td>
<td>8</td>
<td>Destination, Park and Ride, Transfer</td>
<td>Full transfer center amenities with accessible pathways to streets</td>
<td>Full transfer amenities</td>
<td>This is a major transfer station. Potential connection to multiple routes. Greenway close.</td>
<td>Potential for park and ride and transfer station (full amenities) in partnership with Walmart. $280,000.</td>
</tr>
<tr>
<td>US 71B and Maple NW Medical Center</td>
<td>9</td>
<td>Destination, Transfer</td>
<td>Sidewalks. Need pads to overcome verges.</td>
<td>Shelters</td>
<td>Rte. 62</td>
<td>Station pair with kiosks. $110,000</td>
</tr>
<tr>
<td>Station Location</td>
<td>Distance from MLK Blvd. in Fayetteville (Miles)</td>
<td>Type of Station</td>
<td>Accessibility Needs</td>
<td>Other Improvements</td>
<td>Comments</td>
<td>Potential Station Costs</td>
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<td>-------------------------------</td>
</tr>
<tr>
<td>US 71B and Backus - Harps, Georges plant</td>
<td>10</td>
<td>Destination, Potential Park and Ride</td>
<td>Sidewalk on northbound side, landing pad on southbound side</td>
<td>Park and ride space in Harps lot</td>
<td>Greenway</td>
<td>Station pair (kiosks for startup optional). $30,000</td>
</tr>
<tr>
<td>US 71B and Wagon Wheel</td>
<td>12</td>
<td>Origin</td>
<td>Sidewalks and landing pads</td>
<td>Modest improvements - bench, small shelter</td>
<td></td>
<td>Station pair (kiosks for startup optional). $30,000</td>
</tr>
<tr>
<td>US 71B and JB Hunt Dr.</td>
<td>13.5</td>
<td>Destination</td>
<td>Shuttle bus service necessary, Crosswalks.</td>
<td>Modest improvements - bench, small shelter</td>
<td></td>
<td>Station pair (kiosks for startup optional). $30,000 not including crosswalks.</td>
</tr>
<tr>
<td>US 71B and Monroe</td>
<td>14</td>
<td>Origin, Destination</td>
<td>Sidewalks, landing pads and crosswalk</td>
<td>Shelters</td>
<td></td>
<td>Station pair (kiosks for startup optional). $30,000 not including crosswalks.</td>
</tr>
<tr>
<td>US 71B and West Post Rd</td>
<td>17</td>
<td>Origin</td>
<td>Sidewalks, landing pads and crosswalk</td>
<td>Needs pathway from development</td>
<td></td>
<td>Station pair (kiosks for startup optional). $30,000 not including crosswalks or extended sidewalks to adjacent land uses.</td>
</tr>
<tr>
<td>US 71B and Olrich</td>
<td>18.5</td>
<td>Origin</td>
<td>Crosswalk and landing pads</td>
<td></td>
<td></td>
<td>Station pair (kiosks for startup optional). $30,000 not including crosswalks.</td>
</tr>
<tr>
<td>US 71B and Poplar</td>
<td>19.8</td>
<td>Origin, Destination</td>
<td>Landing pads and minor sidewalk improvements</td>
<td>Full transfer amenities</td>
<td>Potential connection to Rte. 51 and 52.</td>
<td>Major Station pair with full transfer amenities. $280,000</td>
</tr>
<tr>
<td>Station Location</td>
<td>Distance from MLK Blvd. in Fayetteville (Miles)</td>
<td>Type of Station</td>
<td>Accessibility Needs</td>
<td>Other Improvements</td>
<td>Comments</td>
<td>Potential Station Costs</td>
</tr>
<tr>
<td>----------------------------------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>US 71B Near Dixieland</td>
<td>21</td>
<td>Park and Ride, Destination</td>
<td>Crosswalks, sidewalks and landing pads</td>
<td>Shelters</td>
<td>Potential connection to Rte. 51 and 52. If stop is relocated to 21st St. no crosswalk infrastructure improvements are required and access to Walmart and the mall is easier.</td>
<td>Station pair with kiosks. $110,000 not including crosswalks. Potential for park and ride facilities working with the mall ($75,000)</td>
</tr>
<tr>
<td>US 71B and N. 46th St</td>
<td>22.5</td>
<td>Destination</td>
<td>Pathways into south side shopping, and minor crosswalk improvements</td>
<td>Shelters</td>
<td></td>
<td>$110,000</td>
</tr>
<tr>
<td>US 71B and Medical Center Parkway</td>
<td>23</td>
<td>Destination</td>
<td>Crosswalks, sidewalks and landing pads</td>
<td>Shelters</td>
<td>Potential connection to Rte. 11.</td>
<td>Station pair with kiosks. $110,000 not including crosswalks.</td>
</tr>
<tr>
<td>US 71B and SE.28th</td>
<td>25</td>
<td>Destination</td>
<td>Landing pads and modest sidewalk improvements</td>
<td>Shelter southbound only</td>
<td>Potential connection to Rte.11.</td>
<td>Station pair with kiosk on southbound side. $70,000</td>
</tr>
<tr>
<td>US 71B and SE 14th St</td>
<td>26</td>
<td>Origin, Destination</td>
<td>Shelter southbound only</td>
<td></td>
<td></td>
<td>Station pair with kiosk on southbound side. $70,000</td>
</tr>
<tr>
<td>WM H.O. (US 71B and 8th)</td>
<td>26.5</td>
<td>Destination</td>
<td>Sidewalks and crosswalks</td>
<td>Shelter southbound only</td>
<td>Potential connection to Rte. 11.</td>
<td>Station pair with kiosk on southbound side. $70,000</td>
</tr>
<tr>
<td>WM Logistics</td>
<td>27.3</td>
<td>Destination, Park and Ride</td>
<td>Sidewalks and crosswalks</td>
<td>Full transfer amenities</td>
<td>Potential connection to Rte. 11.</td>
<td>Single transfer facility, park and ride. $280,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$2.1 million - $2.7 million</strong></td>
</tr>
</tbody>
</table>
Basic Station Guidelines

While the study team with input from each of the cities have selected some stations, most were selected by the study team and the study committee. While it is anticipated that some of the stations may change, the following guidelines (especially related to safety) should be followed for any bus station:

- Stations about every 1 – 2 miles, typical of this type service
- About 50 stations (usually on both sides of the street), origin based (where people live), destination based stations as well as stations with cross route meets and park and ride lots
- All stations must be on the far side of intersection
- 3 types of stations
  - Minimal – Accessible pathways and shelter
  - Major Station – Accessible, raised platform, real time information, fare payment kiosk
• Transfer and/or Park and Ride – Space for multiple buses and amenities of a major station

Accessibility and Safety at All Stations:

• Pathways to intersection
• Signal and Crosswalks – we never recommend stations where passengers have to cross US 71B without benefit of a cross walk and traffic signal
• Safe and well lit
• Appropriate landing pad

Technology – Moving Rapidly on the Corridor

ORT will coordinate a number of technologies to help reduce travel time:

1. **Signal Prioritization** – This is a key element of the Virtual Dedicated Lane. ORT will work with each city and Arkansas Department of Transportation (ArDOT) to ensure that each signal in the corridor allows buses that are operating behind schedule to maintain a green light (except when priority emergencies are taking place). It is important to ensure that all cities and the state are coordinated in order to maximize effectiveness. ORT will be required to work with each city’s system, which are different from each other.

2. **Protected Left Turns** – In the few instances when the bus leaves US 71B (major transfer and end points), the signal will allow for a protected left turn priority.

3. **Fare Payment** – One option is to operate fare free during the pilot project and forgoing about $600,000 for one year. Free fare will generate the highest ridership with the understanding that after one year a fare would be instituted. If implementing a fare, the objective here is for prepayment using a variety of approaches to ensure riders can board as rapidly as possible. This would include a variety of methods to pay the fare:
a. **Smart Fare Box** – Fully electronic fare boxes that can accept the variety of payment methods described below, can assist in the boarding process.

b. **Telephone app** - Interfacing with the fare box for payment.

c. **Fare Vending Machine** – All significant stations will have vending machines that can allow for payment using cash or credit card and customers can reload their smart card. The machines will accept: smart cards, credit cards, telephone app, paper tickets or exact change.

d. **Smart Card** - Can be reloaded at a fare vending machine (all major stops) using cash or a credit card or on a computer using a credit card. There are a variety of fare approaches that can influence riders to use a smart card, which would allow for the quickest boarding.

e. **Accepting Cash** – Exact fare in cash will be accepted at the fare box or at a vending machine.

4. **Real Time information** - At stations and on a telephone app. This will allow customers to gain confidence in the system, knowing when the bus will arrive. It also makes the service more convenient.
5. **Digital Communications** – The vehicle operator will have a series of digital codes to use in communicating issues to dispatch control center. This will cut communications time and allow the vehicle operator to focus on the vehicle operation.

6. **Active Monitoring of Service** – At this time, the best technology must work closely with the dispatchers to gain the “best of both worlds.” The dispatch control center will have screens that tell the dispatchers exactly where the vehicles are and how fast they are going. Seeing the big picture they can direct vehicles as needed.

### CAPITAL AND OPERATING COSTS

The capital and operating costs for a Smart BRT are significant, yet well below the cost of a dedicated lane BRT. This next section reviews the capital, operating and startup costs required for the service to be successful.

#### Capital Costs

The most significant capital costs will be the stations, the buses, and the technology. These are reflected as follows:

**Buses and On Board Technology**

It is proposed that the service use medium duty buses. The base cost of these vehicles is about $330,000 each, a little more than one-half the cost of a heavy duty bus. On board technologies needed to ensure rapid movement through the service area include: automatic vehicle locators (AVL), multiple signal prioritization transponders (for each city’s signals), fully digital communications and electronic fare boxes, all estimated at $45,000 per vehicle. The study team also looked at the costs without the $15,000 electronic fare boxes but using telephone apps, station kiosks, on line and purchase at retail outlets. Fare free service for a pilot would also mitigate the need for a fare box. The various costs built into each vehicle are reflected in Table 6-3.
Table 6-3: Vehicle and Accompanying Technology Costs

<table>
<thead>
<tr>
<th></th>
<th>Unit Cost</th>
<th>21 Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Base Vehicle Cost</td>
<td>$330,000</td>
<td>$6,930,000</td>
</tr>
<tr>
<td>CAD AVL</td>
<td>$4,000</td>
<td>$84,000</td>
</tr>
<tr>
<td>Signal Preemption</td>
<td>$18,000</td>
<td>$378,000</td>
</tr>
<tr>
<td>Digital Communication</td>
<td>$9,000</td>
<td>$189,000</td>
</tr>
<tr>
<td>Fare Boxes</td>
<td>$15,000</td>
<td>$315,000</td>
</tr>
<tr>
<td><strong>Fully Loaded Vehicle Costs</strong></td>
<td><strong>$376,000</strong></td>
<td><strong>$7,896,000</strong></td>
</tr>
</tbody>
</table>

**Stations**

While the cost of BRT stations for this level of service typically top $4 Million, there is no need to spend at those levels at the current time. For BRT to be most successful however, stations should enhance rapid boarding and alighting.

The costs of stations are detailed in Table 6-2 depicted above. These costs range from **$2.1 Million to $2.7 Million** for a higher level of kiosks and some station enhancements.

**Total Operating Costs**

The operating costs are dependent on headways which determine the number of buses in service. Basic per hour costs for the 10/30 scenario are $85 per vehicle hour. These costs are listed in Table 6-4.

Table 6-4: Total Operating Costs

<table>
<thead>
<tr>
<th>Headways</th>
<th>Peak Vehicles</th>
<th>Spare Vehicles</th>
<th>Annual Revenue Hours</th>
<th>Annual Operational Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart BRT</td>
<td>10 Minute (Peak)</td>
<td>17</td>
<td>38,633</td>
<td>$3.28 Million</td>
</tr>
<tr>
<td></td>
<td>30 Minute (Off-Peak)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Planning, Architectural and Engineering Requirements/Costs**

Planning efforts will include: a detailed start-up and service plan with full schedules and run cuts as well as revisions to most other routes in ORT's system. Stations will be located and then designed. Architectural, engineering and technology expertise will also
be needed for signal prioritization and signage. These various efforts will cost on the order of \( \$2,000,000 - \$2,500,000 \). These numbers are also depicted in Table 6-4.

**Marketing and Promotional Costs**

As with any business, a marketing and promotional effort for a new “start-up” service should include a variety of approaches, including high profile television, newspaper and radio spots, billboards strategically located, working with corporations as well as a variety of grass roots efforts. The television, radio, newspaper and billboards require funding, grass roots efforts and work with corporations requires staff time.

Based on start-up advertising campaigns in peer cities we estimate that the marketing efforts will be about \$350,000 for staff time, branding, TV and radio spots (20 each), newspaper ads and other marketing efforts (Table 6-5). On-going marketing costs are built into the hourly operating costs.

**Table 6-5: Total Startup and Operating Costs**

<table>
<thead>
<tr>
<th></th>
<th>10 Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Headways</td>
<td></td>
</tr>
<tr>
<td>Annual Operating Costs</td>
<td>$3,280,000</td>
</tr>
<tr>
<td>Startup Costs</td>
<td>$2,850,000</td>
</tr>
<tr>
<td>Marketing Costs</td>
<td>$350,000</td>
</tr>
<tr>
<td>Architectural &amp; Engineering Costs</td>
<td>$2,500,000</td>
</tr>
<tr>
<td><strong>Total Capital Costs</strong></td>
<td><strong>$10,851,000</strong></td>
</tr>
</tbody>
</table>

**Total Costs**

The total operating costs are \$3.28 million. Startup costs for architecture, engineering, planning and marketing costs are \$2.5 Million. Table 6-5 also depicts the full capital costs of stations, buses and technology. When put together with the operating costs these costs represent the capital/infrastructure costs, start-up and one year of operating costs.

**FUNDING SERVICE**

There are few secrets to securing funding for a start-up, ongoing and sustainable service. Under any scenario, local governments, sponsors and/or residents through a tax will have to pay at least 50 percent of the operating costs and up to 20 percent of the capital costs on an on-going basis. As discussed previously, without a dedicated funding source, the
system will have to rely on each city contributing its fair share. This should ideally be in the form of long term binding agreement.

**Sustainability and Diversity**

Sustainability is critical to the success of a pilot project. That is, future funding commitments from the public and private sector should be secured prior to implementing a pilot project, assuming the pilot is successful. Without a pathway to sustainability any pilot project would be futile. Diversity is the key to sustainability and the system should secure:

1. Federal funding for vehicles, infrastructure improvements and possibly operating funds is typically available, with additional sources for BRT and special projects.
2. Local funds to match the Federal funding,
3. Private sector funding in the form of sponsorships and partnerships.

**Sponsorships - Public/Private Partnerships (P3)**

Sponsorships imply an agreement that benefits all parties. In a sponsorship program, one side receives revenue and support, while the other side receives advertising and promotional benefits commensurate with the cost. In fact, an LBRT service will benefit many businesses by supporting their employee's transit needs as well as bringing customers to their businesses. It is reasonable to ask businesses who will benefit from service to become system sponsors or partners

- **Hotels, major retail, and service sector**: These entities are across the region.
- **Other major employers**: Many employers that hire large numbers of low skilled employees.
- **Any other businesses that wish to advertise their services or company**: If desired, parts or all of buses can be wrapped for advertising purposes.

**Transit Sponsorships Opportunities**

Transit has a long history of providing advertising on and in buses for additional revenue. Many systems have engaged in advertising over the years, but a sponsorship program is more than simply advertising. Instead of the usual selling of just one form of advertising, the new entity should sell sponsorship packages. Since sponsorship and advertising funds are an important source of local funding, this program can help expand this effort.
Identifying Service

The program is designed to sell a service to both public and private sponsors. Possible services for sale can include:

- Sponsorship Services at Any Level
  - Recognize sponsor on the how-to-ride guide (system map and schedule), website, and other venues.
  - Recognize sponsorship on system literature and advertising.
  - Decal on side or back of bus.
  - Dedicated shuttle.
  - Special promotions sponsorship.

- Higher Level Sponsorship Services (in addition to the above benefits)
  - Company logo on system map.
  - Placing a shelter for customers and/or employees.
  - Placing a stop conducive to customers and/or employees. This could include going into a parking lot and stopping next to the facility.
  - Bus wrap or other advertising inside the bus.

SUMMARY

At this time, for the most part one can go from one city in the urban area to another by car, bicycle or walking, but for the most part, one can’t do it using transit.

The service area is basically linear in design but currently there is no linear service and there is little connectivity between cities. The needs in the service area are evident, but services are slow to grow due to the lack of a major local funding commitment to transit.

Smart BRT with a virtual dedicated lane can serve as the “backbone” for the entire network and can connect all of the cities, perhaps the highest un-met need in the area. This route will quickly become the dominant route with far and away the highest ridership and turn ORT into a true regional system.

The challenge is to ensure that the service is funded well enough so that it can succeed, rather than cut costs to save money, resulting in lower service quality, convenience and ultimately chances for success.