



**Noah Fishman - Highfields Center for Composting
US Composting Council Annual Conference, January 29, 2013**

Vermont

- Pop. Of 626,000
- Burlington, Vermonts most populous city has 42,000 people
- Leading producer of Maple Syrup in the USA
- 164 CSAs and 99 Farmer's Markets
- #1 on the Locavore index



160,000 tons/year
12 Million Gallons of Gas



The Price We Pay...

- ▶ *\$2.5-\$7.5M/year in tipping fees and compost sales*
- ▶ *Feed for 350,000 layer hens*
- ▶ *Fertility to produce 17,000 acres of mixed vegetables*

...for Landfilling VT's Food Scraps



Act 148

Phased-in organics diversion mandate:

- 2014 for generators of more than 104 tons/yr
- 2015 for generators of more than 52 tons/yr
- 2016 for generators of more than 26 tons/yr
- 2017 for generators of more than 18 tons/yr

By 2020, all food residuals, including that from households, must be diverted



GOAL ONE

Establish statewide **infrastructure** to recycle **all** of Vermont's food-scrap by the end of **2017**

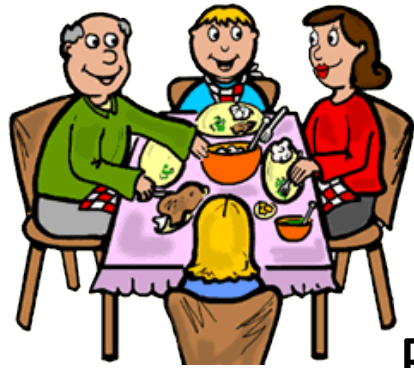


GOAL TWO

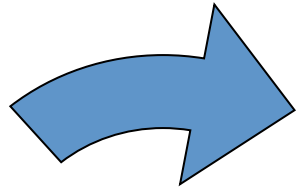
Empower all Vermonters with the **knowledge, tools,**
and resources to *Close the Loop* in their homes,
farms, and communities



Develop Community-Based Compost Programs



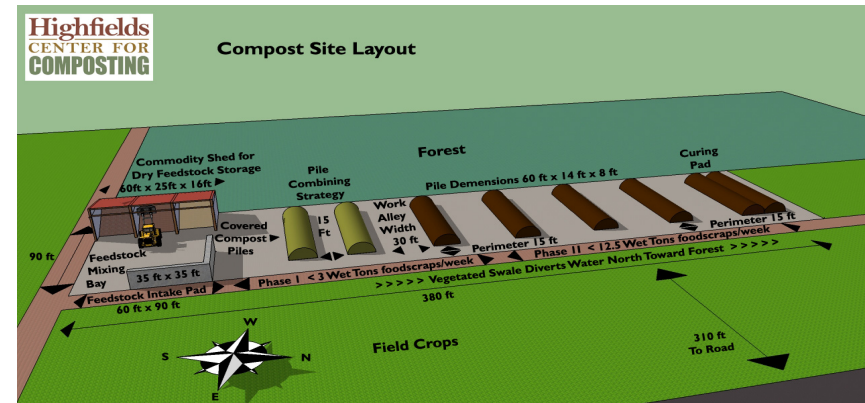
Food scrap generators



Haulers



Farmer/
Composter



Highfields-Run Collection Programs

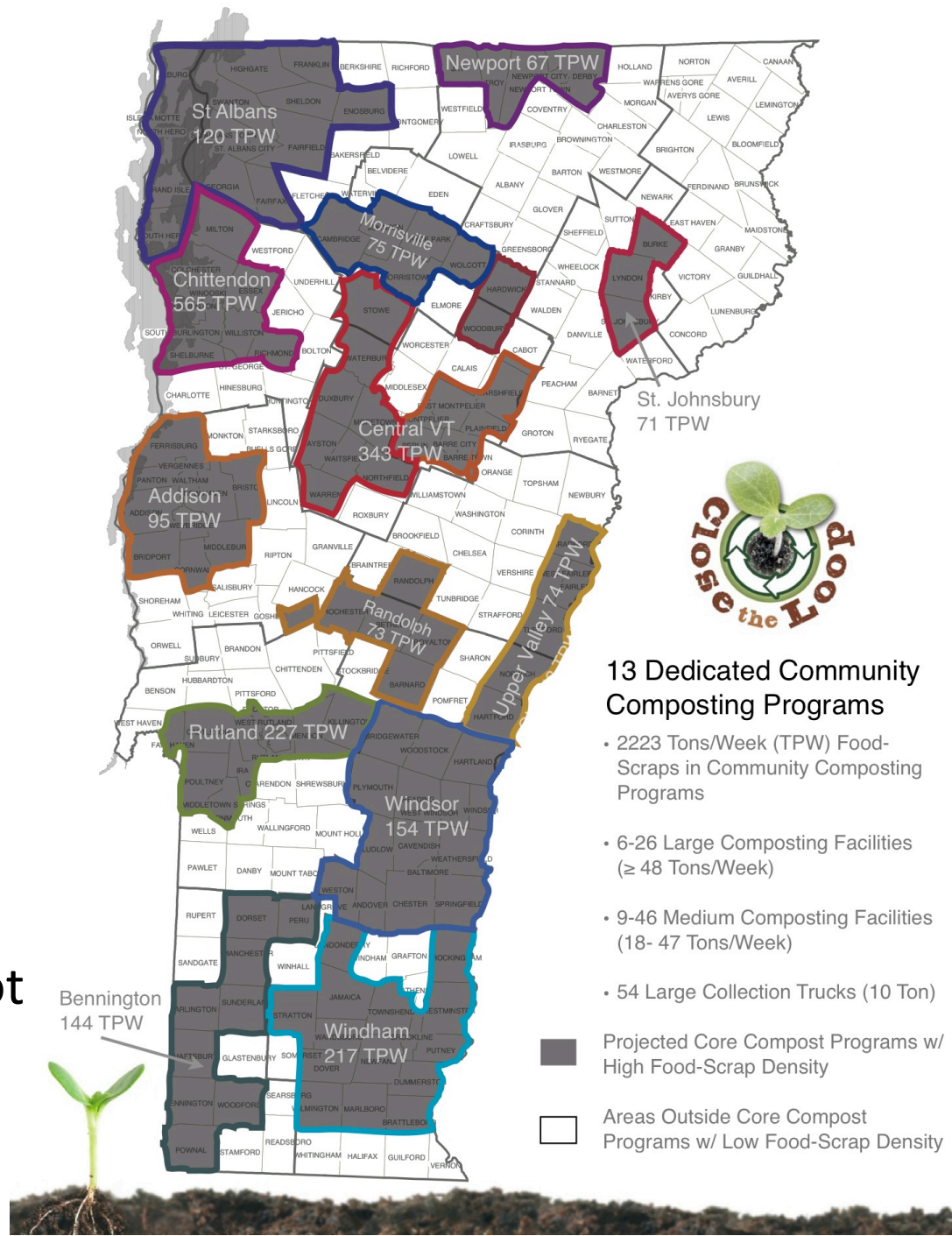
- CTL St Albans
- CTL Northeast Kingdom
- CTL Lamoille Valley
- Rural pilot projects

Partner-Run Programs

- Central Vt SWMD
- Chittenden SWMD

Emerging Programs

- TAM Inc in Bennington
- Brattleboro Curbside Pilot
- Addison Cty Feasibility Study



BUILD A STATEWIDE COALITION

- Composting Association of VT
- Highfields Center for Composting

- Vermont Food Bank
- Network of over 280 local partners

Composting

Food Security



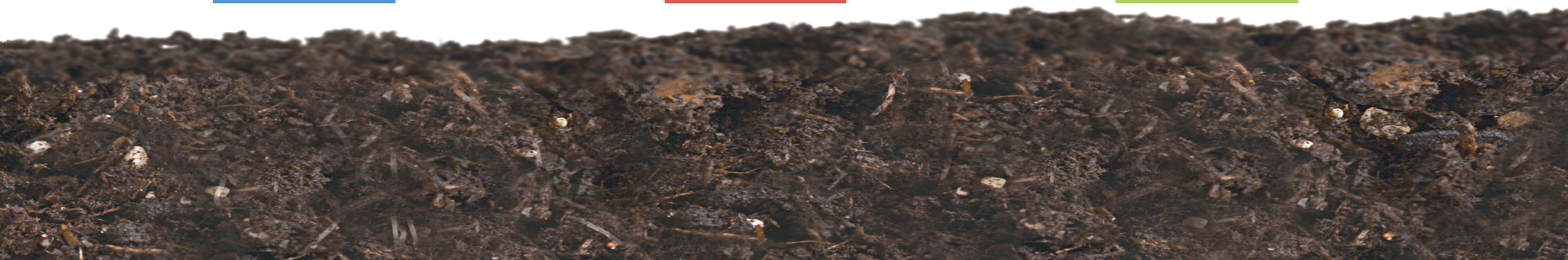
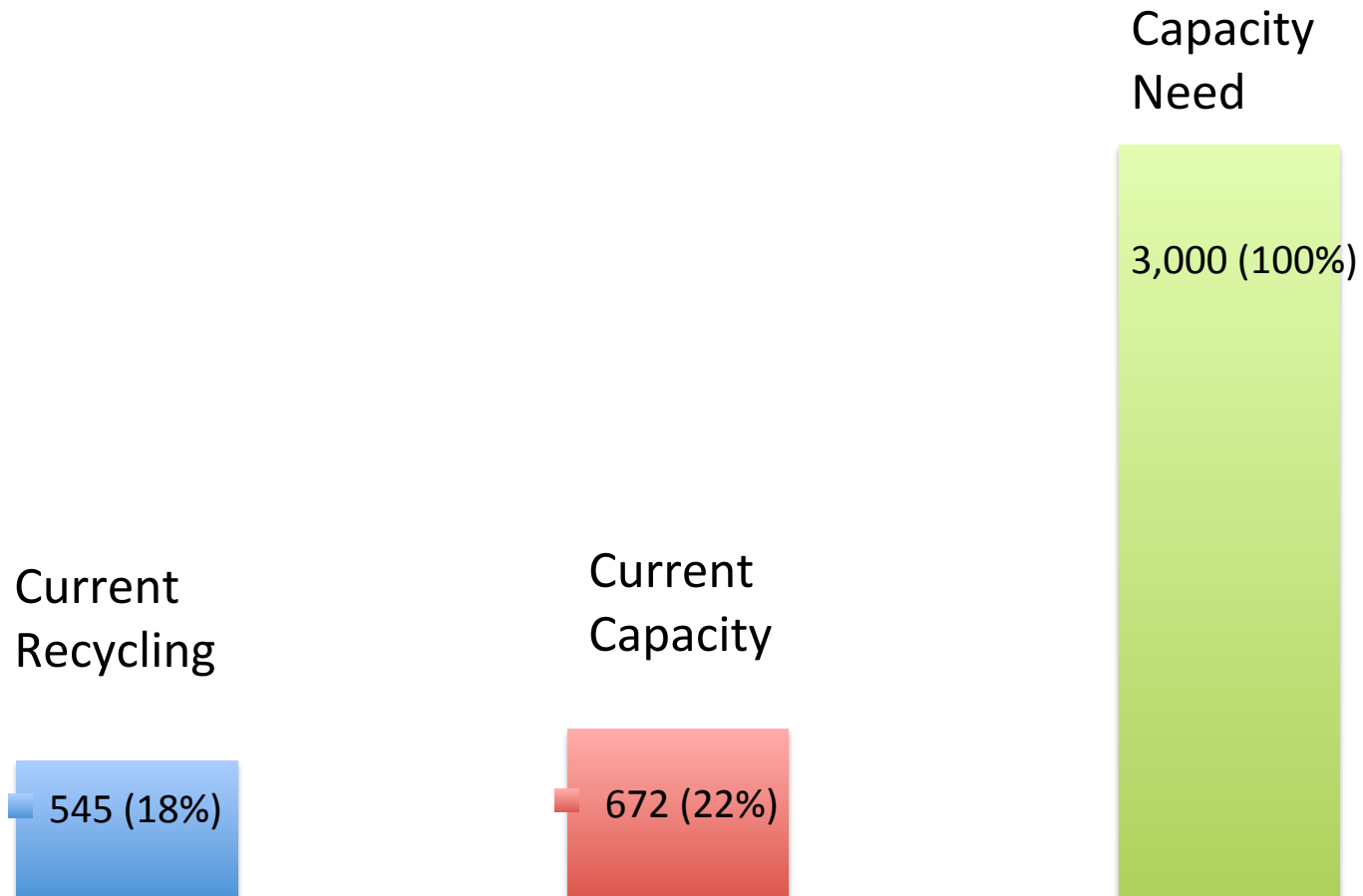
Resource Management

Local Food System Development

- Vermont Waste District Managers Association
- Agency of Natural Resources

- Farm to Plate Network
- hundreds of farmers and food groups

Vermont Food Scraps (tons/wk)



Highfields Research and Education Facility

“breaking trail”



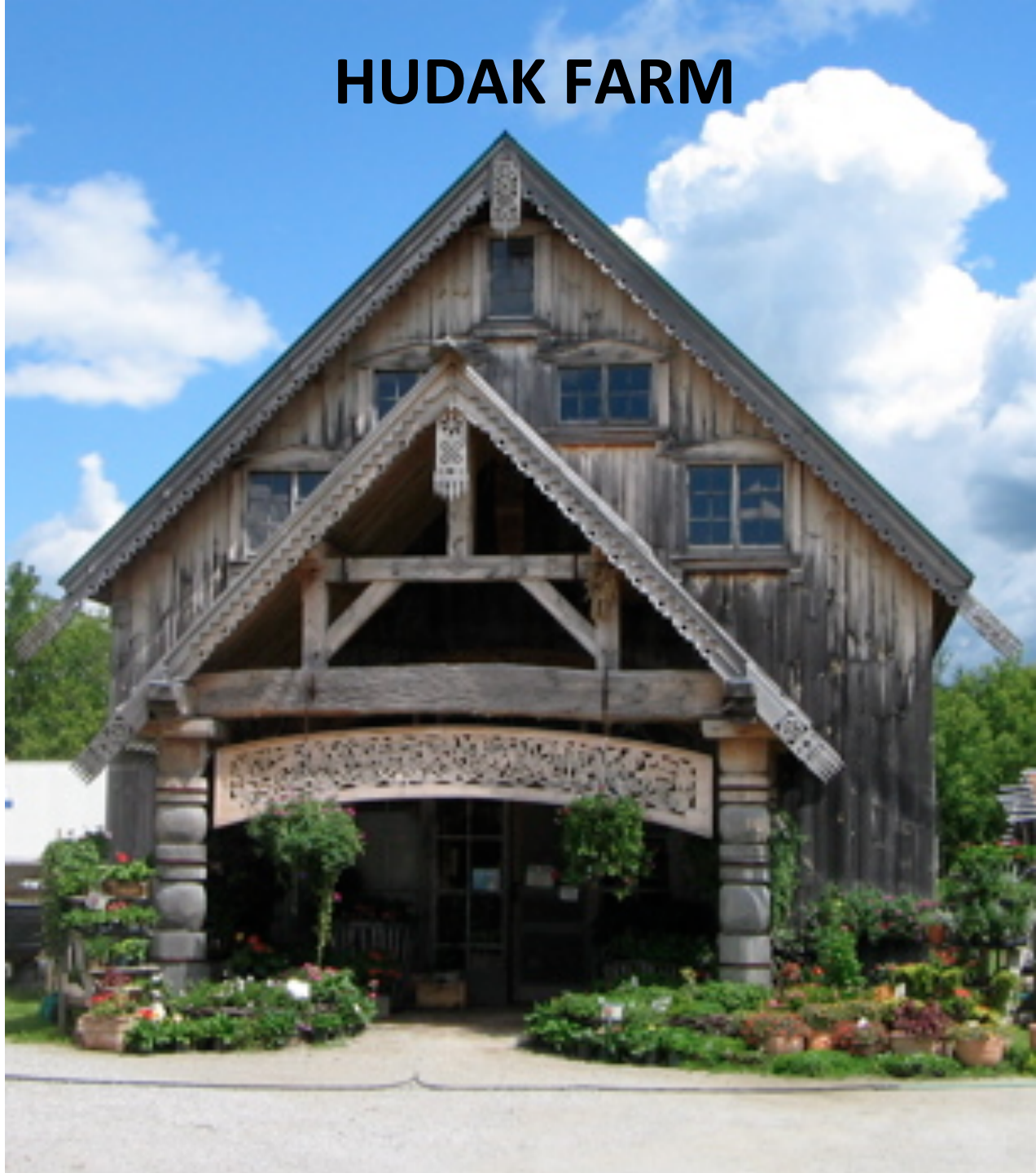
Scale-Appropriate On-Farm Systems



Everlasting Herb Farm, Peacham

- 30 acre mixed vegetable farm
- Will produce 2000 yards of finished compost
- Production will meet farm's compost needs
- surplus compost will go to retail sale at farmstand
- Flexible finance and grant leverage model

HUDAK FARM





On-Site School Systems



Community Composting Toolkit

- ▶ Open Source Designs
 - ▶ Case Studies
 - ▶ Recipe Calculators
- ▶ Business and School Compost Guides
- ▶ Marketing and Promotional Materials
 - ▶ Training and Educational Materials
 - ▶ Compost Video Series



Compost Recipe Calculator

Enter Data From Analysis

Calculated

Material	Cubic Yards Material	Moisture Content (%)	Total Carbon (% Dry Weight)	Total Nitrogen (% Dry Weight)	Bulk Density (Lbs/CY)	Carbon : Nitrogen Ratio	Material Weight (Lbs)	Notes
Food Scraps	1	80	30	2	1200	15	1,200	*Ave Municipal Scraps (1 Yard)
Example: Beans	1	30	47.2	0.432	300	109	300	
Example: Trees	1	36	65	1.85	75	35	75	
Example: Alpacas	1	50	12	0.3	900	40	900	
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Production Estimate Cubic Yards

Total Materials in Recipe 4

Finished Compost 1.6

Recipe Advice

Recipe Calculations Results

Carbon : Nitrogen Ratio 32

Moisture Content (%) 62

Bulk Density (Lbs/ CY) 619

Ideal Parameter: 25-30 parts C

Ideal Parameter: 55-60 % Moist















Ideal Parameter: 700-1000 Pou

Compost Recipes

Provided here are 4 recipes for achieving the conditions necessary for proper composting. These recipes should provide a balance of Carbon and Nitrogen, Moisture, Density, and Porosity.

To follow the recipes, decide upon a common volume unit, such as 1 five gallon bucket and follow any one of the recipes.

Example: In Recipe 1, for every 1 bucket of food scraps, add 1 1/2 buckets of horse manure, 1 bucket of leaves, and 1/2 bucket of wood chip or sawdust.

Material	Recipe 1	Recipe 2	Recipe 3	Recipe 4
Food Scraps				
Horse Manure				
Leaves				
Wood Chips/ Sawdust				
Mulch Hay				
Shredded Paper				

Step 3. Laying Out Your Bin System

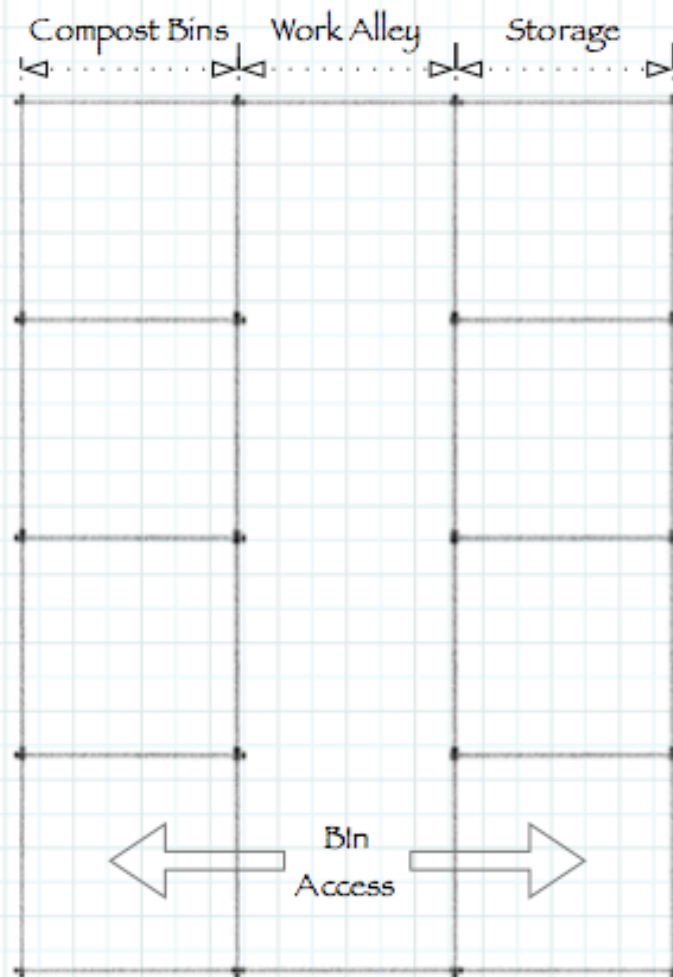
Before you start designing, you should know the following:

- 1 The number of bins you need to build.
- 2 The dimensions of the bins.
- 3 If the system will be operated with a bucket loader.

Now you can think about the layout of the system. Start by laying out your bin system to get the rough dimensions of the structure. Figure 1. is example of a layout that we've used and which works very well for a small hand turned system that is managed under cover. Give yourself plenty of working room, 5-6 ft wide if possible for hand turned systems.

Composting Tip: Chicken McNuggets are not good for you, so are probably better composted.

Figure 1.
Hand Turned Bin System Layout



Marketing and Promotion Materials



Compost your food scraps
and make a difference!

COMPOST

*If it is food, it goes in the compost.
If you have excess food suitable for human
consumption, please donate to your local
food shelf: www.vtfoodbank.org.*



- Meat & bones
- Milk, cheese & other dairy
- Fruits, vegetables & peels
 - Soups & sauces
- Dressings & condiments
- Flour, bread & pastas
 - Nuts and shells
- Coffee grounds & filters
 - Oils & fats
- Eggs & egg shells
- Paper egg cartons
- Spices



RECYCLE

(if possible, otherwise trash)



- Plastics with recycling logo
- Office paper • Cardboard
 - Cans • Bottles

TRASH

- **Plastics** •
Straws, wrappers, packaging,
bags, plastic utensils
- **Paper** •
Napkins, soiled paper, paper towels,
sugar packets, juice & milk boxes
- **Floral Products** •
- **Any Other Items** •
that can't be recycled

PLU stickers: Please remove PLU stickers, they are plastic and do not compost. These are the small stickers on fruits and vegetables used to identify price at the register.



A composting program of
**Highfields
CENTER FOR
COMPOSTING**
www.highfieldscomposting.org

This business / school is reducing its
**CARBON FOOTPRINT
through composting!**

In the landfill food scraps release methane, nitrous oxide, and toxic leachate. Over a 20 year period methane is 72 times more powerful as a greenhouse gas than carbon dioxide.

5 gallons of food scraps composted instead of land-filled prevents the release of greenhouse gas emissions equivalent to burning over one gallon of gasoline.

If all the food scraps in Vermont were composted instead of landfilled it would provide a carbon offset equivalent to not burning 12 MILLION gallons of gas!

**Thanks for making a difference
in climate change!**



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**We can
compost!**



**Join the
COMPOST
CREW**

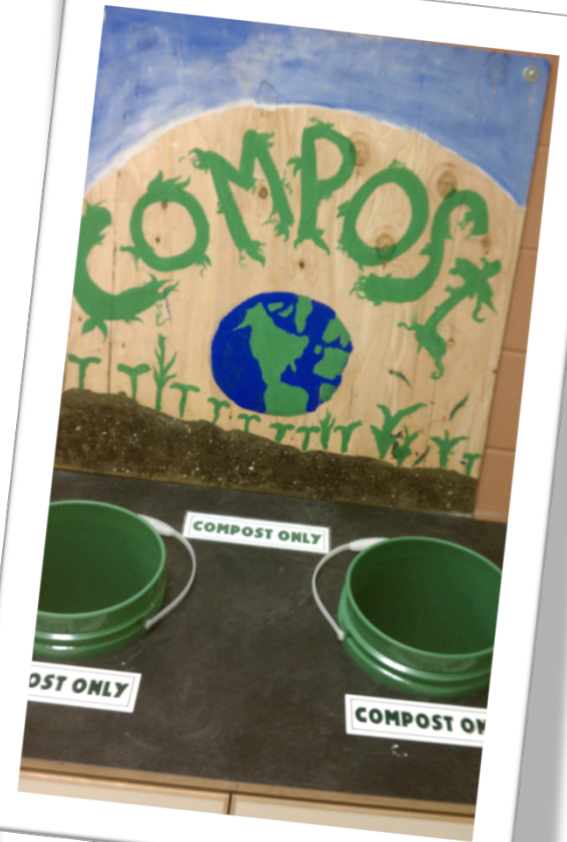
In your town!

www.HighfieldsComposting.org

School and Business Trainings

- **Systems-Thinking Compost Training**
- **Video-based, interactive, replicable**
- **Training of Trainers**
- **School Compost Toolkit**
- **School and volunteer *'Compost Crew'***





Lessons Learned for Rural Community Compost Program Development

- We **can** achieve clean source separated organics with the right training program
- Focus on **quality** compost product
- Build **economies of scale**
- Develop robust multi-sector **partnerships**
- Find **community assets** and leverage
- **Build a Shared Vision**

What if

**“If you want to build a ship,
don't drum up the men to gather wood,
divide the work
and give orders.
Instead,
teach them to yearn
for the vast and endless sea”**

Antoine de Saint-Exupery