1.0

TRANSPORTATION AND MOBILITY

1. Integrated Transportation and Mobility

1.1 A Vision for an Integrated Multimodal Regional Transportation Network

Technological advances, shifting demographics, and social trends are changing the way people and goods move, creating opportunities to rapidly improve transportation efficiency and reliability, while increasing accessibility and mobility for all travelers. Driven by a visitor economy expected to double by the end of the decade,[1] we envision an Eastern Region better connected across land, sea, and air, allowing residents and visitors to move efficiently and sustainably throughout the region and to connect with the adjacent eastern Antillean archipelago.

[1] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact.* https://foundationforpuertorico.org/es/visitor-economy-performance-model/

A regionally integrated, multimodal, and smart transportation system will be transformative for the region, linking existing and new transportation services through a **Mobility-as-a-Service (MaaS) technology platform that can support Demand-Responsive-Transport (DRT), dynamic traffic management, flexible fares and fare bundling, and multiple service operators and modalities including first- and last-mile mobility solutions.** Visitors and residents will have access to a "one-stop-shop" mobile app for planning, reserving and ticketing for existing mobility services (once tech-enabled**)**, including *carros públicos,* municipal trolleys, taxis, ferries and ride-hailing services like Uber to get to and around the region. As new services become available, including intercity buses, municipal transit, paratransit, micromobility and other options, they too will be integrated into the platform.

Urban centers, island municipalities, rural communities, and coastal areas will provide access to transportation services in **multimodal mobility hubs, where passengers can transfer from one route or mode of transportation to another,** forming a cohesive, accessible, reliable, and environmentally friendly, collective transportation network. These mobility hubs can also serve as visitation gateways and vibrant community anchors that integrate cultural heritage, historical significance, functional design, and environmental sustainability, cultivating a strong regional identity rooted in heritage, history and island culture.

Rehabilitation of the **José Aponte de la Torre airport in Ceiba as an inter-island air commercial transit hub** will serve the wider eastern Caribbean, allowing visitors direct access to the region. Growth of tourism visitation to the region over the next decade will increase demand for efficient, flexible, collective transportation and mobility options that can facilitate visitor dispersion throughout the region, bringing economic benefits to less-visited areas, improving the quality of life for residents, and providing equitable access to services while the efficiencies of collective transportation reduce the environmental burden. Ideally, the region's transportation network design can serve as a scalable model that can be replicated and integrated with other regions of Puerto Rico. Connecting other regions will enable a more connected and sustainable island-wide transportation network.

1.2 Strategies to Catalyze Transformative Regional Access and Mobility

1.2.1 Mobility-as-a-Service, the Integrating Power of Technology in Transportation

Essential to the system's success, a **Mobility-as-a-Service (MaaS) platform** will provide the foundational technology infrastructure required to create a fully integrated, inclusive, and accessible

transportation network. This platform will consolidate all mobility options, both public and private, into a single, user-friendly application that enables riders to access real-time information, plan trips, purchase tickets, and complete payments seamlessly.

Critically, MaaS will facilitate real-time, two-way visibility between passengers and the transportation system. This feature is vital for advanced capabilities such as **Demand-Responsive Transit (DRT)** which dynamically adjusts routes and schedules based on actual rider demand, and dynamic traffic management,[2] which responds to real-time road conditions to improve efficiency, reliability, and rider satisfaction.

By aggregating rider demand across multiple routes and various modes of transportation, MaaS will boost overall ridership and enhance the financial sustainability of transit operators through improved load factors and operational efficiency. Once maritime services are integrated, including existing and future ferry services and routes, the system will enable convenient ticket bundling not only across routes but different modalities of travel. By way of illustration, with MaaS integration, a passenger could potentially travel from Bayamón on the Tren Urbano to the Piñero Station in San Juan, connect to an intercity bus to the Ceiba Ferry Terminal, board a ferry to Vieques and ride a carro público to Esperanza.

MaaS-Enabled Rider and Category-Specific Fare Structures and Service Bundling

To further improve accessibility, residents could benefit from targeted, subsidized or free fares that enhances access to health, education, or other essential services. Regular users doing daily commutes would benefit from more economical, discounted fares. Meanwhile, **multimodal travel passes**, similar to those successfully implemented in London and Japan, could be developed for visitors.[3] These passes, available for purchase within the MaaS app or through partner travel agencies, could offer bundled services such as unlimited intercity bus rides, four ferry crossings, two rides on the El Yunque shuttle, and six 15-minute e-scooter rentals, delivering a seamless and attractive travel experience.

The differentiated pricing model becomes even more compelling when viewed through the projected visitor growth to the region. Because day-trip visitors generate the lowest per-day spending, while overnight and travelers staying with friends and relatives contribute substantially more to local economies,[4] the region benefits most when mobility systems facilitate longer, more distributed stays. A MaaS platform that integrates regional passes, bundled services, and transparent route information is a direct mechanism for shifting visitor behavior toward these higher-yield segments. As visitation grows and the economic impact is expected to double by 2030, aligning fare structures with the demonstrated spending capacity of different visitor types enables the mobility system to capture a share of that value while keeping resident fares equitable and affordable. In this way, pricing becomes a strategic instrument for economic development.

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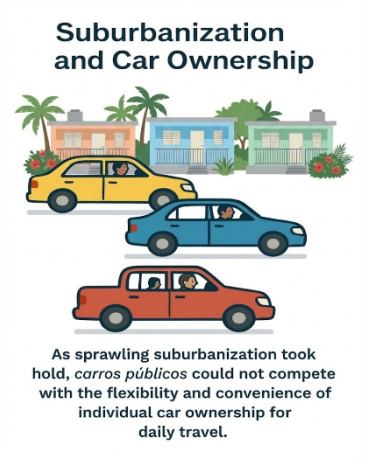
[2] M. Cebecauer, W. Burghout, E. Jenelius, T. Babicheva, & D. Leffler. (2021). Integrating Demand Responsive Services into public transport disruption management. *IEEE Open Journal of Intelligent Transportation Systems, 2*, 24–36. https://doi.org/10.1109/OJITS.2021.3057221

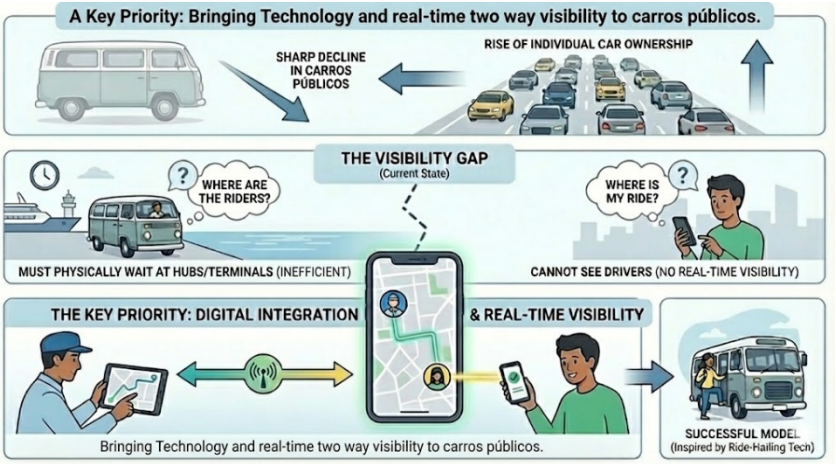
[3] See Multimodal Travel Passes in a MaaS-enabled Transportation Network

[4] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact*. https://foundationforpuertorico.org/es/visitor-economy-performance-model/

Demand-Responsive Transit – a Key Component of a Regional Transportation Network

Increasing collective transit ridership will be critical to the success of the Eastern Region's transportation system. A Demand-Responsive Transit (DRT) -enabled version of traditional carros públicos— will feed into strategically located **mobility hubs**, connecting municipalities within the region and their intra-municipal transit routes, and ultimately linking them to the San Juan Metro Area through planned high-frequency intercity buses.





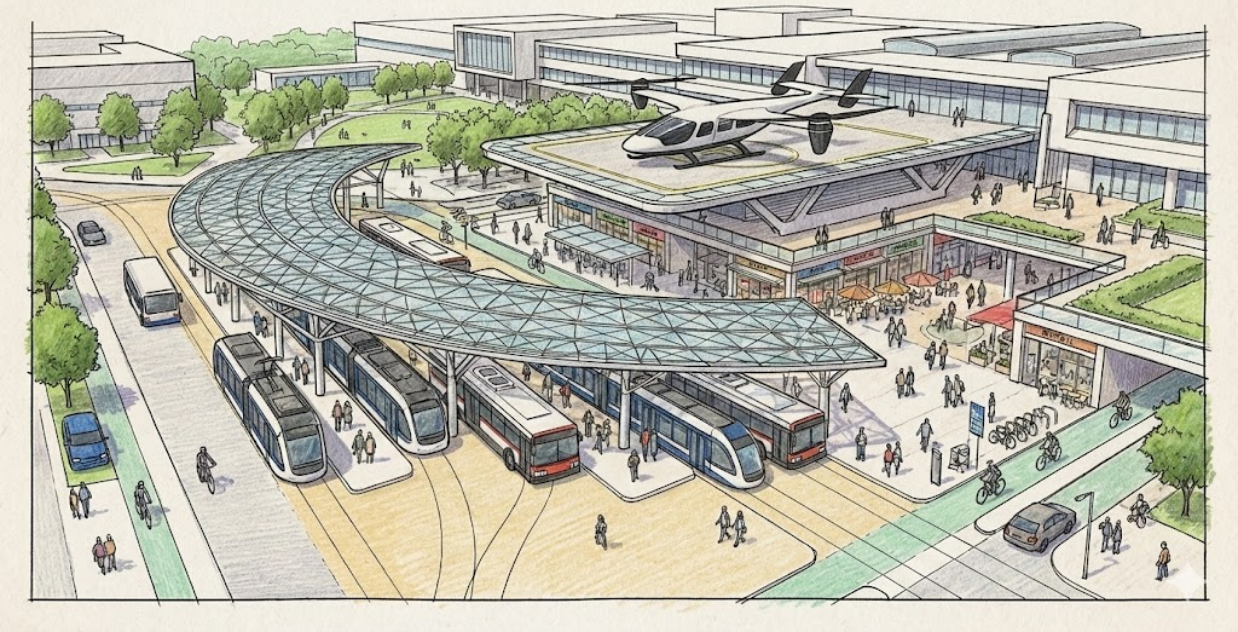
Bringing Technology and Real-Time Two-Way Visibility to Carros Públicos —A Key Priority

Historically, carros públicos served as an efficient intermunicipal transit solution across the region. However, their numbers have declined sharply along with the rise of individual car ownership. That, in turn has been driven by the dispersion of residents away from town centers where they lived or worked or promenaded and into the sprawling suburbanization. What is becoming increasingly evident, highlighted by the success of models of ride-hailing services (like Uber) that are all about technology and digital integration, is that the lack of those capabilities poses a major economic challenge for carros públicos.

Without real-time visibility**,** the drivers cannot see where potential riders are, and those potential riders cannot see where they are. For riders to see where the carros públicos are, the drivers must rely on being physically present at specific locations, like ferry terminals or airports, at a time where passengers are likely to appear. This dramatically reduces opportunity and makes for an unsustainable business model. This visibility gap also affects individual transportation providers, such as taxi drivers, who spend much of their time waiting in a queue for passengers, but it is far more detrimental for collective ride-sharing services that depend on filling up an entire van with passengers to remain cost-effective and profitable.

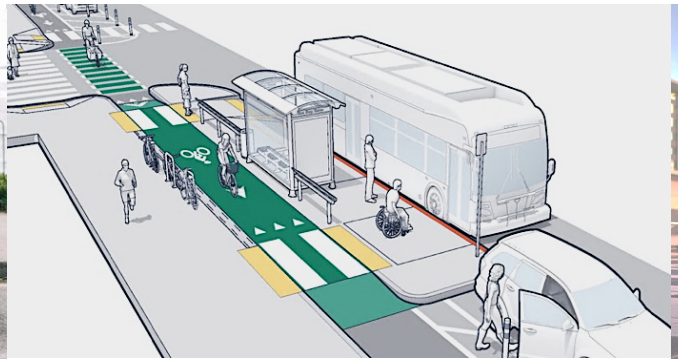
A Network of Empowered Carros Públicos at the Heart of Mobility and Transportation

Retrofitting público vans with Demand-Responsive Transit technology offers a promising solution to the challenges they face and will allow the modernization of their model. By enabling passengers to request rides via a mobile app, DRT allows for flexible routing based on real-time demand, thereby optimizing efficiency, reducing downtime, and enhancing profitability for drivers. Through this transformation, **the existing carros públicos infrastructure can be reimagined, revitalized, and expanded into an efficient, safe, dynamic, flexible, and affordable microtransit system**. An expanded, technologically empowered, and strategically deployed fleet of público vans would be capable of serving a far broader pool of potential riders—including both local residents and visitors—than today's público drivers, or even yesterday's could have ever imagined, while seamlessly integrating with public transportation networks and other mobility options.



1.2.2 Reimagining Mobility Hubs as Visitation Gateways and Commercial Entrepots

Mobility hubs can be developed around key transportation nodes—such as bus stops, ferry terminals, car-sharing locations, and airports—and will enhance connectivity by strengthening demand-responsive and active travel options. At any scale, from enhanced bus stops that serve as pick up spots for carros públicos and connectors between adjacent municipal routes, to strategic hubs with every possible modality coming together, these mobility hubs present opportunities to integrate nearby commercial and community resources, reinforcing local neighborhoods, promoting economic activity, and generating new revenue streams. Hubs of greater complexity, featuring connections between land, sea, and air transport modes, could facilitate the movement of both people and cargo. Some could potentially serve as **efficient collection points for goods**, offering innovative alternatives for last-mile delivery solutions and supporting the region's broader economic resilience.

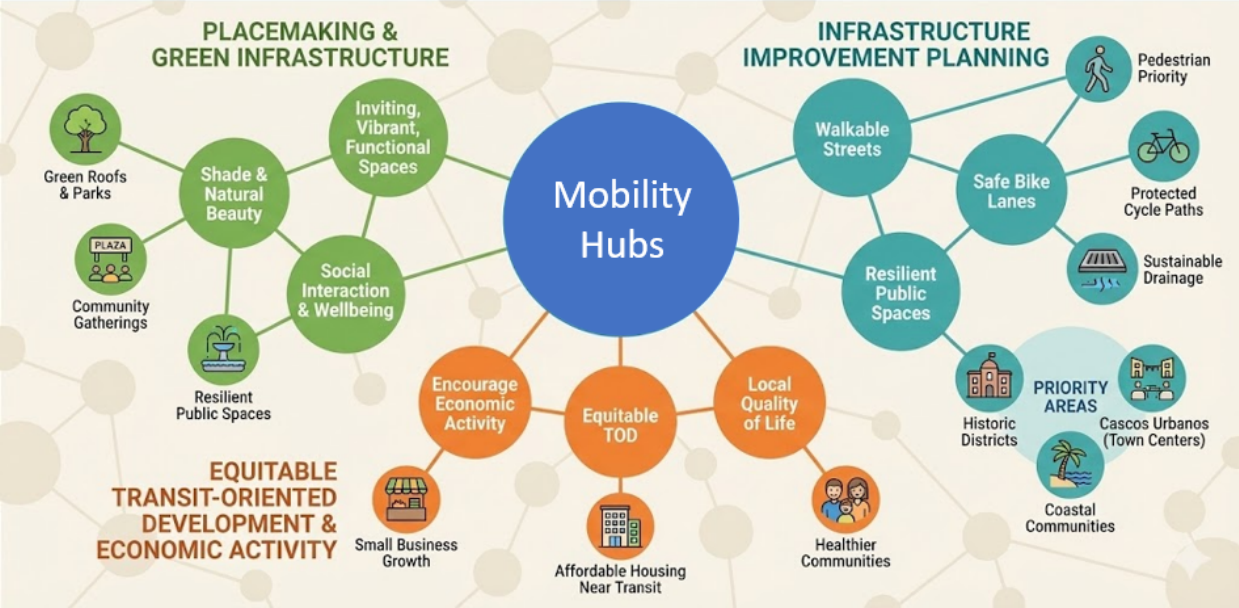




Mobility Hubs as Multimodal, First and Last Mile Access Points

Even relatively small mobility hubs can function as more than just transit stops. They can serve as multimodal access points offering a range of mobility options including public transit, microtransit, private ride-hailing services, micromobility options including pedestrian pathways, bicycle infrastructure, as well as travel information, support services, and technology access. Passengers will be able to seamlessly transfer between modalities to or from municipal trolley lines, ride-sharing services like carros públicos, ride-hailing platforms like Uber or Lyft, taxis, or micromobility options such as bikes, e-bikes, scooters, and e-carts to complete their first- and last-mile journeys. This **networked transportation system will empower individuals** to plan and choose the most convenient, efficient, sustainable, and cost-effective modes of travel for their needs.


Placemaking and Green Infrastructure in Mobility Hubs and Transportation Infrastructure

To further enhance these spaces, **placemaking strategies incorporating green infrastructure** can be employed, potentially transforming the hubs into inviting, vibrant, functional, and community-centered spaces with shade and natural beauty that encourage economic activity and social interaction, and can become focuses of equitable transit-oriented development. Finally, infrastructure improvement planning can embrace walkable streets, safe bike lanes, and thriving, resilient public spaces, with special emphasis on prioritizing historic districts, “cascos urbanos” (town centers), and coastal communities, strengthening both regional mobility and local quality of life.



Placemaking and Transportation – a Cultural and Historical Connection

The Eastern Region of Puerto Rico is defined not only by its geography, but by centuries of movement—of goods, people, and ideas—across land and sea. From its colonial-era railways to its rich maritime traditions connecting communities on the main island with Vieques, Culebra, and beyond, the region's historic transportation networks have shaped a shared cultural identity that transcends municipal boundaries. As the region looks toward the future, reimagining mobility through the lens of placemaking offers an opportunity to revive this legacy. Multimodal mobility hubs can serve as more than functional infrastructure—they can become intentional cultural spaces that reconnect communities, celebrate regional heritage, and foster inclusive economic growth.

Section 1.3.7 Placemaking and Transportation: Reconnecting Communities and Building a Regional Sensibility , explores at length this intersection of transportation and placemaking, highlighting how mobility hubs, supported by Mobility-as-a-Service (MaaS) technology, can become dynamic sites of cultural expression, historical reflection, and community development. Drawing on local initiatives like Ruta Borinquen, El Ancón de Loíza, and mural-based storytelling projects, as well as emerging opportunities in Naguabo and Palmer, the section illustrates how placemaking strategies grounded in the region's transportation history can create spaces that are not only efficient and connected, but meaningful, inclusive, and economically resilient. These insights offer a framework for designing future transportation infrastructure that honors the past while building a vibrant, interconnected archipelagic future.

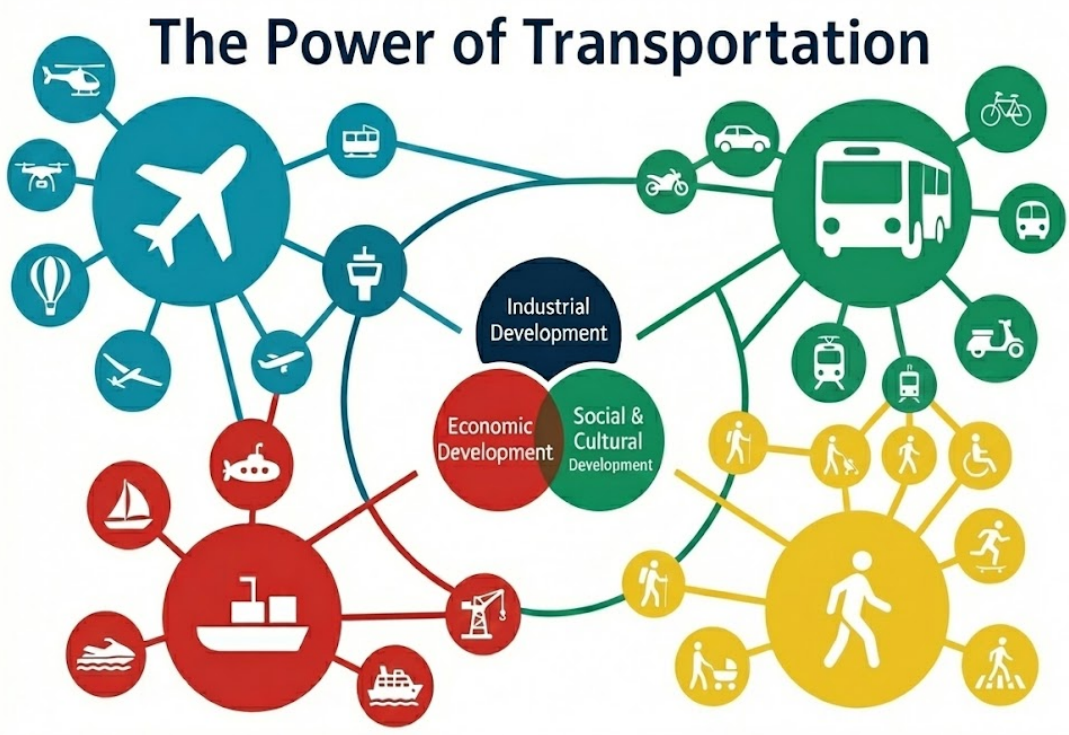
1.2.3 A Commercial Airport at Ceiba - an Accelerator of Visitation and Development

The rehabilitation of the José Aponte de la Torre Airport in Ceiba as a commercial airline-capable regional airport represents perhaps the most strategic infrastructure investment for Puerto Rico's Eastern Region. This project, as envisioned, would enable direct domestic and limited international service to nearby islands and key continental originating markets, providing visitors with streamlined, direct access to the region and improving connectivity with the neighboring Caribbean.

The conversion of the Ceiba airport would unlock an unparalleled opportunity to enhance regional accessibility, catalyze economic development, and generate thousands of new jobs—both in construction and long-term airport operations. It would stimulate new business investment, foster tourism growth, and lay the groundwork for expanded infrastructure to support future regional needs. The Ceiba airport should also serve as a regional logistics and cargo hub, streamlining the movement of goods, supporting local businesses, medical supply chains, and disaster relief operations.

Strategically located less than one hour from the San Juan metropolitan area and serving the second most-visited region in Puerto Rico, Ceiba's enhanced airport would also provide critical redundancy within Puerto Rico's air transport infrastructure. This added capacity will strengthen the island's overall resilience, ensuring greater operational flexibility, and it will safeguard economic continuity in moments of disruption and protect Puerto Rico's transportation future against the certainty of inexorable sea level rise.

Emerging air travel modalities, such as efficient electric vertical takeoff and landing (eVTOL) air taxis with an effective range of over 100 miles, could further augment connections between San Juan's Luis Muñoz Marín International Airport (LMM) and the region's three key airports: Ceiba, Vieques, and Culebra. They could also facilitate direct links to other destinations across the nearby Lesser Antilles, supporting a new era of flexible, sustainable air mobility.



1.2.4 An Integrated Transportation Network – Taking an Idea to the Level of Broad Societal Impact

What may have begun as a limited response to the urgent transportation needs of certain municipality residents, can serve as the foundation of a broader integrated transportation network, strengthening mobility and connectivity across the Eastern Region in support of economic redevelopment. The region already receives more than two million offshore visitors annually whose spending generates over $1.2 billion in direct economic activity.[5] With this activity expected to double by 2030, the imperative is clear: the region must evolve from isolated, municipal-level services toward a coordinated, multimodal system that can responsibly absorb, distribute, and capitalize on rising demand.

Implementing this integrated system would activate economic, social, and cultural transformation by linking job centers, commercial areas, and attractions in ways impossible under today's fragmented, car-dependent framework. By expanding shared mobility options and reducing reliance on private vehicles, the region can alleviate congestion, lower emissions, and enhance access for car-free travelers, older adults, and low-income or marginalized populations. Critically, improved mobility is also one of the most effective mechanisms for converting today's predominantly short-duration, low-yield day visits to the region into longer, higher-value stays.

[5] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact.* https://foundationforpuertorico.org/es/visitor-economy-performance-model/

With tourism now the main source of economic opportunity for many communities in the region, this integrated system can make both magnet attractions and smaller, community-based experiences, accessible to visitors who cannot afford costly rental cars that are currently the only option for independent mobility and dispersion. Through improved maritime and air connectivity, initially anchored at Ceiba, Naguabo, Vieques, and Culebra, the Eastern Region is positioned to emerge as a cross-visitation portal to the Antilles, deepening ties with the U.S. Virgin Islands and the wider Eastern Caribbean. In this sense, the integrated transportation network is not simply a mobility solution; it is the physical and institutional architecture through which the region will manage growth, protect its landscapes, and shape a more inclusive and resilient economic future.

Building a Mobility & Transportation Network – a Strategically Sequenced Implementation

Through effective collaboration, continual and carefully sequenced, progressive steps, and well-designed strategic investments, Puerto Rico can develop a powerful, transformative collective transportation and mobility system for the Eastern Region that will drive economic growth, create jobs and opportunities, and promote long-term prosperity for its residents. The key lies in designing and advancing a series of well-crafted, transportation-related initiatives that can be self-sustaining on a standalone basis, but powerfully synergistic when connected to one another. Each of these initiatives can serve as pilots or catalysts for next stages—projects that serve immediate needs while laying the groundwork for future regional connectivity. These need to be prioritized by combining short term feasibility with synergistic, long term strategic impact.

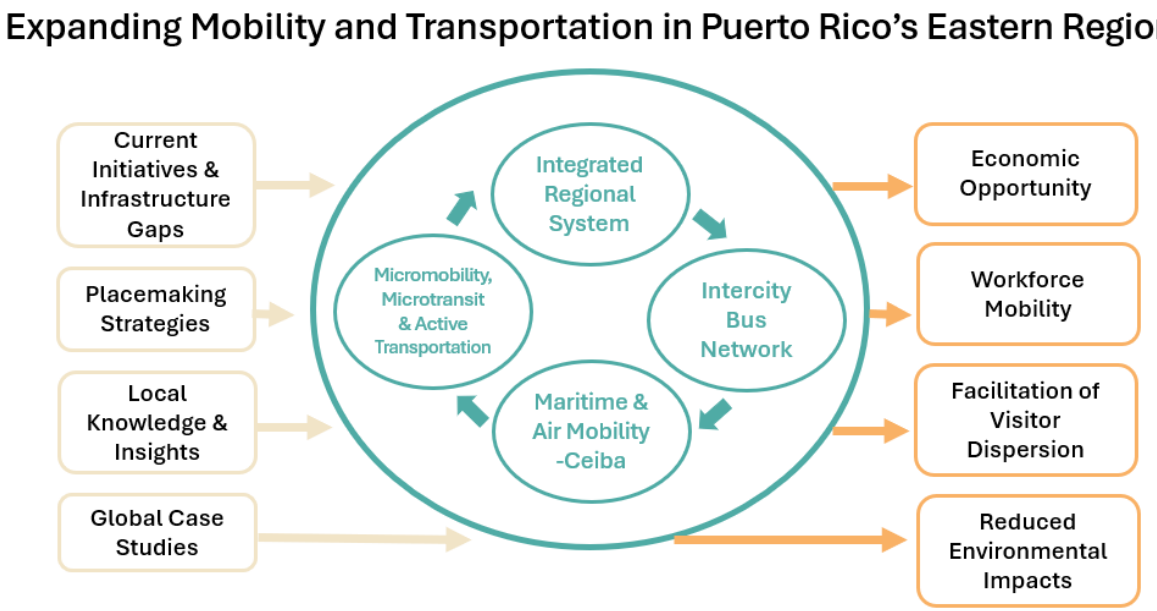
Strategic Philosophy –a Clear Vision, Focused Dialogue, Design, and Smart Prioritization

While we understand that every solution will not materialize simultaneously, sharing this strategic vision and the framework it provides and the priorities it proposes for the development of a

transportation network must foster a focused dialogue among stakeholders that will create the necessary alignment and coordination of efforts and momentum toward its realization. By working collaboratively with multiple partners and stakeholders, embracing the power of ideas and technologies, and making steady, strategically envisioned advancements, we will bring the Eastern Region closer to full integration, resituating its identity within the eastern Antillean archipelago from which so much of its distinctive history and culture derives.

A Role for a Regional Economic Development Council – Integrating a Regional Transportation Network

Building a technologically advanced and resilient regional system will require phased planning, sustained collaboration, and long-term commitment and continuity—a role ideally suited for a nongovernmental entity such as what an empowered Regional Economic Development Council could become. As detailed in the Governance Pillar, an Economic Development Council could lead the design, development, and implementation of an integrated, regional transportation system by fostering municipal, state, and federal collaboration, securing funding, and advocating for public-private partnerships to enhance mobility and accessibility. With a robust multisectoral governance structure, the Council would ensure that sustainable development, economic opportunity, and community well-being remain central priorities throughout the process. Through that well-governed leadership and professional management, the Eastern Region can come together to build an efficient, inclusive, and environmentally sustainable transportation network—serving not only as a model for the region, but also as a replicable framework for other parts of the island.



1.3 From Fragmentation to an Integrated System: Initiatives to Transform the Eastern Region

The following sections delve into the multifaceted challenges, opportunities and impacts, associated with this vision for expanding mobility and transportation in Puerto Rico's Eastern Region. They outline the economic, social, and environmental benefits of a well-planned, tech-enabled system, emphasizing economic opportunity, workforce mobility, facilitation of visitor dispersion, and reduced environmental impacts. Local insights and global case studies ground these big ideas in real-world challenges and proven best practices, strengthening the relevance, feasibility, and potential impact of the strategies presented. Highlighting successful applications of technological innovations, including Mobility-as-a-Service (MaaS), DRT, and multimodal connectivity solutions, provides powerful models that can be adapted to the region's circumstances.

An assessment of existing conditions and infrastructure gaps in ground, air, and maritime transport are provided along with outlook, opportunities, and key takeaways for moving from existing conditions toward a fully integrated regional system. **The potential of an intercity bus network,** starting with planned San Juan to Ceiba bus service,[6] [7]**and the development of the mobility hub concept** with selected sites (in Río Grande,[8] Naguabo, and Ceiba)[9] are showcased as critical, early initiatives that also can serve as anchors for next steps and models for the region as a whole.

Micromobility, microtransit, and active transportation are first-/last-mile solutions that are shown to be key tools for bridging mobility gaps in suburban and rural areas and even providing intermunicipal transportation.[10] Placemaking strategies are presented to demonstrate how integrated transportation systems can foster economic activity, enhance walkability, and improve public spaces and the quality

[6] U.S. Forest Service, personal communication, December 4, 2023.
[7] U.S. DOT Volpe Center, personal communication, August 1, 2023.
[8] D. Santiago, Río Grande planner, personal communication, November 8, 2023.
[9] Information given by representatives from the municipalities on a working group session held on March 13, 2025.
[10] Cui, C., & Zhang, Y. (2024). Integration of Shared Micromobility into Public Transit: A Systematic Literature Review with Grey Literature. Sustainability, 16(9), 3557. https://doi.org/10.3390/su16093557

of life for all. New or expanded maritime routes and ferry facilities are explored that can connect the region with the islands of the Eastern Caribbean, as well as the unique opportunities for converting the Ceiba airport into a commercial hub that will accelerate advanced air mobility services for the Caribbean.

1.3.1 Ground, Air and Sea: Current Conditions, Outlook and Opportunities

Ground Transportation - The Dilemma of the Personal Vehicle

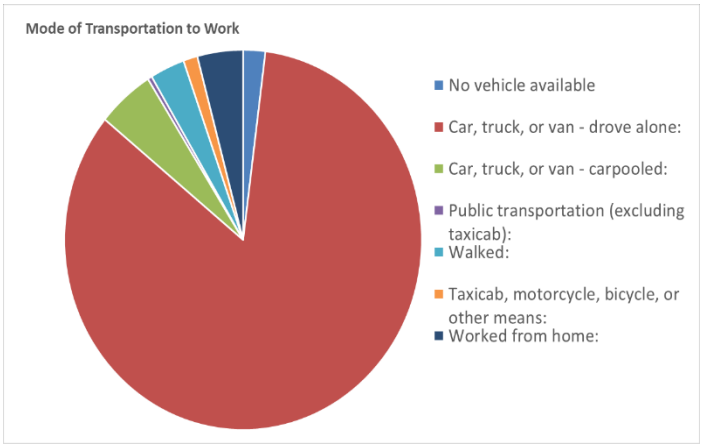


Figure 1.1: Mode of Transportation in the Eastern Region

Transportation in the Eastern Region is a microcosm of Puerto Rico as a whole: there is high personal-vehicle dependency and the absence of collective transportation alternatives. An analysis of how people commute to work across the Region reveals transportation trends; reliance on personal automobiles is central to people's ability to travel. 91% of workers use private vehicles as their primary mode of transportation. Of this percentage, 86% commute alone, while carpooling constitutes only 5% of transportation behaviors.[11]

[11] U.S. Census Bureau, U.S. Department of Commerce. (2023). Means of Transportation to Work by Vehicles Available. *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B08141.* https://data.census.gov/table/ACSDT5Y2023.B08141?q=transportation&g=050XX00US72029,72037,72049,72053,72069,72077,72085,72087,72089,72095,72103,72119,72129,72147,72151.

Without access to a personal vehicle, residents have few options to get to their place of employment regardless of where they work; although some municipalities in the Eastern Region have their own public transportation system, most of these are local, limited-area, limited route trolley systems. This is central to understanding why public transportation accounts for a mere 0.4% of work commutes.

As for non-motorized transport modalities, land use tendencies and road design do not encourage non-vehicular transport; on average 3% of individuals walk to work, with Vieques (7%) and Las Piedras (7%) showing a slightly higher tendency. [12]

Figure 1.2: Negative Effects of Private Vehicle Dependency

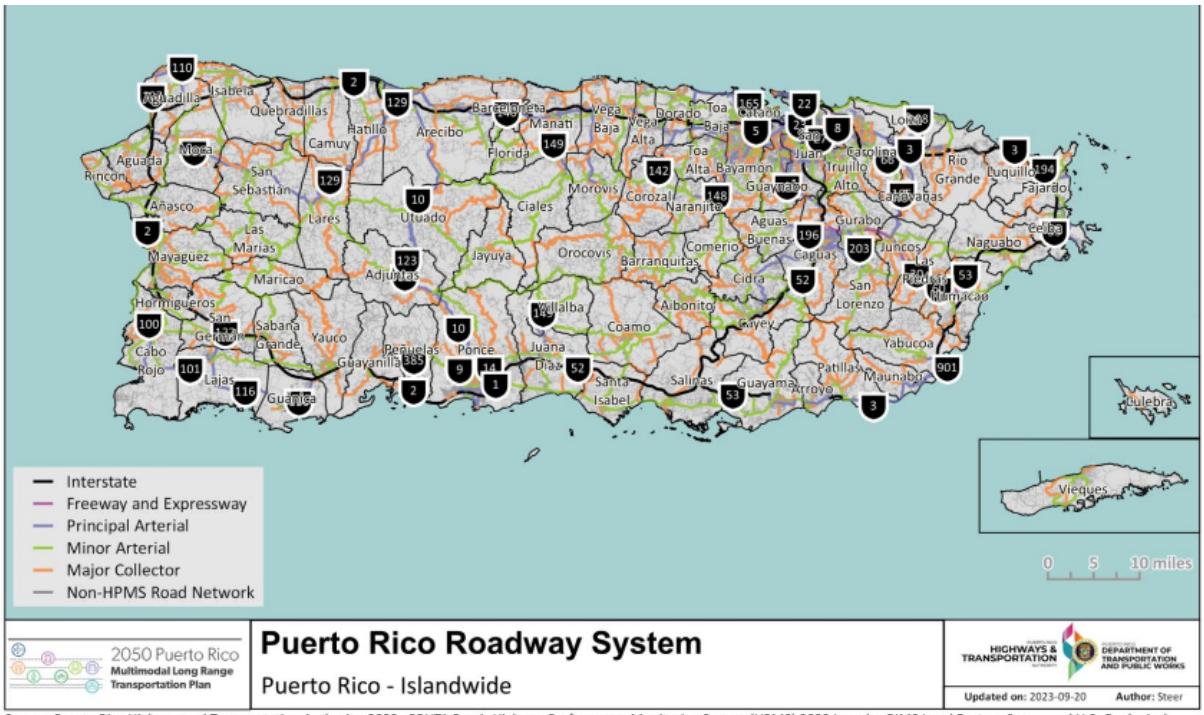
Adverse Consequences of High Private Vehicle Use

High rates of private vehicle use and dependency have multiple negative effects. First, the sheer number of vehicles on the road contributes to traffic congestion, particularly in urban areas, leading to significant productivity losses. While no study has quantified this specifically for the Eastern Region, data from the San Juan metropolitan area offer a useful comparison: in 2023, workers there spent an average of 58 hours per year stuck in traffic, with an estimated economic cost of $1,150 per worker.[13]

Heavy reliance on private vehicles imposes financial burdens on commuters, particularly low-income workers. Costs such as fuel, tolls, vehicle depreciation and maintenance, and parking fees add up significantly. For individuals without access to a car, the lack of viable public transportation options restricts access to employment, healthcare, and essential services—disproportionately affecting populations like the elderly, who may no longer be able to drive.[14]

[12] U.S. Census Bureau, U.S. Department of Commerce. (2023). Means of Transportation to Work by Vehicles Available. *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B08141*. https://data.census.gov/table/ACSDT5Y2023.B08141?q=transportation&g=050XX00US72029,72037,72049,72053,72069,72077,72085,72087,72089,72095,72103,72119,72129,72147,72151.
[13] Financial Oversight and Management Board for Puerto Rico. (2023, January 3). Working group on transportation sector reform established. *Oversight Board PR*. https://oversightboard.pr.gov/working-group-on-transportation-sector-reform-established-2/
[14] Heaps, W., Abramsohn, E., & Skillen, E. (2021, September 29). *Public transportation in the US: A driver of health and equity*. *Health Affairs Brief*. https://www.healthaffairs.org/do/10.1377/hpb20210630.810356/full/

This car-centric model contributes heavily to environmental degradation. The transportation sector is Puerto Rico's second-largest source of carbon emissions, accounting for 26% of the total greenhouse gas (GHG) emissions. Expanding and improving public and shared transportation options can and must reduce this dependency, improve air quality, and help build more connected, livable communities.[15]



Source: Puerto Rico Highway and Transportation Authority, 2022, PRHTA Roads Highway Performance Monitoring System (HPMS) 2022 Log plus RIMS Local Feature Server and U.S. Geological Survey, National Geospatial Technical Operations Center, 20230815, USGS National Transportation Dataset (NTD) for Puerto Rico (published 20230815) Shapefile: U.S. Geological Survey.

The Challenges Posed by the Operation and Maintenance of the Region's Road Network

The complex web of roads in Puerto Rico, combined with mountainous terrain and land use patterns that promote suburbanization, has reduced population density in historic town centers—areas that are often more walkable and better suited for compact development. The Eastern Region's medium-to-high road density and the spread of housing subdivisions have also contributed to the loss of valuable agricultural lands.[16]

Many of these subdivided or "parceled" areas retain a rural or semi-rural appearance yet support population densities comparable to suburban zones. However, they often lack essential urban infrastructure, such as sidewalks and street lighting.[17] The mismatch between sprawling development

[15] Puerto Rico Highway and Transportation Authority. (2023, November 13). Carbon Reduction Strategy. Carbon reduction Program. https://www.transportation.gov/sites/dot.gov/files/2024-05/Puerto%20Rico%20CRS%20final.pdf

[16] López, T. del M., T. Mitchell Aide, & Thomlinson, J. R. (2001). Urban expansion and the loss of prime agricultural lands in Puerto Rico. *Ambio*, *30*(1), 49–54. JSTOR. http://www.jstor.org/stable/4315100

[17] Map establishes that "The rural areas were subdivided into two classes, based on the U.S. Census 2000 approach for the identification of densely and sparsely populated territories: densely-populated rural or

and limited infrastructure investment poses long-term challenges for sustainable growth and public service delivery. By embracing alternative transportation models, municipalities can reimagine mobility solutions that not only address existing gaps but also set the foundation for more sustainable and equitable regional connectivity.

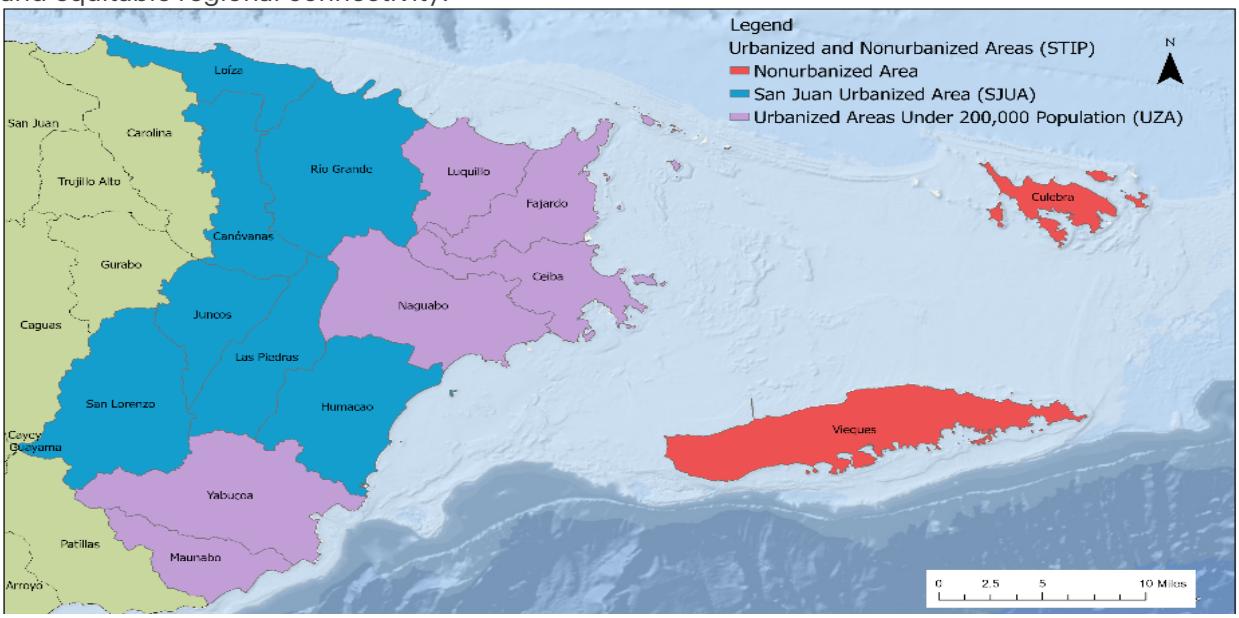


Figure 1.3: Urban and Nonurban areas (Puerto Rico Statewide Transportation Improvement Program (STIP)

The Federal View of Puerto Rico's Road Network

Puerto Rico has approximately 20,000 miles of public roads serving about 3.2 million residents — around 6 miles of road per 1,000 residents.[18] This medium-to-high road density presents significant challenges in terms of ongoing maintenance and infrastructure investment. Only 8% of roads are part of the National Highway System (NHS) and eligible for direct federal funding from the Federal Highway Administration (FHWA). The remaining 92% non-NHS roads must compete for limited federal grants or alternative funding sources, contributing to the widespread deterioration of road conditions.[19]

While local governments can access FEMA funds for repairs after declared disasters, those funds are restricted to emergency response and recovery, not routine maintenance which represents a costly expense for under-resourced municipal and state agencies, charged with keeping roads in serviceable condition. Without reliable, recurring funding mechanisms, road infrastructure across

suburban with core census block groups or blocks that have a population density of at least 1,000 people per square mile plus surrounding census blocks that have an overall density of at least 500 people per square mile, and sparsely populated rural or simply rural for the rest." Martinuzzi, S., Gould, W. A., Ramos González, O. M., Quiñones, M., & Jiménez, M. (2008). *Urban and rural land use in Puerto Rico* [Map]. USDA Forest Service International Institute of Tropical Forestry. https://data.fs.usda.gov/geodata/other_fs/IITF/pdf/IITF-RMAP-01_english.pdf

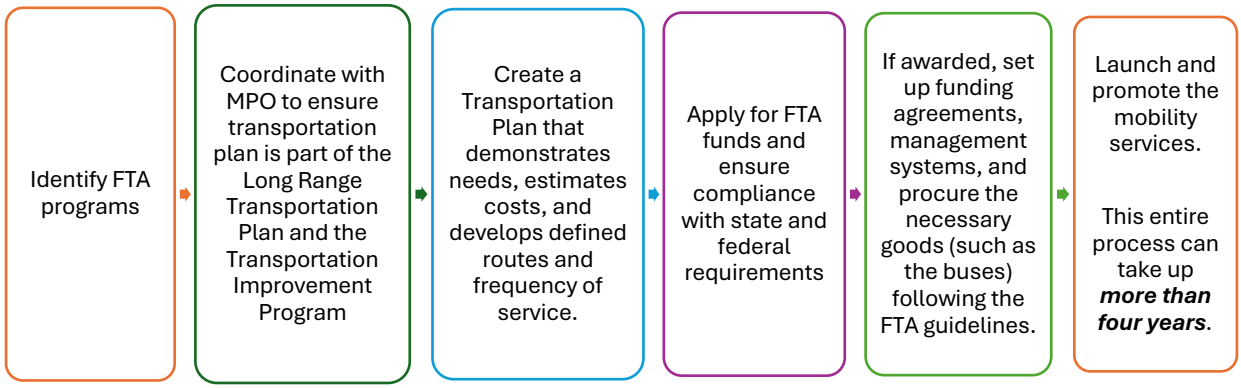
[18] Puerto Rico Highway and Transportation Authority. (2024, January 12). *Public Road Length — 2022 Highway Statistics Table HM-10*. Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/statistics/2022/hm10.cfm

[19] Federal Highway Administration. (2023). *National Highway System (NHS) Spatial Dataset* showing the federally designated NHS road network and its geographic coverage across Puerto Rico. U.S. Department of Transportation. https://hepgis-usdot.hub.arcgis.com/maps/987a3fb33ba64b06ba05138299d8ff6a

Puerto Rico remains vulnerable to long-term decline. Developing a sustainable model for road maintenance is critical.

Inter-Municipal Coordination Challenges in Federal Transportation Funding

The complex planning that the development of federally funded municipal transport entails may influence how towns use federal grants. Moreover, as shown in the map in **Figure 1.3** above, municipalities of the region are disparately classified into urbanized and nonurbanized areas and population thresholds that determine planning processes and funding eligibility. Most municipalities opt for smaller-scale, intra-municipal transit projects rather than pursuing more complex, region-wide initiatives because formula grants, while providing a reliable source of funding, pose challenges for multi-jurisdictional projects as **they require short- and long-term coordination among multiple municipalities and planning regions.** Municipalities must have similar characteristics to benefit from the same formula grants. Rural communities, for example, are ineligible for many of the same grants as urbanized areas.



Federal Funding for Intra-Municipal Transportation Systems as Catalyst for Transformation

Municipalities that successfully navigate the federal process and are awarded funding can address some of their residents' needs with fixed route, intra-municipal transportation services.[20] Canóvanas, Fajardo, Humacao, Juncos, Loíza, Luquillo, Naguabo, Río Grande, and Vieques have trolleys with routes connecting their traditional urban centers exclusively while San Lorenzo, Fajardo and Yabucoa offer expanded connectivity that extend to rural areas.[21] Loíza is also served by the metropolitan (AMA) bus system with stops close in barrios just outside of Carolina, providing residents connectivity to the more expansive metropolitan area system.

Las Piedras and Luquillo have an approved transportation plan along with funding and are in the process of procuring the necessary vehicles. Supply chain challenges have delayed their

[20] FTA formulas are primarily based on population size, directing resources toward routes that best serve local communities, and consequently, are intended to fund routes designed to best serve residents, providing access to medical facilities, supermarkets, banks, and other essential services.
[21] Rosario, F. (2023, August 20). Cada vez más personas cogen pon en los trolleys municipales. *Primera Hora*. https://www.primerahora.com/noticias/gobierno-politica/notas/cada-vez-mas-personas-cogen-pon-en-los-trolleys-municipales/

procurement, so Las Piedras has improvised a limited service to transport residents to Centro Médico in the metropolitan area.[22] This stopgap measure helps meet residents' healthcare needs even in the absence of a federally funded paratransit service.

An Early Example of Local Collaboration – a Multi-Municipal Joint Transportation Plan

One promising example of this potential is a collaborative initiative currently underway among the municipalities of Río Grande, Canóvanas, and Loíza.[23] These municipalities are working together to maximize U.S. Department of Housing and Urban Development (HUD) recovery funds by developing a joint transportation plan. This plan aims to connect key attractions across the three municipalities through a cohesive tourism circuit, demonstrating how coordinated planning can unlock greater funding opportunities and deliver broad socio-economic benefits at a regional scale. This shows how an integrated system can generate sustainable revenue through appropriately structured fares that can serve visitors while also remaining affordable for residents to cover fleet operations, workforce costs, and the maintenance of the road infrastructure it relies on.[24]

Connecting Inter-Municipal Adjacencies - An Unrealized Potential in Transportation

Figure 1.4: Location and Distance of Last Bus Stops in Fajardo and Luquillo Planned Public Transportation Systems showing a mere 1 km gap

Despite existing challenges, there is significant untapped potential in municipalities collaborating on intermunicipal transportation planning to extend the reach and impact of their mobility projects. Take, for example, Fajardo's proposed transportation route, which includes a stop at Plaza Fajardo—a key hub not only for its own residents but also for those of neighboring Luquillo. When compared to Luquillo's proposed plan, it becomes clear that both municipalities have independently identified bus stop locations within just half a mile of each other. With only minor adjustments, these routes could be coordinated to provide seamless cross-municipal access to services and destinations. Realizing this potential, however, will require proactive dialogue and coordination between the leadership of both municipalities. Strategic collaboration in such cases could serve as a model for strengthening regional mobility across the Eastern Region.

Effective coordination is essential for expanding transportation service coverage and can create a multiplier effect that strengthens regional connectivity. Integrated transportation systems not only

[22] M, López Rivera, Las Piedras mayor, personal communication, July 9, 2024.
[23] L. Soto, Canóvamas mayor, personal communication, October 31,2023
[24] Cepeda Acosta, J, Rivera Domenech, L., and Rolón Ramos, J. (2025, May 8). Presentation of "Planes Regionales de Canóvanas, Loíza y Río Grande," at *Encuentro Este*, Centro de Artes Angel Lito Peña Plaza, Humacao, Puerto Rico. Community Innovation Hub, Foundation for Puerto Rico.

improve coverage but can also boost ridership across participating networks, enhancing their long-term sustainability.

The Challenge of Visibility for Intra-Municipal Transit Services and the Impact on Ridership

Visitors and non-residents, and even residents who do not regularly use public transport, may find it challenging to understand existing municipal transportation systems, as there is little online visibility.[25] News reports might report announcements of launches of transportation systems or new routes, but frequently used applications more visible to visitors and non-residents—for example, Google Maps—do not have these routes updated or even visible. Limited visibility impacts potential ridership and ridership drives sustainability.

Visibility is more than informing about the existence of services. It encompasses the clarity, accessibility, and prominence of information and infrastructure that collectively influence ridership. Enhancing visibility in various facets of transportation, from information dissemination and infrastructure design to community engagement and safety, plays a crucial role in boosting ridership and optimizing the effectiveness of transit networks.

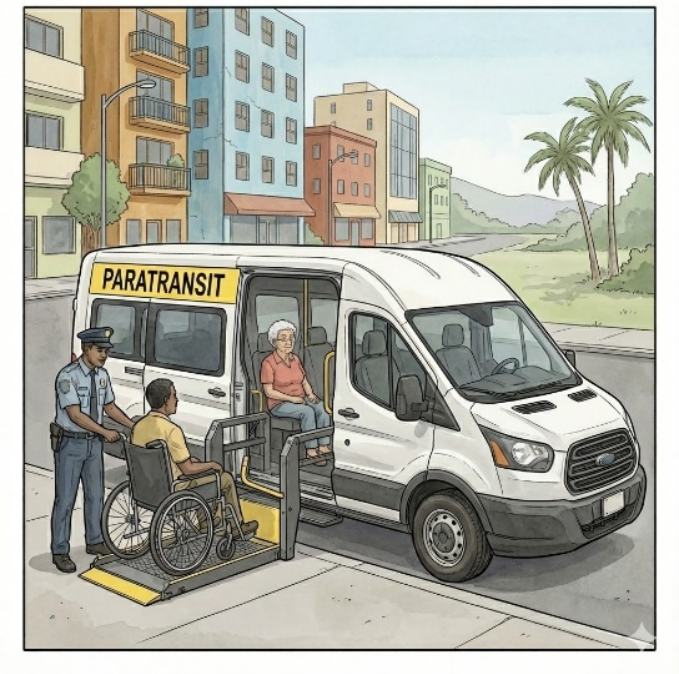
An Insight About a Growing Willingness by Municipalities to Collaborate and Integrate

- Ongoing outreach efforts across the Eastern Region reflect a growing willingness among municipalities to explore innovative transportation solutions[26] and integrate their systems with those of neighboring jurisdictions.[27]
- Establishing and supporting initiatives that facilitate coordination is essential to streamlining collaboration in transportation planning.
- Over time, these efforts—if scaled effectively—could form the foundation of a truly regional transportation network.

Proposed Initiatives

- Convene individual municipalities as well as any transportation-related groupings.
- Formalize this convening under a Regional Economic Development Council.
- Identify all potential modalities of coordination and collaboration among the convened members.
- Catalog, map and prioritize all specific initiatives and the requirements for their execution.

[25] Some municipalities, like Canóvanas, list the existing routes but do not show potential riders the route on a map or other visual format.
[26] Implementing trolleys and/or creating transportations Hubs are some of the most discussed options to help solve the transportation issue.
[27] Per information gathered during FPR's outreach efforts with the local governments of Loíza, Canóvanas, Luquillo, Fajardo, and Yabucoa. Including: J. Nazario, Loíza mayor, personal communication, October 10, 2023; L. Soto, Canóvanas mayor, personal communication, October 31,2023; G. Márquez, Luquillo mayor, personal communication, October 24, 2023; M. Martínez, J.F. Moreira, J.P. Rodríguez, J.M. De León, Fajardo representatives, personal communication, February 28, 2024; R. Surillo, Yabucoa Mayor, personal communication, March 8, 2024.



Paratransit Municipal Transportation Systems

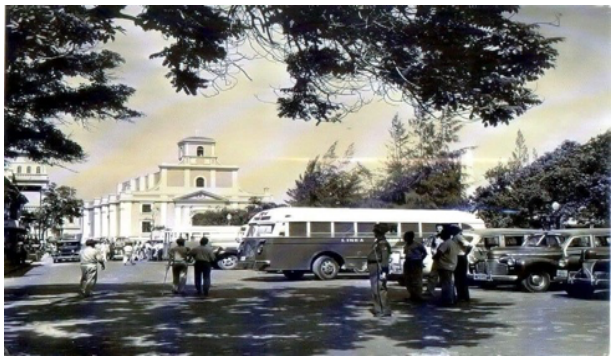
A review of the region's public transportation must also account for paratransit services, which offer transport to eligible populations under the directives of the Americans with Disabilities Act, and function as complementary services to fixed-route public transportation services**.**

In a region with such an elevated number of senior citizens, paratransit is a key service. Municipalities with operational fixed routes should provide paratransit services within ¾ of a mile radius of existing routes as per ADA requirements.[28] That said, "operational" is key; municipalities with approved plans must wait until public transportation is launched to begin providing paratransit service, even if they already have paratransit vehicles available. Paratransit service constrained to a ¾ mile radius of a municipal route may be insufficient to meet the needs of residents particularly in municipalities without hospitals.

Carros Públicos – a Declining Historical Tradition and Future Game Changer in Building a Regional Network

For nearly a century, carros públicos—privately owned shared-ride vans also known as *pisicorres*—formed the backbone of local and intermunicipal mobility in Puerto Rico. Operating along fixed routes, they connected town centers, suburban areas, and rural communities. They serve daily commuters and residents without access to private vehicles and charge riders a set fare. Once a ubiquitous presence on Puerto Rican roads, their numbers have declined sharply due to a combination of factors: rising private vehicle ownership, the outward shift of populations into dispersed suburban developments, an aging workforce of drivers, increasing fuel and maintenance costs, competition from ride-hailing apps, and

[28] *Transportation Services for Individuals with Disabilities (ADA),* 49 C.F.R. § 37 (1990). https://www.ecfr.gov/current/title-49/subtitle-A/part-37#subpart-F



ongoing challenges in attracting new drivers to the profession.[29] Today, only ten of the fifteen municipalities in the Eastern Region continue to offer carro público service, with an estimated total of 42 active routes.[30]

Island-wide, carros públicos have experienced a severe decline in operations, with some major terminals reporting a reduction from hundreds of active vehicles to only a handful today,[31] highlighting the urgent need to reimagine regional mobility systems that can better respond to the changing transportation needs of Puerto Rico's residents.

Integrated Regional Transportation and Socioeconomic Success – an Essential Connection

The absence of intermunicipal transportation systems, along with the limited coverage of existing intra-municipal routes, is a key factor contributing to the low public transportation usage. Developing an effective, multimodal, regional transportation system would significantly improve equitable access for residents to economic opportunities, to health services, and help mitigate the negative impacts of excessive road traffic—including lost productivity and environmental degradation.

Integrated transportation also promises transformative benefits for both visitors—who would enjoy a smoother, more accessible travel experience—and regional residents, who would gain more affordable and efficient commuting options, particularly for those working or studying in the San Juan metropolitan area or other parts of the Eastern Region.

A well-designed intermunicipal transportation system could provide sustainable and safe access to currently under-visited sites, and offer sustainable alternatives for environmentally conscious travelers, while reducing vehicular congestion and environmental stress. At the same time, it would support a more equitable distribution of tourism-related benefits, spurring economic growth for the communities that need it most.

New transportation modes can also address a persistent challenge: the overcrowding of limited parking facilities at key destinations. Whether visiting natural attractions or historic town centers, the lack of convenient parking often discourages visitation, leads to unsafe practices like roadside parking, or causes ecological harm when natural spaces are repurposed into improvised parking lots. A compelling solution lies in shuttle services connecting mobility hubs—equipped with ample

[29] Between 2016 and 2021 there was a reduction of vehicles available for maximum service from 1,971 to 1,620. Puerto Rico Department of Transportation and Public Works, Puerto Rico Highways & Transportation Authority, & Metropolitan Planning Organization. (2023, December 7). *2050 Multimodal Long Range Transportation Plan for Puerto Rico*. https://2050mlrtp.act.pr.gov/wp-content/uploads/2024/01/2050-Island-Wide-MLRTP_VF_Aprobada_Final.pdf

[30] Instituto de Estadísticas de Puerto Rico. (2020, March 19). *Mapa de rutas de porteadores públicos*. Datos Estadísticas PR. https://datos.estadisticas.pr/dataset/mapa-de-rutas-de-porteadores-publicos

[31] Martínez, S. (2024, January 22). En peligro de extinción las pisicorres: En picada la oferta de carros públicos tras la pandemia. El Nuevo Día. https://www.elnuevodia.com/noticias/locales/notas/en-peligro-de-extincion-las-pisicorres-en-picada-la-oferta-de-carros-publicos-tras-la-pandemia/

parking—to nearby attractions. This approach aligns with the U.S. Forest Service's efforts at El Yunque National Forest, where visitor access is constrained by the limited capacity for private vehicles along the forest's roadways.

Key Findings: Assessment of Existing Conditions in the Eastern Region

Systemic Gaps in Multimodal Integration

Key Findings

- High dependency on personal vehicles reflects the absence of a regional, multimodal transportation system.
- The lack of a cohesive, interconnected transit network reflects deeper structural challenges in land use planning, infrastructure investment, innovation, and financing.
- These barriers limit equitable access to essential services, jobs, education, and economic opportunity.

Initiatives

- Create a formal working group through a Memorandum of Understanding (MOU) among key municipalities, agencies, and stakeholders to align plans and foster collaboration.

Planning and Capacity Constraints at the Municipal Level

Key Findings

- Many municipalities prioritize smaller-scale projects due to limited capacity to plan and implement broader (regional) initiatives.
- The complexity of federal grants discourages regional or ambitious transit efforts.

Initiatives

- Provide technical assistance and promote flexible funding models beyond standard formula grants.
- Support collaborative and public-private partnerships to scale innovative transportation solutions.
- Foster regional coordination programs, such as the Canóvanas–Loíza–Río Grande collaboration, to maximize funding impact.

Limited Visibility and Fragmented Communication

Key Findings

- Existing transportation services are underutilized due to low visibility and poor system integration.
- Strategic digital investments can improve rider experience and increase utilization.

Examples

- La Línea San Juan enables real-time trolley tracking and integration with the AMA bus and Tren Urbano systems.
- PRITA and Umomobility.com are developing a unified regional transit app.

- The planned San Juan–Ceiba intercity bus service will connect Tren Urbano, ferries, and SJU airport.
- Canóvanas' ITS grant illustrates municipal leadership in transit tech modernization.

Cultural Attitudes and Behavioral Change

Key Findings

- Car-centric urban planning and norms limit public transportation adoption in Puerto Rico.
- Younger adults face increasing cost barriers to car ownership but are more open to shared mobility.

Initiatives

- Deploy long-term public awareness campaigns to shift cultural perceptions about mobility.
- Use tools like the Transporte Metropolitano campaign to engage audiences with storytelling and video content.

Cross-Sector Collaboration and Advocacy

Key Findings

- Partnerships can enhance outreach and public support for transportation reform.
- Advocacy networks, civic groups, and recreational organizations can amplify the message of mobility equity.

Initiatives

- Coordinate campaigns that promote pedestrian/cyclist safety, climate resilience, and active lifestyles.
- Build shared messaging across platforms to grow a culture of sustainable, regional mobility.

Collective Transportation - Historic Transportation Planning, a Policy Starting Point

Long-term state transportation plans cohere around a need to improve collective transport to respond to safety issues and climate change threats. A review of existing reports **evidences a shared vision ready to be capitalized upon.** Already in 2018, the Comprehensive Bicycle and Pedestrian Plan for Puerto Rico offered a multimodal transportation vision.[32] In 2023, PRDTPW published the 2050 Puerto Rico Multimodal Long Range Transportation Plan which examines existing challenges in the transportation network along with nascent opportunities.[33] This Plan highlights shared transport and micromobility options, as well as technological transformations that promise to increase social, economic, and environmental sustainability through transportation solutions. The 2024 draft Puerto Rico Climate Change Mitigation, Adaptation and Resilience Plan similarly draws attention to a need to lower greenhouse gas emissions in the transportation sector, and the significant role that public transportation plays in achieving lower emissions.[34]

Examined together, these documents make it clear that, for transformative transportation to become reality, it will require extensive stakeholder engagement and collaboration, a strategic, prioritized, multi-phased approach, and careful marshalling of available resources.

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[32] Funding sources for these wide-ranging plans include expanded pedestrian and cycling infrastructure available through the FTA but also through the EPA, the U.S. Department of Energy, PR's Department of Recreation and Sports, among others.
Steer Davies Gleave, Strategic Planning Office, Puerto Rico Highway and Transportation Authority, & Department of Transportation and Public Works. (2018, October 18). *Comprehensive bicycle and pedestrian plan for Puerto Rico*. Puerto Rico Highway and Transportation Authority. https://act.dtop.pr.gov/Bike-and-Ped-OCT262018-Final.pdf

[33] Puerto Rico Department of Transportation and Public Works, Puerto Rico Highways & Transportation Authority, & Metropolitan Planning Organization. (2023, December 7). *2050 Multimodal long range transportation plan for Puerto Rico*. Metropolitan Planning Organization. https://2050mlrtp.act.pr.gov/wp-content/uploads/2024/01/2050-Island-Wide-MLRTP_VF_Aprobada_Final.pdf

[34] Comité de Expertos y Asesores sobre Cambio Climático. (2024). *Plan de mitigación, adaptación y resiliencia al cambio climático en Puerto Rico.* (Borrador). Gobierno de Puerto Rico. https://www.drna.pr.gov/ceacc/publicaciones/borrador-final-plan-ceacc-2024/

Connectivity Between San Juan and the Eastern Region via Intercity Buses

Achieving regional connectivity in an expedient manner will require leveraging existing highway assets, such as PR-3, PR-66, and PR-53, to connect the Eastern Region's municipalities with the San Juan metro area via public transportation for the benefit of residents and visitors. Key destinations within the region include the Canóvanas Outlets/Sector 66, El Yunque National Forest, hotels and resorts, municipal beaches, town centers, gastronomic hubs, the Roosevelt Roads (Ceiba) airport and ferry terminal, and other services and attractions.

Ceiba has been identified as a prime candidate for intermunicipal transport. When Vieques and Culebra residents disembark at the Ceiba ferry terminal (as described in

 section of this Pillar) they find no public transportation available. To respond to this need, PRITA is commencing an intercity bus service that will connect the Ceiba ferry terminal, the Fajardo carros públicos terminal, and the Canóvanas outlets before continuing to the Luis Muñoz Marín airport and the Piñero Tren Urbano station in San Juan to facilitate multimodal connectivity.

This initial intercity route, once established, could be extended to service other municipalities. Mid- and long-term expansions could extend connectivity along the region's north-south corridor, from PR-3 in Fajardo down PR-53 to Maunabo, with stops in Naguabo, Humacao, and Yabucoa. This system could also be expanded by connecting the Caguas metro area via PR-30, with Humacao, Las Piedras, and Juncos, with first- and last-mile feeders allowing connectivity with San Lorenzo. Caguas has an existing intercity bus service to San Juan metro area as well, allowing southeastern towns access to the capital.

To create truly integrated intermunicipal transportation, the design would need to include multiple stops, with associated terminals and mobility hubs connecting with municipal and private (carro público) feeder services to facilitate resident and visitor movement throughout the region. Mobility hubs in the strategic nodes of Canóvanas, Río Grande (discussed more below), Fajardo, Humacao and Juncos would allow riders to transfer to different modes of inter and intra-municipal transportation, including shared and micro-scaled modalities.

The El Yunque National Forest Access and Mobility Plan

An effort led by the U.S. DOT Volpe Center in collaboration with the Puerto Rico Department of Transportation and Public Works (PRDTPW), and supported by the U.S. Forest Service, focuses on improving access and mobility for the eight municipalities (Canóvanas, Río Grande, Luquillo, Fajardo, Ceiba, Naguabo, Las Piedras and Juncos) which have federal forest lands in the Region. The *Regional Transit Access Plan for El Yunque Region*,[35] when complete, will provide a plan for a financially feasible public transportation system that meets the mobility needs of the visitors and communities within the El Yunque forest region. It includes an assessment of the current state of transportation, including road, transit, bike, pedestrian and other mobility and multimodal infrastructure and will present scenarios that would improve connectivity and increase resiliency and access to the forest recreation areas.

El Yunque National Forest Access Points as Future Mobility Hubs

It is essential to highlight additional opportunities currently under feasibility analysis or in early-stage planning that have the potential to serve as mobility hubs that would help catalyze the development of a regional transportation network. Two proposed sites—one located in the Palmer community of Río Grande with access to the PR-191 North primary access road, and another in the town center of Naguabo in the vicinity of the PR-191 South. These are strategically designed to enhance visitor access to El Yunque National Forest while promoting better management and greater dispersion of visitation via those multiple access points. In the short term, both sites are envisioned as transportation terminals and parking facilities that would support access to El Yunque.[36] However, with thoughtful planning and investment, they could evolve into full-fledged mobility hubs—key nodes where multiple transit routes and modalities converge, enabling seamless transfers and expanding regional connectivity.

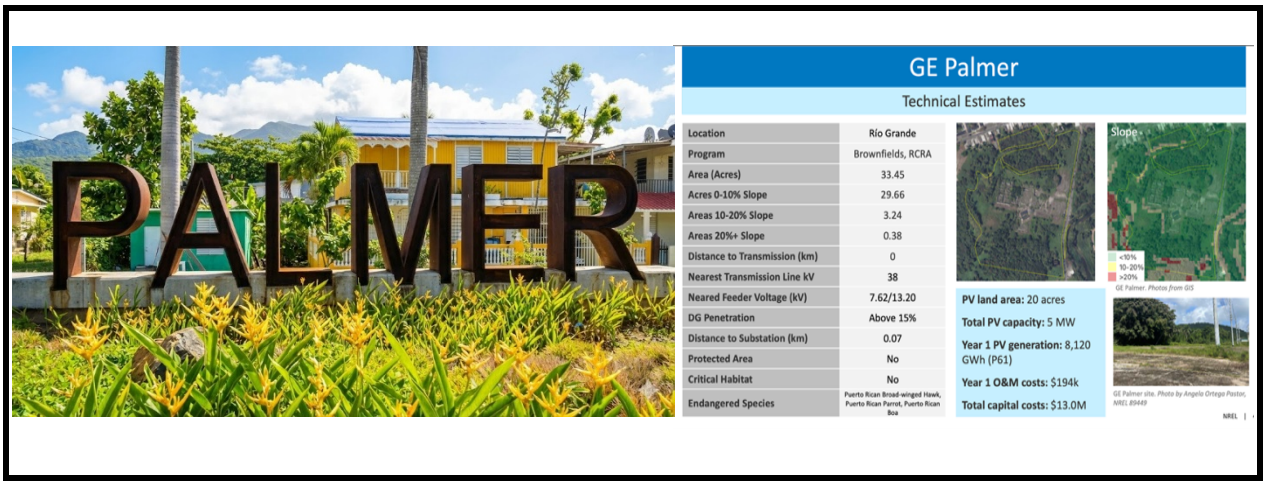
Keeping a clear focus on this long-term vision is critical. Early-phase projects and infrastructure decisions should be guided by a strategic framework that allows for future integration and scaling. In doing so, short-term gains will not constrain future opportunities but will instead lay the foundation

[35] The Regional Transit Access Plan for El Yunque Region by the U.S. DOT Volpe Center is currently under review and is expected to be finalized by early 2026. K. Justice, Community Planner, U.S. DOT Volpe Center, The National Transportation Systems Center, personal communication, 17 December 2025.
[36] U.S. DOT Volpe Center. (2025, May). *El Yunque National Forest: Transit Feasibility Study*. U.S. Forest Service.

for a transformative, multimodal transportation network that serves both residents and visitors across the Eastern Region.

Palmer, Río Grande -Transforming an EPA Brownfields Site into an El Yunque Access Point

Situated at the foothills of El Yunque, this community serves as the gateway community for the forest. Forest visitors typically purchase food and other amenities in Palmer during their trip to El Yunque. Given El Yunque's status as Puerto Rico's second most popular tourist attraction coupled with ongoing congestion and safety concerns within the El Yunque Recreation Zone, establishing a terminal in Palmer would do much to alleviate these issues.



Efforts have been focused on a Puerto Rico Industry Development Company (PRIDCO)-owned lot located in the Palmer community.[37] The site has been subject to environmental cleanup efforts due to its proximity to sensitive

ecological areas.[38] Because the lot is designated as a brownfield site, it is currently undergoing a National Environmental Policy Act (NEPA) process necessary for the Preliminary Design of the Palmer Transit Hub. This process will assess current conditions at the site to allocate funds appropriately for the design and engineering phase.

Previously, PRDTPW partnered with the University of Puerto Rico's School of Architecture to complete a preliminary feasibility study for the transit hub at Palmer. Other planning efforts toward this initiative include a U.S. DOT Volpe Center-led feasibility study analyzing various potential transit scenarios for PR-191 North access to El Yunque National Forest, including recommendations for local fixed routes, operational viability, business implementation models, vehicle requirements, and maintenance needs.[39]

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[37] The former General Electric (GE) Residential Products facility, also known as Caribe GE, was located in the Palmer Ward of Río Grande, Puerto Rico. This electroplating facility was situated adjacent to the Mameyes River, near El Yunque National Forest.

[38] EPA. (June 2025). Hazardous Waste Cleanup: GE Residential Products Incorporated in Palmer Ward, Puerto Rico. https://www.epa.gov/hwcorrectiveactioncleanups/hazardous-waste-cleanup-ge-residential-products-incorporated-palmer-ward

[39] The U.S. DOT Volpe Center study for PR-191 North details the possible options for El Yunque 191-N transit. U.S. DOT Volpe Center. *El Yunque National Forest: Transit Feasibility Study*. May 2025.

The Palmer terminal could function as a park-and-ride for El Yunque National Forest visitors, where a future shuttle service for El Yunque would depart. The U.S. Forest Service has played a key role in creating this vision, **as this site has the potential to accommodate a future of expanded regional mobility hub as envisioned here.** Beyond addressing visitor traffic concerns, **the hub could provide transportation to key attractions within and beyond the forest**, creating a central point for visitors to connect with local guides and businesses. This initiative aims to support the local economy, create jobs, and contribute to establishing a sustainable regional transportation network.

A Potential Park-and-Ride Option to Distribute Visitors

A Palmer Transit Hub would address existing challenges by offering ample parking for visitors, as well as to amenities and services in Palmer and its surroundings. For example, a connecting transportation service operating out of Palmer could alleviate congestion and parking issues in Las Picúas, just a 10-minute drive away, which experiences high visitor demand and serious parking challenges.[40] [41] The planning initiatives around El Yunque access are important first steps in the operationalization of some of the access and transportation strategies in this document.

Naguabo Town Center – El Yunque Southern Access Point and Visitation Center

Another key access point to El Yunque lies in Naguabo, near the intersection of PR-191 with PR-31, where a transportation terminal would help disperse El Yunque visitation to alternative entry points, specifically by way of its southern entrance (PR-191 South). Currently, a plot of land located in Naguabo's town center is the focus of planning efforts toward establishing a shuttle service to reach that southern access point to El Yunque, specifically the Sabana River Recreation Area and Trail. The municipality of Naguabo, along with the U.S. Forest Service, Foundation for Puerto Rico, and the Comité Desarrollo Barrio Cubuy (with the support of USDA Rural Development Communities Facilities Technical Assistance and Training Grant) are collaborating toward enhancing connectivity and expanding transit options for residents and visitors.

The selected site in the Naguabo town center would be able to bring visitors to El Yunque but it would also connect to the municipal trolley, which travels to coastal attractions like El Malecón, and thus

[40] Santa, A. (2023, November 21). Río Grande ordena el libre acceso en la playa Las Picúas. *Metro Puerto Rico*. https://www.metro.pr/noticias/2023/11/21/rio-grande-ordena-el-libre-acceso-en-la-playa-las-picuas/
[41] El Vocero. (2025, December 8). *DRNA cierra acceso vehicular a playa Las Picuas en Río Grande*. El Vocero. https://www.elvocero.com/gobierno/drna-cierra-acceso-vehicular-a-playa-las-picuas-en-r-o-grande/article_adff1fc0-42d1-4020-bae8-4b6c2535ae4c.html

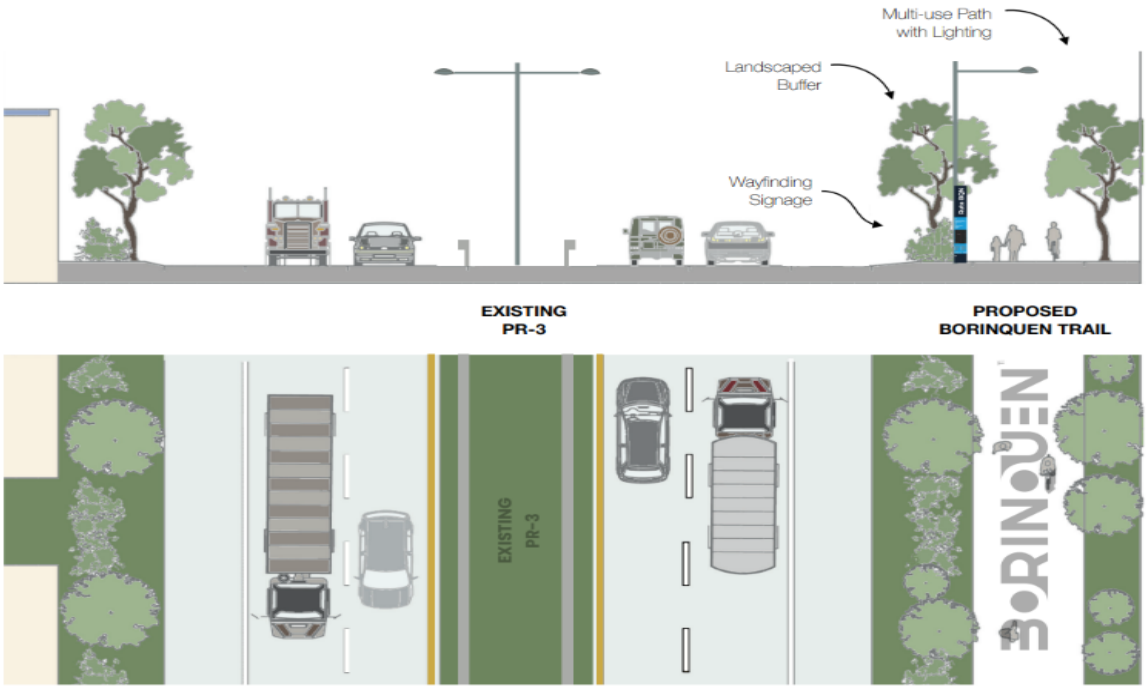
would permit users access to the coast and the rainforest. Once further transportation initiatives are established, the site would be strategically located to serve as an intermunicipal connection point, facilitating connections to communities on the forest's periphery, such as Pasto Seco in Las Piedras and key assets like Roosevelt Roads' airport and ferry terminal. Like Palmer**, it can eventually become a multimodal mobility hub.**

Microtransit, an Enabler of One-Way Hikes -Connecting Naguabo to Río Grande by Trail

Increasing visibility for the southern side of El Yunque could open alternative visitation routes and create new experiences, such as easier access to the Sabana River Recreation Area or allow visitors to experience a guided hike from Naguabo to Río Grande via the Sabana and Tradewinds trails. Although this cross-forest trail exists, hikers must independently plan transportation logistics at the trail's endpoint on the opposite side of El Yunque's mountains. Establishing a coordinated transit connection would enhance accessibility, allowing visitors to experience a seamless journey across the forest while reducing transportation barriers.

Mobility Hubs in Town Centers and Historic Districts – Engines for Strategic Revitalization

Town centers—where parking is often limited but walkability is high—could serve as catalysts for revitalization. These areas may also be ideal locations for visitor lodging, as guests could rely on public transportation, eliminating the need for parking while enhancing the overall visitor experience (see Attractions Pillar for more on town centers or "cascos urbanos"). Proactive planning can mitigate the risks of gentrification or displacement while ensuring that regional connectivity serves residents and visitors alike. Through the CDBG-Disaster Recovery City Revitalization Program, all 78 municipalities have approved projects for the redevelopment, re-greening and restoration of lost natural resources, and further incentivize private investments in restored urban areas. Nine municipalities in the Eastern Region have projects to rehabilitate and improve their public plazas, including Canóvanas, Ceiba, Fajardo, Las Piedras, Loiza, Luquillo, Maunabo, Naguabo and Vieques. [42]



[42] F

Complete Streets: Infrastructure for Pedestrians, Cyclists, and Quality of Life

The municipalities of Canóvanas and Río Grande also have approved projects to employ Complete Streets,[43] [44] that is a transportation policy and design approach that aims to ensure streets are safe, comfortable, and accessible for all users—regardless of age, ability, or mode of transportation (e.g., walking, cycling, driving, public transit)—in their town centers.[45] Vieques is also using the funding to rehabilitate the ferry terminal in Isabel Segunda.[46] The goal is for residents to benefit from increased opportunities of employment and economic growth, affordable housing options, greater access to goods and services, and additional recreational and wellness resources. These projects will contribute to the viability of the future mobility hubs by aligning with a larger strategy targeting downtown/business districts and key corridors supporting and driving future public and private investment in these areas.

Although motor vehicle-based transportation remains essential in Puerto Rico—given the island's land use patterns and the long distances often required to access essential services—there is a critical need to integrate a broader range of transportation modes, including active options such as walking and cycling. Current street and traffic design tends to prioritize the safety and convenience of cars, often at the expense of pedestrians and users of alternative modes of travel. Addressing this imbalance is key to creating a more inclusive, equitable, and multimodal transportation system.

Complete Streets

—David Soto, Ruta Borinquen

Multimodal transportation supports low-impact mobility and fosters new services within outdoor and recreational economies. Complete streets create safe, comfortable networks for travelers, whether they prefer walking, biking, taking transit, or driving. By ensuring universal access regardless of age, skill, or ability, complete streets contribute to social, health, and economic benefits. Strategies for implementing complete streets can be integrated into repaving, pavement rehabilitation, highway reconstruction, or road widening projects. Borinquen Trail is one such proposal calling for complete streets to create an islandwide network of "rails-to-trails" connecting communities, museums, beaches, and national parks.

The Eastern region of Puerto Rico features diverse roads, including highways, regional roads, and neighborhood streets in both urban and rural areas. Borinquen Trail follows Highway 3 between Río Grande and Luquillo along a 4-lane divided highway with varying roadside conditions. Complete streets solutions offer much-needed mobility options where a lack of dedicated infrastructure forces people walking and biking to use of the shoulder alongside fast-moving traffic.

Besides being a community need, complete streets are mandated by Law 201 of 2010 as part of roadway planning, redesign, and rehabilitation projects. To address the unique needs of all road users, complete streets interventions must be context-sensitive. Puerto Rico Complete Streets Design Guidelines (2018) provide support and decision-making frameworks for developing design alternatives. The following diagram provides an example of how to incorporate pedestrians and cyclists adjacent to major highways based on these design guidelines and highlights the role of lighting and landscaping.

[43] For more information see: https://recuperacion.pr.gov/en/city-revitalization/
[44] Notiséis. (2024, April 11). Aúnan esfuerzos para convertir a Canóvanas en epicentro de las Ciudades Smart. *WiPR*. https://wipr.pr/aunan-esfuerzos-para-convertir-a-canovanas-en-epicentro-de-las-ciudades-smart/
[45] Smart Growth America. *What are Complete Streets?* https://www.smartgrowthamerica.org/programs-and-coalitions/national-complete-streets-coalition/about/
[46] For more information see: https://recuperacion.pr.gov/en/city-revitalization/

Creating walkable cities and towns delivers numerous environmental, health, and economic benefits while significantly enhancing overall quality of life. Research supports what many people already intuitively know: walking to and from transit stops helps individuals meet recommended levels of physical activity, contributing to better health outcomes. Walkability also supports cleaner air, reduced traffic congestion, and more vibrant, livable communities.[47]

Safe, accessible walking routes to and from transit stops encourage greater use of alternative modes of transportation and contribute to healthier lifestyles. They also enhance community resilience by improving overall accessibility, particularly for those without access to private vehicles. The long-term viability of micromobility solutions—such as bikes and scooters—will similarly depend on increased walkability and the development of streets that are friendly to non-motorized users.

Efforts to promote walkability are already underway, reflecting the broad consensus on prioritizing pedestrians and people-centered environments for healthier, safer, and more vibrant communities. Act 201-2010 established Complete Streets design as a public policy requirement for planning and designing new or remodeled public streets.[48]

In 2018, PRTPW developed the Puerto Rico Complete Streets Plan & Design Guidelines in compliance with the law. PRTPW's *Complete Streets and Design Guidelines* document plays a crucial role in guiding designers toward considering road design for a variety of mobility and transportation modalities, rather than solely motorized vehicles.

Once Puerto Rico's Highway and Transport Authority adopts a Complete Streets Manual, transport officials will also have a technical framework for incorporating Complete Streets concepts into project design and implementation. Today, the Complete Streets Guide serves as a model for state and local efforts to improve access by enabling safe access for pedestrians, cyclists, motorists and transit riders of all ages and abilities.[49]

The document also contemplates the importance of improving pedestrian and bicycle access to the public transportation systems, so as to permit users to walk or cycle once they disembark a transportation system.[50] In line with this policy, as of summer 2024, PRITA permitted for passengers

[47] Freeland, A. L., Banerjee, S. N., Dannenberg, A. L., & Wendel, A. M. (2013). Walking associated with public transit: Moving toward increased physical activity in the United States. *American Journal of Public Health*, *103*(3), 536–542. https://doi.org/10.2105/AJPH.2012.300912

[48] *Ley para Declarar la Política Pública sobre la Adopción del Concepto de Calles Completas o 'Complete Streets'*, Ley Núm. 201 (December 16, 2010). https://bvirtualogp.pr.gov/ogp/Bvirtual/leyesreferencia/PDF/201-2010.pdf

[49] Smart Growth America, & National Complete Streets Coalition. Complete Streets. Smart Growth America. *https://smartgrowthamerica.org/what-are-complete-streets/*

[50] Steer Davies Gleave, Strategic Planning Office, Puerto Rico Department of Transportation and Public Works, & Puerto Rico Highway and Transportation Authority. (2018, September 18). Puerto Rico Complete Streetss: Plan & Design Guidelines. Puerto Rico Department of Transportation and Public Works. https://act.dtop.pr.gov/PR-Complete-Streets-Plan-and-Design-Guidelines-Final.pdf

of their various assets (the Tren Urbano, ferries, and buses) to bring with them light vehicles like scooters or bicycles without the need for any special permit.[51]

Although Census data shows low biking percentages, it primarily focuses on work commutes and does not account for recreational and other non-work-related bike usage. The relatively flat landscapes of the northern coast of the Eastern Region present an opportunity to integrate Complete Streets design and leverage existing assets and initiatives. For example, revitalizing Loíza's boardwalk, presents a recreational opportunity that can be linked with bike rental shops and other supporting businesses and become a tourist attraction.

Additionally, Canóvanas and Loíza have designated PR-951 for cyclists, runners, and pedestrians during weekends and holidays from 5am-1pm.[52] This scenic route starts at Canóvanas town center, then runs along the Rio Grande de Loiza, past the Canóvanas Central Azucarera historical site, down to Loíza town center, passing the Town Hall and Plaza, ending near the mouth of the river on Loíza's eastern coast.

Further investments in active transportation infrastructure and outdoor recreation can provide quality of life and health improvements for residents, and attract and build a visitor base, [53] especially since current Eastern Region visitation trends indicate strong interest in natural sites.[54] This type of visitation promotes longer stays and a reduced environmental impact.[55] [56]

In the context of regional connectivity, it is essential to implement pedestrian-friendly pathways, bike lanes, and supporting infrastructure that facilitate easy movement within and between communities, amenities, and attractions—especially near municipal and intercity terminals and bus stops. The areas surrounding these terminals and mobility hubs will require thoughtful design in a Complete Streets model to ensure safety, accessibility, and inclusivity for all users. It is therefore critical to begin coordinating efforts and establishing the necessary conditions to support these improvements.

As outlined in the section on **Placemaking and Transportation – a Cultural and Historical Connection,** integrating green infrastructure elements—along with amenities and services that encourage social interaction—can transform transportation hubs into vibrant, destination-worthy spaces. Rather than serving solely as points of transit, these hubs can become community assets: places where people want to walk, bike, or roll to, not just pass through.

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[51] Telemundo PR. (2024, May 28). Permitirán bicicletas, scooters y otros vehículos livianos en el tren. *Telemundo Puerto Rico*. https://www.telemundopr.com/noticias/puerto-rico/permitiran-bicicletas-scooters-y-otros-vehiculos-livianos-en-el-tren/2611980/

[52] Redacción Presencia. (2023, October 25). Canóvanas y Loíza inauguran carretera para la comunidad y deportistas. *Periódico Presencia*. https://presenciapr.com/canovanas-y-loiza-inauguran-carretera-para-la-comunidad-y-deportistas/

[53] *Economic Benefits of Active Transportation*. North Central Texas Council of Governments. https://www.nctcog.org/trans/plan/lumo/bikeped/resources/ebat

[54] Discover PR, personal communication, December 1, 2023

[55] *Economic Impact of Investments in Bicycle Facilities*. American Trails. https://www.americantrails.org/resources/economic-impact-of-investments-in-bicycle-facilities

[56] Zientara, P., Jażdżewska-Gutta, M., Bąk, M., & Zamojska, A. (2024). What drives tourists' sustainable mobility at city destinations? Insights from ten European capital cities. *Journal of Destination Marketing & Management*, *33*, 100931. https://doi.org/10.1016/j.jdmm.2024.100931

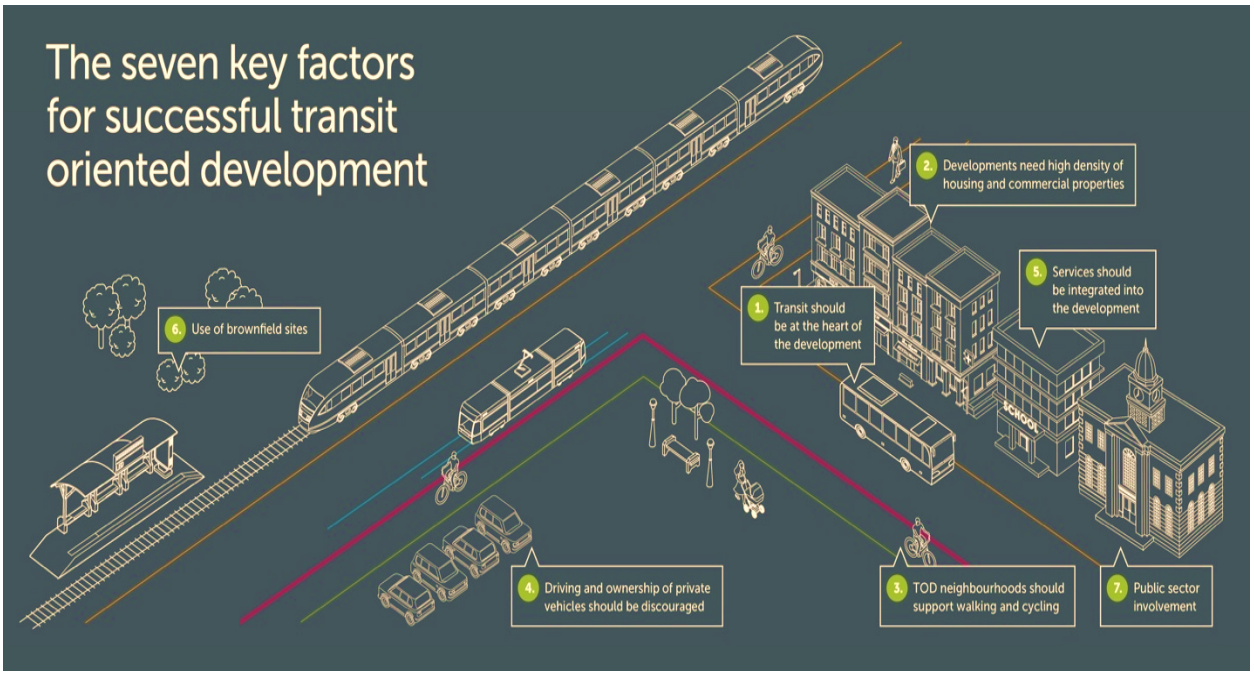


Figure 1.5: Urban Transport Group, UK

Transit-Oriented Development - an Overlooked Synergistic Force in Transportation Networks

The success of mobility hubs depends on multiple factors, including accessibility and the presence of a sufficient concentration of services and residents. Adopting a Transit-Oriented Development (TOD) model can help attract users by promoting compact, mixed-use, walkable communities near transit. However, to maximize accessibility and ensure broad community benefit, it is essential to implement an equitable TOD approach—one that prioritizes affordability and inclusivity. [57] Cities across the United States are embracing this model. In Denver, Colorado, for example, the city has adopted inclusionary housing policies and created the Denver Regional TOD Fund to support low-income housing near transit corridors.[58] Similarly, facilitating the resettlement of residents in town centers and reducing outmigration are critical strategies to achieve the population density necessary for effective, sustainable transit services.

Broader regional development initiatives are essential to effectively expand the inventory of affordable housing near transit systems and urban hubs. High-density, mixed-use housing located within walking distance of transit not only increases the overall supply of housing but also enhances residents' access to employment opportunities, educational institutions, healthcare services, and commercial areas. This type of development improves urban connectivity, reduces reliance on private vehicles, and lowers transportation costs—contributing to more equitable, sustainable, and livable communities.[59] [60]

[57] Pudget Sound Regional Council. (2022). *Planning for Whole Communities Toolkit*. https://www.psrc.org/sites/default/files/2022-03/transit_oriented_development.pdf

[58] Enterprise Community Partners. (2022, January 31). Denver Regional TOD Fund Reaches $50 Million Invested, 2,100 Homes. *Enterprise*. https://www.enterprisecommunity.org/news/denver-regional-tod-fund-reaches-50-million-invested-2100-homes

[59] Litman, T. (2017). Evaluating accessibility for transportation planning. Victoria Transport Policy Institute. Retrieved from https://www.vtpi.org/access.pdf

[60] Culebra is the only municipality in the Eastern Region that is embarking on constructing affordable housing with their CDBG-Disaster Recovery City Revitalization funding.

Affordable housing located near transit corridors and urban centers encourages residents to rely on public transportation rather than personal vehicles. This shift in travel behavior not only supports higher transit ridership but also helps reduce traffic congestion, lower air pollution, and decrease carbon emissions—contributing to broader environmental and public health goals. Strategically locating affordable housing near key transit nodes is thus a critical component of sustainable urban development.[61]

Turning Transit Terminals into Multimodal Hubs and Sites for Transit-Oriented Development (TOD)

Existing, limited-modality transportation terminals (e.g. bus or carro público or ferry) across the region could evolve into multi-modal transportation hubs, expanding intermunicipal connectivity as transportation options grow. As new mobility solutions emerge, a wider range of transportation modalities (as previously detailed) will be able to serve diverse user needs. To ensure long-term efficiency, strategically located sites should be planned with a Transit-Oriented Development (TOD) model. **TOD optimizes the areas surrounding mobility hubs by promoting higher-density development that integrates residences, shops, services, and other amenities, reducing the need for car dependency.** [62]

An equitable TOD prioritizes investments that will also lead to equitable access and would be especially pertinent within the considerations of the Region's aging population as well as current poverty rates, populations that could benefit from ease of access to essential amenities. Transit improvements tend to impact real estate values and can consequently lead to gentrification or displacement.[63] An equitable TOD model can ensure transportation remains affordable and investments are made toward ensuring mixed-income, mixed-use planning and building takes place near hubs. This approach focuses on creating accessible living, working, and leisure spaces that are affordable for all income levels.

In conclusion, increasing population density near transit hubs through the development of affordable housing in the Eastern Region can play a vital role in boosting transit system ridership while advancing sustainable and inclusive urban development. By aligning housing and mobility strategies, the region can create more vibrant, accessible communities that support long-term economic and environmental resilience.

[61] Ewing, R., & Cervero, R. (2010). Travel and the built environment: A meta-analysis. Journal of the American Planning Association, 76(3), 265–294. https://doi.org/10.1080/01944361003766766
[62] *Why TOD Matters*. Institute for Transportation & Development Policy. https://tod.itdp.org/why-tod-matters.html
[63] Grant, M., & Bowen, B. (2021). *Opportunities for Research on Transportation and Equity* (No. E-C270). Transportation Research Circular.

Key Findings for Strategic Transportation and Revitalization Planning

Insights to Guide Integrated Mobility and Economic Revitalization Strategies

1. Carros Públicos: Revitalizing a Legacy System through DRT Integration

Carros públicos—shared passenger vans operating on intermunicipal routes—have historically served as a vital component of Puerto Rico's informal transportation network, especially in rural and peri-urban regions. While usage has declined in recent decades due to private vehicle ownership, urban sprawl, and lack of investment, these services continue to offer essential mobility options for those without access to cars.

Key Historic Challenges:

- Declining ridership and aging fleet.
- Informal operations with minimal coordination.
- Absence of route visibility and digital payment options.
- Limited participation in long-term transportation planning.

Revitalization Opportunity:

Technology integration offers a transformative opportunity to modernize carros públicos through DRT models. By equipping vehicles with GPS, mobile app access, and route optimization tools, municipalities and private operators can offer dynamic, flexible service that responds to real-time user demand.

Best Practice Reference:

Wilson, North Carolina—a rural town with similar demographic and geographic conditions—replaced its fixed-route bus service with "RIDE," a DRT system operated in partnership with Via. The system's increased coverage, reduced per-passenger cost, and improved customer satisfaction through app-based scheduling and predictive dispatching.

Actionable Strategies:

- Leverage federal funding (FTA Section 5311, RAISE grants) and philanthropic capital to support retrofitting of vehicles and training for drivers.
- Collaborate with commercial MaaS (Mobility-as-a-Service) platforms to implement low-cost pilot programs in priority corridors.
- Establish centralized dispatch systems at regional transportation hubs to coordinate services and improve load factors.

2. Suburbanization and the Decline of Traditional Town Centers

Many towns across Puerto Rico have experienced outward suburban expansion, leading to population loss in urban cores. Walkable centers designed for high-density living and commercial activity have suffered from neglect, insufficient parking, and inadequate transit connections—creating a cycle of disinvestment.

Key Issues:

- Underutilization of public plazas and civic infrastructure.
- Inaccessibility due to limited parking and pedestrian amenities.
- Retail space vacancy and reduced municipal revenues.
- Fragmentation between housing, services, and transportation.

Revitalization Pathways:

Coordinated investment in placemaking, mobility, and infrastructure can support reinvigoration of town centers. Transportation is a catalyst for revitalization—both by increasing access and by attracting anchor uses (retail, housing, tourism).

Case Example:

Bayamón's downtown revitalization leveraged its connectivity to the Tren Urbano rapid transit system. Public-private partnerships supported public realm improvements, and strategic alignment with transportation assets drew people and businesses back to the center.

Complementary Mechanisms:

- The CDBG-DR City Revitalization Program can fund infrastructure and mobility improvements, particularly when integrated with broader economic development goals.
- Business Improvement Districts (BIDs), as highlighted by the National Main Street Center, provide a governance model for downtown management, marketing, and capital investment.

Encourage municipalities to develop transit-oriented development (TOD) strategies tied to trolley loops, DRT, and regional hubs. These can increase density and vibrancy while reducing dependence on car travel.

3. Palmer as a Strategic Multimodal Hub and Tourism Gateway

   Located in Río Grande, Palmer is the primary access point to El Yunque National Forest's northern portal along PR-191. Its unique positioning at the intersection of tourism, local commerce, and transportation infrastructure makes it an ideal site for a mobility hub.

Current Initiative:

Assessment is underway for redevelopment of a PRIDCO-owned brownfield parcel, with potential to serve as an intermodal terminal linking DRT, microtransit, public trolleys, and nature-based tourism.

Opportunities:

- Strengthen integration between visitors, local vendors, and public agencies.
- Provide real-time information on shuttle and van services to and from El Yunque.
- Serve as a replicable model for integrating transportation and sustainable tourism.

Analytical Needs:

- Conduct transportation demand studies to assess visitor flow, peak periods, and DRT coverage feasibility.
- Use NEPA outcomes to determine site suitability; if barriers arise, prioritize locations such as Luquillo, which lies outside the San Juan MPO and is eligible for rural transit formula grants that offer higher per-capita allocations.

Long-Term Strategy:

- Envision Palmer as a flagship pilot in the regional MaaS strategy.
- Align planning with the Eastern Region Economic Development Council or a similar intermunicipal governance body.

4. Naguabo: Southern Gateway and Coastal Mobility Corridor

Naguabo serves as a lesser-known but strategically important southern entrance to El Yunque via PR-191 South. It also connects residents and visitors to the "Malecón" (coastal boardwalk), nearby beaches, and rehabilitated but underutilized recreational assets.

Municipal Projects Underway:

- Revitalization of the town plaza and adjacent streetscape.
- Reintroduction and enhancement of a municipal trolley loop.
- Creation of additional parking to improve access and reduce town center congestion.

Key Benefits of Mobility Enhancements:

- Increase visitation to the "Malecón," small businesses, and forest trails.
- Support elderly and carless residents in accessing services.
- Promote eco-tourism and cultural heritage tourism while reducing vehicle dependency.

Partnership and Coordination:

- Work in tandem with the U.S. Forest Service and USDA Rural Development to align transportation improvements with El Yunque visitation planning.
- Deepen collaboration with Foundation for Puerto Rico and other civil society partners to support grant writing, stakeholder engagement, and project design.

Regional Connectivity Strategy:

- Foster stronger coordination between Naguabo, Ceiba, and the Roosevelt Roads Land Redevelopment Authority.

Plan jointly for integrated routes linking ferry terminals, airport services, and inland attractions—creating a seamless visitor and resident experience through shared mobility assets.

1.3.2 Enabling a Regional Transportation & Mobility Network for Visitors and Residents Alike – a Strategic Imperative for Economic Sustainability

To unlock the opportunities of the growing visitor economy, it is crucial for Puerto Rican residents and visitors alike to access the Eastern Region's diverse landscapes and enriching experiences. Transportation and the logistics of travel play a significant role in visitors' decisions; they cannot spend their leisure time in places they cannot reach. **Presently, besides car rental, the only practicable transportation option for visitors is that offered by tour operators.** However, this option prevents individual exploration and access to all but a few of the experiences that are available.

Lack of mobility options other than the use of a personal vehicle limits visitor dispersion and length of stay, inhibiting the spread of potential economic benefits of visitation more equitably across the region. Access to only a few major attractions also increases pressure on those sites and can cause over-tourism and, ultimately, degradation. Proper destination management[64] requires accessible and ubiquitous transportation infrastructure. Mobility is essential for visitors, and sustainable destinations are increasingly marketed to budget and sustainability-conscious travelers.[65] Thus, within the context of promoting sustainable visitation and reducing related burdens, the development of an integrated transportation system—one that is interconnected and multimodal—is critical.

FPR's *Puerto Rico's Visitor Economy Performance Model*[66] study makes the consequences of these mobility constraints explicit. Although visitor numbers are currently high—with more than two million offshore travelers interacting with the region in 2024—the economic yield remains below potential because the majority experience the Eastern Region as a short-duration excursion. The model shows that day visitors spend an average of only $111 per day, compared to $165 among those staying with friends and relatives and $354 among overnight guests in hotels, inns, and short-term rentals.[67] This differential is not merely a matter of spending habits; it is a structural outcome of a transportation system that offers few options beyond private cars, tours, or isolated shuttles. An integrated multimodal network, linking gateways, town centers, natural assets, and coastal communities, directly addresses this gap by making it feasible for visitors to extend itineraries, explore secondary destinations, and distribute economic activity more evenly across the region. In this way, improved

[64] See the Introduction for a discussion of best practices for destination management.
[65] Global tourism trends confirm that Gen Z and Millennial travelers value destinations that offer multiple modes of transportation, including transit and rider share options, most of which are not yet readily available in the Eastern Region. For more information see: Arora, V. (2024, January 12). Exploring Gen Z and Millennial travel habits. *Skift*. https://skift.com/2024/01/12/exploring-gen-z-and-millennial-travel-habits-new-skift-research/
[66] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact*. https://foundationforpuertorico.org/es/visitor-economy-performance-model/
[67] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact*. https://foundationforpuertorico.org/es/visitor-economy-performance-model/

mobility becomes a central value-capture strategy, converting growth in visitation into measurable gains for local businesses, cultural districts, and community enterprises.

A transportation and mobility network must be tailored to the destination and to the existing conditions of the region.[68] **Collective, shared, or active transportation options expand access for residents and visitors alike, optimizing economic opportunities and lowering carbon emissions and air pollution.** The design of an integrated transportation system can address the needs of residents and be strategic in drawing visitors to areas that can most benefit from and are best prepared for that visitation. The current landscape as described in section 1.3.1 Ground, Air and Sea: Current Conditions, Outlook and Opportunities highlights the region's limited transportation options but also reveals significant untapped potential. Even small-scale but strategically impactful initial steps can serve as critical links, setting off a chain reaction of transformation for the future.

The Evolutionary History of Mobility-as-a-Service and the Powers that it Brings to Bear

Over the past decade, various models of Mobility-as-a-Service (MaaS) have emerged globally, structured around integrating seven core dimensions: multiple transport modes and services, geographic coverage, embracing governmental and private business models, managing diverse and flexible fare structures, well-defined goals, high levels of integration, and strategic market positioning.

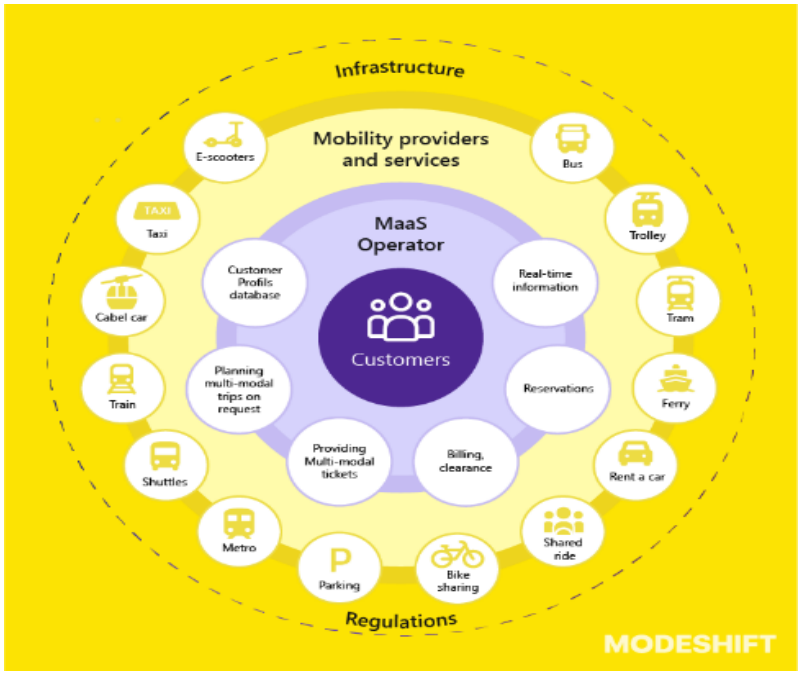


Figure 1.6: Modeshift MaaS illustration

Integration within MaaS systems occurs at multiple levels—ranging from physical infrastructure and operational systems to fare payment mechanisms (**see Figure 1.6).**[69]The extent of this integration can vary significantly across implementations. Some advanced systems demonstrate near-total integration, combining public and private multimodal services with demand-responsive transit and dynamic traffic management. Others remain more limited, offering only basic route planning and fare

[68] Samková, L., & Navrátil, J. (2023). Significance of the public transport for tourism development in destinations. *DETUROPE - The Central European Journal of Tourism and Regional Development*, *15*, 158–189. https://doi.org/10.32725/det.2023.008
[69] Modeshift. (2023, October 31). *What Is Mobility As A Service (MaaS) & Everything You Need To Know About It*. https://www.modeshift.com/what-is-mobility-as-a-service-maas-everything-you-need-to-know-about-it/

information without deeper service coordination or user interactivity.[70] But the premise is that **integrated transportation technology can provide a tailormade service based on the user's needs**[71] while providing crucial user and demand data to operators, thus increasing overall efficiency.[72]

One measure of MaaS success is its ability to make multimodal travel more appealing than owning and driving a car.[73] Users of a robust MaaS transportation system can access the necessary information that allows them to plan a trip that considers total time to destination, route, and real-time changes across a variety of transportation modalities. They should be able to pay for the different modalities they will use on their trip with a single interface or even a single transaction. Promotional and educational campaigns are pivotal **to ensure that the user interface and services are visible, understandable, and accessible** across the spectrum of digital literacy because, ultimately, the technology is meant to simplify transportation use for all potential riders.

What may not be visible to the user is that this level of integration requires extensive coordination (as described in the Governance Pillar), starting with the plan and design of each transportation service. It involves technology implementation that facilitates data integration and visibility across modalities, whether public or private, as well as a shared platform which all require ongoing maintenance and continuous cooperation among the managers of the systems. Once fully integrated, these systems unlock powerful additional innovations.

The Power of Real Time, Two-Way Visibility – a Revolution in Transportation

San Francisco, an early adopter of MaaS technology, abandoned rigid schedules in favor Dynamic Headway Management allowing buses to space themselves along routes – to address the public transit challenges during and after the Covid pandemic[74]—leading to significant improvements in

[70] Daou, S., Leurent, F., & Papet, L. (2023). The MaaS concept in the field as of 2021: Typology of implementations based on an international panorama. *Transportation Research Procedia*, *72*, 541–548. https://doi.org/10.1016/j.trpro.2023.11.437

[71] Mitropoulos, L., Kortsari, A., Mizaras, V., & Ayfantopoulou, G. (2023). Mobility as a Service (MaaS) planning and implementation: Challenges and lessons learned. *Future Transportation*, *3*(2), 498-518. https://doi.org/10.3390/futuretransp3020029

[72] The MaaS Alliance. *Mobility as a Service?* MaaS Alliance. https://maas-alliance.eu/homepage/what-is-maas/

[73] Mitropoulos, L., Kortsari, A., Mizaras, V., & Ayfantopoulou, G. (2023). Mobility as a Service (MaaS) planning and implementation: Challenges and lessons learned. *Future Transportation*, *3*(2), Article 2. https://doi.org/10.3390/futuretransp3020029

[74] Swan, R. (2024, December 31). Outgoing Muni chief Jeffrey Tumlin on the real reason robotaxis are bad for S.F. *San Francisco Chronicle*. https://www.sfchronicle.com/sf/article/muni-jeffrey-tumlin-robotaxi-19998692.php

reliability, shorter wait times, and higher ridership and earning accolades as a model for urban transit reform and positioning the city as a global leader of the future of urban mobility.[75]

The San Francisco initiative demonstrated that even in mass transit settings there is merit to moving away from completely fixed schedules. Rigid schedules are tied to the historic need for people and transportation systems to coincide. However, with the **real-time two-way (passenger/system) visibility** that technology integration allows, even traditionally undynamic municipal buses can be managed more flexibly and dynamically. Passengers can see where the buses are and when they are arriving, and the bus systems, and the drivers, can see where the passengers are and where the buses need to go to pick them up. Likewise, passengers can see when collective transit is not nearby and then choose other ways of getting to their destination such as walking, riding a bike or hailing a rideshare.

Public / Private Cooperation and Services Integration – the Case for a Shared Services Model

Coordinated efforts between public agencies and private entities are needed to offer an array of tailored solutions available through such a mobile app. Private enterprises, public agencies, or public-private partnerships can introduce on-demand transportation services, shared mobility solutions, and last-mile connectivity options that extend beyond traditional public transit models, ensuring a more comprehensive and inclusive transportation network for the region. A multijurisdictional and multisectoral entity, such as a proposed Regional Economic Development Council, detailed in the Governance Pillar, can facilitate adoption and management for such an integrated mobility-as-a service-platform.

[75] Pawlowska, K. (2024, December 16). San Francisco's transit future is the best in the world, researchers say. *SFGate*. https://www.sfgate.com/local/article/san-francisco-transit-future-best-world-study-says-19976634.php

Case Study: Singapore A Successful Implementation of Mobility-as-a-Service (MaaS)

Overview

Singapore, a small island country in Asia with a population of 6 million, is recognized for its early and successful adoption of an integrated transportation system. By combining efficiency, accessibility, and sustainability, Singapore's transport network connects buses, rail lines (Mass Rapid Transit - MRT), taxis, walking paths, and cycling lanes into a cohesive, multimodal experience enabled by smart technology.

Feature	Description
Smart Technology Integration[76]	Government investments in digital infrastructure enable contactless payments, digital displays, and real-time mobile apps for routes, schedules, and congestion.
Predictive Maintenance[77]	The system uses predictive analytics to anticipate failures and minimize service disruptions, enhancing reliability.
Feeder Bus Network[78]	Buses serve as local connectors between neighborhoods and main MRT lines, ensuring system-wide access.
Modal Optimization[79]	Apps promote alternate travel modes when certain transit modes are at capacity, balancing system demand.
Multimodal Accessibility	The integration of walking and cycling with transit planning provides first- and last-mile solutions.

Key Features of Singapore's MaaS System

Relevance to Puerto Rico's Eastern Region

While Singapore's urban density and infrastructure differ from the conditions in Puerto Rico's Eastern Region, its example offers insights into the transformative potential of high-level technology integration in mobility systems. Strategic use of digital tools and multimodal planning could be adapted to meet the mobility needs of both residents and visitors in the Eastern Region, fostering more sustainable and inclusive transportation solutions.

[76] Land Transport Authority of Singapore. *Getting around*. Land Transport Authority. https://www.lta.gov.sg/content/ltagov/en/getting_around.html
[77] Land Transport Authority of Singapore. *Growing Singapore's land transport network*. Land Transport Authority. Retrieved March 7, 2025, from https://www.lta.gov.sg/content/ltagov/en/upcoming_projects.html
[78] Land Transport Authority of Singapore. *Bus network: The bus way to reach your destination*. Land Transport Authority. https://www.lta.gov.sg/content/ltagov/en/getting_around/public_transport/bus_network.html
[79] Sukawan, H. A. R., & Rachmawati, R. (2021). MyTransport.SG as a new communication platform in implementing smart mobility in Singapore. *Journal of Physics: Conference Series, 1834*(1), 012006. https://doi.org/10.1088/1742-6596/1834/1/012006

Retrofitting Existing Transportation Services Infrastructure with MaaS Technology

In the Eastern Region, intercity buses and municipal trolleys, along with privately operated carros públicos operators and other ride-hailing services, can be retrofitted with this technology and can form the primary level of integration for this system. As cooperation among these multiple operators and modalities grows and data collection and sharing advances, new and ever more powerful modes of MaaS technology can happen. This can include the adoption of ever more sophisticated versions of Demand-Responsive Transportation (DRT) so that sufficient vehicles can be in the right place at the right time. The system would know who had booked what trips in advance and take those in consideration alongside last-minute demand. It would see capacity shortages as they were developing and begin deploying additional capacity from adjacent regions, areas or routes. Its software-based platform could add new mobility services as they emerge in the future. It could enable the pooling of vehicles or drivers from different operators and automatically compensate them for taking on the temporary responsibility. Even parking spaces could be pooled, reserved in advance, and paid for. This dynamic transportation network could reshape the future of the region.

Local Insight – Vieques and Culebra

Due to the particularities of the island-municipalities, Vieques and Culebra are two places where carros públicos have remained relevant and common. Drivers work around the ferry schedule to pick up customers, benefiting from the fact that few non-residents are allowed or able to take their car on a cargo ferry. Therefore, the conditions in the island municipalities have been conducive for this type of transport to continue. Integrating technology can allow for carros públicos to be more efficient and continue to serve island-municipality visitors and residents.

The Rebirth of the Carro Público as a Powerful Microtransit Engine

Puerto Ricans are familiar with carros públicos, even as these are no longer as common as they once were. But the necessary infrastructure—vehicles, drivers, pickup points—continues to exist, usually in visible, convenient locations such as town centers or commercial areas. Currently, there are about 42 routes in operation in ten of the Eastern Region municipalities.[80] [81] However, increased visibility is critical: routes are not even visible in Google or Apple Maps, which means that inexperienced riders or visitors may be unaware of how to access them.

Most would be surprised to find how readily technology integration could transform this mode of transport into a powerful engine that can be the driving force of an integrated regional transportation network. The important difference is that it can allow passengers to see in real time where available vehicles are located and permit them to hail a ride via their device. It would direct the driver to a pickup point at or near the passenger's location. It would provide real-time updates to passengers on pickup status.

[80] This information is based on publicly available information from municipal websites, official Facebook and social media pages, news articles, and government documents available at the time of writing.
[81] Rosario, F. (2023, August 21). *Cada vez más personas cogen pon en los trolleys municipales*. Primera Hora. https://www.primerahora.com/noticias/gobierno-politica/notas/cada-vez-mas-personas-cogen-pon-en-los-trolleys-municipales/

Market analysis and feasibility studies would provide evolving insight regarding user preferences, and ongoing analysis of levels of activity on microtransit routes could become essential to identifying pickup/ drop off points that could evolve into mobility hubs; routes would evolve to accommodate users' movement patterns.

Transportation Affordability- a Key Visitation Growth Factor in a MaaS-Enabled Region

A significant portion of tourists arriving in Puerto Rico can be considered lower middle income or below. This can be inferred from the prevalence of low-cost and ultra-low-cost carrier (ULCC) usage.[82] [83] [84] Combining the shares of Frontier and Spirit, both recognized ULCCs, this accounts for approximately 30.34% of total passenger traffic. Including Southwest Airlines, known for its low-cost model, in the equation raises this figure to 41.3%. JetBlue, while not a ULCC, operates as a low-cost carrier and contributes an additional 25.0% of passenger seats to Puerto Rico, bringing the combined total of low-cost carrier seats to approximately 66.3% of passenger traffic. With 30% of air passengers arriving via ULCCs and 35% via LCCs that often attract budget-conscious travelers, it's reasonable to estimate that at as many as 50% of tourists to Puerto Rico may be classified as lower-middle-income or below.

Affordable Access and Mobility Translates to Broader and Deeper Visitation

These visitors, if enabled with both information and access to affordable transportation, could visit and engage with, and potentially lodge within, communities that most need that visitation, and enjoy the experiences on offer. Arriving in the region on the intercity buses and carros públicos or MaaS-enabled ferries, they could make their way throughout the region on carros públicos, municipal trolleys, or micromobility options. They would be welcomed into communities where they could get to know the authentic humanity of their residents, listen to the music, dance, eat local and lodge local. They could then continue with their itinerary, moving on the transportation network, from place to place, and from experience to experience, and thus carry out an immersive exploration of the region.

A Well-Designed Eastern Regional Travel Pass – a Successful Model Worldwide

Building upon the MaaS-integrated transportation infrastructure, a well-designed Eastern Region Travel Pass could bring about an expansion in visitation and the dispersion of that visitation. This offering would be particularly—but not exclusively—appealing and effective with visitors with

[82] 2024: JetBlue: 24.99% Frontier Airlines: 17.44% Spirit Airlines: 12.90% American Airlines: 11.81% Southwest Airlines: 10.94%

[83] Bureau of Transportation Statistics. (2025). *San Juan, PR: Luis Munoz Marin International (SJU) Scheduled Services except Freight/Mail* [Dataset]. https://www.transtats.bts.gov/airports.asp?20=E&Nv42146=fWh&Nv42146_anzr=fn0+W7n0%2C+ce%3A+Y7v5+Z701C+Zn4v0+V06r40n6v10ny&pn44vr4=SNPgf&utm_

[84] *Research Update: December Travel Insights on Revenue and Growth*. (2025, January 15). Discover Puerto Rico. https://www.discoverpuertorico.com/industry/research/research-update-december-travel-insights-revenue-growth/2025-01-15

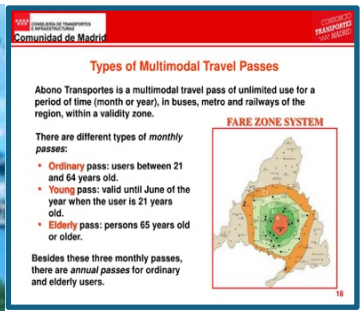
moderate income who may not have access to a costly rental vehicle[85] or an even more costly and more exclusive chauffeur-driven limousine or private guide.

MaaS-Enabled, Strategic, Individual Fare Design Can Promote Ridership and Sustainability

With growing demand for visitation, a well-designed fare cross-subsidization model—where visitors and occasional riders pay higher fares to support lower costs for frequent resident users—combined with price differentiation between pre-booked and on-demand trips, could make ferry operations and the Eastern Region Integrated Transportation Network revenue-positive. Pre-booking certainty is a particularly powerful lever in Mobility-as-a-Service (MaaS) and demand-responsive transport systems.

Capacity Must Follow Demand – Resulting Frequency can Translate to More Demand

It will also be likely necessary in the future to significantly expand the capacity of the planned intercity bus route given the current level of ferry travel. With the availability of this bus service, many who currently use personal vehicles to travel from San Juan to Fajardo or Ceiba for ferry service, would likely to be motivated to use this bus service as a cost-effective alternative. With increasing demand, the frequency of the service might be increased to hourly departures, allowing bus arrivals and departures could align more seamlessly with ferry schedules thus making visits to the islands become easy and convenient.



[85] While there is no data for Puerto Rico, across a broad array of U.S. destination airports, between 3-5% of arriving passengers rent cars. Because of local challenges with language and signage, this number is likely even lower in P.R.

Multimodal Travel Passes in a MaaS-enabled Transportation Network

Multimodal travel passes, exemplified by the iconic Eurail Pass, have transformed tourism and transportation economics worldwide. Introduced in the late 1950s, the Eurail Pass reshaped how visitors explored Europe, turning fragmented rail networks into a seamless travel experience.[86] This innovation dramatically increased visitor mobility, extending stays, dispersing tourism spending more broadly, and fueling economic growth in towns previously overlooked.

Such passes also proved vital in cross-subsidizing public transport infrastructure. By bundling various modes of travel into affordable, flexible packages, revenues from tourism directly supported infrastructure development, enhanced service quality, and provided financial stability for transportation systems. Successful examples include Japan's JR Pass,[87] London's Oyster card,[88] and New York's MetroCard,[89] each illustrating how visitor-focused transportation packages can sustainably finance broader transit improvements.

Today, well-designed multimodal transportation packages continue to demonstrate significant potential—not only as powerful drivers of tourism and visitor spending but as strategic tools for economic resilience and sustainable mobility.

Figure 1.7: Illustrative Mockup of an Eastern Region Pass

[86] *Our Company*. Eurail. https://www.eurail.com/en/about-us/our-company
[87] For more information about the JR Pass see: https://www.jrpass.com/
[88] For more information about the Oyster card see: https://tfl.gov.uk/travel-information/visiting-london/visitor-oyster-card
[89] For more information about the New York Metro card see: https://www.mta.info/fares-tolls/subway-bus/metrocard

Via - Technology Management System: An Established Leader in MaaS and DRT Technology and Services

Founded in 2012 in New York City, Via is one of the largest demand-responsive transit (DRT) platform providers globally. Originally launched as a ride-pooling shuttle service, Via has evolved into a leading Transit Tech partner for public agencies, powering on-demand transit in over 500 cities worldwide.[90]

Key Capabilities

Capability	Description
Real-Time Dynamic Scheduling	Proprietary algorithms enable real-time ride matching and continuous route optimization based on traffic conditions and ride demand.
Multi-Modality	Via supports multimodal trip planning, combining fixed-route transit and on-demand services within a single app experience.
Multi-Operator Management	The platform enables coordinated operations across multiple transit agencies and private operators.
Integrated Fare Structures	Riders can pay through the app using credit cards, transit passes, or integrated fare systems for seamless multimodal trips.
Micro-Mobility Integration	Via's app presents alternative first- and last-mile options, including e-scooters and bikes, strengthened by its 2023 acquisition of Citymapper.
Paratransit Solutions	The platform accommodates riders with disabilities through configurable features like wheelchair-accessible dispatch and integrated eligibility management.
System Design and Consulting	Via assists agencies with service simulations, feasibility studies, network design, and ongoing performance analytics.

Business Model, Pricing and Operating History

Via operates as a for-profit company, offering its services through SaaS contracts or turnkey operations. Pricing typically involves a platform fee plus per-vehicle-hour or per-ride charges. Via launched operations in 2013 and expanded rapidly into key U.S. cities,[91] Europe through ViaVan, and other global markets. Milestones include the acquisitions of Remix (2021)[92] and Citymapper (2023).[93]

Key Clients and Projects

Client	Project Description
Los Angeles Metro	"Metro Micro" initiative.
Berlin's BVG	BerlKönig pilot project.
Transport for London	Multimodal transit support.
King County Metro	On-demand service management.
Transport for New South Wales	Integrated transit solutions.
Puerto Rico	Support provided to PRITA

Service Evolution

While Via phased out certain consumer-facing services (e.g., ViaVan in London),[94] these decisions reflect a strategic shift toward agency partnerships rather than platform limitations. Via's growth contrasts with early competitors like Bridj and Chariot that exited the market.

1.3.3 Multimodality Expanded: On-Demand Microtransit and Micromobility

Micro-Transit for the Eastern Region – Back to the Future with Carros Públicos

The Eastern Region's extensive road networks, sprawling residential areas, and mountainous topography require transportation solutions that look beyond bus transit modalities best suited to dense urban developments. Connecting intercity buses to intra-municipal trolleys would be an initial step but would limit mobility to locations along predefined routes. **The transportation network needs to be able to reach potential riders where they are and transport them to where they need to be.** It needs to deal with existing land-use patterns, population density and geographic conditions. It needs to solve the foundational challenge of service frequency, network design and reliability.[95] For this, more flexible modalities and integrated technology are required.

On-Demand Services - Integrating with, but Moving Beyond Fixed Routes and Schedules

Fixed-route, fixed-schedule collective services—such as large buses and trolleys—restrict the frequency, flexibility, and accessibility essential for successful, user-friendly transit systems.[96] Moving beyond traditional fixed-schedule modes—such as buses, trains, ferries, and planes—emerging options around shared mobility and on-demand services offer greater flexibility by serving smaller groups and even individual users. These solutions are driven by data analytics and cutting-edge route optimization technologies, including artificial intelligence. They are unlocking entirely new possibilities in transportation design, enabling more adaptive, efficient, and user-centered mobility systems than ever before.

Universal Real Time Visibility and Dynamic Management - Leapfrogging Bus Stops and More

In a system with universal real-time visibility across all modalities, buses and other collective transport vehicles could depart earlier than their scheduled time if there were no passengers to wait for and

[95] Vuchic, V. R. (2005). *Urban Transit: Operations, Planning and Economics* (1st ed.). J. Wiley & Sons.
[96] Walker, J. (2012). *Human Transit: How Clearer Thinking about Public Transit Can Enrich Our Communities and Our Lives* (Revised Edition). Island Press.

no passengers on the way—the system would know. An individual bus could skip stops where there was nobody for it to pick up or drop off because the system would know. These levels of dynamic management were almost unimaginable, but they are now becoming practicable because of real/time two-way visibility technology and integrated mobility and transportation platforms. These flexible, dynamic approaches can be applied even more powerfully to the even more flexible microtransit and micromobility services that can be integrated into the new regional transportation networks.

Microtransit – Flexible and Scalable Mobility

Microtransit is tech-enabled shared transportation that lives in the space between traditional fixed-route transit (city buses or ferries) and ride-hailing technology (e.g. Uber).[97] Establishing on-demand microtransit is a cost-effective, flexible and scalable mobility solution that can leverage existing regional assets—the carros públicos and the many places where they can flexibly stop—to connect residents and visitors to major transit nodes, mobility hubs, and regional destinations. It relies on passenger vans, cutaway vans, or minivans that can accommodate more passengers –typically 8-12 rather than the 5 passengers of typical private vehicles.

Microtransit – Dynamism and Adaptability

Microtransit is flexible; it need not depend on established mobility hubs—any pickup point that is safe and does not deviate too far from the general route is fair game; routes do not have to be fixed; they can be limited to a particular geographic area or they follow a general, but flexibly adapting, route. The system could also collect data to dynamically plan future routes or adapt them based on historical activity. Microtransit routes can constantly be adapted for efficiency leveraging data acquired in real time; so-called "hyper pooling" algorithms define itineraries based on rider demands to increase vehicle occupancy and reduce travel times.[98]

Microtransit, Micromobility and Paratransit—The Demand Responsive Transport Solutions

This transportation is most effective as Demand-Responsive-Transport (DRT), where users can call or reserve using a mobile app. DRT has sometimes been used for collective paratransit services,[99] but it also lends itself to low-density areas, since vehicles adapt routes based on demand. Technology-outfitted carros públicos can fill gaps and complement transportation system connectivity as it develops. Moreover, since Covid, paratransit providers have experimented with "commingled services" [100] where technology facilitates providing on-demand transportation for riders with disabilities along with the general population for additional cost savings from shared ridership.

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[97] Via Transportation. (2024, July 18). *What is microtransit?* Ride with Via. https://ridewithvia.com/resources/what-is-microtransit

[98] Kucharski, R., & Cats, O. (2024). Hyper pooling private trips into high occupancy transit like attractive shared rides. *npj Sustainable Mobility and Transport*, *1*(1), 1–14. https://doi.org/10.1038/s44333-024-00006-4

[99] Paratransit service is a complementary transit service for people with disabilities required of FTA-funded public transit agencies that operate fixed-route services, to comply with the American Disabilities Act. See the U.S. Department of Transportation, https://www.transit.dot.gov/funding/procurement/third-party-procurement/paratransit-services

[100] See for example, American Public Transportation Association's *Commingling 101: The Definitive Guide to Integrating Microtransit with Paratransit* guide for commingling services through technology. Most technology platform providers include commingling functionality. For more information see: https://knowledgehub.apta.com/resource/via-commingling-101-the-definitive-guide-to-integrating-microtransit-with-paratransit

As shown in the case studies below, there are a growing number of diverse and successful implementations of *on-demand shared rider service* are happening in many places. Their *seamless, technological integration* with multi-modal public transportation networks that leverage public and private funding models. Given the paucity of public transportation systems in the Eastern Region—municipalities have limited, intra-municipal bus/trolley service and an intercity bus route coming soon—there is a great need for flexible, efficient, ubiquitous, integrated microtransit to fill the transportation gap.

Examples of Flexible Microtransit Offerings in Places Across the U.S.

Microtransit offers greater adaptability than traditional collective public transportation and can fill gaps that exist between urban and suburban spaces. On demand microtransit initiatives involving the provider *Via* have been successfully implemented in different cities across the U.S. to fulfill different needs.[101]

In Austin, Texas, Via on-demand shuttle system, along with the city's public transport system, offer complementary services to provide fully accessible transport to five different zones to connect urban, suburban, and rural areas of the city.

In Birmingham, Alabama, the on-demand system was designed to connect low-income communities to essential services (including grocery stores and health care) and to the city's intermodal hub.

Jersey City launched a microtransit system to fill transit gaps so that low-income residents could access more than half of the jobs in the city.[102] Forty percent of rides started or ended near affordable housing.

A major destination like Lake Tahoe[103] has also introduced app-based on-demand shared ride services to bridge the "first and last mile" gap for visitors. The system (similar in capability as Via's for Jersey City, Birmingham and Austin) reduces reliance on personal vehicles, cuts emissions, and increases overall accessibility. Coordinated by the League to Save Lake Tahoe, this initiative uses a commercially available microtransit platform to provide curb-to-curb on-demand service across three systems: Mountaineer (Olympic Valley), Tart Connect (North Shore), and Lake Link (South Shore) where riders can request free, door-to-door rides using an app, associated to other trip planning services.

[101] For more information see: https://ridewithvia.com/
[102] Jiang, M. (2024, February 28). From transit deserts to two million rides: four years of microtransit in Jersey City. *Via*. https://ridewithvia.com/resources/from-transit-deserts-to-two-million-rides-four-years-of-microtransit-in-jersey-city
[103] See: *Visit Lake Tahoe* website for information on their Curb-to-Curb On-Demand Service across three systems: Mountaineer (Olympic Valley), Tart Connect (North Shore), and Lake Link (South Shore) where riders can request free, door-to-door rides via an app at https://visitlaketahoe.com/travel/getting-around-tahoe/

Across the US, companies like *Freebee* and *Circuit* operate open-air electric vehicles and provide on-demand services with flexible routes with the use of their app. These on-demand services serve areas where companies like UBER or Lyft have few or no drivers. While these local solutions can fill some first/last mile transit gaps, unlike an integrated Mobility-as-a-Service (MaaS) system, they are not designed to provide regional connectivity across rural or low-density geographies, nor support flexible pricing and package bundling for other amenities that can support dispersion of visitors.

The Synergy of Visitors and Residents in Microtransit and Mobility-as-a-Service

In the Eastern Region, microtransit can fill the transportation needs of visitors and local residents alike. Many natural sites have limited or non-existent parking infrastructure; integrating them into microtransit routes can bring a wider public to enjoy these attractions.

Micromobility—the Healthy Option

Another way to expand mobility options for individual users is micromobility, which refers to the use of small, lightweight vehicles for short-distance travel, typically in urban or suburban settings. Micromobility devices include bicycles, electric bicycles (e-bikes), scooters, electric scooters (e-scooters), and other similar devices.[104] These mobility modalities perform best in urban settings and areas with the necessary infrastructure to ensure safety, such as sidewalks and bike lanes. Micromobility offers individuals the flexibility to move through a destination at their own pace, supporting activities like self-guided tours for visitors or providing access to nearby experiences and services.

Local Insight: Las Picúas and Luquillo Kiosks Parking Challenges

For example, Palmer, Rio Grande's proximity to various attractions — including serving as the gateway to El Yunque National Forest's Portal— positions it as a potential starting point for multiple micro transit routes including attractions such as the Luquillo Kiosks and Las Picúas beach which are a ten-minute drive away. Both popular attractions struggle with parking shortages during peak times. Microtransit, as well as micromobility options, can offer a viable solution to these parking shortages, avoiding risky roadside parking and the impact of automobiles on fragile ecosystems.

[104] Regional Transportation Authority of Chicago. *What are mobility hubs?* RTA Chicago. https://www.rtachicago.org/communities/toolkits-and-education/what-are-mobility-hubs

Micromobility
—Juan Carlos Parra, Skootel

Micromobility around the Eastern Region's municipalities and El Yunque offer a promising solution to enhance sustainable tourism and meet local transport needs. The introduction of electric scooters and e-bikes in this region would reduce vehicle congestion and improve the visitor experience by allowing tourists and locals alike to navigate the area more freely and with less environmental impact. Given El Yunque's popularity, strategically placed micromobility options could ease access to the rainforest and surrounding communities, fostering a positive flow of visitors across popular sites while minimizing emissions.

For residents in nearby areas, such as those connecting to El Yunque's PR-191 corridor, micromobility offers convenient, affordable alternatives for first- and last-mile travel. This supports younger populations, including students and eco-conscious locals, in managing shorter commutes without personal vehicles. This approach aligns well with the integrated transit vision set for the Eastern Region, which emphasizes sustainable, multimodal transport options and reducing reliance on private vehicles.

Investment opportunities are strong, given the relatively low infrastructure needs for establishing micromobility. Investors could consider scalable fleet expansions starting at core areas, developing charging stations, and building partnerships with local businesses and eco-tour operators to reach high-traffic zones. This approach would not only improve mobility but also support the region's environmental and economic objectives, making micromobility an ideal fit for sustainable growth in El Yunque.

Mobility-as-a-Service (MaaS) platforms enable the integration of private micromobility options with public transportation systems, improving visibility and coordination across different travel modes—particularly within urbanized areas and historic town centers.

Successful micromobility models already exist in Puerto Rico, as seen in the major tourist and business centers, particularly in the San Juan metro area. Currently, at least two operators provide dockless e-bike and e-scooter rentals through mobile app, which can take users around popular tourist areas in Santurce, Condado and into Old San Juan, as well as the business district of Hato Rey and large university campuses.[105]

One of the largest operators, Skootel, powered by the Bird app, has been scaling their Mayagüez, San German and Lajas) in 2023 to ten currently operations since first launching in 2019, going from serving five municipal markets (San Juan, Guaynabo, added the towns of Ponce, Bayamón, Aguadilla, Cabo Rojo, and Carolina), while also expanding their footprints within the original cities.

Other micromobility services have emerged in Puerto Rico, some as pop up or mobile rentals setting up according to demand in a given area, while others are a fixed concession, such as RidesPR[106] at Isabela's Paseo Lineal Costero boardwalk. **Although micromobility services are often seen as tourist-oriented, their growing popularity in dense urban areas and near campuses reflects increasing use by local residents for short trips and first- or last-mile connections to other transit modes.** Shared bike services, in particular, have been shown to increase both the number and diversity of cyclists on the road. This broader usage can help normalize cycling as a

[105] So far, San Juan only has regulations for micromobility devices, prohibiting use of motorized scooters on the roads and sidewalks of Old San Juan. Autonomous Municipality of San Juan, according to Executive Order MSJ-034 (May 24, 2021).
[106] For more information see: https://ridespr.com/

practical mode of everyday transportation, beyond its traditional association with sport or recreation.[107]

Micromobility solutions in the Eastern Region can be implemented even before transportation terminals and multimodal mobility hubs are fully developed. Because micromobility is especially well-suited to traditional town centers, opportunities for near-term deployment already exist. For instance, Luquillo's historic town center—located near beaches and popular restaurants—offers an ideal setting for micromobility integration. While PR-3's heavy traffic makes it unsuitable for options like electric bicycles or scooters, Ocean Drive, which runs parallel to the main road, provides a safer and more viable corridor for micromobility infrastructure. This route not only accommodates cyclists and scooter users but also connects to roads extending as far as the Kioskos de Luquillo.

Walking from the town center to the kiosks can be difficult for many pedestrians; however, electric bicycles or scooters could significantly enhance access, creating a more seamless and efficient connection between key destinations while reducing the volume of cars attempting to park at the kiosks. In alignment with this vision, the municipality's transportation plan prioritizes Complete Streets design to improve pedestrian and cycling infrastructure between the town center, the public Monserrate Beach facilities, and the Kioskos de Luquillo—ultimately promoting greater safety and mobility for non-motorized users.[108]

Expanding mobility options in the Eastern Region is essential to unlocking its full economic and tourism potential while ensuring sustainable, equitable access for both residents and visitors. Integrating innovative transportation models such as Mobility-as-a-Service, on-demand microtransit, and dynamic multimodal mobility hubs, the region will improve connectivity, reduce congestion, and foster inclusive economic growth. However, true regional accessibility also requires investment in larger-scale infrastructure, particularly in air travel. As ground transportation solutions evolve, revitalizing the José Aponte de la Torre Airport in Ceiba will be critical, providing a direct entryway to the region and positioning it as a central node for both domestic and international connections.

[107] Goodman, A., Green, J., & Woodcock, J. (2014). The role of bicycle sharing systems in normalising the image of cycling: An observational study of London cyclists. *Journal of Transport & Health*, 1(1), 5-8.
[108] Estudios Técnicos Inc., & Kein Engineering PSC. (2021, April 30). *Strategic transit plan for the Municipality of Luquillo*. Municipio de Luquillo. https://estudiostecnicos.com/wp-content/uploads/2021/05/Plan-de-transporte-colectivo-para-Luquillo-Borrador-para-revision-publica.pdf

Key Findings and Insights to Guide Enabling a Regional Transportation & Mobility Network for Visitors and Residents Alike

1. The Strategic Need for Integrated Mobility

Key Findings

- Personal vehicle dependency limits visitor dispersion and reduces the economic benefits of tourism.
- Over-tourism at a few accessible sites threatens environmental and cultural assets.
- A multimodal, integrated system (MaaS) improves access, sustainability, and economic equity.

Initiatives

- Design a multimodal network with shared, collective, and active transportation options.
- Target both visitor and resident mobility needs, especially in underserved and rural areas.
- Implement regional placemaking strategies around accessible mobility nodes.

2. Mobility-as-a-Service (MaaS) – Technology for Seamless Integration

Key Findings

- MaaS enables unified trip planning, booking, and payment across all transportation modes.
- Global models (e.g., Singapore) show how integrated systems can transform mobility.
- Two-way real-time visibility allows Demand-responsive service, increasing user satisfaction.

Initiatives

- Implement a regional MaaS platform connecting ferries, trolleys, intercity buses, and carros públicos.
- Partner with providers like Via and TRC for tech infrastructure and system design.
- Launch pilot programs with visible public education campaigns to build trust and literacy.

3. Carros Públicos as the Backbone of Rural Microtransit

Key Findings

- Carros públicos still operate ~42 routes but lack visibility and tech integration.
- They offer high flexibility, local knowledge, and community-based service delivery.
- Integration with DRT tech would convert them into dynamic microtransit solutions.

Initiatives

- Retrofit carros públicos with GPS, booking apps, and digital fare systems.
- Map routes and publish on Google Maps and other navigation platforms.
- Launch feasibility studies to evaluate microtransit hubs and flexible stops.

4. Affordability and Access for Budget-Conscious Travelers

Key Findings

- ~66% of air arrivals come via low-cost carriers; budget travelers need affordable mobility.

- Most visitors do not rent cars, limiting them to only a few accessible experiences.
- Equitable fare design can boost ridership and help subsidize resident transit use.

Initiatives

- Develop an Eastern Region Mobility Pass with bundled fares (daily, weekly, regional).
- Promote local lodging, eateries, and attractions through transit-accessible itineraries.
- Use differential pricing to support sustainability and equity.

5. Micromobility and Complete Streets – Expanding the Options

Key Findings

- E-bikes, scooters, and bikes can solve first/last mile access problems in town centers.
- Current micromobility in PR is mostly metro-focused but shows strong growth trends.
- Places like Luquillo and Palmer are ready for immediate deployment along safe corridors.

Initiatives

- Establish micromobility corridors around El Yunque access points.
- Promote shared bike/scooter services in compact historic towns.
- Align with Complete Streets investments to ensure safety and accessibility.

6. Microtransit and DRT – A Flexible, Scalable Solution

Key Findings

- On-demand microtransit fills service gaps between fixed-route transit and ride-hailing.
- Real-time routing increases flexibility and scalability in low-density areas.
- Case studies (Jersey City, Lake Tahoe, Austin) show effective implementation across geographies.

Initiatives

- Deploy on-demand microtransit fleets in coordination with intercity bus and ferry terminals.
- Use predictive demand data to manage dynamic routing and vehicle allocation.
- Integrate paratransit services with general ridership through commingled service models.

7. From Mobility to Economic Opportunity

Key Findings

- Seamless mobility drives visitor dispersion, supports local economies, and enhances resiliency.
- Transportation access is foundational to equitable regional development.
- Integrated hubs—air, sea, land—are essential for scalable, resilient growth.

Initiatives

- Prioritize investments in the Ceiba Airport, ferry terminals, and regional multimodal hubs.
- Support municipal transit planning with digital tools and shared governance.
- Embed mobility strategy into workforce development, placemaking, and tourism promotion.

1.3.4 The Ceiba Airport, a Strategic Asset for the Region and Future Resiliency

The Ceiba Airport was an all-important military airfield that sprawled across 1,646 acres of the former Roosevelt Roads Naval Station that once saw every imaginable U.S. military aircraft from the heaviest transports to strategic bombers and fighter aircraft.

After the closure of the naval base, Ceiba's airport commenced commercial airport operations in November 2008, when it replaced the Diego Jiménez Torres Airport in Fajardo.[109] Currently Ceiba's airport only provides scheduled passenger service to the island municipalities of Vieques and Culebra through three commercial airlines operating small aircraft.

Ceiba's airport must be regarded as critically necessary infrastructure for the Puerto Rico archipelago, as climate change projections underscore the importance of strengthening redundancy within Puerto Rico's aerial connectivity assets.

The Future Vulnerability of Luis Muñoz Marín Airport to Climate Change

Currently, Luis Muñoz Marín International Airport (LMM) in San Juan receives most of the domestic and international air traffic and is the essential air access point to the island of Puerto Rico. However, the Luis Muñoz Marín airport faces significant challenges in the future due to climate-change-induced sea level rise. The draft Puerto Rico Climate Change Mitigation, Adaptation and Resilience Plan points out that SJU is experiencing early flooding events in some facilities.[110]

SJU has two runways, one which sits at an elevation of 9.6 feet above sea level, and the main runway which is only 6.8 feet above sea level.[111] The NOAA Sea Level Rise Viewer found that projected sea level rise may render parts of Luis Muñoz Marín airport's infrastructure inoperative by 2050,

[109] The Fajardo airport was permanently closed by the FAA in 2015. *Permanent Closure of Diego Jimenez Torres Airport, Fajardo*, Puerto Rico, 80 FR 9847 (notified February 24, 2015) (effective April 30, 2015). https://www.federalregister.gov/documents/2015/02/24/2015-03776/permanent-closure-of-diego-jimenez-torres-airport-fajardo-puerto-rico

[110] Comité de Expertos y Asesores sobre Cambio Climático. (2024). *Plan de mitigación, adaptación y resiliencia al cambio climático en Puerto Rico.* (Borrador). Gobierno de Puerto Rico. https://www.drna.pr.gov/ceacc/publicaciones/borrador-final-plan-ceacc-2024/

[111] Federal Aviation Administration. (2025, February 20). *(SJU) Luis Munoz Marin Intl Master Record*. Federal Aviation Administration. https://adip.faa.gov/agis/public/#/airportData/SJU

potentially reducing operational capacity by up to 50% and restricting use to smaller aircraft, impacting air operations and passenger movement in Puerto Rico's San Juan region. [112]

While significant, permanent sea level rise may not occur until well into the second half of this century, even the intermittent or partial impairment of LMM due to storms and flooding is a major and imminent threat. Puerto Rico needs to plan and execute adaptation strategies for critical infrastructure such as airports. **In terms of long-term sustainability, inclement weather and climate change must be considered and integrated into any future design to ensure long-term resiliency for the island's aviation system.**

Climate change underscores the urgent need for an alternative airport to mitigate future risks at SJU. With projections indicating intensified climate-related events, the risk of flooding and operational shutdowns at LMM is increasing.[113] Some have proposed addressing that future scenario by relocating air operations to Rafael Hernández International Airport in Aguadilla (BQN), which is not susceptible to sea level rise or flooding. However, it would not be a desirable first option to replace SJU its two-hour distance from San Juan limits its effectiveness as a backup hub.

Ceiba's runway, at 38 feet above sea level,[114] provides a climate resilient alternative just 45 minutes from San Juan and positioning it as a more viable secondary airport for San Juan not only for climactic resiliency but for contingencies such as overflow traffic, emergency operations, and long-term aviation planning. Puerto Rico, therefore, needs to consider the Ceiba airport as a strategic resiliency asset and invest to bring it to the necessary levels of readiness; capable of operating as a fully functioning commercial jetport in the relatively short term.

Investing in Ceiba's development would future-proof Puerto Rico's air infrastructure, supporting tourism, economic growth, and disaster preparedness for decades to come. Strategic planning during the implementation timeframe can help navigate and provide time to overcome any obstacle.[115]

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[112] Comité de Expertos y Asesores sobre Cambio Climático. (2024). *Plan de mitigación, adaptación y resiliencia al cambio climático en Puerto Rico*. (Borrador). Gobierno de Puerto Rico. https://www.drna.pr.gov/ceacc/publicaciones/borrador-final-plan-ceacc-2024/

[113] Díaz, E. L., Gould, W. A., Álvarez-Berríos, N., Aponte-Gonzalez, F., Archibald, W., Bowden, J. H., Carrubba, L., Crespo, W., Fain, S. J., González, G., Goulbourne, A., Harmsen, E., Khalyani, A. H., Holupchinski, E., Kossin, J. P., Leinberger, A. J., Marrero-Santiago, V. I., Martinez-Sanchez, O., McGinley, K., ... Torres-Gonzalez, S. (2018). *Chapter 20: US Caribbean. Impacts, Risks, and Adaptation in the United States: The Fourth National Climate Assessment, Volume II*. U.S. Global Change Research Program. https://doi.org/10.7930/NCA4.2018.CH20

[114] Government of Puerto Rico Ports Authority. (2021, February 26). *Sources Sought Master Developer for the JAT Airport, Ceiba, Puerto Rico*. https://docs.pr.gov/files/Puertos/Avisos/Avisos%20Individuales/Sources%20Sought%20-%20Master%20Developer%20Services%20for%20the%20Jose%20Aponte%20de%20la%20Torre%20(JAT)%20Airport.pdf

[115] The current Public-Private Partnership lease agreement with Aerostar for management of the LMM Airport includes an "adverse action" clause. This clause stipulates that if any Puerto Rico governmental authority takes an action that significantly affects Aerostar, the private operator of the airport, or other similar entities, Aerostar is potentially entitled to claim payments for such action from the PRPA, which are secured by the Government Development Bank of Puerto Rico. While this clause might present a potential challenge, it allows for the development of existing infrastructure. There is little doubt that the Ceiba Airport is existing infrastructure and that it must be developed as a key climate change strategic resiliency asset.

Rehabilitating Ceiba Airport as a Commercial Passenger and Cargo Hub – A Modest Investment that Yields a Powerful Strategic Asset

The current airport at Ceiba operates as a small, general aviation airport (NRR, previously RVR) with a limited schedule of brief flights to the adjacent islands of Vieques and Culebra on small aircraft of less than 10 passengers. However, the military airfield's considerable legacy infrastructure—including its 11,000-foot runway, taxiways, ramps, and hangar structures—positions it for redevelopment into a small, regional commercial jetport. Rehabilitating it to meet minimum FAA Part 139 standards could cost between $100 million and $150 million for cargo and passengers. By contrast, developing a similar small scale, commercial jetport from scratch would require $475 million to $750 million. So, it can be inferred that the value of Ceiba's existing infrastructure asset exceeds $500 million.

The cost estimates are based on FAA standards for airport development using historical data from similar airport conversions. These estimates assume a phased development approach. The Initial Commercial Conversion (FAA Part 139 Certification) would require a minimum of $100 million capital investment for a minimally compliant conversion with a small terminal with a few gates. A more expansive conversion would surpass $250 million. It would include: runway and taxiway upgrades, a new passenger terminal and facilities (small to medium, from 50,000 to 100,000 sq. ft.), apron expansion and aircraft parking, ground transportation and parking, and air traffic control and safety assets. A full commercial conversion – to further expand the passenger terminal (including adding premium lounges), an additional runway and taxiway expansions, adding advanced cargo and logistics hub facilities, the integration of a multimodal transportation hub, and the deployment environmental and resiliency measures - would require an additional $300 million investment.

The Economic Benefits of a Commercial Jetport at Ceiba—a Region Transformed

The economic advantages and opportunities that a rehabilitated Ceiba airport would represent are substantial and far-reaching. In terms of investment, the project promises extraordinary impact and a relatively reduced cost for such a capital project. Existing infrastructure reduces operating costs and means that the airport may be able break even with a lower passenger volume.[116] As a point of comparison, Aguadilla's Rafael Hernández airport in the Western Region of Puerto Rico received almost 800,000 incoming and outgoing passengers from July 2022-June 2023.[117] The number of passengers in a Ceiba-based airport facility holds greater potential since, even under current circumstances of an absence of an integrated regional transport system, the Eastern Region currently receives more than double the number of non-resident visitors and local market (resident) visitors than the Western Region (Porta del Sol).[118]

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[116] A break-even threshold for a commercial airport is between 500,000-1,000,000 annual passengers. Červinka, M. (2019). Is a regional airports business a way to make a profit? *INAIR 2019 - Global Trends in Aviation*, *43*, 84–92. https://doi.org/10.1016/j.trpro.2019.12.022

[117] Puerto Rico Institute of Statistics & U.S. Bureau of Transportation Statistics. (2024, September 27). *Number of flights, air passengers and freight with origin or destination in Puerto Rico*. Indicadores PR. https://indicadores.pr/dataset/vuelos-pasajeros-aereos-y-carga-puerto-rico

[118] As per the PRTC, Porta del Este received 287,609 nonresident visitors and 80,205 local market visitors throughout 2023. This is worth comparing to the Porta del Sol region which received 123,517 nonresident visitors and 195,378 local market visitors in 2023. Even with few transport options, Porta del Este receives a substantial number of visitors, numbers which would further benefit from easier access and transportation options. See: Puerto Rico Tourism Company. (2023). Only includes *lodging units endorsed by the PRTC*. https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Festadisticas.pr%2Ffiles%2Finventario%2Fpuerto_rico_tourism_company%2F2024-02-02%2FCT-MonthlyStatisticsReport-2023-12.xlsx&wdOrigin=BROWSELINK

Ceiba airport would become a key for growth of visitation to the Eastern Region **allowing as many as 1.5 million passengers to travel through this airport** by providing direct flights to key tourism originating markets and serving as a regional economic development engine. By bringing visitors directly to the Eastern Region, instead of requiring them to acquire transportation from the metro area as is the current case with most visitors, there would be an increased demand in accommodation and lodging, food and local transportation services, as well as new experiences.

In 2024, the Eastern Region of Puerto Rico generated $1.2 billion in direct visitor spending, accounting for 17% of the island's total visitor economy.[119] The region welcomed approximately 2.1 million visitors, including both overnight and day visitors.[120] Overnight visitors spend an average of $291 per day, while day visitors spend much less per day.[121] If hotel occupancy were maximized at current lodging capacity, the region could increase direct visitor spending by 40% over current levels.[122] This increased spending would support a significant expansion in employment, with visitor spending projected to support 15,000 jobs in 2024 and up to 27,000 jobs by 2030 as the visitor economy grows.[123]

In a region with an unemployment rate of 6.0%[124] an airport in Ceiba could have an enormous impact. The airport could substantially improve the unemployment rates for the region during the initial rehabilitation phase providing temporary jobs, and later, on a longer-term basis, once it is functional and operating. A $100 million investment for initial capital improvements at the airport can create 2,400 jobs (1,100 direct, 1,200 indirect and 100 induced).[125] Once operational, a commercial airport requires facility employees (airline staff, airport management, security personnel, maintenance crews, and retail employees) along with workers of various federal agencies (TSA, USDA, DHS, ICE, and possibly an expansion of current Customs and Border Patrol presence in Ceiba). This can result in contributing **between 300 and 800 permanent direct employment opportunities for the area**.[126] Though these are preliminary assessments, a detailed feasibility study would be needed to tailor these estimates to Ceiba's specific context, considering factors like local demographics, existing infrastructure, and economic conditions.

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[119] Based on Foundation for Puerto Rico Visitor Behavior Model, 2025. The FPR Visitor Behavior Model calculates visitor's spend and economic contribution based on where they stay, what they do, and how they move across Puerto Rico.
[120] The Eastern region captures a considerable proportion of Puerto Rico's overall visitor pool, representing 2 million (almost 40%) of the 5.3 million visitors that travel to Puerto Rico (including day visitors).
[121] Our model estimates that overnight visitors spend $291 on average while day visitors spend $111 on average.
[122] If hotel occupancy were maximized at full capacity (100%), the region could accommodate an additional 871,000 overnight visitors, assuming lodging supply remains constant. This increase would translate into an estimated $453 million in additional direct visitor spending, representing a potential 40% growth.
[123] Job impact was estimated by deriving a jobs-per-dollar ratio based on 2025 totals, with one job supported for every $83,000 in visitor spend. This ratio was then applied to projected visitor spend figures for each subsequent year to calculate annual job impacts for 2030.
[124] Departamento del Trabajo y Recursos Humanos. (2024, December). *Estadísticas de desempleo por municipio*. Estadísticas PR. https://www.mercadolaboral.pr.gov/lmi/pdf/Default/LAUS/Publicacion%20LAUS.pdf
[125] Calculated using the PR Planning Board, Jobs Multiplier for 202 found at: https://jp.pr.gov/multiplicador-de-empleo/
[126] Based on Blue Grass Airport, Lexington Kentucky, a similarly sized FAA classified small hub primary commercial service airport with about 400,000 enplanements per year. See: https://www.bluegrassairport.com/wp-content/uploads/2024/08/Economic-Impact-Study-Comprehensive-Report.pdf

The overall economic impact of this transformational strategy could surpass $1 billion annually. With its integration into a multimodal transportation center at Ceiba, and the development of a regional transportation network proposed as part of this Strategic Vision for the Eastern Region of Puerto Rico, this powerful gateway would connect visitors traveling to and from the Eastern Caribbean and key U.S. aviation hubs directly to the multitude of unique attractions and experiences the region has to offer. This vision considers the most direct effects of its various components toward job creation, but the rehabilitation of the José Aponte de la Torre airport to accept commercial flights may be singular in its impact on indirect employment and induced economic benefits to the region. This does not consider additional impacts of the future development of vertiport facilities as described next.

A Strategic View of a Ceiba Airport as an Economic Gateway for the Region

Transforming the former Roosevelt Roads Naval Station airport in Ceiba into a commercial aviation hub represents a momentous infrastructure investment that will unlock direct domestic and international access to the Eastern Region and beyond. By also integrating emerging air mobility solutions, such as eVTOL air taxis, the airport can revolutionize interconnectivity between San Juan, Vieques, Culebra, and key eastern Caribbean destinations. This strategic expansion will not only strengthen Puerto Rico's air transport resilience but also fuel economic growth, attract business investment, and generate thousands of jobs in construction, operations, and tourism. Positioned within Puerto Rico's second most-visited region and just an hour from San Juan, Ceiba's airport will serve as a vital gateway, driving long-term economic development while enhancing redundancy and reliability in the island's aviation network.

Restoring and expanding Ceiba's airport would significantly enhance the island's air transport capacity and economic resilience, supporting investment, business growth, and supply chain efficiency. Remote island economies like Iceland, Hawaii, and Puerto Rico depend on multiple airports to sustain tourism, commerce, and cargo operations, ensuring steady economic activity. A multi-airport system allows businesses to scale operations, lower freight costs, and improve logistics, benefiting local industries and consumers alike.

It is possible that the most effective approach at that future point might be to integrate the Ceiba airport with the LMM airport under a single operator. There are studies and technologies that demonstrate that adjacent major airports when they integrate their operations into a single shared route system can gain enormous performance advantages.[127] [128] The key to that future strategy is the advent of eVTOL technology that can link the departure concourses of the two airports with a high speed, high frequency eVTOL shuttle that can move passengers between the respective departure concourse within minutes so that passengers can arrive on a flight at one airport and connect to a flight departing at a concourse at the other airport.

Additionally, with the passenger growth that Puerto Rico has been experiencing, relieving congestion at Luis Muñoz Marín International Airport may become critical for Puerto Rico's competitiveness. A

[127] Zuo, Y., Liu, T.-L., & Liu, W. (2025). On the competition and collaboration in a multi-airport system considering ground connection between airports. *Transportation Research Part A: Policy and Practice, 192*, 104387. https://doi.org/10.1016/j.tra.2025.104387

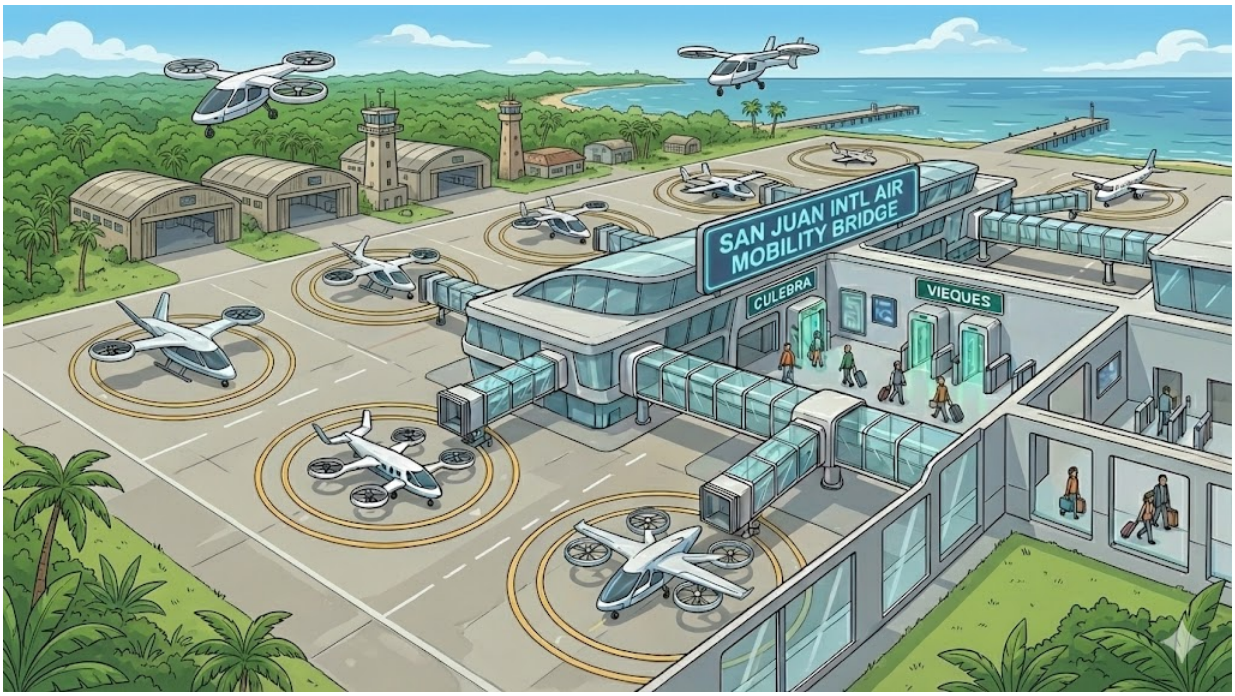
[128] Hou, S., Zhang, Z., Peng, J., & Chen, X. (2025). Multi-airport system management strategies considering air-rail intermodality and social welfare. *Transportation Research Part E: Logistics and Transportation Review, 194*, 103882. https://doi.org/10.1016/j.tre.2024.103882

distributed air traffic system encompassing both airports would allow for more flight routes, fewer delays, and improved security and attractiveness for airlines, strengthening the island's connectivity and economic opportunities.

Beyond economic benefits, Ceiba Airport would enhance Puerto Rico's transportation flexibility by optimizing air traffic distribution between international, regional, and cargo flights. This model, common in major island economies, ensures that different regions benefit from tailored aviation services, creating a more integrated and efficient transportation network. Furthermore, Ceiba would provide crucial redundancy in case of extreme weather, technical failures, or natural disasters, preventing disruptions to air travel and emergency response operations. Located strategically within Puerto Rico's Eastern Region and near the island municipalities, Ceiba could serve as an essential hub for medical evacuations, military logistics, and supply distribution, ensuring continuity in critical services.

The Impact of a Modern, Regional Jetport at the Heart of Ceiba Multi-Mobility Hub

For residents, the rehabilitation of Ceiba's airport and the future addition of a vertiport would deliver tangible improvements in daily life by expanding access to jobs, healthcare, and education through faster, more affordable travel options. By integrating with a regional multimodal network, residents without cars, including seniors and youth, will be able to move more freely across the island and to neighboring municipalities as air taxi service becomes as affordable as shuttle buses. Lower transportation costs, increased job creation, and new business opportunities would strengthen household finances and local economies. In times of emergency or a major disaster, the airport would provide critical evacuation and supply routes particularly for remote areas, enhancing community resilience. Ultimately, these investments would reduce isolation, improve quality of life, and create a more inclusive, connected, and opportunity-rich future for all residents of the Eastern Region.



1.3.5 A Future Vision - An eVTOL Vertiport and Air Mobility Bridge at Ceiba in 2035

In the future, the Ceiba airport at Roosevelt Roads could **incorporate a high throughput vertiport for electric vertical takeoff and landing vehicles (eVTOLs).** This vertiport could serve a network of short routes to adjacent islands and Puerto Rico regional airports. The airport would be transformed through development of multiple landing pads, integrated boarding facilities (with advanced modular jetway concepts), and rapid security/identity screening zones. This facility would serve multiple purposes: connecting eVTOL flights to adjacent islands, to key points in Puerto Rico, and, perhaps, most powerfully, as an Air Mobility Bridge to LMM International Airport.

The Air Mobility Bridge concept is one that has been rapidly developing over the last decade. It proposes to transform close-by airports into a single, virtual airport by having a bidirectional eVTOL "passenger conveyor belt" between two remote terminals. It would be analogous to the passenger conveyor belts (aka travelators or mechanical sidewalks), subways or bus links that connect passengers at large major airports to their own remote terminals, except the distances would be greater and the connection would be much faster. There have been several concept studies and pilot proposals addressing the idea of connecting major New York airports—such as LaGuardia (LGA) and JFK—using on-demand, short range eVTOL services to create a "virtual single airport" experience. MIT's International Center for Air Transportation (ICAT) has been actively engaged in modeling and analyzing air mobility networks and in-depth analyses on operational scaling for urban areas.[129]

These studies have evaluated airports up to 100 miles apart as having the potential to be linked together. The estimated 30-mile flying route between Ceiba and SJU airports (24-mile linear distance) could be managed, by eVTOL aircraft flying 150mph, in less than 20 minutes which is comparable to many of the walking times between gates at major airports. The assumption is that the eVTOL vertiports located at either airport would connect directly into the respective airport concourses located inside the airport "sterile" security zones, checked baggage would be fed into the airport baggage system at the vertiport, and hand-carried luggage would be brought to the aircraft gate by the passenger.

The strategic design of a vertiport and the development of an Air Mobility Bridge can harness a broad ecosystem of emerging technologies and industry players—from eVTOL aircraft manufacturers to providers of advanced vertiport infrastructure and security systems. Recent studies by the FAA, EASA, NASA, and industry leaders such as Uber Elevate, Joby, and Archer, along with findings from academic and trade publications, indicate that this new mode of transportation is rapidly approaching feasibility.[130] [131] [132]

While many of these technologies remain under development, the convergence of innovation across aircraft design, digital systems, and regulatory frameworks is shaping a future in which fast, secure,

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[129] MIT International Center for Air Transportation. *Research*. https://icat.mit.edu/research/
[130] Di Mascio, P., Del Serrone, G., & Moretti, L. (2025). Vertiports: The Infrastructure Backbone of Advanced Air Mobility—A Review. *Eng*, *6*(5), 93. https://doi.org/10.3390/eng6050093
[131] Goodrich, K. H. *Overview of an Exploratory, Real-Time, Multi-Pilot Simulation Study of Early eVTOL Operations at Non-Towered Vertiports*. AIAA Aviation, Las Vegas, NV. https://ntrs.nasa.gov/citations/20240007351
[132] Alliance (NUAIR), N. U. A. I. R. (2020). *Advanced Air Mobility (AAM) Vertiport Automation Trade Study*. https://ntrs.nasa.gov/citations/20210009757

and sustainable air mobility networks could complement—or even replace—conventional ground shuttles in high-density travel corridors.

Major Airlines See Opportunities and Are Investing in eVTOL Technology

Airlines see profitability gains from these services. Even if eVTOL feeders serve a small share of passengers, they tend to be business travelers willing to pay a premium, a "highly profitable market" segment. By reducing missed connections (and costly re-bookings) and attracting new connecting itineraries that span multiple airports, airlines can improve their load factors and yield. For example, United Airlines has invested in 200 eVTOLs (Eve Air Mobility) justifying it by a clear expected return on investment and "sustainability credentials," as United plans to use them at its major hubs. Lower operating costs are a key benefit. For example, replacing a conventional helicopter shuttle with an eVTOL on a ~16-mile JFK route can immediately cut operating costs by ~14%, with further ~10% savings as fleet utilization rises and maintenance costs drop. Maintenance expenses for eVTOLs are projected to be up to 50% lower than for helicopters, thanks to simpler electric propulsion and fewer moving parts. These savings translate into reduced cost per passenger.

Linking Adjacent Airports with eVTOL Shuttles Promises Significant Operating Efficiencies

Early simulations found likely that with operational scale **eVTOL air taxis could achieve per-trip prices comparable to premium ground transport,**[133] but a high frequency shuttle connecting two airport operations might scale to even lower costs. In essence, **eVTOL integration offers a twofold economic benefit: new direct revenue from air taxi fares from city centers, an indirect but powerful boost to airline profitability from the synergies of turning adjacent airports into an integrated network (more convenient, frequent departures and higher load factors).**

The Beginning of a New Era in Advanced Air Mobility (AAM)[134]

From urban air taxis to regional eVTOL services, the integration of the newly emerging Advanced Air Mobility (AAM) operations into existing transportation networks will reshape how people and goods move, particularly benefiting regions like Puerto Rico with dispersed populations and island communities. Instead of relying on fixed airline schedules, AAM could offer on-demand services, making air travel more accessible to a broader range of travelers. Strategic investment and infrastructure development will accelerate the adoption of AAM, thus revitalizing Ceiba airport and establishing vertiports will position it as a key to the future of mobility in Puerto Rico and the Caribbean.

The Early eVTOL Pioneers Are Already Staking Their Claims

An urban air mobility company, UrbanLink plans to establish its regional headquarters in San Juan. They aim to start testing electric flight to the San Juan, Luis Muñoz Marín Airport with connections to U.S. Virgin Islands (USVI).[135] These services may be expanded to Ceiba, Vieques and Culebra. The

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[133] Levitate Capital. (2022). *The future of the drone economy a comprehensive analysis of the economic potential, market opportunities, and strategic considerations in the drone economy*. https://www.mobilitafutura.eu/wp-content/uploads/2022/06/White-Paper-v4.pdf

[134] Advanced Air Mobility (AAM) is used by the Federal Aviation Administration (FAA), U.S. Department of Transportation (DOT) and NASA, as an umbrella term for "a transportation system that will move people and property by air using highly automated aircraft with advanced technologies in controlled and uncontrolled airspace within the U.S." See: US DOT Advanced Air Mobility Interagency Working Group. https://www.transportation.gov/aamiwg

[135] M. Kantrow-Vázquez. (2024, September 27). UrbanLink Air Mobility to launch service from Puerto Rico. *News Is My Business*. https://newsismybusiness.com/urbanlink-air-mobility-to-launch-service-from-puerto-rico/

company expects to begin services to the Caribbean sometime after 2026.[136] While not yet in operation, as noted above, these emerging advances in Advanced Air Mobility are set to revolutionize air travel by introducing new, efficient, and sustainable methods of transporting people and goods. The next decade will see significant changes driven by technological advancements, regulatory adaptations, and increased investment in infrastructure.

The Other Airports in the Eastern Region – Essential Air Links to the Island Municipalities

The Eastern Region has three functioning airports: Antonio Rivera Rodríguez Airport in Vieques, Benjamín Rivera Noriega Airport in Culebra, and the José Aponte de la Torre Airport in Ceiba with the potential to become an important regional jetport. The statistically high number of airports is related to the island municipalities along with the history of military presence in the Region.

The Antonio Rivera Rodríguez Airport in Vieques is a small commercial air facility under the ownership of the Puerto Rico Ports Authority. It serves as a hub for small local airline companies. Current routes connect Vieques to the San Juan metropolitan area (via the Luis Muñoz Marín airport in Carolina and the Isla Grande Airport in Miramar), and to Ceiba (to the José Aponte de la Torre Airport). Following the departure of the United States Navy from the island municipality in 2003, Antonio Rivera Rodríguez Airport has grown significantly in economic importance, particularly due to tourism, which after the closure of the Navy base has become central to Vieques's economic activity.[137]

The Benjamín Rivera Noriega Airport in Culebra, also owned by the Puerto Rico Ports Authority, was initially opened as a military airport. Built by the US Marine Corps in 1957, the airport is now a general aviation airport that offers passenger service to the metropolitan area and Ceiba via four commercial airlines. After the Navy-Culebra protests (1970-1974)[138] which culminated with the departure of the military from Culebra, the PR Ports Authority assumed responsibility for civilian flight operations that had been established since 1965. The first passenger terminal

[136] UrbanLink. (2024, September 25). UrbanLink Air Mobility Orders Regent seagliders for South Florida and Puerto Rico. https://www.flyurbanlink.com/news/urbanlink-air-mobility-orders-regent-seagliders-for-south-florida-and-puerto-rico
[137] Municipio de Vieques. *Home*. Vieques. https://vieques.com/
[138] Schils, N. (2011, July 6). *Puerto Ricans expel United States Navy from Culebra Island, 1970-1974*. Global Nonviolent Action Database. https://nvdatabase.swarthmore.edu/content/puerto-ricans-expel-united-states-navy-culebra-island-1970-1974

opened in 1976, and Ports Authority officially acquired the airport and its 80 acres in 1980, adding a new passenger terminal in 1994.[139]

In addition to these, **Hermenegildo Ortiz Quiñones Airport in Humacao**, with a runway of 2,450 feet, is slated for rehabilitation using federal disaster recovery funding to develop a new, modern passenger terminal, repair two existing hangars, and the construction of an additional hangar, with the goal of increasing the airport's capacity to service aircraft.[140] It is a public use airport primarily used for commercial aviation and ultralight aircraft, and has also hosted flight schools, parachute training, and even several air shows. These upgrades are aimed at attracting more flights and services, thus benefiting the residents of that municipality, as well as the entire southeast. Once completed, such facilities can also become part of Puerto Rico's Advanced Air Mobility system, offering greater connectivity across the archipelago and nearby islands.

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[139] *Aeropuerto Benjamín Rivera Noriega*. Discover Puerto Rico. https://www.discoverpuertorico.com/profile/aeropuerto-benjamin-rivera-noriega/7716
[140] Inicia rehabilitación del aeropuerto regional de Humacao. (2025, 11 Sept.) *Metro*. https://www.metro.pr/noticias/2025/09/11/inicia-rehabilitacion-del-aeropuerto-regional-de-humacao/

Key Findings for Ceiba Airport and Advanced Air Mobility

Insights to Advance PR' Aviation Resiliency and Regional Economic Transformation

1. ### Ceiba Airport as a Climate-Resilient Strategic Asset

   With an elevation of 38 feet above sea level[141]—compared to Luis Muñoz Marín International Airport's 9.6 feet[142]—Ceiba offers a climate-resilient alternative air hub. In the light of increasing flood risk at SJU due to sea level rise and hurricanes, Ceiba is uniquely positioned to provide aviation redundancy and emergency response capacity.

2. ### Aviation Network Redundancy Enhances Emergency Response

   Ceiba's location, near the island municipalities of Vieques and Culebra and outside flood-prone zones, makes it ideal for emergency medical evacuations, military logistics, and disaster relief distribution. It strengthens Puerto Rico's aviation resilience and continuity of essential services during climate-related disruptions.

3. ### Distributed Airport Strategy Supports National Competitiveness

   Puerto Rico's dependence on a single international airport threatens long term economic security. A multi-airport system—anchored by Ceiba and integrated with San Juan—can absorb overflow, reduce delays, and increase route flexibility, making the island more attractive to airlines and investors.

4. ### Leveraging Existing Infrastructure for High ROI

   The José Aponte de la Torre Airport possesses legacy military infrastructure valued at over $500 million, including an 11,000-foot runway. A phased $100–$250 million investment could achieve FAA Part 139 compliance, transforming the site into a fully functional commercial jetport at a fraction of the cost of a new airport build.

5. ### Air Cargo and Business Connectivity Opportunities

   Rehabilitating Ceiba to handle cargo and logistics operations would improve supply chain efficiency and lower costs for local industries. With proper investment, the airport can serve as a hub for regional commerce, integrating air, maritime, and ground transportation systems for multimodal freight mobility.

6. ### Aviation-Tourism Synergy for the Visitor Economy

   Direct flights to Ceiba would reduce dependence on long ground transfers from SJU, improving visitor experience and increasing the accessibility and competitiveness of Eastern Region destinations like El Yunque, Luquillo, and the offshore islands. Seamless multimodal connections from air to ferry to local transit would complete a visitor-centric mobility ecosystem and facilitate opportunities for local visitation.

7. ### Unlocking Regional Economic Impact

   A functioning commercial jetport at Ceiba could support 1.5 million passengers annually, more than double the volume of Aguadilla's airport. This level of activity would drive over $480 million in direct annual tourism-related spending and create approximately 8,000 employment opportunities, while stimulating small business growth across the Eastern Region.

[141] *Elevation: 38 ft (surveyed)* for TJRV (Ceiba). Aircraft Owners and Pilots Association. *José Aponte de la Torre Airport (TJRV), Ceiba, Puerto Rico*. AOPA Destinations. https://www.aopa.org/destinations/airports/TJRV/island
[142] *TJSJ - Luis Munoz Marin International Airport*. AirNav. https://www.airnav.com/airport/TJSJ

8. The Vertiport Vision: Ceiba as a Node in Advanced Air Mobility (AAM)

   By 2035, Ceiba could host a high-capacity vertiport for eVTOL aircraft, enabling rapid connections between Ceiba, San Juan, Vieques, Culebra, and the USVI and serving as a gateway to the Eastern Caribbean. This Air Mobility Bridge concept could link SJU and Ceiba as a virtual, integrated airport system, creating powerful synergies, reducing missed connections and enhancing passenger access and convenience.

9. eVTOL Integration Reduces Costs and Expands Access

   Emerging eVTOL aircraft technologies offer lower operating and maintenance costs compared to helicopters. Vertiport connections would provide affordable, fast, and sustainable travel options for residents and visitors alike, supporting inclusive access to healthcare, jobs, and education.

   Phased Development Offers Economic Scalability

   The Ceiba airport development can evolve in scalable phases:

   Phase I: Minimal Part 139 compliance conversion ($100M, ~2,400 jobs created)
   Phase II: Expanded terminal, cargo capacity, multimodal hub ($250M+)
   Phase III: Capacity expansion: gates, lounges, Vertiport / eVTOL integration ($300M+)

This allows for incremental progress aligned with demand and funding availability.

1.3.6 Maritime Transportation – a Powerful Axis of Mobility and Connectivity

Architecture's design rendering of the new Ceiba ferry terminal, slated to be operational in 2025. [143]

The New Ceiba Ferry Terminal as a Multi-Modal Transportation Hub

The construction, already under way, of a new, expanded maritime and ground transportation hub at Ceiba is a crucial investment in mobility and transportation and will become a catalyst for regional mobility. Combined with another important investment by PRITA in four additional ferries, it will allow people to more easily commute to and from the islands of Vieques and Culebra and beyond.

Current Conditions – Ferry Services

The Eastern Region includes Puerto Rico's two island municipalities, Vieques and Culebra. But in terms of cultural history, economic opportunity and maritime accessibility, it could be construed to include the closely adjacent U.S. Virgin Islands as demonstrated in the above graphic. Maritime transport plays a vital role in connecting Vieques and Culebra with the main island with regular ferry service departing from the deepwater port at the former Roosevelt Roads Naval Station at Ceiba.[144]

The Ferry Terminal at Ceiba, owned by the Puerto Rico Integrated Transportation Authority, and with ferries operated by HMS Ferries, provides a vital modality of transportation for residents and visitors to the offshore island-municipalities of Culebra and Vieques. The ferry service was formerly situated in Fajardo but was relocated to Ceiba in 2018 due to enhanced port and terminal infrastructure available at Ceiba. It was also intended to somewhat reduce maritime travel times to Vieques, which has a greater number of residents than Culebra. When the Ferry was in Fajardo, arriving residents of Vieques and Culebra found themselves relatively close to Fajardo's commercial spaces and medical services.

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[143] News by V Architecture. (2024, February 12). V Architecture's New Ferry Terminal at Roosevelt Roads. https://varchitecture.com/v-architectures-new-ferry-terminal-at-roosevelt-roads/

[144] Other ports include Fajardo, where the ferries had operated from previously, Humacao has a small marina for private yachts located within the Palmas del Mar resort, while the Port of Yabucoa is an artificial harbor (originally excavated in 1971) that currently serves as a marine terminal facility for crude oil, fuel oil, and refined petroleum products.

The Ceiba Ferry and the San Juan Intercity Bus Connection

For Vieques and Culebra residents and visitors, the ferries are a lifeline, providing constant access to necessary mainland services. Both municipalities' terminals are currently located in their main urban centers, Isabel Segunda and Culebra Pueblo respectively.

The integration of an intercity express bus, also under way, with a schedule that aligns with ferry arrivals and departures would extend that connectivity with San Juan. This bus service, if brought to the necessary scale, would also allow a growing number of people to commute to work in San Juan without relying on a personal vehicle. Reliable hourly bus service between Fajardo/Ceiba and San Juan would make it possible for as many as 100,000 visitors to make their way from San Juan to the region without needing to afford a costly rental vehicle.[145]

Departure	Arrival	Segment
6:00 AM	6:15 AM	Sagrado Corazon - SJU Airport
6:15 AM	6:26 AM	SJU Airport (Terminals A-D, 11 min incl. stops)
6:26 AM	7:26 AM	SJU Airport - Fajardo
7:26 AM	7:41 AM	Fajardo - Ceiba
7:41 AM	7:46 AM	Layover at Ceiba
7:46 AM	8:01 AM	Ceiba - Fajardo
8:01 AM	9:01 AM	Fajardo - SJU Airport
9:01 AM	9:12 AM	SJU Airport (Terminals A-D, 11 min incl. stops)
9:12 AM	9:27 AM	SJU Airport - Sagrado Corazon
9:27 AM	9:37 AM	Layover at Sagrado Corazon
9:37 AM	9:52 AM	Sagrado Corazon - SJU Airport
9:52 AM	10:03 AM	SJU Airport (Terminals A-D, 11 min incl. stops)
10:03 AM	11:03 AM	SJU Airport - Fajardo
11:03 AM	11:18 AM	Fajardo - Ceiba
11:18 AM	11:23 AM	Layover at Ceiba
11:23 AM	11:38 AM	Ceiba - Fajardo
11:38 AM	12:38 PM	Fajardo - SJU Airport
12:38 PM	12:49 PM	SJU Airport (Terminals A-D, 11 min incl. stops)
12:49 PM	1:04 PM	SJU Airport - Sagrado Corazon
1:04 PM	1:14 PM	Layover at Sagrado Corazon
1:14 PM	1:29 PM	Sagrado Corazon - SJU Airport
1:29 PM	1:40 PM	SJU Airport (Terminals A-D, 11 min incl. stops)
1:40 PM	2:40 PM	SJU Airport - Fajardo
2:40 PM	2:55 PM	Fajardo - Ceiba
2:55 PM	3:00 PM	Layover at Ceiba
3:00 PM	3:15 PM	Ceiba - Fajardo
3:15 PM	4:15 PM	Fajardo - SJU Airport
4:15 PM	4:26 PM	SJU Airport (Terminals A-D, 11 min incl. stops)
4:26 PM	4:41 PM	SJU Airport - Sagrado Corazon

Figure 1.8: An Illustrative Potential Schedule for San Juan Fajardo Ceiba Intercity Buses

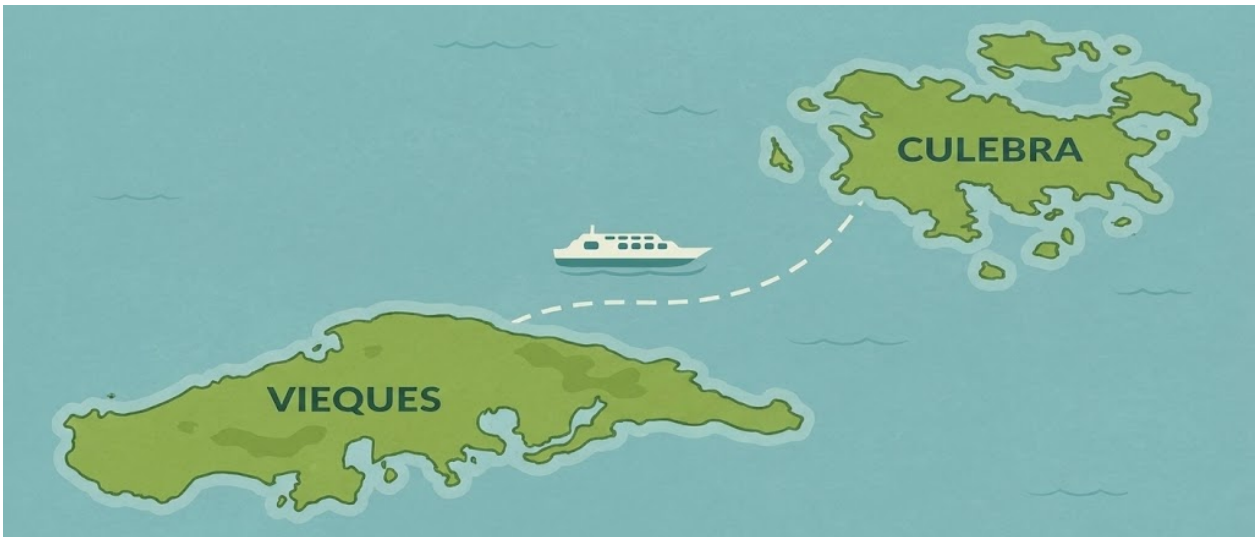
In an attempt to address that multimodal mobility challenge, PRITA has prioritized the establishment of a San Juan-Ceiba intercity bus which will connect the ferry terminal, Ceiba airport, the San Juan airport and Tren Urbano,[146] with a planned stop in Fajardo.[147] This service, which is expected to begin in the near future, will offer 3 daily round-trip (conceptually illustrated as a simulated schedule above)

[145] Ten daily routes would translate to 500 passenger seats some portion of which would be occupied by residents.

[146] Pierluisi, P. (2024, April 2). *Mensaje de situación de Estado* [Press Conference]. https://www.facebook.com/share/v/1Bdv7ZsyN5/; Federal Highway Administration, & Federal Transit Administration. (2023, May 12). *Statewide transportation improvement program (STIP)*. Government of Puerto Rico. https://act.dtop.pr.gov/wp-content/uploads/2023/09/STIP-2023-2026-Enmienda1-AdmModification1_Final-1-12sept-2023.pdf; C. Martínez Marrero (Director of Planning and Capital Projects, PRITA), personal communication, October 10, 2024. https://www.dol.gov/sites/dolgov/files/olms/regs/compliance/DSP/2024/09sep/PR-2024-039-00_PUERTO_RICO_HIGHWAY_AND_TRANSPORTATION_AUTHORITY.pdf

[147] This can also provide some local connectivity between Ceiba and Fajardo.

that are intended to align with departing and/or arriving ferries at Ceiba with an estimated daily capacity of 150 passengers.



The Vieques Culebra Ferry Connector – An Idea Whose Time Has Come

At present, there is no ferry service connecting the two islands—a visitor looking to visit both municipalities would have to take a ferry back to Ceiba and then board another ferry to reach the other island municipality. The route once existed but has not been operated for years. Under the changed conditions, as both island municipalities have vastly increased visitation, reviving this route is no longer a question but a necessity that will soon become a reality. Connecting the two island municipalities with one another will facilitate visitors' and residents' movement, and, for the latter group, may allow for the possibility of work in the other municipality. However, the power of enhancing visitor flows by directly connecting the islands so that visits to both can be included in a visitor's itinerary will more than sufficiently support ferry ridership and frequency.

Moving the Vieques Ferry Terminal from Isabel II to Mosquito Pier

The Vieques ferry terminal is being moved from Isabel Segunda (town center) to the Mosquito Pier, specifically to the Rompeolas dock which has been used for the cargo ferry. Mosquito Pier is undergoing renovations with FTA funding with additional funds investments the Army Corps of Engineers and MARAD. [148] ***Since it is not located near any urbanized area,*** it will require a shift in transportation

Local Insight on Moving the Ferry Terminal in Vieques

The potential relocation of the ferry terminal in Vieques to the Mosquito Pier presents a critical opportunity to rethink the future use of the Isabel Segunda site. Should it cease to receive ferry traffic, it would be in the residents' interest to repurpose the site, which would require the municipality to acquire or lease the property. Allowing the asset to deteriorate would not benefit Isabel Segunda; instead, a new and beneficial use must be ready to establish once the new terminal is operational.

[148] Federal Highway Administration, & Federal Transit Administration. (2023, May 12). *Statewide transportation improvement program (STIP)*. Government of Puerto Rico. https://act.dtop.pr.gov/wp-content/uploads/2023/09/STIP-2023-2026-Enmienda1-AdmModification1_Final-1-12sept-2023.pdf; A. Rosa, personal communication, March 6, 2024.

services when completed. The new site will reduce travel time (and save money on fuel) between Vieques and Ceiba, turning it into a 20-minute commute. Furthermore***, the transfer may also have an adverse economic impact on the businesses in Isabel Segunda which enjoy the constant flow of ferry customers.***[149] The new site has no businesses operating nearby and would need to introduce basic services to fulfill ferry customers' needs and be positioned toward the integration of an equitable TOD model. The pier renovations and new facilities are expected to be completed in December 2026. The Mayor of Vieques has recently expressed interest in develop the pier for cruise ship docking, as well as space to accommodate luxury yachts, convening PRTC, Ports Authority, Sports and Recreation Department, and PRTPW to tour the site; it is unclear if this use would be in addition to moving the passenger ferry there, or an alternative.[150]

[149] Guillama Capella, M. (2023, December 11). Project to relocate Vieques ferry boat terminal and offer "short route" trips to Ceiba resurfaces. *El Nuevo Día*. https://www.elnuevodia.com/english/news/story/project-to-relocate-vieques-ferry-boat-terminal-and-offer-short-route-trips-to-ceiba-resurfaces/

[150] The San Juan Daily Star. (2025, April 28). Vieques mayor proposes turning Mosquito Bay pier into cruise ship terminal. https://www.sanjuandailystar.com/post/vieques-mayor-proposes-turning-mosquito-bay-pier-into-cruise-ship-terminal

Expanding Ferry Capacity, Frequency and Reliability

With this level of growth potential in mind, it may be necessary to supplement current ferry capacity first exploring whether ferry frequencies can be increased, or schedules can be realigned to provide additional capacity with better utilization of the existing fleet after considering vessel loading and cleaning times, ferry docking capacity, etc. For instance, doubling the frequency of the larger vessels might have a dramatic impact on capacity. There also seems to be possibility of integrating a regular schedule of trips between Vieques and Culebra, given the potential demand from visitors for an itinerary that integrates both islands. This connection had been offered in the past, but it was envisioned solely as a facility to allow island residents to travel between the two islands – a small market indeed compared to potential visitor flows.

While this frequency and capacity may be sufficient to facilitate travel to and from San Juan and/or Fajardo for residents of Vieques and Culebra, it is important to put this in the context of overall volume of travel to and from those islands. As can be calculated from the existing ferry schedule (see below), the annual number of ferry passengers departing from Ceiba to Vieques and Culebra is approximately 1.1 million passengers.[151] It is important to note that the Puerto Rico Maritime Transit Authority (PRMTA) is acquiring and awaiting the delivery of four new 300- passenger-capacity ferries. It is assumed that those ferries may replace some existing vessels.

Weekend Ferry Departures from Ceiba to Vieques and Culebra

Departure Time	Destination	Vessel	Capacity	Arrival Time
5:00 AM	Vieques	Mr. Cade	68 pax	5:30 AM
5:30 AM	Vieques	Cayo Largo	304 pax	6:00 AM
6:00 AM	Culebra	Big Cat	377 pax	6:45 AM
7:00 AM	Culebra	Mr. Evan	68 pax	7:45 AM
8:00 AM	Culebra	Big Cat	377 pax	8:45 AM
10:00 AM	Vieques	Cayo Blanco	600 pax	10:30 AM
12:30 PM	Culebra	Isla Bonita	356 pax	1:15 PM
1:30 PM	Vieques	Santa María	141 pax	2:00 PM
2:00 PM	Culebra	Isleño	212 pax	2:45 PM
4:00 PM	Vieques	Mr. Cade	68 pax	4:30 PM
5:00 PM	Vieques	Cayo Blanco	600 pax	5:30 PM
5:30 PM	Culebra	Cayo Largo	304 pax	6:15 PM
8:00 PM	Vieques	Santa María	141 pax	8:30 PM

Weekday Ferry Departures from Ceiba to Vieques and Culebra

Departure Time	Destination	Vessel	Capacity	Arrival Time
3:30 AM	Culebra	Isla Bonita	356 pax	4:15 AM
4:30 AM	Vieques	Cayo Blanco	600 pax	5:00 AM
4:45 AM	Vieques	Santa María	141 pax	5:15 AM
8:30 AM	Vieques	Cayo Largo	304 pax	9:00 AM
1:00 PM	Vieques	Cayo Blanco	600 pax	1:30 PM
3:00 PM	Vieques	Mr. Cade	68 pax	3:30 PM
6:30 PM	Vieques	Mr. Cade	68 pax	7:00 PM
8:00 PM	Vieques	Cayo Largo	304 pax	8:30 PM
6:00 AM	Culebra	Big Cat	377 pax	6:45 AM
7:30 AM	Culebra	Isleño	212 pax	8:15 AM
12:30 PM	Culebra	Big Cat	377 pax	1:15 PM
3:30 PM	Culebra	Cayo Largo	304 pax	4:15 PM
7:00 PM	Culebra	Mr. Evan	68 pax	7:45 PM

Figure 1.9: Ferry schedules Ceiba-Vieques and Ceiba-Culebra

[151] 1,089,906 assuming an 80% load factor. This is in line with the reported levels of travel to the island reported by HMS Ferries.

A Puerto Rico USVI Visitation Partnership – A Ferry Connection

For visitors to Puerto and the U.S. Virgin Islands –over 5 million annual visitors to Puerto Rico and 900,000 annual visitors that spent time in the USVI in 2024—[152]having a ferry connection between the Eastern Region can inspire a closer exploration of the rich cultural and natural beauty of nearby islands with unprecedented ease. Having the option **to hop from the Puerto Rico mainland to the Lesser Antilles, or vice versa, offers a differentiated travel option from that of traditional packaged cruises,** permitting visitors to explore the Caribbean at their own leisure. The Eastern Region can, once again, serve as a portal to the greater Eastern Caribbean.

PRITA has made significant investments in the Ceiba ferry terminal, including $70 million to design and procure four new publicly owned ferry vessels to improve services.[153] They have also expressed interest in evaluating the possibility of creating routes to the U.S. Virgin Islands.[154] A ferry route (or routes) from Puerto Rico to the Virgin Islands could establish an important economic corridor: Many U.S. Virgin Island residents already travel to Puerto Rico for their medical care or to get supplies. A maritime route to Puerto Rico for the USVI's approximately 105,000 residents can open opportunities for businesses and make it easier for residents of both regions to access goods, services, and experiences previously beyond their reach.

The Fajardo Option for Ferry Travel to and from the USVI

The municipality of Fajardo is poised to significantly increase its economic and social standing through the development of a refurbished and expanded maritime port. In December 2024, the Ports Authority signed a 20-year lease with the Fajardo municipality for the Fajardo Port, [155] and the municipality envisions amenities like hotels and commercial spaces for its redevelopment. The port used to contain Fajardo's ferry terminal and a U.S. Customs Office, and now only has a short passenger ferry to Isleta Marina which includes a housing complex in addition to a private marina. **Even though the terminal is not currently operating, the existing Customs Office opens the door to a new route option to the Virgin Islands which requires a customs inspection even though it is a domestic route.[156]** It is important not to exclude in a strategic vision the possibility of ferries operating from other ports including Fajardo. With the scale and opportunity of visitation being contemplated and the Integrated Transportation Network being proposed, there might be the need for more capacity, the diversification of ports creates more possibilities for visitor dispersion and more extended itineraries.

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[152] Tourism Analytics. *The U.S. Virgin Islands*. Tourism Analytics. http://tourismanalytics.com/usvi-statistics.html

[153] Guillama Capella, M. (2023, December 6). *ATI busca adelantar plazo de fabricación de cuatro lanchas nuevas para las islas municipio*. El Nuevo Día. https://www.elnuevodia.com/noticias/gobierno/notas/ati-busca-adelantar-plazo-de-fabricacion-de-cuatro-lanchas-nuevas-para-las-islas-municipio/

[154] C. Torres, personal communication, March 13, 2025.

[155] Rivera Sánchez, M. (2024, December 30). Puertos pasará a manos del municipio de Fajardo el antiguo muelle de lanchas. *El Nuevo Día*. https://www.elnuevodia.com/negocios/turismo/notas/puertos-pasara-a-manos-del-municipio-de-fajardo-el-antiguo-muelle-de-lanchas/; Figueroa Cancel, A. (2024, December 30). Pedro Pierluisi anuncia traspaso del antiguo terminal de lanchas al Municipio de Fajardo. *El Nuevo Día*. https://www.elnuevodia.com/noticias/gobierno/notas/pedro-pierluisi-anuncia-traspaso-del-antiguo-terminal-de-lanchas-al-municipio-de-fajardo/

[156] Municipality of Fajardo. (2023). Municipal Recovery Plan. https://cdn.recuperacion.pr.gov/w3cacheitdg/wp-content/uploads/2024/07/PLN_MRP_Plan-de-Recuperacion-Fajardo.pdf

The scale of projected visitor-economy growth reinforces the strategic role of the maritime system located in Fajardo and Ceiba as the region's primary coastal gateway. The Eastern Region already benefits from nearly $2.8 billion in total GDP impact generated by visitor spending,[157] with activity expected to double by 2030. A substantial share of these travelers enters or circulates through Ceiba and the island municipalities, making maritime capacity, reliability, and last-mile connectivity fundamental determinants of how this growth will be absorbed. Without integrated links between ferry terminals, Demand-Responsive Transit, and municipal hubs, rising visitation risks manifesting as congestion, overcrowding, and uneven pressure on fragile coastal and island environments. Modernizing maritime mobility, therefore, is not simply an operational upgrade; it is a foundational intervention to manage increased demand, redirect flows more sustainably and ensure that expanding visitation strengthens local economies rather than overwhelming them.

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[157] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact.* https://foundationforpuertorico.org/es/visitor-economy-performance-model/

A Fast Ferry Between Puerto Rico and the U.S. Virgin Islands

The following exercise could illustrate the potential for an Eastern Region to St. Thomas fast ferry route. It includes as a possible option of one of the two daily trips going to Fajardo. The vessel being used as a model is a unique design developed and built by Gold Coast Yachts in the USVI for Caribbean interisland travel. It is currently operating between St. Thomas and St. Croix.[158]

A Ceiba-St. Thomas route involves a similar distance and somewhat more favorable seas. In operation for almost a decade, this ferry has proven to be reliable. Because of its unique design, it is very stable and it reduces dramatically the incidence of motion sickness. It is also fuel efficient, with fuel consumption less than 1 mile per gallon, and with a claimed break-even operation at load factors as low as 20% or 10 passengers.[159]

A Conceptual 3-Way Ferry Route Between St. Thomas and Ceiba / Fajardo		
Vessel Type: QE IV High-Speed Ferry	Average Speed: 20 mph (32 km/h)	Capacity: Approximately 50 pax

Departure Time	Departure Point	Distance and Travel Time	Arrival Point	Arrival Time
6:00 AM	Charlotte Amalie	48 miles (~2:25)	Fajardo Port	8:25 AM
9:00 AM	Fajardo Port	48 miles (~2:25)	Charlotte Amalie	11:25 AM
12:00 PM	Charlotte Amalie	45.9 miles (~2:20)	Ceiba Harbor	2:20 PM
3:00 PM	Ceiba Harbor	45.9 miles (~2:20)	Charlotte Amalie	5:20 PM

Illustrative Scenarios:

Inbound Tourism from USVI: Visitors vacationing in St. Thomas could extend their trip to Puerto Rico's Eastern Region by taking a 6:00 AM or 12:00 PM ferry from Charlotte Amalie to Fajardo or Ceiba, where they can enjoy beaches, El Yunque, and local cultural attractions.

Outbound Tourism from Puerto Rico: Travelers staying in the Eastern Region can continue their vacation in St. Thomas via a 9:00 AM departure from Fajardo or a 3:00 PM departure from Ceiba, returning to the U.S. directly from St. Thomas.

Day Travel for USVI Residents: USVI residents can depart Charlotte Amalie at 6:00 AM, shop or run errands in Fajardo during the morning, transfer to Ceiba, and return on the 3:00 PM ferry—arriving back by 5:20 PM.

Additional Assumptions:

- 30 to 40-minute turnaround at each port for passenger embarkation/disembarkation and basic vessel checks.
- Customs and immigration checks factored into turnaround time at Charlotte Amalie.
- Pricing structure based on regional market averages and proportional per-mile rates.

This conceptual schedule could provide reliable, daily inter-island connectivity, promoting tourism and enhancing local commuting options across the region. If a major co-marketing partnership with the U.S. Virgin Islands were undertaken, the acquisition a larger, fast ferry could provide a far greater scale of connectivity.

From the Ferry to the Carro Público – Revitalizing a Tradition with Technology

Ferries play a vital role in the circulation of people and goods between the main island and Vieques and Culebra, which is why taxis and carros públicos are typically found near the ferry terminals. These ground transportation services are, at times, inconsistent and usually only available during peak demand days or times, but they have nonetheless remained common in the island municipalities. There is an active carro público route registered for service from Roosevelt Roads to Fajardo town center, but little visibility as to the time of operation, only regular riders know when and where to get this service. Despite these limitations, the tradition of shared transportation endures in the island municipalities because it fills real mobility gaps that neither formal transit nor private vehicles fully address.

What is changing is the scale of mobility demand. Visitor flows are accelerating: direct offshore visitor spend is projected to double to $2.3 billion by 2030. The majority of this growth is concentrated precisely in the Eastern Region's coastal corridor and island municipalities—yet the mobility system that greets these visitors remains fragmented, analog, and difficult to access. Without significant modernization, rising demand will produce congestion, reinforce rental-car dependency, and limit the region's capacity to capture the full economic value of visitation. A MaaS-enabled transportation network, complemented by a regional commercial airport at Ceiba, linked to ferries and town centers, integrating an intercity bus spine, and powered by Demand-Responsive microtransit, offers a direct solution to these structural constraints.

With over one million additional visitors projected in the next five years, many of whom will seek to explore the region beyond a single attraction or municipality, mobility becomes a core economic development tool rather than a secondary service. Visitors who travel more widely, reach more businesses, and disperse across destinations generate significantly higher spending. Today, nearly half of all offshore visitors lodge in short-term rentals or friends' homes—segments that rely disproportionately on ground transportation to reach experiences dispersed across the Eastern Region. A modernized microtransit system would convert this dispersed lodging pattern into a regional advantage by enabling smooth, predictable movement between nodes of economic opportunity.

Visualize this: millions of visitors arriving directly into the region by ferry or flight, moving seamlessly by microtransit to beaches, El Yunque trailheads, town centers, food districts, marinas, and cultural attractions. As FPR's Visitor Economy Performance Model shows, even modest increases in visitor circulation can have outsized economic effects, because each additional night and each additional destination visited compounds local spending across food, transport, retail, and experiences.[160] This is especially significant because transportation is one of the top categories where spending is currently underestimated in traditional surveys. A strengthened mobility system therefore expands not only access but measurable economic output.

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[158] For more information on Queen Elizabeth IV Ferry see: https://qe4ferry.com/
[159] Gold Coast Yachts. https://www.goldcoastyachts.com/
[160] Foundation for Puerto Rico. (2025). *Puerto Rico's Visitor Economy Performance Model: A deep review of the historical data and an analysis of methodologies for the measurement of visitation activity in Puerto Rico; an estimate of the current state of the visitor economy, and an updated model that leverages technology to provide unprecedented accuracy and impact.* https://foundationforpuertorico.org/es/visitor-economy-performance-model/

An immediate priority and early win toward MaaS implementation would be to modernize existing, microtransit and carro público services in the Ceiba-Fajardo corridor. Público drivers are currently limited because they can only pick up people they can see. Introducing demand-responsive transit (DRT) technology (i.e. two-way digital visibility, dynamic routing, and integrated fare/payment) would allow drivers to receive real-time requests from passengers anywhere in the Ceiba-Fajardo corridor. The result is a continuous mobility loop that responds to ferry arrivals, distributes visitors into town centers, and brings riders back to maritime or air terminals without long waits, uncertainty, or the need for a private vehicle. Residents from Vieques and Culebra will have a reliable way to move once they are on the main island, which has been a constant burden since the ferry moved from Fajardo waterfront center to the isolated location on Roosevelt Roads in Ceiba.

Making Ferry Operations Sustainable Through MaaS-Enabled Fare Management

Ferries in Puerto Rico have traditionally been heavily subsidized to maintain the fares low for low-income residents of the islands and particularly those who commute to work there.[161] With the dramatically increasing volume of tourism visitors availing themselves of ferries, there is an opportunity to leverage that visitation to provide sufficient revenues to maintain and/or expand services. The MaaS platform provides unlimited flexibility in terms of passenger-specific fare pricing structures – there could be special monthly rates for those who commute on the ferries, targeted low fares for low-income seniors, significantly higher single trip fares that visitors might use, even higher for passengers that do not reserve passage on-line in advance, and, because MaaS is a multimodal integration engine, a single fare can cover all segments of a multimodal, multi-route trip.

Tourists might be offered packages that include a combination of modalities and limited or unlimited travel within a short time period – a daily or weekly pass. There might be an Eastern Region package that would allow visitors unlimited regional travel for a week. Such an offer could induce more dispersed and more extended visitation. These packages could be complemented by well-designed or customized itineraries. Many such packages are successful offered throughout the world. In the packaging and the bundling and individualized fares could be a significant source of revenue for the sustainability and even substantial growth of Ferry services.

[161] *Reglamento de tarifas para los servicios ofrecidos en los terminales marítimos del programa marítimo de la Autoridad de Transporte Integrado de Puerto Rico.* https://docs.pr.gov/files/ATI/DERECHOS%20CIVILES/ATI%20-%20Reglamento%20de%20Tarifas%204867-0710-5125%20v.%206%20(002)%20Rev%20Final%2020%20feb%202025%20(1).pdf

Key Findings for Maritime Transportation in the Eastern Region

Insights to Strengthen Island Connectivity and Unlock Regional Economic Potential

1. Ceiba as a Strategic Mobility Gateway
   The redevelopment of the Ceiba Ferry Terminal as a multi-modal transportation hub—paired with investments in four new high-capacity ferries—repositions Ceiba as a linchpin of inter-island connectivity. This will reduce travel times, expand capacity, and improve the reliability of service to Vieques and Culebra.

2. Intercity Connectivity Enhances Economic Integration
   The forthcoming PRITA-backed intercity bus service between San Juan and Ceiba, with stops in Fajardo and connections to the ferry terminal and Ceiba airport, lays the foundation for seamless, car-free regional travel. When synchronized with ferry arrivals, this could provide meaningful mobility alternatives for low-income residents and increase access to visitor markets from the metro area.

3. Reviving Vieques-Culebra Ferry Route: An Opportunity Whose Time has Come
   Currently, no direct maritime connection exists between Vieques and Culebra. Reestablishing this route could dramatically improve inter-island mobility, enable labor mobility between municipalities, and unlock visitor itineraries that include both destinations.

4. Strategic Repositioning of Terminals: The Mosquito Pier Debate
   A potential relocation of the Vieques terminal to Mosquito Pier could reduce travel time to Ceiba by 25% but also introduces critical concerns—ranging from environmental impact to potential disinvestment in Isabel Segunda's local economy. The final decision must weigh operational efficiency against equitable development.

5. Ferry Expansion Requires Operational Optimization
   With 1.1 million annual ferry passengers, current services are under pressure. Immediate gains could come from optimizing schedules, increasing frequencies, and better aligning vessel turnarounds. PRMTA's acquisition of four new 300-passenger ferries presents an opportunity to reassess and realign service delivery.

6. USVI Ferry Link as a Caribbean Economic Corridor
   A fast ferry route between Ceiba/Fajardo and St. Thomas has high potential for regional economic integration. It would serve 5+ million Puerto Rico visitors and nearly 1 million USVI visitors annually, facilitating both inbound tourism and resident mobility. The recently leased Fajardo port, with its U.S. Customs facilities, offers additional flexibility for international maritime routes.

7. The Power of a Maritime Connection to the USVI

   Puerto Rico has no maritime connection to USVIs, yet there are economic opportunities involved in such a connection. Increasing access would permit increased visitation and provide a new travel experience, no longer dependent on private boats or tour ship transport. Moreover, USVI has expressed interest in a new route, sometimes sharing maintenance facilities with PR.

8. Sustainable Fare Models through MaaS Integration

   The introduction of Mobility-as-a-Service (MaaS) technology can diversify fare structures by user type—e.g., commuter passes, discounted rates for seniors, or premium visitor fares—and integrate payment across modes. This creates a sustainable financial model for ferry operations while enhancing rider convenience.

9. DRT-Enabled Carro Público Connections Critical to Ferry Access

   Reliable last-mile solutions remain a bottleneck. Empowering existing carros públicos with DRT (Demand-Responsive Transit) platforms—especially between Ceiba and Fajardo—would enhance the ferry system's usability, encourage visitor dispersion, and modernize a legacy system of rural transit.

10. Multi-Port Vision Enables Resilience and Visitor Dispersion

    Long-term ferry planning must move beyond a single-terminal model. Enabling multi-port operations—via Ceiba, Fajardo, or even San Juan—creates operational resilience and opens up more flexible itineraries for travelers, thereby driving deeper economic impact across more communities.

11. Integrated Maritime-Tourism Offerings to Extend Stays

    Bundled mobility-tourism passes (e.g., weekly all-access passes across ferries, buses, and carros públicos) could drive longer and more dispersed visits. Coupled with curated itineraries, these offers create a revenue stream to sustain ferry operations while enhancing the visitor experience.

1.3.7 Placemaking and Transportation: Reconnecting Communities and Building a Regional Sensibility

Since Spanish colonial times, rail and maritime transportation routes facilitated the exchange of goods and ideas, enriching the region's cultural and historical heritage by blending influences from within the region with those of neighboring Caribbean islands—including the municipalities of Vieques and Culebra. Each of the fifteen municipalities exhibits distinctive characteristics shaped by these interactions.

Such longstanding exchanges have fostered a shared identity, creating a sense of belonging to the wider archipelago—a microcosm of the Caribbean basin—where cultural interactions between humans moving back and forth by land and sea have simultaneously shaped local cultures and delineated national identities. Understanding this history is essential when considering the role that multimodal mobility hubs can play as spaces that facilitate cultural fusion and (re)connect communities.

Images from the U.S. National Archives

Mobility hubs have the potential to become intentionally designed spaces for placemaking strategies: that is, collaborative processes aimed at cultivating collective ownership and responsibility for community spaces. **A placemaking strategy grounded in the history of Puerto Rico's transportation networks can position mobility hubs, beyond being connectors of transportation modalities and routes, as connectors linking the past to the present.** They highlight the evolution of connectivity within the region and across the Caribbean.

Historical train and maritime routes, etched in the collective memory of generations, once spurred economic growth through the efficient movement of goods and people. Communities along maritime routes possess fishing and boating cultures that have historically contributed to local economies and remain integral to these communities' cultural identities. This lived experience, along with geography and ecology, can inform powerful placemaking strategies. Leveraging the unique character of this archipelago—this mélange of adjacent island cultures and its shared cultural heritage—can create sustainable economic opportunities. Celebrating and preserving this heritage can attract visitors who increasingly seek experiences involving cultural immersion and interaction. This type of visitation tends to actively support the stewardship of natural and cultural assets by the communities that depend on them.

Moreover, mobility hubs have the potential to become economic engines by attracting businesses, generating employment, and stimulating local economies. Integrating ferry services and other maritime connections within coastal hubs could help strengthen the Eastern Region's relationship with neighboring islands—especially island municipalities—serving to renew the economic lifelines and cultural channels that generate the archipelagic essence of the region. Acknowledging the role these historical travel routes play in building a regional sensibility underscores the cultural and historical significance of former transportation networks that may infuse modern hubs with the same distinctive archipelagic identity.

The following are examples of initiatives in the Eastern Region that celebrate the cultural heritage of historic transportation connections networks and their ongoing significance within Puerto Rico's collective imagination.

Figure 1.9: Murals found in Gurabo for "Una Taquilla Histórica Pa'l Selfie"; pictures taken by Callejeandopr

"Una Taquilla Histórica Pa'l Selfie" features history-inspired murals illustrating trains that historically served municipalities such as Maunabo, Las Piedras, and Juncos. Each mural includes a QR code offering visitors and residents deeper insights into local history, emphasizing the railway system's essential role in supporting the sugar industry. This initiative fosters a regional understanding of historical interconnections while respecting the individual contexts of participating municipalities.

Figure 1.10 Antiguo Colmado Torres in Cabo Rojo (left), Old Railway Tracks in Las Piedras (middle), Guaniquilla tunnel in Cabo Rojo (right); pictures taken by Ruta Borinquen

Ruta Borinquen proposes transforming historical railway lines into pedestrian- and bike-friendly pathways, revitalizing these spaces as sustainable and active mobility corridors. By preserving remaining train tracks, Ruta Borinquen underscores the historical importance of the railway system, creatively repurposing it as a modern means of connecting communities. This initiative blends natural, historical, cultural, and recreational elements, inviting visitors to explore Puerto Rico's rich heritage sustainably.

Figure 1.11: Historical pictures of El Ancón de Loíza provided by the El Ancón de Loíza organization

El Ancón de Loíza exemplifies local efforts to maintain historical transportation heritage while pursuing sustainable community development. Historically, "El Ancón de Loíza" referred to the barge service connecting communities across the Río Grande de Loíza. Today, the name is used by a community organization which chose to name itself after the barge. *El Colectivo El Ancón* actively preserves the historic site, working to develop sustainable tourism, local youth entrepreneurship, and community improvements through art and historical preservation of Loíza's cultural relationship with maritime routes.

Figure 1.12: Bomba in Loíza; picture taken by Lyma Rodríguez

Collectively, these initiatives highlight how transportation historically shaped the region's cultural development, creating spaces for residents and visitors to reconnect with a shared past and strengthen regional identity. Designing contemporary mobility systems inspired by the region's past transportation networks can unlock the Eastern Region's interconnected cultural heritage as an asset that both residents and visitors can explore. For instance, in Loíza, a network of bike lanes and walking paths can potentially link the historic Ancón site with other offerings like COPI's ecotourism activities—such as kayaking, bike rentals, and bomba lessons.

The forthcoming **SITUR (*Sistema Integrado de Transporte Urbano y Rural*),** that will expand to become an intermunicipal service connecting Canóvanas, Loíza, and Río Grande, as well as the future Ceiba intercity regional bus route, could increase accessibility to these offerings from other municipalities within the region. Integrating multimodal transportation options with local offerings exemplifies how placemaking through modern mobility networks can build on the legacy of historical transportation systems to support the local economy and foster a unified regional identity.

Placemaking transforms ordinary spaces into vibrant and inclusive places that promote social interactions, cultural expression, and economic vitality. By creating literal and metaphorical bridges, placemaking connects people, enriches community identity, and fosters a sense of belonging. This approach is particularly effective in culturally and historically diverse regions like Eastern Puerto Rico, as it leverages unique local characteristics to build a unified regional identity. Proactively building on the Eastern Region's historic interconnectedness requires designing hubs with welcoming public spaces, greenery, and public art that reflect the region's cultural heritage through music, dance, art exhibitions, culinary events, and craft markets. Partnering with local businesses can further enhance the visibility and accessibility of regional cultural and historical offerings, creating interconnected experiences anchored at the hubs.

The incorporation of placemaking strategies within multimodal mobility hubs, supported by Mobility-as-a-Service (MaaS) technology, can further reinforce their role as physical and cultural connectors. As is the case with placemaking through transportation, technology has the power to enhance the way people in the region connect with each other and their surroundings.

The **Municipality of Naguabo** presents a significant opportunity to pilot a comprehensive placemaking strategy through multimodal mobility hubs. Inspired by the success of *Destino 191*,[162] the planned multimodal hub in Naguabo's town center has great potential to stimulate the local economy, increase visibility, and attract visitors. By thoughtfully integrating green spaces that highlight the municipality's natural beauty and inviting local artisans to showcase their creations, the hub can celebrate Naguabo's unique appeal as a destination for both cultural and natural exploration.

[162] Foundation for Puerto Rico, USDA Rural Development, & Comité Desarrollo Barrio Cubuy, Inc. (2023). *Rural Placemaking Plan for Destino 191*. Foundation for Puerto Rico. https://a43.a93.myftpupload.com/wp-content/uploads/2023/11/PlanDestino191_EN.pdf

The Municipality of Naguabo could implement MaaS technology that provides seamless trip planning and integrated fare payment options—not only for booking rides but also for booking nearby local experiences made accessible thanks to the hub's proposed strategic location. As a central node for public transit, cycling, and pedestrian pathways, the multimodal hub will enhance access, making it easier and more enjoyable for residents and visitors to explore Naguabo's urban center and surrounding attractions. Places like the iconic Malecón could be accessed through last-mile connectors, offering travelers a view of the fishing culture that shapes the culinary arts of the region and speaks to its historical fishing and boating traditions.

The municipality's revitalization project of the historic railway line, outlined in Naguabo's Municipal Recovery Plan, can also highlight Naguabo's interconnected relationship with the broader regional psychogeography. Initiatives like Ruta Borinquen, as noted above, which blend historical significance with contemporary functionality, can further build on the legacy of multimodal connectivity across Eastern Region municipalities, allowing others in the region to experience Naguabo's charm as part of a regional destination. By embracing these placemaking strategies through a mobility hub in Naguabo, the municipality can position itself as the first of many vibrant and accessible experiences within the regional destination, fostering economic growth and cultural enrichment for both residents and visitors.

More than mere transit points, multimodal hubs in the Eastern Region have the potential to become vibrant cultural crossroads where the exchange of ideas, traditions, and customs enriches local culture and offers immersive experiences. By thoughtfully highlighting the unique features of each municipality through place-based designs, these hubs can foster authentic interactions, bringing residents and visitors together to celebrate the region's diversity and richness. Embracing a holistic approach that integrates Mobility-as-a-Service (MaaS) technology will not only make exploring the Eastern Region effortless and enjoyable but also enhance residents' quality of life by facilitating convenient travel for work, leisure, and other activities.

Transforming transit hubs into dynamic centers of community life that seamlessly blend cultural, historical, functional, and environmental elements will promote sustainable development and foster a strong sense of regional identity—one that reflects Puerto Rico's deep connection to the eastern Caribbean. These hubs can serve as catalysts for economic growth, cultural enrichment, and environmental stewardship, creating a legacy of interconnectedness and shared heritage for future generations to enjoy.

1.3.9 Transportation's Sustainable Impact: Social, Cultural, and Economic Benefits

A well-designed, integrated transportation and mobility system will boost sustainable tourism and the regional economy by making it easier for visitors to explore the area's unique offerings, thereby spreading visitor spending across communities. By positioning the Eastern Region as a well-connected gateway to the U.S. Virgin Islands and Eastern Caribbean, the system can attract more travelers and extend their stays. This sustained tourism growth will translate into higher local business revenue and job creation in tour services, hospitality, retail, and their supply chains.

Better regional connectivity will enhance workforce mobility and trade, driving long-term economic growth and competitiveness—particularly when it is strategically integrated into national economic policies and infrastructure initiatives. The Eastern Region's integrated transit system, as envisioned here, will not only stimulate the visitor economy while helping protect the cultural and natural assets that make the region unique but also improve residents' mobility options and access to essential services.

The region faces significant mobility and economic challenges, including low labor force participation, low rates of public transit access and ridership, and high household transportation costs due to the need for car ownership. Increasing affordable transportation options will make it easier for people to live and work in the Eastern Region, which can reduce out-migration and strengthen communities. Currently, many residents feel the need to move closer to the metropolitan areas or out of Puerto Rico entirely in search of jobs and greater economic mobility. By linking job centers, commercial areas, and educational institutions via transit, this integrated mobility vision expands opportunities without requiring relocation.

For instance, a young professional in Fajardo could take a fast intercity bus to a job in Humacao or the San Juan metro area, rather than uprooting their family. Similarly, students from Naguabo could reach their student housing and university in San Juan using a combination of a carro público, regional bus, and Tren Urbano—thanks to coordinated schedules at the local mobility hub. Or a resident of Vieques could ride a morning ferry to Ceiba, take an intercity bus to Fajardo, then walk

and use local trolleys to go to a medical specialist's office, visit family in Luquillo, run other errands, and then easily return home the same day via a safe and reliable service.

Mobility networks like this have been shown to make a substantial difference for people with limited incomes. Studies suggest that access to transportation—especially for young people and those on public assistance—leads to higher employment rates and allows people to settle in areas with more services and opportunities, such as urban centers.[163] [164]

Innovative mobility services are now available thanks to technological advances and are emerging as powerful complements to traditional public transit. Integrating public and private systems can reduce reliance on personal vehicles, cut emissions, and increase overall accessibility by linking riders with established bus, trolley, or ferry services and newer options. In this way, the combination of flexible mobility and collective transit with enhanced demand-responsive management can address disparities in rural transportation infrastructure while improving safety, mobility, and economic competitiveness. Additionally, destinations with better transportation systems are more attractive to visitors, and income from tourism can provide funding for transport development and service improvement for residents.

Investments in transport and connectivity influence urban development, fuel job creation, impact real estate values, and are a key component of a region's financial success. Transportation infrastructure development can yield substantial returns, especially in regions that lack adequate connectivity. Initial investments that fill critical gaps—such as a new transit line in a region without options or a commercial airport to serve the area—tend to produce high economic returns by unleashing new mobility options.[165] In summary, increased mobility efficiency produces positive economic multiplier effects: businesses reach more customers, workers access more employment options, and new economic activities emerge. On the other hand, poor or unreliable transportation imposes costs on society, leading to missed opportunities and a lower quality of life. For example, U.S. households (including Puerto Rico) spend about 17% of expenditures on transportation,[166] a high-cost burden.

Realizing the full potential of the growing visitor economy in the Eastern Region will depend on strengthening transportation infrastructure to connect tourists and residents to key destinations. In this context, transportation improvements are not just about mobility—they are strategic investments to spur regional economic revitalization centered on tourism. Studies of tourism geography show a dynamic relationship between transportation and visitation, where increased mobility and transport is both a cause and effect of tourism growth[167]: improving transport facilities tends to stimulate tourism, and rising tourist demand in turn pressures authorities to further upgrade infrastructure.

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[163] Urban Institute Upward Mobility Initiative. *Transportation access*. Upward Mobility. https://upward-mobility.urban.org/framework/neighborhoods/transportation

[164] Gurley, T., & Bruce, D. (2005). The effects of car access on employment outcomes for welfare recipients. *Journal of Urban Economics*, *58*(2), 250–272. https://doi.org/10.1016/j.jue.2005.05.002

[165] Shi, J., Bai, T., Zhao, Z., & Tan, H. (2024). Driving Economic Growth through Transportation Infrastructure: An In-Depth Spatial Econometric Analysis. Sustainability, 16(10), 4283. https://doi.org/10.3390/su16104283

[166] *Consumer Expenditures—2024*. (2025). [Dataset]. U.S. Bureau of Labor Statistics. https://www.bls.gov/news.release/cesan.nr0.htm

[167] Organisation for Economic Co-operation and Development (OECD). OECD Tourism Trends and Policies 2016, Chapter: "Transport and Tourism." Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2016/03/oecd-tourism-trends-and-policies-2016_g1g5c875/tour-2016-en.pdf

Combining global best practices with local insights, the new initiatives presented here must unlock economic opportunities, target underserved connections for high return on investment, and emphasize efficient management of new infrastructure to ensure sustainable community benefits.

An advanced, networked transportation and mobility system will demonstrate that the Eastern Region is "open for business," attracting outside investment and encouraging local entrepreneurship. Investors are more likely to fund projects in areas with reliable transportation for workers and tourists, and improved logistics—via the Ceiba air hub, less congested roads, and accessible seaports—can lower costs for local businesses. Additionally, households stand to gain significant cost savings. Car ownership is virtually a necessity in Puerto Rico, with 89% of Eastern Region workers driving to work (83% of whom drive alone), and the burden of car ownership is higher than in the U.S. mainland and continues to rise.

By providing viable alternatives to private cars, these new options can reduce average transportation costs for residents and ensure that vulnerable populations can access shelters, supplies, and healthcare in the face of emergencies. For instance, if a family can rely on transit and microtransit for some trips, or for regular travel to work or school, they can avoid purchasing a second car or reduce their spending on fuel and car maintenance.

Even a partial shift to public transit or shared mobility can save families thousands of dollars per year, freeing up income for other needs and boosting the local economy through increased disposable spending. Improved access to transportation options can reduce travel times to medical facilities, enhance emergency response, and even expand healthcare access through better pharmacy delivery, potentially lowering overall medical costs for families. Similarly, better transit and infrastructure enable students to more easily reach schools, colleges, training centers, and career opportunities.

Furthermore, an improved transportation system can lower freight costs, where more frequent deliveries and reduced shipping costs mean that rural residents and businesses will have access to a wider variety of goods at more competitive prices. This is particularly impactful for essential goods like medications, household supplies, and fresh food. Ceiba's airport, beyond passengers, is planned to serve as a regional cargo hub to streamline the movement of goods for local businesses and even disaster relief logistics. On-demand microtransit or ferry services can rapidly transport medical personnel, supplies, and patients during a disaster, while flexible microtransit routes—and eventually air taxis—will strengthen the ability to reach remote or otherwise inaccessible areas.

Finally, transportation infrastructure investments that support the growth and dispersion of visitor flows to and within the region can also provide an array of essential benefits for residents: inclusive job opportunities and entry into the workforce, the encouragement of entrepreneurship and business opportunities in remote locations, the building of community resilience in the face of disasters, the sharing and preservation of culture and heritage in local regions, opportunities for producing vibrant public spaces, and increased investment in other infrastructure like the arts, green infrastructure, technology, and education. Measuring the impacts of such investments is essential to ensure that resources are used efficiently, benefits are maximized, and unintended adverse consequences are addressed and minimized; particularly as they relate to growth in visitation.

Key Findings & Initiatives for Placemaking and Transportation

1. Cultural Foundations of Mobility and Identity

Key Findings

Historic transportation routes shaped shared cultural identity across the archipelago.

Mobility hubs have potential to reconnect communities and tell the story of regional heritage.

Transportation networks support cultural fusion, economic exchange, and historic continuity.

Initiatives

Design mobility hubs as placemaking spaces highlighting regional cultural history.

Integrate public art, greenery, and local commerce to reflect unique municipal identities.

Highlight historical travel routes (rail, maritime) through site design and educational media.

2. Modern Mobility Hubs as Placemaking Engines

Key Findings

Mobility hubs can serve as public spaces that drive commerce, tourism, and community pride.

Historic transportation links can be reactivated as cultural corridors.

Sites like Naguabo offer strong pilot opportunities for integrated placemaking strategies.

Initiatives

Leverage Naguabo's future multimodal hub to integrate MaaS with cultural programming and last-mile connectors.

Develop programming at hubs tied to arts, crafts, food, and local festivals.

Create regional heritage routes (e.g., Ruta Borinquen) that repurpose old railways as trails.

3. Local Initiatives Celebrating Transport Heritage

Key Findings

Community-led projects like Pa'l Selfie and El Ancón de Loíza preserve and reinterpret transport heritage.

Blending transport access with storytelling deepens the visitor experience.

Art, tourism, and transit can be mutually reinforcing.

Initiatives

Support and replicate initiatives like QR-coded murals and oral history trails.

Tie microtransit and micromobility access to cultural nodes like El Ancón and COPI.

Fund regional placemaking incubators that connect transit with cultural entrepreneurship.

4. Placemaking Through Technology: MaaS and Culture

Key Findings

MaaS platforms can expand access not just to rides, but to cultural and heritage destinations.

Digital infrastructure supports inclusive placemaking, linking residents and visitors to local offerings.

Booking transit and experiences in one place creates a seamless travel and exploration environment.

1.4 Conclusion and Future Vision

Technologically Enabled, Integrated Transportation and Mobility - The Axis of Economic and Social Transformation for the Eastern Region

From the first mile to the last mile, from the town centers to the sprawling urbanizations to the countryside, people of every walk of life must be able to get from where they live or where they lodge to where they visit or work or play or study or worship or to address their health. They must be able to do so safely and securely and on a timely basis. The transportation experience must be seamless and stress-free. Today, 91% of the people who move around the region rely on a personal vehicle for transportation that too many can ill afford. They do so because they have no realistic options, no reasonable way of getting where they need to go.

Now, an exceptional moment in history is before us. The solution to a problem that has seemed unsolvable for generations is now within reach thanks to a convergence of circumstances of history, policy and technology. State and municipal public transportation investments are beginning to

provide important services in certain locales within the region while dynamic new Demand Responsive Transit (DRT) technologies allow the empowerment and large-scale revival of traditional carros públicos and their integration as a critical element in this strategy, and new governance and operational models can facilitate their integration with available state and municipal services. The goal of making public transportation ubiquitous, reliable, convenient, and cost effective is now achievable.

Well-designed and relatively modest investments in transportation-related infrastructure and associated multimodal hubs laced together by Mobility-as-a-Service (MaaS) technology and integrally operated by a professional, sustainably-managed, capable organization, can deliver efficient, seamless, and cost-effective passenger movement across land, air, and sea. This integrated, multimodal transportation network can, in turn, catalyze significant economic, social and environmental benefits. In fact, the region's economic transformation hinges on a well-connected mobility system that leverages the synergies of combining two different sources of ridership – residents who gain mobility and equitable access to opportunity, and visitors who can, by being able to travel and disperse throughout the region, access exceptional, authentic experiences that communities can offer while bringing with them the economic bounty to lift up these communities from a generation of decline.

The power of strengthening and modernizing the maritime connections to Vieques and Culebra is not only in ensuring that those islands are fully supported in their all-important economic opportunity for visitation but also in the ability of their residents to live their lives with access to services and opportunities on the main island. A Vieques-Culebra connector must come to pass because it enhances the opportunity for visitation for both islands. The Ferry Terminal at Ceiba is an essential investment that is coming to pass at the right, strategic moment along with the government investment in four new ferries. In conjunction with the Ceiba airport, it becomes a critical multimodal hub for the region.

The opportunity to create maritime and air connections between the Eastern Region and the U.S. Virgin Islands is a strategic one. It is also the only practicable maritime connection between Puerto Rico and the USVI. The concept of a shared destination marketing effort with the USVI, analogous to the one being advanced by the PR government with the Dominican Republic, would be powerful for potentially bringing in as many as 100,000 additional visitors into the Eastern Region. The Ceiba air and maritime transportation hub can become the main axis of that connectivity, while a small, fast ferry between St. Thomas and Fajardo could be an important diversification and perhaps become the initial connection point to the Virgin Islands. These connections strengthen not only tourism circulation but also the broader economic corridors required for emerging industries, small exporters, and the advanced manufacturing ecosystem the region seeks to cultivate.

Transforming Ceiba Airport into a commercial and cargo jetport capable of accommodating narrow-body passenger aircraft and air cargo operations would leverage existing infrastructure to achieve expansion at a fraction of the cost of building a new airport, while dramatically improving regional connectivity and catalyzing economic growth. This investment would generate thousands of jobs in construction and operations and strengthen the region's long-term economic development trajectory. As Puerto Rico positions itself to capture the next wave of advanced manufacturing and nearshoring investment, a modern jetport and cargo-capable facility in the Eastern Region becomes essential to coordinating supply chains, moving specialized components, and ensuring that

employers can reliably access both talent and markets. The novel technology of urban air mobility via eVTOL aircraft may appear futuristic yet it is already happening, and a well-designed vertiport integrated into the passenger terminal at Ceiba airport could link it with the main airport in San Juan as a key element of Puerto Rico's long term air access resiliency.

These transformative infrastructure investments (from an expanded airport to a multimodal maritime hub) will create unprecedented gateways into the Eastern Region, but accessibility alone does not generate a thriving economy. For transportation to reach its full economic and social potential, it must be woven into a broader ecosystem of high-quality attractions, vibrant communities, strong governance, and a skilled regional workforce. This interplay becomes the basis on which the region can translate improved mobility into meaningful, place-based experiences. The Attractions Pillar presents innovative strategies for developing new experiences and elevating existing sites to better connect visitors with the region's rich cultural, natural, and historical offerings. The success of an integrated transportation network depends on the governance systems that coordinate it, the workforce that operates and maintains it, and the attractions and businesses that give travelers a reason to move.

Together, these transversal systems—transportation, attractions, governance, and human capital—form the architecture through which the Eastern Region can convert mobility investments into durable, inclusive prosperity. When aligned, they create a development model in which improved access multiplies economic opportunity, strengthens community assets, and positions the region to compete in emerging sectors while deepening its cultural and environmental distinctiveness. It is this integrated framework that ultimately enables the transportation network to function not as an isolated set of projects, but as the catalyst for the region's broader transformation.

The Eastern Region now stands at a pivotal juncture. The integrated transportation network outlined in this Pillar is not merely a technical proposal but the structural foundation for the region's long-term economic renewal. It is the system that will allow new attractions to flourish, advanced manufacturing and reshoring investments to take root, talent to circulate across communities, and a new regional governance model to coordinate growth with discipline, continuity and foresight. Realizing this vision requires collective action: municipalities aligning around shared mobility standards, state agencies coordinating infrastructure investments, private operators embracing innovation, and communities shaping the system to reflect their needs and aspirations. If these actors seize this moment, the Eastern Region can build a transportation architecture that moves people and an entire region toward a more resilient, prosperous, and equitable future.