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German "Smart-Bus" Systems

Potential for Application in Portland, Oregon
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Office of Technical Assistance and Safety
Federal Transit Administration
400 Seventh Street SW
Washington, DC 20590

DOT/FHWA
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A VIDEOTEX_ENHANCED (VIXEN) FLEXIBLE OPERATIONS

COMMAND AND CONTROL SYSTEM (FOCCS)

Section 1 - General Information on VIXEN

Videotex may be defined as any easy-to-use, interactive, information service. This definition is broad enough to include services that permit a person without special training to use:

A. personal computers equipped with modems (e.g., Prodigy, CompuServe),
B. specialized terminals (e.g., Community Link - Omaha and Minneapolis, Minitel - France),
C. and touch-tone telephones, (e.g., BeeLine in Sacramento, InfoLine in Seattle)

to retrieve information from remote computer data bases via ordinary telephone lines. This definition is also broad enough to include services that use cellular telephones, cable TV lines, voice recognition or even old-fashioned rotary dial phones as input/output devices or as data transmission media.

This appendix describes how the capabilities of the German Flexible operations Command and Control System (FOCCS) can be enhanced by adding a videotex interface to answer inquiries or to process transactions, such as a request for a ride. The reasons for adding the videotex interface are to increase the productivity of dispatching/information personnel and to make users responsible for the accuracy and completeness of their data.

This appendix also describes how the capabilities of the VIdeoteX-ENhanced (VIXEN) system can be extended to provide information to drivers of single-trip carpool (aka parataxi) vehicles or any other vehicles on the "best" ways to get between two points (e.g., Home and Work) in light of the latest traffic, weather,. etc., conditions. VIXEN would also permit registered parataxi drivers with the opportunity to enter trip offers and receive information on the name, origin address, destination address, etc., of registered parataxi riders who have accepted a trip offer.

The following sections describe how an audiotex (i.e., touch-tone telephone)-based VIXEN System would operate. However, the task of adapting VIXEN to use Personal Computers (PCs) equipped with modems

or specialized videotex terminals (e.g., Minitels) would be quite straight-forward. section 2 describes the information services available to riders of transit, paratransit or ridesharing vehicles. Section 3 describes the information services available to drivers of public transportation and other vehicles. Section 4 provides additional comments on the design of VIXEN, including flow charts.

Section 2 - Advanced Rider Information Subsystem (ARIS)

This section describes the interactive procedure by which the VIXEN system obtains trip specifications from a rider and how it presents trip information to the rider. The four basic specifications that are required to obtain this information are the:

1. Rider's origin
2. Rider's destination
3. Planned time of departure/arrival
4. Number of seats required (i.e. people traveling)

In order to reduce the input requirements on the rider, it will be possible for each rider to pre-store frequently-used trip specifications in his or her master file to make the system easier to use. For example, the master file could contain all the information required to request a ride, which would arrive by 8:30 AM, from the rider's home to his or her place of work. It will also be possible to store other rider characteristics - such as no smoking, hearing or visual impairment, a wheelchair user - to provide VIXEN with the information necessary to provide the best transportation services to the rider.

The direct phone numbers for each ARIS service can be used to bypass intermediate steps and save the experienced user considerable time. There are two levels of ARIS services, (A) those for the general public and (B) those only for registered VIXEN users:

2A. **General ARIS Services - No VIXEN Registration Required**
Direct Phone: XXX-X120)

These services provide information to the general public about:

2Al. Obtaining rides on scheduled bus and rail transit services, given the user's earliest time of departure.

2A2. Obtaining rides on scheduled bus, and rail transit services, given the user's latest time of arrival.

2A3. Obtaining rides on taxis, airport shuttles and

other conventional paratransit service.

2A4. Registering for conventional carpool and vanpool matching services.

2A5. Registering for Special transit, paratransit and ridesharing services.

(Readers not interested in detailed descriptions of how to use each of these interactive services may skip to paragraph 2B on Page 7.)

2Al. **Obtaining information on scheduled bus and rail transit services, given the earliest time of departure** (Direct Phone: XXX-X121)

This section will describe how one can use an audiotex-based ARIS, sometimes called a Computerized Rider Information System (CRIS), to request information about non-restricted rides on a local public transportation system. Conceptually, this information will be retrieved from a matrix of reasonable (i.e. no more than three transfers) alternatives for each origin-destination pair for weekdays, Saturdays and Sundays and holidays.. Once a request is entered from a touch-tone telephone keyboard, the computer system will examine the available alternatives and provide the user with information about the "best" rides available. The computer will use criteria specified by the user or historical rider preferences to find up to ten (10) rides that meet the caller's transportation needs.

The computer will first describe what it selected as the "best" trip for the user. The user can listen to information about the other nine trip possibilities by using the keys to work through the list of possibilities. The "F" (#3) key can be used to move FORWARD to the next ride description. The "R" (#7) key can be used to REPLAY any ride description and the "B" (#2) key can be used to work one's way BACK-UP to the previous ride, description.

It should be noted that the term "bus" in this and the following sections (as in the German Ruf-Bus or FOCCS systems) applies to maxi-buses (articulated buses), mini-buses and micro-buses (i.e. contract taxis), which may be used on a route at different times. It should also be noted that telephone operators will be available at all times

to assist in the event of a problem. However, there may be an additional charge for "operator-assisted" calls.

It is assumed that users have access to a map[1] that shows the numbers of all check-points[2] in the service area. The following are the steps a user would take-to obtain information about a ride from a regular checkpoint to a regular or route-deviation checkpoint:

1. The computer says: "Please enter "1" if you require a lift-equipped vehicle or a "2" if you do not". If "1" the computer. will skip to Step 3. If anything other than a "1" is pressed (or if there is no answer within 5 seconds), the computer will assume a lift vehicle is not required and will continue to the next step.

2. The computer. says: "Please enter a "1" if you would like to minimize walking distances, a "2" if you would like to minimize transfers, a "3" if you would like to minimize door-to-door travel time, or a"4" to get the lowest price. If anything other than these keys is pressed, the computer will assume a "4" has been selected.

3. The computer says: "Please enter your-origin checkpoint number now." The user enters a four digit number. The system will not accept invalid checkpoint numbers, such as the number of a route-deviation checkpoint, as an origin checkpoint for unregistered users.

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[1]These maps will be available in the yellow pages, from the regional transit agency, and at many stores and newsstands.

[2]Checkpoint - Any public transportation loading or unloading point.

[3]**Regular** checkpoint - A rail station, bus stop, etc. that is visited on a regular schedule and designated with a sign.

[4]Route-deviation checkpoint - Only visited during certain hours (e.g. off-peak, late night) at the special request of a transit user. These checkpoints are also designated with a sign.

4. The computer says: "Please enter your destination checkpoint number now." The user enters a four-digit number.

5. The computer says: "If you are interested in obtaining information about transit rides during the next 12 hours, press the "1" key". If you are interested in transit rides at. other times, press the "2" key. If the user presses the "2" key, the computer skips to Step 9.

6. The computer says: "It is now (TIME) (AM/PM), on (DAY of WEEK). Please enter the earliest time you can leave the checkpoint as a four. digit number. The first two digits are for the hour and the second two digits are for the minutes. For example, 9:45 would be entered as "0945" . The. user enters a four-digit number. The computer will calculate whether the time is AM or PM and the day of the week, since it is within 12 hours of the current time.

7. The computer will search through the origin-destination matrix for that day of the week and will tell the caller the scheduled (and estimated) time of the “best" bus or rail departure, the vehicle and/or route number, and the fare, transfer instructions, etc. The caller can repeat the information by pressing the "R" key. The caller can forward to information about the next alternative by pressing the "F" key. The procedure can be used repeatedly to explore other travel possibilities. The caller can also back-up to the previous alternative with the "B" key. It should be noted that this is an information service only. No new transit trips will be added and no existing transit trips will be modified as a result of this audiotex inquiry.

8. The computer says: "Please press "1" if you would like to get other transit information". If the user presses "1", the computer returns to Step 3. If the user presses any other key, or if 5 seconds elapse, the computer will terminate the call.

9. The computer says: "Enter "1" if you are interested in weekday transit information, "2" if you are interested in Saturday transit,

information, or "3" if you are interested in Sunday or holiday transit information". The user enters 1, 2, or 3. Any other response, or no response for 5 seconds, will be treated as a "1".

10. The computer says: "Please enter the earliest time you can leave the origin checkpoint as a four-digit number". The user enters a four-digit number.

11. The computer says: "Please enter a "1" if this time is AM or a "2" if this time is PM". The user enters a "1" or "2". Any other response or no response for 5 seconds, will be treated as a "2". The computer skips back to Step 7.

2A2. Obtaining information on scheduled bus and rail transit services, given the latest time of arrival **(Direct Phone: XXX-X122)**

Since this procedure is almost identical to that in the preceding section, where the earliest time of departure is given, the steps will not be repeated here.

2A3. Obtaining information on taxis, airport shuttles and other conventional paratransit services (Direct Phone: XXX-X123)

For the initial demonstration of VIXEN, this function will be handled. by trained operators who will collect information from the caller on origin, destination, size of traveling groups, requested departure time, amount of luggage, etc. and enter it into the computer. The computer will transmit information about the closest origin and destination checkpoints to all participating[5] paratransit operators who can provide transportation services between these checkpoints. The operator will review the "bids" received from these operators and will provide alternatives to the caller. After the caller has made a choice,

[5] Participating paratransit operators are those that are properly insured and licensed to provide transportation services in part or all of the VIXEN service area and who have agreed to provide Tri-Met a small commission for brokerage services.

the operator will transmit the name of the caller and the Origin and destination addresses to the selected paratransit- operator and will transmit "sorry" messages to all others who expressed an interest in providing the ride.

This approach assumes that most callers are not familiar with either the local area or with the full range of available local paratransit services, and that most would like to have an "agent" or "broker" help them obtain the most "cost-effective" service available. With a single phone call, this agent could help them locate the closest available taxi, for example, or a less costly jitney or shuttle service. The agent would also let riders know the approximate cost and the approximate travel time when they call.

2A4. Registering for conventional carpool and vanpool matching services (Direct Phone: XXX-X124)

Calls for these services. will be automatically transferred to the rideshare department.

2A5. Registering for special transit, paratransit and ridesharing services (i.e. VIXEN cards) (Direct Phone: XXX-X125)

Calls for these services will be -automatically transferred to the VIXEN "HELP" desk to assist the caller in finding the most convenient registration office, since the applicant will need to be photographed and issued an account number, and an I.D. card, and register a four-digit personal identification number (PIN), which will serve as an electronic signature for future transactions. Perhaps these functions could be provided by Oregon's Department of Motor Vehicles (DMV).

2B. Restricted VIXEN Services - VIXEN Registration Required (Direct Phone: XXX-X130)

Two important purposes for registering users of flexible-route public transportation services and issuing account numbers, identification cards and PINS, is to minimize "false alarms" (i.e. false requests for special transportation services) and to improve the security of both riders and drivers. The following is the procedure a user would follow to access any restricted ARIS services:

The computer will say, "Please enter your account

number now". The user will enter his or her account number.

The computer will say: "Please enter your Personal Identification Code now". The user will enter the four digit PIN.

If the PIN is correct, the computer will skip to. the users special request. If the PIN is not correct, the computer will ask the user to reenter it up to three (3) times. If the PIN number is still incorrect, the computer will advise the user that he or she is being disconnected because the "Personal Identification Code" is invalid. The computer will also record this possible attempt to obtain someone's PIN number and will take appropriate action, including special monitoring programs or changing account numbers and PIN numbers.

Readers who own AT&T or other telephone credit cards will recognize that the procedure is very similar to that used to charge long-distance telephone calls. In fact, users may wish to use their telephone credit card PIN or bank credit card PIN as their VIXEN personal identification number to make it easier to remember. The security procedure is also very similar to that used by the. Charles Schwab brokerage firm to buy and sell stocks via its TeleBroker system and by the State of North Carolina for filing unemployment insurance claims.

Two other purposes for registering users is to make services easier to use and to minimize input errors. Registered users may prestore detailed definitions for mnemonic (i.e. easy to remember) codes and use these codes for:

Origin and destination checkpoints (e.g. HC = Home's (closest) Checkpoint - 1043; SC - School's (closest) Checkpoint = 2078).

Origin and destination addresses for door-to-door services (e.g. H = 23 Elm Street, Westwood; W = 1088 King Street, Santa Monica).

Ride definitions (e.g. HW = A ride from Home (e.g. 23 Elm Street, Westwood) to work (i.e. 1088 King Street, Santa Monica), as soon as possible, one person (male).

The use of easy-to-remember codes, will make VIXEN more convenient to use and will reduce input errors. For example, users should find it much easier to remember the name of the checkpoint nearest home as "HC" rather than 1043. The use of

mnemonic codes will also make it easier to request door-to-door and flexible-route transportation services. Rather than trying to use the touch-tone--key-board to enter "23 Elm Street, Westwood", for example,each time a user wanted to use his or her home address as either an origin or a destination checkpoint, the user need only enter "H", which had earlier been registered as anindividual[6] checkpoint code for that address. Special user information, such as a wheelchair lift is required,will be available in the user's file record and will not need to be entered for each trip by the user.

The biggest time savings will occur when using a mnemonic code to enter the complete description of a public transportation trip, particularly a trip that includes door-to-door service. The mnemonic code (up to six letter or numbers followed by a *) not only provides access to origin and destination information,it may also provide access to information on the requested time of departure or arrival, or the number of people in the traveling group. In the event of a minor change in travel plans, users will be able to modify the requested time of departure or arrival or the number of people in the traveling group by calling the telephone operator (i.e. pressing the"O" or "Operator" key). If the user requests a route-deviation or a demand-responsive ride (i.e., one that is not served on.a regular transit route) and he or she does not show up, the user's account will be billed a penalty fee (e.g., $1.00), since the vehicle and driver had to make a special trip to meet the user's request.

Restricted VIXEN services provide information to registered card holders and their guests about:

2Bl. Obtaining rides on all available fixed-route, route-deviation and demand-responsive transit, paratransit and ridesharing services, given the user's earliest time of departure.

2B2. Obtaining rides on all available fixed-route, route-deviation and demand-responsive transit, paratransit and ridesharing services, given the user's latest time of arrival.

2B3. Obtaining rides on all available fixed-route, route-deviation and demand-responsive transit, paratransit and ridesharing services, given the user's prestored ride specifications.

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[6]Individual checkpoints are special paratransit or ridesharing pickup and delivery points specified by a user. The location of each user's individual checkpoints will in be that user's file records.

(Readers not interested in detailed descriptions of how to use each Of these interactive services may skip to Section 3 on page 13).

The following description assumes that the service area has fixed-route, route-deviation and demand-responsive modes of public transportation. If any of these modes are not available in the service area, they will not be included in the evaluation of alternative modes and will not be offered to users.

2Bl. Obtaining rides on all available fixed-route, route-deviation and demand-response public transportation services, given the user's earliest time of departure (Direct Phone: XXX-X131)

This section will describe how one can use an audiotex-based VIXEN system to request information about both restricted and non-restricted rides on a local public transportation system; The system will examine all the alternatives available between two checkpoints and will provide the user about the "best" rides available. The computer will use criteria specified by the user or historical rider preferences to find up to ten (10) rides that meet the caller's transportation needs.

The computer will first give the user its "best" trip recommendation. The user can use the "F" and "B" keys on the telephone to work his or her way "Forward" or "Backward" through the list of rides descriptions or the "R" key to "Repeat" any ride description. It should be noted that telephone operators will be available at all times to assist the user in the event of a problem. However, there may be an additional charge for "operator-assisted" calls. The following are the steps a registered VIXEN user would take to obtain. information about a ride from an individual checkpoint (e.g. work address) to the regular checkpoint closest to the individuals home:

1. Enter VIXEN account number and PIN. If invalid after three trips, take appropriate security precautions and disconnect user. If valid, continue.

2. Enter origin checkpoint code or number. User enters "W", which has been defined in the user's VIXEN file by his or her work address (i.e. possibly a numbered stall in the employee's parking lot).

3. Enter destination checkpoint code or number. User enters "CH", which has been defined in the user's VIXEN file as regular checkpoint 3314.

4. Enter the number of people in traveling group. User enters a one or two digit number. This information is important in dispatching a large enough vehicle or sufficient vehicles to accommodate the traveling group since the VIXEN computer can dispatch a dial-a-ride minibus or even a contract taxi if this is the most cost-effective approach. Since the caller in this example specified an origin checkpoint that was not a regular transit checkpoint or a route-deviation checkpoint, it is likely that he or she will be picked up by a small paratransit/ridesharing vehicle.

5. Enter the earliest time of departure. The user enters a four digit number and, if necessary, a code to indicate whether the time is AM or PM.

6. The VIXEN computer will search through the public transportation, alternatives available and will prepare a "list" of up to ten (10) that meet the criteria specified by the user (e.g. guaranteed seating, no transfers) in his or her VIXEN file. The computer will first give the user its "best" trip recommendation. The user can use the "F" and "B" keys to search through the list and can select the "one" that he or she prefers by pressing the "#" key immediately after the trip description is read by the ARIS computer.

7. The VIXEN computer will then ask if the registered user would like to get additional information. If "yes", the computer will return to Step 2. If "no", the computer will terminate the call.

Several points should be noted in this example. Firstly, the system will not only examine scheduled transit alternatives for a registered user, it will also examine paratransit and ridesharing alternatives. Secondly, if the user does not specify a regular or route-deviation checkpoint as the origin or destination for. a public transportation trip, the VIXEN computer will probably

assign a small-vehicle paratransit or ridesharing service with guaranteed seating. Thirdly, for registered users, VIXEN is both an information service and a reservation/transaction service. AS soon as the user presses the "#" key (See Step 6), VIXEN accepts this as an electronic signature for an order for transportation services. If the user does not show up to accept the ride, his or her account will be charged a penalty fee. Note: If the ride is on a scheduled transit vehicle. between two regular checkpoints, it is not considered a transaction because no additional vehicle was either dispatched and no existing vehicle was re-routed.

2B2. Obtaining rides on all available fixed-route, route-deviation and demand-response public transportation services, given the user's latest **time of arrival.** (Direct Phone: XXX-X132)

Since this procedure is almost identical to that in the preceding section, where the earliest time of departure is given, the steps will not be repeated here.

2B3. Obtaining rides on all available fixed-route, route deviation and demand-response public transportation services, given the user's prestored **ride** specifications. (Direct Phone: XXX-Xl33)

The following are the steps a registered user would take, for example, to obtain information about door-to-door service between home (H) and work (W):

1. Enter account number and PIN. If invalid after three tries, take appropriate security precautions. and disconnect user. If valid, continue.

2. Enter a prestored ride specifications code (up to 6 characters or digits followed by a "l"), which will provide origin checkpoint number, destination checkpoint number, number of persons in traveling group, and requested time of departure/arrival.

The computer will search through the public transportation alternatives available and will prepare a "list" of up to ten (10) that meet the criteria specified by the user in his or her file. The computer will first give the user its "best" trip recommendation. The user can use the "F" and "B" keys to search this list and can select the one that he or she prefers by pressing the "#" key immediately after the trip description is read by the VIXEN computer.

A video-based Advanced Rider Information Subsystem (ARIS) would closely follow the preceding steps for an audiotex-based subsystem and will not be discussed further-in this report. It should be noted, however, that video-based.systems will be more user-friendly and will provide many more capabilities than audiotex systems in the future.

Section 3 - Advanced Driver Information Subsystem (ADIS)

As in the case of requests for parataxi rides, four basic specifications are required for drivers to offer parataxi rides. These are the:

1. Driver's origin
2. Driver's destination
3. Planned time of departure/arrival
4. Number of seats available (i.e. passenger capacity)

These same trip specifications can also be used to give a driver more timely and accurate information about traffic conditions between his or her origin and destination or to recommend the best routes between the origin and destination. It will also be possible for each driver to pre-store frequently-used trip specifications in his or her master file to make the system easier to use.

There are also two levels of ADIS services, (A) those for the general public and (B) those only for registered VIXEN users:

3A. General ADIS Services - No VIXEN Registration Required
(Direct Phone: XXX-X.140)

These services provide information to the general public about:

3Al. Traffic conditions between any two market (regular or route-deviation) checkpoints, given the driver's planned time of departure.

3A2. Traffic conditions between any two marked checkpoints, given the driver's planned time of arrival.

3A3. Latest traffic conditions on major roads or highways,

3A4. Public parking facilities near any marked checkpoint.

3A5. Registering for conventional carpool and vanpool

matching services.

3A6. Registering for special driver information services (i.e. VIXEN registration procedures).

(Readers not interested in detailed descriptions of how to use each of these interactive services may skip to paragraph 3B on Page 17.)

3Al. Obtaining information on traffic conditions, between any two marked checkpoints, given the planned time ofdeparture . (Direct Phone: XXX-X141)

This section will describe how one can use an audiotex-based VIXEN to request information about traffic conditions between any two points in the service area. Conceptually, this information will be retrieved from a matrix of reasonable routes for each origin-destination pair for morning commuting hours, midday, afternoon commuting hours and other times. Once a request is entered from a touch-tone telephone keyboard, the computer system will examine the available alternatives and will provide the user with information about the "best" routes available. The computer will use criteria specified by the user or historical driver preferences to find up to ten (10) routes that meet the caller's travel needs.

The computer will first describe what it has selected as the "best" route for the user. The user can listen to information about the other route possibilities by using the "F" and "B" keys to work his or her way through the list of possibilities. The "R" key can be used to repeat-any route description. The following sections will describe how to use an audiotex-based Advanced Driver Information Subsystem (ADIS). It should be noted that telephone operators will be available at all times to assist the user, in the event of a problem. However, there may be an additional charge for "operator-assisted" calls.

It is assumed that users have access to a map that shows the numbers of all check-points in the VIXEN service area. The following are the steps a user would take to obtain information

about traffic conditions between two marked checkpoints:

1. The computer says: "Please enter "1" if you are driving a motorcycle, automobile, van or small truck or a "2" if you are driving a larger vehicle. If anything. other than a "1" is pressed (or if there is no answer within 5 seconds), the computer will assume the caller is using a larger vehicle and will skip to Step 2. This feature is necessary because some large trucks are excluded from some streets, neighborhoods, bridges, etc. at certain times.

2. The computer says: "Please enter "2" if you are a two-axle truck, "3" if you are a three-axle truck or trailer-truck, or "4" if you are larger. If anything other than a "2" or "3" is pressed, the computer will assume a "4" has been selected.

3. The computer says: "Please enter the number of the checkpoint closest to your point of origin". The user enters a four-digit number.

4. The computer says: "Please enter the number of the checkpoint closest to your destination point." The user enters a four-digit number.

5. The computer says : "If you are interested in obtaining information about traffic conditions during the next 12 hours, press the "1" key. If you are interested in traffic conditions at other times, press the "2" key. If the user presses the "2" key, the computer skips to Step 9.

6. The computer says: "It is now (TIME) (AM/PM) or (DAY OF WEEK). Please enter your planned time of departure as a four digit number now." The user enters a four-digit number.

7. The computer will search through the origin-destination matrix for that day of the week and time period and will tell

the caller the "best" route between the two checkpoints. The user can hear about alternative routes by us of the "F" key and the "B" key, as described previously. The computer will terminate the call after five minutes-.

8. The computer says: "Please press "1" if you would like information about public parking near your destination (checkpoint). If the user presses "1", the computer skips to Step 2 of Section 3A4 - requesting information about public parking facilities. If the user presses. any other key, or if 5 seconds elapses, the computer will terminate the call.

9. The computer says: "Enter "1" if you are interested in morning commuter hours traffic information, "2" if you are interested in midday traffic information, "3" if you are interested in afternoon commuter hours traffic information or "4" if you are interested in traffic information, at other times. Any other responses,or no response for 5 seconds, will be treated as a "4".

10. The computer says: "Please enter the earliest time you can leave the origin checkpoint as a four-digit number." The user enters a four-digit number.

11. The computer says: "Please enter a "1" if the time is AM or a "2" if this time is PM." The user enters a "1" or "2". Any other response, or no response for 5 seconds will be treated as a "2". The computer skips back to Step 7.

3A2. Obtaining information about traffic congestion, given the planned time of arrival. (Direct Phone: XXX-X142)

Since the procedure is almost identical to that in the preceding section, where the planned time of departure is given, the steps will not be repeated here.

3A3. Obtaining the latest information about traffic congestion on a numbered roadway.

The computer will list the major routes, in order of popularity, and ask the user to enter a "1" as soon as he or she hears the name or the number of the route of interest. As soon as the "1" is pressed, the computer will describe the traffic conditions in both directions or the route. The user can move forward or backward through the list with the "F" or "B" keys.

3A4. Obtaining information about public parking facilities near any marked (i.e. regular or route deviation) checkpoint. (Direct Phone: XXX-X144)

1. The computer will say: "Enter the marked checkpoint number closest to your destination". The user enters a four-digit number.

2. The computer will search its files and give the caller a list of the addresses of the "best" parking facilities close to the (destination) checkpoint.

3. The user can use the "F" and "B" keys to work his or her way forward and backward through the list.

3A5. Registering for conventional carpool and vanpool matching services. Direct Phone: XXX-X124)

Calls for these services will be automatically transferred to the rideshare department. (NOTE: This is the same as Section 2A4).

3A6. Registering for special driver information services (i.e. VIXEN registration procedures). (Direct Phone: XXX-X125)

Calls for these services will be automatically transferred to the VIXEN registration agency. (NOTE: This is the same as Section 2A5).

3B. Restricted ADIS Services - VIXEN Registration Required. (Direct Phone: XXX-Xl5O)

As in the case of the Advanced Rider Information Subsystems (ARIS), all of the above information services require the user

to have a VIXEN account number, identification card and personal identification number (PIN). Each restricted ADIS request will require the user to go through the same security procedures as previously described for ARIS requests. The registered VIXEN user will also be able to learn of opportunities to offer parataxi rides if he or she has been. authorized to serve as a parataxi driver.

In order to further increase security, parataxi drivers will be required to enter a prestored vehicle code which will identify which vehicle the driver will be using if he or she owns multiple vehicles and will serve as another password. The vehicles description, including make, year, model, color and license "number" will be transmitted to approved parataxi riders after.the VIXEN files have been checked to determine that the vehicle has not been reported as stolen, that the vehicle is still properly insured, that the vehicle has a valid safety certificate, etc.

Restricted VIXEN services provide information to registered cardholders and parataxi drivers about:

3Bl. Traffic conditions and parataxi ride offer opportunities between any two checkpoints, given the driver's planned time of departure. Checkpoints can be marked or unmarked (i.e. individual).

3B2. Traffic conditions and parataxi ride offer opportunities between any two checkpoints, given the driver's planned time of arrival.

3B3. Traffic conditions and parataxi ride offer opportunities between the two checkpoints specified in a user's prestored trip description.

(Readers not interested in detailed descriptions of how to use each of these interactive services may skip to Section 4 on Page 21.)

3Bl. Obtaining information about traffic conditions and **parataxi ride offer opportunities between any two checkpoints, given the planned time of departure**. (Direct Phone: XXX-X152)

The first ten (10) steps of this procedure are almost exactly the same as those described for unregistered VIXEN users to obtain information about traffic conditions between two marked checkpoints (See Section 3 Al). Instead of

limiting users to marked checkpoints, however, they will also be allowed to use unmarked (i.e. individual) checkpoints and mnemonic names or codes for checkpoints. In addition, instead of disconnecting the user or transferring the user back to the main ADIS audiotex menu after the traffic congestion information is presented, the system will add the following.steps:

11. The computer says either "There is no registered person looking for a parataxi ride" and returns to the main ADIS menu or "There is a registered person looking for a parataxi ride in your planned direction. If you are interested enter your vehicle identification code". The driver enters a two character/ digit code for the vehicle he or she plans to drive.

12. If the vehicle identification code is valid, the computer will go to the next step. If the code is not valid, the computer will ask the user to reenter it up to three (3) times. If the code is still incorrect, the computer will advise the user that he or she is being disconnected because the "Vehicle Identification Code" is invalid. The computer will also record this possible attempt to obtain someone's vehicle identification code and will take appropriate action, including special monitoring programs or changing account numbers. PIN numbers, vehicle identification codes, etc.

13. The computer says: "Please pick up (Mr./Mrs. _____) , a party of (_____) at (_____) (marked checkpoint number if available) between (_____) and (_____) and deliver (him/her) and his/her companion(s) to (_____). It is now (time). (His/Her) identification card number is (_____). This message may be repeated by pressing the"R" button or your touch tone telephone".

14. The computer says: "Please enter "#" if you agree to agree to give (Mr./Mrs.) _____ a parataxi ride". If the user enters anything. but a "#" the computer will disconnect the call. If the user enters a "#", the computer will say, "Thank you for ridesharing" and go to the next step.

15. The computer will record the transaction, debit the rider's account, credit the driver's account, and remove their names from the active parataxi lists and disconnect the call.

3B2. Obtaining information about traffic congestion and ride offer opportunities between any two checkpoints, given the planned time of arrival. (Direct Phone: XXX-X152)

Since this procedure is almost identical to that in the preceding section, where the planned time of departure is given, the steps will not be repeated here.

3B3. Obtaining information about traffic congestion and parataxi ride offer opportunities, given the driver's prestored trip specifications: (Direct Phone: XXX-X153)

The following are the steps a registered VIXEN driver would take, for example, to obtain information about traffic conditions and parataxi ride offer opportunities between work (W) and home (H):

1. Enter VIXEN's account number and PIN. If invalid after three tries, take appropriate security precautions and disconnect user. If valid continue.

2. Enter a prestored ride specifications code (e.g. W/H) which will provide origin checkpoint number, destination checkpoint number, number of persons in traveling group, and requested time of departure/arrival.

3. Enter the appropriate vehicle code when requested. The system will search through the best routes between the Origin (W) and destination (H) and. provide a report of traffic conditions. The VIXEN computer will then advise the driver if there is a registered user waiting for a parataxi ride in his/her direction. If the driver is interested in providing a ride, the system will also provide pickup and delivery instructions.

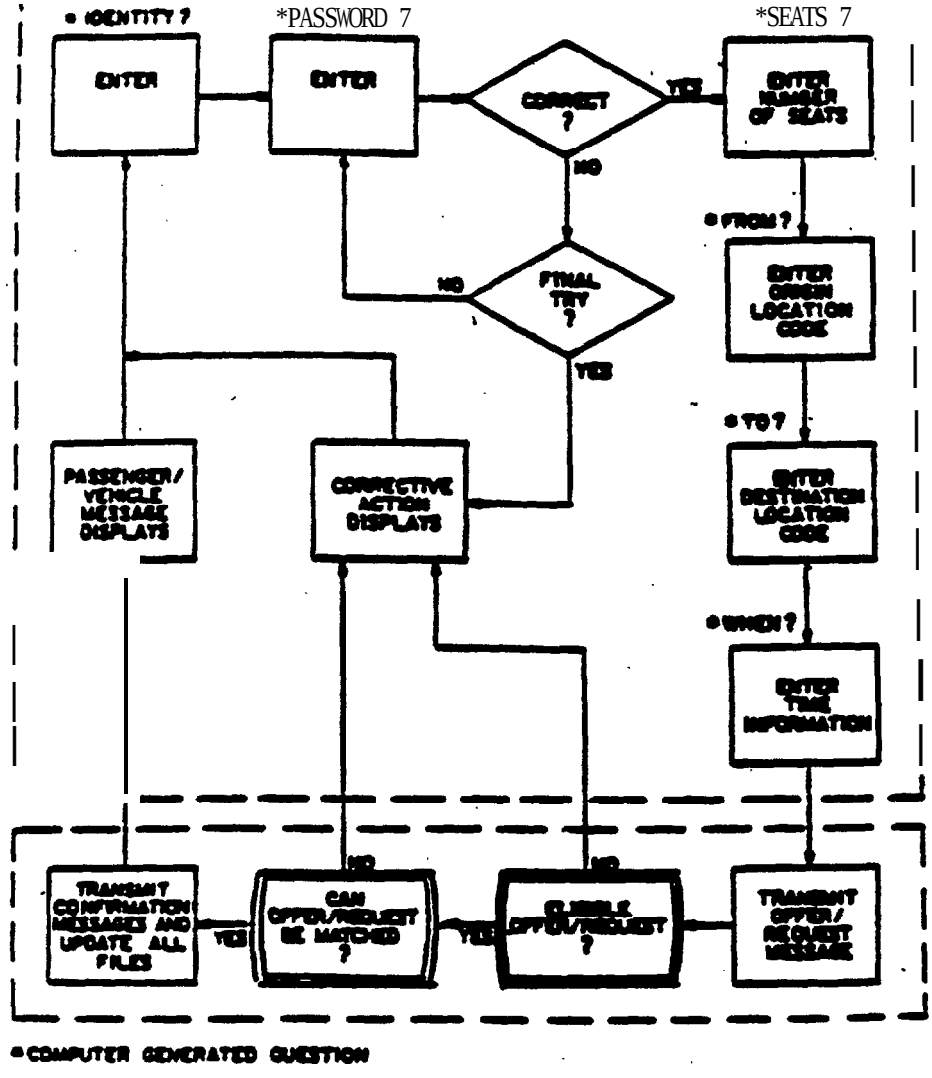
A video-based Advanced Driver Information Subsystem (ADIS) would closely follow the preceding steps for an audiotex-based-subsystem and will not be discussed further in this report. It should be

noted that video-based systems will be more user friendly and will provide many more capabilities than audiotex systems in the future.

Section 4 - Additional Comments on the Design of VIXEN

Figure 1 describes the flow of information for processing of parataxi ride offers and ride requests in VIXEN. Figure 1 could be modified to allow private operators to offer supplementary fixed-route and route-deviation transportation services using automobiles, vans, minibuses or even large buses. In Jerusalem, for example, taxis are allowed to operate as jitneys along existing bus routes during peak commuting hours. Although their fares are

FIGURE 1
PARATAXI TRANSACTION PROCESSING



higher than government-operated buses, the fixed-route taxis provide guaranteed seating, have shorter headways and make fewer stops to pick up and drop off Passengers. These jitney services are popular with both riders and government officials who are faced with tight budgets. A similar approach in the U.S. would enable many communities to provide extra transit capacity during peak commuting hours at a low cost to taxpayers.

Although VIXEN is designed to give the driver information before he or she starts a trip, it can easily be modified to notify the driver of important changes (e.g., traffic accident delay, parataxi ride cancellation) while enroute, if the driver's vehicle is equipped with a mobile terminal, such as a cellular telephone or a notebook computer. The availability of PCN "telephones" in the future will also be able to advise riders of any changes in their scheduled parataxi driver's plans.

Figure 2 describesthe procedure that could be used to match parataxi drivers and riders. In this flowchart, it is assumed the parataxi service area is divided into a square grid. The procedure attempts to find riders that are as close as possible to the driver's origin in order to minimize rider waiting times. In fact, it will first look for riders that have origins in the same square as the drivers origin. If no match is found, it will move to the next square in the direction of the driver’s destination. Figure 2 could be modified to use non-square grids, polar coordinates, etc. if this is a more convenient way to handle the matching process for the available data.

APPENDIX A

German "Smart Bus" Systems

Potential for Application in Portland, Oregon

Volume 2, Appendices
January 1993

Prepared by

Robert W. Behnke.
Aegis Transportation Information Systems, Inc.
11545 SW Settler Way
Beaverton, Oregon 97005

Prepared for

Office of Technical Assistance and Safety
Federal Transit Administration
400 7th Street SW.
Washington, DC 20590

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Washington, D.C. 20590

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APPENDIX B

FOCCS COST ESTIMATES

SHELLHARBOUR (AUSTRALIA) PILOT PROJECT

The table below is a summary of the costs to conduct a one-year operational test of the Flexible Operations Command and Control System (FOCCS) in Shellharbour, Australia. These estimates were prepared by a team of German and Australian transportation consultants.

Summary of Pilot Project Costs

1		2	3
ITEM		Total Costs (DM)	Total Costs ($)
81	1 Management and Control Room Hardware, Software, etc.	56,150	35,838
82	2 Garages and Vehicles	273,850	174,798
83	3 Service Area	23,000	14,681
84	4 Options	48,300	30,821
85	5 Pilot Project Production	1,613,490	1,029,891
86	6 FOCCS Overhead	208,800	133,277
87	7 Operational Costs	113,400	72,383
88	8 Public Relations and Personnel Training	113,560	72,485
	GRAND TOTAL:	2,450,550	1,564,183

Each of the line items in the above table is broken down into more detailed items on the following pages. For explanations of any of these line items please consult Reference 25 or Reference 290.

Shellharbour Operational Test

Special Notes for Cost Estimates

Item Number	Description	Notes
8	Licenses - user software	No license fee in pilot operation
9	Installation	Included in production costs
19	Import duty	Not included, subject to clarification
22	Cable installation for transmitter/receiver	No expenses when cable connector, between control room and radio station exists
46	Manpower for accompanymy investigations - German - Local	Sources other than pilot project included in Item 41
55	Maintenance of vehicle terminals	Included in production costs
57	Software maintenance	Included in production costs
61, 62	Cost per vehicle/km bus minibus taxi/van	 .75 km
61, 62	Cost per year	245 times cost per day

Note: The format and line item entries of each Operational Test Cost Estimate is the same as that used by German and Australian transit experts to develop cost estimates for the "FOCCS" operational test in tbe Municipality of Shellharbour, New South Wales, Australia.

Shellharbour Operational Test

Table 1

Management and Control Center Hardware, Software, etc.

1	ITEM	2 Cost/ 1 Unit (DM)	3 Cost/ 1 Unit ($)	4 Invest. Cost (DM)	5 Invest. Cost ($)
1	2 Central Computers MCD 486-25 with (in each case) - 4 MB RAM - 150 MB hard disc (17 ms access time) - 1.2 MB floppy disc - VGA 512 KB (very high resolution graphic center) - monochrome monitor with keyboard - 8 fold V 24 - interface - Centronix printer interface - Cables	12,000	7,660	24,000	15,319
2	2 Monitor screens with keyboards	1,700	1,085	3,400	2,170
3	1 Kyocera F 800 (laser printer with 3 MB RAM)	6,200	3,957	6,200	3,957
4	2 Digital radio interfaces (incl. modems)	2,l00	1,340	4,200	2,680
5	Voice radio equipment			6,000	3,830
6	Office equipment furniture			3,000	1,915
7	Telephone line (with facility to queue incoming calls), other installations			350	223
8	Licenses				
	- C-Compiler			900	574
	- system software (XENIX)			3,400	2,170
	- user software INFORMIX			4,700	3,000
9	Installation				
	TOTAL:			56,150	35,838

Shellharbour Operational Test

Table 2

Garage and Vehicle Equipment

1		2	3	4	5
ITEM		Cost/ 1 Unit (DM)	Cost/ 1 unit ($)	Invest. Cost (DM)	Invest. Cost ($)
11	1 Memory module loading station (incl.) modem) at the bus garage of J. J. Hill Bus Service	7,425	4,739	7,425	4,739
12	1 Memory module loading station (incl. modem) at the bus garage of Rutty's Bus Service	7,425	4,739	7,425	4,739
13	100 Memory modules	385	246	38,500	24,575
14	25 IBIS vehicle terminals (digital and voice radio sets with 24V transformer fittings) with corresponding software: - John J. Hill Bus Service (10) - Rutty's Bus Service (10) - Spare terminals (4) - Demonstration and presentation (1)	7,500	4,787	187,500	119,681
15	20 IBIS installations	1,125	718	22,500	14,362
16	20 Revolution counters and door cycle indicators	150	96	3,000	1,915
17	20 Connection cables, fittings and installation from vehicle terminal to revolution counters/door cycle indicators	300	191	6,000	3,830
18	20 Information signs on vehicles	15	48	1,500	957
19	Import duty				
TOTAL:				**273,850**	**174,798**

Shellharbour Operational Test

Table 3
Service Area Improvements

1		2	3	4	5
ITEM		Cost/ 1 Unit (DM)	Cost/ 1 Unit ($)	Invest. Cost (DM)	Invest. Cost ($)
21	1 Stationary transmitter/receiver			15,000	9,575
22	**Cable installation for transmitter/ receiver**				
23	Measurements/tests of radio transmission coverage			4,000	2,553
24	200 Information signs at bus stops	20	13	4,000	2,553
	TOTAL:			23,000	14,681

Shellharbour Operational Test

Table 4
Optional Equipment

1		2	3	4	5
ITEM		Cost/ 1 Unit (DM)	Cost/ 1 Unit ($)	Invest. Cost (DM)	Invest. Cost ($)
31	5 Infra-red beacons at selected locations of service network for vehicle location synchronisation purposes	1,300	830	6,500	4,149
32	20 On-board infra-red reading/receiving units for reception of location telegrams	800	511	16,000	10,213
33	4 Digital radio reception units for traffic light interference	2,700	1,723	10,800	6,894
34	2 Stationary information tables/screens	7,500	4,787	15,000	9,575
TOTAL:				48,300	30,830

Table 5
Pilot Project Production Costs

1		2	3
ITEM		Production Costs (DM)	Production Costs ($)
41	Manpower and additional services for project management, coordination, documentation, representation, consultation, etc.		
	- German	329,000	210,000
	- Local	439,760	280,699 *
42	Manpower and additional services for system realization and implementation		
	- German	239,740	153,026
	- Local	131,250	83,777
43	Manpower for co-operation of operators' staff		
	- Taxi Service	105,840	67,558 *
44	Manpower for software maintenance		
	- German		
	- Local	24,000	15,319
45	Manpower for maintenance of vehicle equipment		
	- German		
	- Local	32,500	20,745
46	Manpower for accompanying investigations		
	- German		
	- Local		
47	Office labor costs and rent, office supplies, etc.		
	- German		
	- Local	121,400	77,490 *
48	Travel and additional expenses in connection with pilot project		
	- German	190,000	121,277
	- Local		
	TOTAL:	1,613,490	1,029,891

* Designates in-kind services

Table 6
Overhead Costs

1		2	3	4	5
ITEM		Cost/ 1 Unit (DM)	Cost/ 1 Unit ($)	Invest. Cost (DM)	Invest. Cost ($)
51	Office labor costs of operational supervisor andtelephone operator (2 shifts per day)	4	2,500	180,000	114,894
52	Control room rent (including associated costs), phone bills, stationary		1,000	18,000	11,489
53	Insurance of centrc hardware (computer and peripheral equipment)				
54	Maintenance of centre hardware (computer and peripheral equipment)		300	5,400	3,447
55	Maintenance of vehicle terminals				
56	Service of vehicle communication system (e.g., cable fees, electricity fees for T/R)		300	5,400	3,477
57	Software maintenance				
	TOTAL:			208,800	133,277

Shellharbour Operational Test

Table 7
Operations Costs

1		2	3	4	5
ITEM		No. of bus km/ day	Cost/ bus/km ($)	Operating Costs (DM/y)	Operating Costs ($/y)
61	Vehicle kms due to system trials and to demand-oriented deviations from trunk routes multiplied by specific cost per vehicle km - J.J.Hill BusService - Rutty's Bus Service	120	1.75	113,400	72,383
62	Vehicle kms due to additional service expansions in the municipality, multiplied by specific cost per vehicle km - J.J. Hill Bus Service - Rutty's Bus Service				
	TOTAL:			113,400	72,383

Shellharbour Operational Test

Table 8
Public Relations and Personnel Training

1		2	3	4	5
ITEM		Cost/ Manmonth (DM)	Manmonths	Total Costs (DM)	Total costs ($)
71	Training of control room personnel	17,640	0.5	8,820	5,630
72	Training of operator's staff and drivers	17,640	1.5	26,460	16,889
73	Training of Australian company in system running and maintenance	17,640	2.0	35,280	22,519
74	Local public relations (press releases, advertising, brochures, periodicals)			18,000	11,489
75	Supra-regional public relations. (publications, presentations, to conferences. workshops. etc.)			25,000	15,958
	TOTAL:			113,560	72,485

APPENDIX C

TRI-MET Strategic Plan

Pursuing a Shared Vision

DISCUSSION DRAFT TWO

CONTENTS

December 1992

Tri-Met Board of Directors

Loren Wyss, President
Phil Bogue
Shirley Huffman
Ron Tonkin
Robert Bocci
Nita Brueggeman
Bill Robertson

Strategic Plan Working Group

Tom Walsh
Bill Robertson
Bruce Harder
Doug Capps
Dan Hoyt
Bob Post
Nita Brueggeman
Dick Feeney
Bill Allen
David Calves
G. B. Arrington, Project Manager
Karl Marlantes, Consultant
Paula Coppel, Consultant

5-Year Plan Working Group

Rick Gerhart
Claire Cushman
Ken Zatarain
Ross Roberts

Production and Design

Warren Schlegel
Diana Smith
Jeff Frane

Dear Friend,

The Portland metropolitan area is facing a critically important decision: How can we accommodate 500,000 more people over the next 20 years without sacrificing our high quality of life?

A number of local jurisdictions and public agencies have been trying to address that question through their long-range plans and strategies. The attached document expresses Tri-Met' s view, and suggests one way all of us in the region can join efforts to create the kind of future we want.

This document is the second draft of Tri-Met' s strategic plan.You may be one of the 5000 individuals who received and'reviewed the first draft. Most of the people who commented on the first draft encouraged us to pursue the vision laid out in the plan; they also recommended some change and additions. This new version reflects the helpful feedback we received from people throughout the region as well as our own employees.

The main focus continues to be on maintaining mobility and livability as the region grows. Specifically, the new draft:

- Has a stronger regional orientation;
- Provides more detail on our suggested vision and how to achieve it;
- Recognizes more fully the essential role our employees will play in achieving the vision and Tri-Met' s specific goals;
- Describes in more detail the land use implications of the vision, and Tri-Met' s anticipated role in that arena;
- Includes a separate section on regional partnerships to underscore the importance of mutual support and cooperation; and
- Describes the funding that will be needed to support the level of transit service implied by the vision, as well as possible sources of funding.

We have tried to address most of the concerns raised by those who reviewed draft one. If you have comments on this draft, please contact Tri-Met Public Affairs, 4012 SE 17th Avenue, Portland, OR 97202, or call 2384960. The plan will be presented to the Tri-Met Board of Directors for a public hearing and final approval Jan. 27, 1993 at 3:30 p.m. in Room C of the Portland Building, 1120 SW Fifth Avenue, Portland.

While this report is Tri-Met's strategic plan, it is clearly a regional document. We hope it will be refined, shared and "owned" by our partners throughout the metropolitan area.

Circulating this second draft gives us a chance to ask: Is this what you want from Tri-Met? And, if so, are you willing to help pay for it?

Thank you for taking the time to work with us on this document. Your thoughtful comments and suggestions will help us develop a final strategic plan that is supported by the region and reflects the wants and needs of the customers we serve.

Loren Wyss
President of the Board

Tom Walsh
General Manager

Quality of Life

A matter of choice

Today the Portland metropolitan area -from Forest Grove to Troutdale, Vancouver to Estacada - offers a quality of life that is the envy of much of the nation.Vibrant communities, beautiful parks, stable neighborhoods, cultural opportunities, innovative development, model transportation and trend-setting environmental initiatives al1 contribute to a way of life that is cherished and unique.

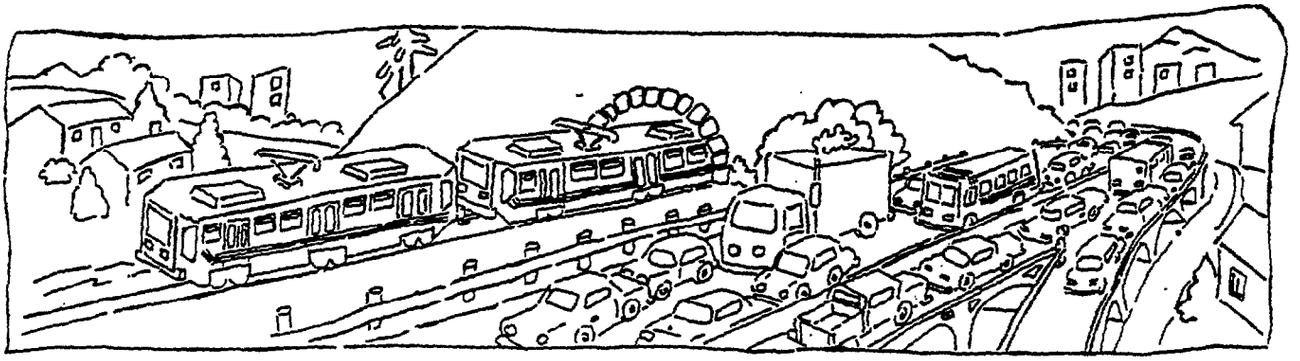
Yet, as the region's population increases, our quality of life is at risk. There is a real danger that rapid growth could diminish much of the progress and good deeds that have shaped this area into the special place it is today.

The people of our region are becoming increasingly concerned. They know that, over the next 20 years, even at historic rates of growth, the region's population is expected to increase by 500,000 — the equivalent of another city the size of Portland. That's faster than the entire state of Oregon grew in the 1980s.

The most common fear is that major and rapid growth could cause our region to lose its livability. Even citizens who welcome the economic benefits of growth worry that it will make our cities and towns less people-friendly.

That's what has happened to other growing metropolitan areas: Livability declined as the population increased: Unbridled growth led to urban sprawl, traffic jams, dirty air and decaying downtowns.

That needn't be the case in our region. . We can build on our past successes in growth management. Traffic congestion, air pollution, and other urban problems are not an inevitable part of growth — they are the result of growing the wrong way.



The fact is: We have a choice. We can accommodate growth in ways that will allow us to maintain our quality of life even as the population grows. But if we as a region don't make a conscious choice to follow that path, we will inevitably fall prey to the same forces that have ruined the livability of other major American cities.

The first step is to recognize the challenge before us. Then we as a region must rise to meet it.

Current Trends are Troubling

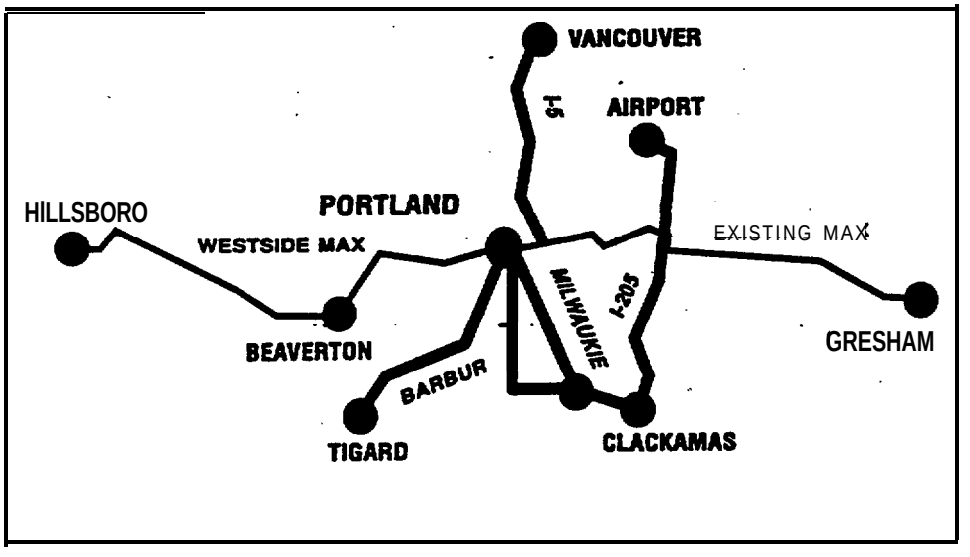
Despite the region's past achievements, some of the current trends are troubling.

Traffic congestion is increasing. A recent survey of residents in Washington and Clackamas counties showed traffic was the number one concern Light rail on the west side will alleviate some of the traffic in Washington County, but it cannot do the job alone. Light rail will mainly just keep congestion from getting worse.

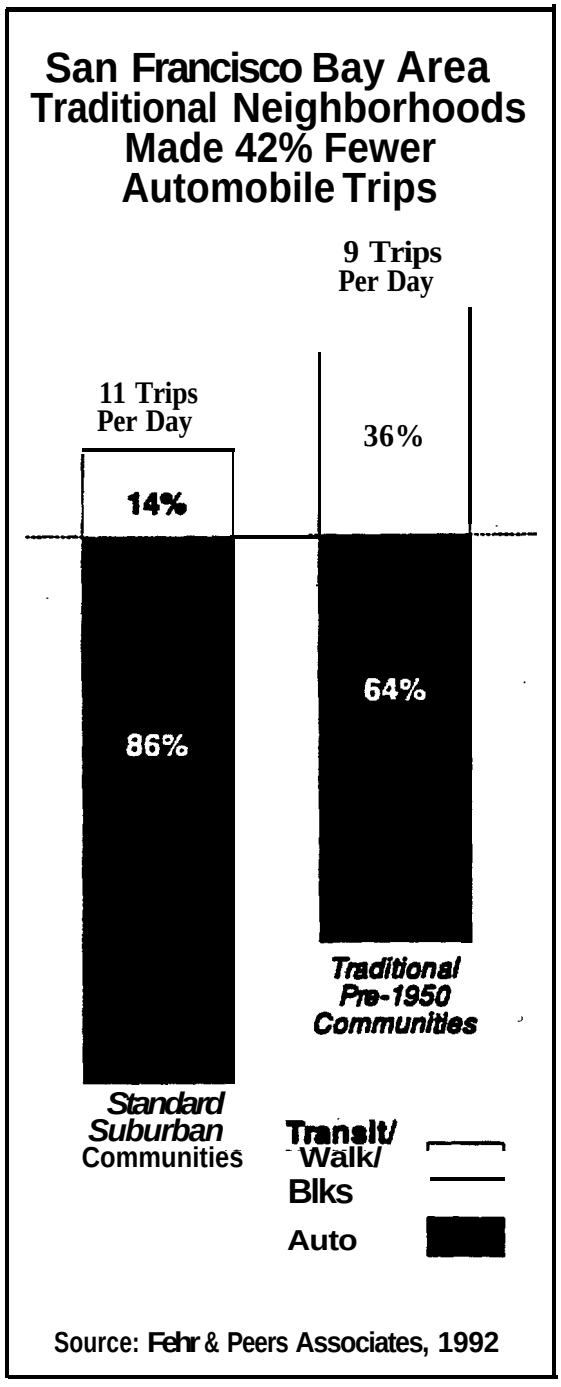
Most disturbing is the fact that even if the region is successful in carrying out its current land use and transportation plans, traffic congestion could still more than double.

The fact that our highways are overloaded underscores a second major concern: lagging investment in public works

Regional Rail System



Opening the Westside Project in 1998 is the next link in the development of the proposed regional light rail system.



Compact growth can cause a reduction in total trips and an increase in transit use.

— including transportation, wastewater, storm sewers and other utilities. In transportation alone, according to the Oregon Department of Transportation, the region as a whole is $10 billion short of the funding needed to-restore and maintain its deteriorating roads.

The question at this point is not whether we will fall short in necessary investments like new roads and transit, but by how much. The more carefully we plan for growth the more efficiently we can provide these public services to our citizens.

Air quality is another source of concern. The number of vehicle miles traveled in our region has been growing by about 6 percent a year. To keep the air clean and safe and meet federal clean air guidelines, we will need to reduce that to only 2 to 4 percent a year — or face tough federal mandates and higher costs to industry to force compliance, which could lead to loss of jobs and slower economic growth.

While the pressure is mounting to reduce vehicular travel in the region, the current pattern of growth will result in more trips and more travel by automobile.

Growing Outward Means More Travel, Less Transit

Our region is currently growing outward rather than inward, through compact development. The pattern that is emerging is one of sprawl within the urban growth boundary (UGB). Growth is generally being contained within the UGB, but, according to a State of Oregon study, it is occurring on average at only 70 percent of planned densities, intensifying the pressure to expand the UGB. If current patterns continue, future growth will mainly occur on the fringes of the UGB — or, if the existing boundary is expanded, onto neighboring farm and forest lands.

Spreading out presents two problems: First, it causes the number of vehicular trips to increase at a rate even faster than the populatioh In Oregon in the 1980s, the number of vehicle miles traveled increased eight times faster than the populatioh

Second, this land use pattern cannot be served cost-effectively by transit. Buses and light rail are simply not an efficient choice for low-density, dispersed development.

A study of different neighborhoods in the San Francisco area revealed the dramatic difference in the number of automobile trips between people living in lowdensity standard suburban developments and those in compact

traditional neighborhoods. Residents in pm-1950 traditional neighborhoods made 42 percent fewer trips by car than their suburban counterparts. The San Francisco study found that a doubling of density resulted in a 30 percent drop in the number of vehicle miles traveled.

In our region, current projections show the number of total trips within the suburbs will increase by 72 percent over the next 20 years. Even with a major increase in transit service, the percentage of those trips served by transit will stay at today's level of 1 percent. Unless development in outlying areas becomes more clustered and transit-oriented, the percentage of suburban trips being taken on bus and light rail is not expected to change at all.

Contained growth — moving "in" rather than "out" — can allow a community to fully use transit as a, way to maintain mobility while accommodating growth.

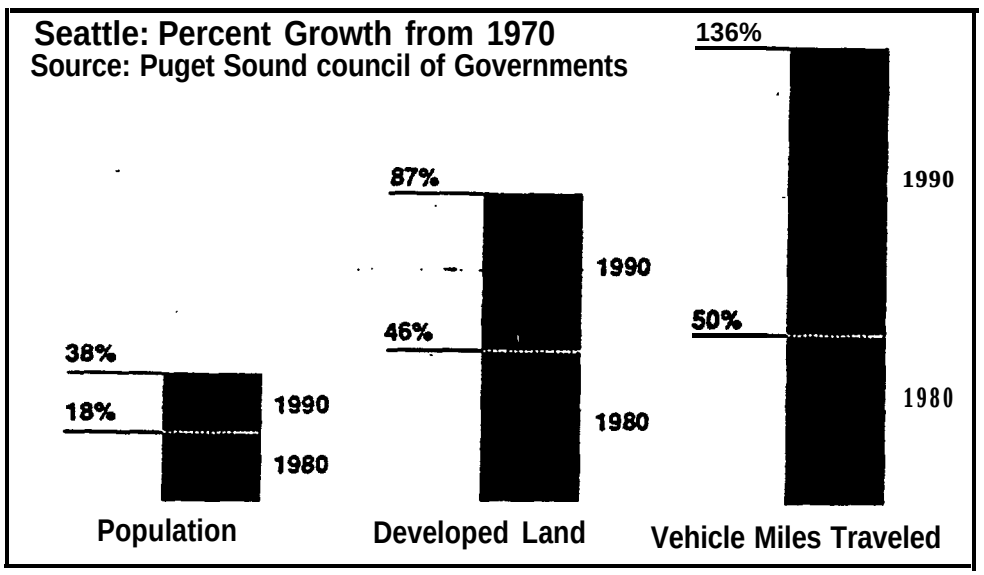
Two West Coast cities — Seattle and Vancouver, B.C. — provide striking examples of how mobility and livability are affected when a community grows outward instead of inward.

Seattle: 'Paradise Lost'

In the early 1980s, Seattle was considered one of the most livable cities in the country. Now, just a decade later, it is listed as the sixth most congested **urban** area in the United States. In recent times, the Puget Sound area has been referred to as "paradise lost."

What happened to cause such a dramatic decline in one decade? Primarily, rapid, uncontrolled growth. The

Rx for Gridlock



Portland is currently following the same trends that overtook Seattle: land consumed at a faster rate than population growth, increased dependence on the automobile, and an explosion in vehicle miles traveled.

Seattle region-grew by 500,000 people in the 1980s. However, it had no overall vision or strong planning to guide its growth. As a result; the region slid into a pattern of sprawl. From 1970 to 1990, the population grew by 38 percent — while the amount of land developed increased by 87 percent.

Outward, growth led to greater reliance on the auto-. mobile. Consequently, vehicle miles traveled went up 136 percent from 1970 to 1990 — almost four times as much as the population. At the same time, the level of funding for transportation dropped in terms of real dollars.

Seattle is now trying to play "catch-up," but the costs are enormous. Once a community has spread out, it is nearly impossible to reverse the trend. The Seattle region has identified the need for more than $20 billion in capital investments and $10 billion in operations and maintenance to improve transportation over the next 30 years. That total of $30 billion would not reduce today's level of congestion, but would only keep it from getting significantly worse.

Seattle did not have the advantage the Portland region has of well-established land use planning. It grew "out)) not "in" — and has paid dearly in terms of traffic jams, gridlock and lost livability.

Vancouver: A Better Way To Grow

The Vancouver, British Columbia, area has managed its growth differently. Through careful planning, clustered development and a pervasive commitment to transit, the metropolitan area has **become** a thriving, growing region that works — a bustling place as renowned for its charm, mobility and livability as its spectacular physical beauty.

The characteristics of the Vancouver area today are similar to what we might expect or hope for in the Port-, land area by the year 2020.

Vancouver currently has one-third more people than Portland; only one-third-higher density; and three limes the transit ridership.

In Vancouver, 10 percent of all trips and 17 percent of work trips are taken on transit. In Portland, while over 40 percent of downtown Portland work trips are on transit, only 3 percent of all trips and 7 percent of work trips are taken on transit.

Vancouver's progress can be traced to its citizens' longstanding support for transit and land use planning.

In the 1960s, when many cities were investing in the construction of freeways, the people of Vancouver opposed them. They preferred expanding their bus and trolley service and, eventually, adding the SeaBus cross-harbor ferry system, and the Sky Train advanced light rail system. Today Vancouver is the only city in North America with less than one mile of freeway within its city limits.

Vancouver is Canada's fastest growing city. That growth has brought problems, but Vancouver's population continues to make choices that support compact development and transit use. Under the area's "Livable Region Strategy," growth has been focused in large regional town centers that are linked to Vancouver by Sky Train and buses.

A Matter of Choice

The Portland metropolitan area is at a critical crossroads. We can grow like Seattle, or we can grow like Vancouver. We have a choice.

However, judging by the experience of other cities, we need to act now. We cannot rest on our past successes. If we do, our future will be decided for us. Inertia will lead us into the same fate of undisciplined growth, traffic jams, dirty air and lost livability that has befallen other growing American cities.

Sprawling, congestion-clogged cities like Los Angeles and Seattle are the way they are today not because their people want them that way, but because they missed the chance to make their choice. Seattle had its opportunity in the mid-1970s to plan for growth and let it slip away.

Now it is our turn. We have already applied some techniques that work. Downtown Portland, like Vancouver, provides an example of growing the right way. The key elements in Portland's success were the downtown plan and an investment in transit. The downtown area has grown from 56,000 jobs in 1975 to 86,000 plus jobs today — an increase of more than 50 percent. At the same time, air quality has improved and traffic congestion has not increased.

The challenge now is to build on our successes. There is a way to grow and still keep our livability, and we as a region can achieve it -- if we have the collective will to do so.

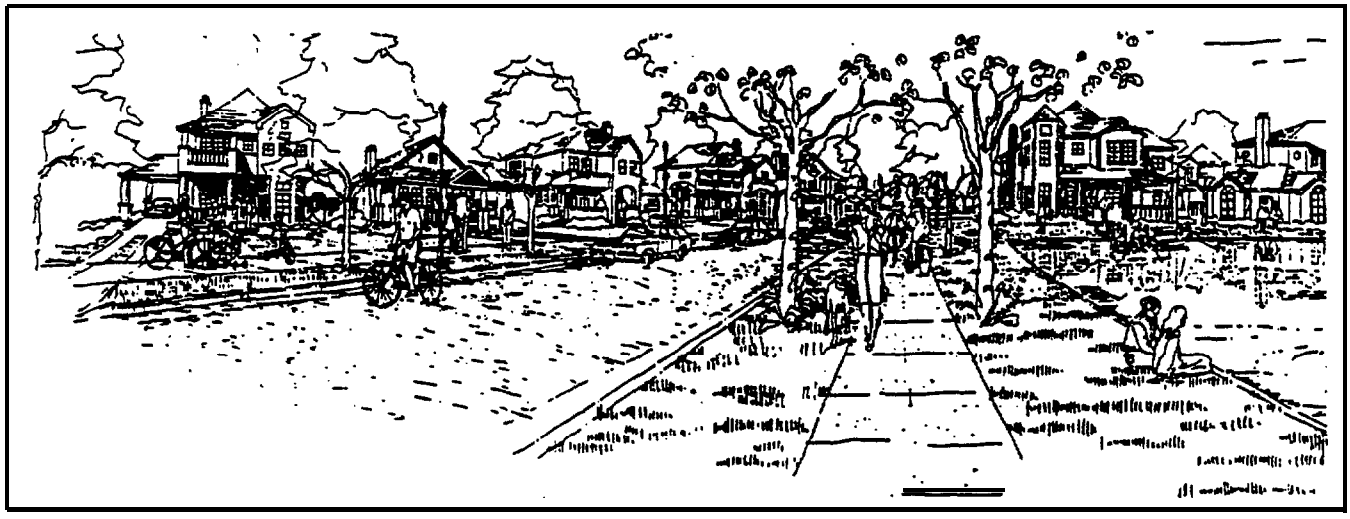
A Vision for Growth and Liability

To decide how to grow, the region must first determine what it wants to look like. What follows is one vision of how the Portland metropolitan area might look 20 years from now:

Our region is a bustling metropolitan area with some 2 million people, set off from surrounding farm and forest lands by a distinct, unchanging urban growth boundary. The air is clean and the landscape a striking balance of attractive, well-planned development and natural beauty.

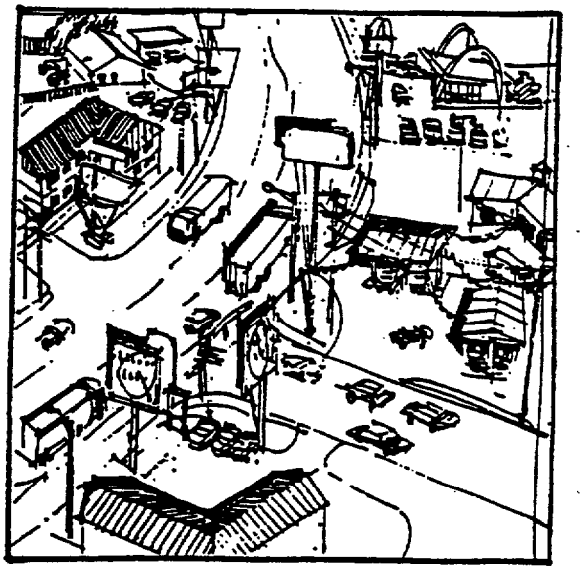
The region has retained its unique charm and livability, despite substantial growth in recent years. People enjoy working, playing and living here. Ample parks and open spaces complement vibrant urban centers. The comfortable pace of life contributes to people caring about and interacting with one another to a degree unheard of in other fast-growing metropolitan areas.

Cars, buses and light rail trains move throughout the region at a steady, continuous pace. The transportation network, including a five-line light rail system (with one more line under construction) and major transit corridors, accommodates travel between and within our cities, and provides the backbone connecting development throughout the region. In all parts of the area, development is located near and around transit stops.



Source: Calthorpe Associates

All of the region's cities have used their land carefully to avoid sprawl. The downtown areas of cities like Beaverton, Hillsboro and Gresham are thriving, people-oriented places, where jobs, shops, services, schools and parks are conveniently located together within walking or biking distance of transit stops and a variety of housing options that surround the downtown core.



Before

After

Richard Potestio, AIA

Portland's central city, redeveloped land and revitalized neighborhoods have strengthened and reinvigorated the city. Much of the new development along Portland's major streets and rail lines consists of 3- or 4-story multi-family units over street level shops There is good pedestrian access to services and shopping, and good transit access to employment.

In other parts of the region, new communities have been created around major transit stops. At stations such as the Sunset Highway12 17 interchange and Clackamas Town Center, the development is self-contained, offering local choices of services and schools within walking distance. The center of many of these "villages" consists of a transit station and central park, surrounded by a main street or square of shops, offices, restaurants, smaller businesses, child care facilities and recreational opportunities. In some locations, multi-family housing is located near the central park. Walking paths and bike paths connect the entire community.

The region's commitment to sensible growth and transit-oriented development has provided practical alternatives to the automobile and the attendant air pollution and traffic jams.

The percentage of total trips taken on transit (including buses, light rail, shuttles and van pools as well as taxis) is as high in our metropolitan area as anywhere else in the country.

Residents find the lifestyle here stimulating and

satisfying. They enjoy the amenities of a major city without the associated sprawl, congestion, crime, crowding and tensions found elsewhere. In our region, livability is still prized, and citizens and jurisdictions work together to protect and enhance it.

As for TriMet itself, we envision:

An agency that leads tbe nation in the quality, integrity and success of its transit system. Tri-Met operates an exceptional regional rail system, complemented by a network of major bus corridors that provide fast, frequent, convenient service to key destinations. The agency also provides personalized service with its neighborhood mini-buses that link residents to the bus corridors and regional rail.

Tri-Met works closely with local jurisdictions, decision-makers and developers to encourage land use and transportation patterns that enhance the region's mobility and livability. The agency's public approval rating is high. Tri-Met is well-funded and well-supported at both the state and local levels, and at the federal level, where Tri-Met is considered a model for the country.

Tri-Met's employees are among the best and brightest in the Northwest They are actively involved in problem-solving within the agency, and find their ideas for improvement are frequently implemented. Two-way communication is integral to the agencies method of operation. Managers freely and openly share information with each other and with employees, and employees continually contribute ideas for improving customer s&vice.

Each employee understands Tri-Met's mission and goals, the obstacles that must be overcome to achieve them, and what he or she can do to contribute to Tri-Met's success.

Outstanding customer service is a shared passion, and employees routinely ask themselves, "What will this do to help us attract or keep more customers?"

The philosophy at Tri-Met is: "Customers, one at a time." While the agency serves the entire region, it treats its customers as individuals, and strives to satisfy them just that way: one at a time.

Growth and a Sense of Community

Richard Potestiom AIA

The vision suggests ways in which we as a region can enjoy the economic benefits of growth while still preserving our small-town charm and livability Through well-planned communities, our region can accommodate more residents while still offering a lifestyle that is pleasant and comfortable. Whether in the suburbs, downtown Portland or in a new mixed-use neighborhood, people can live in placeswhere they know their neighbors and local merchants, and can walk to schools, parks, the corner grocery, neighborhood restaurants, the post office, transit stations, shops and other services.

This clustering of development offers other benefits as well: The opportunity for all of us to breathe clean air; get where we want to go quickly and easily; live. in the type of housing we want and can afford; minimize our tax dollars for public services; enjoy safer streets and neighborhoods; and take greater advantage of green and open spaces in our communities. Such a pattern would not only enhance our everyday life, it would put this region on the map as one of the only metropolitan areas in the country that has been able to grow while actually improving its livability.

While achieving the vision would be a significant accomplishment, it would not require a major departure from some of the things we are doing today Many of the components for the vision already exist throughout the region. For example, state law already requires that half of all new housing in the metropolitan area be multi-family housing. For the last 10 years, the real estate market has been meeting that goal. However, many of the multiple family housing developments have been located on the fringes of the urban growth boundary; and are difficult to

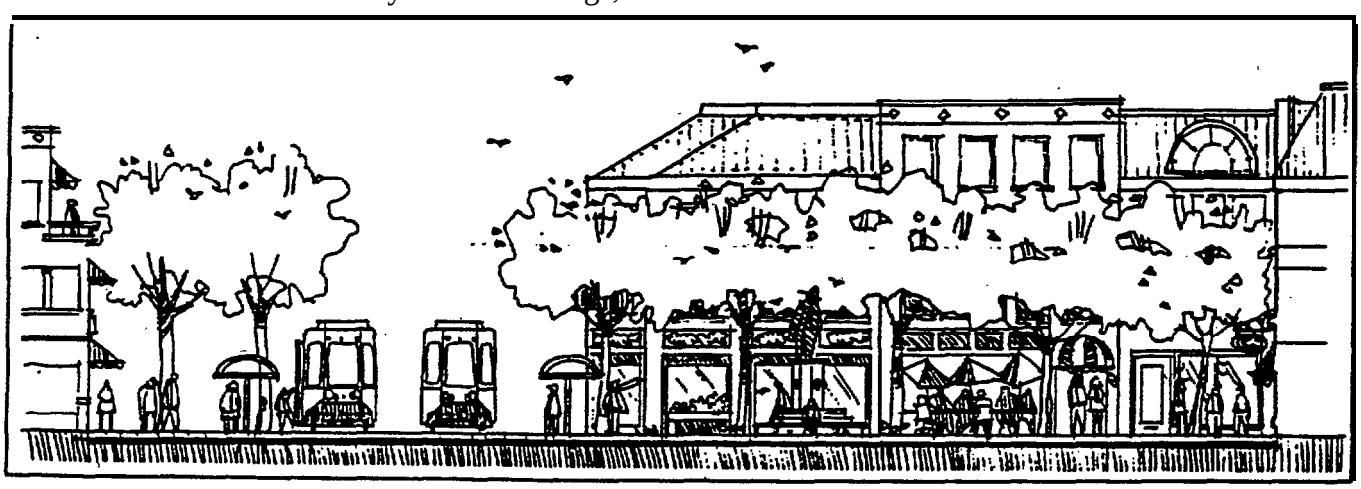
serve by transit. The vision would have us meet those same customer needs, improve on the response by mixing in other uses (such as retail, commercial, and recreational), and locate the new development in a transit corridor. The resulting mixed-use communities will be attractive places to live, work, shop, play, fall in love and raise children. Otherwise, the market will not support them because people won't want to live there.

Whose Vision Is It?

While the vision as stated here has been proposed by Tri-Met, many of the same principles and values have been advanced by others throughout the region. A number of local jurisdictions and state and regional agencies have been developing long-range plans.

The common thread in each of them is a recognized need to change current patterns of growth which, if unchecked, will lead to a serious deterioration in the region's livability.

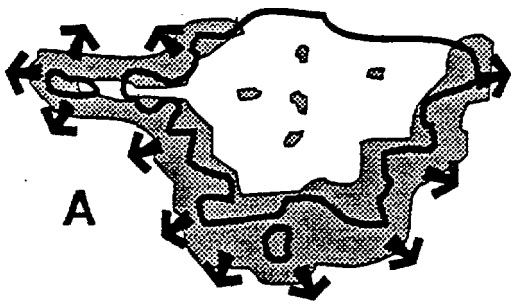
- The City of Beaverton in its Downtown Development Plan calls for promoting downtown Beaverton "as a public transit and pedestrian-oriented district"; for concentrating new commercial development in a compact area to facilitate pedestrian access; and for increasing the supply of close, multi-family housing, linked to the downtown core by transit.
- In its vision for the future, the City of Gresham calls for the creation of a downtown mixed-use center organized around light rail that includes a high-density retail core with multi-story office buildings, surrounded-



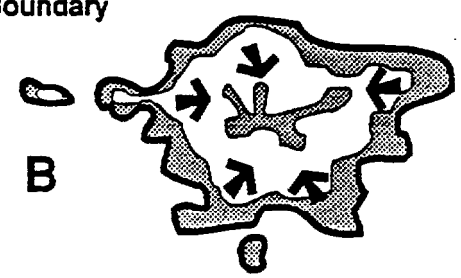
Beaverton Civic Center: Transit Plaza Concept (Source: Beaverton Downtown Plan)

Metro 2040:
Alternative Growth Cortcepts

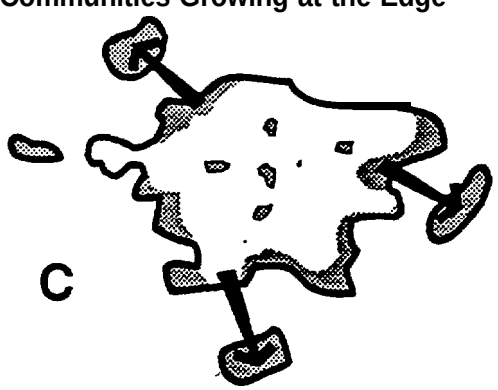
Continuing with Current Policies



Growing Inside the Urban Growth Boundary



Communities Growing at the Edge



Metro's 2040 process is the forum for developing a consensus on a vision for how the region wants to grow.

by residential and commercial buildings. Gresham's plan also calls for neighborhood community centers and "live-work" communities linked to downtown Gresham via transit, mixed-use development along the light rail corridor, and expanded public transit including a downtown light rail loop, bus service, shuttles and park-and-rides.

- 1000 Friends of Oregon, in its LUTRAQ (Making the Land Use Transportation Air Quality Connection) study, envisions a new land use development pattern that encourages a reduction in the number of auto trips and vehicle miles traveled "by creating opponrunities to walk, bike and use transit." LUTRAQ also strongly advocates transit-oriented development and "the maximum use of existing urbanized areas accessible to transit through sensitive infill and redevelopment."

Clearly, there is no shortage of support for carefully managed growth. But with so many organizations tackling the issue from different perspectives, the question arises: How can we as a region coordinate our efforts and work together to achieve one overall vision for this metropoli-. tan area? The answer lies in one word: Partnerships.

Regional Partnerships: Working Together to Shape Our Future

Tri-Met is eager to work with its regional partners to achieve a vision we all agree on. Leaders, organizations and citizens in the metropolitan area will need to work together to pursue the desired changes.

Three areas requiring cooperation are of particular concern to Tri-Met:

1. Defining the vision,
2. Identifying funding for transit expansion, and
3. Achieving the desired land use patterns.

Defining the Vision

While there is some healthy overlap among many of the plans being put forth in the state and region, the metropolitan area as a whole has not yet reached a consensus on its vision for the future The proper forum for developing that consensus is Metro's Region 2040, an effort now underway to plan for the region's future through'the year 2040. The 2040 activities provide a vehicle for the community to discuss alternative ways to grow and address the trade-offs in choosing one approach over another.

Metro has circulated a publication that presents three development patterns to be evaluated in 1993 through the Region 2040 process. One of the concepts offered-Concept B — includes many of the same principles advocated by Tri-Met. Concept B would accommodate growth within today's urban growth boundary by using land more effectively, increasing redevelopment, mainly along major transportation corridors, and encouraging clustered communities with mixed uses and pedestrian amenities.

But before these or any other ideas can be pursued, agencies and jurisdictions in the region must be committed to a common vision.

For its part, Tri-Met will modify its strategic plan to reflect the results of 2040 and expects the rest of the region to do the same with their plans. Tri-Met will need a clear understanding of what the region wants and expects from its transit agency. Then Tri-Met will need the help of its regional partners in meeting those expectations.

The support and involvement of others will be especially important in two key areas: identifying funding for transit and achieving desired land use patterns.

Identifying Funding for Transit

To achieve the level of transit expansion suggested in all of the region's currently adopted plans, or any of the Metro 2040 concepts, Tri-Met will need additional finding.

To move ahead with its own strategic plan, Tri-Met will need assurances from its regional partners that they agree with the proposed level of transit expansion and will help Tri-Met secure the funding to achieve it.

The agency will need $45 million more a year in operating revenue starting in fiscal year 1995 and an additional $30 million a year-starting in FY-1998 in-order to achieve the strategic plan and increase mobility as the population grows. Those amounts represent a major infusion of additional support — equal to about 70 percent of Tri-Met's operating budget today.

It is unlikely that all of those funds will come from a single source. Rather, it is expected that they will come from a number of sources over time, and will likely involve

placing ballot measures before the voters to secure transit financing measures. Seeking additional funding in increments will help Tri-Met stay attuned to voters' concerns and desires.

Some efforts to increase transit funding are already underway. A number of agencies are working on an overall transportation finance package to help fund both highway and transit needs. The Oregon Transportation' Commission, the Governor's Task Force on Vehicle Emissions and Metro's Joint Policy Advisory Committee on Transportation (JPACT) are developing a cooperative state and regional strategy for transportation financing. Transportation 93 — a statewide group of government; business and community interests — is reviewing all of the funding proposals and will act as the final clearinghouse to recommend to the 1993 Oregon Legislature a broad transportation strategy that includes a transit financing proposal.

The current transportation strategy under consideration is based on the Oregon Transportation Plan ap proved by the Oregon Transportation Commission. That plan, like the new federal Surface Transportation Act, contains first-time-ever provisions for flexibility and balance between highway and transit funding.

Half of the federal transportation money allocated to Oregon can now be used for either highway or transit projects. The investments are interrelated According to the State, more than $11 billion in road investments can be avoided by shifting land use patterns, expanding transit. For the Portland region, that's a savings of nearly $10,000 for every household.

Looking beyond the 1993 legislative session, possible sources of funding being considered for transit include:

- A systems development charge imposed on the construction of new parking spaces to support transit; and
- A general obligation bond for light rail and bus capital expansion.

In general, Tri-Met would prefer transportation-related sources of funding for transit than general-purpose taxes. The agency will be seeking voter, legislative and jurisdictional support for transit expansion.

Achieving Transit-Oriented Land Use Patterns

We will all need to work together to avoid the pattern of sprawl that has plagued most growing American cities.

Tri-Met has no formal authority in the land use arena, nor does it want any. Nevertheless, the agency's ability to effectively meet the region's transportation needs depends heavily on the pattern of land use here. Transit cannot serve a pattern of lowdensity development efficiently or economically.

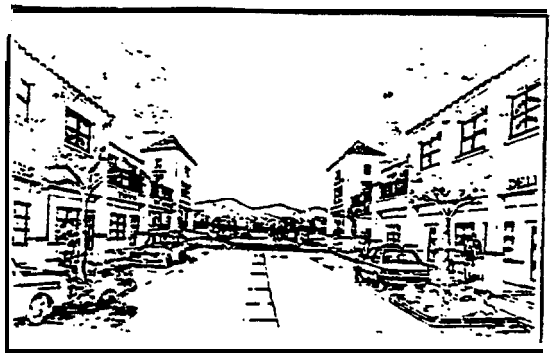
As land use issues are debated, Tri-Met will emphasize that compactly developed areas are given the highest priority for transit service. The lower-density development in outlying areas may have to wait as operating efficiencies permit and may not be serviced by large buses and light rail at all.

Tri-Met will advocate three major public policy initiatives:

1. Containing growth within the existing UGB;
2. Substantially increasing development in transit corridors; and
3. Helping to assure development is designed to be served efficiently by transit.

The agency will generally support the concepts of building "in" rather than "out"; developing self-contained communities; and encouraging pedestrian-friendly urban and suburban centers. These patterns help: the region get the best return on its public investment in not only expanded transit service, but all forms of public works, including sewers, schools, parks and roads.

Tri-Met will also work with local jurisdictions to help them comply with the new requirements under the transportation goal of the state's planning regulations. As an example, the metropolitan area must reduce vehicle miles traveled per capita by 20-percent in the next 30-years. Jurisdictions also must change their planning and zoning codes to allow for transit-oriented development and must find ways to achieve a 10 percent reduction in the number of parking spaces per capita over the next 30 years, Tri-Met's mission of improving mobility fits precisely with these state-mandated goals.



Tri-Met will support the concepts of building "in" rather than "out" and developing pedestrian-friendly centers. (Source: Calthorpe Associates)

The Challenge to Tri-Met

The vision not only implies major challenges for the region; it also-has significant implications for Tri-Met.

First of all, it suggests that Tri-Met has an overriding purpose beyond the provision of bus and rail service.

Tri-Met's job, as stated in the vision, is to help this region stay livable as it grows by making sure citizens can get where they want to go quickly, easily and safely.

That means Tri-Met's role is not only to provide bus, special needs, carpool and light rail service, but also to help citizens access other alternatives to the single-occupant vehicle such as biking and walking.

Second, the vision implies the need for a dramatic increase in Tri-Met's service to enhance mobility. If the agency's service continues to grow at the percent rate of only 1 to 1 1/2 percent a year, a vision of growth without increased congestion cannot be achieved.

Tri-Met has developed a new strategic plan to rise to these two challenges- broadening the ways in which it contributes to enhanced mobility, and dramatically-increasing its service and ridership to keep the region livable.

According to the new strategic plan, Tri-Met's mission is "to assure people increased mobility in our growing, compact urban region." The agency has set six strategic, goals to steer its course. A detailed strategy for achieving the goals will come later in Tri-Met's Five Year Transit Development Plan and individual program strategies. The goals can be grouped into three categories: Getting more riders, getting more funding, and achieving mobility-oriented land use.

Getting More Riders

The surest way to reduce traffic congestion as the population grows is for more people to bike, walk, carpool, or use transit. Tri-Met's ridership goal calls for an aggressive but achievable leap in the number of customers served: from today's 200,000 riders per day to 690,000 riders by 2005 — a more than three-fold jump.

To achieve the ridership goal, Tri-Met must attract as well as retain more customers. The entire agency will be focused on making transit so convenient, so easy-to-use, so economical and so appealing that customers simply can't resist it.

Particular emphasis will be placed on further improving--the reliability of Tri-Met's service, and on assuring that the transit system is safe and secure. Customers should be able to virtually set their watches by the arrival of a Tri-Met vehicle; Inaddition, they should feel assured when they board a Tri-Met bus or train, that they will travel in safety.

Customer service will be a driving ethic at Tri-Met. Employees will be highly trained and oriented to meeting the needs of customers. Hiring, communications, team building and employee development will all underscore the strongest possible customer orientation.

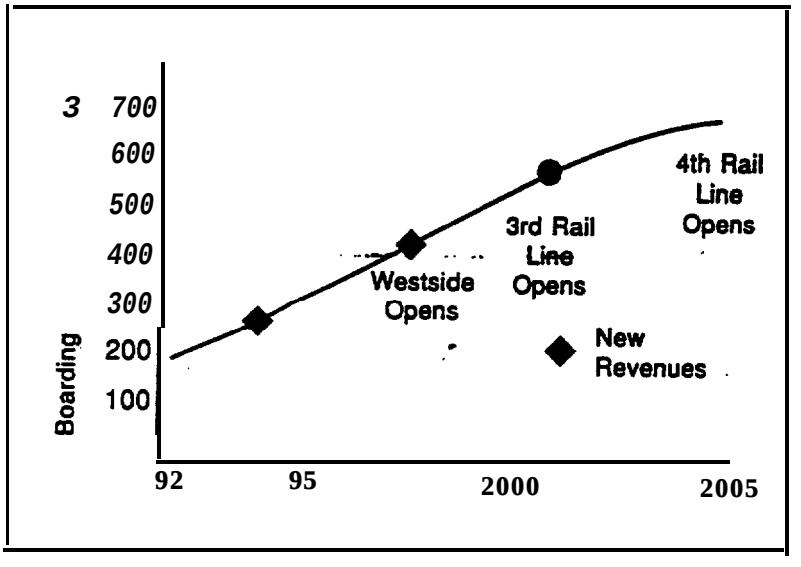
In addition, Tri-Met will initiate a full range of marketing activities to understand and address the needs of its customers. Market research will be used to help the agency find out who its future customers are and how it can serve them with transit.

New Types of Service Planned

Two new types of service are being planned to help Tri-Met reach out to more customers; They are "10-minute corridor service" and "neighborhood mini-bus service."

The 10-minute corridors will provide a network of service from transit center to transit center throughout the region, replicating the attractiveness of regional light rail The corridors will become the backbone of Tri-Met' s bus system. They will consist of major transit routes where service and capital improvements have been made (such as traffic signals that give preference to buses, special bus bypass lanes at intersections, curb extensions at bus stops, etc.) so that a bus can arrive at least every 10 minutes.

Strategic Plan Ridership Curve



Dramatically increased ridership is critical for Tri-Met to achieve its mission of enhanced regional mobility.

Capital improvements to the transit lanes will allow the buses to move faster than nearby automobiles.

The lo-minute corridor service will be easy to use. Customers will riot have to use schedules because of the frequency of service.

Pilot projects will initially be tested on a few key routes. The first l0-minute corridor could begin operating in fiscal year 1995.

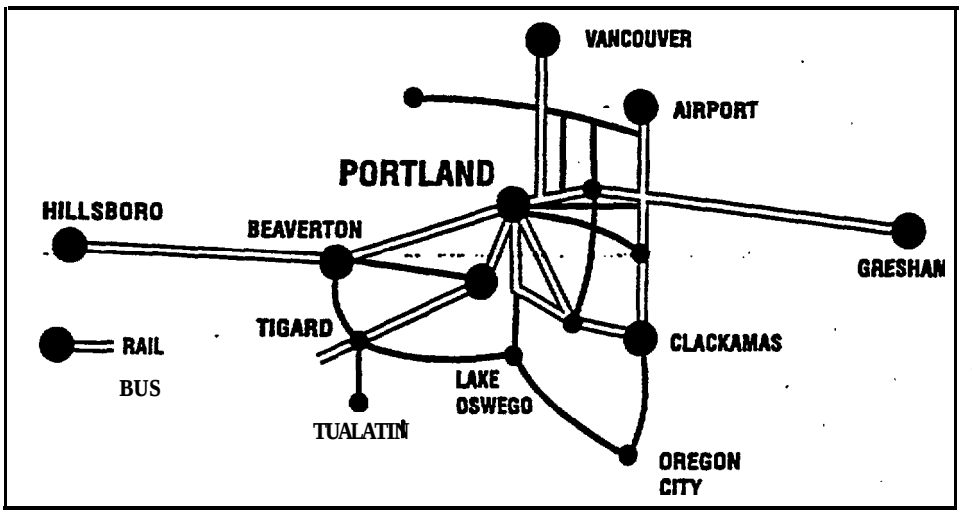
Tri-Met is also proposing to introduce 'neighborhood mini-bus service." This service would be an outgrowth of the special needs transportation service Tri-Met provides . to disabled people. It will operate in a given neighborhood like a local shuttle service or in low-density areas inappropriate for big buses. These smaller buses — possibly electric -will take passengers to local destinations, 10-minute corridor stops or light rail stations.

To help keep the region mobile, Tri-Met is planning a major service expansion over the next 13 years — from some 30,000 weekly hours of bus and rail service today, to almost 87,000 weekly, hours of service by FY 2005.

This will include expansion of the regional rail system and increases in traditional bus and mini-bus service to feed into the rail lines and l0-minute corridors. Tri-Met

10-Minute Corridors Concept

A new concept, "10-minute" corridors will provide the backbone of Tri-Met service, creating the bus and ail equivalent of an above ground subway.



will also promote other modes of transportation, such as biking and walking to improve regional mobility.

The accelerated development of a six-line regional rail system will be a top priority. Tri-Met's most important short-term objective will be completing the Westside light rail project on time and within budget. The agency forecasts 20,000 riders on Westside MAX when the line opens in September of 1997. The line will extend to Hillsboro by 1998. A third rail corridor should be ready for final design in 1996 and a fourth in 2000. Bus and mini-bus services, will grow at a complementary pace.

Where will Tri-Met place its additional bus service? The agency will continue to make specific service decisions in consultation with local jurisdictions, neighborhoods and community groups, as part of the preparation of Tri-Met' s annual service plan. Top priority will be given to providing additional service to those parts of the region that have compact, transit-supportive land use patterns.

Getting the Funding

Tri-Met will not be able to do its part in improving regional mobility unless it can obtain additional funding to serve more riders.

The fiscal stability goal focuses Tri-Met on: 1) Obtaining additional funding; and 2) Getting the best return for each dollar spent.

To secure additional funding, Tri-Met will need support throughout the region for a collective vision of compact urban growth served increasingly by transit. It will need to achieve a regional consensus on a finance package, mobility goals, expansion of the transit system and adoption of land use plans that foster mobility.

To get the best return on each dollar spent, Tri-Met will carefully target its own'spending toward achieving the vision, and will emphasize efficiency throughout its operations. The most effective way to steadily reduce the coat of each ride is to steadily increase the number of riders. Hence, steady ridership growth will be essential for increasing efficiency. Tri-Met will work with its customers and its regional partners to identify the most valuable service lines and reallocate resources as appropriate.

The fiscal stability goal also calls for Tri-Met to maintain three months of working capital for operations, in order to stay closely attuned to risk, keep capital replacement and operating needs in harmony and assure wise spending and the care and maintenance of funding sources. The agency is well aware of the need to spend wisely: If it

doesn't, it could lose its public support and its base of operations.

Getting the Land Use

Tri-Met' s land use goal calls for working with public and private interests to help assure that 75 percent of all new housing and jobs inside the region's urban growth boundary are served by a designated major transit corridor within a 5-minute walk

More detail on Tri-Met' s involvement in the regional approach to land use is provided in the "Partnerships" section of this report.

Tri-Met' s People Make the Difference

To provide the level of service called for in its strategic plan, Tri-Met will need a workforce of some 4500 employees by 2005, compared to its 1800 employees today. The agency will need to dramatically increase its recruitment, training and retention activities to attract and retain a top quality workforce.

Employees will need to be trained to not only operate the agency's equipment, but also to be Tri-Met's major source of contact with customers. A dedication to outstanding customer service will be the overriding ethic at Tri-Met The philosophy of "customers, one at a time" will require that Tri-Met employees be attuned to customer needs and that they be empowered to help the agency find ways to serve customers even better.

To make full use of the skills and talents of its people, Tri-Met will enhance its mechanisms for obtaining and using information from employees to improve service and efficiency; Tri-Met has already begun stepping up its communications activities to listen to employees and help them understand the Strategic Plan and relate their work to it.

In addition, a human resources plan is being prepared to determine how Tri-Met can give its people more opportunities to contribute to achieving the plan. Tri-Met is investigating such possibilities as increased employee training and-education; total quality improvement techniques, two-way communication activities and incentive and recognition programs; At the same time, individual departments within Tri-Met are looking at ways to involve employees specifically in generating ideas to improve service and attract more riders.

Tri-Met' s mission: To assure people increased mobility in our growing, compact urban region.

Goal 1

Customer Service:

Steadily increase system reliability and decrease the number of customer complaints.

Overall Approach:

Tri-Met will be driven by an ethic of superlative customer service. A strong orientation to customers and to outstanding service will be fostered throughout the agency. The agency's principle will be satisfying customers "one at a time."

Tri-Met will also improve the transit system itself by making it more convenient, reliable, easy-to-understand, and appealing to customers. Particular emphasis will be given to system safety and security.

Capital improvements will include creation of 10-minute corridors, (where faster, more frequent service will be provided on primary routes), and improvements in and around transit stops, including park-and-ride lots.

Tri-Met will strive to increase customer satisfaction and reduce customer complaints regarding regular and special service. It will improve its ways of listening and responding to customers and will enhance its system for organizing and responding to customer complaints. Customer community and Tri-Met employee input will be used to improved service.

Tri-Met will also focus on meeting a exceeding the criteria set forth in Tri-Met's Service Standards for on-time performance in fixed-route bus route. The reliability of the system will be assured by maintaining adequate levels of service and vehicle maintenance. The agency will expend its efforts to help more people learn how to use transit. Continuing emphasis will be placed at providing the kind of high quality service that keeps customers coming back.

Goal 2

Ridership:

Increase transit ridership to 690,000 riders per day by 2005.

Overall Approach:

The goal represents a dramatic increase from the 200,000 daily riders who now use transit. This increase will be accomplished in incremental stages. By the end of fiscal year 1997, Tri-Met plans to achieve an average of 310,000 riders per day.

Bus service will continue to be the mainstay of Tri-Met's transit service, and will be bolstered by two new concepts.

1) "Ten-minute corridors" will be created on two dozen major transit corridors, where Tri-Met will increase bus frequency and speed so that a bus comes by every 10 minutes (creating the bus equivalent of an above-ground subway system). Tri-Met will work with its regional partners to determine the location of the l0-minute corridors, and will begin implementing them by fiscal year 1995. Tri-Met will also work with local jurisdictions to achieve road treatments that give preference to transit.

2) Neighborhood mini-bus service will provide service to customers close to home, offering almost door-to-door pickup and delivery to link customers with light rail and the 10-minute corridors.

Tri-Met will increase the number of hours of bus and light rail service to 50,000 per week from the current level of 30,000 per week -- a 67 percent increase in weekly vehicle hours -- by the end of FY 97.

Tri-Met will use marketing, advertising, customer service, promotions, and pricing strategies to boost transit ridership. It will also strive to increase transit ridership by elderly and disabled citizens. Overall, the agency will work to substantially increase system reliability, operating speeds, capacity, frequency, security and convenience. Attracting and retaining more customers will be the primary focus of every Tri-Met employee.

Goal 3

Human Resources:

Attract, train and retain 4.500 employees by 2005, who will provide superior customer service. Refine **internal systems for using information from employees to improve service and efficiency.**

Overall Approach:

Tri-Met will, first, assure that it has the number and quality of employees it needs, and, second make sure it is managing them to achieve optimum results. The agency will expand its recruitment, training and retention activities to attract and retain the best employees.

A strong emphasis will be placed on orienting all employees to the strategic goals and, in particular, to customer service. "Customer" can mean an external Tri-Met customer, a someone within Tri-Met who serves external customers.

Management's role is to support employees and help them do their best. Employee training and education will be expanded as needed. Mutual respect, teamwork and open communication will be reinforced as key values throughout Tri-Met. Significant emphasis will be placed on achieving divenity at all levels of the agency.

Specific initiatives will include:

- Develop a human resources plan.
- Revise and improve the classification and compensation system as needed.
- Expand recognition programs.
- Investigate the potential for total quality management at Tri-Met.
- Focus employees at key issues related to customer service improvement. Develop a system a management approach that empowers employees to take the initiative to solve problems.
- Assure that all employees understand the Strategic Plan and their role in helping to achieve it. Help managers assume stronger role in two-way communication with employees.

Goal 4

Fiscal Stability:

Steadily decrease the cost of each **originating ride provided. maintain the** equivalent of three months' waiting capital, and increase the continuing revenue base by $145 million per year by 2005.

Overall Approach:

To achieve this goal, Tri-Met will focus on:

I) Obtaining additional funding and

2) Getting the best return for each dollar spent.

To obtain additional funding, Tri-Met will need support throughout the region for a shared vision of compact urban growth and a regional rail system. It will be critical to achieve regional consensus on mobility goals, finance packaging, expansion of the transit system end adoption of land use plans that foster mobility.

Tri-Met will seek legislative authority on one or more taxing measures and plans to secure a major new source of funding for operations and routine capital by July of 1994. Voter approval will be sought for a funding mechanism for construction of a third rail corridor in 1999 and for the local sare of support for the 20-year rail development plan. It is unlikely that those funds will come from a single source. They are more likely to come from a number of sources over time.

Tri-Met will increase efficiency and get the best return for each dollar spent by increasing ridership and consistently applying established financial controls. Maintaining three months' capital will provide a control mechanism for keeping Tri-Met on track financially.

Goal 5

Service Expansion:

By 2005, expand and diversify service to 1,650 buses and mini-buses and **three operating rail corridors, with one rail corridor in construction and one** In final design, Double the percentage of carpool, bike and walk trips.

Overall Approach:

Tri-Met will seek to accelerate development of a six-line regional rail system.

Plans call for completing Westside light rail within budget and serving 20,000 daily boarding riders when the line opens in September 1997. The extension to Hillsboro is to be added to the project in 1994, with completion in 1998. The third rail corridor -- to Clackamas County and possibly north to Vancouver -- should be ready for construction in 1999, with completion in 2003. Tri-Met will also work with Clark County's transit agency, C-TRAN, to strengthen the integration of the two systems to better meet bi-state travel needs. The capital cost of **system expansion will be $3 to $4 billion.**

Tri-Met will expand its bus service to support the 10-minute corridors and existing and future rail lines. The agency will increase its fixed-route bus fleet by 208 coaches (118 to meet service standards; 90 for the 10-minute corridors), to a total of 734 fixed-route buses by the end of FY 97.

To house and service its bus and rail cars, Tri-Met will expand its existing operating and maintenance centers, or add a new one.

Tri-Met will also explore new service possibilities to better meet customer needs. It will work with its regional partners to obtain more funding and staffing for carpooling programs, and increase employer vanpooling. The agency will also work to achieve attractive, transit-supportive pedestrian and biking environments.

Goal 6

Land Use:

Using public and private partnerships, help assure that 75 percent of all new housing and jobs inside the region's Urban Growth Boundary (UGB) are served by a designated transit corridor within a 5-minute walk.

Tri-Met is not a land use agency. Rather, it can act as an advocate and catalyst for shaping land use patterns in ways that improve mobility. The agency will work with others to achieve land use plans that can be cost-effectively served by transit. Tri-Met will advocate three major initiatives:

1. Containing growth within the existing urban growth boundary (UGB);
2. Substantially increasing development in transit corridors; and
3. Helping to assure that new development is designed to be served efficiently by transit.

Tri-Met will consider these three factors in deciding where to provide service. Transit service and land use are interrelated. Tri-Met cannot achieve its ridership goals without changes in land use. The agency's service standards and Five Year Plan will be changed to incorporate land use considerations into service expansion decisions.

On a regional level, Tri-Met will be initiating a cooperative process with local jurisdictions to select the "designated transit corridors" called for in the goal. Because the corridors will be limited in number, top priority will be placed on locating them in areas with land use patterns compatible with transit.

Tri-Met will encourage the inclusion of its land use initiatives in the region's land use and transportation plans (Metro's Region 2040 Plan and revised Regional Transportation Plan) and in local comprehensive plans. The agency will also strive to achieve recognition from the development community that transit-oriented development is both achievable and profitable

Tri-Met Strategic Plan: Business Plan

Year of Expenditure Dollars

	FY93 FORECAST	FY94 FORECAST	FY95 FORECAST	FY96 FORECAST	FY97 FORECAST	FY98 FORECAST	FY99 FORECAST	FY2000 FORECAST	FY2001 FORECAST	FY2002 FORECAST	FY2003 FORECAST	FY2004 FORECAST	FY2005 FORECAST
1. Weekday Rideship	216,000	233,300	256,600	282,300	310,500	347,800	382,500	420,800	462,900	518,400	570,200	627,300	690,000
2. Weekly Bus and Rail Hours	32,163	33,095	36,960	41,286	46,127	52,302	56,126	60,233	64,644	70,382	75,472	80,940	86,814
3. Annual Revenues (000s)													
a. Passenger Revenues	30,464	34,546	39,900	46,085	53,228	62,597	71,298	83,505	96,449	113,424	131,004	151,310	174,763
b. Payroll Tax Revenues	84,214	90,430	96,863	103,157	109,861	117,002	124,608	132,708	141,336	150,528	160,316	171,512	172,713
c. Other Existing Revenues	35,413	57,579	45,684	57,413	33,305	36,606	57,172	44,721	50,643	76,646	62,503	69,776	99,105
d. New Revenues			45,000	48,150	51,521	85,127	91,086	97,462	104,284	111,584	119,395	127,753	136,695
4. Total Revenues (CRR and OTO)	150,091	182,555	227,447	254,805	247,915	301,332	345,164	358,396	392,712	452,182	473,218	520,351	583,276
5. Operating Expenditures (CE)	114,415	124,825	144,176	161,141	180,967	209,646	230,430	251,447	274,601	314,635	343,295	374,869	409,664
6. Capital Expenditures (CE and OTO)	32,100	67,541	53,370	109,779	62,450	70,545	101,253	90,237	101,198	138,115	125,913	139,855	184,837
7. Total Expenditures (CE and OTO)	146,515	192,366	197,546	270,920	243,417	280,191	331,683	341,684	375,799	452,750	469,208	514,724	594,501
8. Operating Result	3,576	(9,811)	29,901	(16,115)	4,498	21,141	13,481	16,712	16,913	(568)	4,010	5,627	(11,225)
9. Estimated Beginning Working Capital	57,034	54,610	44,799	74,700	58,585	63,083	84,223	97,704	114,416	131,329	130,761	134,771	140,398
a. Operating Fund	28,604	31,206	36,044	40,285	45,242	52,412	57,608	62,862	68,650	78,659	85,824	93,717	102,416
b. Capital Reserve Fund	28,430	21,404	8,715	34,415	13,343	10,671	26,616	34,843	45,766	52,670	44,938	41,054	37,982
10. Months of Operating Expense	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
11. Fare Recovery Ratio	**26.6%**	**27.7%**	**27.7%**	**28.6%**	**29.4%**	**29.9%**	**31.4%**	**33.2%**	**35.1%**	**36.0%**	**38.2%**	**40.4%**	**42.7%**

CR-Continuing Revenue
OTO-One Time Only
CE-Continuing Expenditures

Key Points:

Ridership Growth

- The focus of much of Tri-Met's activl-ties will be achieving the weekly ridership increases shown in line one-- from about 200,000 daily boarding rides today to about 690,000 in FY 2005. A gradual shift in land use as envisioned in the Strategic Plan is necessary to achieve these ridership levels. This growth in fixed-route and mini-bus ridership is considered critical for Tri-Met to achieve its mission of improving mobility as the region grows.

Service Expansion

-Line two, weekly bus and rail hours, shows the level of service needed to serve significantly more customers.

New Revenues

- As indicated in line 3d, Tri-Met will need new revenues to pay lot expanded service. The agency will need $45 million in new revenues starting in FY 95, growing at 7 percent per year An additional new revenue source of $30 million is anticipated starting in FY 98, also increasing at 7 percent per year. The total revenues in line 4 will cover Tri-Met's operating and capital ex-penses except for the money needed to match federal funding for additional light rail lines.

Fiscal Stability

- The agency's commitment to maintain-ing three months of operating working capital as part of its fiscal stability goal is reflected in line 10, which shows steady maintenance of three months of operating expense. Tri-Met will main-rain this cushion to assure wise and prudent spending.

Operating Efficiences

- The agency will be improving its operating efficiencies so that its fare recovery ratio (line 11) increases from 26 percent today to almost 43 percent in FY 2005. This means that by 2005, **about 43 percent of Tri-Met' s costs will** be covered by passenger fares.

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