



## **Shop & Technician Productivity Case Study**

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Improving the productivity of vehicle maintenance and shop operations is an ongoing challenge for fleet managers. For most fleet maintenance operations, contributors to this productivity include shop design, technician proficiency and selection of tools and equipment.

Addressing the design of the shop itself can make repair and maintenance facilities more productive. In *Recommended Maintenance Practice 515 – Maintenance Shop Considerations* from the Technology & Maintenance Council of American Trucking Associations, the statement that the “efficiency and productivity of a maintenance operation is directly affected by the design of the shop” indicates clearly that productivity can be improved through design considerations.

Another contributor to shop productivity is technician proficiency. Trained and motivated personnel not only enhance efficiency but can also offset the ongoing challenge posed by a shortage of technicians.

Finally, the selection of tools and equipment also contributes to the productivity of vehicle maintenance and shop operations. Convenient access to management information systems, including parts and inventory applications, increases both the accuracy and efficiency of these operations.

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Improving the productivity of fleet maintenance operations can be a formidable challenge. For the following fleets, representing three different types of utility operations, productivity is being increased without sacrificing quality of work.

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## **Baltimore Gas & Electric**

“Our shop productivity goals are targeted at reducing the average age of the work orders in our system,” says Burton Jackson, director of Fleet Services at Baltimore Gas & Electric, a regulated utility owned by Constellation Energy. “We have eight fleet shops throughout central Maryland and a staff of 60 technicians that service 2,000 vehicles and pieces of equipment. It’s important that we continually assess the performance of our technicians in many areas, including some related to the amount of time spent per task with and without specific targets.”

Baltimore Gas & Electric, a utility that serves 1.2 million electric and 600,000 gas customers, fields a typical mix of equipment. Included in its fleet are 400 heavy-duty trucks, 200 medium-duty models and about 600 light-duty vehicles. The balance of the fleet consists of various types of equipment, such as trailers, forklifts, backhoes, trenchers and mobile substations, among others.

To address productivity in its fleet shops, Baltimore Gas & Electric closely considered the layout of the facilities. “The shops were all constructed based on our design input, which included work areas and access to parts storage,” Jackson relates. “Each shop, for example, has a storage area to stock our high volume parts. Slower moving or specialty parts that are needed are dropped at our door by our parts vendor.

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“Another consideration we had was the ability to provide technicians with access to our fleet management information system,” Jackson continues. “As a result, our shops have computer workstations where technicians enter labor, parts and other charges against work orders. The system also provides access to vehicle and parts information, and work order histories.”

One other factor in shop productivity, Jackson adds, is to be sure all new technicians are fully and properly trained. To recruit new technicians, Fleet Services and the utility’s Human Resources Department work with several local vocational educational high schools and other training entities.

“We have established a new technician training program that lasts for at least 18 months,” Jackson concludes. “We have in-house classroom and hands-on training as well as courses provided by manufacturers and we contract for skills training with other sources. All of our trainees are prepared to acquire ASE certifications and move into higher paid positions, as well as continue to help reach our shop productivity goals.”

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## **Regional Water Authority**

“One of the main ways we address productivity in our shop is to design the facility in a way that reduces a lot of walking, which reduces wasted time,” says Robert A. Orifice Sr., senior manager of Metering/Fleet/Field Services at Regional Water Authority. “For example, all of our mechanics have their tool boxes strategically positioned next to their work bays. All mechanics also have their own tools so they don't need to borrow another's, while higher cost common items that we supply are all centrally located.”

The Regional Water Authority's three-bay shop is equipped with three above ground lifts and one in-ground, two for heavy-duty units and two that handle light-duty vehicles. Common equipment includes a tire changer and balancer, and an alignment system that is set up on a drive-on lift. Staffing the facility are three day shift and two night mechanics. The company also offers contract maintenance and repair services to outside customers, including the utility's employees and their families.

Based in New Haven, Connecticut, the Regional Water Authority is a water utility that serves customers in the south central portion of the state. The utility's fleet consists of a wide range of more than 300 vehicles and pieces of equipment, a group Orifice likes to describe as “everything from weed whackers to 20 ton cranes.” Included are autos, and light-, medium- and heavy-duty trucks outfitted with specialized systems needed to service the utility's infrastructure. There are

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also many kinds of construction equipment in the operation, such as backhoes, dozers, excavators and skid steers, as well as boats and trailers, and many lawn maintenance pieces.

Helping boost shop productivity at the Regional Water Authority, Orifice points out, is a computerized work order and parts management system. “All parts have bar code labels that mechanics can peel off and place on work orders to be scanned by our office assistant,” he relates. “This saves a lot of time compared to having the mechanics write in the parts they used, and it helps ensure accuracy as well.”

The computerized parts inventory system is monitored by the shop’s crew chief. If a particular part is not in stock then the mechanic will call an order in to one of several local suppliers or order it online. “All of our parts suppliers help improve productivity by allowing us to place orders and have them delivered at any time,” Orifice says. “Even when they are closed, we can place an order and have the item first thing the next day.

“Our suppliers impact our productivity by their response time,” Orifice continues. “It is crucial to have a good supplier house with sufficient delivery vehicles in order to get parts when needed in an allowable time frame. Before we use a supply house we have them sign a commitment with a performance clause that states acceptable delivery times of no longer than 20 minutes. While we do try to

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keep the parts we need for fleet units the most on hand – and to reduce our inventory needs through standardization – we still have to meet specialized parts needs and cover the diverse number of contract repairs we perform.”

Looking ahead, Orifice relates that improving productivity will remain a focus of ongoing efforts at the Regional Water Authority’s fleet operation. “That may include the use of handheld computers in the shop,” he concludes, “and developing the ability to generate meaningful metrics through better reporting capabilities in our fleet information management system.”

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## Verizon

“Balancing the workload and the number of technicians required at each of our shops is a challenge due to the complexity and scope of our operation,” says Dave Williams, NY Region manager of Fleet Operations for Verizon. “One way we regularly measure those productivity factors is to apply an equivalent vehicle to mechanic ratio.”

The process that Williams notes aims to assign 72 units per technician, including powered vehicles, trailers and mobile tools. “We count everything we’re required to maintain,” he explains further, “and assign each unit a factor. For example, sedans are rated at 0.9, vans at 1.0 and bucket trucks at 3.1. That way, complexity counts.”

Providing a means to account for the complexity of each unit is also important considering the size of the Verizon operation that Williams oversees. In total he is responsible for approximately 9,800 vehicles that operate throughout the State of New York, including New York City, plus an additional 3,550 units in Massachusetts and Rhode Island. The fleet ranges from compact sedans to tractor-trailers, with the largest group consisting of installation vans and splicing trucks fitted with small aerial units.

In the New York Verizon region that Williams manages there are 134 shops and 63 in the two New England states. “In terms of shop productivity,” he says, “it’s

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also important for us to look at the number and types of bays we have in each facility based on the number of vehicles. Typically, we have three bays for 100 vehicles.

“We also design and equip shops based on the types of equipment serviced at each facility,” Williams continues. “For example, we may have a shop that maintains a lot of hydraulic equipment while another location may have brake lathes because it handles a large group of sedans and vans.”

All shops in the Verizon region are supplied with parts by local vendors, including some items that are sourced using major contracts with OEMs. Repairs covered by warranty are handled in-house or by dealers. “Work quality and timeliness are not an issue,” Williams notes, “but the turnaround time is usually faster in our own facilities because we can eliminate travel time to and from a dealership. It’s a question of the shop’s workload and which alternative is more productive.”

Also contributing to shop productivity, according to Williams, is a fleet database that was made part of Verizon’s SAP system in late 2009. The parts and maintenance management solution, which is tied to the company’s logistics and accounting systems, is used to create work orders as well as send purchase orders to vendors electronically.

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“The data is tracked to specific vehicles and helps evaluate shop performance,” Williams explains. “In the future we will also be able to code each repair using Vehicle Maintenance Reporting Standards (VMRS) created by The Technology & Maintenance Council (TMC) of the American Trucking Associations.

“VMRS codes,” Williams continues, “can identify training needs based on data on repetitive repairs, is helpful when we consolidate and relocate personnel and vehicles, and when we add new technicians. After downsizing through attrition a few years ago we are now bringing on new people, so identifying needed skill sets will be essential to maintaining shop productivity at the highest possible level.”

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## **Meeting the Challenge**

In today's environment of tight budgets and a shortage of qualified technicians, improving the productivity of vehicle maintenance and shop operations can be a formidable challenge for fleet managers.

For most fleet maintenance operations, a well-designed shop, effective technician training, and the proper selection of tools and equipment are among the keys to meeting the challenge of improving shop productivity and ensuring the lowest possible maintenance costs.