Organic Waste Ban Case Study - Vermont, USA and the potential economic benefits of organics (food waste) recycling

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ZTL ORGANICS

Vermont, USA
The Green Mountain State

Vermont – Food Waste

- Estimated that 60 000 tons of food waste landfilled every year – 2014
- 28% of residential waste is food waste
- 30 - 40% of this waste is edible food

Case Study: Vermont's Universal Recycling Law (Act 148)

Passed in 2012 it effectively banned three types of waste from landfills over the course of six years

- "blue bin" recyclables (plastic, paper, glass, metals) BY JULY 2015
- garden waste; clean wood BY JULY 2016
- food scraps (organic, compostable kitchen wastes) BY JULY 2020

Reference: http://dec.vermont.gov/waste-management/solid/universal-recycling


NEWS
Paper, plastic, glass
and metal cans

Main Features of the Universal Recycling Law

1. Parallel Collection
2. Unit-Based Pricing or "Pay-As-You-Throw“
3. Public Space Recycling
4. Phased-In Food Scrap Ban

1. Parallel Collection

Waste transporters and drop-off centres are required to offer recycling and food scrap collection services in advance of each landfill ban going into effect. For example, waste transporters and facilities must offer food scrap collection by 2017, so that there is time for residents and businesses to find a preferred way to manage their food scraps by 2020.

February 2018: Considering relaxing this requirement

2. Unit-Based Pricing and "Pay-As-You-Throw"

All Vermont towns are required to pass ordinances that require waste transporters and transfer stations to bundle the costs of recycling and waste collection into one fee for residential customers only. This mechanism levels the playing field for residents across the State, so households do not have to make decisions about whether or not to recycle based on their wallets.

Examples of Pay as you throw pricing systems

- **Imprinted Waste Bags** – Residents purchase coloured plastic bags imprinted with a unique identifier, such as the name or seal of the municipality. The price of each bag covers the cost of the bag itself and part or all of the cost of transportation, and disposal. Residents set these bags for collection or bring them to their local drop-off facility. Waste haulers and drop-off facility operators are instructed to accept only the specially marked bags. Additional fees are usually charged for disposal of items too large to fit into a bag.
- **Stickers** – Residents purchase stickers at their municipal office and/or local stores to affix to a specific sized bags or containers (30 gallon sticker for kitchen sized bags and 50 gallon stickers for "contractor bags" for example). Only bags with these stickers are collected or are accepted for disposal at drop-off facilities. Sticker systems avoid the need for billing.
- **Per Bag Punch Cards** – Residents purchase punch cards at their municipal office and/or local retail stores priced based on the number of dots or bags offered on the card. Drop-off facility operators punch the dots for each bag

3. Public Space Recycling

Any waste container in a public space needs to be accompanied by a recycling receptacle as of July 2015, making recycling more convenient in more locations. Public spaces include city streets, parks, municipal offices, schools, and more; bathrooms are exempt.

4. Phased-In Food Scrap Ban

Businesses and institutions that produce large amounts of food waste--such as supermarkets, college campuses, and restaurants--are required to comply with the landfill ban on food scraps earlier than residents, if they are located within 20 road miles of a composting facility that willingly accepts food scraps. This phased-in approach is designed to create demand for food scrap collection, and support investments in new food scrap collection infrastructure.

Food Waste Thresholds

- Greater than 104 tons/year: July 1, 2014
- Greater than 52 tons/year: July 1, 2015
- Greater than 26 tons/year: July 1, 2016
- Greater than 18 tons/year: July 1, 2017
- Greater than any amount, with no distance exemption: July 1, 2020

Universal Recycling
TIMELINE

JULY 1 2014

- Transfer stations/Drop-off Facilities must accept residential recyclables at no extra charge
- Food scrap generators of 104 tons/year (2 tons/week) must divert material to any certified facility within 20 miles

JULY 1 2015

- Statewide unit based pricing takes effect, requiring residential trash charges be based on volume or weight
- Recyclables are banned from the landfill
- Transfer stations/Drop-off Facilities must accept leaf and yard debris
- Haulers must offer residential recycling collection at no extra charge
- Public buildings must provide recycling containers alongside all trash containers in public spaces (exception for restrooms)
- Food scrap generators of 52 tons/year (1 ton/week) must divert material to any certified facility within 20 miles

JULY 1 2016

- Leaf, yard, and clean wood debris are banned from the landfill
- Haulers must offer leaf and yard debris collection
- Food scrap generators of 26 tons/year (1/2 ton/week) must divert material to any certified facility within 20 miles

JULY 1 2017

- Transfer stations/Drop-off Facilities must accept food scraps
- Food scrap generators of 18 tons/year (1/3 ton/week) must divert material to any certified facility within 20 miles

JULY 1 2020

- Food scraps are banned from the landfill
- Haulers must offer food scrap collection

VERMONT
AGENCY OF NATURAL RESOURCES

Recycling drop off centres accept food waste – 1st July, 2017

Universal Recycling Law Requirements

Vermont's Universal Recycling Law is much more comprehensive than a comparatively more simple disposal ban

- Utilizes a set of phased in dates that help encourage and provide time for infrastructure to develop, partnerships to form, and hauling and collection programs to be developed and established
- Eventually requires everyone to source separate organic materials from other waste and recyclables
- Encourages generators to consider the adopted food recovery hierarchy when processing these materials
- Creates convenience and consistency for recycling and organics diversion

UNIVERSAL RECYCLING

Materials Management Map

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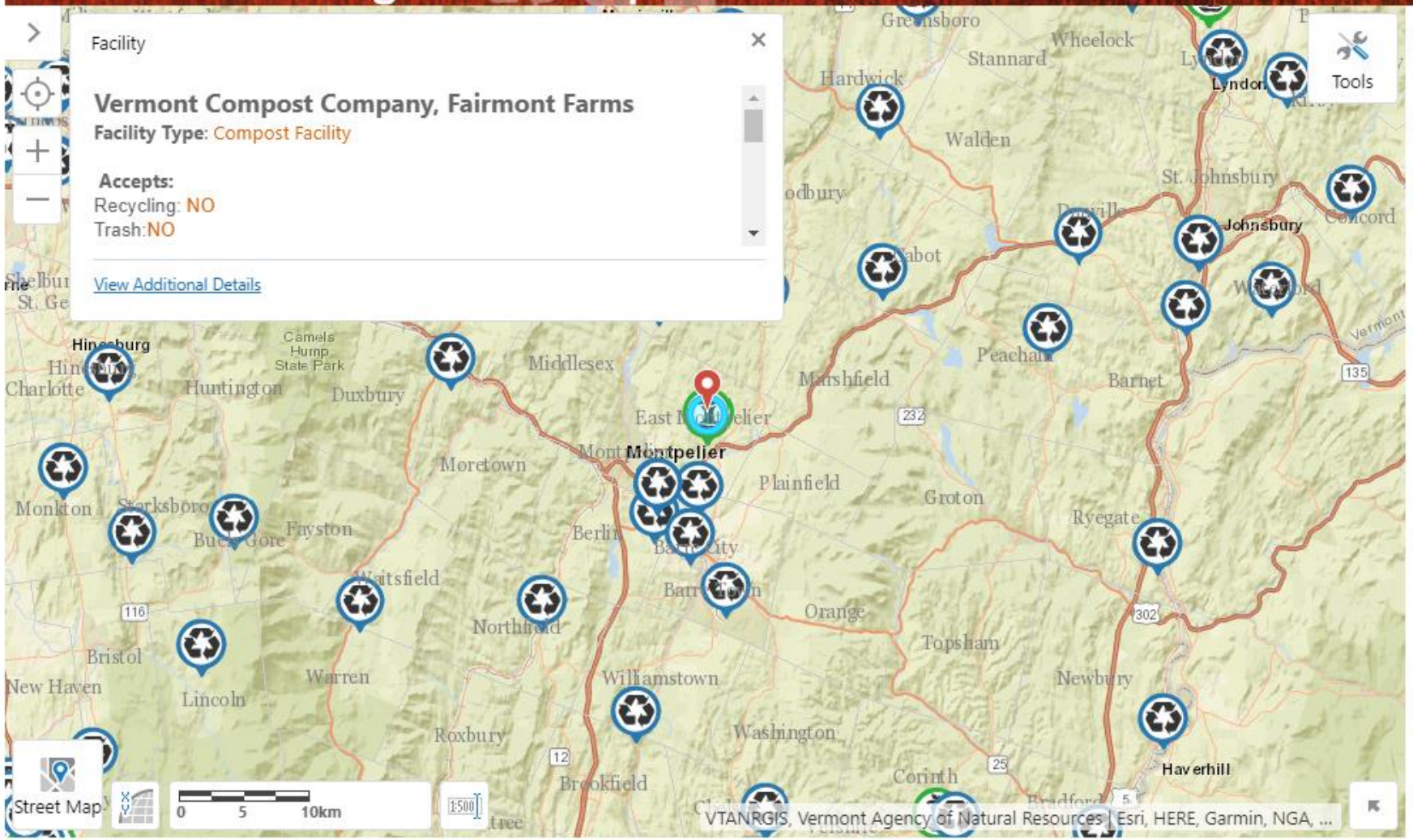


Welcome to the Universal Recycling Materials Management Map.

This map was developed to connect residents, businesses, and institutions with solid waste services; and to connect haulers, composters, and food rescue agencies to sources of food and food scraps. The goal is to make it easier to reduce waste and save natural resources.

Here you will find facilities that accept various materials for food rescue, recycling, composting, and disposal, such as food shelves, transfer stations and composters. As you zoom in closer, you will find businesses and institutions (such as restaurants, grocery stores, markets, hospitals, schools, food manufacturers, assisted living facilities, correctional facilities, and more) with the estimated tons of food scraps they might generate. Zooming in will also reveal local food shelves where quality food can be donated for people in need. You can map and find your local solid waste management entity by clicking on the box in the map layers section.

For an overview of the map tools and functions, click the **Map Guide** button below or **view a 7-minute User Tutorial Video.**

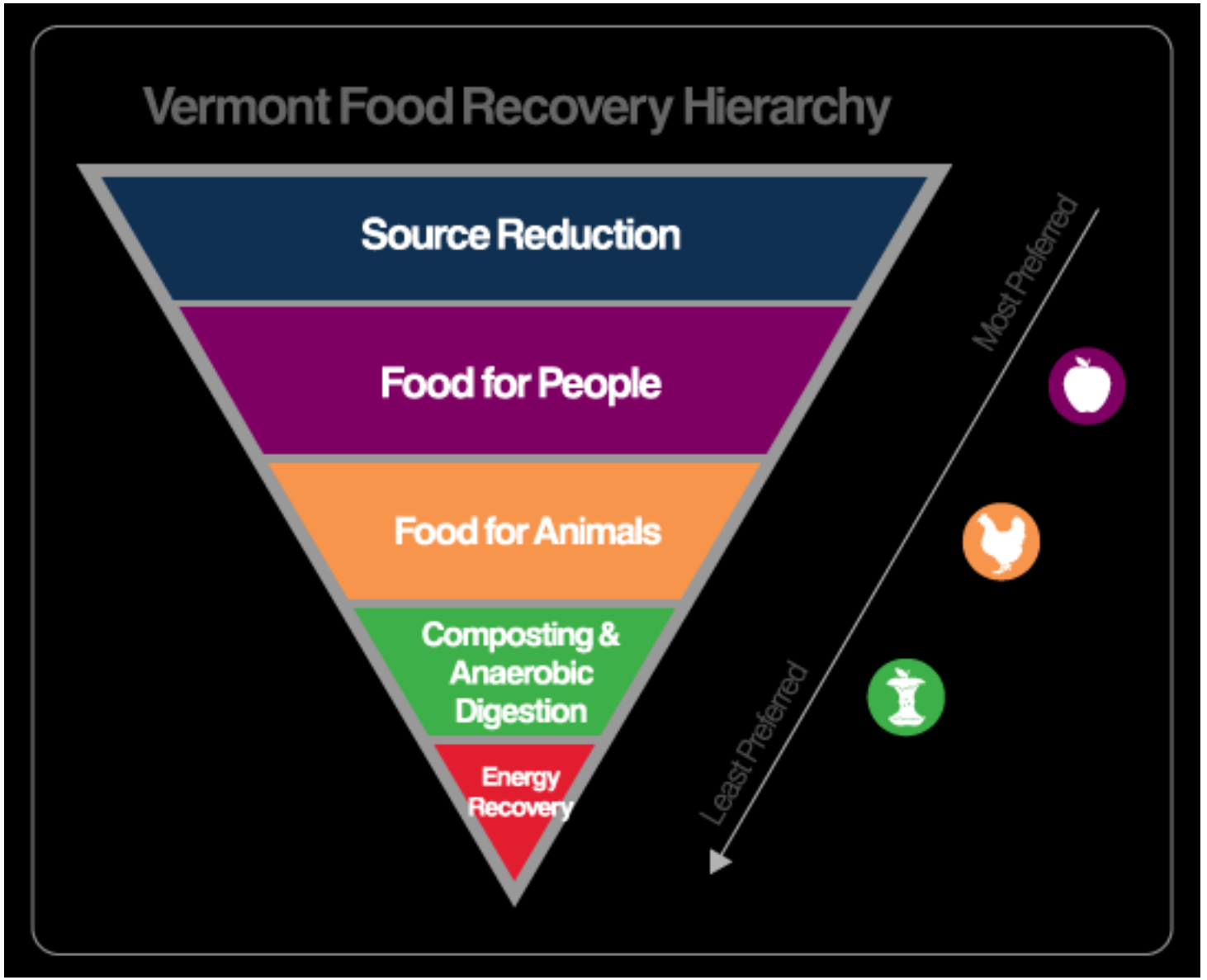
Disclaimer: This map, and the database that supports it, contains inaccuracies. With over 6,000 entries and a near constant opening and closing of businesses around the state,

Economic Benefits

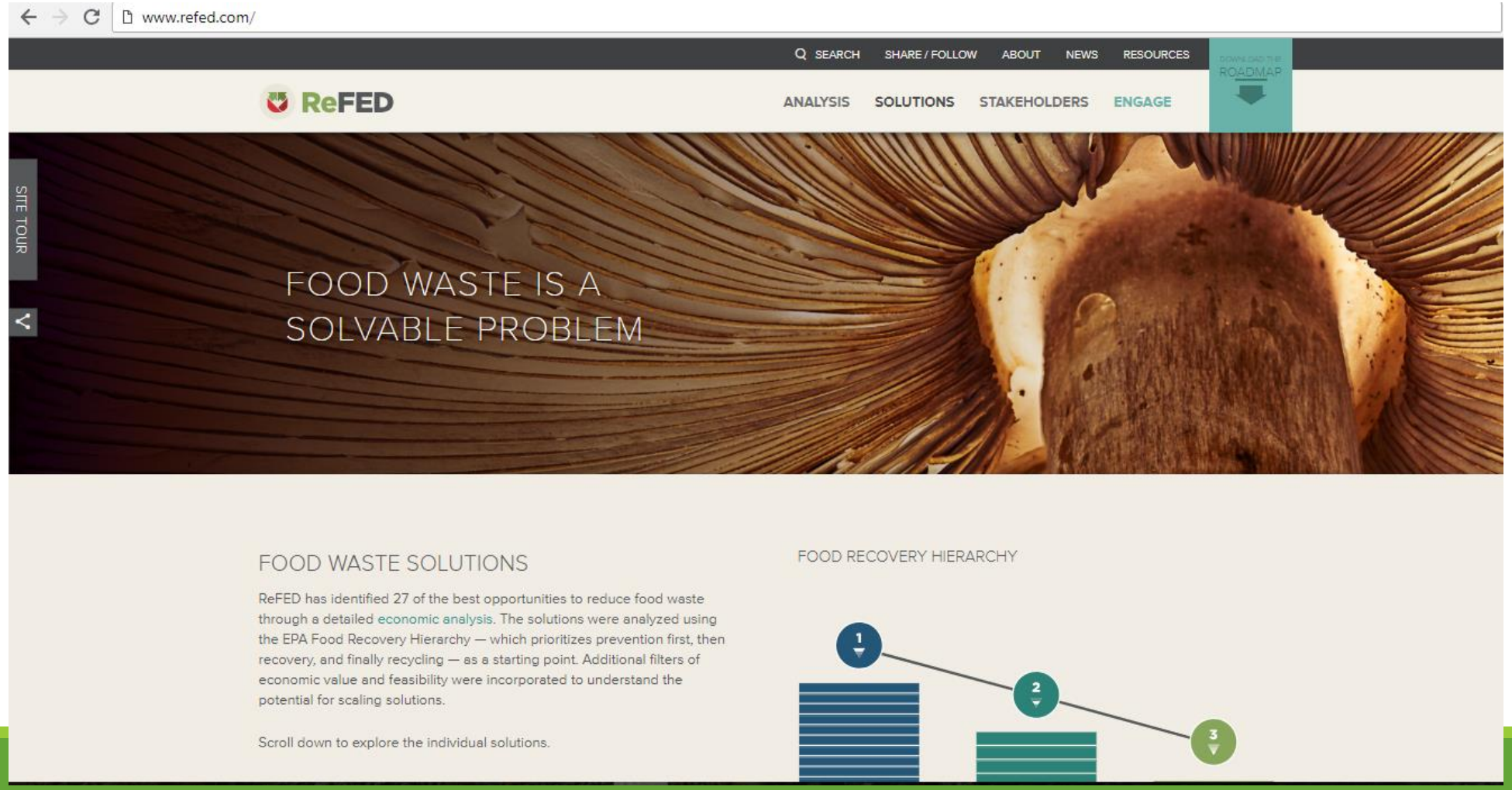
PREVENTION

RECOVERY

RECYCLING


Vermont Food Recovery Hierarchy
Source Reduction
Food for People
Food for Animals
Composting & Anaerobic Digestion
Energy Recovery
Most Preferred
Least Preferred

www.refed.com



Solutions to Food Waste – Prevention and Recovery

Consumer Education Campaigns

Standardised Date Labelling

Packaging Adjustments

Donation Matching Software

Donation Liability Education

Value Added Processing

Donation Storage and Handling

Spoilage Prevention Packaging

Donation Transportation

Waste Tracking and Analytics

Trayless Dining

Smaller plates

Cold Chain Management

Donation Tax Incentives

Improved Inventory Management

Produce Specifications (Imperfect Produce)

Secondary Resellers

Solutions to Food Waste – Recycling

Home Composting

Commercial Greywater

Water Resources Recovery Facility – Anaerobic digestion

Centralised Anaerobic Digestion

Centralised Composting

Community Composting

Animal Feed

In-Vessel Composting

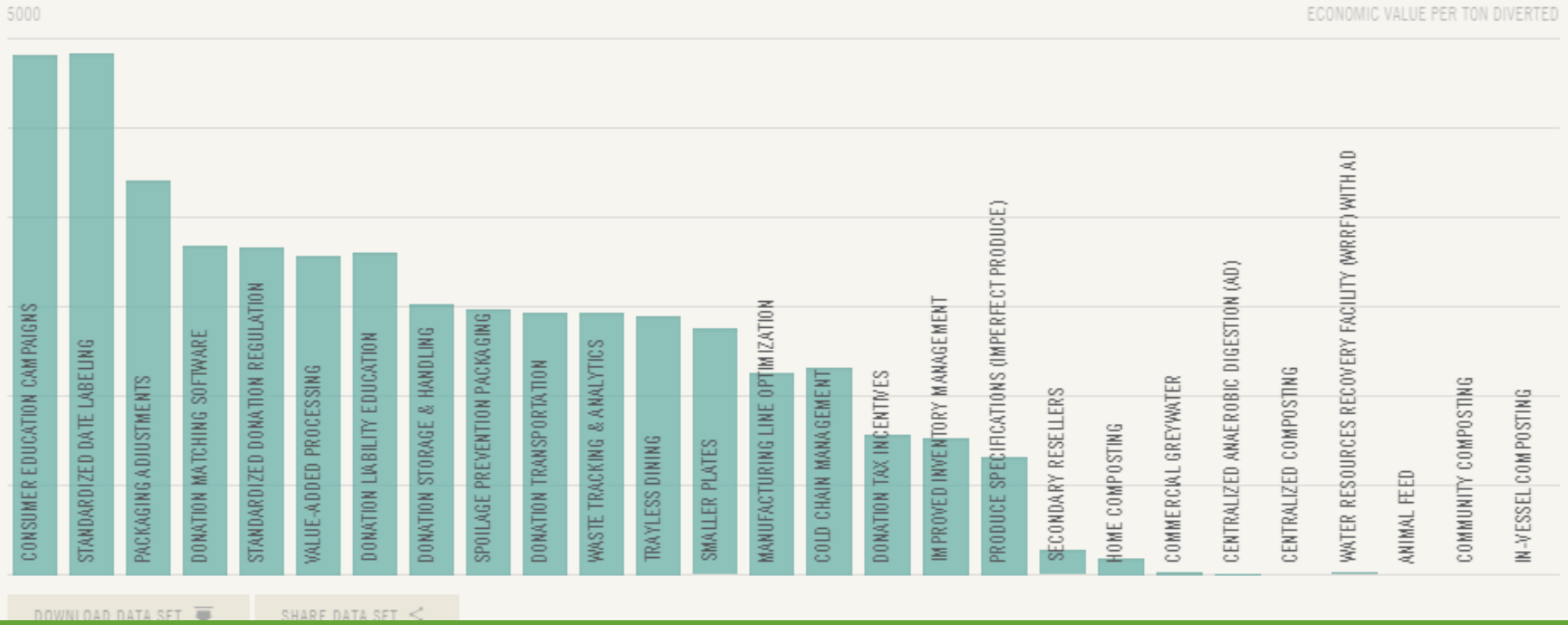
27 SOLUTIONS TO FOOD WASTE

The benefits of each of these solutions outweigh the costs.

Choose a filter button or bar to see the impacts of each solution.

FINANCIAL BENEFIT | WASTE DIVERTED | EMISSIONS REDUCED | WATER SAVED | JOBS CREATED | MEALS RECOVERED

The aggregate financial benefit to society (consumers, businesses, governments, and other stakeholders) minus all investment and costs per ton of food waste diverted. It shows the amount of benefit received per ton of reduction and is calculated as the Economic Value per Ton.



Waste Prevention/Minimisation

- As of 2016 some towns in Vermont had seen a 50% reduction in waste volumes (Town of Vernon) after the implementation of pay-as-you-throw pricing systems and recycling increased by 50%
- **Pricing** will encourage waste minimisation and prevention and promote home composting of garden and food waste

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ANALYSIS SOLUTIONS STAKEHOLDERS ENGAGE ROADMAP

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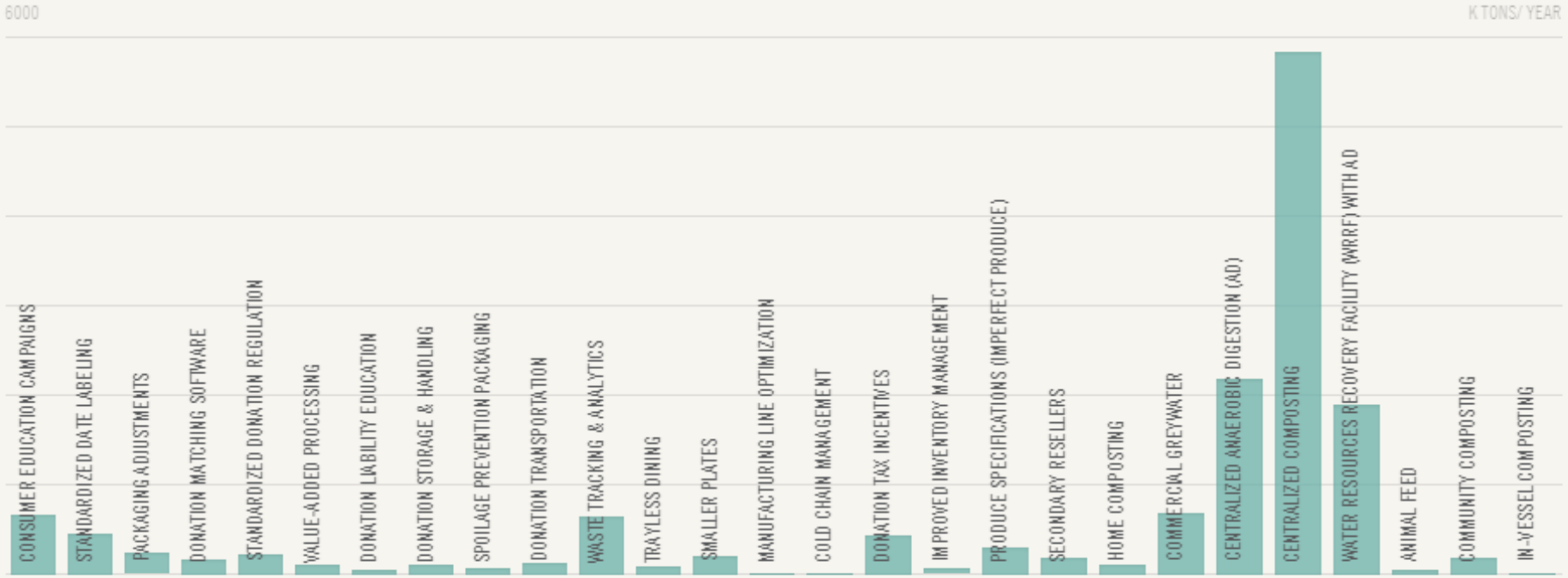
The tons of annual waste that can feasibly be diverted from landfills and on-farm losses per solution.



DOWNLOAD DATA SET | SHARE DATA SET

Centralised Composting Facilities
< 300 tons/month
No waste permit required

	Total waste tons per year	Total waste tons per month	% Organic incl paper	Organic Waste tons per month	50% Diversion	Districts/Towns	Number of Composting Sites
Cape Winelands	273000	22750	27%	6142,5	3071,25	7	**10**
Karoo	17000	1417	50%	708	354	3	**1,2**
Eden District	202000	16833	34%	5723	2862	7	**10**
Overberg	100000	8333	27%	2250	1125	4	**4**
West Coast	158000	13167	49%	6452	3226	4	**11**

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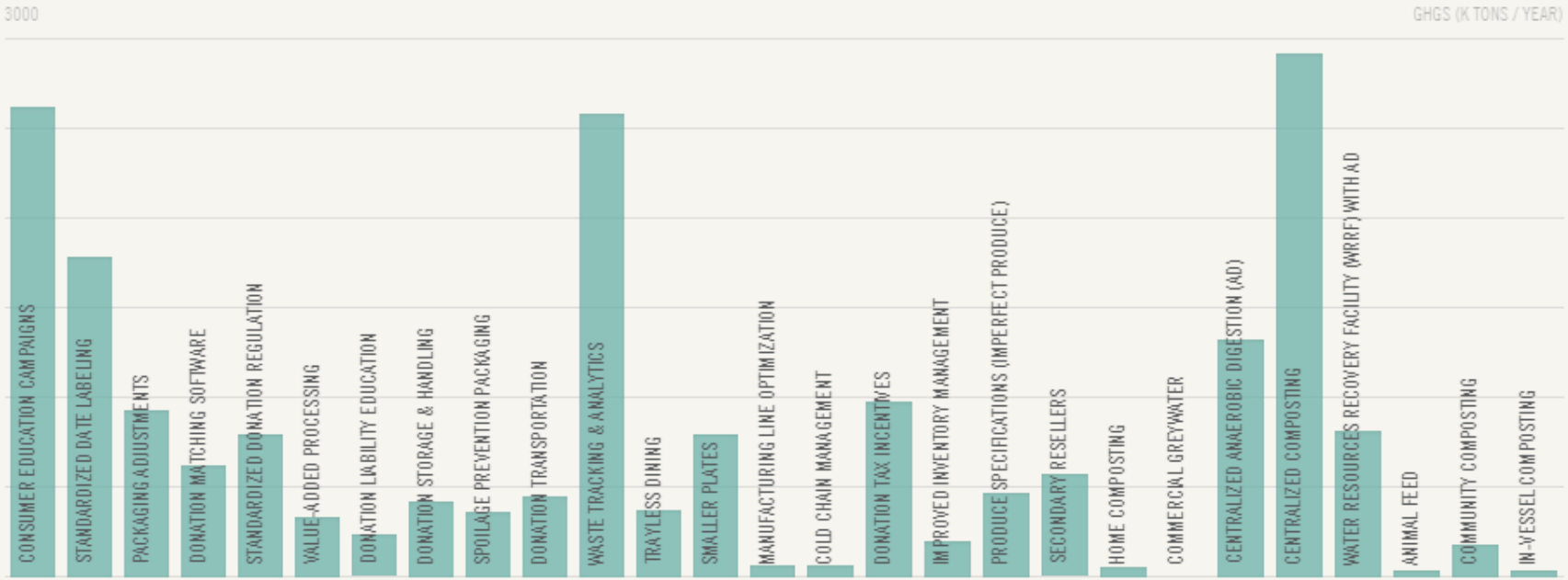
Greenhouse gases are reduced per solution by avoiding the resources that go into producing, processing, and transporting food, as well as the methane emissions from food disposed of in landfills.



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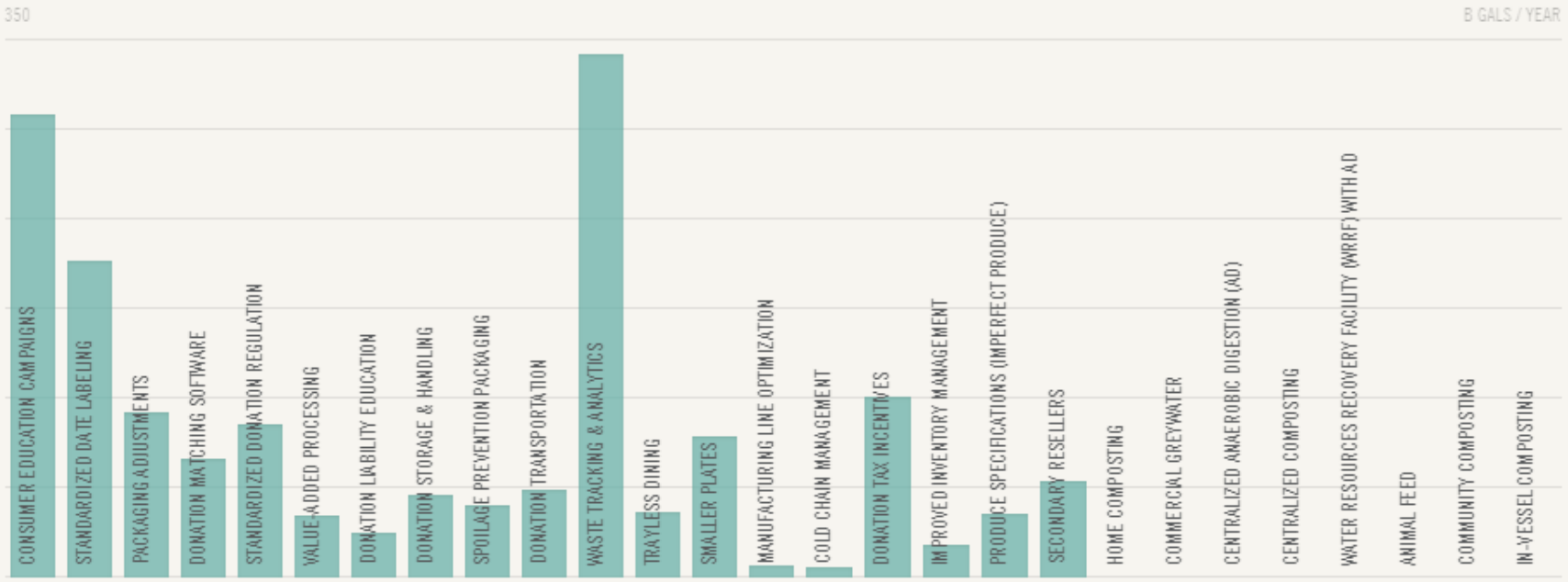
Water conservation occurs when a solution helps avoid agricultural water use to produce food that would have ultimately been wasted.



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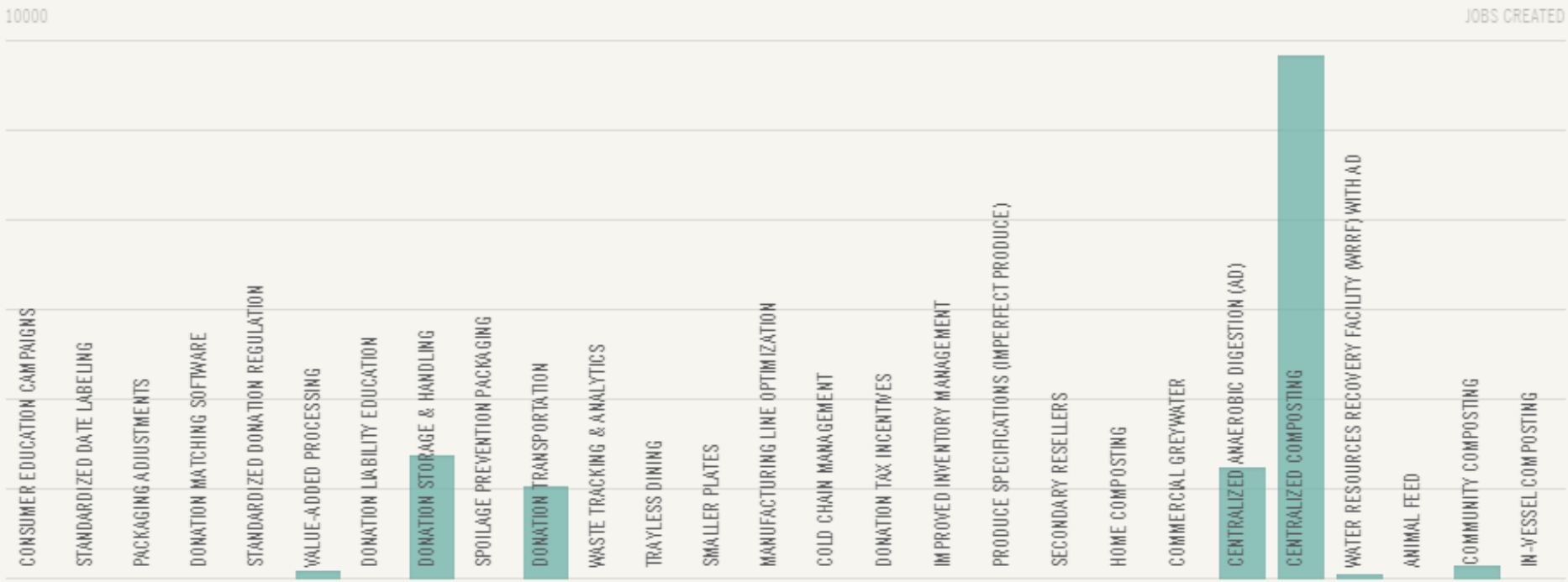
The jobs created or sustained by implementing a solution.



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Job Creation

- No current figures for Vermont Job creation from the ban
- An analysis of Massachusetts' Commercial Food Waste Disposal Ban shows that the law has created more than 900 direct and indirect jobs and stimulated $175 million in economic activity across the State of Massachusetts during the first two years of its landfill ban.

om/?sort=meals-recovered

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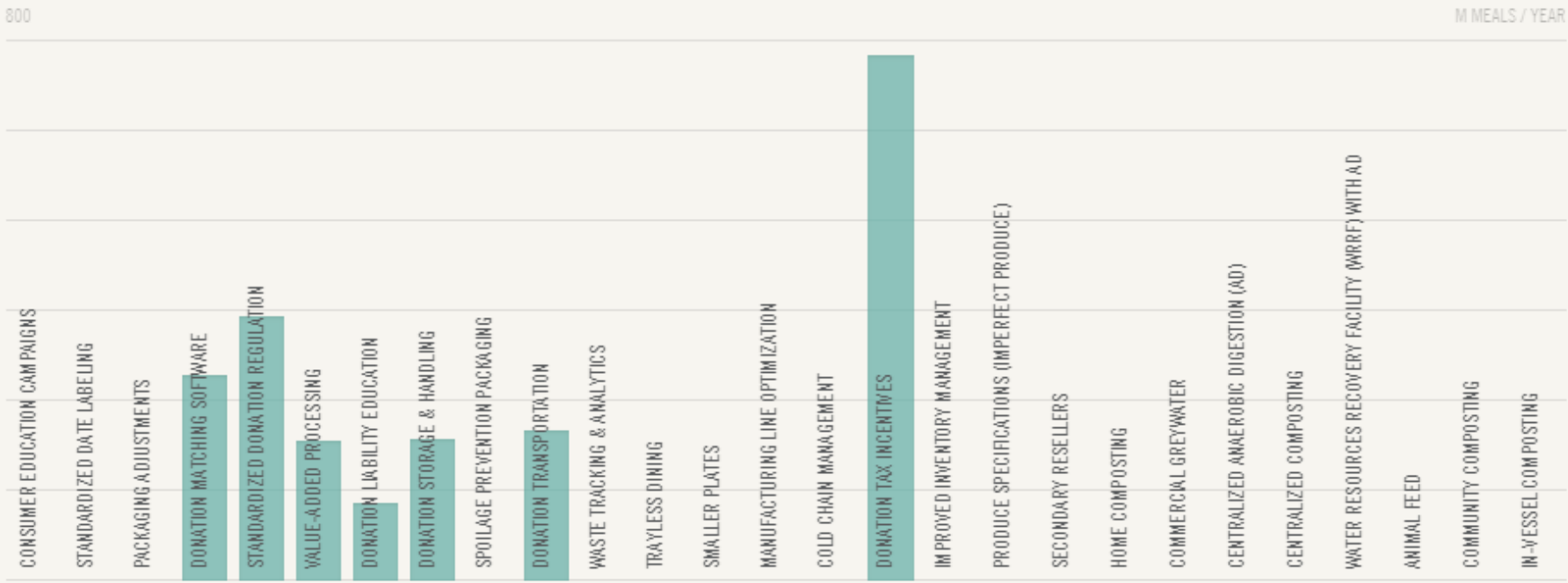
Food recovery solutions recover perishable food that would otherwise go to waste and donate it to people in need. One pound of food waste diverted equals 1.2 meals.



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Food Donation/Recovery

- 1st July 2015 – Waste generators > 52 tons per year were required to divert organic waste
- This led to a significant increase, 30%, in food donations from retailers to Vermont Foodbank and pickups from retailers and restaurants increased 200%. The Farm to Plate network encourages networks between producers and hunger relief organisations to divert food for human consumption
- The Salvation Army of Greater Burlington reported in 2016 that thanks to increased food donations, it had slashed its cost per meal to under $0.07, compared with about $1.47 just two years ago.
- Food donation reduces the need for processing capacity
- Retailers who are saving waste disposal or treatment costs should contribute to transport and sorting of diverted food to human consumption – the full cost should not fall on the hunger relief organisation to fund the food recovery solution

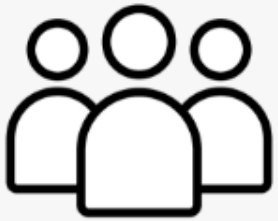
FOOD FORWARD SA

600
Beneficiary Organisations Supported

17,600,000
Meals per year

R0,79
Cost per meal

4,400,000
Kg's of food distributed



250 000
People Fed Daily

Economic Benefits of Organics Recycling

- Opportunity for new businesses at every level of organics diversion (source separation training, bins and skips, compostable packaging, transport, processing facilities, products, sales, exports)
- Valuable resources are recovered – Nutrients, nitrogen, phosphates, potassium, energy and heat
- New products manufactured, valued added

  Black soldier flies – animal feed

  Anaerobic digestion – biogas and CO2

  Composting – organic fertiliser and heat
- Reduced cost of building landfills and leachate processing plants

Conclusion

- The Organic Waste Landfill Ban can be implemented in a gradual manner giving organic recycling infrastructure time to grow and for waste generators and transporters to put systems in place to divert organic waste.
- There are many economic benefits for society at each level of the waste hierarchy – Prevention, Recovery and Recycling – which a landfill organic waste ban can trigger
- There are many opportunities for new businesses and jobs to grow from the organics recycling industry
- Vermont's statistics: Waste disposal decreased 5% state wide from 2014 to 2015 and Recycling and composting increased by 11,793 tons from 2014 to 2015. Food donation grew by nearly 40% from 2015-2016, according to the Vermont Foodbank.
- Vermont Universal Law Status Report December 2016 is available on their website: http://dec.vermont.gov/waste-management/solid/universal-recycling

Thank You

ANY QUESTIONS?

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