



Puerto Rico's

TREN URBANO

Putting Transit Innovation On-Track for the 21st Century



Some Basic Facts

The land: approximately 35 miles wide by 100 miles long.

1993 Population: 3.6 million.

Population Density: 1,028 per square mile, one of the highest in the world.

Government: A stable democracy with executive, legislative, and judicial branches modeled after state governments and operating within the U.S. Constitutional system.

Voter participation in general elections has averaged over 85% since 1972.

Annual rate of inflation for Fiscal Year 1993: 2.8%

Unemployment Rate for Fiscal Year 1993: 17%

Gross Product for Fiscal Year 1993: \$24.99 billion

Per capita income: \$6,360 (1992 PR Planning Board).

Major Employers: Manufacturing (40%); Tourism, Banking, Insurance, and other Services; Government, Education, and Public Corporations.

A Must for Puerto Rico and a Unique Opportunity for The Nation



The San Juan Metropolitan Region Rapid Transit System, commonly known as "Tren Urbano," is the regional rail transit system under development in San Juan, Puerto Rico. The Puerto Rico Department of Transportation and Public Works (DTPW) plans to begin construction on Tren Urbano in 1996. The initial 11.8-mile line will run through one of the most densely populated and centrally developed corridors in the United States and will serve an estimated 115,000 travelers per day.

The 1.3 million residents of greater San Juan generate about 3.2 million trips daily, producing traffic conditions on expressways and major roads that vary from sluggish to standstill much of the time. In order to manage the congestion, we will have in 15 years, it is absolutely essential that we develop a multimodal public transportation system built around a rail transit backbone that can offer an escape from highway congestion.

Last year, the FTA designated Tren Urbano as one of four "turnkey demonstration projects" in the United States. My Administration is firmly committed to making Tren Urbano a demonstration project that will serve as a model of transit systems innovation for the entire United States. We also believe that the Tren Urbano project offers a unique opportunity for the nation because of Puerto Rico's proven effectiveness as a bridge for the sharing of technology transfer between the United States and Latin America.

Following the passage of NAFTA and the successful trade summit with the Asian Pacific nations, the United States is poised to take advantage of the opportunities presented by the end of the Cold War. Many economists have recommended that the Federal government facilitate the rapid conversion of U. S. defense industries to provide commercial products for the global marketplace. Like many others, I am convinced that advanced transportation and transit technologies offer U.S. high-tech defense industries the most promising area for product development. And without a doubt, the largest market for such technologies will be in Latin America. As just one example, the mayor of Bogotá, Colombia, recently declared his intention to build a light-rail transit system to relieve the terrible traffic congestion in that city. Many such opportunities will develop in Latin America, but the competition from Europe and the Pacific Rim countries will be fierce.

As a Spanish-speaking part of the U.S., strategically located in the Caribbean near South America, Puerto Rico has the potential to make a significant contribution to the promotion and export of new U.S. technology to the Latin American market. In particular, the Tren Urbano turnkey demonstration project will create the opportunity for Puerto Rico to serve as a vital link between U.S. industries developing high-tech products for advanced rail transit systems and Latin American countries eager to import state-of-the-art transit solutions for their congested cities.

Pedro Rosselló
Governor of Puerto Rico

San Juan Metropolitan Region

The Municipality of San Juan, the capital of Puerto Rico, is the center of a metropolitan region that includes 13 municipalities with a total area of 400 square miles along the island's northeastern coast. About 1.3 million people, 37% of Puerto Rico's population, live in the San Juan Metropolitan Region (SJMR). Population densities in the three central municipalities are among the highest in the United States, with the average population density for the Municipality of San Juan at over 8,500 persons per square mile. Densities in some areas exceed 20,000 persons per square mile.

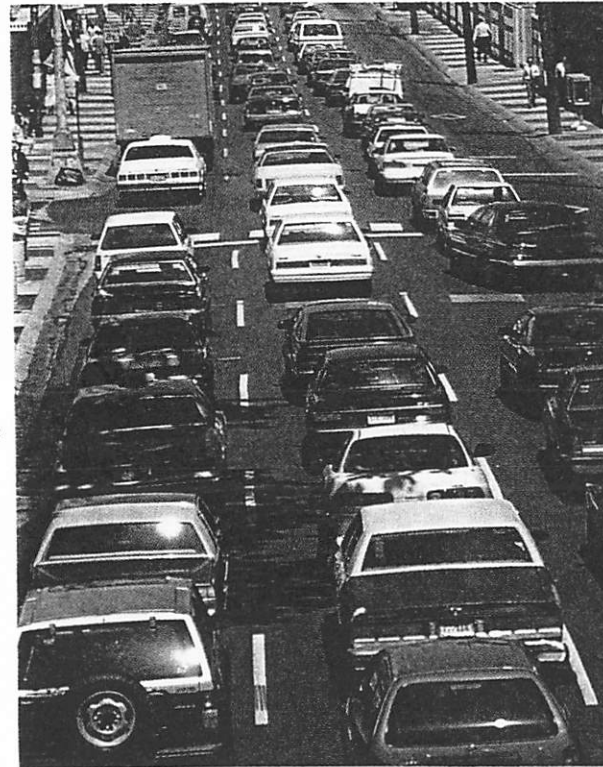
The concentration of employment in the region's urban core is even more pronounced. In 1993, San Juan accounted for 63% of regional employment, which is concentrated in the commercial centers of Old San Juan, Santurce, Hato Rey and Río Piedras (including the University of Puerto Rico and the Medical Center Complex). These centers form a virtually continuous north-south, high-density employment corridor that has been the main focus of the region's public transportation system.

The extreme concentrations of population and employment in the central SJMR are served by a relatively sparse system of major streets, with few routes having continuity beyond a particular neighborhood or business district. The result is severe congestion and extended peak periods throughout the region, but especially in the central zones. In 1990, 25% of the lane-miles in the entire major street system were congested during the a.m. peak hour, or approximately 50% of inbound (directional) lane-miles.

These conditions are affecting the attractiveness and competitive position of San Juan as a commercial and residential center, and especially as a business and tourism hub. In an effort to alleviate congestion in the region, the DTPW and its Highway and Transportation Authority (HTA) have accelerated important expressway and toll

bridge projects, adopted a new multimodal strategy, and assigned priority to transit and circulation improvements. A plan to implement a carefully selected and integrated mix of IVHS technologies is being developed as part of an FHWA-supported IVHS Early Deployment Project.

The consequences of congestion are well known, and the SJMR is facing all of them: productivity losses, wasted energy, increased traffic accidents, and decreased air quality.



The capacity of the central SJMR's major streets and expressways cannot be expanded enough to manage projected travel demand. Unfortunately, this also limits the contribution that current public transportation modes can make toward solving the congestion problem.

Even the most successful new public transportation mode, Metrobús, has to cope with blocked intersections, pedestrian-vehicular conflicts, and congested traffic at the ends of the exclusive contraflow lanes in which it operates. Though Metrobús has been a very positive experience for the DTPW/HTA, expansion of the service is hampered by rising traffic volumes that make it increasingly difficult to take away mixed traffic lanes and devote them to bus-use only operation. The bottom line is that it will be difficult for any at-grade transit operation in the central SJMR to offer a level of service superior to autos because of the severe congestion.

Current Public Transportation System

The Metropolitan Bus Authority (MBA) is the public operator of fixed route bus service in the SJMR. MBA ridership fell off during the past decade due to the deteriorating condition of the fleet, irregular schedule adherence, and congestion-related delays. The DTPW is correcting the first two problems but congestion will impede efforts to attract more riders.



Públicos are privately owned medium-size vehicles operating on fixed routes franchised by the government. Unsubsidized but regulated, públicos are a major source of mobility in the San Juan Region.



Metrobús is a privately-contracted premium bus service operated by the HTA. Metrobús ridership has exceeded expectations since its startup in 1991. The buses utilize bus-only contraflow lanes, also carrying regular bus routes, to serve the Río Piedras-to-Old San Juan corridor.

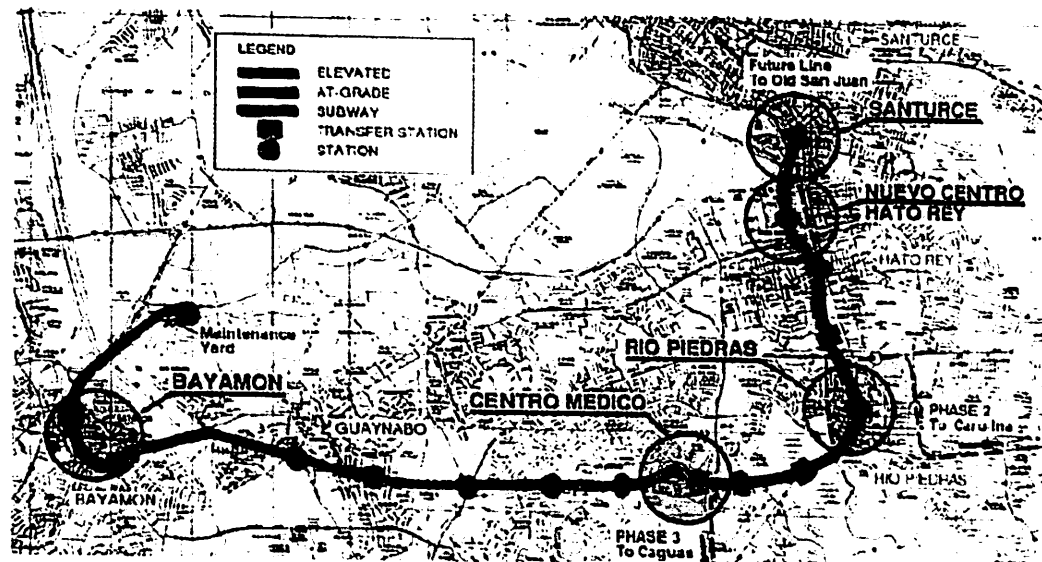


Acuaexpreso, a new ferry service linking Old San Juan, Cataño, and Hato Rey, takes advantage of the SJMR's inland waterways. It will provide a key intermodal transfer option for riders of Tren Urbano.

Tren Urbano: Backbone of a Multimodal System

Of the three factors contributing to the congestion problem in the SJMR, only one can be remedied to a significant degree. The population density is not amenable to change. And while the capacity of the region's highways and major arterials will be increased by a number of improvements and the eventual implementation of IVHS technologies, the long-range surface transportation needs of the SJMR can only be addressed by a multimodal public transportation system built around a high-capacity rail transit system.

About forty percent of the Phase 1 line of Tren Urbano will run at-grade on exclusive guideways from Bayamón to Río Piedras, using a right-of-way previously acquired for a projected highway. (See map.) This east-west segment of the alignment will serve major residential, sports, retail, and medical activity centers. At Río Piedras, the line will turn north and run on an



elevated alignment to serve the main campus of the University of Puerto Rico, at Río Piedras, and principal business and government centers in Hato Rey and Santurce. The possibility of building a tunnel section through Río Piedras is being studied.

As presently conceived, Tren Urbano, Phase 1, will have 12-16 stations and a maintenance and storage yard. All stations will provide convenient intermodal transfers; remote stations will have park and ride and "kiss and ride" facilities to attract suburban commuters. Special attention will

be given to the design of all Tren Urbano stations. Naturally, they will be totally accessible facilities in strict conformance with the Americans with Disabilities Act.

Tren Urbano stations will be designed to enhance the flow of buses, públicos, and pedestrians within an attractively landscaped ambiance. At least five stations will become focal points of a special effort to stimulate commercial expansion and revitalize traditionally important areas of the SJMR's urban core.

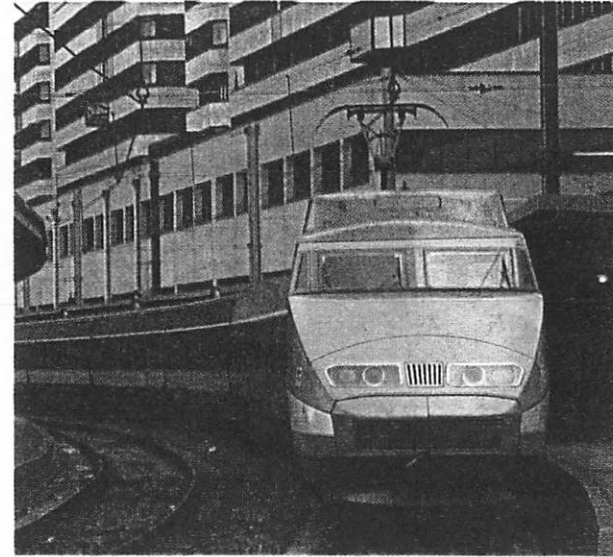
Optimizing Technology Transfer To Build Local Expertise

To capitalize on the economic development potential of the Tren Urbano project, the General Management Consultant (GMC) and the turnkey contracting process will include mechanisms to optimize technology transfer and local skill development. A substantial portion of the design work will be done in San Juan and technical professionals in Puerto Rico will be sent to the mainland for training. In addition, the DTPW has organized an ambitious multidisciplinary Human Resources Development program as part of the Tren Urbano project. The program will involve a select group of students and faculty in engineering, architecture, and planning at UPR and MIT, working in close cooperation with the DTPW and the GMC, and, ultimately with the turnkey contractor.

Local expertise in design, engineering, and management of state-of-the-art rail transit systems, coupled with advanced technologies developed by mainland U.S. industries, should prove to be eminently exportable to countries in the Caribbean and Latin America.

Achievements

The technical excellence of Tren Urbano project first gained public recognition when the House Committee on Appropriations, in House Report 102-639 attached to the Transportation Appropriations Bill for FY 1993, directed the Federal Transit Administration (FTA) to give "priority consideration" to the designation of Tren Urbano as one of the initial turnkey demonstration projects called for under section 3019 of ISTEA. "The Committee believes this project exemplifies the qualities the FTA should emphasize in selecting turnkey demonstration projects: excellent ridership potential, extensive local financial commitment, local consensus to undertake the project as proposed, integration/evolution of bus and fixed guideway systems, strong history of planning and travel demand studies, intermodal coordination between highway and transit funding, and a willingness to fast-track planning,



environmental, and engineering studies prior to initiating the turnkey procurement."

Early in 1993, the FTA designated Tren Urbano one of four turnkey demonstration projects in the nation. This year, the FTA's draft FY 1995 Section 3(j) report found Tren Urbano to be one of the most cost effective projects in the U.S. The cost per new rider was calculated at \$3.50 (1992 dollars, 54,000 new riders per day), and the FTA considered this to be a conservative estimate.

The House Public Works and Transportation Committee has authorized \$40 million for the planning, engineering, and design of Tren Urbano.

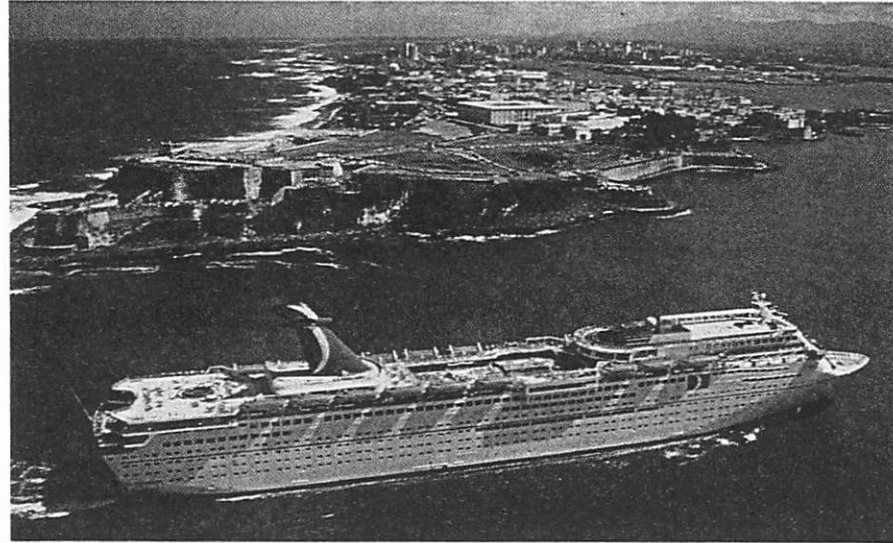
Benefits

The Tren Urbano project will make a world of difference to the economic, environmental, and social future of Puerto Rico. As a result of the increased mobility Tren Urbano will provide, San Juan will be able to compete on an even playing field with other first-class cities of the hemisphere for new business, industry, and tourism. Studies indicate that this initial Tren Urbano line will serve 100,000 to 115,000 passengers per day. Expanded bus, Metrobús, and público systems will operate in tight coordination with this modern, efficient rail transit system. The effect on congestion in the region will be enormous, saving an estimated 6.5 million hours of highway travel time each year.

Economic Benefits

By enhancing mobility and, at the same time, reducing dependency on the automobile, Tren Urbano will:

- Strengthen the Island's economy by increasing productivity.
- Reduce the Island's dependency on petroleum products and save energy.
- Stimulate economic renewal in key urban centers.



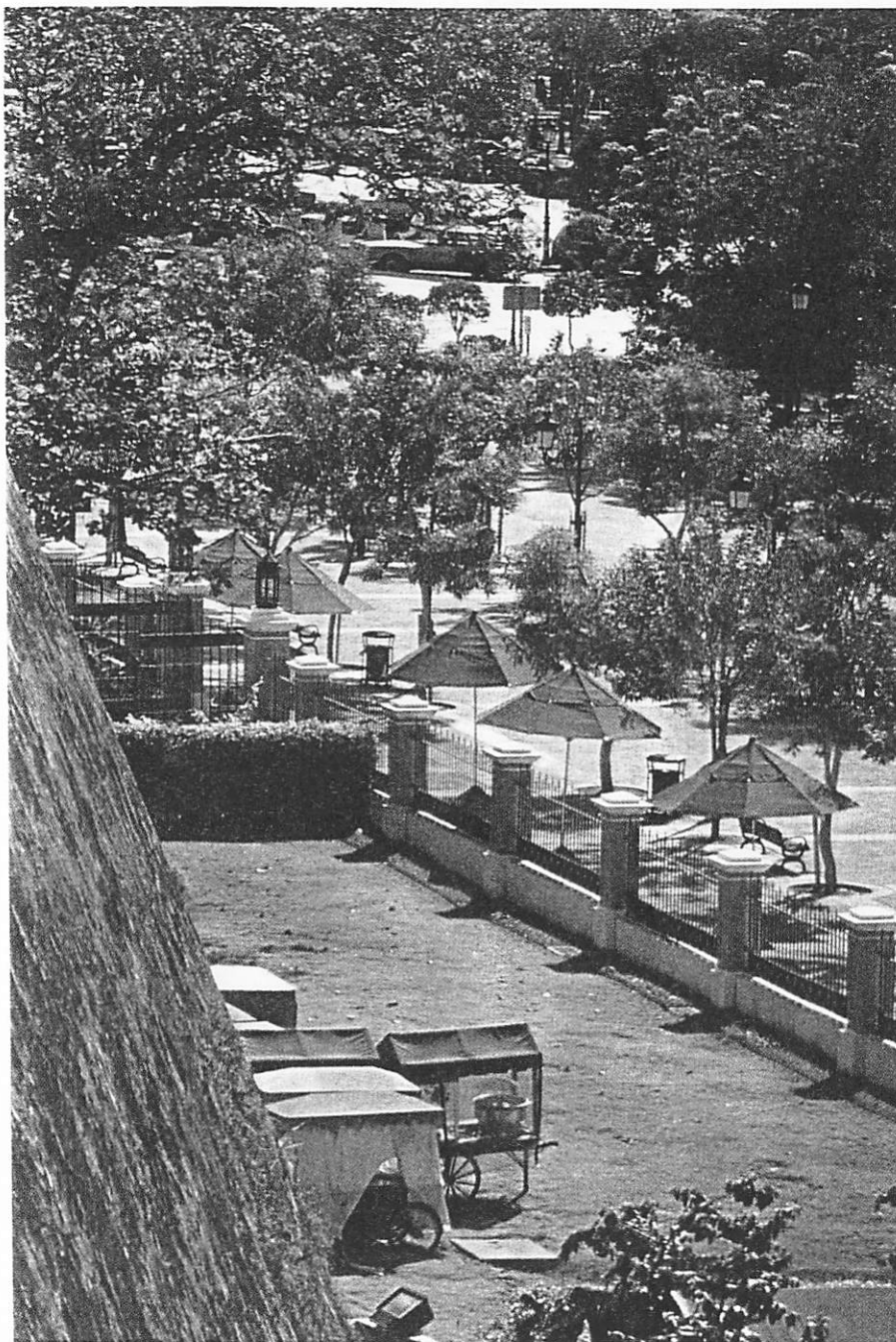
Tren Urbano will enhance the competitiveness of the SJMR as a tourist destination.

- Enhance the competitiveness of the SJMR as a tourist destination.
- Develop rail transit systems expertise that can be exported to the rest of the Caribbean and Latin America along with the new U.S. - supplied technology.

Social and Environmental Benefits

Tren Urbano will also help the Puerto Rico Government improve social equity and the quality of life in the San Juan Metropolitan Region, where a third of Puerto Rico's population lives and works. As the backbone of an intermodal public transportation system, Tren Urbano will:

- Provide a major expansion and improvement in service to the disabled and the transit dependent.
- Reduce economic stress on moderate-income households by providing an attractive transportation alternative to the privately owned automobile.
- Reduce congestion-related highway accidents and their enormous social and economic costs.
- Improve air quality by reducing vehicle emissions.
- Create other environmental benefits related to land-use.



The High Cost of NOT Building Tren Urbano

The importance of building Tren Urbano can only be fully appreciated by considering the benefits it will bring to the SJMR in contrast to the costs associated with continuing to rely exclusively on motor vehicles and highways to meet the region's transportation needs.

Compared to the future for the SJMR envisioned by Tren Urbano project, a future without Tren Urbano would mean:

- More and more time wasted in traffic jams.
- Greater consumption of petroleum products.
- Higher automobile operation and maintenance expenses.
- Loss of valuable urban space to provide more parking facilities and highways.
- Increased suburban sprawl and the corresponding deterioration of urban centers.
- More air and noise pollution.
- More automobile accidents and a general decrease in the quality of urban life.

***The conclusion is obvious:
PUERTO RICO CANNOT AFFORD
NOT TO BUILD TREN URBANO.***

Tren Urbano will improve air quality by reducing vehicle emissions and create other environmental benefits related to land-use.

Rock-Solid Local Support

The strength of the local support for Tren Urbano is unprecedented in Puerto Rico for a large infrastructure project. The concept's evolution and refinement over 25 years has created a broad base of support that spans the political spectrum and includes the endorsements of all major community groups and organizations representing business and industry.

The proposed financial plan for Tren Urbano demonstrates the top priority status accorded to the project by Governor Pedro Rosselló and his Administration. Puerto Rico plans to commit a portion of its annual apportionment from the FHWA to Tren Urbano. In addition, a substantial amount of the local share will come from HTA revenues generated by tolls, the local motor vehicle fuel tax, and vehicle licensing fees.

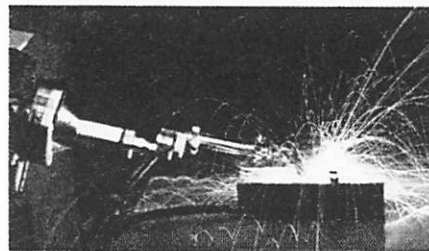
The strength of local support can also be gauged by the following:

- In a letter to USDOT Secretary Federico Peña, Governor Pedro Rosselló characterized the Tren Urbano project as "the most



important infrastructure project for this decade in Puerto Rico."

- Key members of the Puerto Rico Legislature from all three major political parties have publicly stated support for Tren Urbano.
- The Mayors of all the five Municipalities directly impacted by the planned construction of Tren Urbano have issued statements strongly endorsing the project.
- The Committee for the Economic Development of Puerto Rico, a group of private sector leaders, commissioned an independent study of the SJMR transportation problem that recommended adding a rail transit system and contained a strong statement of support for Tren Urbano.
- San Juan's three major newspapers and influential community, business, professional, and industry organizations have endorsed the implementation of the Tren Urbano project.



Tren Urbano as a Vehicle for Urban Planning



As a result of an intense process of review, evaluation, and revision of previous planning, it can now be said that the

Tren Urbano project provides a clear vision of the urban form desired for the San Juan region in decades to come. That vision has, as its guiding light, the economic and social revitalization of the region's urban core.

Rather than merely encouraging more suburban sprawl, we have begun to focus on environmentally sound and socially beneficial urban development through the creation of an efficient and flexible regional transportation system based on "smart" highways integrated with an advanced multimodal transit system.

Tren Urbano will tie together the diverse social, educational, and business places that are the city's heart and soul, encouraging a healthy redefinition of our economic and social lives by integrating the communities of the San Juan Metropolitan Region in a way that merely building more highways could never accomplish.

Dr. Carlos I. Pesquera – Secretary
Department of Transportation and
Public Works
Government of Puerto Rico

