

# Going Electric at CSWD's Organics Recycling Facility *aka Green Mountain Compost*

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# Marching forward: more efficiency, less fossil fuels

1988-2010 –  
22 years of windrow  
composting at Intervale



2011 –  
Opened new \$2.3M ASP  
Compost facility in Williston





# Marching forward: more efficiency, less fossil fuels

2017 – Arrival of Komptech Star Screener for final product sifting







Advanced screening  
technology

Photos courtesy of Komptech GmbH



# Marching forward: more efficiency, less fossil fuels

2019–2020 VT  
ANR DEC \$500K  
grant helped with  
site expansion,  
efficiencies

- Extension of 3-phase power
- Converted screener: diesel to electric
- Added electric stacking conveyor
- Added windrow turner to replace excavator turning
- Added haul truck to replace loader bucket hauling















# 3 Phase Electric Extension

## Green Mountain Power, line extension

- Initial cost: \$27,793
- Fuel reduction incentive-\$ 7,722  
Final cost: \$20,071

## Trenching, conduit, transformer, switches, meters

- \$36,043

## Three phase extension final cost

- \$56,114











Redmond Rd









# Benefits of recent improvements & conversions



Adding windrow turner allowed for replacement of four diesel machines with one



Turning of windrows went from 2-week activity to 3 hr. activity



Far fewer aging diesel engines requiring maintenance



Less reliance on diesel fuel



# Komptech L3 Compost Screener 12-month fuel comparison

March 2022 - February 2023				
	Hour of use: 476			
	Consumption	Unit	Avg cost per unit (current/ FY23 Avg)	Total Cost
Actual Electricity Consumption	15,964	KWH	\$0.2084	\$3,327
Diesel Consumption Avoided	809	Gal	\$4.35	\$3,519



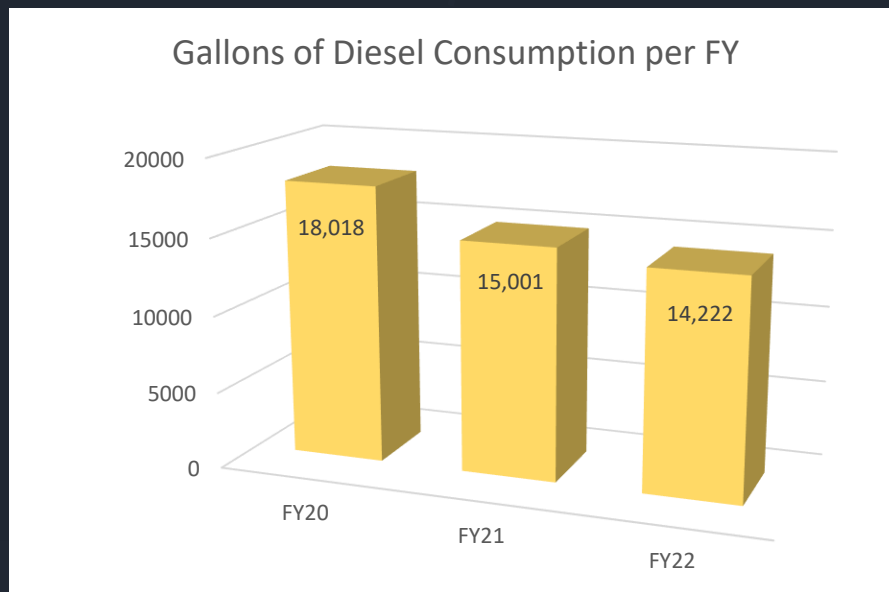
# Komptech L3 Compost Screener 12-month fuel comparison

- 5.5% direct cost savings
- Electric infrastructure in place for additional uses (Stacking Conveyor, future screening plants)
- Approximately \$1000/yr avoided in parts/supplies
- Approximately \$450/yr savings on labor for maint. of engine & generator
- ↓ noise pollution
- ↑ QOL for operators
- Less overall reliance on fossil fuels





# Diesel Consumption at CSWD's ODF, FY20-FY22

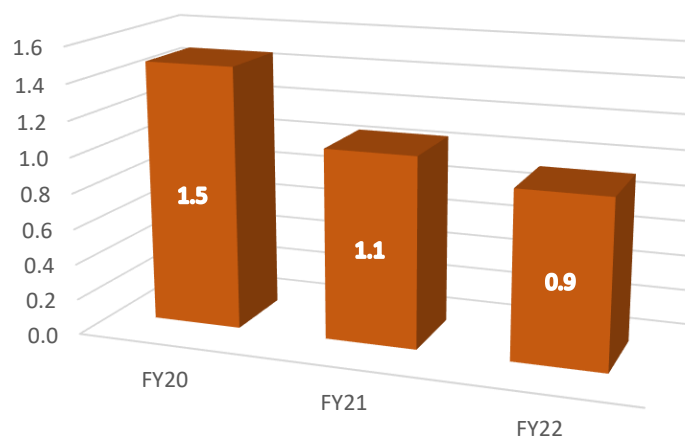




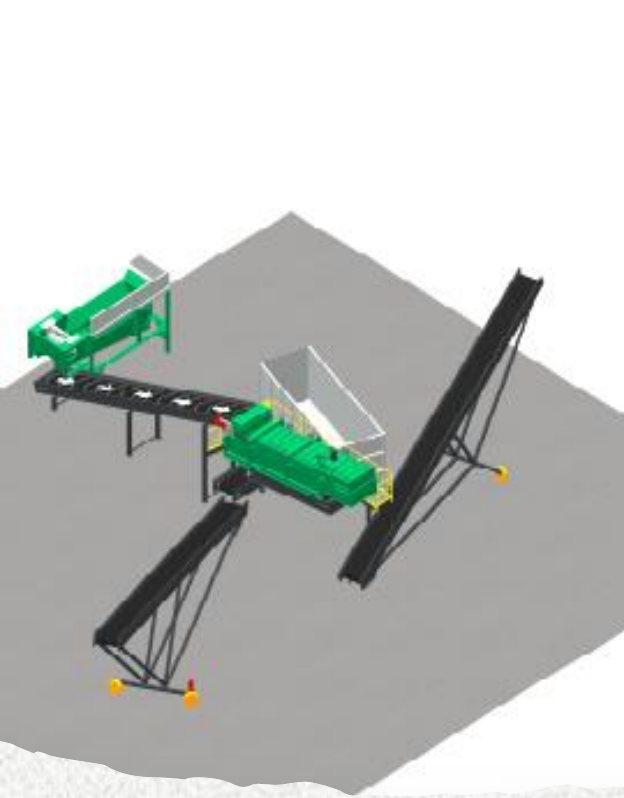


# Diesel Consumption per ton of feedstock, FY20-FY22

Gallons of Diesel per Ton of Feedstock







## Other current conversions at CSWD's ODF

- Snowblower
- Golf Cart
- Replacement Screener
- Heat pumps for office, booth





## District-wide green energy improvements

- Heat pump conversion at DOC's
- Solar addition at Hinesburg DOC
- FY24 – District-wide solar initiative





# Future of battery-powered heavy eqpt.

## Caterpillar

- Full-size hybrid excavators and wheel loaders currently available
- All-electric full-size equipment at least a couple years out
- Focus on in-house batteries and engines

## John Deere

- Full-size hybrid loaders available now (644X, 944X), on-board electric generators
- Mid-size all-electric excavator and backhoe announced in 2023, not yet available
- 2022 acquisition of Kreisel, Austrian battery company



# Future of battery-powered heavy eqpt.

## Volvo

- Mid-size all electric excavator and wheel loader currently available
- Cleary Stone of Richmond purchased 1<sup>st</sup> in nation L20 compact loader in 2022
- Design underway for additional models

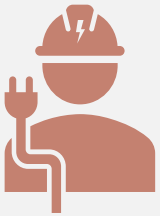
Photo courtesy of Volvo Construction Equipment



# Downsides of battery-powered heavy eqpt.



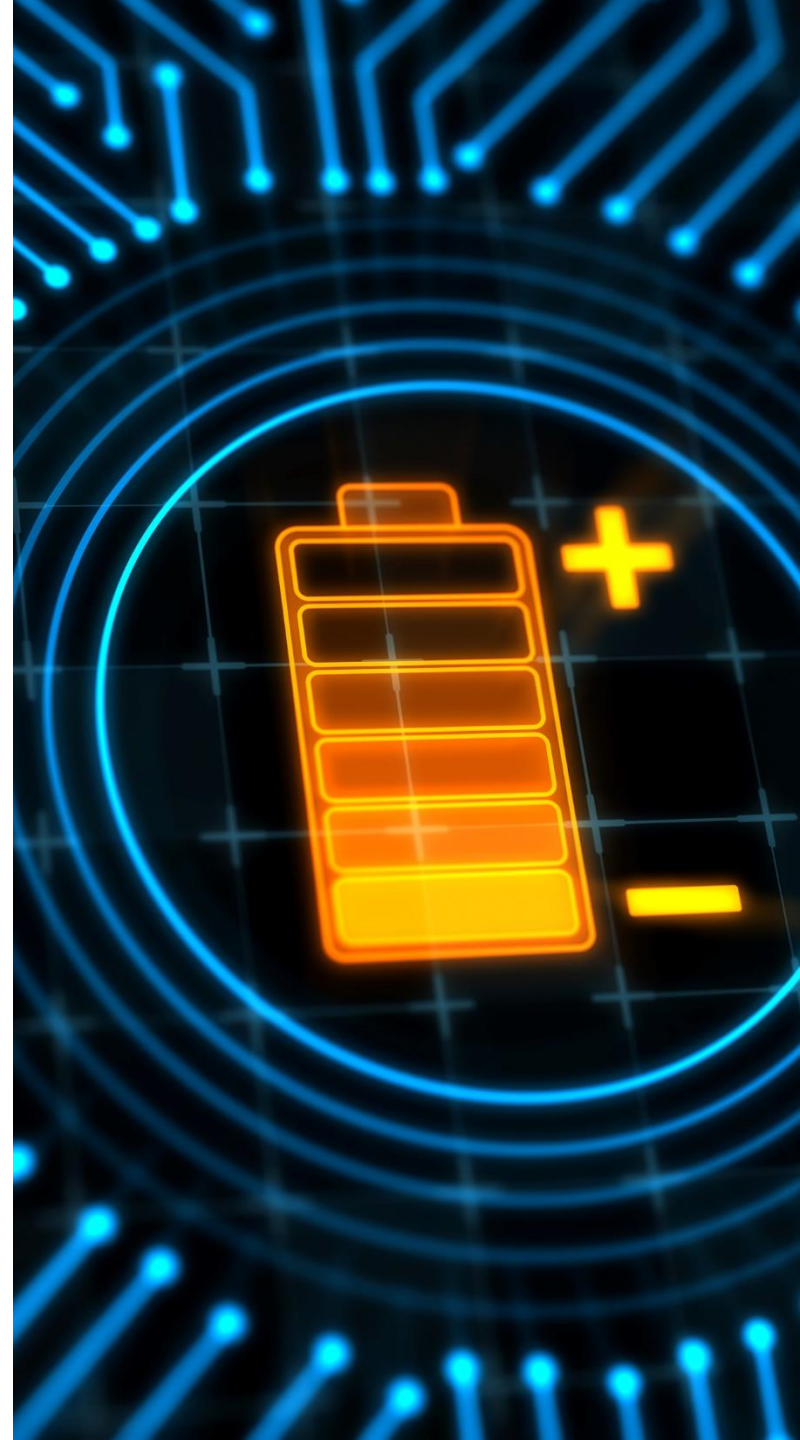
Runtimes – current prototypes and available machines run less than a full day



Slow charge times – 4 hrs. to 24 hrs. depending for 110v and 240v



Jobsite charging?





# Thanks!

Dan Goossen

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