



LYT.

Music City in Motion



WeGo's Smart Approach to Transit Signal Priority

Nashville has always had rhythm. Music spills out of open doors on Broadway, weekend crowds fill the streets, and new residents arrive daily to join the city's steady tempo of growth. It's now the top destination in the U.S. for bachelorette parties, beating Las Vegas, and is one of the fastest-growing cities in the nation. Favorable living conditions, a thriving job market, and no state income tax have brought record migration into the region.

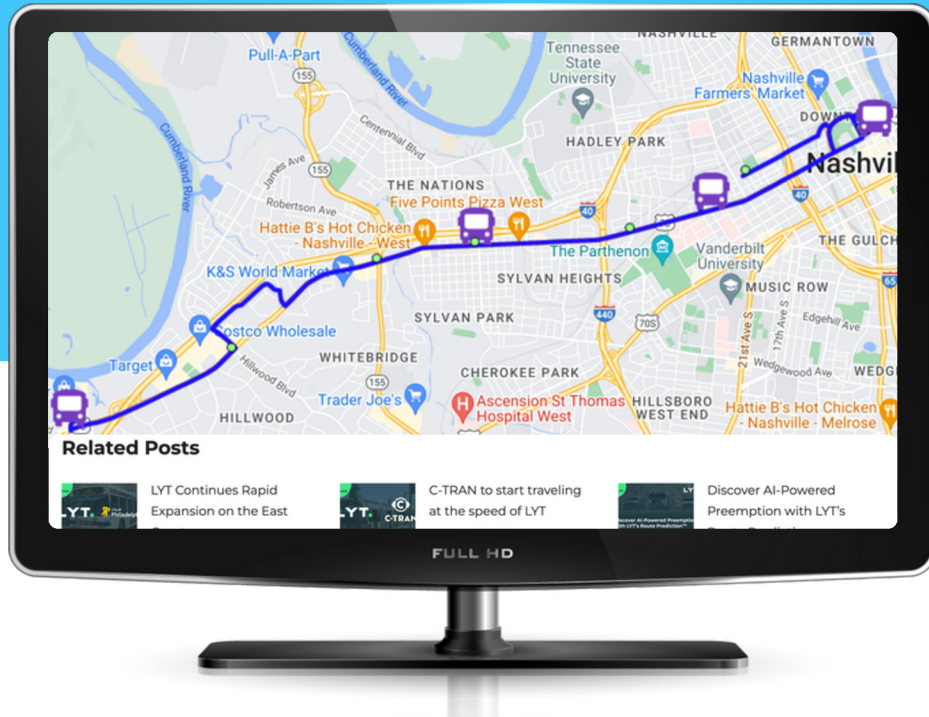
The Nashville metro area has grown by more than 6% since 2020, adding about 80 new residents each day. It also ranks 11th in the nation for traffic congestion, with drivers losing over 60 hours per year sitting in traffic according to the Nashville Chamber of Commerce, and Nashtoday.

This growth brings energy and opportunity, but also strain. More residents mean more cars, longer commutes, and greater pressure on public infrastructure. WeGo Public Transit and the Nashville Department of Transportation (NDOT) recognize that keeping the city moving requires modern technology and fast decision-making.

That's why, in 2024, they launched a Transit Signal Priority (TSP) pilot project on Charlotte Avenue, testing a new way to keep buses on schedule and passengers on time.

The Pilot: Smarter Signals on Charlotte Avenue

Charlotte Avenue is one of Nashville's busiest east-west corridors. For WeGo, it's a critical route connecting neighborhoods, jobs, and downtown destinations. The pilot includes 27 signals along Route 50, selected as a controlled environment to test an intelligent, data-driven approach to TSP.



The pilot wasn't a trial of traditional, hardware-heavy systems. It was an experiment in what happens when decision-making moves to the cloud. Instead of relying on physical emitters and sensors, **LYT's connected vehicle platform uses real-time data to make signal requests only when they're needed.** Each bus is evaluated against its schedule and its spacing from the next vehicle. When the data indicates that a priority will have a meaningful impact, the system acts. When it won't, it lets the signal operate normally.

The result is a more balanced approach to priority that benefits drivers, riders, and overall traffic flow.



How Intelligent TSP Works

At the core of Nashville's pilot are two adaptive rule sets: **schedule-based** and **headway-based** priority logic.

Schedule-Based Priority

Every bus is continuously compared to its published schedule. If a bus is running late, the system automatically requests priority to help it catch up. On-time buses are allowed to proceed with normal signal timing, while early buses may pause briefly at signals to prevent arriving ahead of schedule.

This targeted approach improves reliability and reduces the frustration of unpredictable arrivals.

Headway-Based Priority

Beyond the schedule, the system monitors the spacing between consecutive buses. When two buses get too far apart, the system can prioritize the trailing bus to help restore proper spacing. This reduces "bus gapping", a problem where passengers wait too long for one bus, then see several arrive back-to-back.



Together, these two forms of logic create a more even, dependable rhythm for service delivery.

Flexible by Design

LYT's Transit Signal Priority platform is built on an open architecture that connects easily with the data systems agencies already use. It does not require new hardware or complex integrations. Instead, it works within existing infrastructure to deliver results faster and at a lower cost.

“Operational efficiency is about more than moving faster. It's about using the systems and data we already have to improve the flow of service. This pilot shows that intelligent technology can improve reliability without adding cost or complexity.”

Dan Freudberg, Deputy Chief Operating Officer at WeGo

In Nashville, the platform used data from **Swiftly**, a system the city previously invested in for improved passenger information and performance insights. Swiftly's reliable, real-time information engine leveraged existing hardware to create a data feed with all necessary attributes for LYT's AI-powered engine to make intelligent signal decisions without requiring additional resources or straining limited city budgets. Swiftly recalculates a vehicle's current headway bunching status and on-time performance status every few seconds, thereby providing the best possible information to inform LYT.

For WeGo and NDOT, this meant **no new devices to install, no added maintenance, and no disruption to operations**. It was simply a smarter use of the data already in hand.

Benefits Beyond the Green Light



For Riders

Passengers experience shorter waits, more reliable arrivals, and a smoother ride. When buses move consistently, trust in the system grows, and so does ridership.



For Bus Operators

Drivers feel the difference. More predictable signals result in fewer hard stops, reduced stress, and smoother trips for passengers.



For the Agency

With a fully cloud-based system, WeGo and NDOT can track corridor performance in real time without field maintenance. The pilot provides clear data on on-time performance and traffic flow to guide future expansion.

Looking Forward

The Charlotte Avenue pilot has proven that modern Transit Signal Priority doesn't have to mean expensive upgrades or complex deployments. Nashville's data-driven approach shows how cities can scale more innovative mobility solutions with limited resources, and without replacing existing infrastructure.

Nashville's pace isn't slowing down, and neither is its innovation. The city that built its reputation on rhythm is now using data to keep its movement in tune, one green light at a time.

Reach out to info@lyt.ai to learn how LYT can change transit operations in your city.