

Organics Diversion and Climate Action Planning

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A little personal background...

○ Who am I?

- Vice President and Project Manager at Spring Hill Solutions
- Background in stormwater, land conservation, and business management
- MS in Environmental Policy
- MBA student at Champlain College

○ Who is Spring Hill?

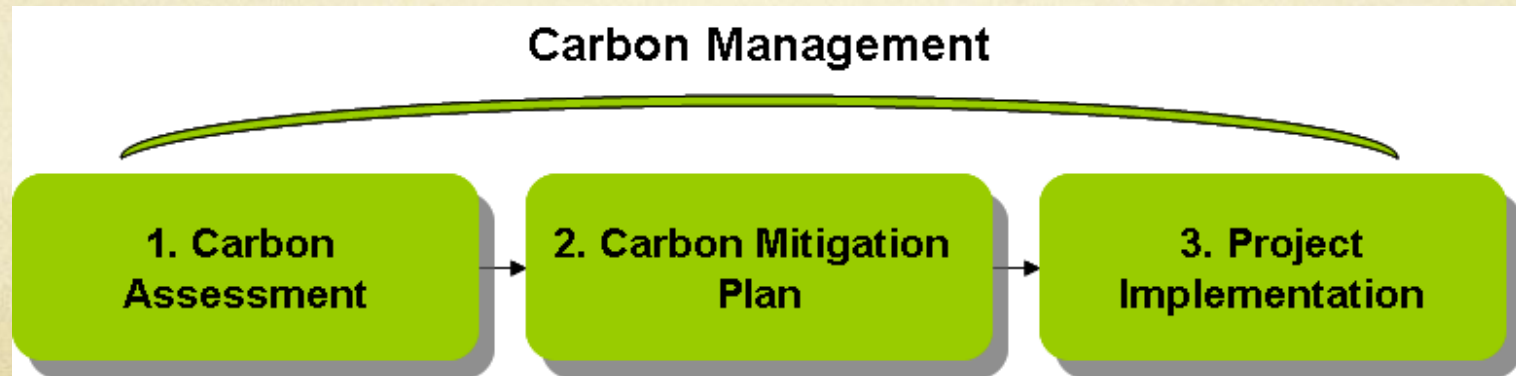
- Burlington-based environmental consulting firm specializing in:
 - Carbon Management
 - Renewable Energy
 - Business Sustainability

What am I going to address?

- What is carbon management?
- Where does solid “waste” fit in?
- How do you measure landfill emissions?
- What are the carbon benefits of composting and organics diversion?
- What is climate action planning?
- What is Burlington considering?

What is carbon management?

A process of **measuring**, **mitigating**, and **managing** greenhouse gas (GHG) emissions across internal operations and supply chains.



Where does solid “waste” fit in?

- Landfill disposal
- Diversion:
 - Composting
 - Reducing
 - Repurposing
 - Recycling



What happens at the landfill?

- It depends on...
 - Type of disposal practice
 - Technological factors
 - Material specificity
 - Season and climate



How do you measure landfill GHGs?

- It depends on...
- Protocol/use of data
- Assessment/accounting methodology
- Latest research

Waste Related Emissions	
<i>Type of disposal practice</i>	<i>tCO₂ e/short ton waste</i>
No CH ₄ Recovery	1.08
CH ₄ Recovery and Flaring	0.28
CH ₄ Recovery and Electricity Generation	0.16
Waste-to-Energy	0.69
Onsite Composting	-0.38
Recycling	0

Source
CA-CP Calculator v6

What are the benefits of methane capture and electricity generation?

- Landfill GHG emissions are reduced
- GHG emissions are avoided from fossil fuel use for energy



What's the opportunity?

33% of our landfilled “waste” is organic!

Source: Chittenden Solid Waste District, “2006 Household Solid Waste Survey Report”



<http://www.flickr.com/photos/usepagov/3679111263/>

What are the GHG benefits of organics diversion and composting?

- Does not generate methane emissions
- Results in net carbon storage
- Could be used in a digester to energy project



What is climate action planning?

- A process for **measuring, planning, and reducing** GHG emissions and climatic impacts
- It creates a customized **roadmap and decision support tool** to understand where to get the largest and most cost-effective emissions reductions



What is Burlington considering?

- Implementing a pay as you throw program
- Creating a residential organics collection program
- Setting up a local digester and energy project



<http://www.flickr.com/photos/41084246@N00/2580969473/>

Pay as you throw program

- Creates a residential collection payment system in which residents pay per unit of trash collected
- Assumes use of current collection system infrastructure and similar cost profile
- Assumes a 17% decrease in MSW and a 10% reduction in collection costs
- Would result in avoided landfill emissions

Category	Initial Capital Investment (\$)	Total Capital Investment (\$)	Average Annual Cost / Savings (\$)	Internal Rate of Return (%)	Net Present Value (\$)	Average Annual Avoided Emissions (tCO ₂ e)	Cost / Savings per Ton of Avoided Emissions (\$/tCO ₂ e)
Waste Reduction and Recycling	\$0	\$0	\$466,658	Infinite	\$4,583,789	943	495

Organics collection program

- Modeled after residential recycling program with similar infrastructure and cost profile
- Assumes no yard waste and a 50% participation rate
- Assumes 10% collection cost savings and limited revenue generation from compost sales
- Would result in avoided landfill emissions and net carbon storage/sequestration

Category	Initial Capital Investment (\$)	Total Capital Investment (\$)	Average Annual Cost / Savings (\$)	Internal Rate of Return (%)	Net Present Value (\$)	Average Annual Avoided Emissions (tCO ₂ e)	Cost / Savings per Ton of Avoided Emissions (\$/tCO ₂ e)
Waste Reduction and Recycling	(\$855,000)	(\$855,000)	(\$218,313)	N/A	(\$3,126,170)	1,782	(142)

Local digester and energy project

- Modeled on VT Technical College's proposed digester project
- Uses community organic waste and manure from local farms
- Assumed to generate heat, electricity, and a bi-product to be sold as soil amendment
- Would reduce emissions due to the production/use of cleaner electricity and heat and from avoided landfill emissions

Category	Initial Capital Investment (\$)	Total Capital Investment (\$)	Average Annual Cost / Savings (\$)	Internal Rate of Return (%)	Net Present Value (\$)	Average Annual Avoided Emissions (tCO ₂ e)	Cost / Savings per Ton of Avoided Emissions (\$/tCO ₂ e)
Renewable Energy	(\$4,950,000)	(\$4,950,000)	(\$334,707)	N/A	(\$8,237,684)	5,017	(106)

Thank you and Q & A

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