

Roadmap to Reduce U.S. Food Waste

Presented by:
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ReFED

Rethink Food Waste
Through Economics & Data

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 2016, 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.

In 2017, ReFED is working to close the financing gap to drive capital and promote innovation in food waste reduction



AWARENESS

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



ACTION

- Reduction/ prevention
- Recovery
- Reuse/ Recycle

ReFED Steering Committee, Advisory Council, and Roadmap Team



Atticus Trust



The Overbrook Foundation

New York City



City of Phoenix



Ahearn Family Foundation



WORLD RESOURCES INSTITUTE



AGUA FUND



HENRY P. KENDALL FOUNDATION

THE CLANEIL FOUNDATION



THE ROCKEFELLER FOUNDATION



newventurefund

THE PROBLEM OF FOOD WASTE

A top-down view of various fresh vegetables scattered on a white surface. The vegetables include several orange carrots of different sizes and shapes, a few green and red apples, a red bell pepper, a yellow squash, a white onion, and several sweet potatoes. The lighting is bright, casting soft shadows.

Every year, American consumers, businesses and farms spend \$218 billion (roughly 1.3% of GDP) on food that is never eaten.

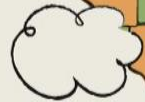
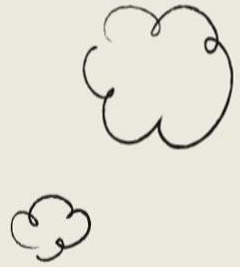
This waste represents 18% of Cropland, 19% of Fertilizer, 21% of Freshwater, and 5% of GHG emissions.



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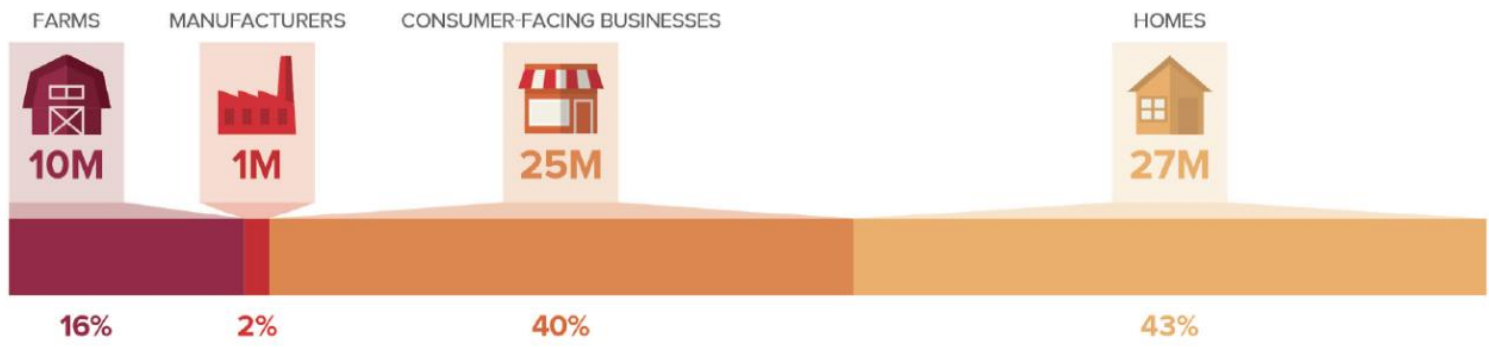
OF

CALIFORNIA



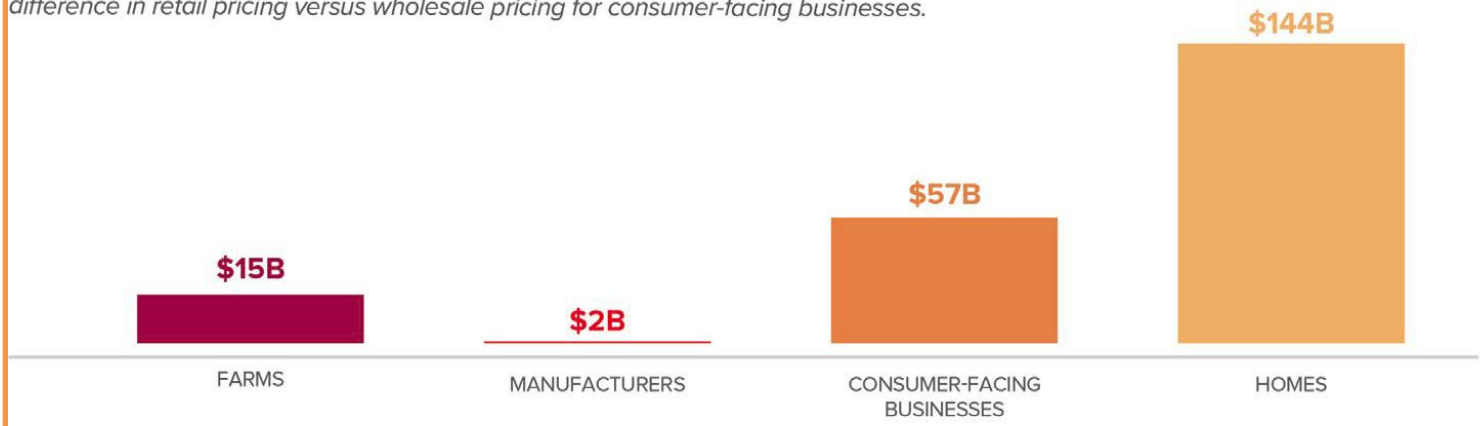
Nearly 85% of all food waste happens in homes or consumer-facing businesses (restaurants, retail grocers, institutional cafeterias)

FOOD WASTED BY WEIGHT — 63 MILLION TONS



VALUE OF WASTE — \$218 BILLION

The financial cost of food waste ends up costing consumers the most due to the difference in retail pricing versus wholesale pricing for consumer-facing businesses.



THE SOLUTIONS AND ECONOMIC ANALYSIS

27 Solutions Evaluated

PREVENTION SOLUTIONS Annual Economic Value: \$7.7B	
Packaging, Product & Portions	Standardized Date Labeling
	Packaging Adjustments
	Spoilage Prevention Packaging
	Produce Specifications (Imperfect Produce)
	Smaller Plates
	Trayless Dining
Operational & Supply Chain Efficiency	Waste Tracking & Analytics
	Cold Chain Management
	Improved Inventory Management
	Secondary Resellers
	Manufacturing Line Optimization
Consumer Education	Consumer Education Campaigns

RECOVERY SOLUTIONS Annual Economic Value: \$2.4B	
Donation Infrastructure	Donation Matching Software
	Donation Storage & Handling
	Donation Transportation
	Value-Added Processing
Donation Policy	Donation Liability Education
	Standardized Donation Regulation
	Donation Tax Incentives

RECYCLING SOLUTIONS Annual Economic Value: \$121M	
Energy & Digestate	Centralized Anaerobic Digestion (AD)
	Water Resource Recovery Facility (WRRF) with AD
On-Site Business Processing Solutions	In-Vessel Composting
	Commercial Greywater
Agricultural Products	Community Composting
	Centralized Composting
	Animal Feed
	Home Composting

Criteria for Selection

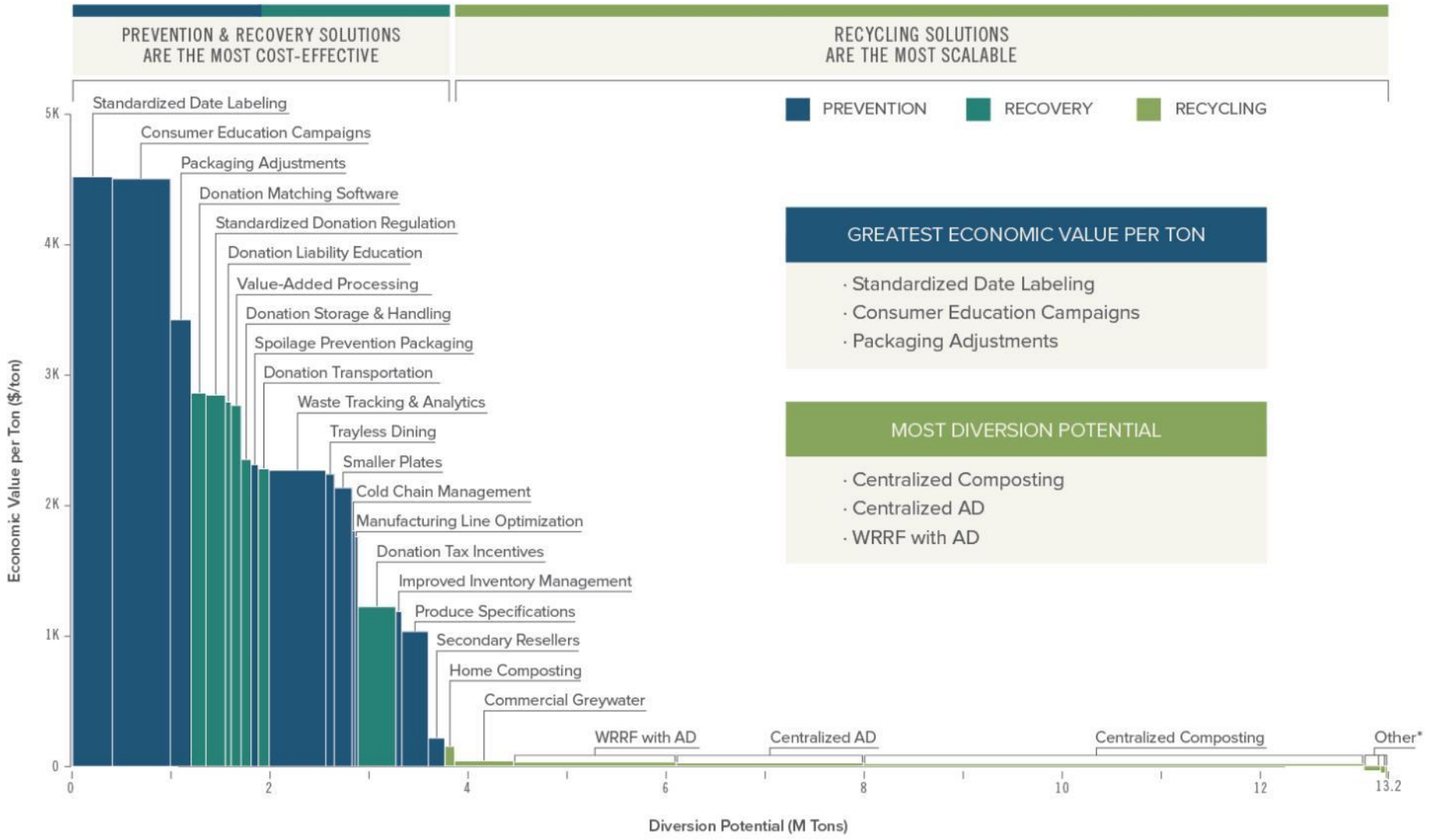
Available Data

Cost effective

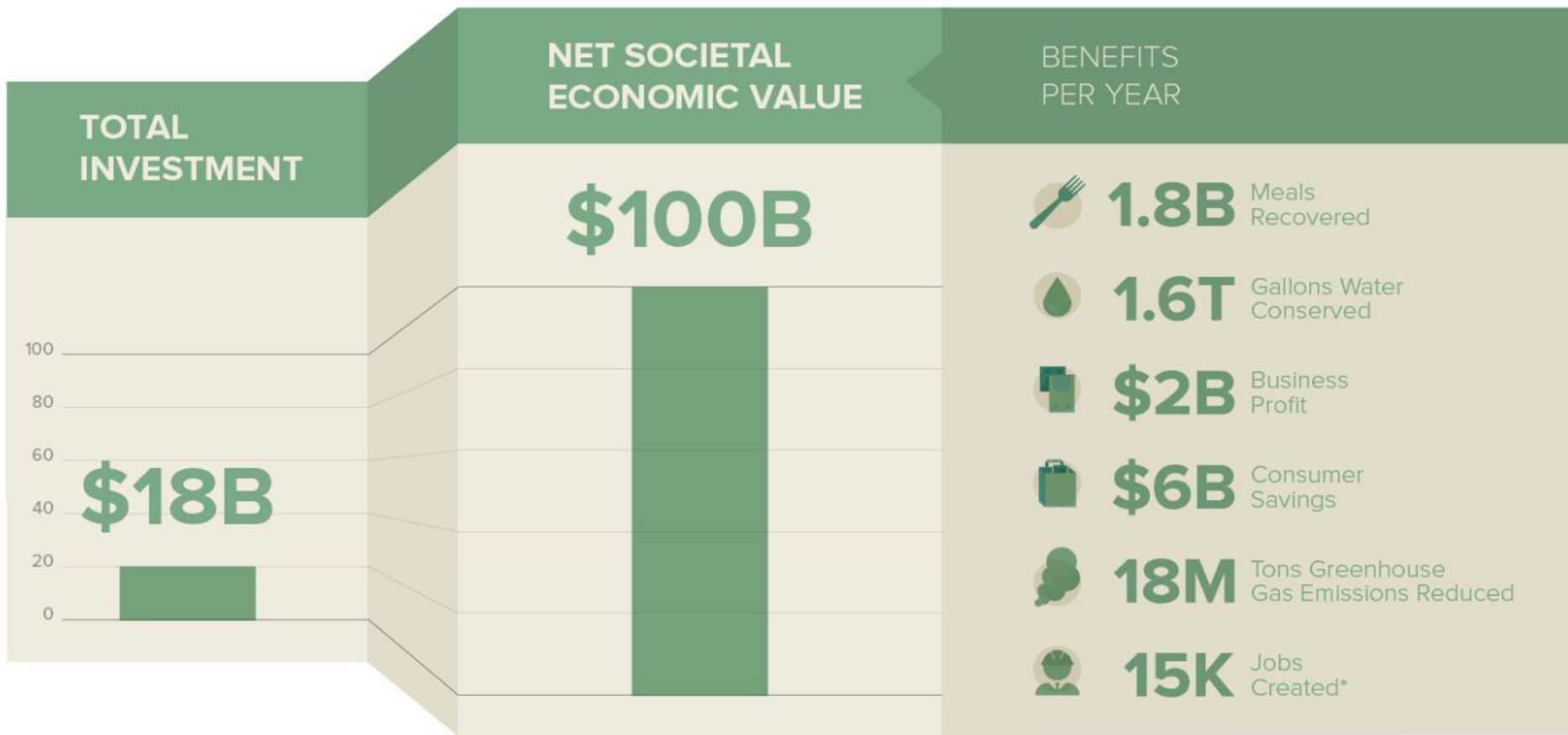
Feasible

Scalable

MARGINAL FOOD WASTE ABATEMENT COST CURVE



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



**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



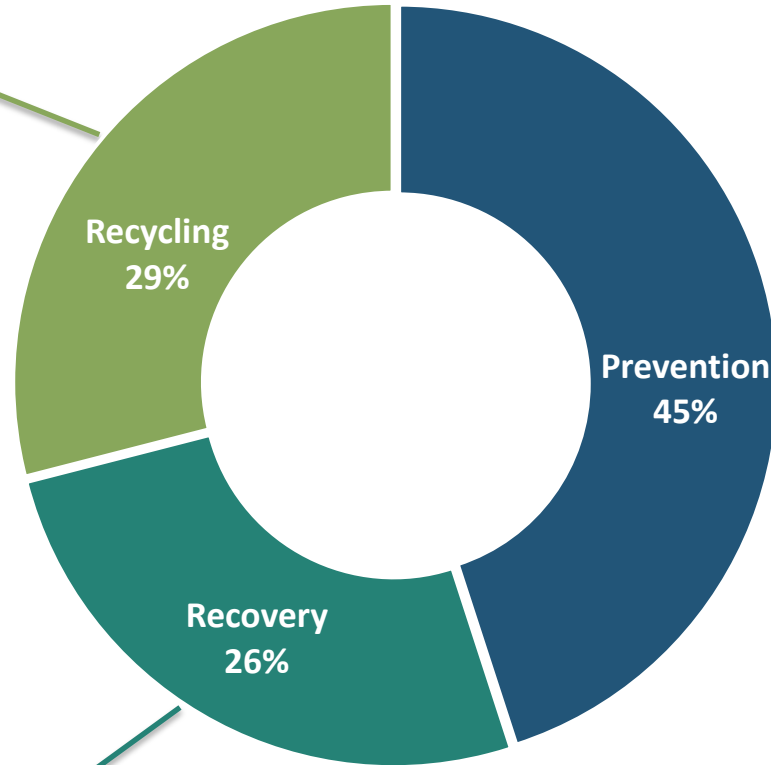
EDUCATION

National Consumer and Employee campaigns

ReFED Innovator Database



Tracks 300+ commercial and non-profit food waste innovators



TOP RECYCLING CATEGORIES: Agricultural Products



Energy & Digestate



Value-Added Recycling



TOP RECOVERY CATEGORIES: Donation Matching Platforms



Donation Transportation



Donation Storage & Handling



Non-profit Innovators (percent of total)

Prevention – 12%
Recovery – 86%
Recycling – 5%

TOP PREVENTION CATEGORIES: Upcycling Edible Food Scraps



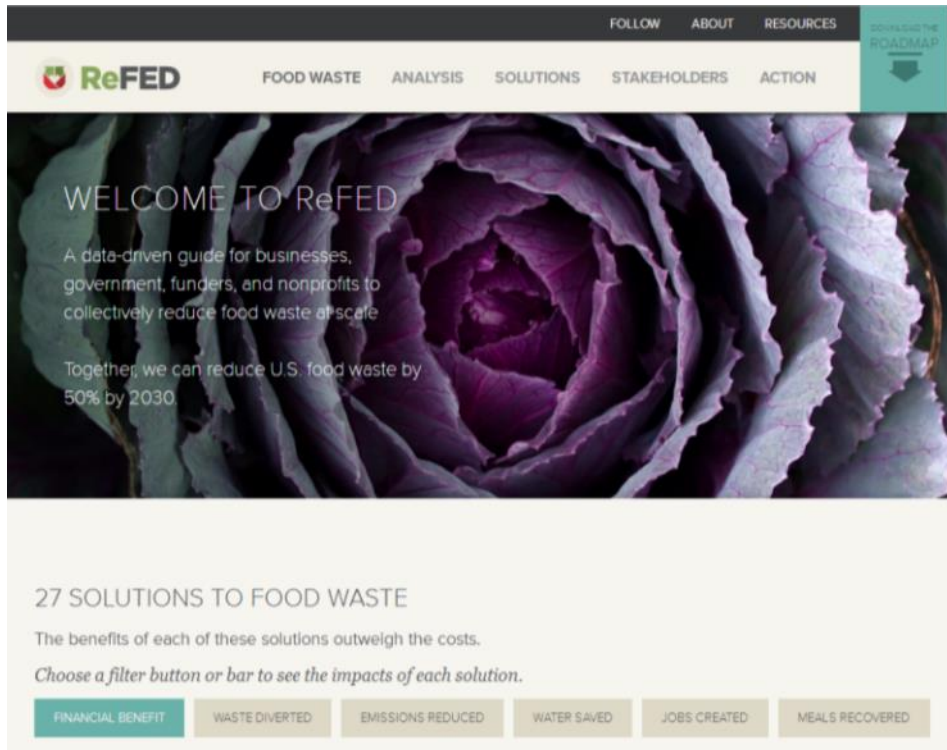
Operational & Supply Chain Efficiency



Secondary Online Marketplaces



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

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

APPENDIX

Prevention



Standardized Date Labeling



Waste Tracking & Analytics



Consumer Education Campaigns

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

RETAILERS: Opportunity to prevent waste upstream (e.g., purchasing/selling imperfect produce) and downstream (e.g., consumer education)

CITIES: Opportunity to support these efforts!

Major Barriers:

- Lack of social license
- Information gaps and organizational silos
- Misalignment of cost and benefits

Recovery



Donation Matching Software

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

- Opportunity to purchase 'gleaned' or 'rescued' produce
- Growth of Secondary Marketplaces for Surplus

COMING SOON: ReFED Web-based Policy Tool



Recycling



Centralized Composting



Centralized Anaerobic Digestion



Water Resource
Recovery Facility with
AD

Nearly three-quarters of total *Roadmap* diversion potential

Northeast, Northwest, and Midwest show the highest economic value per ton from recycling due to high disposal fees and high compost & energy prices

FACTORS TO CONSIDER FOR WASTE GENERATORS:

- Do you have a Recycling Champion?
- Have you performed a waste audit?
- What are local processing options?
- Is there adequate space to store collection materials?
- Do you have an education plan? Re-education plan?
- Do you have a plan to monitor and evaluate success?

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”: First widespread public service campaign promoting food waste awareness by NRDC and the Ad Council.
 - Target: Moms & Millennials

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)
- Quickest path to widespread employee training: Food Waste Certification as part of existing Food Safety Training

SAVETHEFOOD.COM

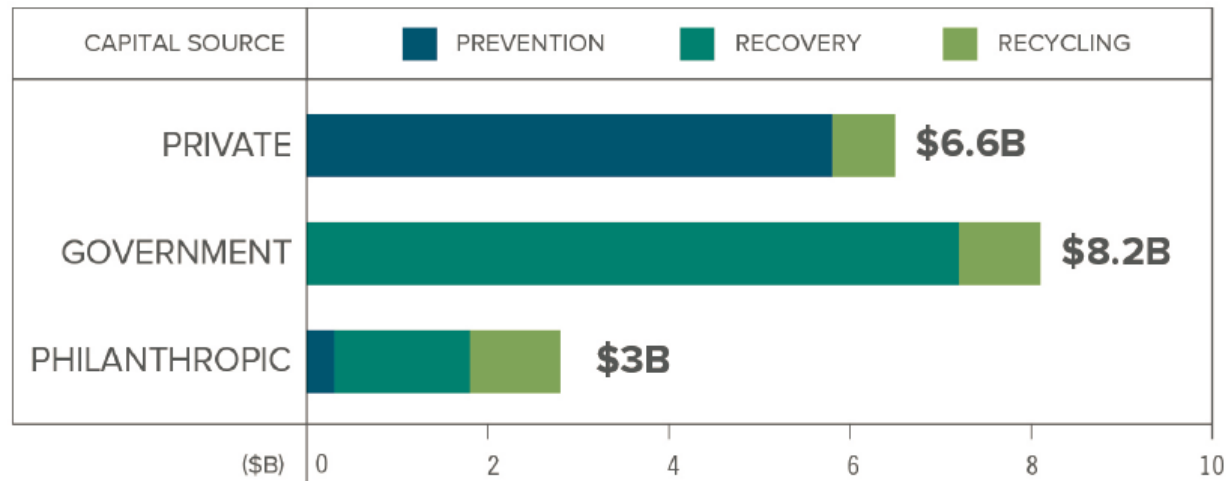


Financing

The Roadmap will require an \$18 billion investment, less than a tenth of a penny of investment per pound of food waste reduced.

\$3 billion is needed in grants and impact investments to fill gaps between private and government sources by supporting critical research and supporting the development of new innovations and solutions.

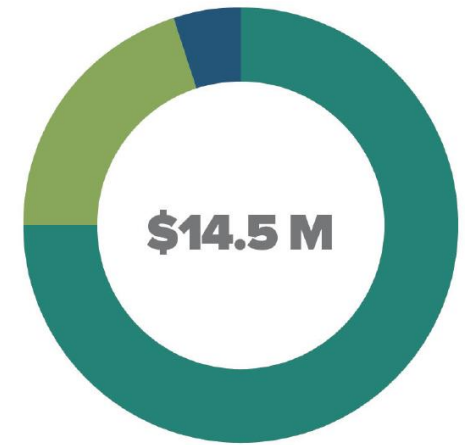
FINANCING NEEDS FOR 20% REDUCTION IN FOOD WASTE OVER A DECADE



Baseline Funding Assessment

- Between 2012-2014 an estimated \$14.5M (~\$5M/yr) was directed toward food waste related initiatives
- Average grant size was <\$30k
- <5% of funding for prevention solutions – even though prevention is the most cost-effective & best for the environment
- Estimated that in 2015 – 2016 grant funding has tripled to \$15 – 20M

\$14.5 MILLION TOWARD
FOOD WASTE-RELATED
INITIATIVES (2012-2014)



- 75% toward **Recovery**
- 20% toward **Recycling**
- <5% toward **Prevention**