



GREEN PURCHASING CASE STUDIES Hand Tools Get an Efficiency Upgrade



PBOT's new hand tools, like this backpack blower, are more energy efficient and emit less air emissions than conventional hand tools.

Purchasing Green

The Bureau of Transportation's (PBOT) Maintenance Operations group uses a wide assortment of hand tools including backpack blowers, chainsaws, hedge trimmers, brush cutters, and weed trimmers. The equipment has a somewhat limited lifespan due to heavy usage, usually no more than two years.

PBOT wanted to replace these tools with something more energy efficient and environmentally friendly. In early 2011, PDOT purchased 4-MIX engine hand tools made by STIHL. Conventional hand tools have a 2-cycle engine, whereas the 4-MIX hand tools feature a patented lubrication design that allows a 4-cycle engine to use standard STIHL 2-cycle (50:1) fuel mix, thus eliminating the extra oil tank for engine lubrication.

Benefits

The new hand tools improve air quality through reduced emissions of hydrocarbons such as ozone and carbon monoxide. Furthermore, the new equipment meets or exceeds current California Air Resources Board (CARB) and U.S. EPA standards for non-road engine exhaust emissions. The backpack blowers, for example, emit 73 percent fewer emissions than current EPA requirements for these products. Another benefit is that the new hand tools are quieter than conventional tools, and meet the City's noise ordinance decibel levels for both day and nighttime usage.

Cost

The 4-MIX hand tools are comparable in price to conventional tools. While conventional tools typically have a 90-day warranty, the STIHL 4-MIX products carry a two-year warranty that covers the costs of repairs. PBOT also anticipates that the extended warranty will reduce maintenance costs for repairs previously performed by staff.

AT A GLANCE

Who

Portland Bureau of Transportation

Product

STIHL 4-MIX engine hand tools

Cost

- 💰 Purchase price is cost neutral
- 💰 Reduces fuel costs by 25%
- 💰 Long warranty

Benefits

- ✓ Reduces air emissions
- ✓ Quieter than conventional tools

In addition, PBOT saves money through reduced fuel consumption. A 50:1 fuel mix means there are 50 drops of gas to one drop of oil. Since conventional hand tools use a 40:1 fuel mix, using the leaner 50:1 fuel mix saves 25 percent in oil costs. PDOT estimates that the fuel savings alone will pay for the new equipment in two years.

Performance

PBOT has found that these tools perform better than previous equipment. For instance, maintenance staff report that the backpack blowers have stronger blowing power, enabling them to finish jobs quicker and more efficiently. The products are also lighter, reducing operator fatigue and potential injuries while increasing productivity. With the two-year warranty, PBOT expects the lifespan of these products to exceed conventional equipment.

PBOT is also in the process of testing various biodegradable lubricating chainsaw bar oils and will soon be testing electric battery operated chainsaws as well.

Lessons Learned

Some of the equipment does have a small learning curve and PBOT recommends training staff on proper usage for the equipment. PBOT held a 10-minute briefing for its staff and to date has had no problems with the equipment.

“These new power tools offer improved operator health, user-friendly features, reduced fuel requirements, and factory training for our mechanics for in-house maintenance—all of which factor into additional savings for the public and its workers.”

Tom Ullmann
Lead General Mechanic,
Portland Bureau of Transportation

About the Portland Bureau of Transportation

The Portland Bureau of Transportation (PBOT) is responsible for planning, building, managing, and maintaining Portland’s transportation system. Within PBOT, the Maintenance Operations group is charged with the responsibility of preserving the public investment of over \$8.1 billion in transportation facilities and \$1.5 billion in sewer infrastructure by inspecting, cleaning, maintaining, and repairing all transportation and sewer related infrastructure within the City of Portland. In addition, they perform around-the-clock response to emergencies such as storms, floods, and other incidents that inhibit safe transportation.

For More Information

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