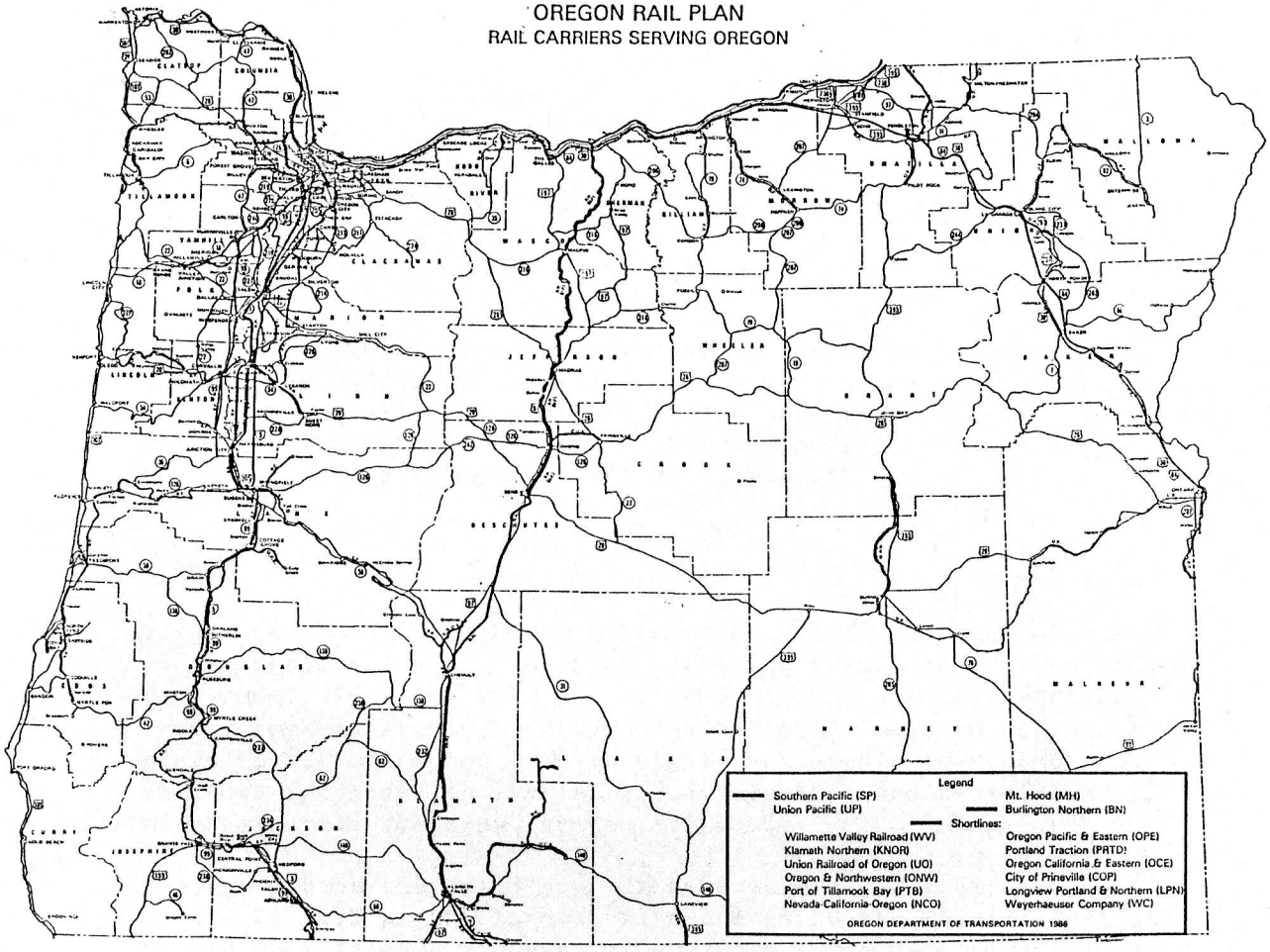

OR-MAX

SUSTAINABLE OREGON TRANSPORTATION

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OR-MAX is a proposal for development of a statewide electric rail freight and passenger transportation system using the network of existing railroad rights-of-way linked with local transit and highway vehicle rental stations. The system is proposed for substantial operation by the projected 1992 oil crisis.

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Oregon has been a pioneer and leader in the development of energy conservation and replacement of depleting fossil fuels with renewable resources. In spite of gains in other areas, our transportation system remains almost totally dependent upon imported petroleum products for operation. It is highly vulnerable to disruption and cost increases in available fuel supplies and has virtually no alternative "back-up" system available.

Expert opinion now solidly predicts a severe and protracted oil crisis by 1992 at the latest, with events in the Persian Gulf able to precipitate such an event at any time. Prudent planning would mandate development of non-oil based transportation alternatives by 1992.

Oregon is uniquely fortunate in having the possibility of doing so, and to reap a variety of other benefits in the process. Our much maligned rainfall gives us the renewable resource of water power, and the ability to use hydroelectricity to power a statewide passenger and freight rail system which can form the backbone of an integrated transportation system. Such a statewide rail system has a number of distinct advantages:

1. SPEED - 100 mph express operation can offer considerable time savings for both passenger and freight operation. Electric trains can accelerate and operate at considerably faster speeds than diesel locomotives.

2. SAFETY - Statistics show that rail passenger service is 20 times safer than auto travel, with resultant reduction in medical costs, suffering, and insurance premiums.

3. COST SAVINGS - A 1974 study of nationwide rail electrification and upgrading by Pennsylvania Governor Milton J. Shapp

projected a $1.5 billion/year savings after 6 years, without any traffic increase, and a 15-18% return on investment. Based on oil-generated electricity, it projected a 25% reduction in cost of operating freight service. With Northwest hydropower compared to anticipated oil costs in the near future, the comparison would be far more dramatic. With shifts from truck to rail,and passenger service added, the savings would be even greater.

4. ECONOMIC DEVELOPMENT - In-state economic development would be stimulated by keeping fuel dollars and expenditures for automobile purchase, financing and insurance circulating within the state providing local employment and income rather than exporting them to purchase oil and vehicles, and by providing an inexpensive and secure support system for industry.

5. ENERGY - OR-MAX would provide an unsubsidized replacement market for part of BPA's currently subsidized and contracting direct service (DSI) market, and stabilize BPA sales.

6. SECURITY - It would provide transportation security by elimination of Oregon's total fuel dependence on imported petroleum, reduce oil imports and help U.S. balance of trade, and develop a sustainable transportation system while we have the time, money, and net energy to do so without disruption and sacrifice.

Two circumstances give us an unrepeatable opportunity today for development of OR-MAX:

1. RIGHT-OF-WAY: Major sections of Oregon's rail rights-of-way (r.o.w.) are in process of abandonment or sell-off. (Oregonian, 6/21/87). Once sold and broken up, the development of a replacement r.o.w. system would prove prohibitively expensive. Some branch lines, such as Portland/Wheeler/Tillamook have been purchased or leased by local public operating entities, but could be easily integrated into a public system. This proposal would put the entire state r.o.w. under public ownership. This would permit electrification and upgrading of the track system to safe and rapid use conditions before the opportunity for a statewide system is lost. Significant repair and upgrade is necessary on much of the trackage, and common public ownership is necessary for scale of operation to successfully capitalize, manage, and coordinate upgrading and operation.

2. ENERGY: Our hydroelectric system is a renewable resource, in place, and with current excess capacity. One of BPA's largest Direct Service Industries, aluminum smelting, is faced with major competition from newer, more energy-efficient smelters elsewhere, by stockpiles of recyclable aluminum, and substitution by other products. A hydroelectric based transportation system can provide BPA a stable alternate market for this capacity. The system should operate as a Direct Service Customer served directly from BPA substations.

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Our rail systems are badly deteriorated. Short-sighted management has focussed on short-term financial gains rather than long-term economically profitable growth. Failure to maintain facilities, to adapt new freight handling techniques and to connect with other transportation modes to develop an integrated transportation system has masked the potentials which electric rail service can offer.

Acceptance and ridership on Portland's MAX light rail system shows that people have lost their infatuation with automobiles and are ready to use other transportation modes when appropriate. Low cost petroleum made a highway-centered transportation system affordable, but oil price increases have already reversed that advantage.

A major argument against rail systems has been their lack of flexibility in destination and difficulty in serving dispersed areas. OR-MAX proposes a rail system integrated with local transit, air and highway systems. It would interface with a diversified vehicle rental system providing destination freedom while limiting the need for car ownership and operation. The vehicle rental system would provide both weekday business and weekend personal rentals. It would provide a full range of vehicle types - from sedans to compacts, vans, sports models, and trucks - as well as both new and "rent-a-wreck" options. Combined with upgraded local transit, it would provide a significant savings to users through reducing need for private vehicle ownership.

Comparing the full cost of first or second car ownership (purchase, financing, insurance, repairs, fuel, hassle, parking, storage space, etc.) and showing broad user advantages (different kinds of vehicles when and where you need them, less driving, no repairs) users can begin to take advantage of true costs, not just out-of-pocket fuel costs. "Credit card" operation of both transit ticketing and car rental would eliminate much of the time and hassle of both operations for users.

Fleet operation of the rental system would also provide opportunity for obtaining maximum fuel efficiency in all classes of vehicles and ability to respond quickly to available improvements in fuel efficiency or alternate fuels. It would encourage purchase for durability and low maintenance, integrate maintenance and repair operations, and save on financing and quantity purchases. Coupled with extended use-life of vehicles, less advertising and lower use peaks, this would result in lower rental costs compared with current rental operations.

VEHICLES: Passenger rail cars would provide a substantial improvement in comfort, convenience, and amenity for their users compared to current transit vehicles. Reflective glass roofs would provide panoramic enjoyment of Oregon's natural beauty. Operable windows would give individual comfort in our mild climate. "Business cars", as on Japanese trains, would provide phones, computers, work space, etc. en route. On-board phones or computer contact with stations would provide on-board scheduling information and routing for passengers connecting with local transit and reservations for rental vehicles. Individual seat adjustment, heat, light and audio facilities and secure luggage storage would be provided for passenger comfort.

FREIGHT: Existing freight service would be improved by roadbed urgrading with consequent speed improvements and damage reduction. Addition of containerized and drive-on freight operation and mechanized transfer facilities would further reduce costs and reduce overall delivery time. Electrification would give cost savings and a secure backbone to the state's freight system. Combined freight and passenger use would expand 24-hour use of the system, lower peak loads, and spread fixed costs. The system would provide labor, fuel, cost and time savings for freight transporters, with advantages increasing as petroleum fuel costs escalate.

PHASING: Concurrant planning and implementation would be carried on in several areas. General phasing is seen as follows:

1. Electrification and signal system upgrading of entire r.o.w. should be given highest priority, as it will both allow change of fuel for present uses and support rapid expansion of use as appropriate. Priority for branch line electrification should be based both on local economic development priorities and statewide system operation needs.

2. R.O.W. review should be made as electrification planning is begun, for potential grade changes, curve radii and superelevation changes to permit system operation speeds of 100mph where feasible.

3. Rail replacement and roadbed upgrading should be begun simultaneously, with priority given to existing roadbed problems and scheduling improvement before passenger service begins on each segment.

4. Passenger service development should expand from an initial focus on two areas:

A. Portland-Eugene high density corridor for major ridership and demonstration of local transit/vehicle rental links, commuter and business use.

B. Development of demonstration branch lines, such has Portland/Wheeler/Tillamook coast line or the Portland-Dalles-Bend-Eugene loop with high visibility for both tourism and recreational use. Ability of skiiers to reach ski areas without highway delays, chains, black ice, and shoveling out buried cars would highlight the "hassle-free" benefits of rail use.

5. Freight service development should have three priorities:

A. Development and improvement of airport, seaport and major highway freight transfer facilities.

B. Implementing local mechanized freight transfer facilities.

C. Improvement of specialized branch line equipment for handling agricultural and forestry products.

FINANCING: Financing would be developed by components:

1. Right-of-way acquisition would be self-financing through user fees from existing freight operations, with value derived from such income history.

2. Value-added capture should be the primary financing mechanism for electrification, roadbed improvement, equipment purchase and facility construction. Any major infrastructure development impacts land values. While the U.S. Interstate Highway System "gave" that value away at its interchanges, more recent and sophisticated developments such as the Hong Kong subway and the Washington D.C.-Dulles Airport transit line were financed almost entirely through capture of the value added to real estate in the vicinity of their stations.

3. As one of the major goals of the program is to encourage movement away from imported oil fueled transportation modes to those fueled by local renewable resources, partial financing through a progressive tax on petroleum fuels could play a double function of correcting misleading price signals and financing the development of the necessary replacement system.

4. With one of the primary goals of rapid electrification and introduction of passenger service being to provide the "insurance" value of a basic non-oil fueled transportation system, the cost of these components could appropriately come from, or be backed by,state general funds.

5. Phasing of local roadbed upgrading and freight and passenger facilities should be tied to local priorities for economic development. As such, their financing could appropriately be tied to economic development or lottery funds.

In all cases, revenue rather than debt financing should be employed, due to its far lower ultimate costs.

MANAGEMENT OPTIONS: Several management options exist:

1. Public ownership and operation as a Rail Department parallel to the Highway Department in ODOT.

2. A separate public ownership and operating entity similar to a Port Authority with directors appointed by the Governor and funding approved by the legislature.

3. A "coalition" ownership of various branch line owners, public, etc.

4. Private ownership.

Of these, the separate "Transit Authority" approach appears to offer the greatest advantages in flexibility, ability to marshall funding, speed of implementation, and ability to market a coherent and integrated system.

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Some would counsel postponing electric rail development until superconducting or magnetically-levitated trains are available. Maglev trains offer advantages only on ultra-high-speed operations which are precluded on a regional transportation system by stop spacing. Their use would be applicable only on a national express system, and would require a separate r.o.w. system. Superconducting motors can be fitted as new or replacement equipment as they become available. The primary value in the technology in this application appears to lie in the realm of BPA distribution system rather than rail operation itself.

Other critics of rail transport point to the eventual development of 65-100mpg automobiles as making alternatives to highway-centered transportation unnecessary. Any calculation of availability dates vs. oil depletion curves shows that both a major elimination of the need for oil in transportation and much higher efficiency of use in the remaining oil-fueled sector will be necessary in the very near future.

The parameters of our economic development are being forced to shift from 20 year discounted financial horizons to 100-200 year economic planning horizons because of the far higher real economic costs incurred by "financial" planning that discounts real future costs and benefits. Other cities and countries, aware of this, are now shifting to long-term analysis, planning and development. Successful economic competition with such areas requires we do the same, and improves our competitive position relative to those who are slower to perceive today's needs.

The earlier we develop a transportation infrastructure which is sustainable through the next century, the easier our land use and urban patterns can adapt and develop in accord with such transit and the greater our cumulative economic and social benefits.

OR-MAX would go far towards "recession-proofing" a major sector of our economy. It would generate a significant economic impact beyond its cost savings, through replacing export of our dollars spent on autos, fuel, and insurance by local employment. Countries such as Finland have successfully operated very low density rail transit systems for years - their lessons can aid our own applications. OR-MAX can demonstrate a clear vision of a people who can grasp the opportunities of today and turn them into benefit for both today and tomorrow.

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Lee Johnson was a founder of Ecotope Group (Seattle) and RAIN (Portland), and later Technology Director of Western SUN, the regional federal solar energy institute. He is now on the staff of the Portland, Oregon, Energy Office. At Ecotope, he managed the nation's first statewide study of sustainable energy, for the state of Montana.