

Commonwealth of Puerto Rico
Department of Transportation and Public Works
Puerto Rico Highway and Transportation Authority



Multi-Modal Transportation Presentation VIII UPR/MIT Encounter

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Puerto Rican Initiative for the New Century

“The infrastructure is an essential element for the economic development. The investment on it is a tool, and not an end by itself. It is essential that its planning consider relevant regulations, and the claims of the communities”.

Hon. Sila María Calderón
Governor

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Mission of the PRDTPW

- Develop, maintain, manage and regulate the infrastructure and the systems for the transportation of people, goods and services with safety, celerity, and sensibility, considering the environment and the citizens.
- Provide durable, integrated and efficient transportation systems that promote the economic development and the quality of life.

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Goals

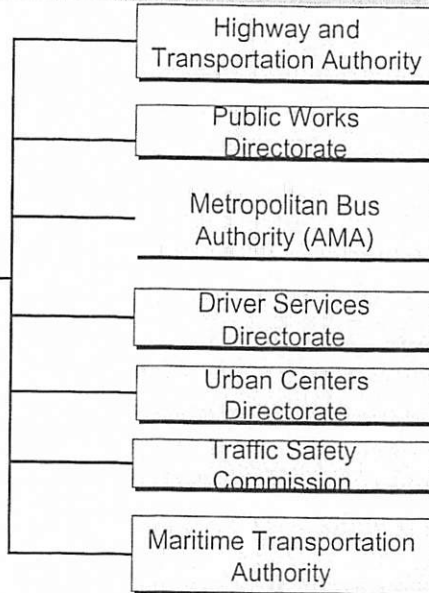
- A safe, integrated, efficient and reliable system, that provide a diversity of travel alternatives for the majority of the citizens.
- Social justice for the people that lack adequate transportation alternatives, and for those that invest a considerable amount of their income in the operation and maintenance of their automobiles, as their only mode of transport.

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The PRDTPW Umbrella

Puerto Rico
Department of
Transportation and
Public Works
(PRDTPW)*

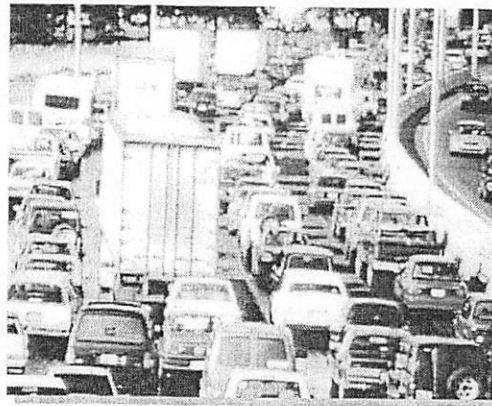
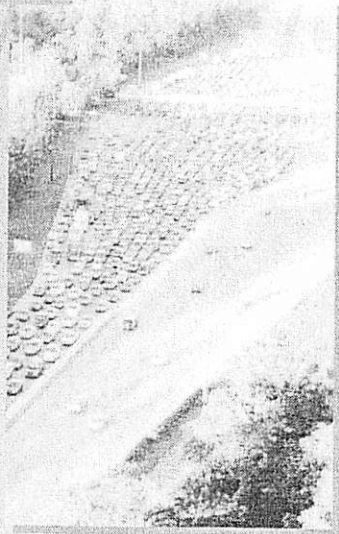


* The PRDTPW is the MPO for Puerto Rico's 9 UZA's.

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Highway Congestion has Grown



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Puerto Rico: Some Relevant Facts

In San Juan Metropolitan Regional Urban Core:

- Close to 4,300 cars per square mile
- 1.4 million residents generate over 3.2 million trips per day
- Person trips per day are expected to continue increasing faster than the rate of population growth
- Traffic Engineers have determined that the capacity of the San Juan road network cannot be expanded significantly due to space limitations

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Puerto Rico: Some Relevant Facts

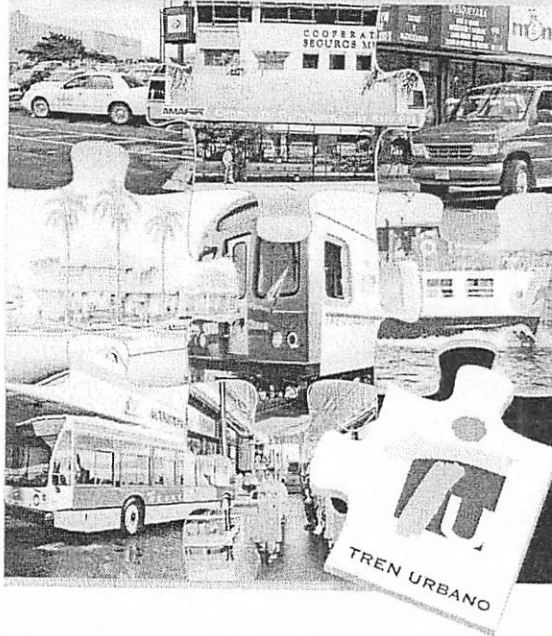
- Population: 3.8 million U.S. Citizens in year 2000.
- 36% of the population (1.4 million people) lives in the San Juan Metropolitan Region.
- Population density:
 - Island: 1,100 /square mile
 - San Juan Metropolitan Region: 3,500/square mile
 - City of San Juan: 8,500/square mile
(In some sections of the City you find densities comparable to those of N.Y. City.)
- Over 2.4 million cars, or about 620 cars per 1000 people
- Over 150 vehicles per mile of paved road
 - The highest such ratio in the world
 - Three times more than in the continental U.S.A.

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Multimodal System

- *Tren Urbano*
- MBA
- *Metrobús*
- Municipal shuttles
- Paratransit for handicapped
- *Publicos*
- Bicycle / Pedestrian
- *Acuaexpreso* (water ferries)



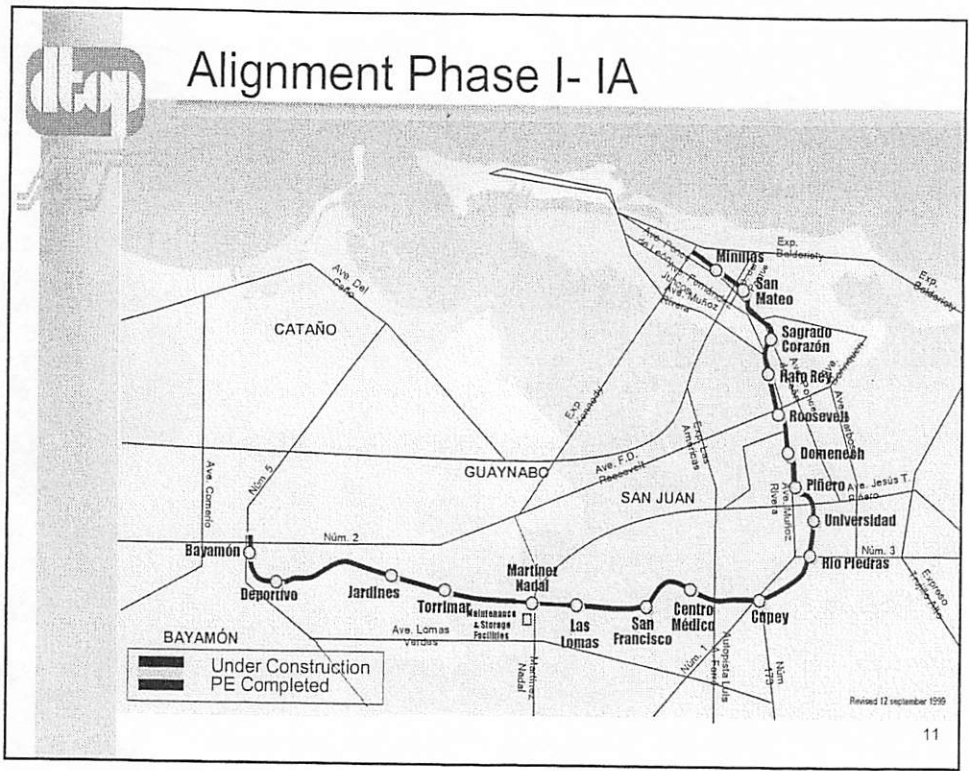
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Tren Urbano

- The central, higher capacity element of the multimodal system will be a regional metro called *Tren Urbano*, because of its importance for reshaping the metropolitan center and helping to stop urban sprawl.
- Old and new transit services will converge or provide connections to *Tren Urbano*.
- These connections are essential for the success of the regional transit system and the urban revitalization policies.

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Tren Urbano Facts – Phase I

- 10.5-miles (17-kilometers)
- 16 stations and a storage and maintenance yard.
- Travel time of approximately 30 minutes end to end.
- 60% of the alignment will be elevated, 40 % will be at-grade.
- Expected ridership: 115,000 passengers per day.
- Estimated cost: \$1.9 billion.
- Approximately 50% of the alignment makes use of existing highway ROW.



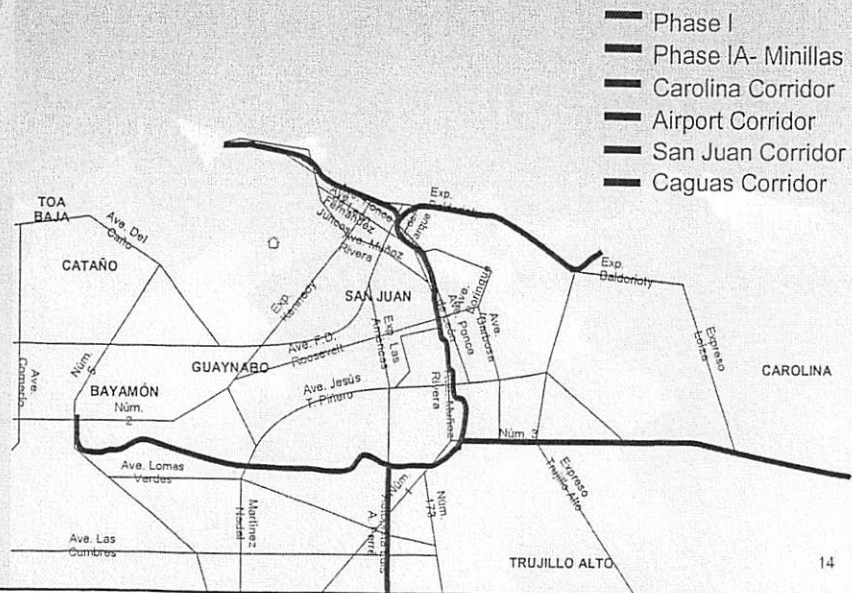
Tren Urbano Access Program

<u>Modal Alternatives</u>	<u>Actions</u>
Walk	Station area improvements Pedestrian access
Bicycle	Investigate storage alternatives and locations
Bus	Implementing feeder plan
Public (Private fixed-route van service)	Implementing feeder plan (route restructuring)
Private Vehicle - Urban	Park & ride, kiss & ride
Private Vehicle - Commuter	Remote Park & Ride Plazas/BRT

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Possible Future Extensions or Connections



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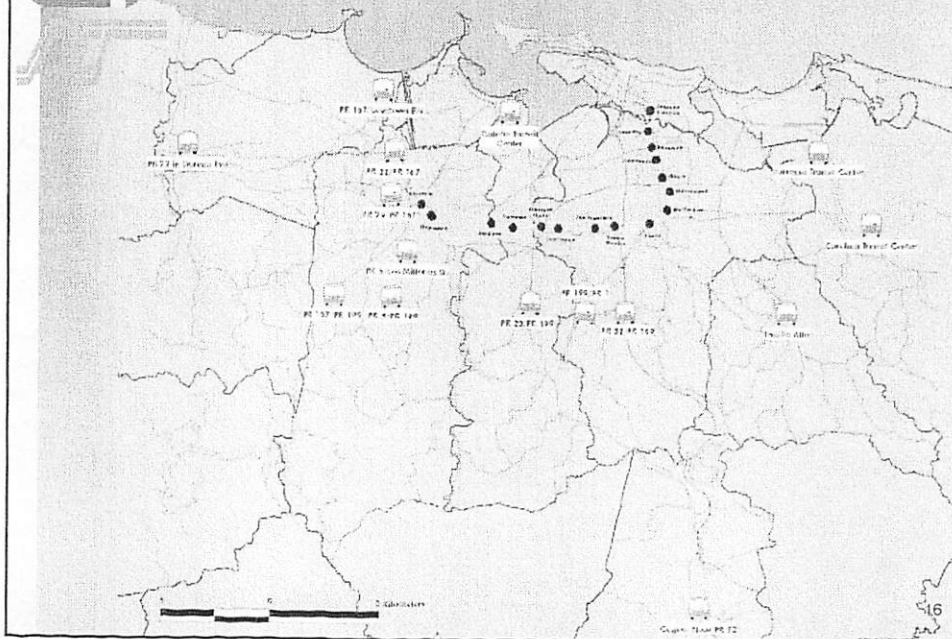
Remote Park-and-Ride Lots and High Occupancy Vehicle (HOV) Lanes

The Highways and Transportation Authority is considering the idea of establishing remote park-and-ride lots in three locations with high population density in the metropolitan area of San Juan. There would also be a High Occupancy Vehicle (HOV) Lane, as part of its multi-modal transportation system that would complement the role of the Urban Train on the island.

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Remote Park & Ride Plazas



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Bus Rapid Transit Project

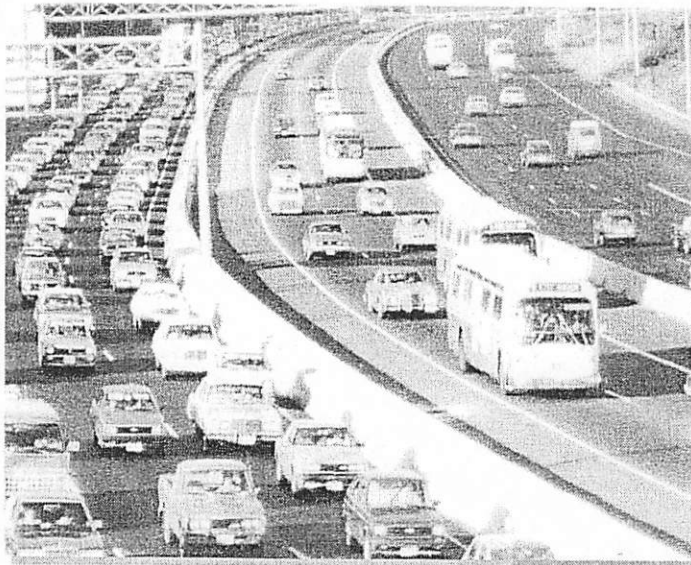
- High speed bus shuttle service between Tren Urbano rapid transit line and intermodal transfer facilities



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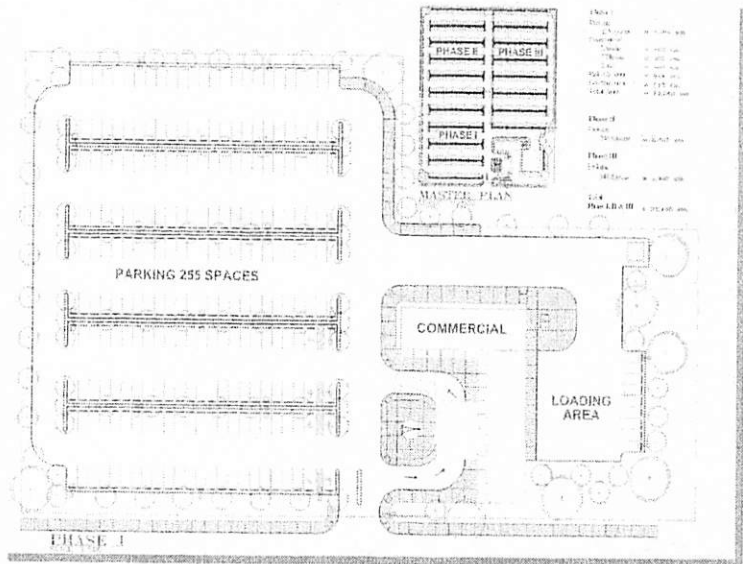
H.O.T. Concept



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Tren Urbano Plaza-Prototype Concept D



Río Hondo Connector BRT Project

Drivers who park their automobiles will board vans with a capacity for 21 passengers that will operate at intervals of five minutes. Transportation will be provided along an HOV lane to an area close to the Bayamón station. The driver of the mass transportation vehicle could manipulate electronically those distances that do not have an exclusive lane.

- Remote Park-and-Ride Lot

Point of origin: Intersection of PR-5 along the Río Hondo Connector with PR-199 on Martínez Nadal Avenue.

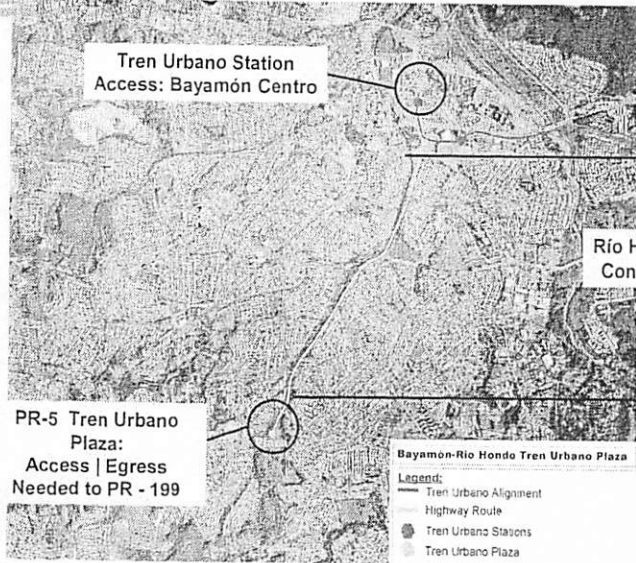
- HOV Lane

Point of origin: Intersection of PR-5 on the Río Hondo Connector 2/3 of PR-5 to Bayamón Station.

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Río Hondo Connector BRT Project



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Río Hondo Connector PR-5



Current stage: under construction

Termination date: end of 2002

Remote Park-and-Ride Lot

Current stage: preliminary design

- Initial Site
- Alternative Site
- Access Car AM
- Egress Car PM
- Bus to TU AM
- Bus from TU PM

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Tren Urbano

PR-52 Luis A. Ferré Expressway – Cagua

The ACT is studying two possibilities for establishing a remote park-and-ride lot that would feed the mass transportation system moving passengers to the Cupey Station.

Alternative #1

Remote Park-and-Ride Lot

- Point of origin: Intersection of PR-1 with PR-3
- Current stage: Preliminary design

HOV Lane

Point of origin: Intersection of PR-1 with PR-30. The lane would connect to PR-52 by means of an exclusive lane until reaching the Cupey Station in Río Piedras.

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Tren Urbano

PR-52 Luis A. Ferré Expressway – Cagua

Alternative #2

Point of origin: PR-52 near the Catalinas Shopping Mall

HOV Lane

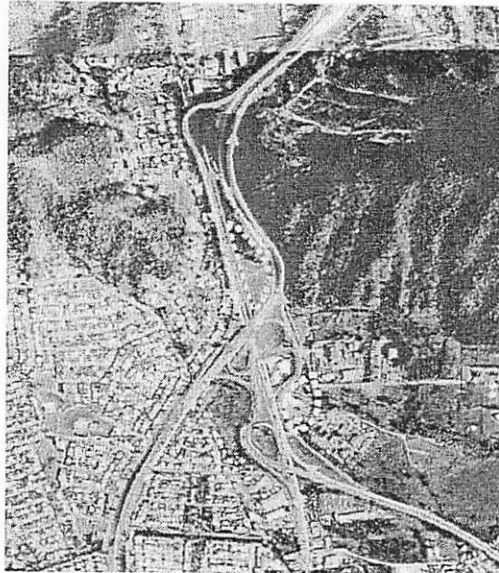
Point of origin: From PR-52, close to the Catalinas Mall, of the Cupey Station, Río Piedras.

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Tren Urbano

PR-52 Luis A. Ferré Expressway – Cagua



- ■ ■ ■ Initial Site
- ■ ■ ■ Alternative Site
- Access Car AM
- Egress Car PM
- Bus to TU AM
- Bus from TU PM

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Tren Urbano

PR-22 De Diego Expressway – Dorado

The remote park-and-ride lot proposed for the intersection of PR-22 with PR-165 would direct drivers from the western region to the center of Bayamón.

Remote Park-and-Ride Lot

Intersection of PR-22 with PR-165

Current stage: Preliminary design

HOV Lane

Origin: From the intersection of PR-22 and PR-165 to the center of Bayamón.

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Tren Urbano PR-22 De Diego Expressway – Dorado

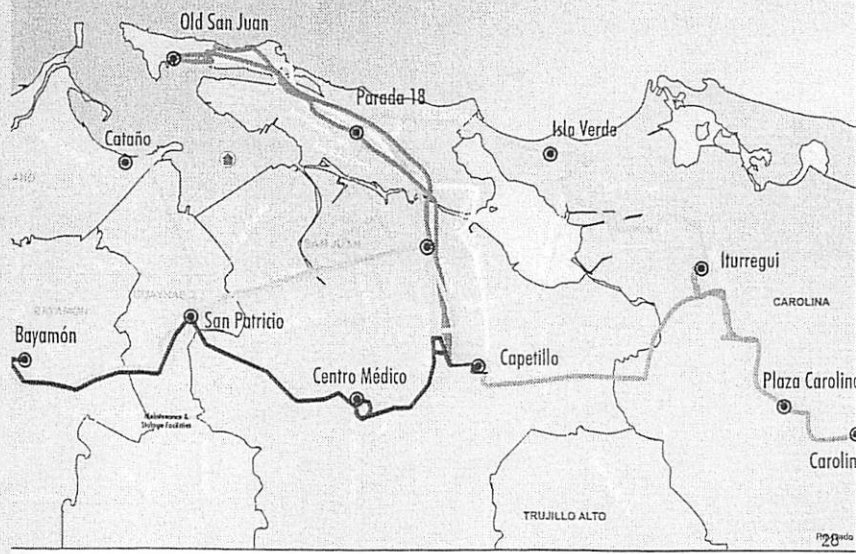


- Initial Site
- Alternative Site
- Access Car AM
- Egress Car PM
- Bus to TU AM
- Bus from TU PM

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Metropolitan Bus Authority – Trunk Routes and Transit Centers



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MBA Overview

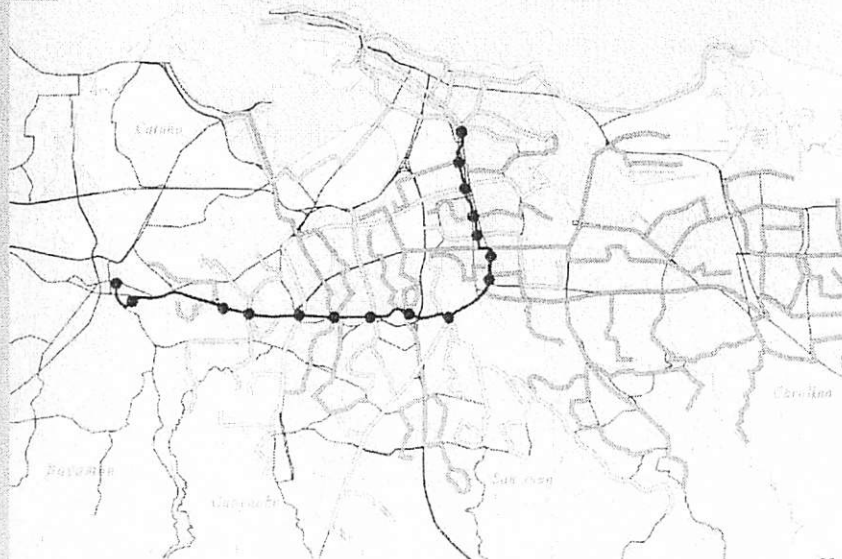
- Seven municipalities served
- 30 Routes
- 301 Conventional buses
- 31.9 million annual passengers
- 104,800 trips in 33 paratransit vehicles
- 6 trunk routes, some in counterflow exclusive lanes



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Revised Bus Routes



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Goal for the Publico System

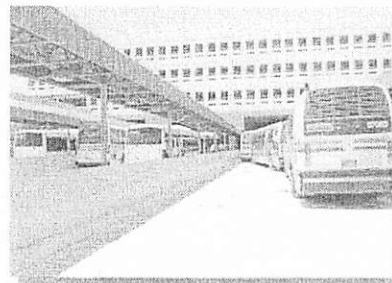
The PRDTPW plans to incorporate the Publico as part of the structured multimodal transit system by means of various programs to help the service become more attractive to potential users and profitable to operators in areas such as vehicle conditions, schedule compliance, market studies and development, and multimodal integration.

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Puerto Rico's Publico System

- Fixed-route and fares regulated by the Public Service Commission



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Puerto Rico's Publico System

- Interested operators request permission to serve a route that he perceives as profitable
- Extent of their service depends mainly upon actual demand and service limitations



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Puerto Rico's Publico System

- Do not receive any government financial support



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Integration of Publicos into the Intermodal System

- Provide incentives to upgrade service to collective transportation standards
- Require vehicle improvement
- Assure service reliability in terms of schedule and coverage
- Develop Publico route maps and system information
- Access to Bus Rapid Transit corridors

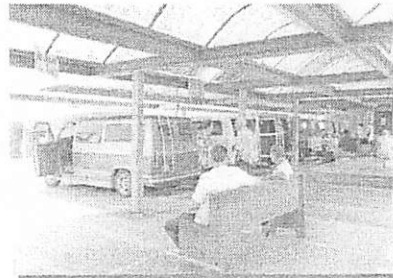


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MBA and Public Integrated System

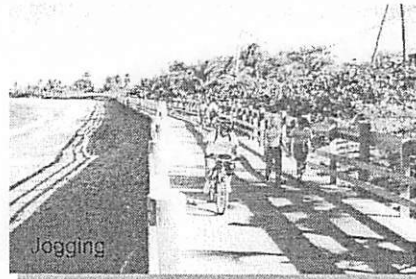
- MBA and Public will share transportation market
- Riders will have alternatives
- MBA and Publicos will compliment each other



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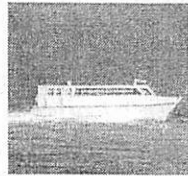
Bicycle and Pedestrian



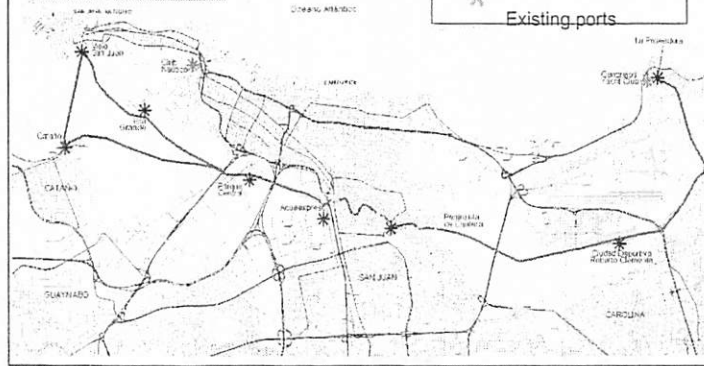
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Maritime System



- Water ferry system
- proposed
- Stops *
- Route —
- Recreational facilities *
- Existing ports *

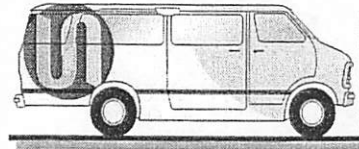


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Effective and integrated multimodal system for our people

- A true multimodal system will require a partnership between the public and private sectors.
- Commonwealth and Municipal agencies and programs must work in unison, and incorporate communities, transit users and transit providers in the design and monitoring of the operations.

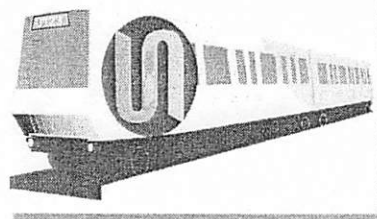


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Effective and integrated multimodal system for our people

- Reliability, safety, punctuality and coordination are the most important elements to address, in order to ensure continued growth of transit patronage.
- Integration and coordination must consider elements such as schedule, equipment compatibility, fare structure, signalization, user information and marketing.
- Educative programs will emphasize the convenience, reliability and benefits of the system, and promote a sense of public pride on the quality of the service.



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