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Table 1 Problems & Barriers: “Good food is going to waste.”

Transportation/Geography:

- There are high costs associated with transportation in rural areas, thus limiting access to redistribution and composting services. Dense areas provide more financially feasible areas for operation.
- Rural and urban areas have different transportation issues
- Rural areas may be in a better position to compost

Climate Change:

- The impact of food waste on climate change
- Links between climate change and transportation
- From a landfill perspective, food contributes to uncontrolled methane generation and release

Cultural/awareness/behavior/education

- We need more education to increase awareness of the problem and the resources to deal with it. For example, there is a lack of knowledge on why and how to compost.
- There is a lack of knowledge about the real cost of cheap food and the resources required to produce the food.
- Consumers have limited ideas of “food.” For example, consumers are only eating some/certain parts of livestock.
- There are misconceptions about food safety.
- There is individual and corporate resistance to changing behaviors
- Cost assumptions versus reality. People assume redistribution and composting will cost more, but it doesn’t necessarily.
- At institutions, there is typically a social norm of preparing more food than is needed and of individuals taking more than they can consume.
- Dealing with food waste is not an expectation across the state; different social norms depending on location.

Lack of incentives to change behavior:

- There are no incentives to compost

- Without widespread pay-to-throw, there is no or reduced incentive to decrease waste

Supply chain: transporting and ordering and preparing too much

- Standardized date labeling, or the lack there of, is a problem for industries and consumers
- There is no guidance/allowance for minimal food processing
- Expiration dates on foods and local foods that are not usually perfect
- We need to better manage production, quantity
- Compost is often contaminated
- Subsidies that keep food artificially cheap

Other:

- Production issue: in good years (bumper crops) lead to waste issues
- Nutrient cycles: when do we till in high nutrient crops, when do we export them off the farm?
- The quality of produce demanded by some wholesalers/retailers leads to questions of how to efficiently use culls
- Laws dealing with gleaning and food safety laws
- There are often conflicting school policies on dealing with food (e.g. need to make a meal for each student but also want to reduce food waste)
- However, participants also saw K-12 schools as part of the solution. For example, using greenhouses and composting in schools is seen as instilling certain values in students that they will carry into adulthood.
- The odor created by food waste in our trash stream is problematic; it contributes to trash being unpopular.
- There was an interesting discussion about recycling, composting, and diverting food waste as being seen as “elitist.”

Table 1 Barriers:

- Laws against gleaning
- Need more studies on food spoilage
- Restrictive land and solid waste ordinances in towns

Table 2 Themes: A note about this table. Several participants didn’t differentiate between barriers and problems and thus their sticky notes were very similar. This was a failure of definition associated with facilitation. However, as we sorted our notes I attempted to define problems negative outcomes associated with the generation of food waste and to define barriers as factors that prevented us from stopping food waste. Once we did that it became much more clear and we were able to sort our post-it notes into the following themes.

Table Two Problems:

Hunger: Many Mainers are hungry. One of the biggest problems of food waste is that we're missing important opportunities to redistribute food where it is needed most.

- "Hunger"
- "Missed opportunities to ensure healthy families and children"

Environmental/Agricultural Consequences: Wasted food turns environmental goods (nutrition) into environmental bads (pollution like leachate and methane) which results in long-term costs.

- "Waste hierarchy" - which indicates the most environmentally preferred solutions - is not being supported in reality.
- "Wasted energy, water and other limited resources embodied by food also wasted"
- "Pollution: wasted nutrients turn into leachate and methane"
- "Farm systems: farms can't get products to market and food is wasted"

Wasted Money (COST/inefficiency):

- "Costs" - it is cheaper to throw it away
- "Lack of incentives for waste reduction and repurposing of waste"
- "Cost" - easy and cheap to bury and burn

Table Two Barriers:

Infrastructure (human and physical) - many systems are simply not in place to implement changes in the food waste/recovery landscape. To implement these changes we would need more capacity. The question is whether it makes sense to build the capacity before the commitment or to make the commitment and then the capacity will expand.

- "Management (grocers) doesn't currently have strategies and best practices in place to implement these programs"
- "Need protocols in place to control overproduction and reduce food waste and costs"
- "Need programs in place to track data for optimal inventory management" (food retail/service)
- "Transportation costs"
- "Geographic distances in Maine"
- "Geography"
- "Logistics"
- "Lack of investment in infrastructure"
- "No outside organizations to come and pick up food for re-consumption"
- "Collection"

- “Transportation”
- “Lack of processing facilities for overproduction, storage, distribution”
- Management - no incentive to change systems
- Lack of receiving centers for food to be re-issued

Awareness: many people are simply not aware of the magnitude of the food waste problem and its associated consequences. This is partially because of the hidden costs of waste and our “hidden” and cheap disposal systems.

- “Awareness that food waste is an issue/problem, as well as its links to food insecurity - particularly at the residential level”
- “Lack of recognition that food insecurity is a problem which is prevalent, growing - as well as its effects on other aspects of society”
- “Participation - # of people and quality”
- “Externalization of long-term/hidden costs”
- “Lack of understanding/information in general public”
- “Public recognition that there is a problem/need for education”

Policy: Cost/Funding/Incentives

- “Lack of leadership and long-term goals/strategies/ planning”
- “Inconsistent and uncoordinated activities” - everyone is attempting to reinvent the wheel with no centralized socket or spokes (centralized goals or planning)
- “Lack of prioritization of sustainable food systems, ethics and infrastructure”
- “Costs” - it is cheaper to throw it away
- “Lack of incentives for waste reduction and repurposing of waste”
- “Cost” - it is expensive (time/money) to implement these systems
- “Cost” - easy and cheap to bury and burn
- “Lack of funding”
- “\$/lack of market drivers”

Food safety/quality

- “Food safety down the line if food re-consumed”
- “Safety”
- Ick-factor
- Liability for illness caused by food reconsumption
- “fear/safety concerns”
- Safe transport of re-purposed food

Table 3 Themes:

- **Problem: Change is hard.** A key challenge is that food waste is tied to so many elements and, thus, many changes are likely to be needed: change in the behavior of homeowners, change in how small and large restaurants handle waste, changes

in schools and how they handle waste, changes, in how large and small institutions such as hospitals handle waste. Changes would likely be needed because of potential safety issues.

- Barriers: **External and internal barriers** (e.g., time, space, labor, education)
- **Problem: Cost of program.** If a food waste recovery program were to be started, there would be many potential financial costs such as the cost to restaurants to handle the food waste recovery or the potential loss to food haulers of no longer having heavy food waste to pick up (which could reduce their profits since their profits are sometimes linked to the weight of the waste).
 - **Barrier: Hauler challenges** between organization (may lose money)
- **Problem: Lack of consistent processes** for managing unwanted food; too much is being wasted; there is no system in place to easily identify organizations to take consistently unwanted food; system for food transportation is not refined
 - **Lack of food redistribution policy** to guide processes
- **Problem: One “size” does not fit all.** For example, strategies or policies that might work for large restaurants in dealing with food waste might not work for small restaurants with few staff and few resources.
 - **Barrier: Messaging creates** confusion-the message should be to reduce first and then feed those in need
- **Problem: Food safety** issues with distribution
 - Barrier: **There are a variety of problems**; these not realized by everyone
- **Problem: Infrastructure deficits**; huge amounts of resources being wasted (H2O, energy, transportation); lack of storage; confusion with date labeling;
 - **Insufficient incentives**
- **The problem is not “seen or recognized as a problem”** by everyone; excessive generation of FW in households;
- **Other Barriers:**
 - **Cost**
 - **Health Inspector coordination**
 - **Schools have food requirements and portions are standard**

Table 4 Themes:

- **Problems:**
 - Geography and population density in rural areas makes it difficult to participate in organics diversion
 - Lack of business and/or tax incentives to participate
 - Cost of collection/inefficient local transport (not recreating same routes as others)
 - Competition between composting/AD providers for feed
 - Contamination due to confusion over what goes where
 - Local education of youth is not up to snuff

- Lack of rural solutions
- Confusion about what you can and can't do, legally, to share food
- Cultural divide – issue is seen as “green” or “liberal” not just economical and frugal use of resources, which can mean some people refuse to engage
- food past date has a bad image (and people don't know what the dates mean)
- Skewed incentives – (a candy manufacturer could get tax credit for donating candy but a farmer donating gleaned food does not)
- Legal risk if someone gets sick
- Lack of knowledge and data
- Reducing food waste is extra work
- Food waste solutions focus on food after it is identified as waste – should go to people first
- Global warming – wasting energy in transpo
- Income inequality – wasting food where there is food insecurity
- **Barriers:**
 - Disposal pricing at landfill is too low
 - Programs that used to exist to build infrastructure (like EAE) are no longer in place
 - Lack of co-collection options
 - Education and awareness of the issue – economy of scale hard to achieve in handling operations when opportunities to understand the system requires proximity to a facility and ability to see and understand how things work (safety concerns and distance from sites)
 - Seasonal workers mis-sort or move on when they are trained up (increases contamination)
 - Difficult to efficiently manage treatment when availability of food waste is event-driven or sporadic (spiky availability and have to deal with it in a timely manner)
 - Lack of infrastructure to make diversion economical (support needed?)
 - Compost market development so the product can be sold
 - Building soil is important but farmers mostly concentrate on N/P/K – so they invest in fertilizer, not compost. Application of compost to horticulture operations or lawns does not circularize the system
 - Exclusion of higher density housing developments from FW diversion programs
 - Cheaper to throw away (have to pay for two collections instead of one – often pay collection just by frequency, not mass)
 - Timing of food donation doesn't always = timing of demand for food so need processing and storage
 - (nutrition barriers – cheaper to pay for nutritious food than to pay medical bills, but different pots of money)
 - Lack of policy
 - Lack of clarity on policy and good practice
 - The “best” policies and approaches have not yet been identified

- Any legislative intervention would have to achieve bipartisan support, therefore must be a compromise approach

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