

Come Join the Vermont Scrounge-a-thon !!



Teams of Students enter
and present results at
Coopation at end of
2020 school year

Hey, I have an
idea!
Let's Build it!

Work together and
use a lot of Common
Sense and a little
money to
SOLVE real world
problems!



Contact: lori@communityhydro.biz-a project of the Champlain Maker Faire

Magic WandYou have 3 wishes (or more)



The Scrounge-a-thon!

Join a Team and Solve Real-world problems using a lot of common sense and a little money

Teams of Students will receive some financial support to solve challenges. Results to be presented at end of 2020 school year. Winning teams receive mentorship, prizes and support to turn projects into businesses. Let's make the world we WANT



Scrounge-a-thon Challenges:

- 1) Bio-launcher-vertically lift wood pellets
- 2) Ride-Share app for rural transportation
- 3) Weatherization-80,000 Vermont homes
- 4) Dirty Plastics to fuel
- 5) Clean up dirty Lakes

YOUR IDEAS WELCOME-WHAT PROBLEM DO YOU WANT TO SOLVE?

Sign up at this booth, or at Champlain Maker Faire website!

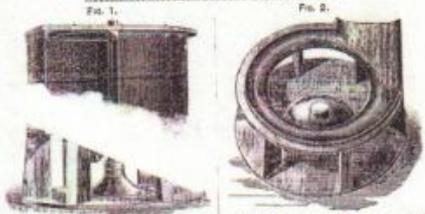
FUEL FROM THE SKY.

80,000 NON-POWERED DAMS IN THE US

Sweden with 4% of the US land mass has 2000 hydro sites (same as US)-
Germany has 7,500! Lots of opportunity

THE IMPROVED Green Mountain Turbine —AND— Impact Whirlpool Water Wheel. MANUFACTURED BY J. V. THURX, ESSEX JUNCTION, VT.

MARCH, 1888.



The following is a full description of this improved wheel:
Fig. 1 is a plan view of the top of the improved water-wheel with the top of the case removed and with a part of the founner-lamina broken away. Fig. 2 is a side elevation. Fig. 3 is a sectional elevation of the wheel and its case on the line a-a of Fig. 1, and

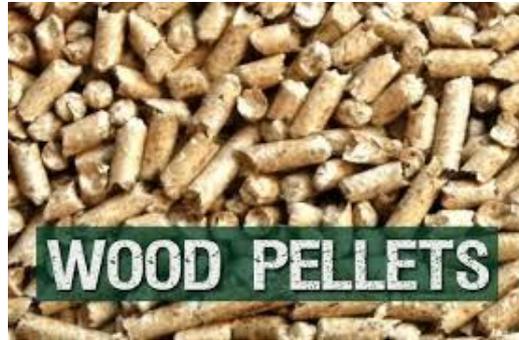


Green Mountain Turbine:
March 1888, Essex Junction

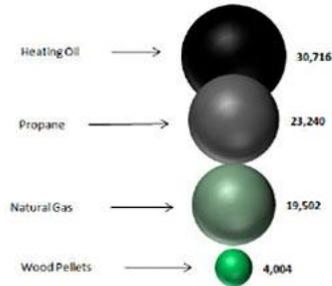
GoHydro Turbine. Patented . No fish entrainment, Easy modular design to add to existing dams and drops. Over 50 of Vermont's 1200 dams could use the GoHydro design

SCROUNGE-A-THON: CHALLENGE #1

(supported in part by Vermont Clean Energy Development Fund)



Total Pounds of CO₂ (a greenhouse gas) per Year
normalized to the equivalent of the BTU from 1000 gallons of heating oil per year



Sustainable Forest >>> Use Wood Pellets >>>> Local Low CO₂ Fuel >>>> Stronger Local Economy

78 cents of every energy dollar goes out of state. Keep energy dollars in state:



Challenge: Move Wood Pellets from Bulk Bin to Day Bin



Augers: Use a low-speed Drill at top of auger in over-sized pipe



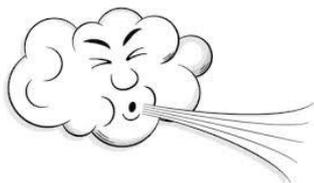
Shop Vacs: Use an old refrigerator With seal on door for vacuum box! Ground system and Limit dust -as dust can explode!

Enter to win: The winning system must be rugged, reliable, move tons of pellets annually and cost less than \$500 It should be able to be installed into various homes (with and without basement etc.) and move pellets from bulk to day bin.

HOW DO WE WIN? The winning teams would move 40 lbs of wood pellets uphill and sideways? (10 ft vertical distance) in <10 minutes, so bulk pellets can be delivered to a house, stored in a bulk pellet bin (either outside or in a basement)-and then transferred from the "bulk" bin to a day bin. **SIGN UP FOR MORE INFO!**

SCROUNGE-A-THON: CHALLENGE #2-WEATHERIZATION

Partially supported by VEIC



shutterstock.com • 287231882



<<\$3000+ commercial blower door setup.

Or...build a \$100 DIY >> blower door setup (used HVAC motor and phone app to measure pressures)



Keep money from going out the window----



Hat and slippers for a house
Insulate attic and basement

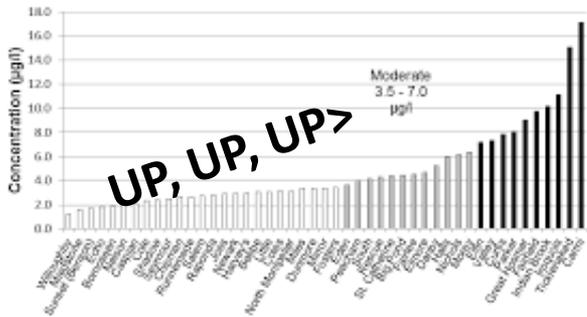


Build and use DIY blower door to find air leaks in house.

Seal leaks with caulk and spray foam!!



LMP Long-Term Mean for Chlorophyll-a Concentration Inland Lakes



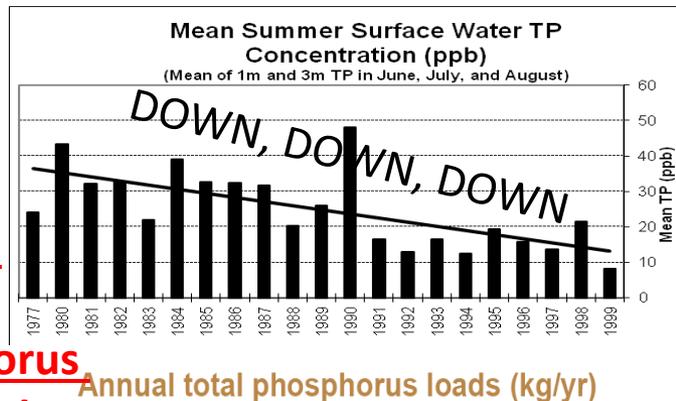
SCROUNGE-A-THON: CHALLENGE #3

Reduce Algae blooms in Lake Champlain

THE BIG QUESTION:

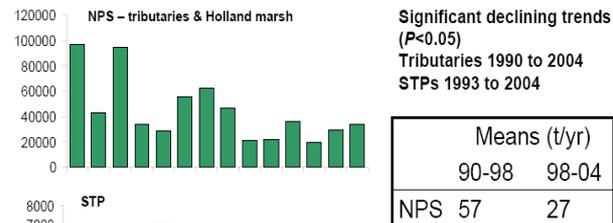
How come nearby Lakes (Maine, Ontario, CT) have reduced (P)

Phosphorus while Phosphorus in Lake Champlain increased over the same time period?



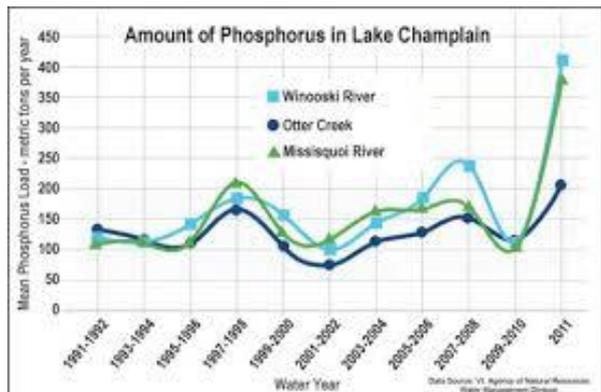
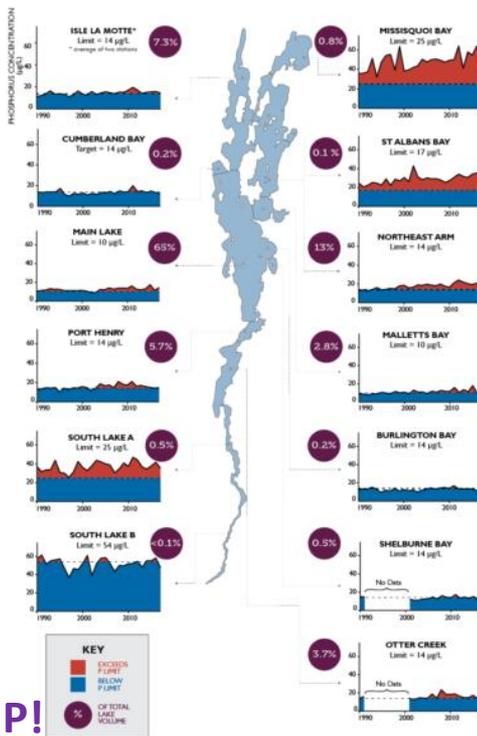
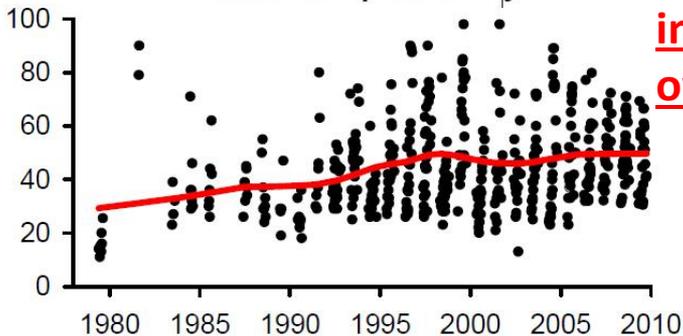
Annual total phosphorus loads (kg/yr)

NPS – tributaries & Holland marsh

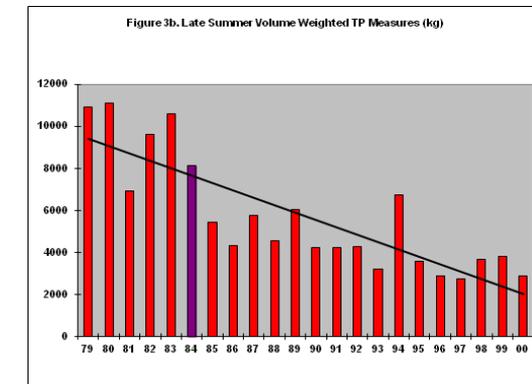


Total Phosphorus (µg/L)

Missisquoi Bay



In Lake Champlain P levels go UP!



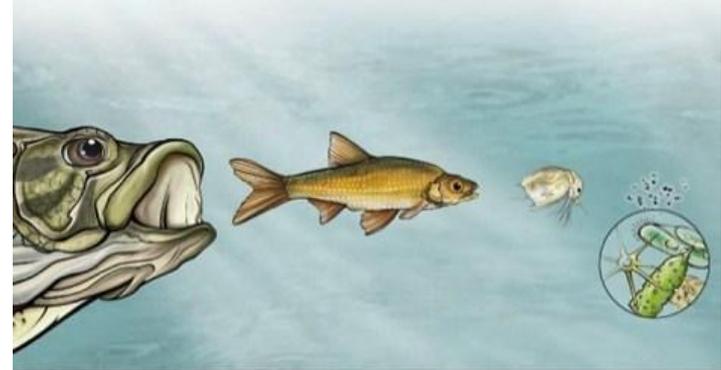
In Lake Sebasticook, Simcoe and Waramaug P levels go DOWN

DATA SOURCE: Long Term Phosphorus Program (LTPP) VIAN, NYDEC

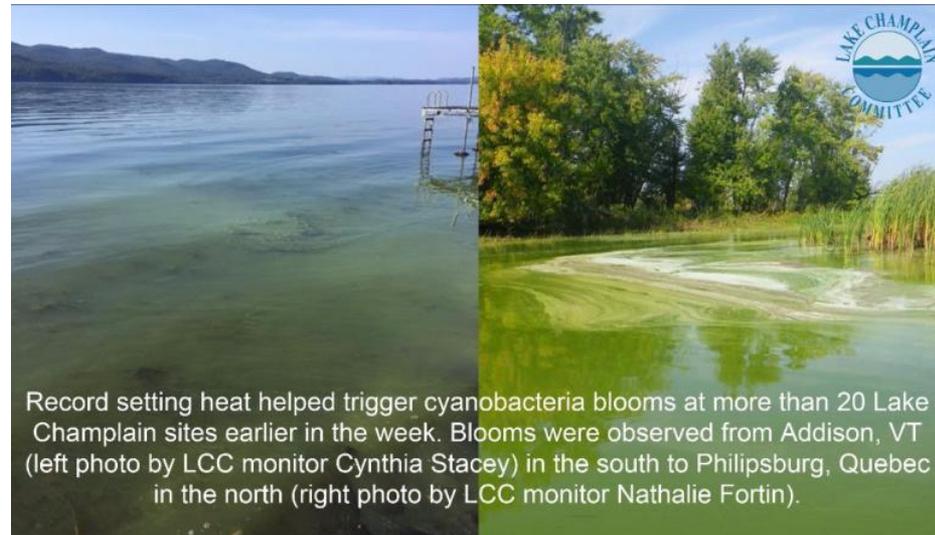
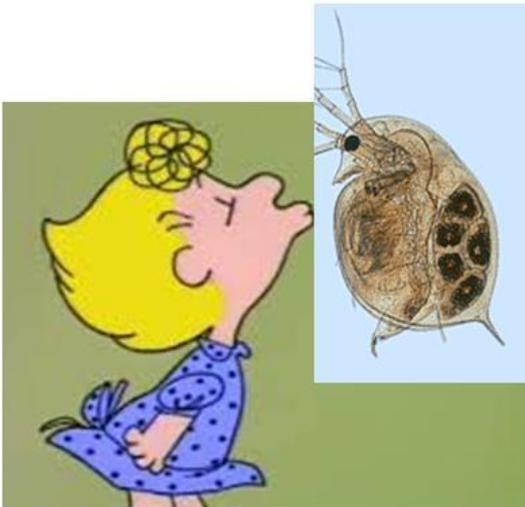
SCROUNGE-A-THON: CHALLENGE #3

Clean up Lake Champlain: Reduce Algae blooms

<<Non-native
zooplankton-eating
alewives die-off
in the spring



**WE SHOULD LOVE ZOOPLANKTON-BECAUSE THEY EAT ALGAE
NON-NATIVE WHITE PERCH AND ALEWIVES EAT THE
ZOOPLANKTON-
SO THERE ARE LESS ZOOPLANKTON AROUND TO EAT ALGAE**



Record setting heat helped trigger cyanobacteria blooms at more than 20 Lake Champlain sites earlier in the week. Blooms were observed from Addison, VT (left photo by LCC monitor Cynthia Stacey) in the south to Philipsburg, Quebec in the north (right photo by LCC monitor Nathalie Fortin).

**Non-native White Perch and Alewives eat the zooplankton-so algae increases.
At Lake Sebasticook in Maine-they removed non-native zooplanktivore fish and
IMPROVED WATER QUALITY!**

SCROUNGE-A-THON: CHALLENGE #4

Use our existing Transportation system more efficiently. Hack and Develop a Ride-Share app. Partially supported by Waytogo! &Go!Vermont



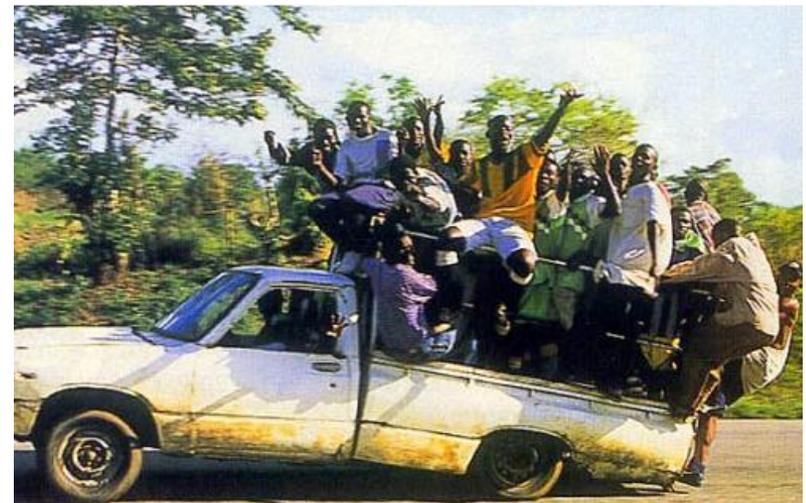
Want to get from here to there in rural Vermont? Can't drive, want to share?

Enter the app-a-thon- Hackathon! Teams will present at Go!Vermont in June, 2020

Start inventing with Open source software: libretaxi.org; Didi, Agilemile, etc.



Sign up at the
Go!Vermont
Booth!



A project of [EcoStrategies LLC](#) And [Vermont Energy Education Program \(VEEP\)](#)

SCROUNGE-A-THON: CHALLENGE #5

Dirty plastic to fuel. Plastic use is predicted to increase by 3 - 4 x by 2050! Floatable-non-chlorinated plastics can be turned into diesel, kerosene and gasoline easily

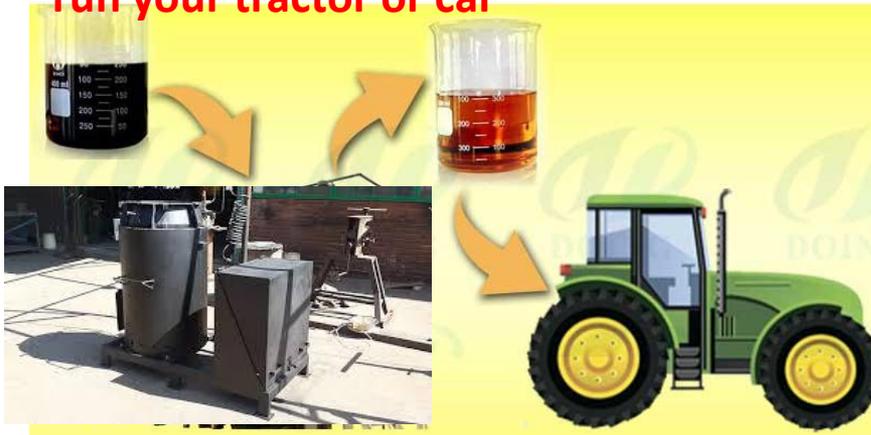


Plastic is filling our land and water!



Mr. Trashwheel (Baltimore) uses hydropower and solar power to collect trash before it goes into the ocean

Use fire (pyrolysis) to melt floatable plastics and make fuel to run your tractor or car



<https://www.recor.co.za/100-litre-day-plastics-to-diesel>
and
<https://www.instructables.com/id/Waste-Plastic-to-Fuel/>

Rural Plastics to fuel plant
South Africa-courtesy of Recor

START DREAMING----3 WISHES



Plastics to Diesel
in rural South Africa

Calera-biological organisms to make Low CO2 concrete. Marine organisms use CO2 to form calcium carbonate shells



70-100 Million Billion tonnes of CO2 in the geological record in the form of calcium carbonate



The special form of calcium carbonate that Calera produces in its process mimics the form of calcium carbonate that marine organisms use to make their shells and other structures. The special form of calcium carbonate is a binder that creates structures with high strength and toughness.

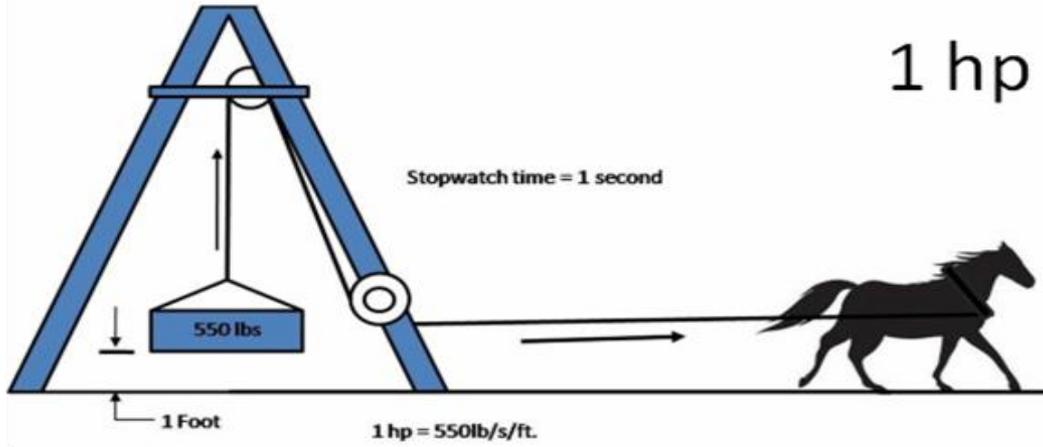


Ecovative-Mushrooms to replace plastic and meat

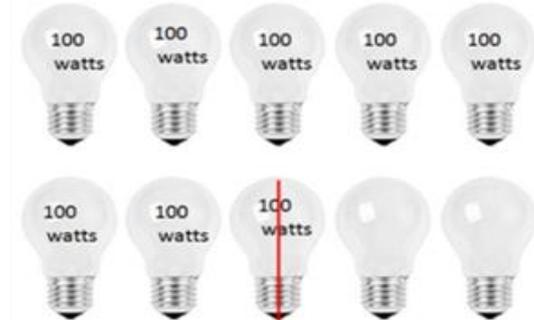
Algix-algae to sneakers, surfboards and flipflops

Scrounge-a-thon challenge. How much energy can YOU produce?

1 horsepower = 2,500 btu/hour = 745 watts



1 hp – 745.7 watts



1 hp-lifts 550 lbs (about 3 adults)
one foot in one second!!

This is a LOT of energy



Will lift 550
lbs 60 ft in
one minute

HOW MUCH CAN YOU LIFT?