Organics Diversion and Climate Action Planning

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A little personal background…

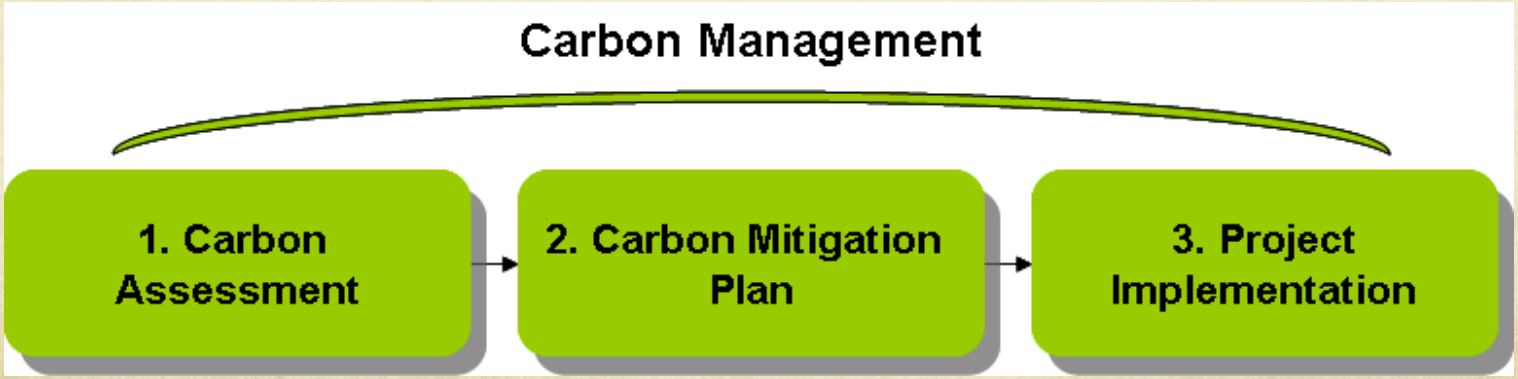
- **Who am I?**
  - Vice President and Project Manager at Spring Hill Solutions
  - Background in stormwater, land conservation, and business management
  - MS in Environmental Policy
  - MBA student at Champlain College
- **Who is Spring Hill?**
  - Burlington-based environmental consulting firm specializing 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

http://www.flickr.com/photos/dnorman/3590134173/in/photostream/

What happens at the landfill?

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

http://www.flickr.com/photos/ctuna/2202085590/

How do you measure landfill GHGs?

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

Waste Related Emissions	
Type of disposal practice	***tCO_2e/short ton waste***
No CH4 Recovery	1.08
CH4 Recovery and Flaring	0.28
CH4 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

http://www.bartonandloguidice.com/Services/SolidWaste/WastetoEnergyLandfillGastoEnergy/tabid/285/Default.aspx

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

http://www.flickr.com/photos/8586443@N03/3535058411/

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

http://www.sustain.ucla.edu/news/article.asp?parentid=3002

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_2e)	Cost / Savings per Ton of Avoided Emissions ($/tCO_2e$)
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_2e)	Cost / Savings per Ton of Avoided Emissions ($/tCO_2e$)
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_2e)	Cost / Savings per Ton of Avoided Emissions ($/tCO_2e$)
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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