Scott Myers
President & CEO
e: scott.myers@optifuelsystems.com
p: (339) 222-7575

FOR IMMEDIATE RELEASE

Zero Emission Line Haul Locomotives for $1.1 Million? OptiFuel Puts Renewable Fuel Credits to Smart Use for the Benefit of US Railroads

OptiFuel Drives Affordability With its Pioneering Locomotive-as-a-Service (LAAS™) Program. Utilizing EPA RIN Credits to Offset Key Energy Transition Costs, Railroads Could Acquire a NEW Total-Zero™ 5,600 hp RNG Hybrid Line Haul Locomotive for as Little as $1.1 Million With No Additional Cost for Refueling Infrastructure.

BEAUFORT, SC – Jun 13, 2024 – The US boasts the most efficient rail network in the world, a status achieved through steadfast commitment to standardization—a principle that once underpinned America's supply chain efficiency and economic dominance. To protect this crucial advantage, any approach to decarbonizing rail must avoid unproven locomotive power systems that fail to meet the scientific and operational demands of line haul operations, which represent over 85% of all rail criteria and GHG emissions. The modernization of the US rail network is a singular opportunity to optimize the railroads, ensuring their prominence for a 3rd consecutive

century. A comprehensive systems-based approach encompassing locomotives, refueling infrastructure, transport logistics, fuel supply, and workforce integration is crucial.

Capture Natural Efficiencies: Railroads Already Have Access to the Most Efficient Fuel Distribution System Conceivable in North America

Fortuitously, US railroads have a near-term solution within reach. By assessing natural efficiencies unique to the rail network and utilizing existing resources and tools, a clear path to decarbonizing rail with revolutionary optimization emerges. Post-World War II, the US developed a 3-million-mile natural gas pipeline network alongside railways, establishing the most efficient fuel distribution system conceivable for railroad operations, which require the transport of more than 3.5 million gallons of fuel annually. With pipeline transport, refueling locomotives and tenders with RNG is actually more straightforward than refueling with diesel.

Capture Immediate Impact: RNG has the same energy, physical, and safety benefits as fossil-based natural gas, but is 100% renewable with a ZERO or NEGATIVE Carbon Intensity (CI) and a lower cost than diesel.

Society will always produce waste, which naturally emits surface-level methane into the atmosphere as it decomposes. This organic waste can be used as feedstock to produce Renewable Natural Gas (RNG). RNG is **NOT** a fossil-based fuel and is the only renewable fuel with a negative carbon intensity. RNG production takes a product that is negatively impacting the environment — organic waste — and creates a clean, reliable energy resource that is fully compatible with our current rail infrastructure and operations, serving a productive role in the clean energy transition. Readily available RNG from landfill sites with a CI of +40 can easily be blended with 400 million DGEs of RNG with a CI of -350 from agriculture waste to provide 3 billion DGEs of final locomotive fuel with a CI of 0 or less for all 25,000 line haul locomotives in the Class 1 fleet.

Capture Credits: Leverage Credits to Deliver Affordable, Comprehensive Solutions

Earlier this year, OptiFuel launched its Total-Zero™ switcher series locomotives. The company's flagship line haul series, led by the **Total-Zero™ 5,600 hp RNG Hybrid Line Haul Locomotive**, will undergo two years of FRA concurrence from 2025 to 2026 and one million miles of testing in line haul operations, and is expected to be in full production by 2029.

Through OptiFuel's integrated approach, rail solutions are delivered as a comprehensive "package" that includes RNG-powered locomotives, RNG fuel supply and refueling infrastructure. The RNG refueling systems planned for the Class 1 railroad main tracks will be larger, modular versions of the company's 2019 refueling system at the Indiana Harbor Belt Railroad, with a capacity of 260,000 diesel gallon equivalents (DGE) of RNG per day. *RNG supply volumes and lower costs are assured through in-sourced production of the RNG.* Each modular digester system produces approximately 5 million DGEs of 300 CI RNG annually.

601 Bay Street, Beaufort, SC 29902 • P: (339) 222-7575 • optifuelsystems.com

Traditionally, US railroads have funded their own refueling infrastructure. However, by owning the RNG production and fuel infrastructure, OptiFuel can leverage federal and state alternative fuel tax credits to offset infrastructure and equipment costs and offer railroads a low, fixed price for zero-emission RNG. Co-investment and direct ownership opportunities are available for railroads interested in participating in infrastructure ownership.

"*While retaining the benefits of RNG credits is lucrative for fuel producers and suppliers, we chose to become the producer to utilize those credits where they truly matter—at the railroads*," says OptiFuel Founder and CEO Scott Myers. "*By allocating fuel credits to offset production, infrastructure and equipment costs, we not only expedite the transition of the US locomotive fleet to zero emissions, but we also enhance the efficiency of US rail and optimize the nation's supply chain for sustainability in the next 50 years*."

Smart Pricing: Making it Affordable for the Railroads

While purchasing locomotives and other equipment upfront is an option, OptiFuel's pioneering Locomotive-as-a-Service (LAAS™) Program makes affordability a reality. Through this program, railroads receive a fully integrated solution - including RNG-powered locomotives, tenders, refueling infrastructure, and RNG fuel – for one low, fixed-rate fuel price plus an upfront payment of about 20% of the retail price of the locomotive. For an **OptiFuel Total-Zero™ 5,600 hp RNG Hybrid Line Haul Locomotive**, this upfront payment would be approximately $1.1 million, covering up to 30 years of use.

OptiFuel's LAAS™ model is inspired by the successful Class 8 trucking sector, where fleet operators pay a single, low cost per gallon of fuel dispensed. The per-gallon cost includes the fuel commodity, fuel station and equipment CAPEX, and operational expenses. With smart use of the available renewable fuel credits, OptiFuel's all-inclusive rate per gallon of RNG dispensed is about the price that railroads are paying for a gallon of diesel today.

For an estimated price of $3.00 per diesel gallon equivalent (DGE) of RNG dispensed, Class 1 railroads receive ZERO carbon intensity (CI) renewable natural gas (RNG) and all required infrastructure and support – including guaranteed supply, fuel tenders for transport, refueling infrastructure, and seamless program management.

The approach allows locomotive fleet owners to reinvest savings into new equipment or other needed infrastructure, creating a win-win scenario.

Plan for Smaller Fleets

Short line railroads, ports, mining operators, intermodals, and other locomotive operators with smaller fleets have several options for transitioning to OptiFuel Total-Zero™ locomotives. For operators with 2 to 249 locomotives, OptiFuel will provide the most cost-effective equipment and refueling options based on the number of locomotives, horsepower requirements, duty cycle,

total fuel requirement, and current refueling process. Customers interested in learning more or receiving a no-obligation cost assessment and transition plan can contact OptiFuel at any time at Info@OptiFuelSystems.com.

Batch Implementation: Prioritize Routes for Seamless Integration without Disrupting Routes or Operations

OptiFuel's implementation model is structured around production batches of 250 locomotives, aligning with the average purchase size of Class 1 railroads. With each order batch, OptiFuel will construct not only the locomotives but also build and orchestrate the necessary RNG refueling systems and pipeline connections, RNG digester systems, transport vehicles, mobile refueling trucks, and tender car assets to support those specific locomotives and routes. Each batch is expected to take approximately 12 months from start to finish, with four scheduled batches and new Class 1 refueling sites per year.

OptiFuel has pre-mapped multiple implementation pathways for each Class 1 railroad, ensuring that these sets of stations and 250 locomotives can be integrated into existing routes with minimal disruption to daily operations and the larger network. Refueling sites in California and the Chicago area are prioritized to meet impending regulatory deadlines in 2035 for BNSF and UP.

For more information on OptiFuel's Locomotive as-a-Service (LAAS™) Program, see OptiFuel's response to *the Department of Energy's Request for Information on Progression to Net-Zero Emission Propulsion Technologies for The Rail Sector* at https://optifuelsystems.com/wp-content/uploads/2024/06/OptiFuel-Systems-DOE-RFI-061024.pdf

About OptiFuel Systems LLC:

OptiFuel Systems is a solution provider designing and manufacturing **Total-Zero™** emission products and services in the hard-to-abate transportation and industrial markets, specifically in rail, marine and power generation. OptiFuel works as a systems integrator with strategic partners to engineer innovative technology that is low-risk and modular with flexible fuel options consisting of affordable renewable natural gas (RNG) and hydrogen fuels. Products include switcher and line haul freight locomotives, RNG and hydrogen tenders, stationary and mobile refueling systems, and mobile and stationary standby and emergency generators. Services include sales, leasing, long-term maintenance, and refueling services. Customers are expected to achieve increased reliability, reduced lifetime maintenance costs, minimized downtime, greater sustainability, and an impressive up to 30% enhancement in fuel economy. OptiFuel's Total-Zero™ RNG-electric locomotives and hydrogen-electric locomotives are EPA certified as zero NOx and PM emissions and have achieved FRA concurrence.