AURORA

GREEN FLEET ACTION PLAN
Focusing on Sustainable Fleet Management
and Reduction of Greenhouse Gas Emissions

OPERATIONS DEPARTMENT – PARKS & FLEET DIVISION

The Corporation of the Town of Aurora
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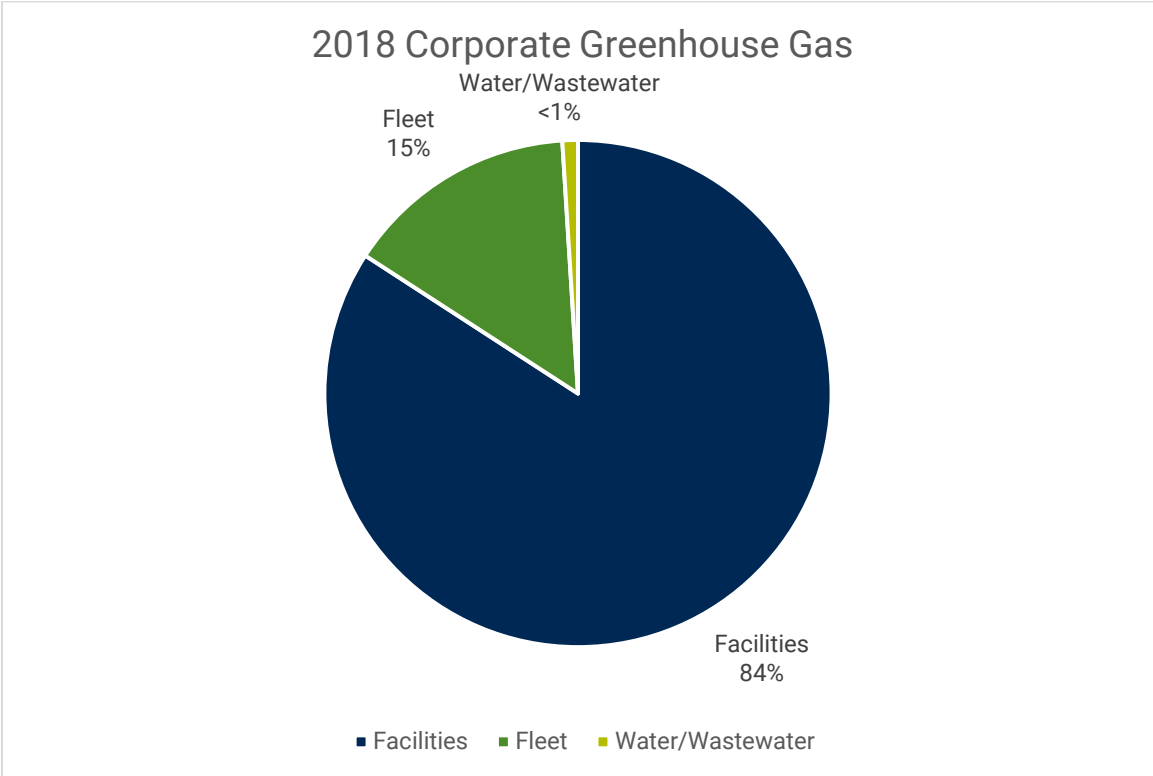
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Background

In 2019, the Fleet Division completed a Fleet Management Strategy, a comprehensive study which delivered a set of recommendations designed to streamline asset management practices and create a more efficient Fleet Management approach. Included in the strategy were baselines for existing vehicles, fuel efficiency, fuel use and emissions. This data, coupled with recommendations for green fleet initiatives, provided a platform for the Fleet Division to build a Green Fleet Plan.

The Energy Conservation and Management Plan Update 2019-2023 (ECDM Plan) set a goal for fleet vehicles of improving average fuel efficiency to 23L/100km and reducing Greenhouse Gas (GHG) Emissions by 50% (245 mtCO2e) by 2023, compared to 2018 levels. The ECDM Plan did not capture all the 2018 fleet fuel data due to fuel dispensing equipment issues. As a result of the data discrepancy, the Green Fleet Action Plan (GFAP) is setting a more accurate and realistic reduction target of 50% reduction by 2028, rather than by 2023, based on a complete year's data.

In 2018, fleet accounted for 15% of the total Corporate GHG emissions.

2018 Corporate Greenhouse Gas

Water/Wastewater <1%
Fleet 15%
Facilities 84%
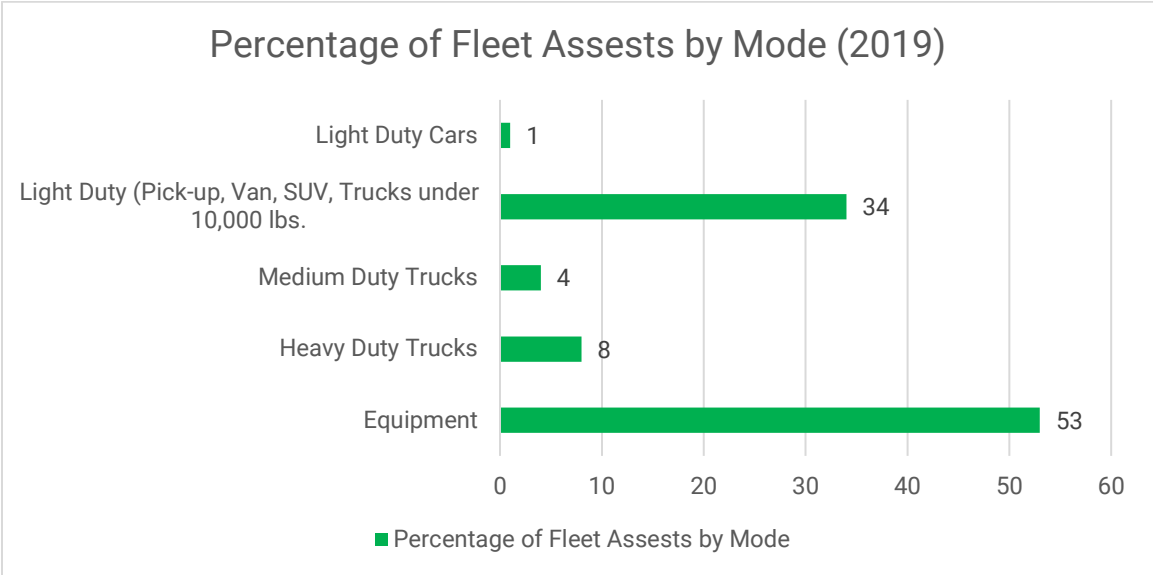
■ Facilities   ■ Fleet   ■ Water/Wastewater

To reduce GHG emissions, the Fleet Division is aligning with York Region's goal of electrifying the corporate fleet to produce zero emissions by 2051. The goal produces challenges that will need to be addressed through proper planning and innovation.
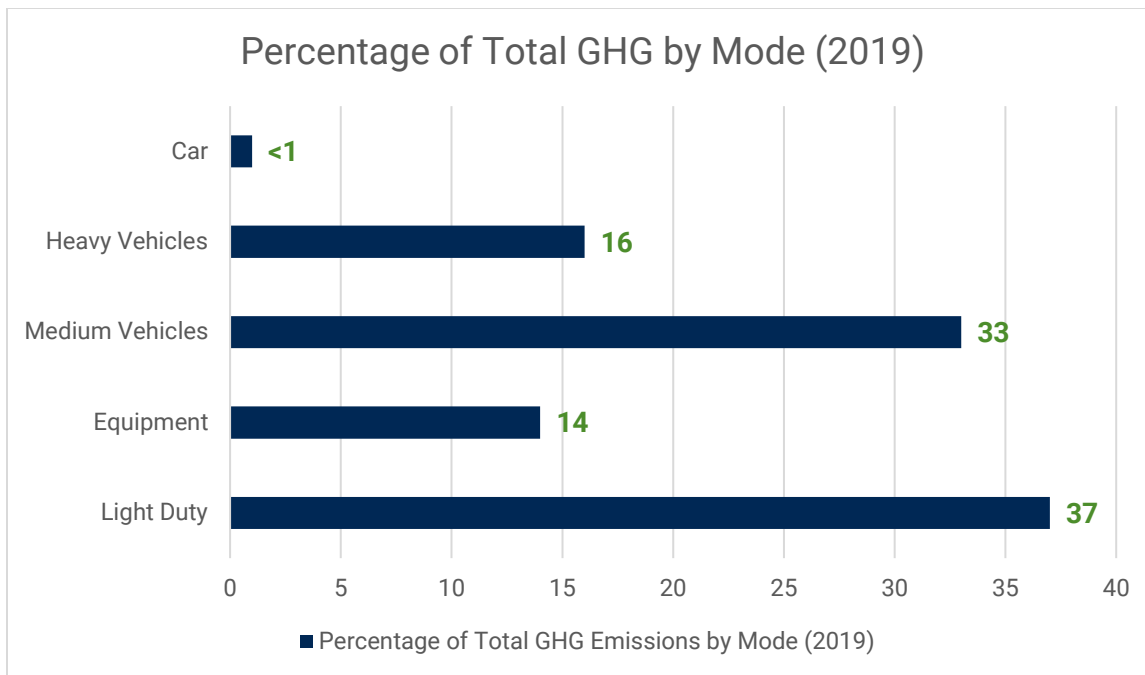
Aurora's GFAP focuses on shifting towards "green" operations, including strategies to purchase vehicles that have lower emissions, green maintenance products and options to reduce fuel consumption.

This plan is intended to be a living document that will be reviewed every five (5) years with updates to access progress, technological advancements, and future opportunities.

Where do Fleet Services Green House Gas Emissions Come From?

The Town of Aurora owns and operates 120+ vehicles and relies on its Fleet to maintain/ensure roads are safe, keep parks beautiful and clean, manage water and sewer, provide By-law enforcement, and supports many other services in the community. These vehicles are essential; however, the Town recognizes that Fleet Operations generates GHG emissions and, to manage the impact of these emissions, the Town is implementing a sustainable Green Fleet Management Plan.

Percentage of Fleet Assests by Mode (2019)

Mode	Percentage
Light Duty Cars	1
Light Duty (Pick-up, Van, SUV, Trucks under 10,000 lbs.	34
Medium Duty Trucks	4
Heavy Duty Trucks	8
Equipment	53

■ Percentage of Fleet Assests by Mode

Percentage of Total GHG by Mode (2019)

Mode	Percentage of Total GHG Emissions by Mode (2019)
Car	<1
Heavy Vehicles	16
Medium Vehicles	33
Equipment	14
Light Duty	37

Key Objectives in Implementing a Green Fleet Plan

The key opportunity in developing the Green Fleet Plan is to achieve long-term GHG emissions targets, fundamental goals have been developed with associated action items.

1. Reduce demand and analyze data to maximize performance and efficient resource use.
2. Improve maintenance and management practices.
3. Covert to alternative and renewable low carbon fuels.
4. Continue to provide efficient, cost-effective services with focus on Green Technologies.
5. Education and Outreach Initiatives.

1. **Reduce demand and analyze data to maximize performance and efficient resource use.**

Vehicle data can provide significant insight into the Fleet and how it functions as a whole and individually.

This information can contribute and help focus efforts on environmental and cost saving benefits.

The primary source of this data can be obtained through the GPS Software and can provide information on driver behaviour, idling time, route optimization, fuel use and

trends relating to the mechanics and function of the vehicles, all of which can reduce GHG emissions.

Action	Impact
Develop and Implement Anti-Idling Policy.	Reduce idling in the Fleet and support the community Anti-Idling Policy introduced in June 2020.
Reduce Vehicle Kilometres Traveled (VKT).	Consolidate and eliminate trips through route optimization e.g., plow routes, waste collection, turf maintenance and By-law vehicle deployment to calls.
Maximize Telematics Information GPS system.	Utilize telematic information provided through GPS system to assist in route planning, idle time tracking, driver information, and fuel usage patterns.
Upgrade Roads vehicles and newly outfit Parks and By-law vehicles with GPS hardware.	All Fleet vehicles will be tracked with GPS providing valuable data to manage the Fleet and make educated decisions.
Share Data with User Groups.	Actual use data of current vehicles will assist in evaluating for right-sizing and electric vehicle opportunities.
Continue to replace vehicles with best in class fuel efficient vehicles with focus on light duty trucks.	New models are more fuel efficient, produce lower emissions and are good options while the manufactures develop viable hybrid/electric vehicles required to provide service. Overall GHG reduction, by upgrading alone, through capital renewal can produce 4-5% decrease.
Continue to replace emergency lights with LED's and auxiliary batteries.	Supports anti-idling program.

2. **Improve maintenance and management practices.**

Basic preventative maintenance is essential to optimizing fuel and emissions performance. For example:

- Engine malfunction can go undetected and could over fuel the system, resulting in the release of unburned hydrocarbons into the air. While it would be eventually detected during a Drive Clean test, until such time the vehicle would accelerate the rates of GHG, air contaminants and fuel waste.
- A poorly tuned engine, whether you're driving a vehicle down the road or letting it idle, uses up to 15% more fuel than a well-tuned vehicle.

Emerging and chronic problems can be detected through routine and improved preventative maintenance programs which can save money and downtime. Accurate maintenance files on vehicles assist Fleet Managers in tracking costs for labour, parts, budgeting, and lifecycles. In addition, such records identify abnormalities, excessive fuel/oil use and tire wear.

Action	Impact
Ongoing preventative maintenance program improvement.	Ensures safety and efficient vehicle performance for worker safety and best vehicle performance.
Extract data and monitor automated fuel management and dispensing system.	The fuel system has many functions that were not being maximized. Detailed training on system use has allowed staff to understand its full capabilities, including tracking use, security and report access.
Integrate GHG measurement tools with Fleet Management software.	Assures monitoring and reporting on Fleet emissions performance.
Monitoring and reporting on: • Vehicle Kilometres Travelled (VKT) annually	Supports right-sizing and downsizing of existing assets. Fuel costs are maximized when higher capital green fleet vehicles are assigned to users with the highest VKT eg: By-law Services.
Improved Asset/ Fleet Management systems.	Financial sustainability of fleet, improved asset management, maintenance schedules and active data use for fuel savings.
Continue to use and to implement eco-friendly shop practices.	Continuing to explore new ways of being and working green in Fleet will assist in meeting objectives, and provide for a safer/cleaner work environment for staff.
Monitoring and reporting on the GFAP.	Annual reporting on green initiatives, achievements targets and sharing data in support of CEAP and ECDM Plan reporting requirements on an annual basis.

3. **Convert/explore alternative and renewable low carbon fuels.**

GHG emissions can be reduced by using low-carbon fuels, such as alternate and renewable fuels. Low-carbon fuels should be used when/where available and wherever operationally practical. Low-carbon fuel switching away from fossil fuels will have the greatest impact on vehicle GHG emissions.

There are opportunities to utilize lower carbon fuels currently in the Fleet without large infrastructure investment. As electric vehicle technologies, specifically for light to heavy duty trucks/equipment and fuels advancements are made, Fleet will evaluate for large scale fleet implementation and financial impacts.

Action	Impact
Adopt Biodiesel 5 (B5) blend in diesel fuel.	Can produce a GHG reduction of approximately 5% or 20 tonnes. Cost neutral as there is no increase from regular diesel, currently utilized To be implemented in March 2021. Biodiesel blends higher that 5% may require a separate tank if Fleet choses to utilize them, incurring capital costs.

Action	Impact
Ontario announced increasing biofuel blend in regular gasoline 10-15% by 2030.	Impact on Fleet vehicles utilizing gasoline and will impact GHG reduction when fuel blend available.
Monitor the advancements in biodiesel and consider switching to a higher biodiesel.	GHG benefit of biodiesel is in the full lifecycle of the fuel, with estimated savings of 18% for Biodiesel 20 (B20); however, manufactures warranties do not support higher grades currently without modifications to engines/filters.
Region to trial higher biodiesel blends based on seasonality of light, medium and heavy-duty vehicles.	Monitor data and consider implementation based on results from trials.
Continue to evaluate fuel options and evolving electric vehicle technologies that align with long term GHG emission targets.	Significant decrease or net zero results as technological advancements made in emission reduction.

4. **Continue to provide efficient, cost-effective services with focus on Green Technologies.**

Service delivery to residents is the priority of all Fleet dependant divisions and providing vehicles and equipment for user groups with an effective means to deliver these services remains the primary driver of the Fleet Division. A focus on the procurement of green technologies should not come at the expense of service delivery and will require some planning to ensure a smooth transition.

Planning for these changes will be integral to the success of the overall GHG reduction plans. Infrastructure to support the fuel types and energy options is critical e.g., ensuring an electric vehicle can charge at the end of the day is integral. In addition, as more municipalities and companies turn their focus to GHG reduction, procurement of green vehicle demand will increase, and timely purchasing could be difficult.

Developing a procurement approach to green vehicle acquisition and infrastructure requirements will require collaboration from various departments/stakeholders.

Action	Impact
Purchase hybrid models when possible e.g., SUV's.	Can provide up to 5% reductions in emissions. In 2020, three (3) Hybrid SUV's were purchased, one (1) for By-law (additional new vehicle), one (1) for the Parks Division and the Roads Division (replacement for trucks).
Explore battery technology for small equipment/handheld tools	Battery options available for commercial use of chainsaws, blowers, string trimmers etc. Zero emissions and low noise decibels for increase staff safety and pollution.
Monitor and assess emerging electric/hybrid technologies and alternative fuels for medium/heavy duty trucks as market is ready.	Potential for significant reductions to net zero GHG emissions from vehicles.
Identify upcoming vehicle replacements where hybrids or electric vehicles could be considered.	Ensure capital replacement budgets are accurate and infrastructure for charging stations are accounted for. Evaluate technologies based on lifecycle costs, including fuel economy.
Develop and launch a vehicle selection criterion for all vehicle classes with focus on green technologies.	Work collaboratively with users to ensure all technologies considered and impact of "green" decision making is understood and aligns with Corporate objectives.
Review all products and cleaners in Fleet garage, and purchase green/environmentally-friendly options where available.	Wide variety of greener options available with minimal cost increase and effect on operational budgets. Parts cleaner changed over to aqueous product in 2020.
Pursue Grant funding and incentive opportunities to reduce new capital and replacement budget	Grants available for many green initiatives that can offset financial impacts.

Action	Impact
pressure for fleet vehicles and related acquisitions.	
In collaboration with the Procurement Division, Energy & Climate Change Analyst and Fleet Stakeholders, identify vehicle options and specifications that meet operational needs and GHG reduction targets.	Enhanced business practices to have an increased environmental focus specific to Fleet, meeting operational needs by considering the total lifecycle costs (capital, operational, disposal as high energy efficient models tend to be the most cost effective) into procurement of new fleet vehicles.

5. **Education and Outreach Initiatives.**

Increased dialogue and engagement of all stakeholders on Corporate GHG emission reduction targets and GFAP goals will be vital to achieving success.

Operational Fleet Best Practices include the reduction of unnecessary trips, elimination or re-purposing of underutilized vehicles and employee training. Education of staff will be an important component in addressing Fleet driver behaviour and how they can positively or negatively impact the objectives.

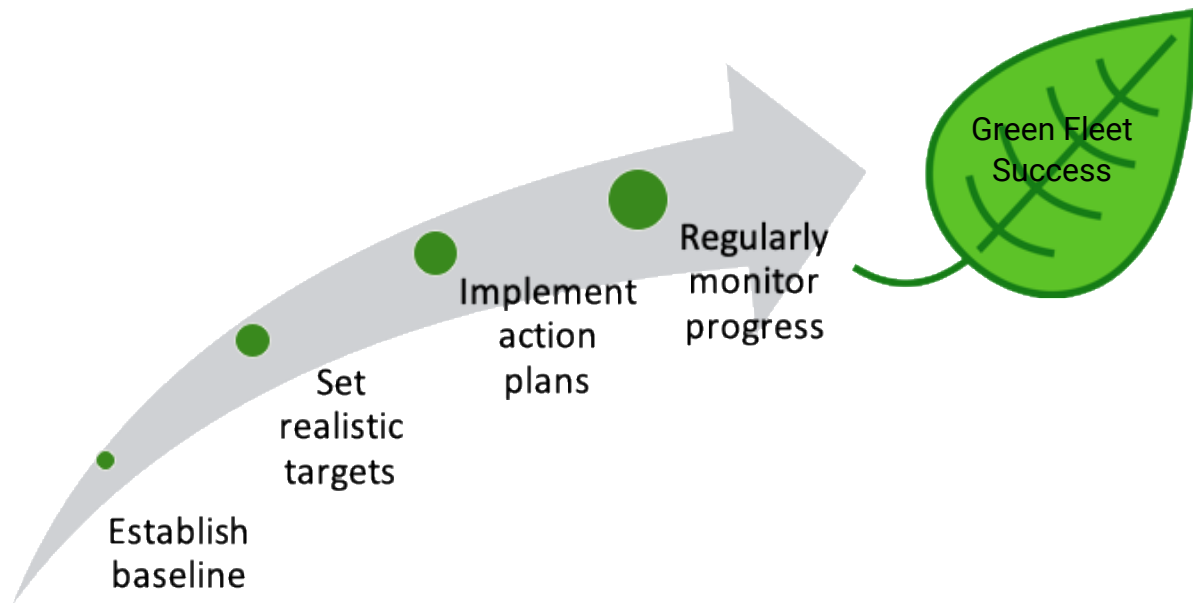| Action	Outcome
Educate Fleet stakeholders on the GFAP objectives and targets.	Creates an awareness of Corporate objectives and allows users to understand the goals and how they are integral to the success of the action items.
Working with Communications Division on education.	Share education initiatives and successes corporately.
Training of mechanical staff on hybrid and electric vehicles.	Ensure staff are up-to-date on new technology maintenance and procedures required.
Include staff training budget line to the Fleet Division Operational budget.	Assist in delivering training to staff for safety, on the job knowledge of vehicles/equipment, continuing education and demonstrate commitment to improvement for the individuals and Corporation.
Analyze data and outputs from GPS software.	Utilize telematic information provided through GPS system to identify quick acceleration, hard

Action	Outcome
	braking, idle time to assist in education of staff and ongoing coaching.
Anti-idling Policy.	Awareness of reducing idling toward goal of GHG reduction.
Driver training for new drivers and continuing education program for current employees.	Driver behavior, including idling accounts for five (5) to 33% of fuel use – smart drivers can help reduce fuel use.
Identify stakeholders with new vehicle & replacements in next five (5) years.	Allows for conversations around right-sizing, green options, and accurate budget forecasting.
Actively work to support the ECDM Plan.	Support the ECDM Steering Committee, Energy and Climate Analyst in achieving goals and providing supporting data.

Green Fleet Success Measures

There are many Green Fleet success stories, but plans are not always successful. When Green Fleet plans have unrealistic or unachievable targets, insufficient planning, or lack of support from one or more levels of the organization they may not be sustainable.

Common attributes that lead to successful plan implementation success include:

1. A corporate culture that encourages environmental leadership.
2. An internal champion.
3. Commitment to Greening the Feet - from the ground floor operational level up to the most senior level of the organization.
4. Carefully managed risk - and a willingness to experiment.
5. A strong communications team to share successes.
6. Commitment, policy, clearly defined timelines, responsibilities.
7. Procurement policies to assist in acquiring best in class options based on total lifecycle costs.
8. Prepared Green Feet plans based and practicality that are living documents and evolve with innovation.
9. Reliable and consistent fleet operating data.
10. Measurable and achievable goals.

Establish baseline → Set realistic targets → Implement action plans → Regularly monitor progress → Green Fleet Success

Taking the Lead Towards Cleaner Air in Aurora

Aurora's Fleet Division recognizes that efficient Fleet Operations are essential to delivering Town services and that there are opportunities to improve the sustainability of these operations. Remaining focused on continuous improvement by applying progressive, practical measures the reduce GHG emissions and lower fuel consumption. With the Green Fleet Action Plan, the Fleet Division has set a target to reduce its GHG emissions by 50% by 2026, and it has clearly defined a strategy and framework to achieve this target by implementing measures based on research, baseline data and industry best practices.

Aurora will monitor its fuel use and emissions on an annual basis and report out on Green Fleet actions. Emissions will be tracked on a five (5) year basis to allow for updated and new actions to be evaluated and adopted against emerging technologies and new vehicle enhancements, as part of this living document.

By reducing demand overall through programs like anti-idling, providing driver training and applying maintenance programs that support safety and efficiency, operational improvement will occur. In addition, applying efficient use of resources such as purchasing vehicles with considerably greater fuel efficiency and exploring alternative fuel vehicles, Aurora will shift its fleet operations towards a more sustainable model with reduced emissions.

Together, these actions will help Aurora achieve its targets in a responsible fiscal manner while considering the continued growth in the community and ongoing need to expand its fleet to meet service standard demand.