SUGAR

Team Member Name	**Year**	**Major**
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Topic Title: Smart Cities IoT in Infrastructure
Audience: Government & Transportation Authorities

Sustainable Development Goal

UN Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Executive Summary

AI-driven toll price adjustment is an innovative approach to managing urban traffic congestion by dynamically modifying toll rates based on real-time road conditions. Unlike fixed toll systems, this intelligent pricing mechanism utilizes AI, IoT sensors, and GPS data to monitor traffic density and adjust toll fees accordingly. During peak congestion, toll prices increase, encouraging alternative travel options such as public transport or off-peak commuting. Conversely, lower tolls during light traffic incentivize more efficient road use. Integration with navigation apps like Google Maps and Waze further enhances user experience by providing route recommendations based on real-time toll fluctuations.

The benefits of AI-powered toll adjustments are substantial, from reducing congestion and promoting sustainable transportation choices to optimizing road infrastructure usage. Governments can leverage this system to generate revenue for reinvestment in public transit and smart city projects, while also decreasing carbon emissions by limiting excessive road use. However, challenges such as public acceptance, equity concerns for low-income drivers, and the need for advanced technology infrastructure must be addressed. With further development, this AI-driven approach could revolutionize urban mobility, ensuring a more efficient, adaptive, and sustainable future for transportation networks worldwide.