



# Reducing GHG Emissions With Electric Lawn Care Equipment - Opportunities and Challenges

2019 Vermont Energy and Climate Action Conference



*Eco-Equipment Supply*

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

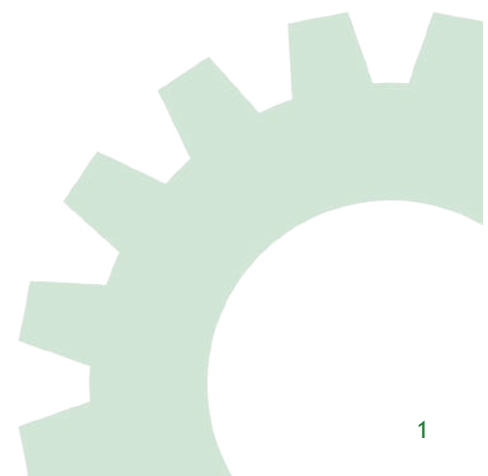
[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# Estimated CO2 Emissions of Mowing 40 MILLION Acres of Grass in the US

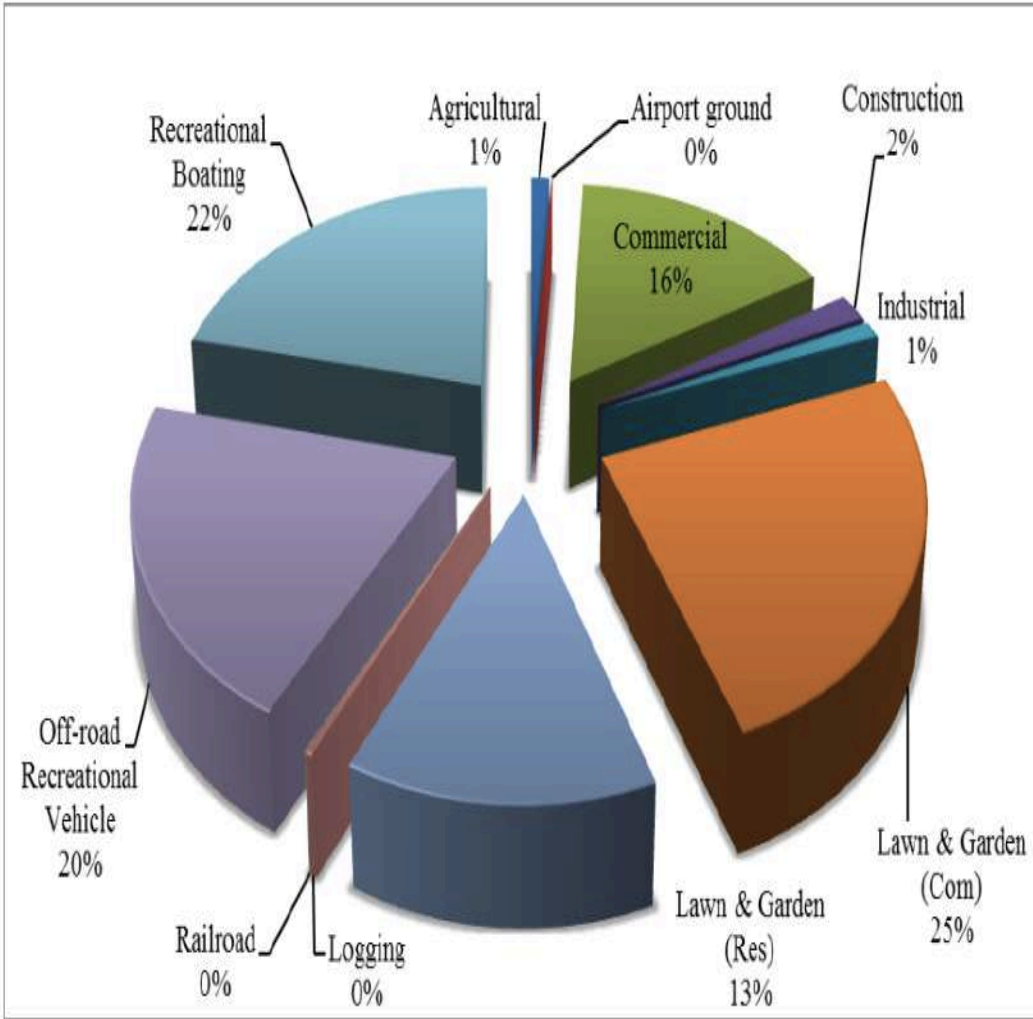


Figure 10-1. EPA NONROAD2008 estimates gas consumption in 2013 by sector.

**2.6 BILLION gallons of Gasoline +  
100 MILLION gallons of Diesel =  
54 BILLION pounds of CO2**

US DOT, "Off-highway and Public-use Gasoline Consumption Estimation Models Used in the Fed. Highway Administration". Final report. Pub # " fhwa-pl-17-012 June 2015 AND

US DOE "Clean Cities Guide to Alternative Fuel Commercial Lawn Equipment" Pub: DOE/GO-102011-3364. October 2011

## Vermont's Lawn Care GHG Emissions?

Assuming 15 gal/acre/season x  
10,000 (?) acres = 150,000 gal x 20 lb CO2/gal =  
**3 MILLION pounds of CO2**



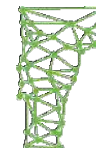
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

www.ecoequipmentsupply.com

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# ELECTRIC "RESIDENTIAL" WALK-BEHIND MOWERS

(Push and Self-propelled - \$150 to \$650)

greenworks



TORO.



Makita



EGO



SNAPPER



WORX



ECHO  
ALL PROFESSIONAL GRADE EQUIPMENT



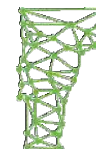
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# ELECTRIC “RESIDENTIAL” RIDING MOWERS

(Steer-type and Zero-turn - \$2,600 to \$12,000)



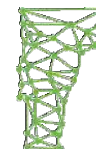
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# ELECTRIC ROBOTIC LAWN MOWERS (\$900 to \$3,300)



**Robomow**  
friendly home



**SEAMAGIC**



**Husqvarna**



**BOSCH**  
invented for life



**GARDENA**



**WORX**



**Flymo**



**HONDA**



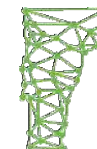
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# ELECTRIC "HANDHELD" LAWN CARE TOOLS

String Trimmers



Leaf Blowers



Hedge & Pole Trimmers



Chain Saws



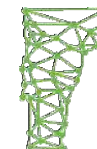
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK





# NEW Models for 2020/21

## EVO-74



### New Features:

- 74 in mowing deck
- 7 to 8 hr run-time

## RIVAL-52/60



### New Features:

- 20% more power than CXR
- Faster
- Improved maneuverability



**AUTONOMOUS Commercial Mower**  
(available in 2021)





# greenworks®



**52" Stand-On Zero Turn  
Mower**



**60" Ride-On Zero Turn  
Mower**



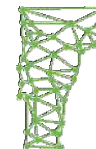
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# VT CONTRACTORS USING ELECTRIC LAWN MOWERS (as of December 2019)

**Bear Mountain Mowing LLC**

We have a few openings left for the 2020 Mowing season. Please contact us for a free quote today!



Free no obligation quotes  
*Eco-friendly mowing and lawn care.*  
We use only lithium battery powered mowers, trimmers, blowers and edgers and only 100% organic treatments.

RESIDENTIAL AND COMMERCIAL

**CHURCH HILL LANDSCAPERS**

SCHEDULE AN APPOINTMENT (802) 425-8222

ABOUT PROJECTS SERVICES PROCESS CONTACT US

GREENER LAWN CARE  
*green for the future*

**The Green Side**  
Eco-Friendly Landscaping



*Top Notch Property Management*

*Orleans, Vermont*



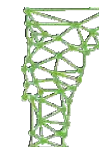
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWN MOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



**VECAN**  
VERMONT ENERGY & CLIMATE ACTION NETWORK



# OTHER ELECTRIC RIDING MOWERS OPERATING IN VERMONT and NEW HAMPSHIRE (in 2019)



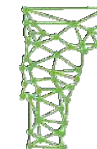
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

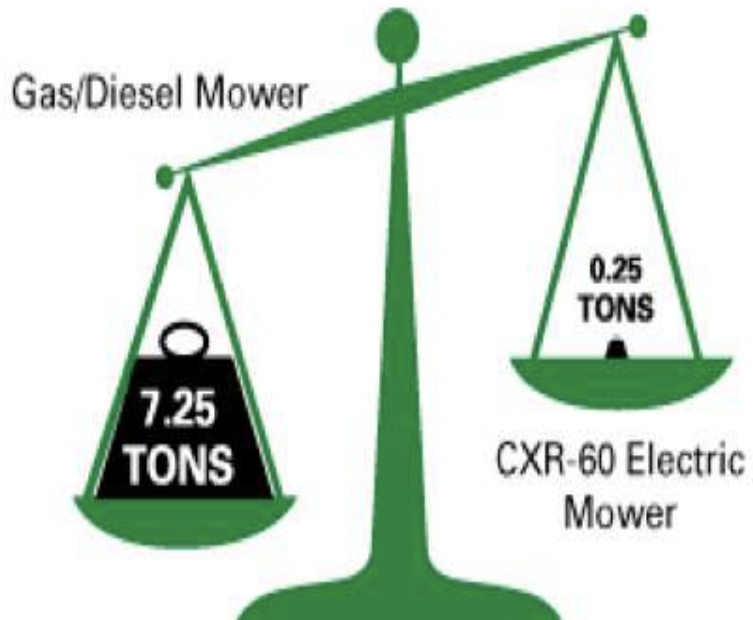
The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# Comparison of Annual CO2 Emissions of Commercial ELECTRIC versus GAS Mowers



## **ELECTRIC** Mowers:

650 hrs @ 2.8 kW/hr = 1,820 kWh x .26 lb/CO2 = **.25 tons CO2**

## **GAS** Mowers

650 hrs x 1.12 gal/hr = 728 gal x 20 lb CO2/gal = **7.25 tons CO2**

SO:

**10** electric mowers saving 7 tons CO2/yr **SAVES 70 TONS CO2**

**1,000** electric mowers saving 7 tons CO2/yr **SAVES 7,000 TONS CO2**



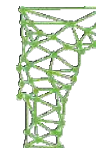
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



**VECAN**

VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# 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:

- Launched Summer 2018
- \$700 Commercial incentive
- \$50 Residential incentive



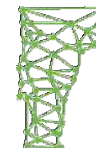
*Eco-Equipment Supply*

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

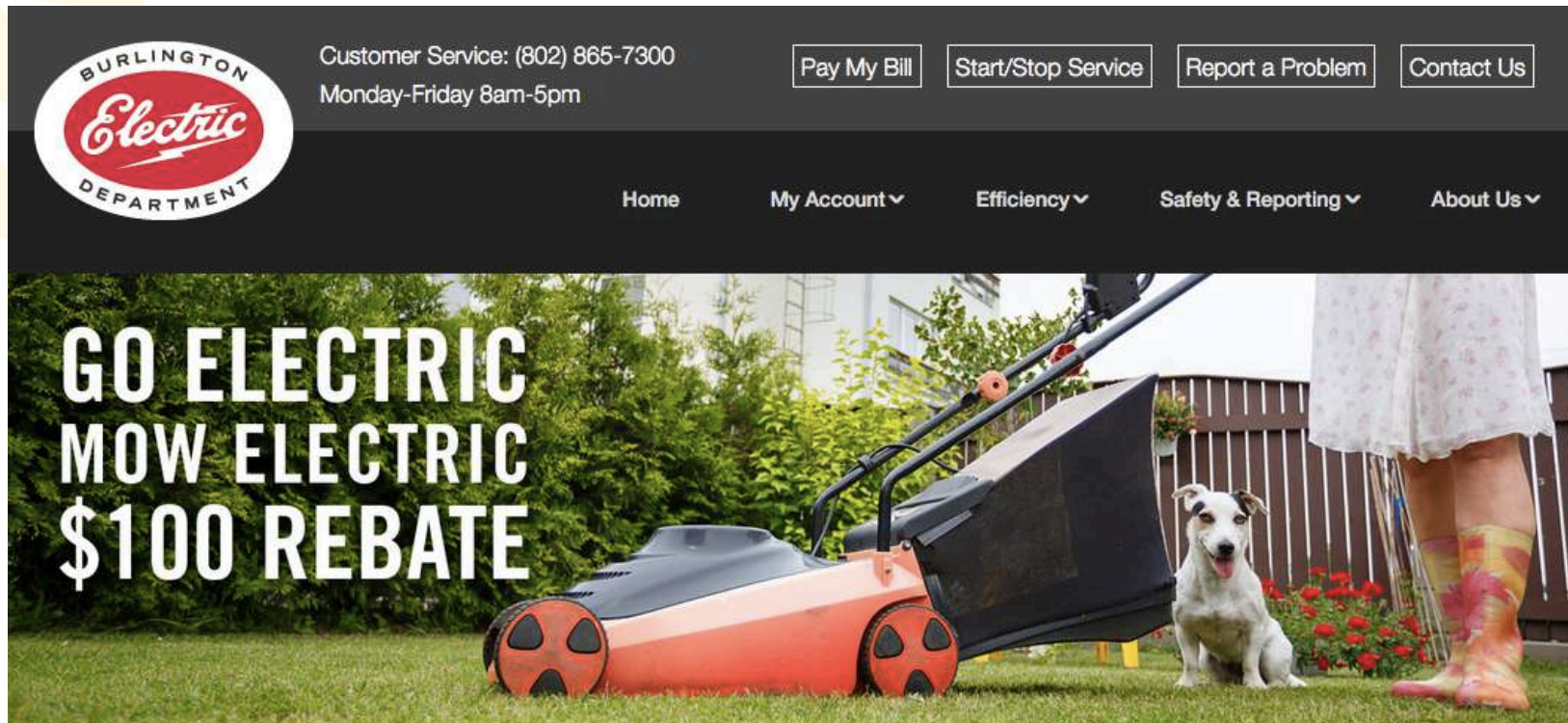
The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# Burlington Electric Department Incentive



## Details:

- ▶ Launched Spring 2019
- ▶ \$3,500 Commercial incentive
- ▶ \$100 for Residential incentive



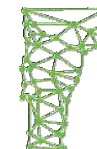
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# Vermont Electric Co-op Incentive

REASON #4  
WHY YOU SHOULD  
CONSIDER AN ELECTRIC  
LAWN MOWER

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

**Electric Mower:**  
Charge  
Mow  
Quiet & clean

#cutthegas

VECA ENERGY TRANSFORMATION

## Details:

- ▶ Launched Spring 2019
- ▶ \$100 Residential incentive
- ▶ \$1,000 Commercial incentive



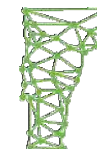
**Eco-Equipment Supply**

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

# 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:

- Launched Spring 2019
- \$ 100 Residential incentive
- \$1,000 Commercial incentive

## Washington Electric Coop 2019 electric lawnmower incentives



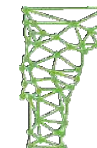
Eco-Equipment Supply

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



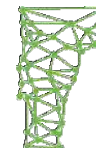
VECAN  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



# CULTURAL AND INSTITUTIONAL BARRIERS TO ADOPTION OF ELECTRIC LAWN CARE PRACTICES

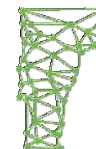
## CULTURAL BARRIERS INCLUDE:

- ▶ Resistance to change
- ▶ Bias and skepticism:
  - Perception that electric mowers are inherently less powerful
  - Negative experiences with less-advanced battery technologies (e.g. “memory” issue)
  - “Perfection being the enemy of the good” (e.g. lack of leaf collection systems)
  - There’s still relatively few electric mowers operating in Vermont.
- ▶ A problem and a solution “hidden in plain sight”:
  - The GHG emissions of gas-powered lawn care equipment is only recently being recognized
  - While the availability of high-quality electric alternatives is also only recently becoming known



## INSTITUTIONAL BARRIERS INCLUDE:

- ▶ **LOWER** operating costs but **HIGHER** purchase price:
  - Commercial electric mowers cost 25 to 300% more than conventional mowers
- ▶ While helpful, **MOST** existing utility incentives are relatively small:
  - BED incentive for commercial mowers reduce the purchase price by 14%
  - Other utility incentives reduce the cost of commercial mowers by only 3 or 4%
- ▶ There are no incentives offered through Efficiency Vermont/VEIC, nor are there any low-interest loan programs available to contractors to purchase commercial electric mowers





# *“Overcoming the Cultural and Institutional Barriers to Adopting Commercial Electric Lawn Care Equipment in VT”*

And for specific strategies to encourage the use of electric lawn care practices in our local communities:

## *“Taking Action - Strategies For Reducing GHG Emissions from Lawn Care Equipment in VT”*



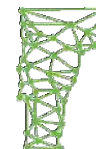
*Eco-Equipment Supply*

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

10/10/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK



*Thanks for listening*

***MOW ELECTRIC !!!***



*Eco-Equipment Supply*

HIGH PERFORMANCE ELECTRIC LAWNMOWERS

[www.ecoequipmentsupply.com](http://www.ecoequipmentsupply.com)

The Environmental and Economic Benefits of Electric Lawn Mowers, by Steven Wisbaum

12/7/19



**VECAN**  
VERMONT ENERGY & CLIMATE  
ACTION NETWORK

