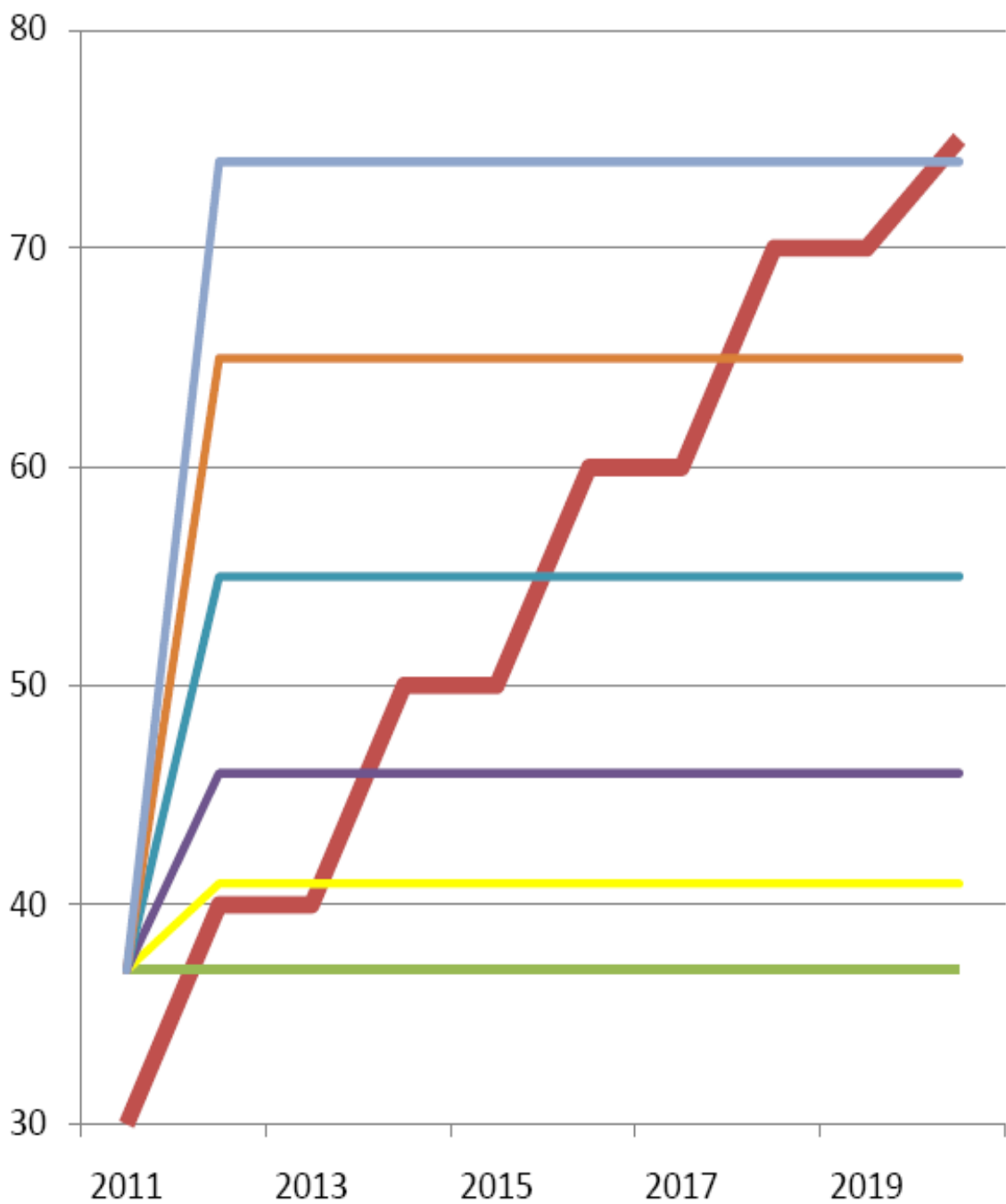


The Role of Restaurants in Organics Recycling

MSW Recycling Percentage



- State Recycling Goal
- Current Recycling Rate
- Adding 35 TPD (10% of Organic Waste Stream)
- Adding 87 TPD (25% of Organic Waste Stream)
- Adding 174 TPD (50% of Organic Waste Stream)
- Adding 261 TPD (75% of Organic Waste Stream)
- Adding 348 TPD (100% of Organic Waste Stream)

What is Organics Recycling?

“Organics recycling means diverting carbon-based wastes from disposal in a landfill, and instead recovering the energy in those wastes, and possibly processing the residuals into a soil amendment or compost.”

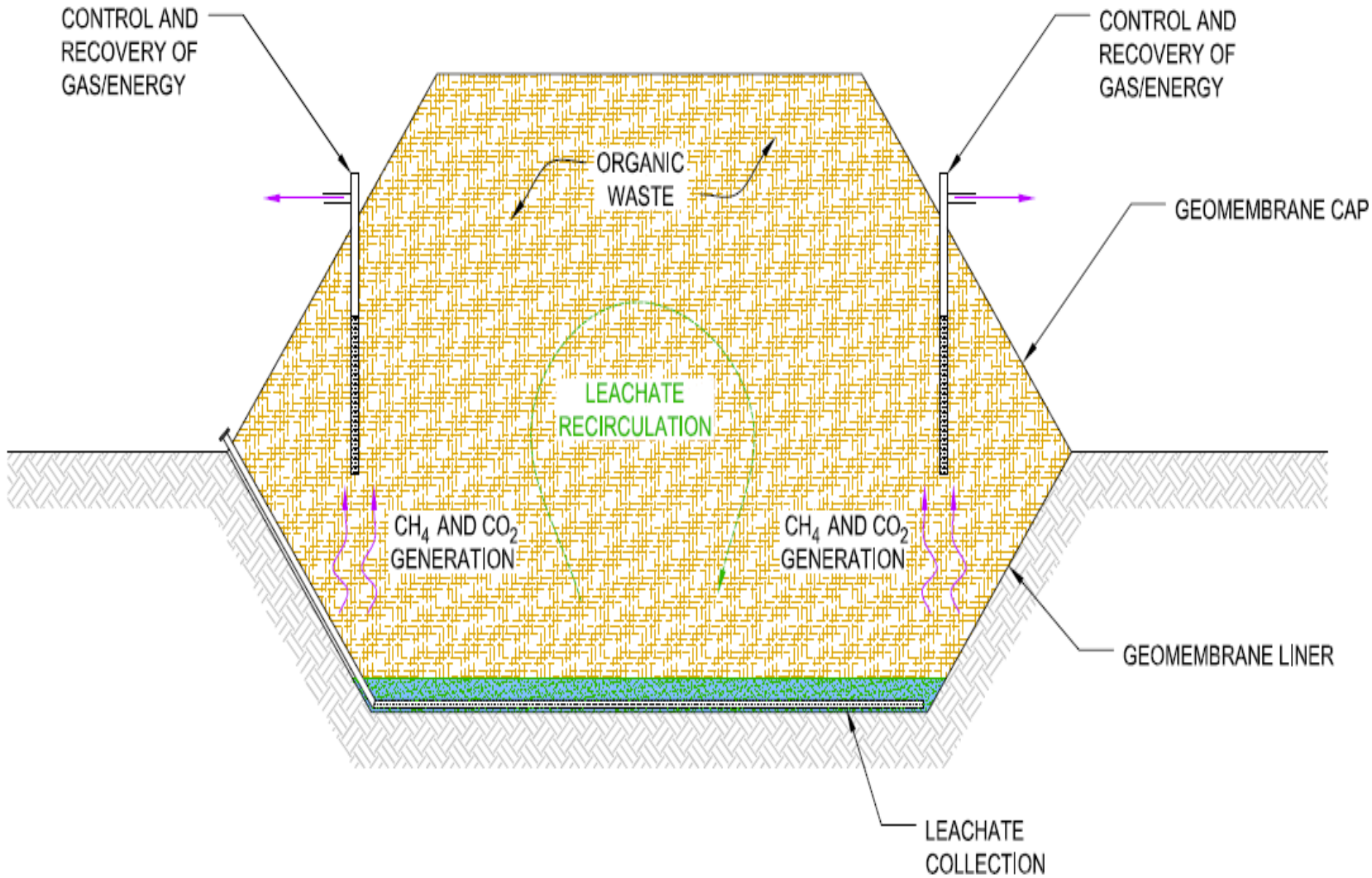
-Approx 27,000 tons per year diverted and digested for methane production (conservative estimate of 87 tons per day, 312 days per year)

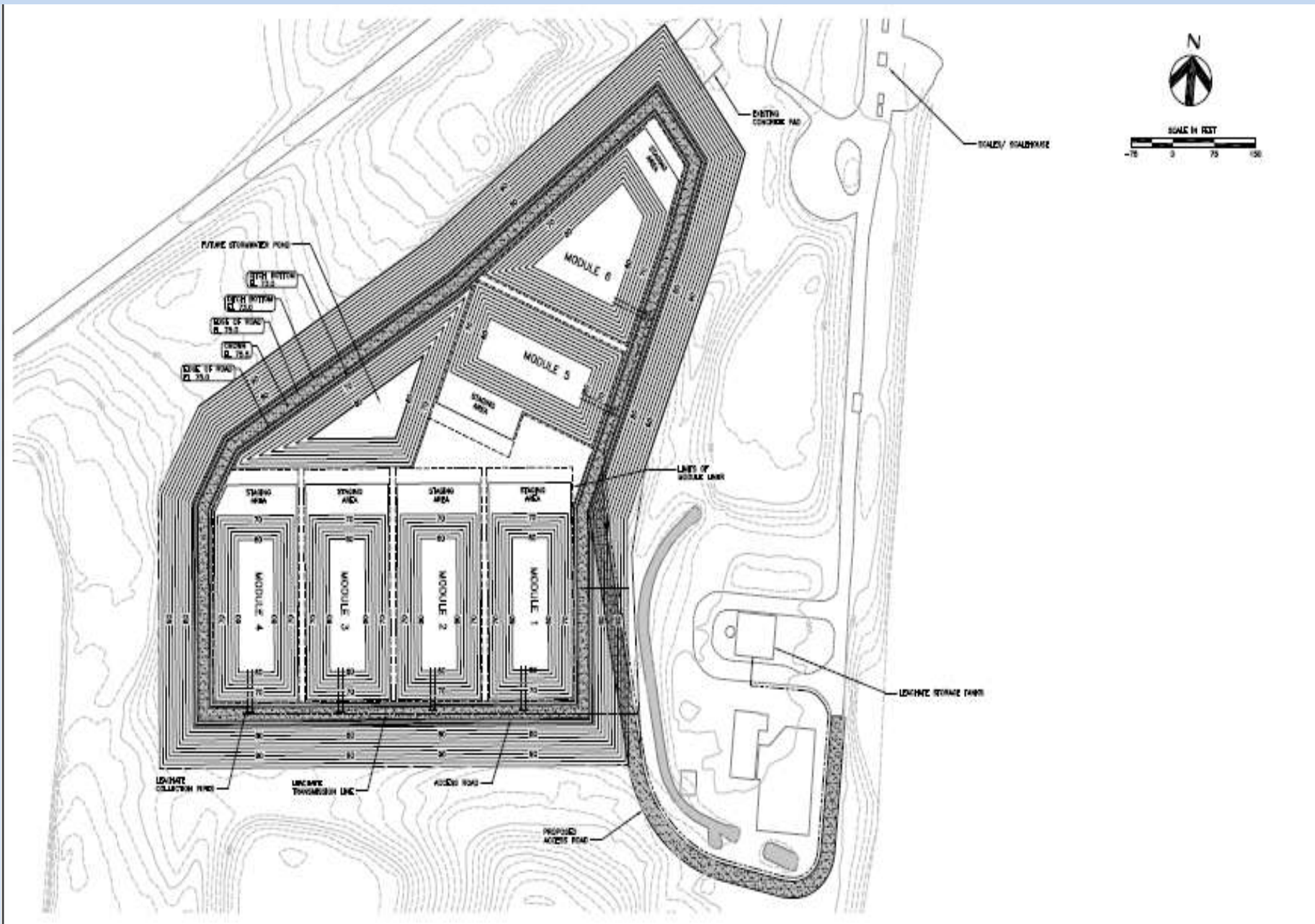
-According to EPA (as of 2007) 450 landfills currently have a landfill gas to energy programs across USA

-According to EPA landfills produce 23% of all man-made methane, a greenhouse gas approx 21x more potent than carbon dioxide

So, What's the Plan?



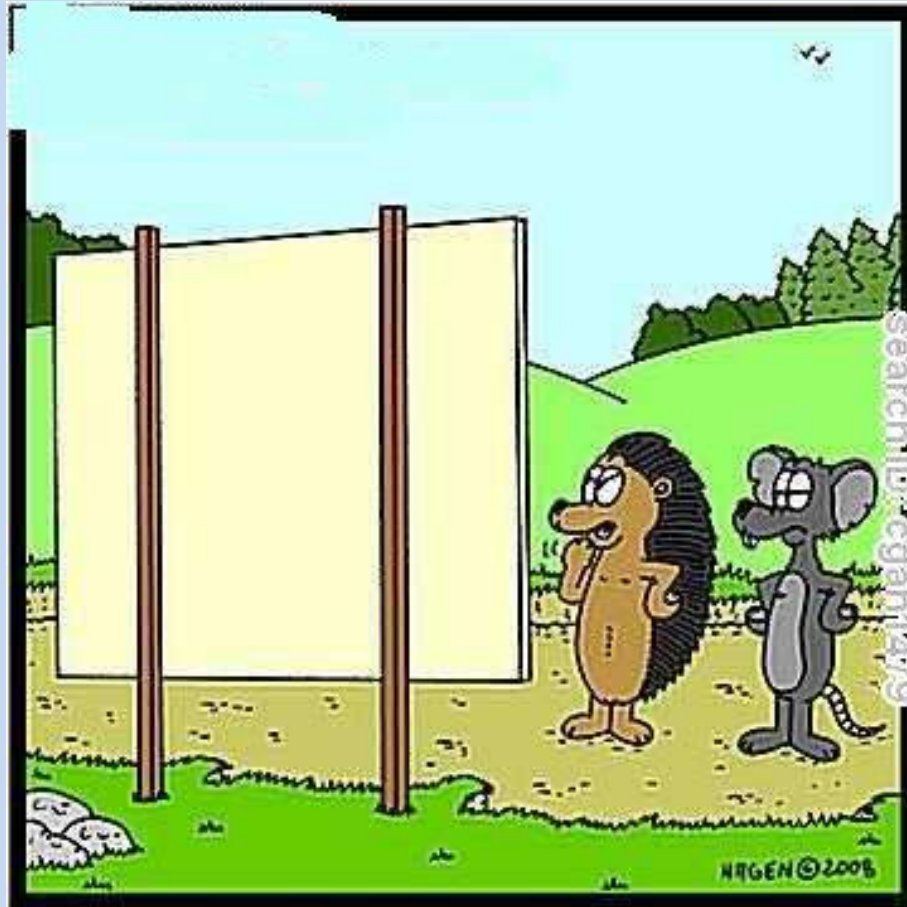




Project Benefits

- Reduce landfill filling rate
- Reuse existing infrastructure at closed landfill
- Reduce greenhouse gas emissions by
 - Capturing methane that would otherwise emit into the atmosphere (either through natural decomposition or flaring of methane)
 - Reducing hauling distances
- Provide revenue stream by selling electricity back into grid
- Provide potential revenue through sod farm
- Savings by not sending as many loads to New River Landfill

What's the Catch?



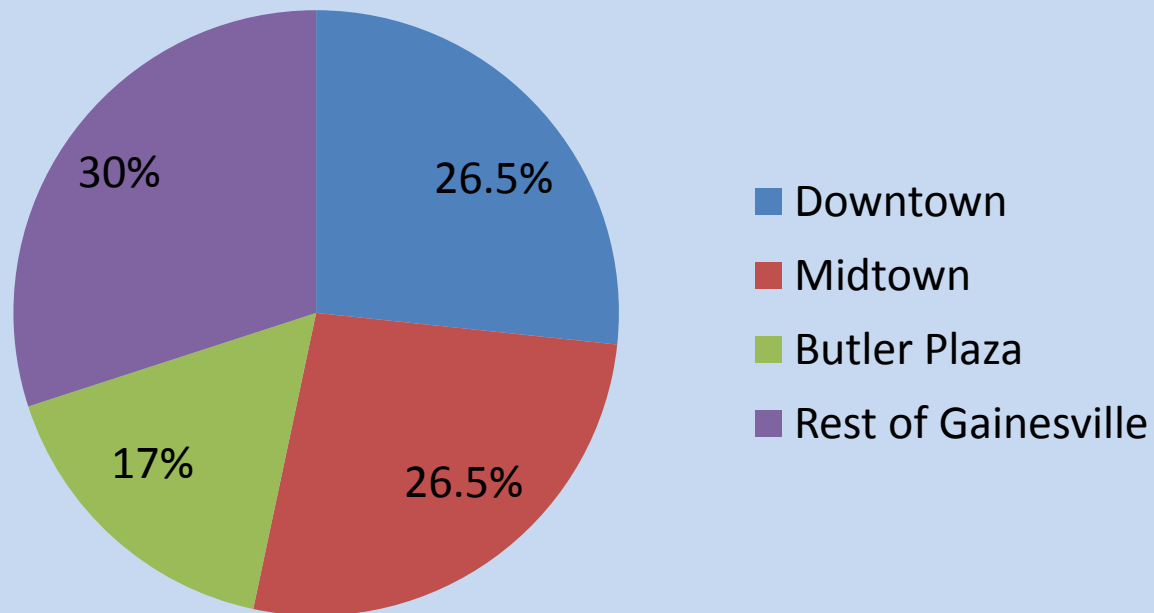
Hmm, this is too good to be true:
I can smell a rat...

My Project:

**The Feasibility of Restaurants
To source-separate
Organic waste**

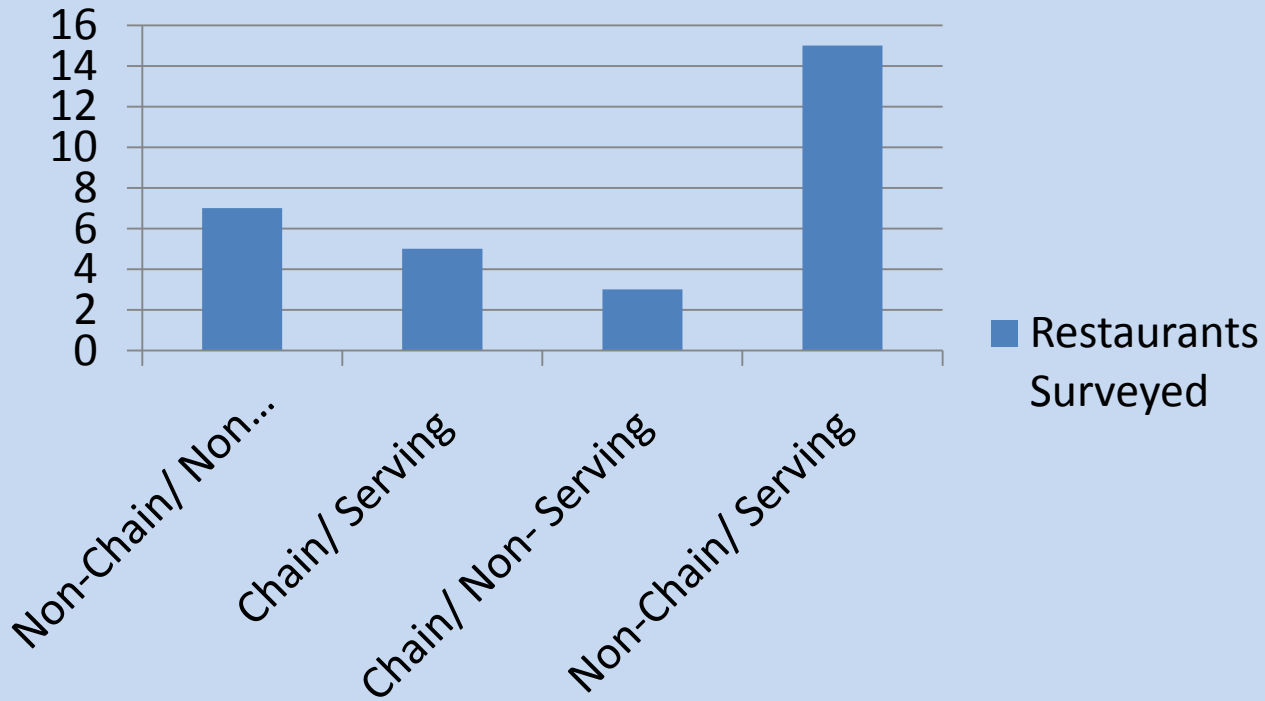
Survey Composition

Location



31 restaurants surveyed=32% response rate

Restaurants Surveyed



1. How much do you pay for garbage collection
On average anywhere from \$200-\$300 was most common

2. Who is your waste collection service provider?
Approximately 70% EWS, 25% Waste Pro, 5% not sure

3. Is your establishment's garbage collected on its own or as part of a plaza or group collection? 58% have exclusive contract; 42% either share their dumpster within a plaza or it is included in their lease with the plaza owner

4. How much waste does your establishment currently produce per collection period? Results Unquantifiable

5. How frequently is it collected?
The most common answers were 2 and 4 days per week

6. What percentage of your waste would you consider food waste?

Type of Restaurant	Average	Mode
Non-Corporate Non Serving	24.7%	20%
Non Corporate and Serving	27%	25%
Corporate and Non Serving	13.33%	10%
Corporate and Serving	24%	25%

7. If a law were passed requiring you to separate your food waste from the rest of your garbage, what barriers do you think you would encounter in order to do this as compared to your current waste disposal practices?

The overall barriers that almost every restaurant faces are the need for another container, non-intrusive space for the container, and retraining of the employees. If all of those factors were addressed, than it would be possible

8. Would you consider separating your food waste voluntarily if the environmental benefits were explained to you?

If the cost were to remain the same, than 61% of the restaurants would be willing to try it out. The remaining 39% were either corporate franchises that would not comment or think it would be too difficult.

9. Would you separate your food waste if there were a financial incentive to do so?

77% of restaurants would separate, assuming logistical barriers were addressed and there was a financial incentive

Collection Fees for Restaurants

EWS

Type of Waste	Size of Container (cubic yards)	Number of Pickups per week	Price (\$)
Garbage	2	2	105.27
Garbage	2	4	210.55
Garbage	4	2	142.89
Garbage	4	4	285.78
Garbage	6	2	180.51
Garbage	6	4	361.01
Garbage	8	2	218.12
Garbage	8	4	436.25

Case Study

Big Lou's Pizza

Garbage Collection Fee	\$500 per month
Service Provider	Waste Pro
Size of Dumpster	2 cubic yards
Frequency of Collection	Six times per week
Food Waste Percentage	60%

The most important factors preventing Big Lou's from separating food/ organic waste include:

- A new container and more importantly space for that container
- Training of employees

Big Lou's would not be willing to separate organic waste based solely on environmental benefits to the county, they would require some sort of financial incentive; they said that even a 10% reduction in their bill would make them consider separation.

Analysis

Collecting

Big Lou's pays \$500/ month for a collection which consists of 60% food waste. If they were to cut their general garbage in half by separating food waste, they could in theory reduce their pickups to 3x per week. That results in a savings of \$3,000 per year. That is money that could then be reinvested to contract with Waste Pro to collect their food waste the other 3 days a week.



Tipping Analysis

Public Works estimates that they landfill 184,827 tons per year 29% of MSW is paper waste and 18% food. They initially predict a 25% efficiency of collecting organic waste; this all equals 87 tons of organic per day with 312 working days per year (6 days a week).

Tons	Tipping Fee at LBEPTS	New River Landfill Fee	Estimated Organics Recycling Tip Fee
Per Ton	\$52.13	\$31.35	\$36
87 TPD	\$4,535.31	\$2,727.45	\$3132
27144 TPY	\$1,415,016.72	\$850964.4	\$977184
Savings		County saves: \$564,052.32py	Private Collector saves: \$437,832.72py

That is a 31% savings for the private collector to dump at Southwest as opposed to LBEPTS. Emerald Waste, who already contracts with about 70% of food vendors, has approximately 61 tons per day out for collection that could provide an approximate additional revenue of \$306,986.16py

Conclusion

If the county were to lock in a organics dumping fee at \$36/ ton, then haulers would have the incentive to collect it. The savings produced make it realistic for waste haulers to restructure their contracts with restaurants. Overall, if costs are not raised by the restaurant, they feel it would be reasonable to source-separate organics.

I recommend that for the near future, assessing how this fee restructuring actually change sbehavior. This could be done via trial contracts with restaurants in large plazas or parking lots where there is extra space for another dumpster.

If this proves successful, than the county could recommend a requiring source separation by any commercial entity

The issues that would still need to be looked at is the most efficient collection routes and schedules for a new organics program, and any potential added odor that could emit from these dumpsters

The key is to illustrate how each member in the chain of custody can benefit from this and their role in successfully implementing the program

Extra Benefits to the Landfill

These savings do not include any additional revenue that would be generated due to gas sales. Biogas would produce in year two starting at revenues of approx \$220,000py and rising. Due to the volatility of energy prices this was not included in the study. Public Works estimates that they would be able to power a 600kW generator which would then be fed into the electricity grid powering.

They predict that 80% of waste volume would be reduced to sod after digestion. There is a potential market for this sod/soil amendment but more testing would need to be done on the composition of this sod to see if it would pass EPA regulation