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Motorcoach Sustainability and Innovation

A Study of Sustainability and Innovation within the Motorcoach and Charter Bus Industry

April 2025

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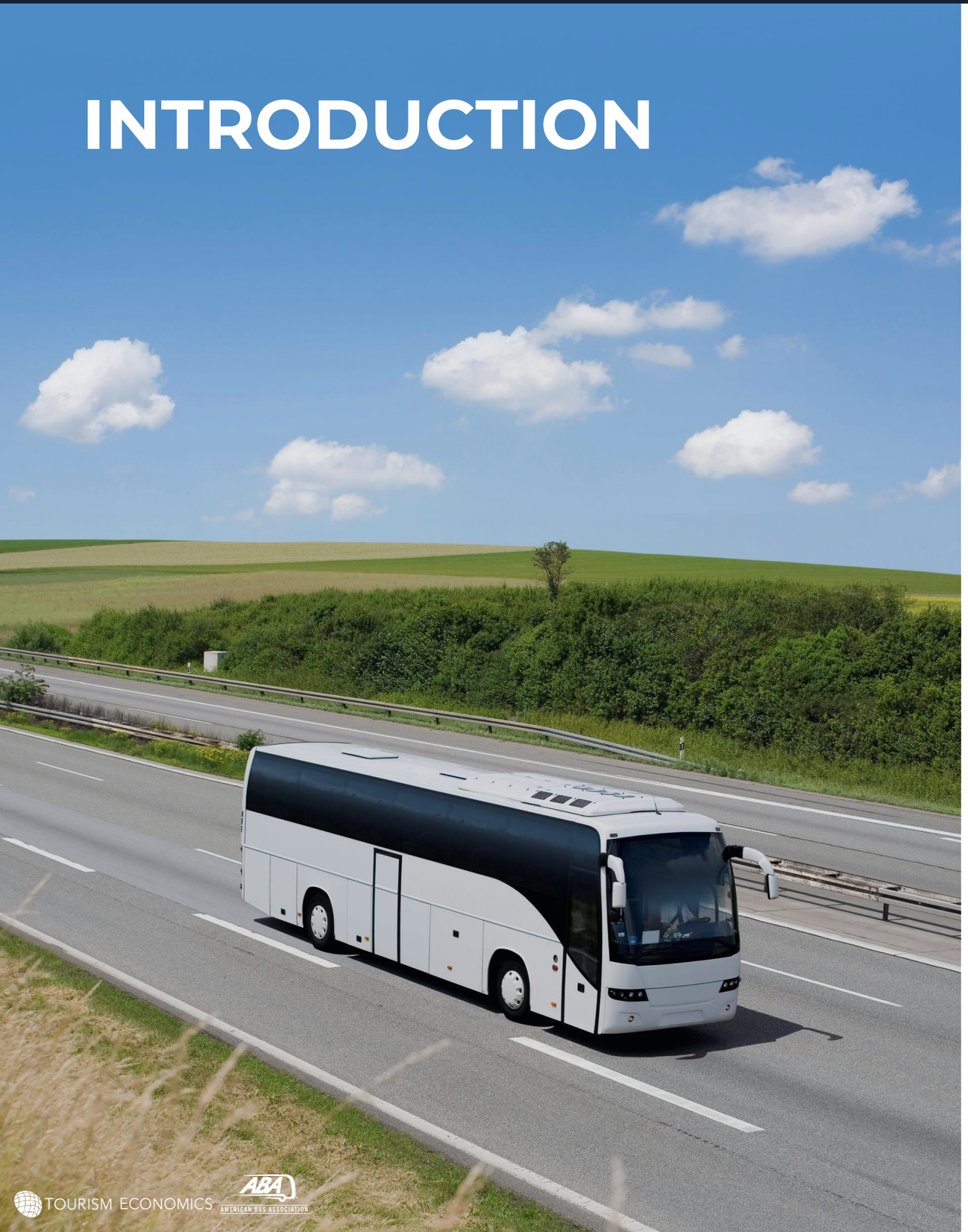


Research Overview

The Sustainability and Innovation of the Motorcoach and Charter Bus Industry is a study commissioned by the American Bus Association Foundation (ABAF) to explore the current state of sustainability within the motorcoach industry. For the purposes of this study, sustainability within the motorcoach industry is defined as any operation or manufacturing practice that reduces emissions, supports local communities, and preserves the environment. This study explores the current state of sustainability and innovation within the industry and looks at progress and challenges from both the manufacturer and operator perspective.

Definition of the Motorcoach Industry

For this research, the Motorcoach Industry is defined as:

Private-sector organizations that manufacture, lease/own and operate motorcoaches and offer motorcoach transportation services to the public, including private and public sector organizations, on a contract basis.

- This includes motorcoach transportation companies hired on a contract basis by state or city transit authorities to transport commuters.
- Excludes governments, transit agencies, or other public-sector organizations that lease/own and operate motorcoaches and offer transportation services to the public.
- Excludes private- and public-sector organizations that lease/own and operate motorcoaches for their use, such as businesses that operate motorcoaches to shuttle their employees.

Definition of a Motorcoach

For this study, a motorcoach, or over-the-road bus (OTRB), is defined as a vehicle designed for long-distance transportation of passengers, characterized by integral construction with an elevated passenger deck located over a baggage compartment. It is at least 30 feet in length. This definition closely matches the definition of an OTRB written into U.S. law: “a bus characterized by an elevated passenger deck located over a baggage compartment” (Section 3038 of Public Law 105-178, 49 USC 5310 note). This definition of a motorcoach excludes the typical city transit bus and city sightseeing buses, such as double-decker buses and trolleys.

INTRODUCTION

Research Overview

Data Sources

Several sources of information were used to inform this study.

1. ABAF's latest emissions report "Updated Comparison of Energy Use and Emissions from Different Transportation Modes Using the Latest Available Datasets" by the Texas A&M Transportation Institute.
2. The ABAF's "Motorcoach Census: A Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2023."
3. Background research from the following organizations: U.S. Department of Energy, U.S. Environmental Protection Agency (EPA), United Nations (U.N.), ISGlobal, and the GST Council.
4. A survey distributed to motorcoach carriers and manufacturers to capture and assess current sustainable practices within the industry.
5. Interviews with key motorcoach carriers and manufacturers to gather information about strategic planning, current and future efforts, as well as challenges.
6. Publications by OEMs referenced in this report have been closely consulted to ensure accuracy, incorporate industry best practices, and provide insights into the latest advancements in motorcoach manufacturing and sustainability.

Disclaimers

Tourism Economics prepared this analysis based on individual company responses to a survey. Our role was to aggregate the data to present an overview of sustainability within the motorcoach industry in the United States and Canada while maintaining the confidentiality of the individual respondent's information.

Any errors in the aggregation and presentation are our own.

Executive Summary

Motorcoaches Are the Most Energy-Efficient Mode of Transportation

According to the report's data, compiled by Tourism Economics on behalf of the American Bus Association Foundation, motorcoaches significantly outperform all other modes of travel in terms of energy consumption per passenger-mile. This includes commercial air travel, rail, ferry, transit buses, and personal vehicles.

Motorcoaches Emit the Least CO_2 Per Passenger-Mile

Among the key findings, motorcoaches emit less carbon dioxide per passenger-mile than any other mode, making them the top choice for travelers and policymakers focused on reducing transportation emissions.

Transit Buses Emit 10x More CO_2 Than Motorcoaches

The study found that while transit buses serve a critical role in local communities, they emit more than ten times the amount of CO_2 per passenger-mile compared to motorcoaches—highlighting the unique environmental advantage of long-distance motorcoach travel.

Motorcoaches Lead in Low Social Cost of CO_2 Emissions

By applying the EPA's most recent valuation of the social cost of carbon, the report calculates the societal impact of each transportation method. Motorcoaches emerged with the lowest associated cost—thanks to their superior emissions performance—highlighting their positive impact on public health, environmental protection, and economic sustainability.

Annual Savings From Motorcoach Travel

According to the ABA's *Motorcoach Census*, nearly 38 billion passenger-miles were traveled by motorcoach in 2023. If those same miles had been traveled by personal cars instead, the nation would have incurred an estimated **$2.7 billion** in environmental, health, and economic losses. This underscores the significant social and environmental savings generated when Americans choose motorcoach travel over less efficient alternatives.

Motorcoach Travel Delivers the Best Environmental Performance Across All Pollutants

Beyond carbon emissions, the report evaluated a full spectrum of pollutants and energy use indicators. In every category modeled, motorcoach travel consistently ranked as one of the most environmentally friendly and sustainable modes of transportation.

Clean Idle Technology Sets the Standard for Emissions Compliance

Modern motorcoaches are equipped with advanced **Clean Idle technology**, designed to significantly reduce emissions during common idle periods at rest stops, terminals, and loading zones. These systems enable coaches to meet—and exceed—regulatory standards, cutting idle NOx emissions by **nearly 50%** below the regulatory limit of 30 g/hr.

MOTORCOACH INDUSTRY: A SUSTAINABLE MODE OF TRANSPORTATION

Motorcoach Industry Sustainability Findings

The Motorcoach Industry's Role in Supporting Sustainable Travel

In terms of energy efficiency and reduced CO_2 emissions, long-distance travel by motorcoach outperforms travel by van, rail, trolley, passenger car, and boat. Tourist travel by motorcoach also serves to protect environmentally sensitive areas by offering a sustainable way to visit natural reserves, parks, and other delicate ecosystems. Motorcoach travel creates opportunities to promote sustainable practices and raise passenger awareness about environmental issues. This places the motorcoach industry in a pivotal role to improve the overall sustainability of long-distance travel.

Economic Advantages

The environmental benefits of motorcoach travel can be measured in economic terms by applying a widely accepted savings estimate known as the social cost of carbon (SCC). The SCC is a comprehensive measurement representing the present value of long-term environmental, health, and economic impacts caused by each additional unit of carbon emissions in a particular year and includes valuations for reduced agricultural productivity, disruption of energy systems, risk of conflict, environmental migration, increased human health costs, damage from extreme weather events, rising sea levels and property loss, as well as biodiversity loss and ecosystem disruptions.

Through this lens, it is possible to estimate the social savings generated by each additional unit of carbon emissions prevented through sustainable travel choices. The following pages offer an overview of the motorcoach industry's role in reducing carbon emissions and generating social savings.

Motorcoach Industry Sustainability Findings

Motorcoach Travel Comparison

The ABA Foundation's 2023 "Updated Comparison of Energy Use and Emissions from Different Transportation Modes Using the Latest Available Updates" report evaluates the environmental performance of motorcoach operations through a comparison of energy use and pollutants emitted. Researchers at the Texas A&M Transportation Institute found that motorcoaches outperformed all other transportation modes in terms of energy efficiency, ranking among the best performing for all pollutant types modeled.

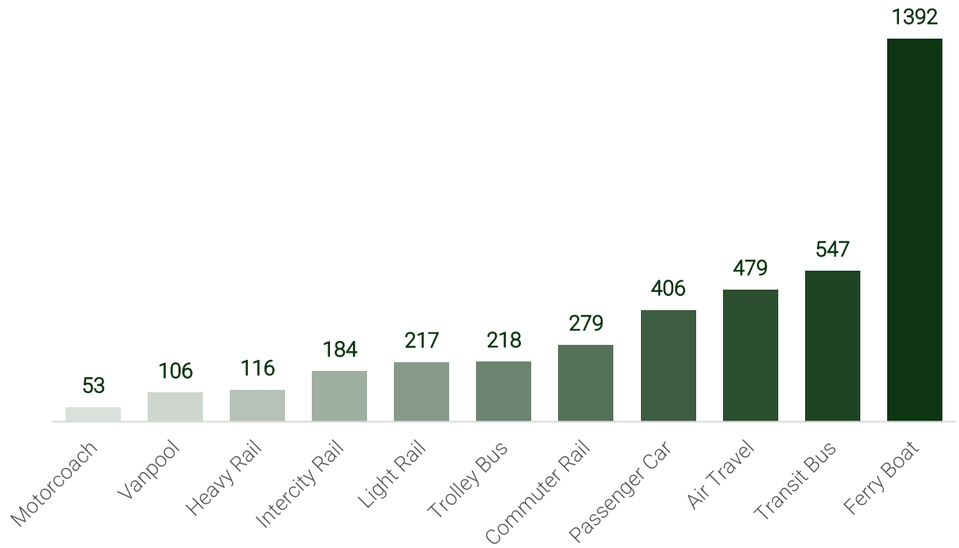
The chart to the right (top) compares the average per passenger-mile CO_2 emissions for various modes of transportation. Ferry boats ranked highest in terms of CO_2 emissions and proved the least sustainable mode of transportation. Transit buses were found to emit 10.3 times more CO_2 than motorcoaches making them the second least sustainable. Air travel ranked the third least sustainable travel mode, emitting an average rate of CO_2 emissions 9.1 times higher than that of motorcoach travel. Though vanpooling ranked second best, only surpassed by motorcoaches, the ABA study revealed vanpooling used more energy and produced 2.6 more CO_2 per passenger-mile.

Social Cost Per Passenger-Mile of CO_2 Emissions

Understanding the social cost of CO_2 emissions in terms of the environmental, health, and economic impacts caused by each additional unit of carbon emissions allows for a greater understanding of the benefits to society when more sustainable modes of travel are utilized. To calculate the social cost of CO_2 emissions, the rate of emissions per gram was multiplied by the EPA's most recent social cost of carbon valuation for the 2023 calendar year.

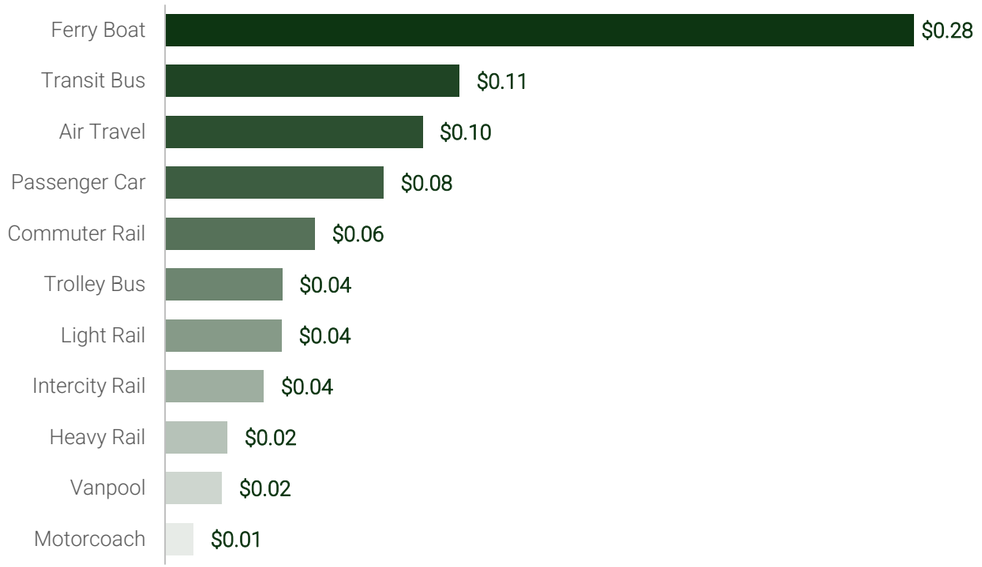
The chart to the right (bottom) provides a breakdown of the social cost of carbon per passenger-mile across the analyzed modes of transportation further highlighting the sustainable nature of motorcoach travel.

AVERAGE PER PASSENGER-MILE CO_2 EMISSIONS
in grams



Source: ABA, Our World in Data

AVERAGE SOCIAL COST OF CARBON PER PASSENGER-MILE



Source: ABA, EPA, Our World in Data, and Tourism Economics

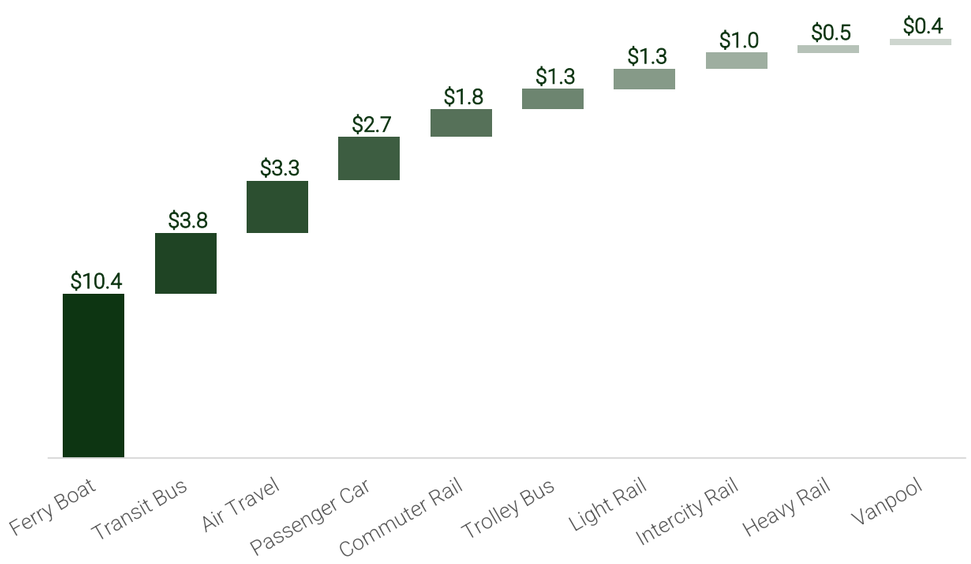
Motorcoach Industry Sustainability Findings

Annual Savings From Motorcoach Travel

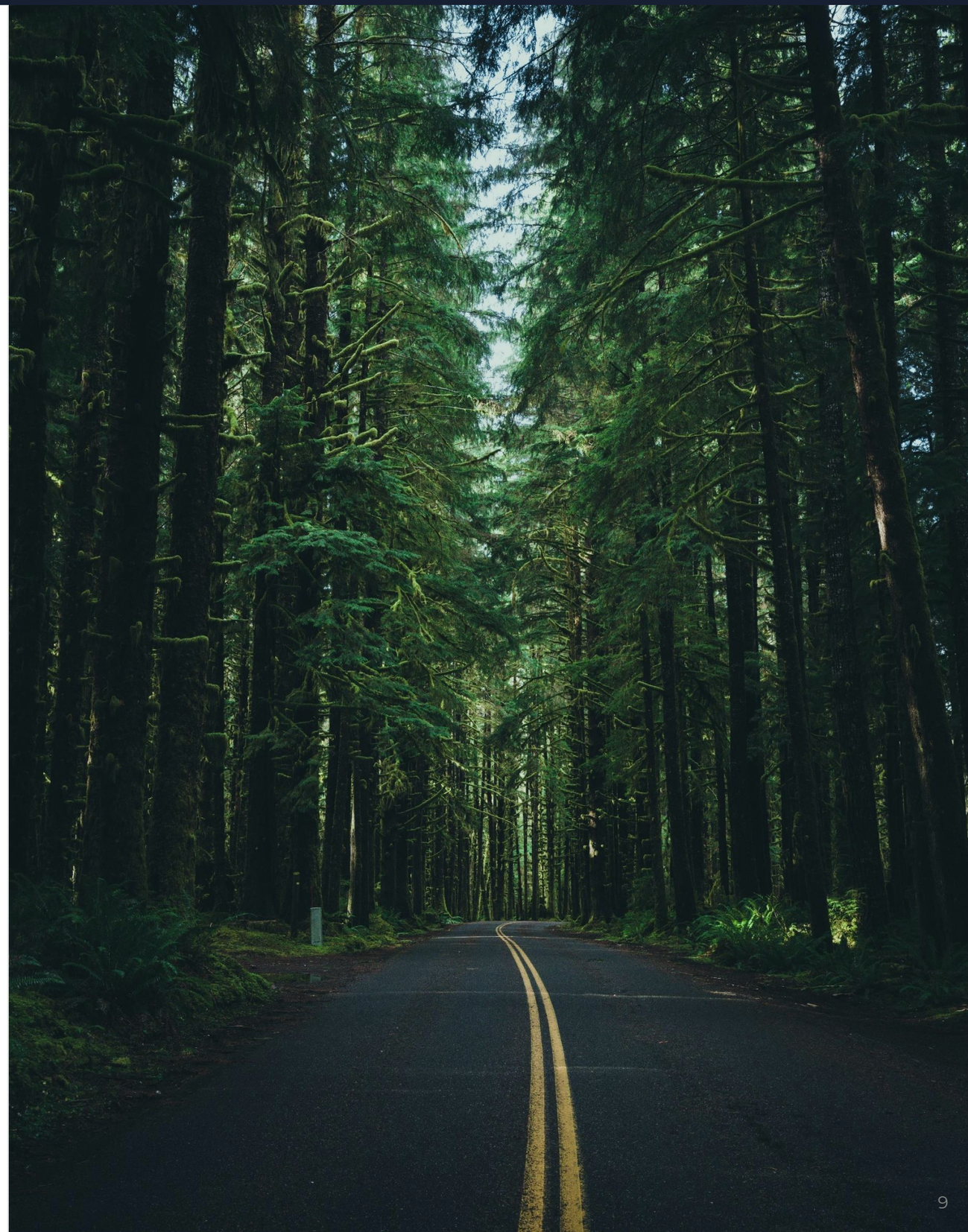
In 2024, the ABA released its “Motorcoach Census” for the 2023 calendar year, which aimed to measure the size and activity of the motorcoach transportation industry. The findings estimated the annual per passenger-miles traveled amounted to nearly 38 billion in 2023. Applying the average per passenger-mile SCC to the annual total miles traveled allows insight into the social savings generated when travelers use motorcoach transportation versus other modes of transportation.

The chart below offers an overview of the estimated 2023 annual savings generated by the 38 billion passenger miles traveled via motorcoach as opposed to other modes of transportation. For example, had travelers chosen passenger car travel versus traveling by motorcoach for the 38 billion miles traveled in 2023, $2.7 billion in environmental, health, and economic losses would have been incurred.

ANNUAL SOCIAL COST OF CARBON SAVINGS
in billions



Source: ABA, EPA, and Tourism Economics



ROLE OF MANUFACTURERS

ROLE OF MANUFACTURERS
Driving Motorcoach Sustainability and Innovation

Sustainable manufacturing serves as a primary facilitator of the motorcoach industry's overall sustainability. Manufacturers support the long-term sustainability of motorcoach transportation by:

- Investment in technology development aimed at reducing CO^2 emissions, and fuel efficiency enhancement
- Responsible production and waste management
- Incorporation of eco-friendly materials and design
- Regulatory compliance and standards
- Integration of smart technologies
- Lifecycle management
- Collaboration with operators and stakeholders
- Sustainable supply chain sourcing

Carbon Emissions and Enhancing Fuel Efficiency

Motorcoach manufacturers can reduce carbon emissions through both the production of more efficient buses and the implementation of sustainable practices throughout the production and delivery phase. In accordance with U.N. climate change findings, manufacturers can further reduce harmful emissions through reliance on alternative energy sources such as solar, wind, or hydro-electric power. Manufacturing plants may also choose to rely on LED lighting and smart energy management systems.

Organizations focused on supporting the industry's shift toward sustainability, including the U.S. EPA, have identified several sustainable motorcoach designs as an effective way to minimize emissions and dependence on fossil fuels. Motorcoaches that rely on electric or hydrogen fuel cell technology emit no pollutants, and hybrid motorcoaches enhance performance through the integration of combustion engines and electric power systems. Motorcoaches powered by compressed natural gas and liquified natural gas along with biodiesel and propane systems serve as cleaner alternatives to diesel engines by reducing greenhouse gas emissions, while motorcoaches with solar assistance enhance performance through renewable energy sources. The motorcoach industry can achieve its zero-emission goals through innovative practices that reduce environmental harm and support sustainable energy systems.

Eco-Friendly Materials and Design

Incorporating eco-friendly materials and designs into motorcoach manufacturing supports sustainability while maintaining durability, safety, and comfort. Manufacturers advance sustainability efforts by using recyclable, lightweight materials including aluminum and carbon fiber-reinforced polymers which help to decrease vehicle weight and improve fuel efficiency thereby reducing emissions. According to the U.S. Department of Energy, a 10% reduction in vehicle weight can result in as much as an 8% improvement in fuel economy. The use of recyclable plastics and metals allows vehicle parts to be reused at the end of their lifespan. Sustainable interior components contain recycled and plant-based fabrics derived from polyethylene terephthalate bottles or natural fibers and sustainable wood and bamboo flooring with low-VOC adhesives and paints to protect air quality. Sustainability is further enhanced by advancements in energy-efficient design features like aerodynamic shapes, LED lighting, and solar panels which decrease fuel use and reduce reliance on auxiliary power. According to the EPA, eco-conscious manufacturing processes are further improved by the use of water-based coatings, renewable energy-powered factories, and waste reduction programs. Sustainable end-of-life practices focus on modular and repairable designs for extended vehicle lifespans, battery recycling programs for electric coaches, and biodegradable interior components. The combined implementation of these innovations results in enhanced sustainability within the motorcoach industry.

Regulatory Compliance and Standards

Regulatory compliance and standards function to maintain safety, environmental sustainability, and operational efficiency. Manufacturers must adhere to strict regulations set by government agencies and international bodies, covering aspects such as emissions control, fuel efficiency, passenger safety, and accessibility. Environmental standards, such as EPA and Euro VI emissions regulations, drive the adoption of cleaner technologies like electric, hydrogen, and low-emission diesel engines. Safety regulations mandate crashworthiness, fire resistance, and advanced braking systems to protect passengers. The Americans with Disabilities Act (ADA), alongside other accessibility regulations, mandates that motorcoaches have wheelchair ramps and priority seating among additional features for passenger accommodation. Meeting these standards protects passengers and benefits the environment while enabling manufacturers to satisfy market demands and avoid legal consequences. Advancements in sustainability and technology drive the evolution of regulatory frameworks and push the transportation industry toward eco-friendly and innovative solutions.

ROLE OF MANUFACTURERS
Driving Motorcoach Sustainability and Innovation

Smart Technologies

The motorcoach industry stands to undergo significant transformation through smart technologies which enhance safety standards, operational efficiency and passenger satisfaction. Advanced driver-assistance systems (ADAS) with features like collision avoidance, lane departure warnings, and adaptive cruise control serve to enhance safety and reduce human error. Evolving technologies such as telematics and IoT integration allow operators to track vehicle performance and fuel usage in real time and utilize predictive maintenance to reduce operational expenses and vehicle downtime. AI-based route planning allow operators adjust vehicle operation patterns to enhance energy efficiency and achieve peak fuel savings. Manufacturers who incorporating these innovations into their designs satisfy both changing regulations and environmental requirements while boosting efficiency, resulting in safer, smarter and more sustainable motorcoach travel.

Lifecycle Management

Life cycle management plays a large part in the overall motorcoach manufacturing industry by ensuring sustainability, cost efficiency, and long-term performance from production to end-of-life disposal through designing motorcoaches with durable, recyclable materials and energy-efficient components therefore extending lifespans and minimizing environmental impact. As motorcoaches reach the end of their service life, responsible disposal methods, including parts refurbishment, material recycling, and battery repurposing for electric models, help reduce waste and support a circular economy. Life cycle management aligns closely with regulatory compliance and sustainability goals, driving innovation in eco-friendly designs and manufacturing processes. By prioritizing the entire life cycle of a vehicle, manufacturers enhance reliability, lower total ownership costs, and contribute to a more sustainable transportation industry.

Collaboration

Collaboration plays a key role in the motorcoach manufacturing industry, driving innovation, sustainability, and the development of essential infrastructure. Partnerships with technology companies lead to the integration of smart systems, such as telematics, autonomous driving features, and energy-efficient technologies, enhancing the safety and performance of motorcoaches. In terms of infrastructure, manufacturer collaboration with local governments and energy providers to develop charging or refueling stations for electric, hydrogen, and alternative fuel motorcoaches is crucial to the adoption of newer technologies. Public-private partnerships are instrumental in creating a robust network of charging stations, maintenance facilities, and routes tailored to these new energy sources. Furthermore, collaboration with transport operators and fleet managers ensures motorcoaches are designed with real-world operational needs in mind, optimizing both the vehicles and infrastructure to support efficient and sustainable transportation networks. This collective approach fosters innovation, accelerates the adoption of new technologies, to support the development of smarter and more efficient motorcoach systems.

Sustainable Supply Chain Sourcing

Sustainable supply chain sourcing plays a critical role in the motorcoach manufacturing industry by ensuring materials, components, and production processes align with environmental and social responsibility goals. Eco-friendly sourcing and the use of ethically produced materials, such as recycled metals, biodegradable plastics, and sustainable fabrics, serve to minimize the environmental footprint of motorcoach production. By selecting suppliers committed to sustainable practices, including responsible resource extraction, reduced carbon emissions, and waste minimization, manufacturers can ensure that every stage of the motorcoach lifecycle contributes to overall sustainability, while sustainable supply chain sourcing further promotes fair labor practices, safe working conditions, and the use of renewable energy in production facilities. This is increasingly important as consumers and regulatory bodies demand greater transparency and accountability from manufacturers. Through the adoption of green logistics and efficient transportation networks, manufacturers can reduce the carbon footprint incurred by moving materials between suppliers and production plants. Moreover, close collaboration with suppliers helps drive innovation in sustainable technologies, such as alternative fuels and eco-friendly components, further advancing the industry's shift toward sustainable transportation solutions. By integrating sustainability into the entire supply chain, motorcoach manufacturers not only meet environmental and social standards but also improve efficiency, reduce costs, and enhance their long-term competitiveness in a rapidly evolving market.

ROLE OF MANUFACTURERS
Driving Motorcoach Sustainability and Innovation

Responsible Production and Waste Management

In accordance with objectives outlined in the U.N. SDGs, responsible production and waste management remain critical to supporting the sustainability of motorcoach manufacturing operations. By adopting eco-friendly materials, energy-efficient manufacturing processes, and sustainable supply chain practices, manufacturers can significantly lower carbon emissions and resource consumption. The use of strategies that reduce waste through recycling metals and plastics and repurposing old vehicles alongside reducing hazardous waste contributes to landfill reduction and establishes a circular economy system. Investments in energy-efficient technologies and alternative fuels like electric or hydrogen-powered motorcoaches advance sustainable practices. By prioritizing responsible production and waste management, motorcoach manufacturers not only comply with environmental regulations but also contribute to a cleaner, more efficient transportation sector.

ROLE OF MANUFACTURERS
Driving Motorcoach Sustainability and Innovation

Engine Innovation and Air Quality Improvement in Today's Motorcoaches

Through continuous innovation in engine technology and a strong commitment to cleaner air, the motorcoach industry contributes to cleaner communities directly by improving air quality within the communities these vehicles serve every day. Some key innovations and commitments supporting the industry's contribution to improved air quality are:

- Commitment to Cleaner Air: Modern motorcoaches are engineered with air quality in mind, meeting the California Air Resources Board (CARB) "Legacy" emissions standards, including a stringent NOx emission limit of 0.20 g/bhp-hr and an idle NOx limit of 30 g/hr.
- Advanced Emission Controls at Idle: These vehicles feature an innovative "Clean Idle" system, which significantly reduces harmful emissions during idling—one of the most common conditions for buses at rest stops, terminals, and loading zones.
- Smart Engine Management: The system intelligently manages engine components like the turbocharger, EGR valve, injection timing, and aftertreatment systems to optimize performance and lower emissions when the engine is idling.
- Proven Emissions Reduction: Real-world testing demonstrates that Clean Idle mode reduces NOx emissions from 18.67 mg/s to just 4.20 mg/s—well below the regulatory threshold, resulting in a 78% reduction in idle NOx output.
- Performance That Exceeds Expectations: During Clean Idle the NOx emissions are 4.20 mg/s which is equivalent to 15.12 g/hr. This is nearly 50% lower than the limit of 30 g/hr imposed by the CARB-mandated limit, showcasing how current motorcoach technology delivers environmental benefits even before meeting future standards.

ROLE OF MANUFACTURERS
Sustainability Survey Results

To illustrate the comparative environmental and economic advantages of motorcoach and charter bus trips, the ABA conducted a survey of North American motorcoach manufacturers and operators to capture and assess current sustainable practices in place within the industry. This section presents key findings from respondent manufacturers.

Key Findings From the Motorcoach Sustainability Survey

The findings highlight motorcoach respondent manufacturers' strong commitment to driving the overall industry toward greater sustainability. Of respondents, **62%** include **recycling** in their strategic plans. **More than half (54%)** of respondent manufacturers set **carbon emissions targets**; have **energy conservation**, **waste management**, and **water conservation initiatives**; and engage in **responsible sourcing**, **data collection**, **KPI tracking**, and **ESG management**. The survey also found that **39%** of respondents have **weight reduction targets** in place and conduct **life cycle assessments**. **Almost a third (31%)** of respondents report incorporating **renewable energy sources** to sustain their operations.

62%
Participate in recycling programs, focusing on reducing, reusing & recycling

54%
Set carbon emissions targets & have energy conservation initiatives

54%
Have waste management & water conservation initiatives

54%
Engage in responsible sourcing, data collection, KPI tracking & ESG management

39%
Set weight reduction targets & conduct lifecycle assessments

31%
Incorporate renewable energy sources into operations

ROLE OF MANUFACTURERS
Sustainability Survey Results

Sustainability in Practice

Motorcoach manufacturers have a broad-reaching impact on the overall sustainability within the industry. Successfully implemented sustainable operations efforts and policies serve to minimize environmental impacts and promote social responsibility while ensuring profitability.

Demonstrating a strong commitment to sustainability, respondent manufacturers reported including the following policies and practices as key measures to support company sustainability initiatives (listed in order of occurrence reported among respondent manufacturers):

- Recycle and reuse
- Carbon emissions targets
- Waste management
- Water conservation
- Sustainable sourcing
- Energy conservation
- Data collection and KPI tracking
- ESG management
- Research and development
- Weight reduction targets
- Product life cycle assessment
- Renewable energy plant power sources
- Carbon offset programs
- Biodiversity policy
- SDG goal alignment

ROLE OF MANUFACTURERS
Sustainability Survey Results

Incentives

Incentives for employees and supply chain partners act as effective mechanisms to promote sustainable practices within motorcoach manufacturing. Manufacturers who provide rewards for employees who adopt sustainable practices like waste reduction and energy efficiency help build a workforce culture dedicated to environmental responsibility. When suppliers are motivated to practice responsible sourcing and minimize emissions while enhancing resource efficiency, they help build a stronger environmental commitment throughout the supply chain. Incentives promote ongoing advancements in sustainable manufacturing while simultaneously boosting business endurance over time and maintaining both regulatory compliance and brand standing within a market that values environmental consciousness.

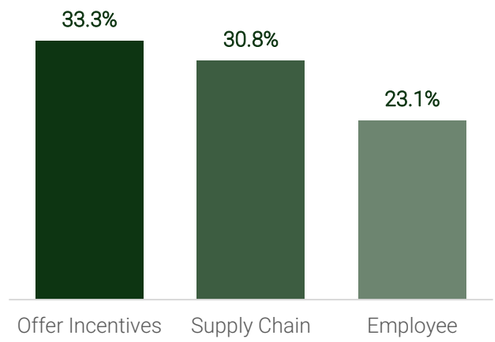
Key Sustainability Challenges Facing Motorcoach Manufacturers

Motorcoach manufacturers face significant hurdles in advancing sustainability efforts, starting with the initial investment required to transition to more advanced technologies as well as the significant investment and collaboration required to further infrastructure development, particularly charging station infrastructure. Manufacturers also face constraints associated with technological advancements and innovation, including research and development of alternative fuel engines and lightweight materials. End-of-life disposal of electric vehicle batteries and other components also poses challenges as manufacturers increasingly turn their focus to the life cycle of their vehicles and components.

Although incentives and grants may offset some costs, they are often insufficient or inconsistently available. Manufacturers face additional challenges in terms of investment in staff training aimed at equipping employees with the skills necessary to work with new technologies. Meanwhile, public expectations for more sustainable and efficient transportation options continue to rise, pressuring manufacturers to balance innovation with affordability and reliability.

The table to the right offers a ranked breakdown of challenges faced by respondent manufacturers as they aim to meet sustainability goals. **Initial investment** posed the biggest challenge, **ranking 1st** among **20%** of respondents. **Infrastructure development investment** and **regulatory landscape** were each ranked 1st among **10%** of respondents. The survey further found that **10%** of respondent manufacturers ranked **technological advancements and innovation costs**, **end-of-life disposal**, and **incentives and grants** as their **2nd greatest challenge**.

MANUFACTURER INCENTIVE PROGRAMS



Source: Tourism Economics

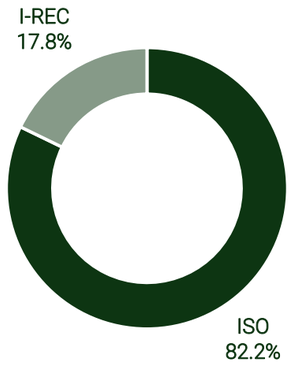
MOTORCOACH MANUFACTURER CHALLENGES

	1st Ranking	2nd Ranking
Initial investment	20%	0%
Infrastructure development investment	10%	0%
Technological advancements/innovation costs	0%	10%
End-of-life disposal	0%	10%
Regulatory landscape	10%	0%
Incentives & grants	0%	10%

Source: Tourism Economics

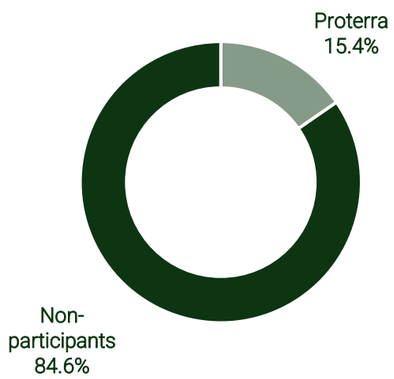
ROLE OF MANUFACTURERS
Sustainability Survey Results

CERTIFICATIONS AND STANDARDS



Source: Tourism Economics

PARTNERSHIPS AND COLLABORATIONS



Source: Tourism Economics

Certifications and Standards

Motorcoach manufacturers rely on sustainability certifications and awards as critical instruments to evaluate and advance their environmental and social performance. These certifications enable manufacturers to stand out by demonstrating their dedication to sustainable practices, increasing their competitive advantage. Certifications provide customers with transparent details so operators and buyers can quickly recognize motorcoaches that adhere to high sustainability standards, including fuel efficiency and emissions reduction as well as responsible sourcing and eco-friendly manufacturing processes. Of respondents reporting certification and standards achievement, more than **82%** have achieved at least one **ISO certification**, and nearly **18% I-REC**.

Partnerships and Collaborations

Motorcoach manufacturer partnerships and collaborations support progress as the nature of sustainable travel relies heavily on interconnected systems. Manufacturers who collaborate with suppliers, industry leaders, and environmental organizations achieve faster innovation and improved sustainable technology performance while increasing their initiatives' effectiveness. Responsible sourcing collaborations reinforce supply chain strength and secure business longevity while helping companies stay competitive in an environmentally aware marketplace. Of survey respondents, more than **15%** reported engaging in partnerships with **Proterra**, an American company specializing in the design and manufacture of electric bus battery systems.

Grants Programs

A number of state and federal grant programs are made available to operators to aid in the initial investment for the purchase of new motorcoaches. Manufacturers can support operator transitions toward electric and hybrid fleets by educating operators about available grants and encouraging participation. Of respondent manufacturers, **36%** report actively **encouraging operators to participate in grant programs**.

MANUFACTURER SPOTLIGHTS

Manufacturer Spotlights
New Flyer Industries (NFI)

Motor Coach Industries (MCI), a subsidiary of NFI Group Inc., is North America's public and private market motor coach leader. With a legacy of over 90 years, the company manufactures the luxury J Series (an industry best-seller for over a decade), the workhorse D Series, and zero-emission luxury and commuter coaches including the battery-electric J4500 CHARGE™, D45 CRT CHARGE™, and D45 CRT LE CHARGE™. All coaches are backed by MCI support services, including in-field expertise, 24/7 roadside assistance, a technical call center, Automotive Service Excellence (ASE) accredited MCI Academy technician training, and parts support through NFI Parts.

NFI is a global independent, publicly traded bus and motorcoach manufacturer focused on the evolution to zero-emission mobility. With vehicles operating in 13 countries and an installed base of over 100,000 buses and coaches worldwide, NFI provides diverse drive systems, including clean diesel, natural gas, diesel-electric hybrid, and zero-emission electric (battery, trolley, and fuel cell). NFI operates the largest and most comprehensive aftermarket service and support network in North America and the United Kingdom.

Together with New Flyer, we're home to North America's largest and most trusted team of bus and coach experts, relentlessly focused on customer care and dedicated to supporting the reliability of your fleet, the resiliency of your operation, and the safety of your passengers.

NFI's sustainability initiatives focus on four key areas:

- **Employees:** Focus on sustainability training and engagement, environmental health and safety (ISO 45001), fostering a respectful and vibrant workplace culture, workforce development, DEI initiatives, and employee retention.
- **Environment:** Commitment to zero-emission products, ESG standards, energy and waste management, ISO 14001 certification, and industry partnerships to support a net-zero economy.
- **Company Management:** Focus on business performance, integrity in leadership, quality and innovation, robust governance, and sustainable supply chain management.
- **Community:** Commitment to corporate responsibility, human rights, community and charitable initiatives, fostering team and community spirit, and global sponsorship.

NFI's heavy-duty and medium-duty transit bus and motorcoach manufacturing facilities in North America have been registered for the **ISO 9001**.

In 2023, NFI's **mean gender pay gap** reduced from 3.4% in 2022 to **1.5%**.

The delivery of 878 NFI ZEBs, in 2023, will prevent the equivalent of **1.1M tons of CO_2** emissions over the expected 12-year lifespan of the buses.

NFI received **$10M** CAD in financing through PrairiesCan to support the expansion of zero-emission heavy-duty transit and coach offerings.

Manufacturer Spotlights
New Flyer Industries (NFI)

NFI's Commitment to Sustainability

NFI's most recent ESG Report, published in 2023, reflects its dedication to environmental sustainability, social responsibility, and robust governance practices, reinforcing its role as a leader in zero-emission transportation solutions. Key highlights from the report include:

- Zero-Emission Vehicles (ZEBs): In 2023, NFI delivered 878 ZEBs, accounting for 22% of total deliveries and preventing the emission of 2.1 billion lbs. of CO_2. The number ZEBs delivered is expected to rise to 30-35% of total deliveries in 2024, and 40% by 2025.
- Global Reach: Over 150 cities across six countries have NFI ZEBs in service or on order.
- Charging Infrastructure: Since 2018, NFI has delivered more than 445 EV chargers and 72 megawatts of charging capacity via Infrastructure Solutions to support the transition to zero-emission transportation.
- Employee Development: NFI invested $10.9 million in team member career development and expanded its Electrical Technician Apprenticeship Program to provide high-demand electrical skills for the new EV mobility era.
- Diversity and Inclusion: NFI joined Canada's 50-30 Challenge, formalizing its commitment to advancing diversity, equity, and inclusion within the workplace.
- Governance Practices: NFI's governance strategy focuses on safety, quality, integrity, accountability, teamwork, and sustainability.
- Biodiversity: In 2023, NFI announced the commencement of an initial assessment of its global locations to better understand the impact operational sites may have on biodiversity-sensitive areas.

Manufacturer Spotlights
Volvo Group

Volvo Group, including its Canadian-based subsidiary, Prevost, serves as a major player in the motorcoach industry, producing premium, high-performance coaches. With a focus on innovation, safety, and sustainability, Volvo Group integrates advanced technologies in alignment with its commitment to shaping the landscape of sustainable transport and infrastructure solutions. Headquartered in Sweden, Volvo Group has customers, primarily companies within the transportation and infrastructure industry, in nearly 180 markets.

Volvo's sustainability initiatives focus on three key areas:

- **Climate**: Striving to reach net-zero value chain greenhouse gas emissions by 2040. Their strategy includes a shift toward vehicles that are battery-electric, fuel cell-electric, or driven by internal combustion engines powered by fossil-free or low-carbon fuels.
- **Resources:** Commitment to enhancing the reliability and productivity of its products and services while striving to optimize resource efficiency and uphold responsible business practices.
- **People:** Driving positive change for value chain members through an ongoing robust approach focused on mitigating potential risks, safeguarding human rights, and promoting decent work.

Volvo Group's **ISO 14001** certified environmental management system applies to nearly 95% of its production facilities & 90% of distribution centers. Three of Volvo Group's U.S. operations have achieved **ISO 50001** and **Superior Energy Performance** certifications.

In 2024, Volvo Group invested nearly **$860M** in low carbon technology R&D and an additional **$376M** in R&D aimed at other pollution control activities.

Compared to the 2019 baseline, the total GHG emissions from the use of sold Volvo Group products fell from 331 to 249 million tons, a reduction of nearly **25%**.

In 2024, Volvo Group acquired **Proterra**, a company specializing in the design and manufacture of battery-electric transit buses and EV technology.

Manufacturer Spotlights
Volvo Group

Volvo Group's Commitment to Sustainability

Volvo Group is committed to sustainability by focusing on reducing carbon emissions and achieving climate neutrality by 2040. The company is driving innovation in electric and hydrogen-powered vehicles, enhancing resource efficiency through a circular economy approach, and working toward sustainable manufacturing practices. Volvo further demonstrates its commitment to sustainability through prioritizing transparency and collaboration in environmental impact reduction across the supply chain. In its most recent Annual Report, released in 2024, Volvo Group offers the following key highlights:

- Energy Efficient Operations: Initiatives to reduce annual energy use have resulted in accumulated energy savings of 70 GWh between 2021 and 2025.
- **Renewable Energy:** In 2024, total GHG emissions from Volvo Group operations were 30% lower compared to 2019.
- **Waste Management:** Volvo Group aims to avoid waste to landfill and has identified a 55-site target to reach this goal. As of year-end 2024, 31 sites were certified as landfill-free.
- **Increasing Fuel Efficiency:** In 2023, Prevost released its all-new H3-45 featuring aerodynamic improvements which combined with other feature updates offer an overall 12% increase in fuel efficiency.

Manufacturer Spotlights
ABC

ABC is a leading supplier of motorcoaches in North America with focus on delivering reliable coaches, providing innovative transport solutions, and offering comprehensive after-sales service. As the exclusive distributor of Van Hool motorcoaches in the U.S. and Canada, ABC plays an essential role in supporting the industry's overall sustainability. The alliance between ABC and the Van Hool brand ensures the North American market has access to Van Hool's latest innovations, reinforcing a shared commitment to sustainable transportation solutions.

Van Hool's sustainability initiatives focus on three key areas:

- **Environment:** Engage in a proactive approach to environmental responsibility through protecting the environment, conserving natural resources, and reducing the environmental footprint of production, products, and services throughout their lifecycle.
- **Responsible sourcing:** Comprehensive Supplier Code of Conduct based on the UN Global Compact, relevant international treaties, and sound business practices. Van Hool applies the OECD Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-risk Areas.
- **Employees:** Ensuring a safe working environment for staff, including an extensive training program to enhance awareness and technical knowledge.

Van Hool's production facilities in Belgium and North-Macedonia are **ISO 14001** certified.

Supports sustainable initiatives through clear and measurable objectives to **reduce energy, water consumption, and emissions**.

Demonstrates high commitment to human rights and working conditions through series of strict polices aimed at protecting employees, including adherence to the **ILO 138 Minimum Age Convention**.

ABC supports the transition to zero-emissions by offering **battery electric motorcoaches**.

Redefining the Standard: How ABC Companies is Driving Innovation and Sustainability in Transportation

Powering Tomorrow's Mobility, Today

In today's transportation landscape, moving people isn't enough. Whether managing scheduled line-run services or tour fleets, operators must evolve to meet growing demands for sustainability, efficiency, and compliance.

Evolution takes more than vehicles—it requires a partner who understands the challenges and delivers practical, future-ready solutions.

That's where ABC Companies comes in. With a mission to drive the industry forward through innovative, collaborative solutions that redefine the standard, ABC is helping operators turn today's pressure into tomorrow's opportunity.

Driving Change: ABC's Path to a Zero-Emission Future

For operators considering the transition to zero emissions, the path forward can feel uncertain. ABC helps eliminate that uncertainty with a practical, hands-on approach that gives operators the confidence to navigate this shift successfully.

ABC's Zero Emissions Tour brought long-range battery-electric motorcoaches directly to operators across North America. This real-world experience allowed fleet managers to—test performance, assess range, and evaluate how battery-electric vehicles could integrate into their operations.

To support adoption, ABC invested in high-capacity infrastructure—most notably, its charging facility in Newark, CA, one of the first of its kind tailored to EV needs. This facility has demonstrated the feasibility of electrification by reducing charging time and increasing route flexibility.

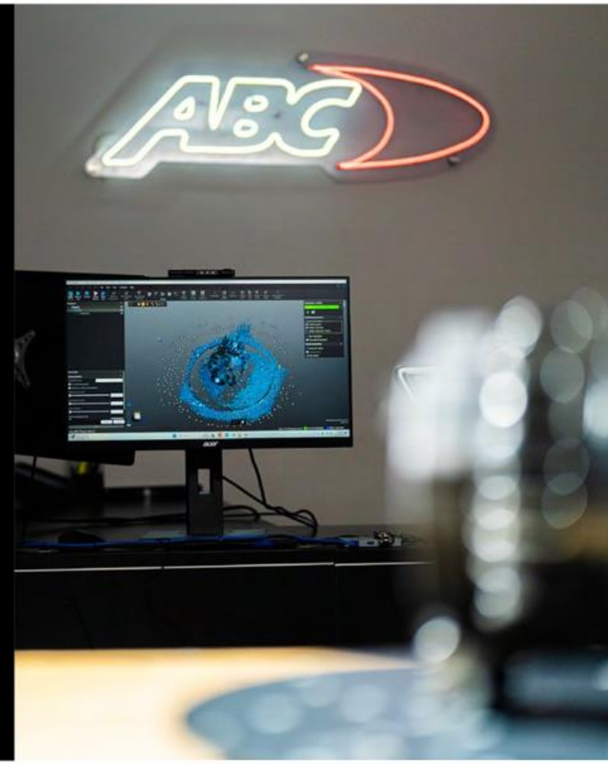
With more than 300 electric vehicles currently in operation and additional growth expected by year-end, ABC is actively accelerating the shift to clean transportation. The company also continues to explore forward-thinking solutions, including hydrogen fuel cell retrofit projects and partnerships with alternative fuel innovators, to ensure operators have access to a wider range of sustainable energy options.

From Operations to Impact: Aligning Business Practices with Global Sustainability Goals

Beyond vehicle innovation, ABC is advancing sustainability through digital transformation and operational efficiency—key steps in aligning with global environmental goals.

For example, routine fleet maintenance is often where waste and inefficiencies hide. ABC has transitioned from traditional paper-based maintenance to digital inspection tools and predictive maintenance technology, making it easier to stay ahead of repairs, reduce downtime, and extend vehicle life.

These efforts are designed not only to improve operational output but to support long-term sustainability by embedding efficiency into the daily rhythms of fleet management—offering clear benefits for both operators and the environment.



Shaping the Future of Passenger Transportation

Sustainability isn't just a mandate—it's an opportunity to future-proof your fleet, boost efficiency, and lead with purpose in a rapidly evolving industry. But real progress requires a partner who understands where you're headed and has the tools to get you there.

ABC continues to set new standards in sustainable fleet solutions. Through zero-emission innovations, fleet optimization strategies, and infrastructure investments, the company is helping redefine the transportation industry.

Learn more about how ABC is helping operators move toward a smarter, more sustainable future at abc-companies.com.

TOURISM ECONOMICS ABA AMERICAN BUS ASSOCIATION aba foundation AMERICAN BUS ASSOCIATION

Manufacturer Spotlights
Daimler Truck

DAIMLER

Daimler Truck, a subsidiary of Mercedes-Benz Group, is a global commercial vehicle manufacturer and leading provider of comprehensive products, services, and technologies within the motorcoach industry. With a holistic approach to sustainability, Daimler Truck focuses on environmental, social, and governance (ESG) initiatives to support its sustainability efforts. Headquartered in Germany, Daimler Truck has customers in nearly all countries of the world.

Daimler Trucks' sustainability initiatives focus on four key areas:

- **Decarbonization**: Committed to reducing CO_2 emission through expanding its portfolio of zero-emissions vehicles. Daimler Truck not only contributes to reducing emissions through the production of battery-electric and hydron-based vehicles but also in the form of various services and digital solutions.
- **Sustainable Production Practices:** To further reduce CO_2 emissions, Daimler Truck recognizes the production of raw materials as a main driver of greenhouse gas emissions. To promote sustainable material procurement, the company is dedicated to systematically integrating relevant key measures into its business processes to achieve CO_2 neutrality.
- **Circular Economy Initiatives:** Emphasizing durability and recyclability through careful use of natural resources and product development focused on longevity and recyclability.
- **Social Responsibility:** Demonstrating a strong commitment to human rights, Daimler Truck adheres to the UN Guiding Principles of Business and Human Rights. To monitor the fulfillment of human rights due diligence obligations, Daimler Truck utilizes an internal Human Rights Management System.

ISO 14064

Daimler Buses locations in Neu-Ulm, Bavaria, Mannheim, and Baden-Wurttemberg **ISO 45001** certified. Requires suppliers to have **ISO 14001**, **EMAS**, or **comparable standards** in place for their management systems.

In 2024, Daimler Trucks' **waste stream recovery rate** reached **86%,** demonstrating significant progress toward its 95% by 2030 goal.

Leveraging CO_2e-netral production practices & carbon offsets, Daimler Truck publicly declared **Co2e neutrality** in 2024.

Daimler Truck reported a **17% increase** in **battery electric vehicle sales** in 2024 over the previous year.

Manufacturer Spotlights
Daimler Truck

DAIMLER

Daimler Truck's Commitment to Sustainability

With a focus on ESG, Daimler Truck aligns its sustainability targets closely with the U.N. Sustainable Development Goals (SDGs). As a primary goal, the company aims to lead the technology transformation to support CO_2e-free transport by 2050. To this end, Daimler Truck plans to offer only CO_2e-free vehicles in the U.S. by 2039. Below are three key initiatives outlined in the Daimler Truck 2024 Annual Report:

- Efficient Electric Buses: In a partnership with battery system expert BMZ Poland, Daimler has developed a strategic plan for the development and supply of next-generation electric bus batteries. Developing the existing technology further, the new NMC4 battery generation is scheduled to combine high energy density to enable a longer range for electric buses with long cycle life. The batteries are intended for a 2026 release.
- Integrated Electromobility Service Provider: To support the introduction of zero-emission vehicles, Daimler Truck Financial Services provides financing as well as a holistic ecosystem for vehicles and charging infrastructure. Charging and depot management systems are also integrated into the network to support customers' sustainability and cost-optimization goals.
- Human Rights: Guided by internationally recognized human rights, Daimler Truck bases its actions on the UN Guiding Principles on Business and Human Rights, attaching particular importance to the United Nations Bill of Human Rights and core labor standards outlined by the International Labor Organization.

Manufacturer Spotlights
TEMSA

TEMSA, a leading motorcoach manufacturer headquartered in Turkey, provides transportation solutions in over 66 countries. With a focus on smart and sustainable mobility options, TEMSA aligns its sustainability approach closely with global frameworks including the U.N. SDGs, the Science-Based Targets Initiative (SBTi), and the Carbon Disclosure Project.

TEMSA's sustainability initiatives focus on four key pillars:

- **Climate Action:** Achieving carbon neutrality through emission reductions. To support emission reduction efforts, TEMSA has implemented a Carbon Footprint Reduction and Carbon Sink Analysis Project to assess the impact of its emissions on ecosystems.
- **Circular Economy:** Integrating resource efficiency, waste reduction, and sustainable material sourcing. To enhance these initiatives throughout the supply chain, TEMSA has introduced supplier training programs to improve awareness in sustainability, health and safety, and circular economy practices.
- **Biodiversity:** Protecting natural ecosystems. To enhance its efforts to protect biodiversity throughout its supply chain, TEMSA has developed a Biodiversity Protection and Nature-Positive Business Strategy. As part of this strategy, TEMSA has developed high-resolution spatial maps to analyze pollutant distribution along with remote sensing technologies to model the impact of industrial activities.
- **Sustainable Supply Chain:** Ensuring suppliers align with ESG performance standards. In addition to its supplier training program, TEMSA further enhances the sustainability of its supply chain by conducting ESG compliance audits and collaborating with suppliers to develop innovative and sustainable materials.

TEMSA has achieved **ISO 14001**, **ISO 14064**, **ISO 50001** & **ISO 9001** certifications.

Through its Women in Leadership Programs, TEMSA reports achieving a 25.4% rate of women in white-collar positions.

TEMSA has achieved recognition as part of the Carbon Disclosure Project Global A List.

In 2023, TEMSA's production facility achieved **100% renewable electricity** usage.

Manufacturer Spotlights
TEMSA

TEMSA's Commitment to Sustainability

TEMSA is committed to performing all climate-related engagement activities in accordance with the Paris Agreement. Further demonstrating the prioritization of sustainable operations, TEMSA's sustainability mission focuses on creating permanent benefits for the world and humanity. In its most recent Sustainability Report, released in 2023, TEMSA highlights the following key points:

- Energy Efficiency Activities: To improve energy efficiency in its operations, TEMSA implemented LED lighting transformation across 14 departments and conducted pipe insulation activities, resulting in a 40.7 tons total CO_2e reduction in 2022.
- Electric Bus Design: Designed specifically for the North American market, TEMSA launched the TS45E electric motorcoach in 2022 providing customers with serious cost advantage compared to conventional engine competitors and offering driving comfort, maximum passenger safety, advanced technology, and zero-emissions features.
- Investment in Research & Development: During the reporting period included in its 2023 Sustainability Report, TEMSA invested approximately $2.2 million USD in R&D. Approximately $7.9 million or 35% of this amount was invested in sustainability-focused R&D and innovation projects.
- Zero-waste Approach: By embracing a zero-waste approach, TEMSA reported reducing the use of parts and decreasing plastic consumption by 95.2%. Additionally, the company reduced the amount of insulation material used by 45%, further supporting sustainability and ecological balance.

Manufacturer Spotlights
Irizar

The Irizar Group is a leading manufacturer in the bus and coach industry, providing technology, innovation, and solutions to support the energy transition. Irizar operates production facilities worldwide. Strengthening its footprint in the U.S. market, Irizar established USA LLC, headquartered in Las Vegas, Nevada, which focuses on distribution and providing after-sales support. With a commercial presence in more than 90 countries across five continents, Irizar specializes in providing luxury motorcoaches, electric buses, and sustainable mobility technologies.

Irizar's sustainability initiatives focus on three key areas:

- **Decarbonization:** Continuous investment and development of innovative solutions to provide immediate and long-term decarbonization results with a focus on greenhouse gas reduction over the entire lifespan of each vehicle produced.
- **Safety:** Commitment to safety across three key pillars: Active safety, including monitoring and safety systems; passive safety design elements intended to minimize harm in the case of unavoidable accidents; and cybersecurity, ensuring cybersecurity management system and software update management system certifications align with UN regulations.
- **Connectivity-Big Data:** Leveraging intelligent driver assistance systems to provide optimal mobility to drivers and passengers, leading to increased productivity, reduced fuel usage, and better maintenance control.

ISO 14064

Since 1998, Irizar has been **ISO 14001** verified and expanded this verification to their e-mobility division in 2020. In 2023, Irizar achieved its **ISO 14604** Carbon Footprint Verification.

Irizar has applied **LCA** methodologies to the development of their Energy 54Ah & 65Ah batteries since 2022. In 2019, Irizar was the first company in the worldwide sector awarded **EPD** certification for its i4 integral coach. **EPD** certifications for this product are awarded in accordance with **ISO 14025**,**14040**, **14044** standards.

In 2022, the most recent year for which data is available, Irizar reduced **CO_2** emissions by **1.7M tons**. This includes direct GHG emissions removals as well as indirect GHG emissions caused by imported energy.

Moving beyond the 3Rs (Reduce, Reuse, and Recycle), Irizar models its sustainability on the expanded **7Rs** concept: **Recycle, Redesign, Reduce, Reuse, Repair, Renovate, & Recover.**

Manufacturer Spotlights
Irizar

Irizar's Commitment to Sustainability

Irizar has been a committed member of the United Nations Global Compact since 2013, aligning its strategies with the 10 Principles covering human rights, labor standards, environmental protection, and anti-corruption. In its most recent Sustainability Report, released in 2023, Irizar highlights the following key points:

- First Hydrogen-Powered Coach: In 2022, Irizar launched the Irizar Hydrogen i6S Efficient, its most efficient coach to date, winning the Sustainable Bus award. The i6S Efficient model boasts an emissions reduction of up to 13%, a weight reduction of up to 2.2 lbs., and a 30% improvement in the aerodynamic coefficient. The Irizar Hydrogen i6S Efficient has a range of up to 620 miles and minimal charging times of around 20 mins.
- First Fully Sustainable Energy Electromobility Factory: In 2019, after commissioning the largest photovoltaic solar park in the Basque Country, in which Irizar is one of the largest investors with 3 megawatts purchased, the company became the first fully sustainable energy electromobility factory in Europe.
- Investment in Research & Development: Irizar consistently invests up to 3% of its revenue in research and development leading to a range of products that support the transition to zero-emissions.
- Human Rights: In 2023, Irizar participated in the Business & Human Rights Accelerator Program organized by the UN Global Compact, emphasizing its dedication to integrating human rights considerations into its operations.

Manufacturer Spotlights
SDG Alignment

Sustainable Development Goals

In 2015, the United Nations adopted a set of 17 Sustainable Development Goals (SDGs), to serve as a global roadmap toward a more sustainable future. The Goals were developed as a call to action for both government and non-government organizations to support and engage in activities aimed at ending poverty, protecting the planet, and ensuring peace and prosperity by 2030. Understanding how motorcoach manufacturer activities align with the U.N. SDGs provides valuable insight into the environmental, social, and economic impact of the industry.

The chart to the right highlights how manufacturer commitments to sustainability support the industry's efforts to address key global challenges. For stakeholders, these insights foster accountability and contribute to more informed decision-making. Additionally, expanded awareness of the SDGs and the part they play in motorcoach manufacturing encourages collaboration across the value chain, driving the industry toward an increasingly proactive role in the transition toward sustainable mobility.

To learn more about the Sustainable Development Goals visit: https://sdgs.un.org/goals

MOTORCOACH MANUFACTURER SDG ALIGNMENT

Source: Tourism Economics

ROLE OF OPERATORS

Role of Operators
Vital Links in Eco-friendly Travel

Operators serve as vital links in shaping the sustainability of the overall motorcoach industry:

- Supporting local economies
- Encouraging group travel
- Adopting sustainable operating practices
- Reducing congestion in popular destinations
- Increasing passenger awareness

Operator contributions to sustainability are influenced by factors such as operating policies, marketing strategies, fuel type, use of electric/hybrid vehicles, maintenance, fleet age, occupancy rates, and adopting technologies aimed at reducing environmental impact.

Local Economies

Charter bus operators support local economies and the communities in which they operate by employing local residents, providing transportation for community events and tourists, and utilizing local business services. In 2024, operators employed approximately 77,000 residents in the U.S. and Canada.

Group Travel

By highlighting the convenience, comfort, and cost-effectiveness of group travel, operators promote sustainability by reducing the number of vehicles on the road as well as less sustainable travel by air or boat. Operators enhance interest in group travel by offering amenities such as onboard entertainment, storage, professional drivers, customized itineraries, and flexible packages.

Sustainable Operating Practices

Operators further enhance the sustainability of charter bus travel by adopting sustainable practices such as using alternative fuels and batteries, fleet maintenance and renewal, improving fuel efficiency, optimizing occupancy, recycling, responsible supply chain sourcing, driver training and eco-driving practices, carbon offsetting programs, and vehicle sharing and pooling.

Congestion Reduction

By consolidating groups of passengers into a single vehicle, charter buses effectively take multiple cars off the road, minimizing congestion and easing the strain on streets, improving air quality in densely populated and sensitive areas.

Educational Opportunities

Motorcoach operators facilitate passenger education, offering insights into the environmental benefits of motorcoach travel and highlighting its lower carbon footprint compared to other transportation modes. Through onboard announcements, digital materials, and partnerships with sustainability organizations, they can inform travelers about fuel efficiency, reduced congestion, and emissions savings. By actively promoting eco-conscious travel choices, operators can encourage passengers to support and advocate for sustainable transportation solutions.

Role of Operators
Sustainability Survey Results

To illustrate the comparative environmental and economic advantages of motorcoach and charter bus trips, the ABA conducted a survey of North American motorcoach manufacturers and operators to capture and assess current sustainable practices in place within the industry. This section presents key findings from respondent operators.

Key Findings From the Motorcoach Sustainability Survey

The findings below highlight the growing commitment of motorcoach operators to sustainability. A significant **65%** have established **sustainability plans**, demonstrating a strategic approach to environmental responsibility. **Fleet maintenance and renewal** were cited by **71%** as a key measure implemented to ensure efficiency and reduce emissions. Collaboration and partnerships also proved a priority, with **64%** engaging in **partnerships** and/or **collaborations** to enhance their sustainability efforts. Additionally, **54%** provide **eco-friendly driver training**, promoting fuel-efficient driving behaviors. **Anti-idling policies**, implemented by **60%**, help cut unnecessary emissions. As part of efforts to further reduce waste, **64%** incorporate **recycling** into daily operations. Collectively, these efforts contribute significantly to support the overall sustainability of motorcoach operations.

65%
Have a sustainability plan in place

71%
Report fleet management& renewal initiatives

64%
Engage in Partnerships & Collaborations

54%
Offer eco-friendly driver training programs

60%
Have an anti-idling policy in place

64%
Participate in recycling programs

Role of Operators
Sustainability Survey Results

The Critical Role of Strategic Planning in Motorcoach Operations

Strategic planning plays a crucial role in sustainability efforts, providing a blueprint for integrating environmental and social objectives into both an organization's short and long-term goals. Effective sustainability planning ensures that operations are profitable, environmentally responsible, and socially impactful with a focus on sustainable growth and negative impact minimization.

Key elements included in a well-designed strategic plan are:

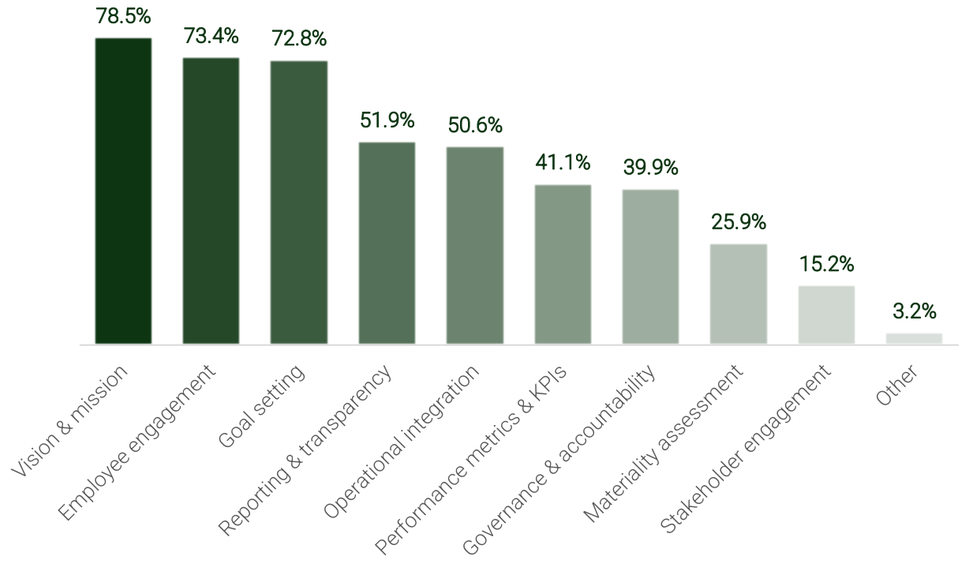
- Vision and mission
- Employee engagement
- Goal setting
- Reporting & transparency
- Operational integration
- Performance metric & KPIs
- Governance and accountability
- Materiality assessment
- Stakeholder engagement

Strategic Planning Elements

Among survey respondents, **65%** of operators reported having a **strategic plan** in place that includes policies to support and improve the company's efficiency and sustainability. The chart below outlines elements included in operator strategic plans. This offers useful insight into areas of strength and those where operators can explore expanded planning efforts to enhance further sustainability efforts.

The top three elements reported among operators include **vision and mission (79%), employee engagement (73%)**, and **goal setting (73%)** in their strategic plans. More than **50%** of operator plans include sections on **reporting and transparency** and **operational integration**.

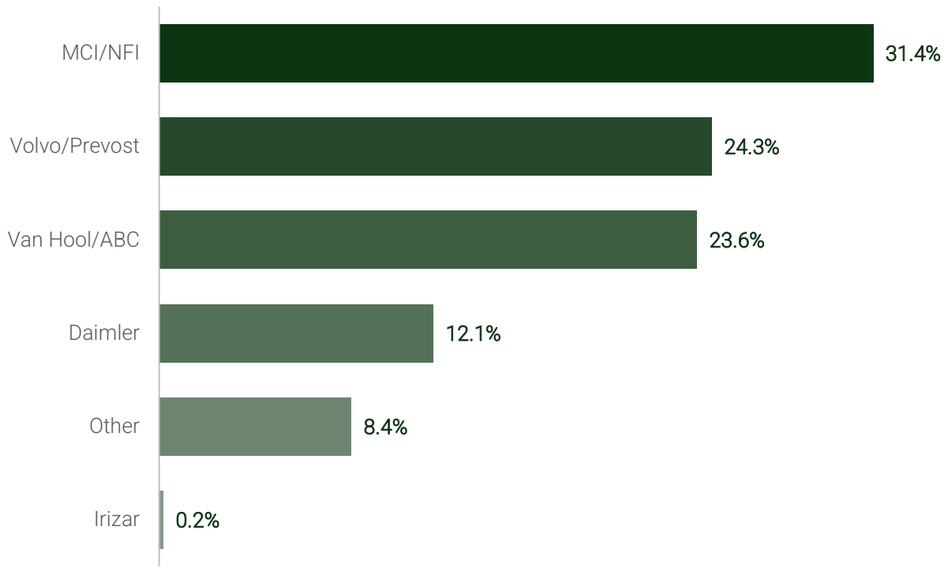
KEY OPERATOR STRATEGIC SUSTAINABILITY PLAN ELEMENTS



Source: Tourism Economics

Role of Operators
Sustainability Survey Results

OPERATOR FLEET COMPOSITION



Source: Tourism Economics

Average Fleet Age

Maintaining a young fleet is essential for improving fuel efficiency, reducing emissions and enhancing overall sustainability. Younger fleets consist of newer model vehicles equipped with the latest technologies and design features aimed at increasing energy efficiency and reducing carbon emissions. Respondent operators reported an **average fleet age of 10.3 years**. While comprehensive data regarding optimal fleet age is not available, fleet management practices and routine maintenance can considerably extend motorcoach lifespans, reducing waste to support industry sustainability.

Understanding fleet composition in terms of make offers further insight into the overall sustainability of the industry. Among survey respondents, **MCI, Volvo/Prevost, Van Hool/ABC and Daimler** comprised **91.4%** of the reported fleet, demonstrating the industry's collective commitment to investing in motorcoach makes to support overall progress toward sustainability.

Role of Operators
Sustainability Survey Results

Sustainability in Practice

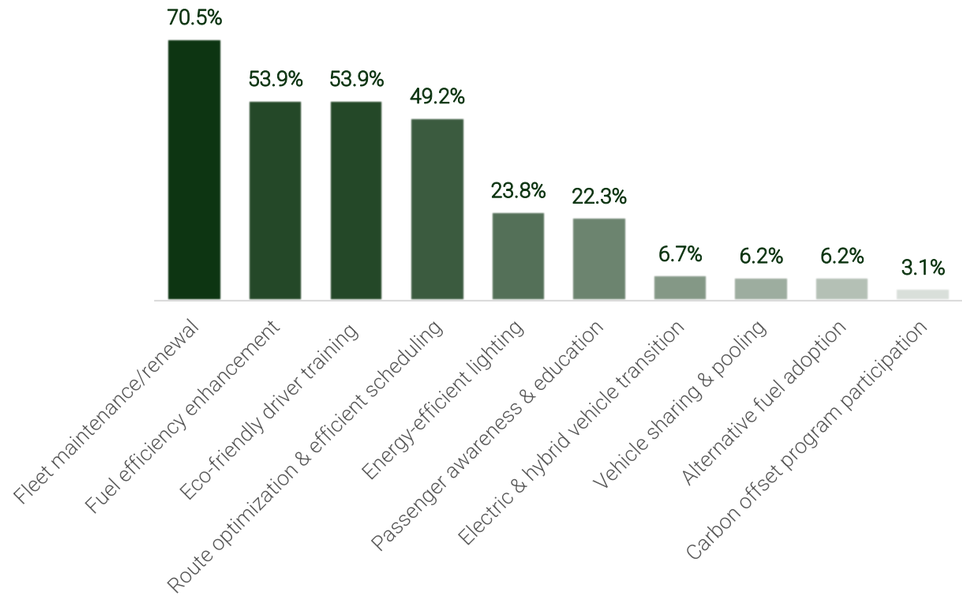
Motorcoach company operations have a significant bearing on the industry's overall sustainability, making successfully implemented sustainable operations efforts and policies integral to reducing harmful environmental impacts and promoting social responsibility, along with ensuring profitability.

Key measures for supporting sustainable motorcoach operations include:

- Fleet maintenance and renewal
- Fuel efficiency enhancement
- Eco-friendly driver training
- Route optimization and efficient scheduling
- Use of energy-efficient lighting
- Passenger awareness and education
- Electric and hybrid vehicle transition
- Vehicle sharing and pooling
- Alternate fuel adoption
- Carbon offset program participation

The chart to the right offers an overview of the current state of sustainable operations implementation among operators. Nearly **71%** of operators report **fleet maintenance and renewal** as an integral component of their sustainability plans. More than half **(54%)** cite **fuel efficiency enhancement** and **driver training programs** as key elements of their sustainability efforts**. Energy-efficient lighting** and **passenger awareness and education** were featured in **24%** and **22%** of sustainability plans, respectively. Less than **7%** of respondents report **transitioning to EV/hybrid vehicles**, **vehicle sharing and pooling**, **alternative fuel adoption**, and **carbon offset program participation** as part of their strategic plans. This highlights potential areas for improvement within the industry.

SUSTAINABLE OPERATIONS IMPLEMENTATION



Source: Tourism Economics

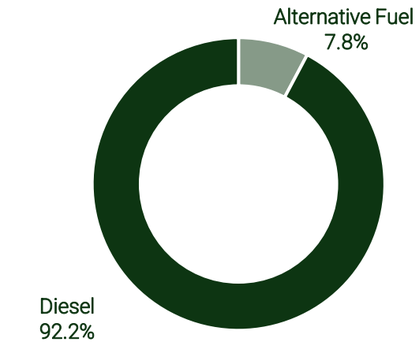
Role of Operators
Sustainability Survey Results

Alternative fuels, technology, and policies

Using alternative fuel offers motorcoach operators a way to reduce CO_2 emissions and contribute to improved air quality. While carbon emission reduction can vary considerably across fuel types, according to the U.S. Department of Energy, replacing standard diesel fuel usage with propane gas can reduce carbon emissions by 13% and using biodiesel can reduce emissions by up to 74%. Among respondent operators who reported using alternative fuel, biodiesel was the most frequently reported.

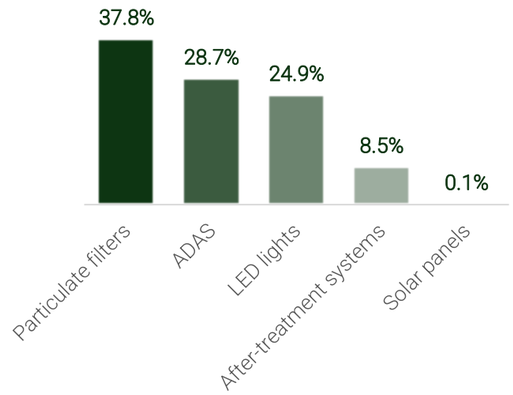
In addition to the nearly **8%** of respondent operators who reported using **alternative fuels**, nearly **38%** report using **particulate filters**. Furthermore, **29%** of operators utilize **advanced driver assistance systems** (ADAS) in their vehicles and **9%** equip vehicles with **after-treatment systems**. To further reduce energy usage, **25%** of operator vehicles are equipped with **LED lights**. As new technologies continue to emerge, the use of **solar panels** on motorcoaches, while not widely used, has been introduced by a limited number of operators **(0.1%)**. By combining policies that enhance technological advances through optimal employee performance, operators can achieve greater levels of efficiency. To this end, **60%** of operators have **anti-idling policies** in place, with nearly **10%** offering employee incentives for increased efficiency.

ALTERNATIVE FUEL vs. DIESEL FUEL USEAGE



Source: Tourism Economics

REDUCED ENERGY CONSUMPTION TECHNOLOGY



Source: Tourism Economics

Role of Operators
Sustainability Survey Results

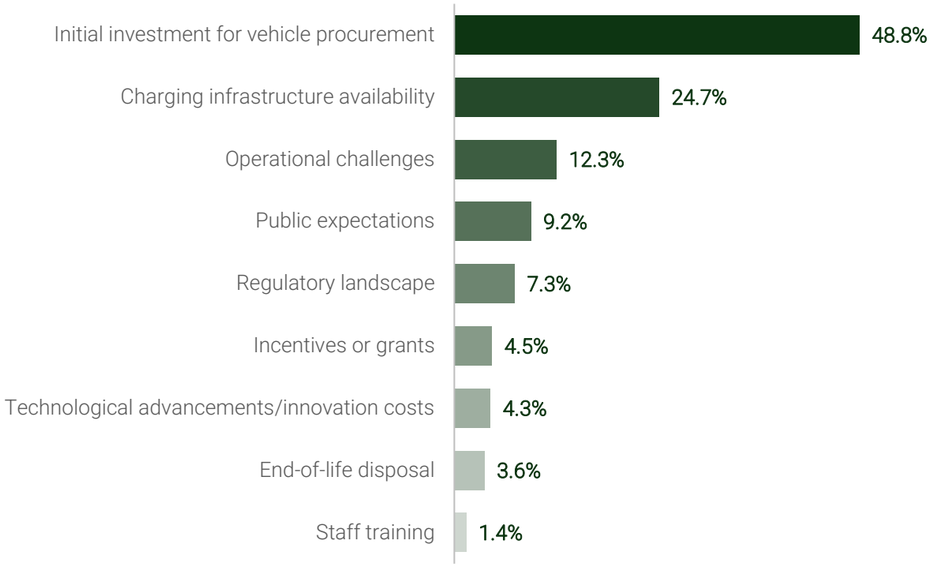
Key Sustainability Challenges Facing Motorcoach Operators

The motorcoach industry faces several challenges as it aims to achieve greater sustainability, including high costs, infrastructure limitations, regulatory hurdles, and technological constraints. With the higher upfront cost of transitioning to electric/hybrid vehicles, many operators, particularly smaller companies, face difficulty making the transition. In fact, **almost half (49%)** of respondent operators reported **initial investment for vehicle procurement** as a significant barrier to improving their company's sustainability.

The next most commonly reported challenge was **limited infrastructure availability**, mainly charging stations, with nearly **25%** of respondent operators citing it as a barrier to progress. For companies positioned to make the initial investment in EV and/or hybrid models, limited charging station access and the additional resources required to accommodate extended charging times pose additional, often insurmountable, hurdles. Furthermore, as more operators work to transition to electric vehicles, existing charging infrastructure could face additional strain.

Respondent operators also reported facing challenges associated with **operations (12%)**, **public expectations (9%)**, **regulatory landscape (7%)**, lack of access to **incentives and grants (5%)**, **high cost of innovation and technological advancements (4%)**, **end-of-life disposal (4%)**, and **staff training (1%)**.

KEY OPERATOR CHALLENGES



Source: Tourism Economics

Role of Operators
Sustainability Survey Results

Certifications, Standards, and Awards

Sustainability certifications, standards, and awards enable companies and consumers to measure and advance environmental and social responsibility effectively. These certifications offer companies an opportunity to differentiate themselves through their sustainable practices enhancing their competitive advantage. Sustainability certifications and awards allow consumers to easily identify which products and services maintain sustainable practices.

Nearly **10%** of respondent operators reported **achieving certifications, standards, and awards in 2024,** with ENERGY STAR certification being the most commonly reported. The ENERGY STAR certification is a widely accepted symbol of energy efficiency awarded to facilities that meet strict energy performance standards set by the U.S. Environmental Protection Agency. Other reported achievements include the ISO 14001, UMA Environmental Leadership Award, AGA certification, and EarthCheck.

Partnerships and Collaborations

Given the complex and interconnected nature of sustainability, partnerships and collaborations are essential components of achieving meaningful and lasting progress toward sustainability targets. They serve to accelerate innovation and impact, strengthen supply chains and responsible sourcing, and enhance business resilience and competitiveness.

Over **64%** of respondent operators report **participating in partnerships and/or collaborations** to support their sustainability efforts. Partnership with the American Bus Association was the most frequently reported among respondents. Operators benefit from partnerships such as this by sharing resources, optimizing routes, and accessing shared investments to support economic viability while improving customer experience and service. Joint lobbying activities offer operators a means of advocating for governmental incentives to support compliance with new regulatory demands.

Role of Operators
Sustainability Survey Results

Marketing Eco-Friendly Motorcoach Travel

Effective marketing helps promote motorcoach travel by showcasing its positive impacts on the environment alongside its cost benefits and ease of use. By implementing targeted campaigns and engaging customers on social media while educating them about motorcoach travel, operators can inform people about its environmental benefits, including reduced carbon emissions per passenger compared to other transportation modes. Marketing efforts that highlight cost savings, comfort, and sustainability enable operators to shape consumer choices and establish motorcoaches as a responsible travel solution.

Nearly **41%** of respondent operators report **leveraging the sustainable nature of motorcoach travel in their marketing strategies,** where they highlight their vehicles' fuel efficiency and emission reductions together with sustainable practices like anti-idling measures and fleet maintenance. Environmental organization partnerships, green certification program participation, and eco-conscious traveler testimonials can serve to further bolster the message, transforming public perception and boosting ridership numbers through increased demand for sustainable transportation options.

Traveler Interest in Sustainable Transportation

In 2024, the “Booking.com Sustainable Travel Report” cited travelers’ growing commitment to sustainable travel, with **75%** of travelers expressing **plans to adopt more eco-friendly travel habits** over the next year. Increased consumer awareness about sustainability is further evidenced by a **26% rise in online searches for sustainable travel options** over the past five years, demonstrating an expanding demand for sustainable transportation. Motorcoach operators are experiencing this trend firsthand, with more than **21%** of respondent operators reporting a noticeable **increase in traveler interest in sustainable policies and practices**. Respondents reported an uptick in traveler inquiries regarding their commitment to fuel efficiency, carbon emission reduction, anti-idling policies, fleet maintenance, and recycling programs. Evidence of this growing interest offers operators an opportunity to further integrate and promote their sustainability efforts, increasing their competitive advantage and reinforcing the role of motorcoach travel as a sustainable transportation solution.

Role of Operators
Operator Interview Findings

Approach

In addition to analyzing the results of the Motorcoach Sustainability Survey, Tourism Economics conducted a series of interviews with volunteer motorcoach operator survey respondents to improve the understanding of ongoing sustainability efforts as well as challenges faced in implementing sustainable practices, regulatory compliance, and the adoption of new technologies within the industry. This section presents an overview of insights* gained from those conversations.

Findings

As the industry navigates the transition toward sustainable mobility, individual operators hold diverse perspectives on what sustainability means within their operations and the practical efforts required to enhance sustainability. Over the course of six operator interviews, a few key themes emerged as central operator focuses related to the transition. These themes highlight operator commitment to reducing environmental impact, improving operational efficiency, and fostering long-term resilience through innovation and collaboration.

- Defining sustainability

  As it encompasses a wide range of environmental, social, and economic considerations, the term "sustainability" is inherently ambiguous. Asking operator interviewees to describe what sustainability means within the context of their operations offered insight into industry engagement with sustainability. Responses ranged from identifying sustainability as something outside of the scope of operations planning to sustainability serving as the core operations driver. Interviewees highlighted a variety of viewpoints, including the inherently sustainable nature of motorcoach travel, resiliency as a focal point of sustainability efforts, and commitments to local communities through volunteer and charitable work.

- Sustainable practices

In terms of practical application, interviewee responses were equally as variable, including a broad range of practices aimed at improving sustainable operations. The following are some of the more notable practices highlighted:

- Supporting local charitable organizations
- Recycling, reusing, and reducing
- Implementing anti-idling policies
- Engaging in volunteer initiatives
- Providing passenger and community education
- Promoting second-chance and inclusive hiring
- Utilizing bioremediation techniques
- Waste-to-energy conversion
- Enhancing rural-urban connectivity
- Driving eco-innovation efforts
- Transitioning to EV and hybrid models
- Adopting emerging transportation technologies

- Promoting sustainability

Interviewees reported deploying several employee engagement, customer education, and community awareness strategies to further promote sustainability in their operations. These efforts included incentives for achieving anti-idling targets, communicating with passengers on arrival times to reduce idling times, passenger and community education, and incorporating sustainability into sales strategies.

**Insights are included anonymously in this report to ensure the confidentiality of the information provided by operator participants.*

Role of Operators
Operator Interview Findings

- Objectives and targets

In terms of objectives and targets, interviewees reported a variety of sustainability measures and goals, including transitioning to biodiesel, recycling tires and scrap metal, converting shops to LED lighting, and using waste oil to heat facilities. Many operators recognize that despite their long-term commitment to improving the sustainability of their operations, progress toward achieving targets is often slower than desired, with some estimating a 20-year outlook as a reasonable timeline for reaching their goals.

- Supply chain engagement

Interviewees reported engaging with supply chain partners to support their sustainability efforts by choosing the most environmentally responsible products for use both on their motorcoaches and in their operational facilities. Supporting circular economy practices was reported as a strategy employed to engage sustainability between operators and supply chain partners. Additionally, interviewees reported collaborating with manufacturers on EV development in recognition that demand from operators is key to building a viable market. For many interviewees, sustainability factors heavily into purchasing decisions and they often communicate interest in cleaner products to influence supply-side offerings and innovation.

- Next steps

Along with the goals, targets, and objectives outlined in this section, interviewees emphasized the importance of:

- Expanding access to EV infrastructure at scale in order to operationalize EV use on a largescale basis
- Implementing systems for tracking sustainability metrics
- Measuring KPIs
- Supply chain evaluations

While interviewees reported perceiving the industry's overall sustainability as in the early stages, a key point highlighted was that the most impactful step toward achieving greater sustainability is fostering growth and expansion within the sectors.

APPENDIX:

STUDY METHODOLOGY

Appendix
Study Methodology

For this study, a motorcoach, or over-the-road bus (OTRB), is defined as a vehicle designed for long-distance transportation of passengers, characterized by integral construction with an elevated passenger deck located over a baggage compartment. It is at least 30 feet in length. This definition closely matches the definition of an OTRB written into U.S. law: "a bus characterized by an elevated passenger deck located over a baggage compartment" (Section 3038 of Public Law 105-178, 49 USC 5310 note). This definition of a motorcoach excludes the typical city transit bus and city sightseeing buses, such as double-decker buses and trolleys.

Project Approach

This study utilized several research methods:

- A comprehensive literature review was used to:
  a) Compile a list of environmental goals that motorcoach manufacturing companies and operators have (e.g., reducing carbon emissions)
  b) Consolidate a list of current efforts (e.g., use of alternative fuels, electric vehicles, etc) used by manufacturers and operators
  c) Gather current and potential challenges (e.g., initial investment, infrastructure development, etc.) that both manufacturers and operators face in the journey to become more green
- A survey was disseminated to both manufacturers and operators to gather information about the sustainable practices in place.
- Interviews were conducted with key motorcoach manufacturers and operators with sustainability programs to gather information about current and future efforts.

Survey Frame

Tourism Economics assembled a list (i.e., survey frame) of manufacturers and operators in the United States and Canada that produce and operate charter buses. The list was developed using information from the following sources:

- American Bus Association Foundation
- Dun and Bradstreet
- U.S. Department of Transportation
- Motor Coach Canada

Survey Data Collection and Processing

Online survey questionnaires with cover letters from Tourism Economics were sent electronically to potential manufacturers and operators and Tourism Economics sent weekly reminders to carriers during the four-week survey period.

Submitted electronic questionnaires were reviewed for completeness and validity. The data were tabulated and evaluated for duplicates, inconsistencies, irregularities, and respondent-specific values significantly different from average reported values. The final survey database contained usable responses from 13 manufacturers and 283 motorcoach operators.

Interviews

Interviews were conducted with key motorcoach manufacturers and operators. They were conducted either virtually or over the phone and lasted approximately 30 minutes. The questions focused on topics related to sustainable operations efforts such as strategic planning, operational practices, promotion, objectives and targets, challenges, and outlook

Appendix
Definitions

Definitions

Diversity, Equity, and Inclusion (DEI) – refers to policies and initiatives that promote the representation and participation of diverse groups of individuals, ensuring fairness and creating an inclusive environment where everyone feels valued and respected.

Environmental, Social, and Governance (ESG) – is a framework used to evaluate company performance and sustainability based on non-financial factors, affording investors and stakeholders a tool for assessing their ethical and sustainable practices.

International Renewable Energy Certificates (I-REC) – are a globally recognized standard for verifying the renewable origin of electricity, allowing organizations to demonstrate their commitment to sustainability by reaching renewable energy targets.

International Organization for Standardization Certification (ISO) – refers to international standards developed to allow organizations to manage their environmental responsibilities and improve sustainability performance.

Internet of Things Technologies (IoT) – refers to the hardware, software, and network infrastructure that connect everyday objects via the Internet to collect and exchange data and automate tasks.

Key Performance Indicator (KPI) – is a quantifiable metric used to measure and track progress towards specific sustainability goals, encompassing environmental, social, and economic aspects of a manufacturing process or product.

Social Cost of Carbon (SCC) – is a comprehensive measurement representing the present value of long-term environmental, health, and economic impacts caused by each additional unit of carbon emissions in a particular year and includes valuations for reduced agricultural productivity, disruption of energy systems, risk of conflict, environmental migration, increased human health costs, damage from extreme weather events, rising sea levels and property loss, as well as biodiversity loss and ecosystem disruptions.

Sustainable Development Goals (SDGs) – is a set of 17 goals, developed by the United Nations (U.N.) in 2015, which serve as a global roadmap toward a more sustainable future. The Goals serve as a call to action for both government and non-government organizations to support and engage in activities aimed at ending poverty, protecting the planet, and ensuring peace and prosperity by 2030.

Telematics – refers to technology that combines telecommunications and information technologies to facilitate real-time data collection, transmission, and management from and to a vehicle, often using GPS and onboard diagnostics.

About the Research Team

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Oxford Economics was founded in 1981 as a commercial venture with Oxford University's business college to provide economic forecasting and modelling to UK companies and financial institutions expanding abroad. Since then, we have become one of the world's foremost independent global advisory firms, providing reports, forecasts and analytical tools on 200 countries, 100 industrial sectors and over 3,000 cities. Our best-of-class global economic and industry models and analytical tools give us an unparalleled ability to forecast external market trends and assess their economic, social and business impact.

Oxford Economics is an adviser to corporate, financial and government decision-makers and thought leaders. Our worldwide client base comprises over 2,000 international organizations, including leading multinational companies and financial institutions; key government bodies and trade associations; and top universities, consultancies, and think tanks.

This study was conducted by the Tourism Economics group within Oxford Economics. Tourism Economics combines an understanding of traveler dynamics with rigorous economics in order to answer the most important questions facing destinations, investors, and strategic planners. By combining quantitative methods with industry knowledge, Tourism Economics designs custom market strategies, destination recovery plans, forecasting models, policy analysis, and economic impact studies.

Oxford Economics employs 600 full-time staff, including 350 professional economists and analysts. Headquartered in Oxford, England, with regional centers in London, New York, and Singapore, Oxford Economics has offices across the globe in Belfast, Orlando, Dubai, Miami, Milan, Paris, Philadelphia, San Francisco, and Washington DC.

For more information, questions on the report or other general inquiries, please reach out to the team at **admin@tourismeconomics.com**.