Roadmap to Reduce U.S. Food Waste

NERC Conference
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Presented by: Nate Clark, ReFED
What is the ReFED Roadmap?

ReFED is a nonprofit collaboration formed in 2015 of over 30 business, nonprofit, foundation, and government leaders committed to reducing food waste in the United States.

On March 9th, ReFED launched A Roadmap to Reduce U.S. Food Waste by 20 Percent, the first ever national economic study and action plan driven by a multi-stakeholder group committed to tackling food waste at scale.

AWARENESS
- Amount of food wasted
- Causes of that waste
- Impacts on the environment & economy

GAP

ACTION
- Reduction/ prevention
- Recovery
- Reuse/ Recycle
ReFED Steering Committee, Advisory Council, and Roadmap Team
THE PROBLEM OF FOOD WASTE
Every year, American consumers, businesses, and farms spend $218 billion (roughly 1.3% of GDP) on food that is never eaten.

This waste represents 18% of Cropland, 19% of Fertilizer, 21% of Freshwater, and 5% of GHG emissions.
ReFED Food Waste Baseline: Nearly 63M tons of waste per year

52.4 MILLION TONS
SENT TO LANDFILL

+ 10.1 MILLION TONS
ON-FARM LOSS

62.5 MILLION TONS
FOOD WASTED IN
THE U.S. EVERY YEAR

FOOD WASTED BY WEIGHT — 63 MILLION TONS ($218 billion)

FARMS
MANUFACTURERS
CONSUMER-FACING BUSINESSES
HOMES

10M 1M 25M 27M
16% 2% 40% 43%
$15B $2B $57B $144B
THE SOLUTIONS AND ECONOMIC ANALYSIS
Solution Analysis

Screening Criteria:
- Supporting Data
- Cost-Effectiveness
- Scaling Potential
- Feasibility

1. PREVENTION
2. RECOVERY
3. RECYCLING
Prevention

Solutions tend to be capital-light → Involve changing behavior through packaging changes, software, and marketing

Largest net environmental benefit by avoiding wasted resources in agriculture – twice the GHG impact per ton reduced of recycling

Major focus for innovation – 44% of food waste innovators in ReFED’s database prevention-focused

Major Barriers:
• Lack of social license
• Information gaps and organizational silos
• Misalignment of cost and benefits
Recovery

Three pillars to scale:

1. Enabling policy that financially incentivizes donations from businesses with standardized regulations (e.g. PATH Act in Dec. ’15)

2. Education for businesses on donor liability protections and safe food handling practices

3. Logistics and infrastructure to transport, process, and distribute excess food

Half of new recovery potential comes from surplus produce on farms + at packinghouses

- Engage this community to donate through strategies like Donation Matching Software and gleaning
  - Spoiler Alert (MA) and Healthy Acadia (ME)

Opportunity to partner with public health officials to fight food insecurity + divert wasted food

- Waste Not Orange County, CA
Nearly three-quarters of total *Roadmap* diversion potential
- 73% of recycling opportunity expected to come from Centralized Composting and Centralized Anaerobic Digestion (AD) facilities

**Northeast**, Northwest, and Midwest show the highest economic value per ton from recycling due to high disposal fees and high compost & energy prices
- Generate 53% (2.7M TPY) of composted material at net societal benefit of $30/ton

**Top levers to scale recycling:**
- Increase in landfill disposal costs
- Efficiencies in hauling and collection through siting near urban centers
- Denser routes
## Barriers to Recycling Organics

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Levers to Drive Action</th>
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<tbody>
<tr>
<td>Cost of Disposal</td>
<td>• Landfill taxes, surcharges</td>
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<tr>
<td>High Transportation and Logistics Cost (i.e. Hauling)</td>
<td>• Reduce route redundancy</td>
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<td>• Site facility closer to urban center than landfill disposal alternative</td>
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<td>Material Supply Assurance (Quantity)</td>
<td>• Enforcement of organics bans (letters or audits)</td>
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<td>• Long-term contracts between generators and processors</td>
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<tr>
<td>Packaging and Contamination (Quality)</td>
<td>• Innovation on compostable packaging and depackaging equipment</td>
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<td></td>
<td>• Communication between generators, haulers, processors</td>
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<td>Access to Financing</td>
<td>• If federal and state programs or impact investors could supply 10% of all project capital in form of grants, potential of 2M additional tons of diversion</td>
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<td>End-Market Development</td>
<td>• Municipal incentives for compost use in RFPs</td>
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<td>• Innovation competitions for compost products</td>
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<tr>
<td>Permitting and Siting</td>
<td>• Factor environmental and social impacts of waste diversion (i.e. cost of siting/building new landfills; benefits of local job creation) into cost-benefit analysis of food waste recycling</td>
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Marginal Food Waste Abatement Cost Curve

Prevention & Recovery Solutions are the most cost-effective

- Standardized Date Labeling
- Consumer Education Campaigns
- Packaging Adjustments
- Donation Matching Software
- Standardized Donation Regulation
- Donation Liability Education
- Value-Added Processing
- Donation Storage & Handling
- Spoilage Prevention Packaging
- Donation Transportation
- Waste Tracking & Analytics
- Trayless Dining
- Smaller Plates
- Cold Chain Management
- Manufacturing Line Optimization
- Donation Tax Incentives
- Improved Inventory Management
- Produce Specifications
- Secondary Resellers
- Home Composting
- Commercial Greywater
- WRRF with AD
- Centralized AD
- Centralized Composting

Recycling Solutions are the most scalable

- GREATEST ECONOMIC VALUE PER TON
  - Standardized Date Labeling
  - Consumer Education Campaigns
  - Packaging Adjustments

- MOST DIVERSION POTENTIAL
  - Centralized Composting
  - Centralized AD
  - WRRF with AD

Diversion Potential (M Tons)

* Other: Community Composting, Animal Feed, In-Vessel Composting
AN $18 BILLION INVESTMENT IN 27 SOLUTIONS TO REDUCE U.S. FOOD WASTE BY 20% WILL YIELD $100 BILLION IN SOCIETAL ECONOMIC VALUE OVER A DECADE

TOTAL INVESTMENT

$18B

NET SOCIETAL ECONOMIC VALUE

$100B

BENEFITS PER YEAR

1.8B Meals Recovered

1.6T Gallons Water Conserved

$2B Business Profit

$6B Consumer Savings

18M Tons Greenhouse Gas Emissions Reduced

15K Jobs Created*

*Jobs created is a total number, not annual new jobs
THE PATH AHEAD TO TAKE ACTION
Levers to Drive Action Across all Stakeholders

Four crosscutting actions needed to quickly cut 20% of waste and put the U.S. on track to achieve a broader 50% food waste reduction goal by 2030.

- **POLICY**: Commonsense tweaks leading to standardized national policy
- **FINANCING**: New catalytic capital and quantified non-financial impacts
- **INNOVATION**: 5 focus areas and innovation incubator networks
- **EDUCATION**: National Consumer and Employee campaigns

ReFED
Policy

Commonsense policy adjustments are needed to scale federal food donation tax incentives, standardize safe handling regulations, and boost recycling infrastructure by expanding state and local incentives and reducing permitting barriers.

- NERC states are no strangers to organics recycling/wasted food-related policy
  - Enacted: CT, RI, MA, VT
  - Proposed: NJ
  - Counties/Municipalities: Montgomery County, MD; New York, NY
- May 2016: The first-ever Congressional Hearing on food waste by the House Agricultural Committee
  - Unique bipartisan issue
- STRATEGY: Develop multi-stakeholder Food Policy Councils
  - Examples include: CT; RI; MA; NY; NJ
Big Opportunity: Innovation needed to scale solutions for depackaging, distributed recycling, and creating end-markets for compost
Financing

The Roadmap will require an $18 billion investment, less than a tenth of a penny of investment per pound of food waste reduced, which will yield an expected $100 billion in societal Economic Value over a decade.

*FINANCING NEEDS FOR 20% REDUCTION IN FOOD WASTE OVER A DECADE*

<table>
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<tr>
<th>CAPITAL SOURCE</th>
<th>PREVENTION</th>
<th>RECOVERY</th>
<th>RECYCLING</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>PRIVATE</td>
<td></td>
<td></td>
<td>1.5B</td>
<td>$6.5B</td>
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<tr>
<td>GOVERNMENT</td>
<td></td>
<td>$8.1B</td>
<td></td>
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<tr>
<td>PHILANTHROPIC</td>
<td>$2.9B</td>
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($)B

0 2 4 6 8 10
Education

Consumer Education
• One of the most cost effective of the 27 solutions
• Spurs consumer demand for smarter retail offerings, such as Standardized Date Labeling, Spoilage Prevention Packaging, Imperfect Produce, and Trayless Dining.
• Consumer attitudes *currently drive food waste* at farm/retail level
• “Save the Food” National Campaign

Employee Education
• Food service employees play a central role in food waste reduction (avoid unnecessary removal of products, ID donated, and properly source-separate scraps)

Facility Operator Education
• NIMBY: Low threshold for error
• States/municipalities should invest in “Compost Operator Training” courses
  - Focus on generator/processor relationships + community outreach
  - Examples: ME, MD, VT, USCC/NYS
How to get involved? Visit refed.com

Interactive Cost Curve ranks solutions by economic value, scalability, and environmental/social benefits

Download and share the Roadmap full report (96pg), Key insights (5pg), and Technical Appendix

Watch the ReFED video and sign-up for newsletter

Future Research Priorities

For additional questions, contact us at info@refed.com