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ALTERNATIVE POWER SPECIAL REPORT

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ON YOUR RADAR

THE COMMERCIAL LANDSCAPE INDUSTRY is buying into propane. Commercial mowers powered by propane are gaining traction among landscape contractors at an impressive rate. The fuel is propelling professional landscapers to a better bottom line through lower fuel costs, less maintenance and increased productivity. Add in a clean emissions profile and it's easy to see why propane mowers are winning over contractors.

Propane mower use has earned a firm footing in the commercial landscape industry ever since influencers began putting resources behind developing propane solutions in 2012. In 2016, more than 15,000 commercial mowers were in operation across the country. Currently, 14 manufacturers offer dedicated propane mower models.

As peer-to-peer validation of propane's benefits continues to spread, 2017 figures to be another year of growth. The Propane Education & Research Council is offering more tools and resources than ever to assist contractors interested in transitioning their fleet to propane.

For starters, in March, PERC is partnering with Lawn & Landscape to host a free webinar that will discuss propane's benefits and help contractors get started on the path to propane. Visit bit.ly/lawnperc to register.

PERC is also launching The Cut, a quarterly e-newsletter designed to keep contractors up to speed on all things propane in the commercial landscape market. The Cut will keep you in the know and bring you all the relevant tips, tricks, resources and tools to help you maximize your investment in propane. The first issue of The Cut will be delivered next month, and you can sign up for free at propane.com/TheCut.

The overwhelmingly successful Mower Incentive Program from PERC is once again available for contractors still making equipment purchases prior to the busy season. The program assists contractors by reimbursing them \$1,000 for every new propane mower purchase. The program also rewards \$500 toward a qualified conversion kit. To date, PERC's Propane Mower Incentive Program has helped put more than 4,000 new commercial propane mowers in the field in 43 states around the country.

We're excited for 2017 – and beyond – as propane continues to make a compelling case to contractors as the fuel that's best for business.

Hear what your peers are saying about their switch to propane at propane.com/commercial-landscape. Here's to a successful year!



Jeremy Wishart

Deputy Director of Business Development,
The Propane Education & Research Council



JEREMY WISHART

THE PROPANE
EDUCATION & RESEARCH
COUNCIL

“As peer-to-peer validation of propane's benefits continues to spread, 2017 figures to be another year of growth.”



Exploring alternatives

Landscape contractors share their motivations for moving away from gasoline, and how propane or battery-powered equipment has changed their operations.

By Kristen Hampshire

ABOVE: Using battery-powered hand-held equipment can help contractors appeal more to environmentally friendly clients.

BEFORE THE SEASON STARTS, the entire 120-mower fleet at Benchmark Landscapes based in Austin, Texas, will be converted to propane power. The process has been gradual during the last five years — but the cost savings of running on this alternative fuel vs. gasoline has been dramatic. We're talking \$100,000 less cash spent on fuel per year, and that's when gas prices are down.

"Our average crew drives only about 10 miles per day, so 90 percent of our fuel consumption is through mowers," says Casey Vickrey, president. "Our crews will use 1 or 2 gallons of gas in a vehicle and 10 gallons with two mowers running on gas."

But on propane, not only does fuel cost half as much (sometimes a greater savings), mowers also run cleaner and require less maintenance, Vickrey says. "We were changing oil every 100 hours, and we have gone to every 250 hours with propane. We sent the oil in for inspection and there's still plenty of life left in it."

"Propane burns leaner and



The team at Greenwise Organic Lawn Care originally converted mowers to propane on their own, but now buy them already converted.

THE SUPPLY SIDE

Onsite propane fueling stations are a significant benefit, according to Adam Linnemann, president of Linnemann Lawn Care & Landscaping in Columbia, Illinois. He partnered with a local propane supplier that installed a free 500-gallon propane tank at his business. "He set up the propane filling station so we can fill the tanks ourselves," Linnemann says.

A sensor on that 500-gallon propane tank alerts the supplier when fuel levels are low. Then, the supplier returns to Linnemann Lawn Care & Landscaping to replenish the propane. "It's a routine service," he says.

Casey Vickrey of Benchmark Landscaping in Austin, Texas, also has propane fuel stations at all of his company's locations throughout the state. "For us, if we did not have a good partner like we do, using propane would be much more difficult," he says.

Bottle exchange services for propane are available, Vickrey says. "But that fuel savings isn't as significant as what we can experience (with onsite fuel stations)," he says.

Vickrey figures the return on investment if you fuel on site versus bottle exchange is nine months compared to 18 months.

"All we had to do was set up a barrier for the fuel station and the supplier did the rest of the work for us," he says.

Regarding that barrier, Marc Wise of Greenwise Organic Lawn Care in Evanston, Illinois, explains that his company used concrete barriers it already had (previously for landscape bin dividers). "You need concrete posts, so you would drill a post and put in a pile, fill that with concrete, and so on," he says. You also need space on your property for this infrastructure. Where will you place the fuel site?

Because Wise already had concrete barriers, the setup of a fueling area was seamless. And, the propane company handled installing the tank, which was provided in return for a deposit.

What about battery power? Charging batteries while travelling is possible at Solar Earth Lawn Care in Indiana because of solar panels on the roof of Gus Mariscal's truck.

"We also have a little solar-powered stand that sits in the back yard, and we can use that to charge batteries," he says. Conventional battery charging stations that connect to "the grid" are more standard.

Regardless of the type of alternative power, the first question to ask before making equipment investments is: How will we refuel/recharge? Vickrey advises, "Get set up to work with a reputable propane supplier."

To find a propane supplier in your area, visit retailers.propane.com.

cleaner. And, at the end of the day, you have less maintenance."

For Vickrey and others who use alternative fuels, the decision is all about responsibility — from a profit and sustainability perspective. As landscape professionals consider ways to run leaner and compete in a price-sensitive market, they recognize that alternative fuel could elevate profit margins.

Also, there's a growing realization that "green" business is good business. Commercial clients might be asking about environmentally friendly methods to support their own corporate sustainability efforts, and homeowners are more attuned to the potential impact of engine emissions.

Here, Lawn & Landscape explores the why and how of moving to an alternative fuel source.

CONVERTING TO PROPANE. In the major metropolitan areas

of Texas, running propane is common among large landscape firms, Vickrey says. He estimates that three out of the four largest companies he competes with have already converted to propane, or at least are in the process.

"The key is to make sure you have a good propane provider, and every major city in this area has a provider that can offer service," Vickrey says, adding that there were really no logistical hoops to jump through when he decided to begin converting mowers.

Marc Wise of Greenwise Organic Lawn Care in Evanston, Illinois, says alternative fuel is not standard in his region, but his company started running propane mowers seven years ago.

"We just wanted to use the most sustainable equipment, that's part of our mission statement," Wise says. "We looked into electric mowers, and at the time, we found that would only take us so far."

Back then, Wise had just a few mowers, so technicians used propane conversion kits to move engines from gas to propane power.

A propane company visited weekly to refuel propane tanks. (Now, Wise has a tank on site for fueling. See sidebar on page P4.)

"The major benefits for us are environmental," Wise says. "There is very little exhaust, and it's better for our guys in the field. They are the ones who are walking behind mowers all day, so making these considerate choices is the right thing to do by your employees."

Wise investigated both battery and propane options before he converted his first mower. "The difference is, the electric machines are more than double the cost of standard (gas-powered) machines," he says. "And, they're about double the cost of one of our machines converted to propane."

Now, depending on financing options, the fuel savings can help pay for battery-powered mowers, Wise says. But still, there's an upfront expense that was not an issue with propane.

Wise now buys mowers pre-converted rather than doing it himself. His equipment dealer uses a kit to convert the 21-, 32- and 36-inch mowers to propane, and the dealer also facilitates securing rebates and

incentives. "To get the incentives, you need documentation and it's easier for us to work through a dealer for that," Wise says.

Vickrey's team converts their mowers on site. "We buy our propane kits direct, and it takes about an hour and a half to install them," he says, adding that his team is certified to do so through the propane supplier.

He prefers to convert mowers versus buying machines that are already outfitted for propane power because of the resale advantage gasoline offers. "We can take off the kits with minimal expense and it's easier to sell to the ranchers or farmers who tend to buy them," he says.

The cost of a mower that

is manufactured with a propane-power engine ranges from \$1,800 to about \$2,500 depending on the make. However, Vickrey points out that incentives of about \$2,500 per mower can basically cancel out this expense.

The kits Vickrey purchases cost about \$1,000. So, when he crunches the numbers, after about nine months of running a propane mower, the machine is completely paid for. With rebates, he says you can save money on day one.

"With the cost of labor and insurance prices constantly going up, it's difficult to increase contract values at the rate that the cost of doing business is increasing," Vickrey says. "So, anywhere you can cut expenses is vital."



BATTERY POWER. For Gus Mariscal, battery-powered mowers and hand-held equipment that are charged by solar panels on his service truck are an economical and ecological advantage.

"The main reason for our move to battery power was more environmental and personal health issues that gas mowers cause because of engine emissions," says Mariscal, president of Solar Earth Lawn Care in Indianapolis.

His first two years in busi-

LEFT: Gus Mariscal spent \$10,000 to add solar panels to his truck to charge batteries for his equipment. The panels provide 16 hours of charge time.

ness, Mariscal operated typical gas-engine mowers, trimmers and blowers. Then he began exploring battery-powered equipment to determine whether moving this direction would make sense financially.

The initial investment was 37 percent more than gas mowers. For example, a typical 21-inch gas mower Mariscal uses costs about \$250. A comparable battery-powered mower runs about \$400.

Mariscal operates two 21-inch mowers, along with a 33-inch and 46-inch walk-behind. Commercial-grade batteries for smaller mowers cost about \$150 to \$180, offering a run-time of about 50 minutes. Batteries for larger mowers can cost up to \$3,000, he says, and must be replaced every five years.

Still, these expenses were far less over time than running gas-powered mowers, he says. He figures spending about \$3.70 per hour to operate gas-powered mowers and less than \$0.20 per hour for electric mowers.

“Over a five-year span, we would pay \$18,000 a year for gas, and the maximum we’d spend for electric would be \$1,000 every five years,” he says, based on his equipment’s battery requirements.

Mariscal based this on 40-hour mowing weeks and a 25-week season.

“We did not see the initial return the first couple of years, but after two years

we’ll start hitting a tipping point where you make back your money from not spending on gas,” he says.

Financially, Mariscal says his company is “good” compared to a business that runs only gas-powered engines.

“But in the next couple of years, we’ll start seeing bigger profit margins because our initial investment will be paid off.”

Meanwhile, Mariscal says the cost of outfitting his truck with solar panels to charge the batteries was about \$10,000.

The panels provide 16 hours of charge time. What if it’s cloudy outside? “We can charge batteries if we have three days of no sunshine, and beyond that we can connect to the grid and charge batteries,” he says.

Mariscal has not run into that cloudy day problem yet. And running out of power on the job is no concern because after a job, batteries are switched out in machines. There are always batteries charging while mowers are in use.

Is this the way of the future? Mariscal thinks so.

And Wise adds, “The financials do work out. The conversions do work out. And, alternative fuel (like propane) can extend the life of your engine.”

Vickrey says for landscape professionals considering a switch, “It’s always a savings with propane. The faster you can get it done, the better.” 🔥



DO TH

How do alternative power sources make good financial sense?

By Kristen Hampshire

ERIK LOWES SAT DOWN TO CRUNCH some numbers so he could figure out exactly how much his business was spending on fuel. Three years ago, that number rounded out to about \$30,000. “Fuel is our second



equated to \$7 per hour to run a mower. He could get propane for \$1.39 a gallon then, which meant spending about \$2.50 per hour given the usage rate. (Propane mowers burn about 1.5 gallons per hour at Lowes' Landscaping—a gallon less than gas-powered mower engines, based on his estimates.)

With four mowers running about 400 hours per year, the potential savings quickly added up and justified investing in propane mowers.

His machines were already aging, so the timing was right for a switch. "I could get a 25 percent fleet discount, so I bought four machines and basically got one free," he says.

Then, Lowes found out about alternative energy incentives. He was able to score \$8,000 in federal government incentives, and another 15 percent off the total mower purchase price from the state of Illinois. That equated to about \$2,000 off per machine, and Lowes runs 60-inch mowers.

"I was getting really excited at this point," Lowes says.

LABOR COSTS. Then, Lowes went back to labor expenses. Every day, crews stopped at a gas station to fuel up.

"That was reduced because by working through a propane distributor, we now have a bulk fuel tank so one guy can fuel up all of the tanks two times a week," he says. "That means I have one guy fueling up tanks as opposed to five guys going to a gas station.

Now, the crews fuel their service trucks before the workday and one dedicated crewmember manages the task.

All of this streamlining of fuel and reduction of mid-day stops improved labor costs, too. "Our cost per man-hour has decreased by \$6 because of efficiency—not only because of fuel, but better processes," Lowes says. "That's money in our back pocket whereas before, we were at break-even with mowing. Now, mowing is profitable again."

IMMEDIATE SAVINGS. Before Adam Linnemann of Columbia, Illinois-based Linnemann Lawn Care & Landscaping switched to propane, he figured the cost of filling a fuel tank versus a

largest expense, behind labor," says Lowes, president of Cuba, Missouri-based Lowes' Landscaping. "I thought, we can definitely work on labor expenses, but we need to work on fuel, so I started researching." He saw propane advertised and looked into it. "I stayed up nights, late, doing cost analyses based on our usage," he says.

CRUNCH THE NUMBERS. Lowes figured out his mowers used about 2.5 gallons of gasoline per hour, and at \$3 per gallon, that



Contractors who switch to propane may be eligible for federal and state incentives.

COST-CRUNCHING TIP SHEET

KNOW YOUR NUMBERS. Know your actual fuel costs today, and compare those with potential costs of alternative fuel. “Dive into the costs during a quiet time and look at every angle,” Lowes says. “Propane may not work for everyone, but look at your expenses and start plugging in the numbers.”

TAP INTO A FUEL SUPPLY. Having a relationship with a local propane fuel supplier has been critical for Linnemann and Lowes. Linnemann has a 500-gallon propane fuel tank on site (provided free of charge), and the propane supplier certified his employees to fill the tanks (also free).

APPLY FOR INCENTIVES. You can earn money back to recoup the cost of equipment purchases. Incentives vary by state, and these can be combined with federal alternative fuel incentives. Lowes earned back about \$2,000 per mower from incentives.

propane tank. “Our propane tanks are 33-pound cylinders that hold 7 pounds of propane,” he says. He currently gets propane for \$1.34 per gallon.

“You’re getting the same production out of the tank as you would gasoline,” Linnemann says. “Right off the bat, there’s a savings in fuel cost.”

Linnemann opted to purchase already-converted propane mowers as opposed to using a conversion kit like some landscape professionals do because he believes there is a more lucrative government rebate for doing so.

Plus, he prefers to turn mowers over after their three-year warranty so he can rest assured that maintenance issues will not crop up.

“The mowers have more power when running propane vs. gasoline, and less pollutants,” Linnemann says. “The mowers don’t bog down in heavy

grass as much, and engines run cleaner so there is less time and cost associated with maintenance like oil changes.”

In fact, Linnemann switched engines to propane and oil to synthetic. That combination has seriously extended the period in between oil changes, he says. “You can practically change the oil twice a year vs. doing it monthly,” he says.

Linnemann’s propane mower investment qualified for federal and state tax incentives. He received about \$1,000 per mower just from the federal incentive in the form of a check a couple of months after the mower purchase.

Today, all eight mowers in Linnemann’s fleet are powered by propane fuel. “It helps to have a good relationship with your dealer and with your fuel supplier,” he says. “When you work together, the conversion can be seamless.” 🔥



Now, an EFI propane engine adds more savings on top of that. “You are getting an engine that has been designed and optimized specifically for propane,” Hudak says.

Some landscapers might choose to stick to gasoline, but switch from a carbureted system to fuel injection, says Paul Leech, engineering director at Briggs & Stratton Corp.

By using a quarter of the fuel with an EFI system, you’ll reduce greenhouse gas emissions by 25 percent compared to a carbureted gasoline engine.

“If you are using good, fresh fuel in a gasoline engine vs. propane, the engine durability should not change at all,” says Brett Jury, engineering manager, fuel systems, Briggs & Stratton Corp. “But if you introduce stale gasoline into the system, you can cause damage right then and there.”

Ethanol gasoline creates new concerns in terms of engine longevity and performance, Jury says. Take fuel storage, for example.

“Gasoline is stored in a container where oxygen can get into it, which causes fuel to oxidize and go stale. That used to not be as big of a deal until we started introducing ethanol,” Jury says.

“Ethanol absorbs water, and that can cause fuel to break down and degrade faster than it used to. In that process, it can cause corrosion and gumming, and it can cause bad thing to happen to fuel systems, which can result in performance running stability issues and starting problems.”

That said, Leech notes that

SYSTEM ANALYSIS

The type of fuel you use will have different effects on your engine. **By Kristen Hampshire**

WHILE GASOLINE MAY STILL BE the most popular method of powering equipment, manufacturers have been exploring and investing in R&D and new products designed for propane power. This gives contractors an option to buy a ready-made propane mower vs. using a kit to convert an existing gasoline engine to one that will accept propane fuel.

“Propane has been around in the turf care industry for 20 to 30 years,” says Kohler marketing manager Eric Hudak, who has been responsible for marketing and helping develop the propane engine business.

“It was typically done as an engine conversion that required taking off the gasoline fuel system and mounting a propane tank, and installing an aftermarket propane carburetor and propane regulator.” Cur-

rently, only Kohler and Kubota manufacture propane engines.

Hudak says landscape professionals have shared that they tend to change oil less often when running propane.

“There’s a financial benefit of running propane versus gasoline,” Hudak says, adding that propane can save you in excess of 25 percent on fuel expenses.

Some landscape professionals were saving \$1,200 per year per mower during high-fuel

cost years. “That translates to about \$2 per hour compared to a carbureted gas mower,” Hudak says.

With lower gas prices at the pump now, the immediate push to propane is not quite as prevalent as it was when the cost per gallon was near \$4, Hudak says.

“The demand for propane seems less intense now with fuel prices down,” Hudak says. “But it’s an opportunity to keep an eye on as fuel prices go up and we are all expecting that to happen.”

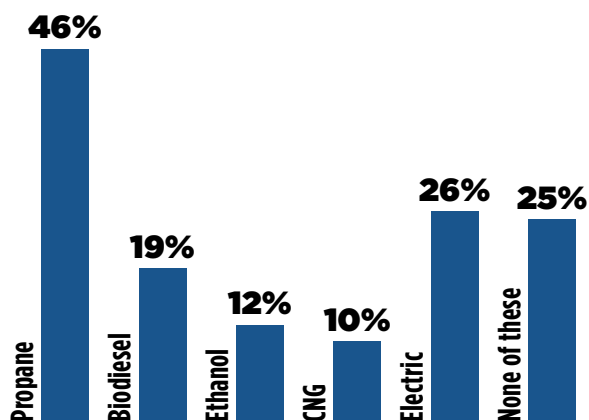
FUEL SYSTEM ADVANCES.

Kohler offers an EFI gasoline engine that offers 25 percent fuel savings with gasoline.

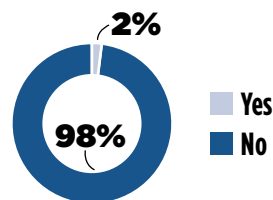
FIGURES BEHIND THE FUEL

We surveyed more than 100 contractors to find out their feelings on alternative power for their mowers and hand-held equipment. The results show that fuel still has a strong hold on the market, but contractors are open to trying something new.

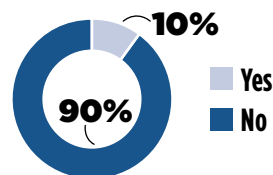
WHICH OF THE FOLLOWING ALTERNATIVE FUELS WOULD YOU CONSIDER USING IN COMMERCIAL MOWERS?



DO YOU USE PROPANE IN ANY OF YOUR COMMERCIAL MOWING EQUIPMENT?



HAVE YOU USED ALTERNATIVE FUELS (PROPANE, CNG, BIODIESEL, ETC.) IN THE PAST AND STOPPED?



Why did you stop? Answers included: (1) Tanks are heavy on the mowers, refilling can be troublesome. Have had multiple broken brackets on the tank mounts, and the re-routing of cables is problematic. **(2)** Gasoline is cheaper, propane is too much trouble to change out every day and our jobs are too big to use propane. **(3)** Battery power in a mower did not last long enough.

propane can offer mechanical benefits compared to a carbureted gasoline engine. “Gasoline can dilute engine oil if it gets mixed in, so propane eliminates the concern,” he says.

“As far as fuel going bad or concerns with ethanol and gumming of jets, the carburetor or injectors, you virtually eliminate those issues so your

maintenance can be a big benefit.”

But quality gasoline with a stabilizer running in an EFI engine can give landscape contractors a leg up in the fuel efficiency and performance arena.

“The recommendation we make with ethanol fuels is to either use it, don’t buy more than you’ll use in 30 days, or if

you do have fuel that is stored longer, then absolutely put a fuel stabilizer in it,” Leech says.

CNG AND BIODIESEL. While Compressed natural gas (CNG) is a growing option in the highway trucking industry, the high-pressure storage tank required and accessibility of the fuel are obstacles for the green industry. Hudak says Kohler

has introduced CNG power for home generator sets, but not outdoor power engines.

As for diesel and biodiesel, emission regulations have nearly doubled the size of engines because those control devices are nearly the size of the engines, Leech says. “They’re somewhat problematic from a packaging perspective,” he says.

“There has been a shift in the

WHAT ARE THE BARRIERS TO INCREASING YOUR USE OF PROPANE IN COMMERCIAL MOWERS?

Carrying tanks is a hassle	44%
The incremental cost to convert the fleet to propane is prohibitive	38%
I don't know how to perform maintenance or how to find a mechanic to service them	31%
I prefer what I have/I don't have interest in propane mowers	25%
Don't know where to get propane for mowers	22%
I don't know where to get the equipment	19%
Hassle of training the crew how to use	19%
I'm not familiar with the fuel	18%
I believe propane is more expensive	17%
I don't feel comfortable with propane	15%
Other	12%
Propane equipment needs better technology	9%
Propane is not as efficient	5%
There are government regulations/I'd need a permit to operate propane mowers	2%
Propane is not safe	1%



Other answers included:

Don't want the liability of a propane storage rack in event of a fire to adjacent properties in my commercial storage facility

Do not know how mowers will handle hills

WHAT ARE THE BARRIERS TO INCREASING YOUR USE OF BATTERY-POWERED COMMERCIAL EQUIPMENT?

Run time is too short	76%
Recharging the equipment takes too long	52%
They are more expensive	31%
Electric equipment needs better technology	29%
The incremental cost to convert the fleet is prohibitive	26%
Electric equipment is not as efficient	21%
I'm not familiar with them	20%
I prefer what I have/I don't have interest in battery-powered equipment	18%
Other	11%
I don't know how to perform maintenance or how to find a mechanic to serve them	10%
I don't know where to get the equipment	9%
I don't feel comfortable with them	9%
Hassle of training the crew how to use	6%



Other answers included:

Batteries too heavy on commercial mowers

Industry suppliers haven't "pushed" it. Tells me not time.

After training, making sure crew people keep and operate equipment properly. Crews tend to cut corners

smaller engine displacements to gasoline and away from diesel.

MAKING A CONVERSION. Historically, using propane meant using a conversion kit, and this is still the method many business owners use. They might contract with a third-party or ask their dealer to make the conversion. However, the cost

today of conversion via kit versus purchasing a propane engine from the get-go is not all that different, Hudak says.


"When you figure the labor of doing a conversion and the hardware costs, you are typically better off purchasing it outright than doing a conversion."

For landscape contractors who want to switch over engines they're already running

on gasoline, or convert a new machine that is not yet equipped for propane, Jury says that "a third party is a good choice for our industry, because they will make sure that (the engine) is certified and meets engine regulations."

MARKETING OPPORTUNITIES. Propane has a running advantage for landscape firms

operating in areas where sustainability is especially important, Hudek says. Companies in Seattle or Madison, Wisconsin, for example, could market their propane mower fleets as a green advantage.

And in areas that enforce ozone action days, landscapers with propane mowers can still operate. "You can keep working," Leech says. 

GETTING IN SHAPE HAS NEVER BEEN SO PAINLESS.

SUPPORT A HEALTHIER BOTTOM LINE BY SWITCHING TO PROPANE WITH THESE RESOURCES.

transferring to propane — it's as easy as fuel that can be purchased separately or while refueling propane vehicles — it's as easy as fuel that can be used to heat your home or business with direct natural gas or propane.

PROPANE COST CALCULATOR

See why propane savings matters.
PropaneCostCalculator.com

PROPANE EQUIPMENT DEALER FINDER

Locate and talk directly with your local propane equipment dealer.

PROPANE.COM