

## PILLAR BRIEF

# TRANSPORTATION & MOBILITY<sup>1</sup>



The **Eastern Region<sup>2</sup> Strategic Vision** is a framework for transformation and a living roadmap for a thriving future rooted in sustainability, resilience and shared prosperity. It unites data, design, and collaboration to ensure that growth benefits the residents while sustainably leveraging its natural and cultural assets. Developed through rigorous research, extensive stakeholder engagement, and alignment with global best practices, it is grounded in enduring principles that give direction and meaning to the region’s development. At its core are values of **shared stewardship, inclusive community engagement, collective responsibility and governance**, recognizing that prosperity must be co-created by the people who live, work, and visit here. It calls for **asset-based development** that empowers communities, **sustainable destination management** that promotes economic vitality while safeguarding the ecosystems on which life and livelihoods depend. Above all, it embraces **innovation**, not only through adoption of technology, but through new ways of connecting, collaborating, solving problems, and sustaining the places we cherish.

These principles form the moral and operational compass of the Eastern Region Strategic Vision, expressed through four interdependent pillars: ***Transportation and Mobility, Attractions, Human Capital, and Governance***. These pillars will guide how the region will move visitors and residents, attract and distribute visitation, empower its communities, and provide cohesive, shared governance for regionwide strategic initiatives in the decades ahead. Together, we can elevate regional economic development as a multisectoral model that benefits communities, visitors, and future generations alike. The first and most transformative step in realizing this vision lies in **reimagining how the Eastern Region moves**, through an integrated, multimodal transportation and mobility system that connects its people, places, and opportunities across land, sea, and air.

### Vision for an Integrated Multimodal Regional Transportation & Mobility System

The Eastern Region of Puerto Rico aspires to develop a fully integrated, technologically advanced, and multimodal transportation network that links land, sea, and air services. Key to this vision is a “Mobility as a Service” (MaaS) platform, which will provide a digital backbone for seamlessly connecting travelers to public transit, maritime ferries, microtransit, micromobility, and, ultimately, commercial and advanced air mobility options.

**Objective:** Increase efficiency and reliability, improve accessibility for residents, and facilitate the region’s growing visitor economy to disperse visitors and extend their stay.

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<sup>1</sup> One of four pillars of FPR’s *Eastern Region Strategic Vision for Sustainable Development*.

<sup>2</sup> The Eastern Region comprises the 15 municipalities of: Canóvanas, Ceiba, Culebra, Fajardo, Juncos, Humacao, Las Piedras, Loíza, Luquillo, Maunabo, Naguabo, Río Grande, San Lorenzo, Vieques, and Yabucoa.



**Approach:** Integrate new and existing services—such as *carros públicos* (shared vans), municipal trolleys, ferries, on-demand microtransit and micromobility—into a single app for trip planning, booking, and payment.

**Expected Impact:** Reduce car dependency and congestion, lower carbon emissions, and stimulate regional economic growth by increased access and regional mobility.

**Shifting Socioeconomic Dynamics:** With ever-increasing vehicle acquisition and maintenance costs, coupled with younger generations’ growing openness to shared and on-demand options, conditions are ripe for a shift away from car-centric travel. This intersection of rising household transportation expenditures, evolving cultural preferences, and increasing visitation provides a unique opportunity to accelerate the adoption of integrated multimodal systems—linking buses, microtransit, ferries, micromobility, and car-sharing services under a unified, technology-driven platform.



## Ground Transportation: From Car-Centric to Multimodal

Currently, over 89% of workers in the Eastern Region rely on private vehicles for commuting; public transportation accounts for only 0.5% of travel-to-work modes. Very few collective transportation options exist. This dependency leads to high household transport costs, limited mobility options for seniors and low-income individuals, and increased traffic congestion. About 38% of visitors to Puerto Rico use a personal car rental to move around, while the majority going to El Yunque National Forest, bio bays, or other key attractions outside the metro area travel through a tour operator that restricts their movement across the region and length of stay. Increased visitation to popular outdoor recreation areas using personal vehicles by both residents and visitors causes traffic and parking congestion, pollution, environmental degradation, and lower capacity limits.

- **Municipal Trolley & Bus Systems:** Several municipalities have launched (or are in the process of launching) small-scale, Federal Transit Authority-funded fixed-route trolleys. However, these systems lack intermunicipal connectivity and real-time visibility for users.



- **Carros Públicos:** Previously the backbone of intermunicipal travel, these shared vans are now in decline. Yet the infrastructure (routes, terminals) remains and can be modernized with app-based, on-demand ride-hailing technology. Two-way visibility and demand responsive management with route diversion, as well as differentiated pricing will ensure ridership so that carros públicos are affordable for both residents and visitors, as well as commercially viable for operators.
- **Intercity Buses:** To bridge large distances, the Puerto Rico Integrated Transit Authority (PRITA) is preparing an intercity bus link connecting Ceiba’s ferry terminal and airport with the San Juan metro area Tren Urbano. This route could be extended to other municipalities, functioning as the starting point for a true regional bus network.
- **Microtransit & Micromobility:** Demand-responsive-transit (DRT) shared ride services, along with bicycle or e-scooter sharing, can offer flexibility for first- and last-mile solutions, especially in low-density or rural areas that can be more rapidly deployed and scaled than public transit systems. By combining fixed-route buses with on-demand shuttles and micromobility at key “mobility hubs,” the region can broaden its transportation reach without requiring every traveler to own a car.

### Mobility Hubs and Placemaking

A cornerstone of this regional vision is establishing “mobility hubs”—nodes integrating multiple travel modes (bus, microtransit, ferry, micromobility) under one physical and digital network.

- **Community Anchors:** These hubs can be intentionally designed to incorporate placemaking strategies (public art, green space, local businesses), effectively transforming transit points into destinations that enhance community identity. Priority sites include ferry and airport in Ceiba, as well as Naguabo and Palmer, Rio Grande as gateways to El Yunque National Forest.
- **TOD and Equitable Access:** Transit-Oriented Development (TOD) near these hubs would promote mixed-use, higher-density projects that reduce car dependence. Special attention is given to equitable TOD, ensuring that affordability and inclusion remain priorities.

### Maritime Transportation: Linking Archipelagos and Beyond

The Eastern Region includes Puerto Rico’s two island municipalities, Vieques and Culebra, making ferry service critical. Ferries currently depart from Ceiba and connect to Isabel Segunda, Vieques and Dewey, Culebra’s town center.

- **Challenges:** Limited-service frequency, inconsistent ground transport upon arrival, and no direct ferry route connecting the island municipalities.
- **Opportunities:** New ferry vessels are being procured by Port Authority, and PRITA is considering additional routes, including potential service to the U.S. Virgin Islands. Fajardo’s port redevelopment and a possible new terminal in Vieques’ Mosquito Pier also offer expansion prospects.
- **Future Outlook:** Position the Eastern Region as a maritime gateway connecting Puerto Rico, Vieques, Culebra, and the Virgin Islands, boosting both economic activity and resilience in times of disruption.



## Air Transportation: Ceiba Airport’s Transformative Potential

Puerto Rico’s Eastern Region already has three airports, but the José Aponte de la Torre Airport in Ceiba stands out as the most underutilized yet most promising for catalyzing an era of regional prosperity.

- **Commercial Redevelopment:** With its long runway (a legacy of the former naval base), a relatively modest capital investment can upgrade Ceiba to handle commercial passenger jets and serve as an overflow or secondary hub for San Juan’s airport, which is vulnerable to flooding and sea-level rise.
- **Advanced Air Mobility (AAM) and eVTOLs:** The region is exploring future air taxi (eVTOL) services that could link San Juan directly with Ceiba, Vieques, Culebra, and beyond in 15–20 minutes.
- **Regional Economic Engine:** Upgrading Ceiba is projected to generate thousands of jobs, attract new business, and strengthen Puerto Rico’s resilience. In a future scenario of climate change and extreme weather, having additional high-elevation runway capacity is critical for emergency response and continuity of air service.

## Technology and MaaS Integration

A high level of technological integration across all modes is essential for systemwide efficiency. MaaS platforms offer:

- **Real-Time Coordination:** Shared, dynamic schedules that let riders track vehicle locations, compare modes, and pay digitally in a single interface.
- **On-Demand Service:** Automated route optimization and “hyper-pooling” can boost ridership and lower operating costs, especially in rural or spread-out communities.
- **Data-Driven Policy:** Centralizing passenger demand data, ridership flows, and performance metrics can help planners continuously optimize service quality and coverage.

## Socioeconomic and Environmental Benefits

Building an integrated system promises far-reaching impacts:

- **Economic Growth:** By reducing dependency on cars, improving inter-municipal connectivity, and expanding capacity for tourism and dispersing visitor flows, the region can capture more visitor spending and stimulate local entrepreneurship.
- **Accessibility:** Targeted investments in paratransit, microtransit, and integrated public options can dramatically improve access to education, healthcare, and employment for vulnerable groups including the elderly and people with disabilities.
- **Environmental Sustainability:** Shifting trips from private vehicles to shared modes can lower carbon emissions. Puerto Rico’s 2019–2021 greenhouse gas inventory identified transportation as the second-largest contributor of emissions, underscoring the urgent need for more efficient transit solutions.



## Implementation Pathways and Key Takeaways

- **Phased Projects:** Initiatives like PRITA’s Ceiba–San Juan intercity bus, the Palmer transit hub and Naguabo terminus planning to facilitate access to El Yunque, the US Forest Service and Volpe Center’s planning studies for a forest region transit system, DTOP/MPO Northeast Regional Planning Committee, and the new ferry acquisitions and expansion of ferry service offer building blocks for broader network integration over time. Launching a pilot project for microtransit in the northeast corridor through a modernized *carros públicos* system that offers on-demand shared transportation through a mobile app will support increased visitation and connectivity from the metro area to island municipalities for residents.
- **Coordination Across Jurisdictions:** Aligning municipalities, state agencies, and private operators is essential for leveraging federal grants, streamlining planning, and enabling cross-regional routes and greater interconnectivity.
- **Governance and Funding:** A Regional Stewardship Council that can serve as an Economic Development Organization could provide sustained leadership, secure funding, facilitate public-private partnerships, and advocate for an integrated, technology-driven system.
- **Metrics & Monitoring:** Tracking ridership, household transportation costs, economic outputs (e.g., real estate values, local business revenues), and environmental indicators will be crucial for guiding long-term investments and refinements.

## Conclusion: Building a Regional Integrated Mobility System for the Future

The vision outlined in this chapter is both comprehensive and future-forward, embracing next-generation transportation technologies, sustainability, and social equity. It leverages Puerto Rico’s existing—but underutilized—infrastructure (*carros públicos* terminals, municipal trolleys, Ceiba airport, ferry network) and new assets (on-demand microtransit, MaaS platforms, future eVTOL services) to create a system that can adapt to fast-changing conditions, from increasing tourism demand to the impacts of climate change. By focusing on connectivity, efficiency, and innovation, the Eastern Region can serve as a model for other parts of the island and the Caribbean.

This integrated approach, where improved air, maritime, and ground transportation converge into a seamless MaaS platform, has the potential to generate significant social, economic, and environmental benefits. It stands as a prime example of forward-thinking regional mobility planning that could be of high interest to researchers, policymakers, planners and practitioners in civil and transportation engineering.