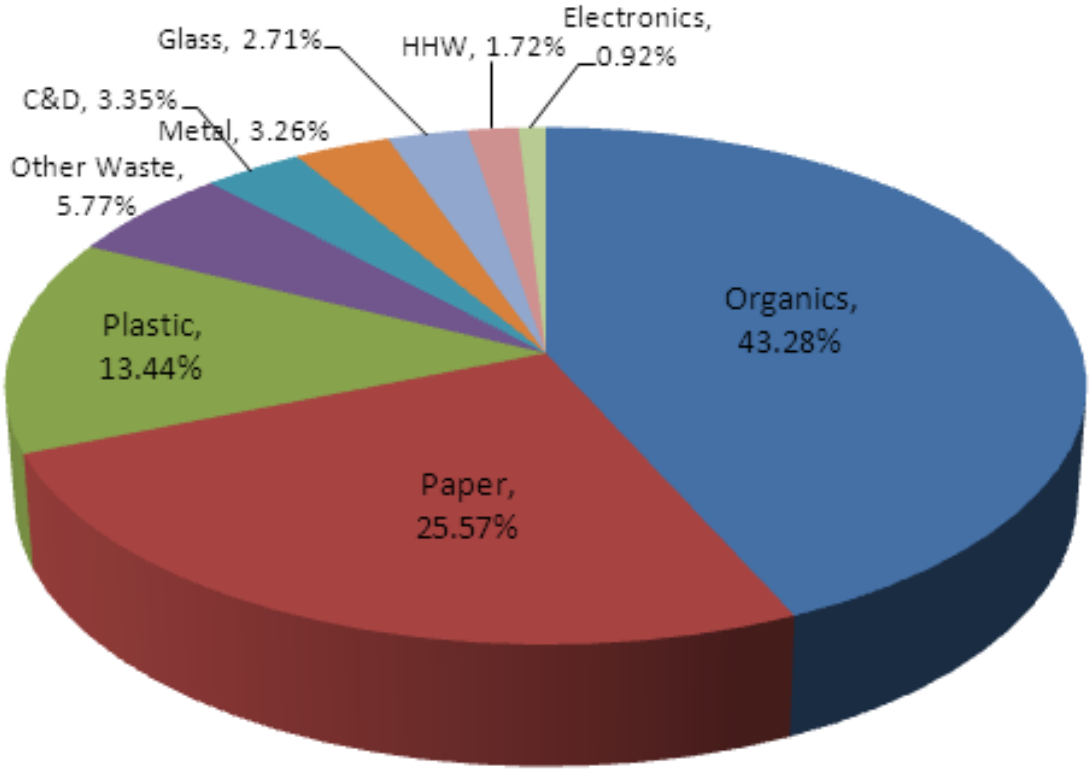
Options for Organics Recovery and Management in Your Community

Mark A. King,
Organics Management Specialist
Division of Materials Management

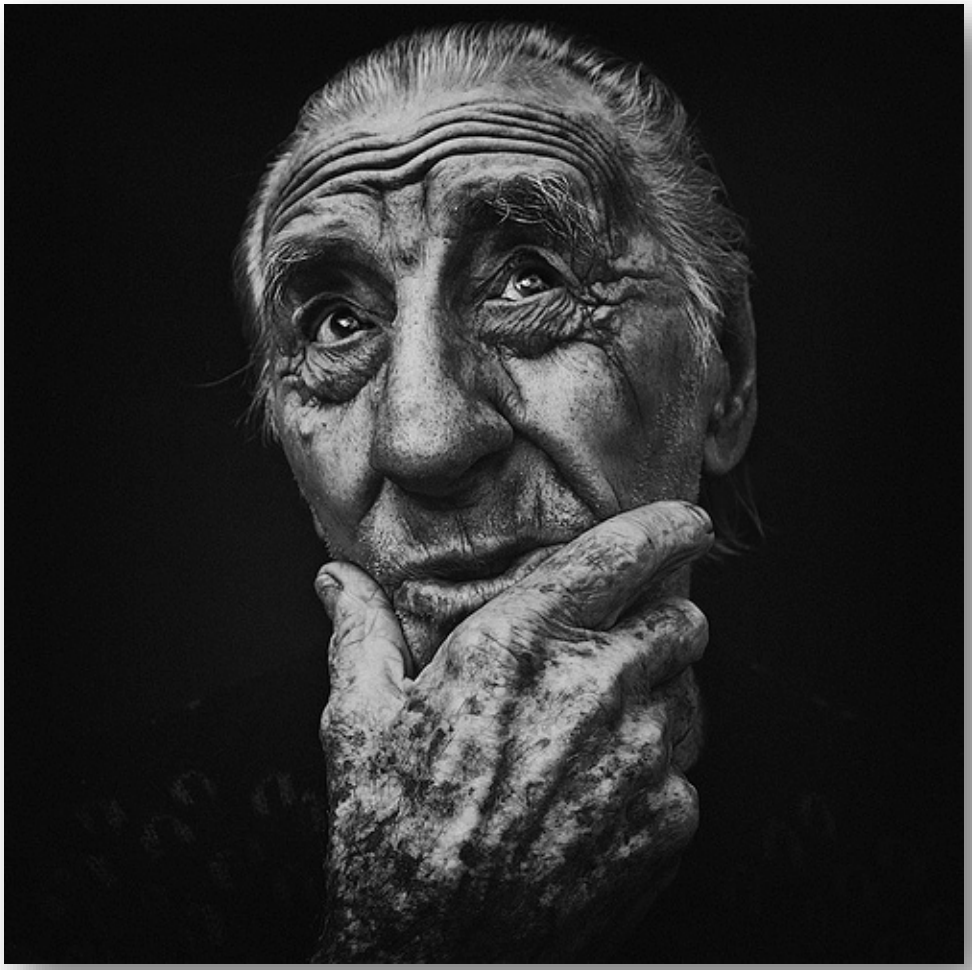
Community Collection—What's Out There



Maine 2011 residential MSW composition after recycling has occurred

Food scraps, paper and yard debris account for close to 70% of the potential recoverables!

How Do I Get Started?



First - Determine what you have and what you are doing about it…

Complete an inventory of all current solid waste issues and practices, including:

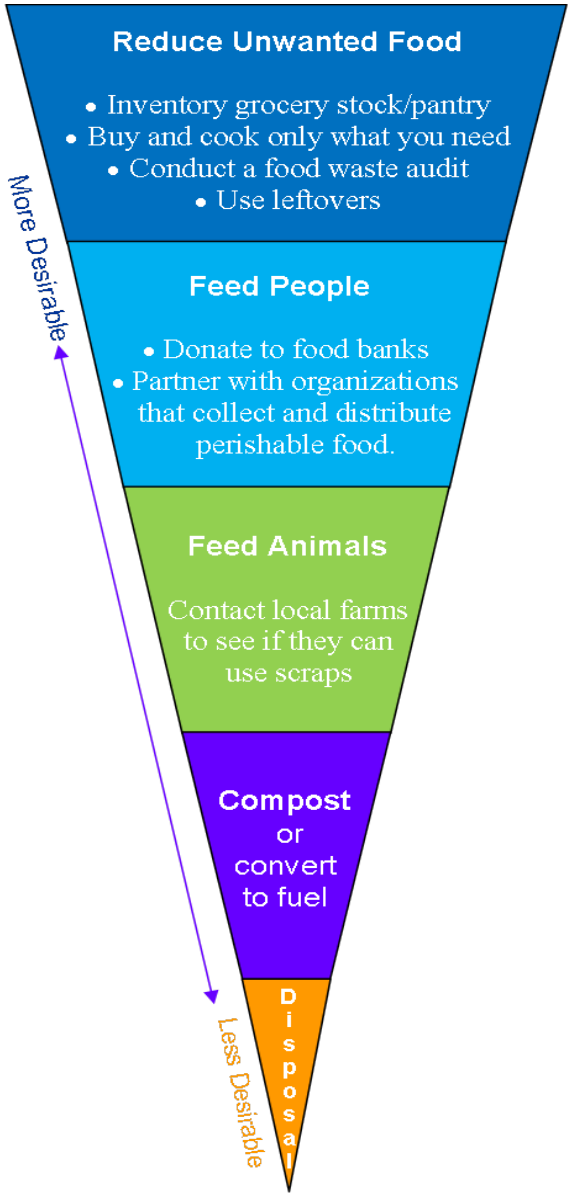
- *Generation*
- *Composition*
- *Purchasing*
- *Reduction*
- *Reuse*
- *Collection*
- *Who is involved/responsible*

Perform a Residual Characterization

- Assess all ‘food-handling’ areas of business:
  - Upstream-prep area/receiving area
  - Midstream-service area/clean-up
  - Downstream- aka, “dumpster diving”
- Determine the recoverable volume
- Select containers for receiving/storing food scraps
- What are storage limitations?
- Determine collection and hauling scenarios
- Locate partners
- Begin Program…

Maine's Food Recovery Hierarchy

Adopted in 2016 by Maine Legislature



Conducting the Residual Characterization

What's Needed to Handle Organics?

- Infrastructure
- Predictable Cost-Effective Transportation
- Airtight/Watertight Containers
- Long-term options (contract)
- Predictability/professionality
- Managing public perceptions
- **Remember: Public perception is <u>your</u> reality!**

Food Scrap Program Success Relies Upon…

- Top down and bottom-up communication is key
- It must be good for all involved
- Key players are supportive
- Training assures consistency
- Frequent feedback
- Positive reinforcement
- Partnership (within and without) is critical!!!

Consolidated Collection Center

- Simply put…Food Scrap Transfer station
- Provides one central location to build-up collection
- Ideal for rural communities that lack space for full-scale compost facility
- Materials are covered each day (odor/vectors)
- Once full, roll-offs are taken to larger facility for processing
- Regulated under Department Rule Chapter 402, “Transfer Stations and Storage Sites for Solid Waste”

Benefits of Consolidated Collection

- Allow accumulation of adequate volumes of organics, making trucking economically feasible;
- Allow residents to source-separate and collect food from home and bring it to one central location for delivery to a higher end-use;
- Helps to fulfill the demand for organics inputs at larger processing facilities; and
- Enhanced organics collection bolsters state's recycling rate.

What Can Be Collected?

- The following items should be targeted for collection:
  - ✓Fruits and vegetables;
  - ✓Pasta and bread;
  - ✓Egg shells, seafood (including shells);
  - ✓Meat and fish (including bones);
  - ✓Coffee grounds
- Stay away from the following contaminants:
  - ✓Liquid materials (dairy and fryolator grease);
  - ✓Pet wastes (dog and cat specifically);
  - ✓Unbleached paper napkins;
  - ✓Soiled pizza boxes;
  - ✓Diapers and sanitary napkins;
  - ✓Some compostable plates, cups and utensils; and
  - ✓Glass, plastic or metals of any kind.

Type IB

Type IC

Training Staff….

An Exercise in “Patience”

Food Recovery-Kitchen Prep.

"Pre-Consumer"

Food Recovery-Plate Scrapings



“Post-Consumer”

Separation

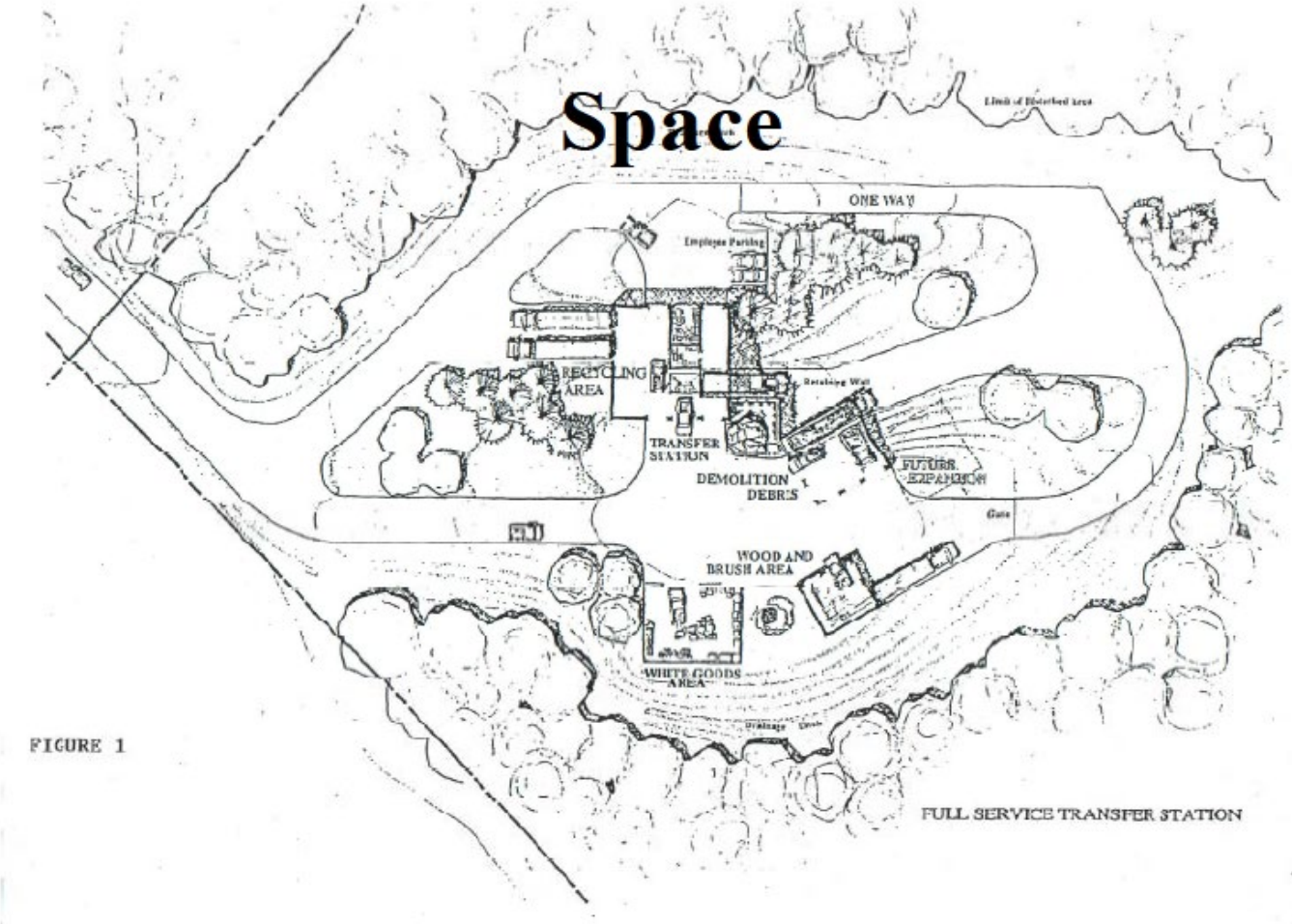
- Logistics are not that difficult
- Long-term consistency is very difficult
- Permanent feedback loop is needed to correct problems quickly
- How to institutionalize organics recycling?

Residential: Curbside picked weekly…

Residential: Large Scale

Stand-alone Collection Sites

Do You Have Room?



General Facility Layout Requirements

Area Requirement	Cart (96 Gallon)	Front-Load (up to 6 yd^3)	Roll-Off (20 yd^3)
Footprint	3-4 ft^2	30-40 ft^2	175-200 ft^2
Vertical Clearance	15-25 feet	15-25 feet	25-30 feet
Dimensions	30-40 feet long 10-15 feet wide	30-40 feet long 15-20 feet wide	40-50 feet long 15-20 feet wide

Regulatory Requirements

Regulated under Chapter 402, “Transfer Stations and Storage Sites for Solid Waste”. Mechanisms for approval may vary.

- Existing facility: Update to the facility Operations Manual, a Minor Revision or an Amendment to the license;
- A new site may require a full Chapter 402 license;
- Stand-alone collection sites (kiosks) not at a licensed facility may be registered using a form provided by the Department.

What About The Public?

Does Perception = Reality??

Public Perception

How Do You Go From This?

To This?

Emphasize Proper Management

Options for Collected Scraps?

- Compost onsite = Most efficient option
- Compost offsite = Requires Transport
  - Community-based site
  - On Farm Compost Site (Compost Management Plan)
- Take to Anaerobic Digester (Offsite)
  - Requires Transport—several programs available

Organics Management Options

Composting

Anaerobic Digestion

What is Composting?

"A biological process that *transforms* raw organic materials into a nutrient rich, biologically-stable soil additive suitable for plant and crop use"

What Makes a Compost Pile Work?

- C:N ratio
- Oxygen content (porosity)
- Moisture content
- pH
- Particle size

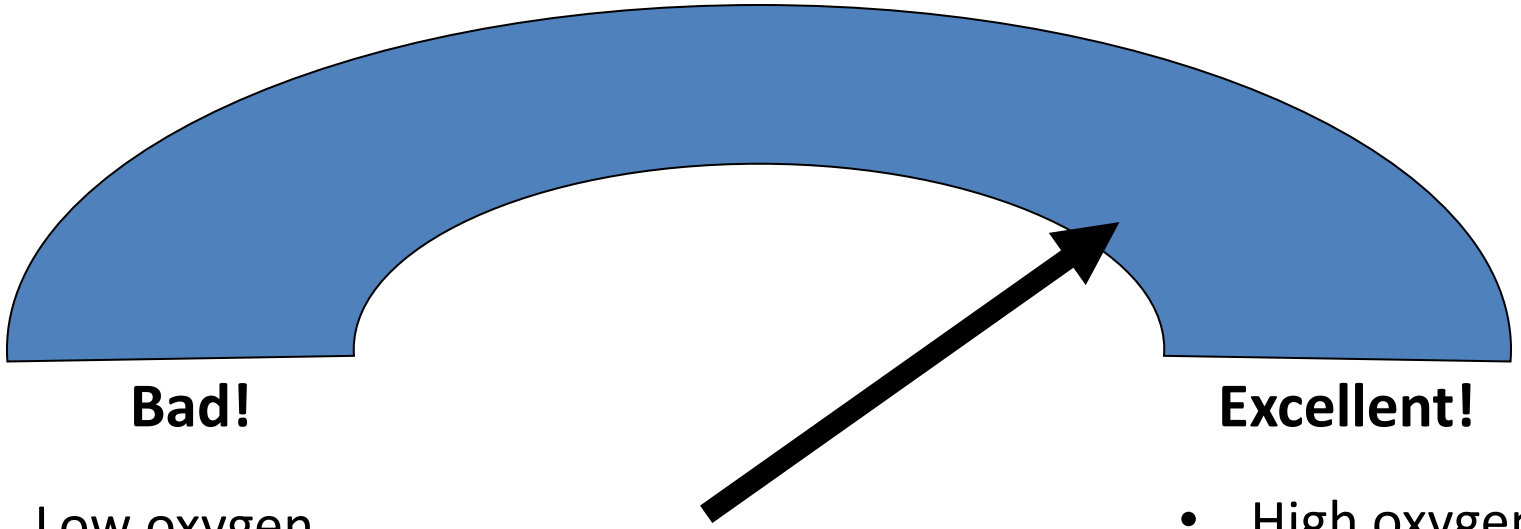
Carbon Feedstocks

- **Carbon: 30:1 or >**
  - **Leaves**
  - **Wood shavings**
  - **Card board: caution**
  - **Shredded Newspaper**
  - **Wood chips**
  - **Corn stalks**
  - **Straw**

Nitrogen Feedstocks

- **Nitrogen: 30:1 or <**
  - **Animal manures**
  - **Food waste**
  - **Lawn clippings: caution**
  - **Fish**
  - **Garden clippings: caution**

Oxygen, We All Need It!!



Bad!

- Low oxygen
- Slows Down
- High odors

Excellent!

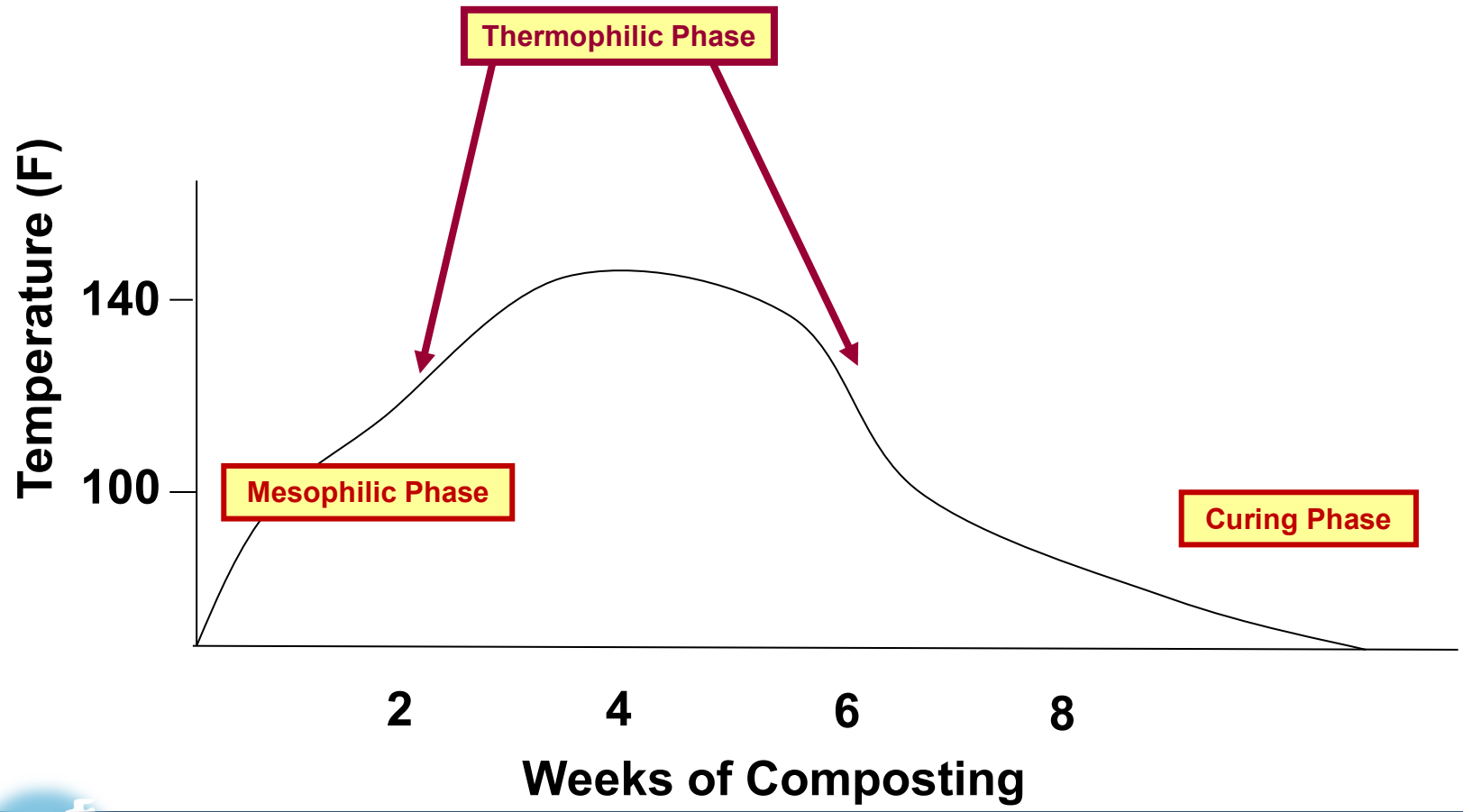
- High oxygen
- Efficient
- Low odors

Aerobic Composting and Temperature

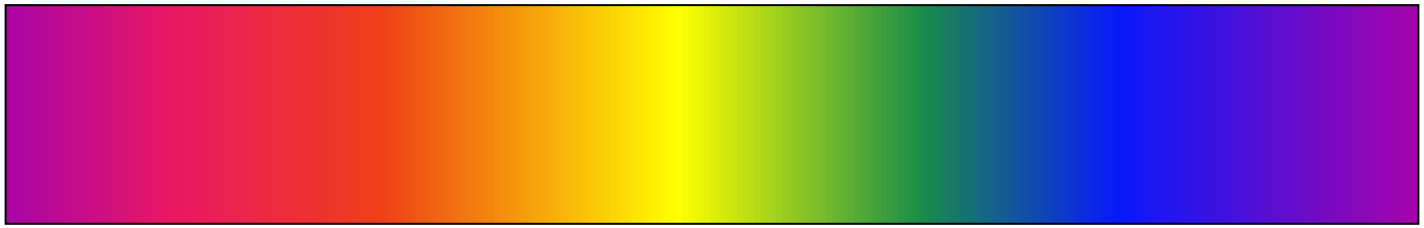
- Active composting occurs in the temperature range of 110°F to 160°F
- Pile temperature may increase above 160°F but this is too hot for most bacteria and decomposition will slow until temperature decreases again

Remember, compost pile heat is the direct result of bacteria working!

Typical Temperature Profile



Compost Moisture



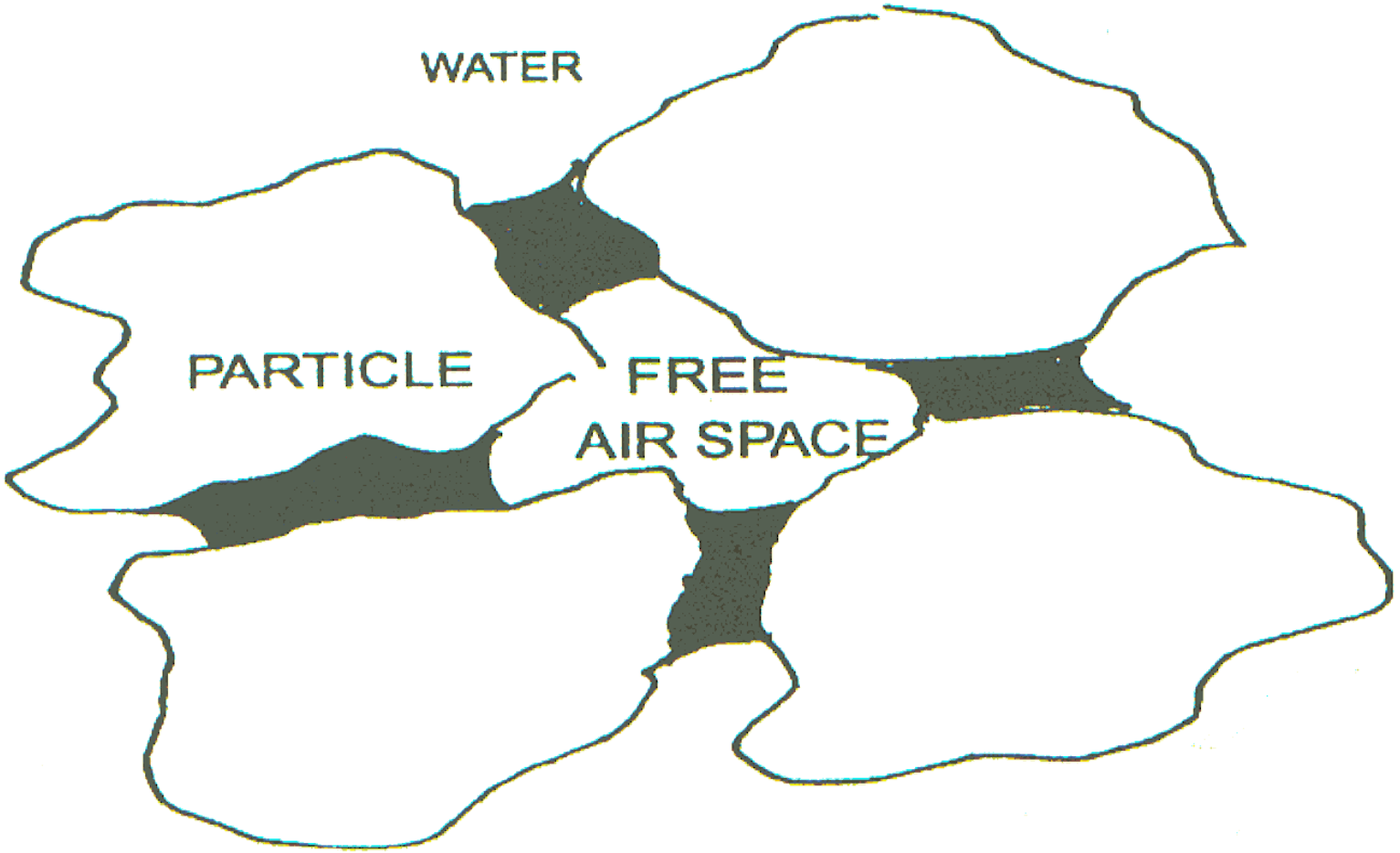


FIGURE 2.10. The relationship of free air space to water and particles in a composting media.

What Does Particle Size Do?

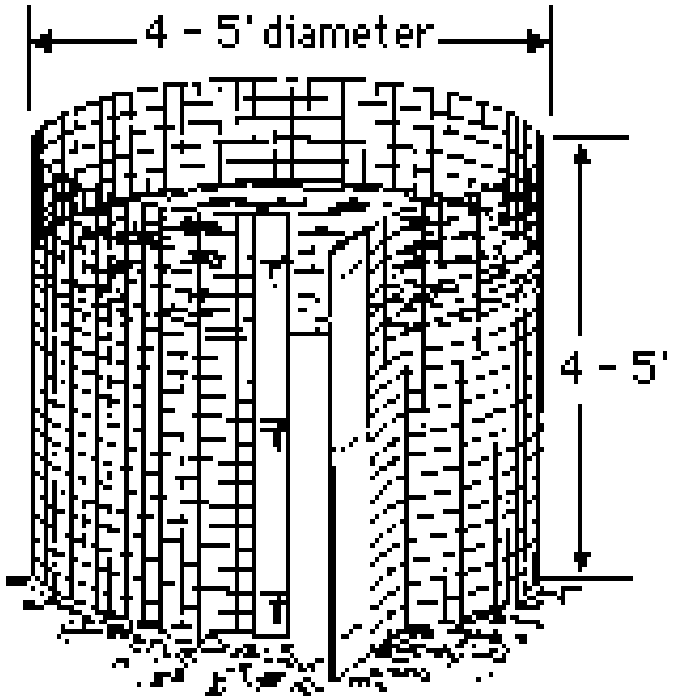
Moisture Distribution vs. Air Flow Through Compost Pile

How do I start a Compost Program?

Designing a Compost System

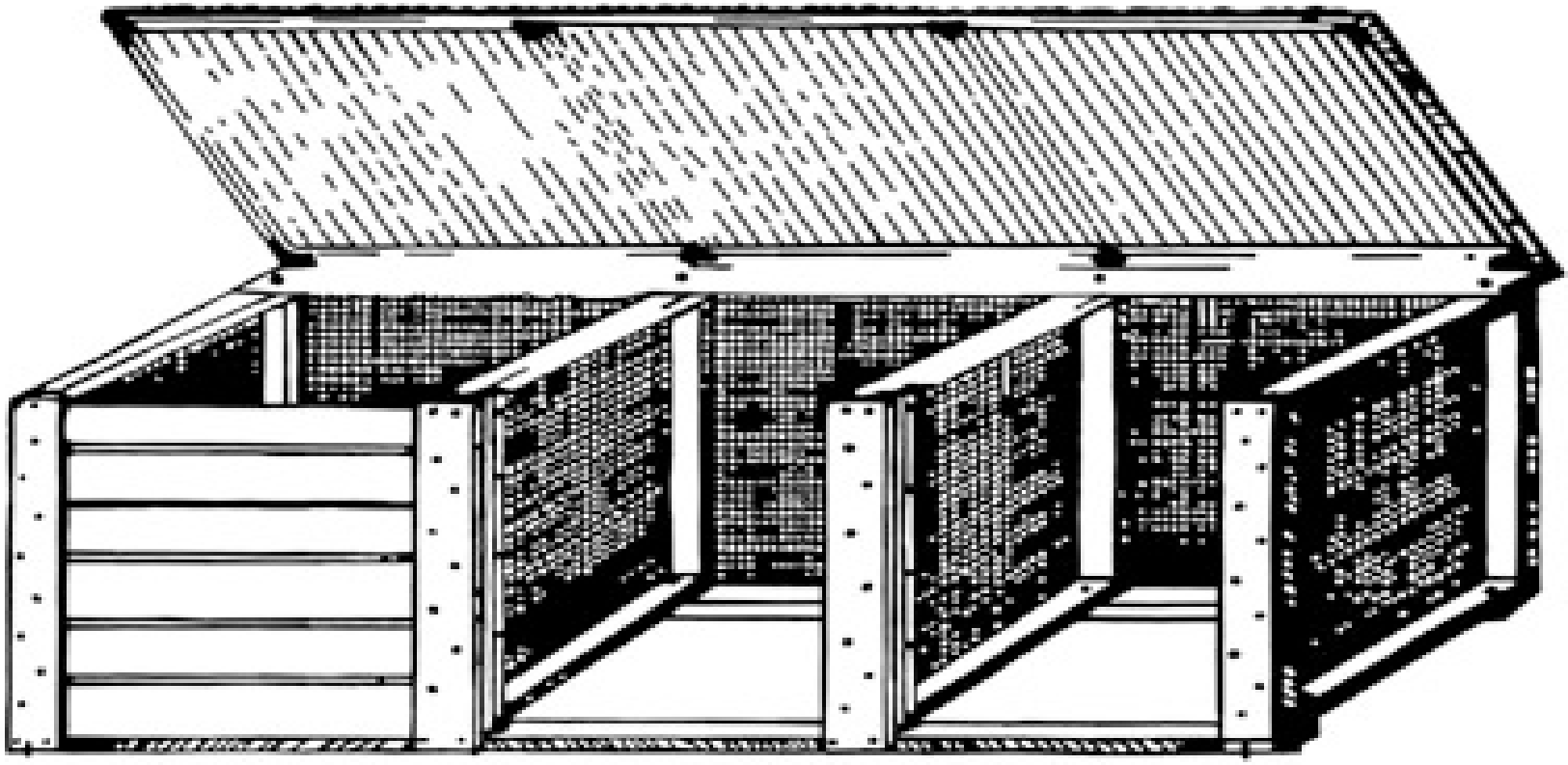
- Locate a Suitable Site:
  - Away from people
  - Dry
  - Shady to partly shady
  - Flat with well-drained soils
- Pick a System:
  - Bins
  - Piles
- Build it and Start Composting!

Simple Bins



Backyard Compost Bins

3 Bin System



Open System

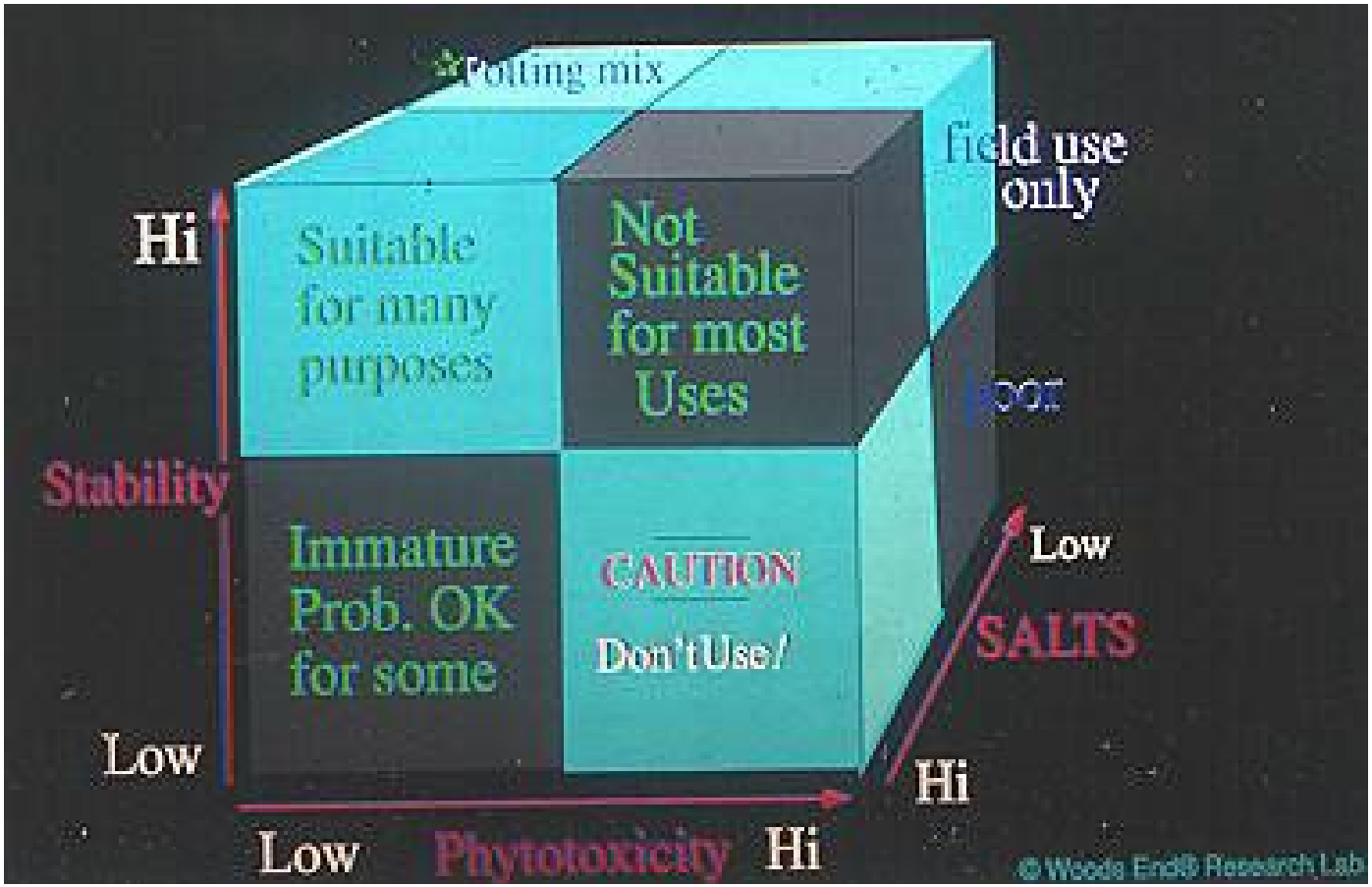
Massabesic Middle School Food Scrap Compost Pilot 2016-2017

Massabesic Middle School Food Scrap Compost Pilot

Values of Compost

- Builds up organic matter
- Improves soil tilth
- Helps hold moisture within the soil
- Enhances root and plant growth
- Helps suppress plant diseases

Compost Can Be Complex!



In Closing…

- The best waste reduction plan is to avoid creating it in the first place!
- Follow food re-use hierarchy.
- Identify obstacles and develop ways to overcome.
- Create a program that benefits many.
- Have fun doing it!!!


www.maine.gov/dep

Designing a Compost Pilot for Your Community

- Dominique DiSpirito,
- Lead For America AmeriCorps Fellow
- Serving the Maine DEP

Why a pilot?

- Baby steps are key when trying something new
  - *Smaller starts=smaller problems*
- When done effectively, pilots can give you the **information, experience,** and **support** needed to scale up successfully
- Easier buy-in for stakeholders
- Enables you to tailor a program to your community's needs and strengths

So where do we start?

Step 1: Which Pilot is Best for Your Community?

- Work backwards
  - Figure out what type of pilot is best for your community:
    - Drop-off or pick up?
    - Whose food scraps are you targeting? (e.g. businesses, residents)
- Consider logistics, capacity, impact, etc.

Example:

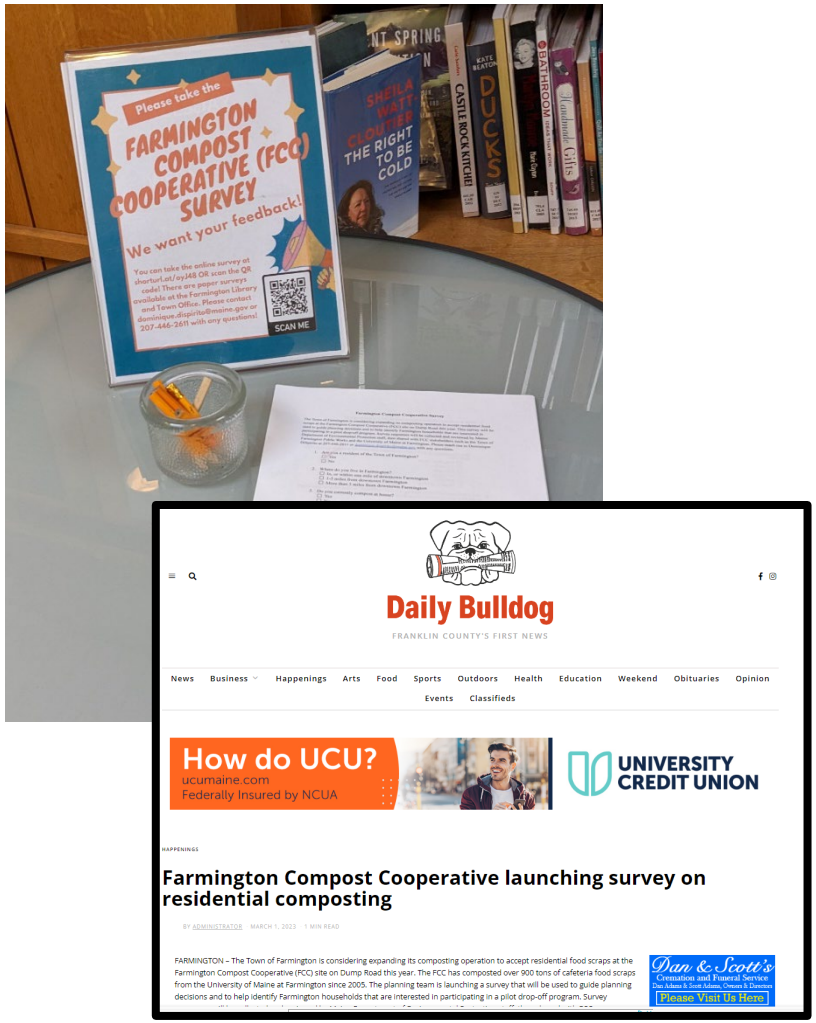
- FCC considered three pilot scenarios:
  - Businesses
  - Dorm Halls
  - Residents
- Determined that the pilot must be a drop-off pilot due to capacity limitations
- **Developing proposal documents are helpful to keep track of ideas and facilitate discussions!**

Step 2: Gather information & resources

- Identify “key” players in your community
  - Pilot participants (businesses, residents, etc).
    - Projected material generated
    - Understanding of best organics collection practices
  - Organizations & advocates that will be your support network!

Launch a Survey!

- Free surveys can be made with google forms
- Who can help you get an online survey out? A paper survey?
- Critical component of FCC pilot development

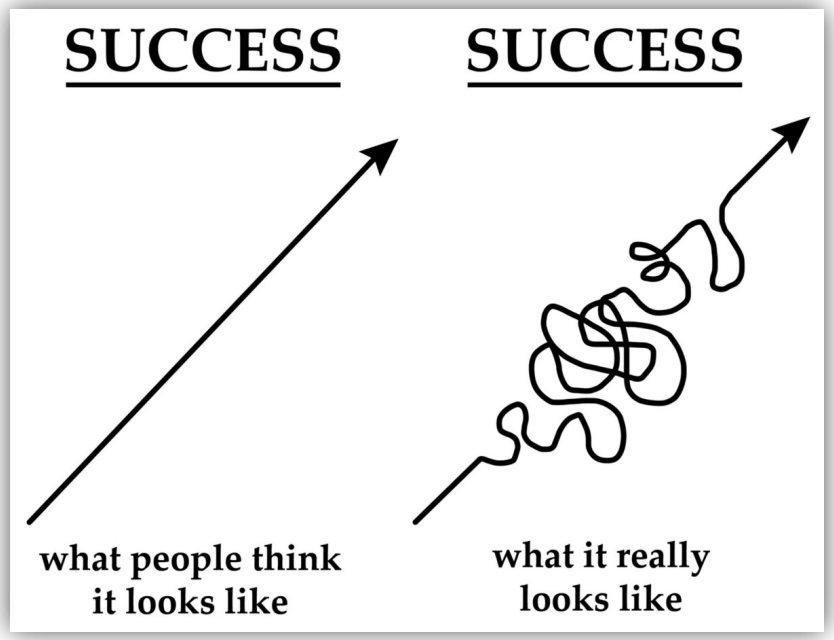


Step 3: Launch!

- **Identify a "deadline"**
  - Consider the following:
    - Season (spring best, early summer)
    - Wiggle room
    - Accessibility (weekday vs. weekend)
- **Make it exciting!**
  - Interact with pilot participants
    - Ex. host a workshop, open house, etc.

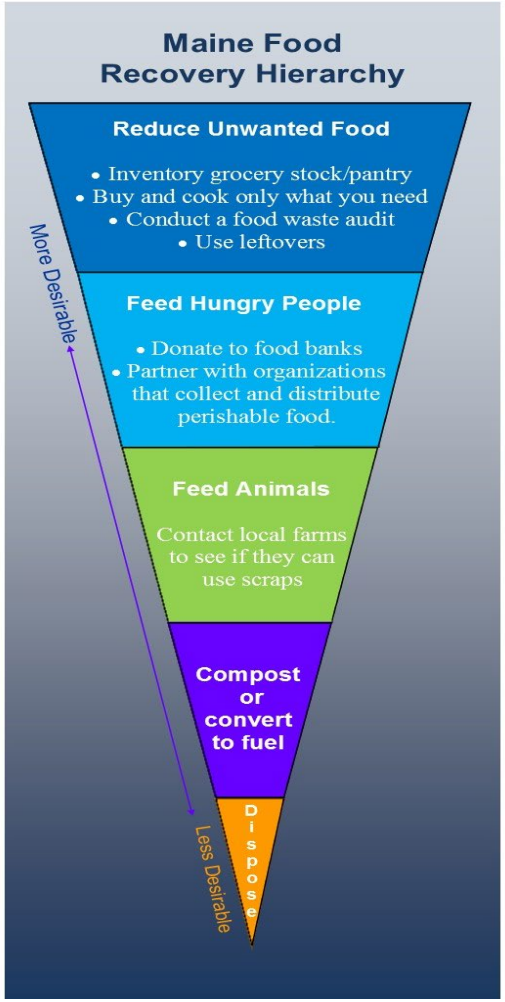
Step 4: Monitor, adjust, expand

- Monitor progress and challenges in ways that are significant for your community
  - Not always quantitative
- Meet challenges with creativity, cooperation, and patience
  - Challenges are normal and rarely insurmountable
- **Expand sustainably**



Key Takeaways & Considerations

- **Remember the hierarchy!**
  - Embrace unexpected and happy connections
    - Ex. Maybe one of your business partners sends their scraps to feed animals!
- **Consistency is key!**
  - Success requires investment and attention
- **Relationships are key!**
  - Who could benefit from the compost?
  - Who could help you get the word out?
- **Never be afraid to pivot!**



Questions?