

Vermont's Innovative Electric Lawn Mower Incentives Are They Working ? Why and Why Not ?

Bi-State Connector, Incentive Panel Discussion 09-27-2019

The **electric** lawn care revolution is here.



Commercial electric
lawn mowers

- Reduce Noise
- Reduce CO2 Emissions
- Save Money



Available
from:



Eco-Equipment Supply
Charlotte, Vermont

Request a free demo:
www.ecoequipmentsupply.com

The Larger Mission of Eco-Equipment Supply

To help stimulate the electrification of the lawn care industry and thereby eliminate the significant environmental impacts from gas-powered lawn care equipment

These environmental impacts include:

- ▶ Noise pollution
- ▶ Air pollution
- ▶ CO2 emissions

Electric Utility Incentives

- ▶ Two primary objectives:
 - ▶ Increase awareness that commercial electric lawn mowers exist
 - ▶ Reduce the price to make them more cost competitive
- ▶ Incentives were created under Vermont's Tier III Renewable Energy Standard that requires Vermont's utilities offset a percentage of their GHG emissions, and reducing fossil fuel consumption is one way to do that

Methodology Used by GMP to Create its Electric Lawn Mower Incentive

All incentives are created using a standard methodology based on:

- ▶ The expected reduction in fossil fuel use from the new technology
- ▶ The GHG emissions associated with that amount of fossil fuel
- ▶ The amount of electricity that will be used by the new technology
- ▶ The GHG emissions associated with that electricity

The resources GMP used to determine these values included:

- ▶ Electricity use data from Mean Green Products (2.8 kW/hour)
- ▶ Fuel use data from conventional mower manufacturers (1 to 1.5 gal/hr)
- ▶ Argonne National Labs' Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (GREET) Footprint Calculator
- ▶ US Dept of Energy's Clean Cities Guide to Alternative Fuel Equipment

GMP Incentive “Use Case” Assumptions

- ▶ # of Hours and Fuel Use: **875 hours per year and 1.03 gallons per hour**
- ▶ Annual Fuel Consumption:
 - ▶ US Average: **900-2,000 gallons annually**
 - ▶ Vermont Average: **900 gallons annually**
- ▶ Duty Cycle (ie. Operational Life) of Electric Mower:
 - ▶ Lithium ion batteries - **6,000 hours (conservative)**
 - ▶ 6,000 hours divided by 875 hours/year = **7 years (rounded)**
- ▶ Tier III Valuation:
 - ▶ Gross Tier III Fossil Fuel Displaced - **81 MWh Equivalent**
 - ▶ Net Lifetime Tier III Savings - **73 MWh**
 - ▶ Annual Carbon Offset - **8 metric tons**
 - ▶ Lifetime Carbon Offset - **54 metric tons**
 - ▶ Increased Lifetime Electric Consumption - **67 MWh**

Green Mountain Power Incentive



Greener Acres - Green Mountain Power

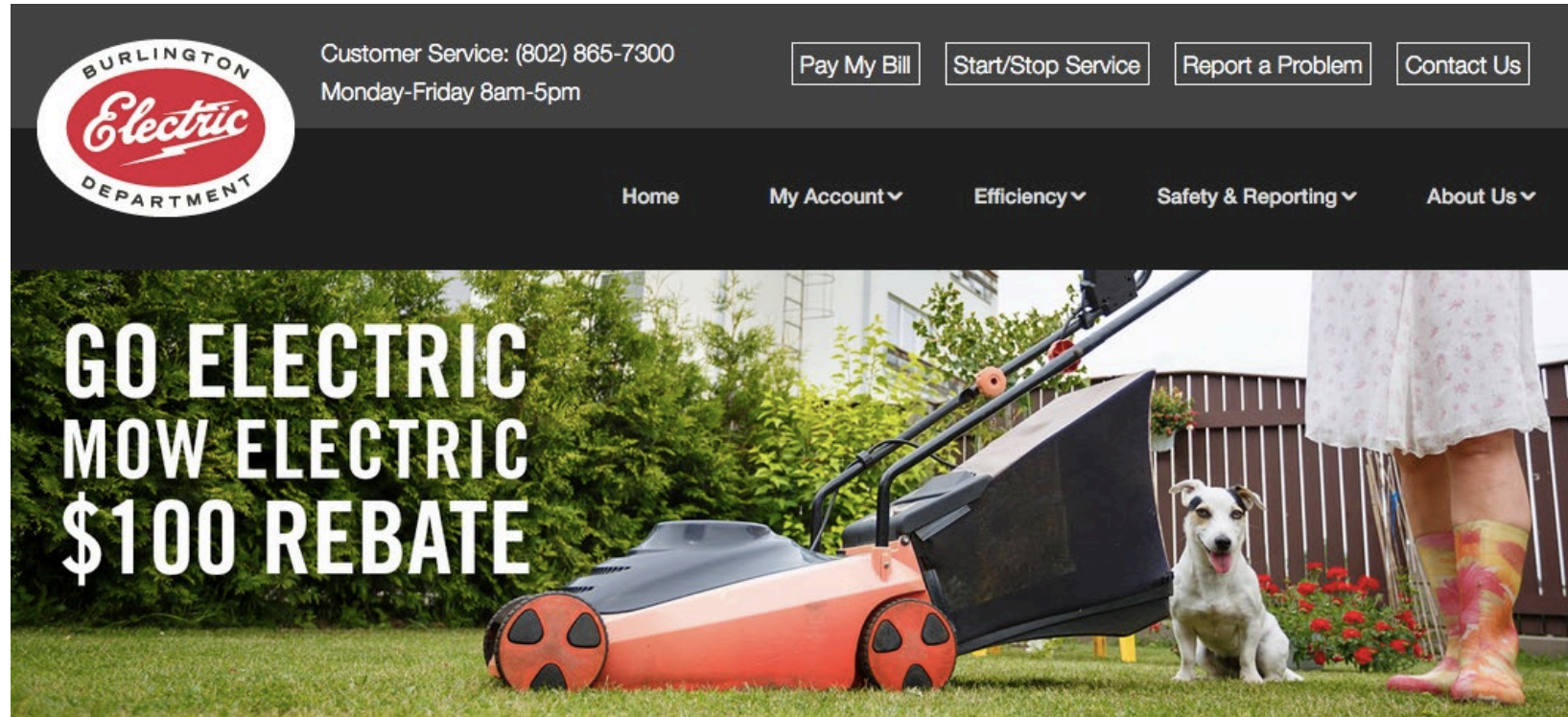
<https://greenmountainpower.com> › 2018/08/13 › greener-acres ▼

Aug 13, 2018 - GMP is launching a pilot program and offering a \$700 discount to help landscaping customers adopt **electric mowers** and cut greener acres. Without combustion engines, **electric mowers** usually require less routine maintenance – no paying for oil changes or spark plugs to clean and change!

Details and Results To-date:

- “Pilot” project launched in August 2018 for commercial mowers
- \$700 Commercial incentive - 0 mowers purchased
- \$50 Residential incentive - ? mowers purchased (just launched)
- ZERO incentive applications processed

Burlington Electric Department Incentive






Details and Results To-date:

- ▶ Launched Spring 2019
- ▶ \$3,500 Commercial incentive: 1 mower purchased (by BED)
- ▶ \$100 for Residential incentive: 121 mowers purchased

Vermont Electric Co-op Incentive

REASON #4
WHY YOU SHOULD
CONSIDER AN ELECTRIC
LAWNMOWER



Drag mower from shed
Fill mower with gas
Pull cord (5 times)
Make noise
Pollute air

Charge
Mow
Quiet & clean

#cutthegas

Details and Results To-Date:

- ▶ Launched Spring 2019
- ▶ \$100 Residential incentive: 36 mowers purchased
- ▶ \$1,000 Commercial incentive: 0 mowers purchased

Washington Electric Co-op Incentive



2019 Electric Lawn Mower Incentive Form

Electric Lawn Mower Incentive

Receive up to \$100 toward the purchase of a new electric lawn mower.



Terms & Conditions:

Rebate amount is limited to the lesser of \$100 or 50% of the purchase price.
Only valid on purchases of new electric push/walk behind lawn mowers (corded or cordless).
Purchase date is after May 13, 2019.
Purchase must be made in Vermont.
Lawn mower must be at least 36 volt.
This incentive is only for WEC members.
WEC reserves the right to modify or end this offer at any time.
Good through December 1, 2019 unless otherwise modified/terminated.

2019 Commercial E-Lawn Mower Incentive

Receive up to \$1,000 toward the purchase of a new commercial electric lawn mower.



Terms & Conditions:

- Rebate amount is limited to \$1,000 or 50% of the purchase price.
- Only valid for these models:
 - Mean Green WBX-33
 - Mean Green DWBX-48/52
 - Mean Green SK-48
 - Mean Green NXR48-52
 - Mean Green CXR-52/60
- Purchase date is after 1 June 2019.
- This incentive is for WEC members only.
- WEC reserves the right to modify or end this offer at any time.
- Good through December 1, 2019 unless otherwise modified/terminated.

Details and Results To-Date

- Launched Spring 2019
- \$ 100 Residential incentive: 10 mowers purchased
- \$1,000 Commercial incentive: 0 mowers purchased

Village of Orleans Electric Department Incentive

Details and Results To-Date:

- ▶ Member of the Vermont Public Power Supply Authority (VPPSA)
- ▶ Launched January 2019
- ▶ \$1,500 Commercial incentive: 1 mower purchased

There's been a relatively robust response to the residential mower incentives, but why have only two commercial electric mowers received incentive payments so far?

- ▶ Residential electric mowers are relatively inexpensive, they cost about the same as conventional mowers, and the existing incentives reduce their cost by 20 to 30%
- ▶ Conversely, commercial electric mowers are anywhere from 20% to 300% more expensive, than conventional mowers (depending on models, factory and institutional discounts, etc.)
- ▶ The existing incentives only reduce the cost of a \$23,500 zero-turn mower with a 6 to 7 hr run-time by 3% (with a \$1,000 incentive) to 15% (with a \$3,500 incentive)
- ▶ Significant cultural and institutional barriers need to be overcome to stimulate the transition to commercial electric mowers

Cultural Barriers

- ▶ There exists both a lack of familiarity with, and a negative bias against electric lawn mowers
- ▶ Electric mowers handle a bit differently
- ▶ Different operation paradigm: Electric mowers are charged overnight while engines are refueled as needed
- ▶ Existing 6 to 7-plus hour run-time can be perceived as a limitation, although most mowers are rarely operated for more than 6 or 7 hrs/day
- ▶ The substantial environmental impacts from conventional lawn care equipment apparently aren't yet considered relevant to environmental mission statements and/or GHG reduction goals at either the individual, institutional, municipal, or state level

Institutional Barriers

- ▶ The higher purchase price of electric mowers reduces the amount of money available for other equipment in capital budgets
- ▶ Fuel costs for conventional mowers are often not tracked, which makes it harder to demonstrate the lower operating costs of electric mowers
 - ▶ \$4 to \$5/hr for fuel compared to \$0.45/hr for electricity
- ▶ Operating budgets are considered independently from capital budgets, which means the substantial savings in operating costs from electric mowers aren't factored into purchasing decisions
- ▶ The higher purchase price is a disadvantage in competitive bids, unless the bid documents specify “electric” mowers
- ▶ Institutions may not be set up to finance mower purchases to reduce up-front costs while benefiting from lower life-cycle costs

Thank You

- ▶ For more information about Mean Green electric lawn mowers, to obtain a copy of the GMP incentive methodology, or my article ‘Overcoming the Cultural and Institutional Barriers to Electric Lawn Care Equipment’
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