Willing Hands

Climate Action Plan

Willing Hands is a 501(c)(3) nonprofit that recovers fresh food from farms, grocery stores, and wholesalers, and delivers it year-round, for free, to more than 80 social service organizations across the Upper Valley of Vermont and New Hampshire. Our work is made possible by a strong and wide network of volunteers, food donors, and recipient organizations. Together, we serve 30,000 individuals annually with 4 million servings while mitigating nearly 1 million pounds of carbon dioxide emissions from food that would have otherwise gone to waste.

Willing Hands

Reducing food waste to *end hunger.*

Dear Friends,

The three pillars of Willing Hands' mission are ending hunger, improving health, and reducing waste. This third pillar speaks to an inherent human desire to avoid spending our collective resources and energy without purpose. But in today's world, reducing waste is more than just a value. Food waste is one of the world's biggest contributors to climate change, and unless we do something, it will only grow.

Climate change often feels too big and too complicated for an individual to make a difference. It's true that the most important solutions are going to have to come from governments and industry, and be global in scope. Reducing food waste at Willing Hands' scale is often overlooked as a "community level" approach to climate action, which can leverage the collective effort of neighborhoods and towns to make an outsized difference.

We began creating a Climate Action Plan for several reasons. Every effective organization needs to measure its impact toward its mission. We wanted to go beyond the pounds of food we deliver to food-insecure community members and better understand the carbon impact of our work. Reducing waste is not just the food that is recovered but also how efficiently we recover it. It was essential to examine our direct emissions and identify ways to reduce cost and carbon footprint. Lastly, we believe strongly that our approach to climate action is a story which is not told often enough. Our hope is that by doing a careful analysis and putting in place an aggressive but actionable plan, we can inspire other communities and organizations to do the same.

This project would not have been possible without funding from the Cotyledon Fund, who saw the value in this project early on and enabled us to bring it to life. We also extend our deepest thanks to the committee who offered expert advice and thoughtful feedback throughout the process: Andy Friedland (Dartmouth College Environmental Sciences Department), Robin Tindall (Hypertherm Associates), Marta Ceroni (Academy for Systems Change), Linda Gray (Norwich Energy Committee), and Evelyn Hatem (Dartmouth College '24). We couldn't have done this without you.

Special appreciation is due to Andy Friedland and Brody McNutt for jumping on board early in the process and helping shape this project, especially the carbon calculator.

Lastly, we are incredibly grateful for Katie Ryan-O'Flaherty, Willing Hands' Mission Impact Coordinator, who shaped and shepherded this project to an exciting and successful end.

Sincerely,

Gabe Zoerheide,
Executive Director

Krista Karlson,
Outreach and Development Manager

Contents

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Executive Summary

Willing Hands is a leader in community-scale climate solutions. Food recovery is one of the most important things we can do to address the climate crisis; in fact, reducing food waste is 10 times more impactful than transitioning to electric vehicles.[1] That's because when food goes to waste it harms the climate in two ways: first by wasting all the energy that went into producing it, and second by producing methane–a greenhouse gas which is 25 times more powerful than carbon dioxide–as it rots in the landfill.

Willing Hands is one of the most successful food recovery organizations in the Northeast, which means we are significantly reducing carbon emissions and we are well-positioned to do more. Growing the climate impact of our work is not only good for the planet; it is good for our food-insecure neighbors. Expanding our food recovery efforts will enable us to deliver more nourishing food to the community that we serve. This dual benefit is especially important since the impacts of climate change, including food insecurity, are experienced more acutely by the most vulnerable populations that we serve.

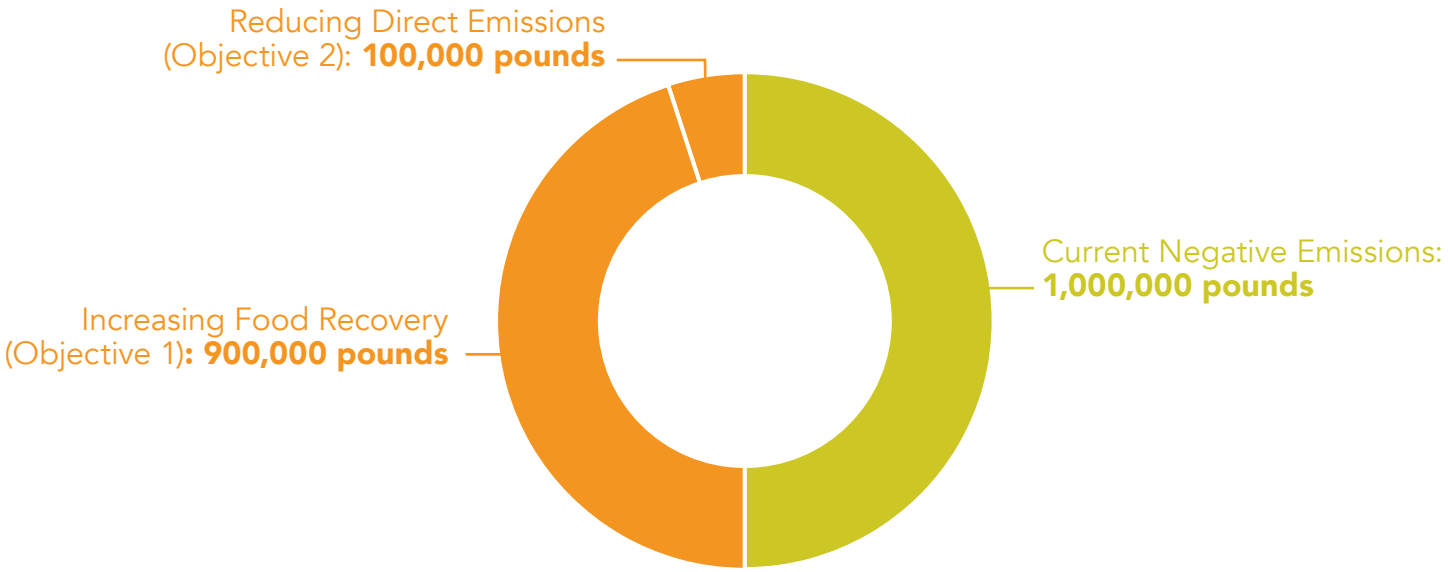
A group gleaning corn for WIlling Hands.

By reducing food waste, Willing Hands avoids 1 million pounds of carbon dioxide-equivalent emissions (CO_2e) annually. We plan to double this negative carbon footprint by 2026, for a total of negative 2 million pounds CO_2e. We will achieve this ambitious goal through two primary avenues: reducing direct emissions from our daily operations, and increasing avoided emissions through food recovery. Additionally, we aim to inspire other organizations, and the community more broadly, to take action on climate change through reducing food waste.

After careful research and analysis, we have identified **15 highly impactful "Phase 1" actions** that can be accomplished in the near term, and an additional 13 "Phase 2" actions that will be critical to achieving our goal in the long-term. Together, these actions will double our climate impact.

1. Project Drawdown. 2020. "Table of Solutions." Project Drawdown. February 5, 2020. https://drawdown.org/solutions/table-of-solutions.

Goal: Negative 2 million pounds CO_2e



Top Five Most Impactful Actions

1
Increase food recovery from new and existing sources
334,800 pounds

2
Improve efficiency of refrigeration system
56,000 pounds

3
Glean more from local farms
16,000 pounds

4
Install a heat pump
9,000 pounds

5
Make truck routes more efficient
6,500 pounds

Outcomes

The Willing Hands Climate Action Plan sets an ambitious goal of doubling the organization's negative carbon footprint for a total of negative 2 million pounds of CO_2e annually by 2026. There are three objectives to achieve this goal, ranked by impact:

OBJECTIVE 1: FOOD RECOVERY. Increase annual avoided emissions through increased food recovery and gleaning by 900,000 pounds of CO_2e.

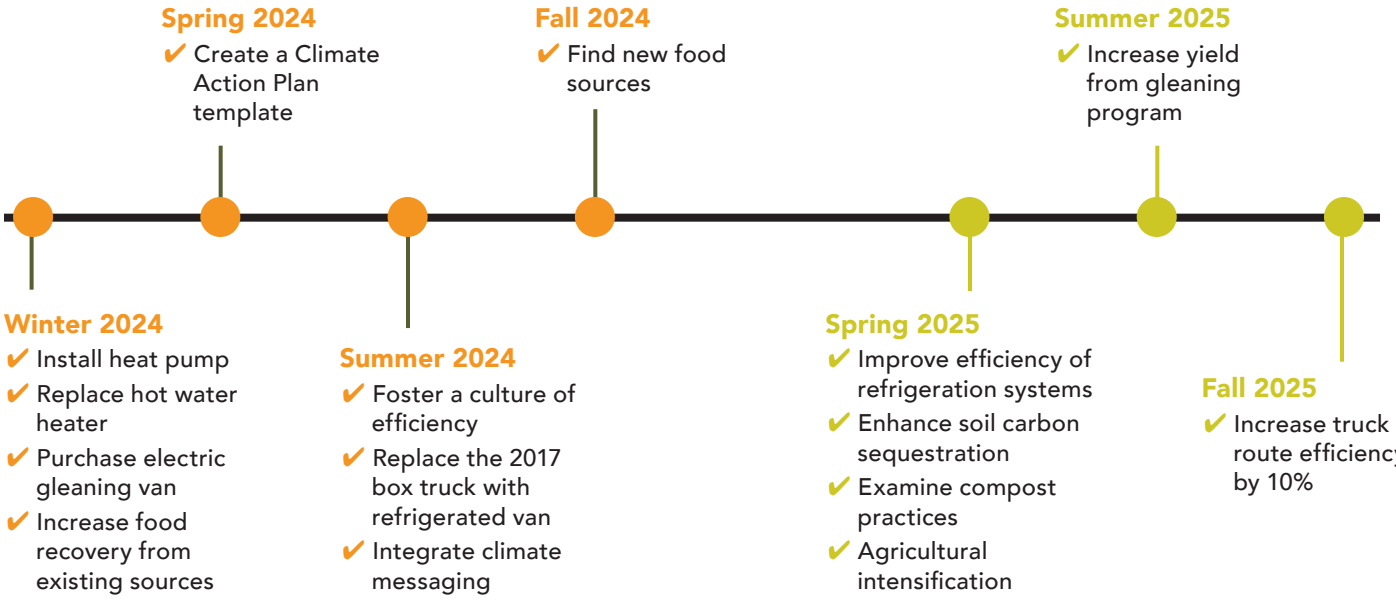
OBJECTIVE 2: DIRECT EMISSIONS. Reduce annual direct emissions by 100,000 pounds CO_2e.

OBJECTIVE 3: OUTREACH. Inspire other organizations, and the community more broadly, to take action on climate change through food recovery.

Within each objective, we have identified a series of Phase 1 and Phase 2 actions. Phase 1, which represents achievable near-term actions, will get us 43 percent of the way toward our goal of negative 2 million pounds CO_2e. Phase 2 actions, which require further research and development before launching, will provide the critical remaining 57 percent.

Timeline of Phase 1 Actions

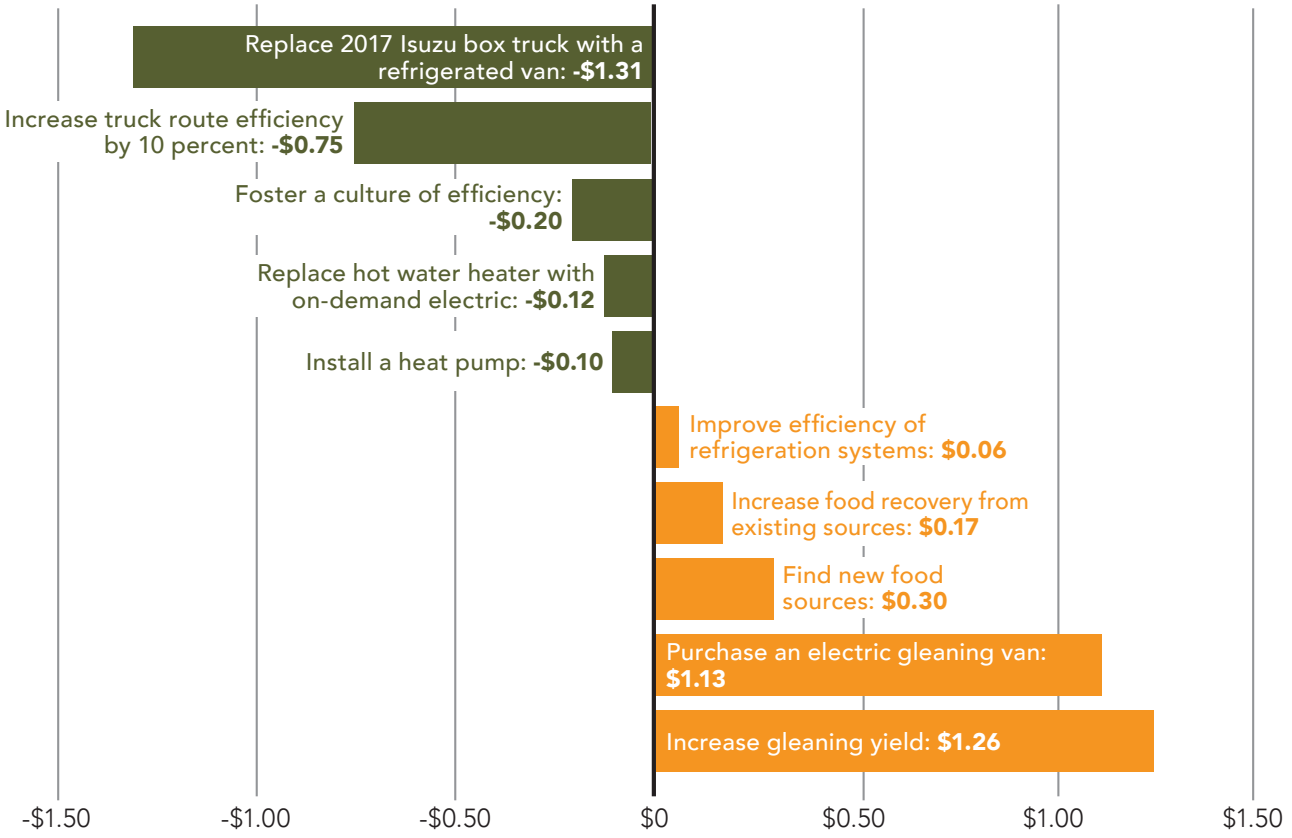
Phase 1 actions will begin in Winter 2024 and run through Fall 2025.



Carbon Efficiency

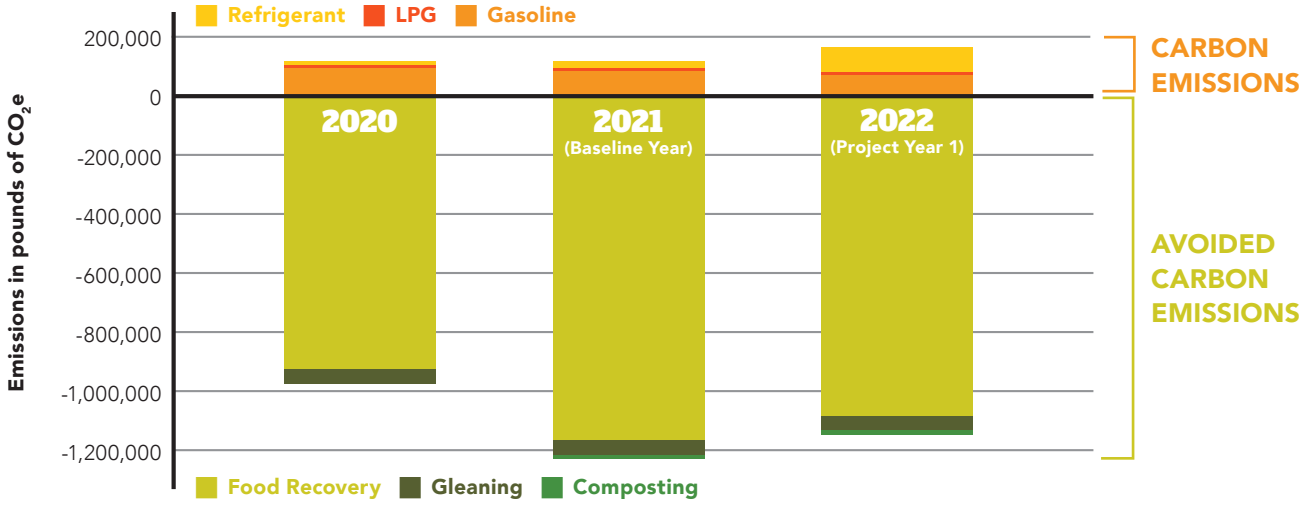
The following chart shows the relative capital investment in dollars required for Willing Hands to achieve a standard amount of CO_2e reduction. This is a planning tool to help prioritize which actions we should take first.

Dollar cost per pound CO_2e avoided



Willing Hands Carbon Footprint

Willing Hands has been tracking and analyzing our carbon footprint since 2020. The Climate Action Plan objectives were created based on our understanding of our current carbon footprint. (*See Process and Methodology section for more details about our carbon calculator.*)



Increasing Avoided Emissions via Food Recovery

Background

Reducing food waste is core to Willing Hands' mission as it enables us to provide free, nourishing food to food-insecure neighbors in the Upper Valley. Our capacity to source and deliver recovered food quickly and at scale presents us with a community-scale climate solution unique for an organization of our size.

Willing Hands recovers fresh food from two primary sources: farms and businesses.

- ✔ Farms often have surplus due to unpredictable weather and market changes. If that food is not harvested, it is considered "food loss" and it gets tilled into the soil as compost for next year. The Willing Hands gleaning program harvests that food so that it can be eaten instead.
- ✔ Businesses like grocery stores and wholesalers often have surplus due to inefficient ordering or other market factors. When this food is landfilled, it is considered "food waste." Willing Hands picks up large quantities of food from grocery stores and wholesalers so that it can be eaten instead.

The vast majority (87 percent) of the food Willing Hands sourced in our Baseline year was recovered, and the remaining 13 percent was grown in the Willing Hands Gardens or purchased.

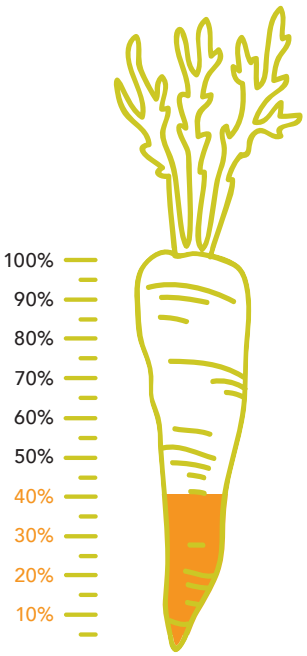
Food recovery results in **"avoided emissions"** because 1) the energy that went into producing the food is not wasted, and 2) the food is diverted from the landfill, where it would otherwise rot and produce methane–a greenhouse gas which is 25 times more powerful than CO_2.[2] In other words, for every pound of food that Willing Hands recovers, we prevent a scenario in which greenhouse gasses would enter the atmosphere as that food rotted. When the food is delivered to a food shelf, we reduce demand for additional food production because neither the food shelf nor the individual receiving the food has to purchase the item we've provided, thereby avoiding associated emissions.

Our carbon calculator estimates:

- ✔ 1 pound of recovered food avoids approximately 1.6 pounds CO_2e
- ✔ 1 pound of gleaned food avoids approximately 1 pound CO_2e
- ✔ 1 pound of composted food avoids approximately 0.75 pounds CO_2e

2. *Reducing Food Waste*. n.d. Project Drawdown. Accessed October 10, 2023. https://drawdown.org/solutions/reduced-food-waste

Phase 1 Actions



To reach our objective of increasing avoided emissions through food recovery by 900,000 pounds of CO_2e annually, Willing Hands will have to increase food recovery by 600,000 pounds of food. Half will come from current and new local sources (described in Phase 1 below), and half from a broader network of food providers through the development of a regional food recovery network (described in Phase 2 below). The Phase 1 actions will get us about 39 percent of the way toward the objective. In order to achieve the remaining 61 percent during Phase 2, we will need to increase our capacity as an organization by hiring a food recovery coordinator.

Increase food recovery from existing sources

ESTIMATED AVOIDED EMISSIONS: **214,800 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Maintain and improve relationships with existing food donor partners
  - Confirm the best point of contact for each donor and keep all contact information updated using a centralized CRM.
  - Make a schedule for regular check-ins with all food donors.
  - Identify ways to deepen these partnerships through co-promotion.
- ✔ Explore the benefits and drawbacks of signing formal agreements with our food donor partners
- ✔ Increase food recovery from our primary wholesale partner
  - Continue to build relationship with primary wholesale partner.
  - Research partner's food waste reduction goals.
  - Determine whether their partnership with Feeding America could affect their donations to Willing hands at our scale of operation.
  - Determine feasibility of additional weekly pickups.
- ✔ Increase food recovery from farm partners
  - Increase supply of food from local farms, especially farms with climate-friendly practices.
  - Solicit donations from non-gleaning farm partners on a more regular basis.
  - Look into bottling surplus milk from dairies.

ESTIMATED COST: **$36,400**

Increase yield from gleaning program

ESTIMATED AVOIDED EMISSIONS: **16,000 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Establish more independent volunteer-led gleaning opportunities
  - Increase large-scale gleaning
  - Establish "super gleaner" program for volunteers who can donate larger chunks of time when there is a bumper crop to harvest.
  - Increase co-gleans with VT Gleaning Collective members.
  - Look into increased bulk food sharing among NH Gleans and VT Gleaning Collective.

✔ Continue to invest in relationships with gleaning farm sites through consistent positive communication and co-promotion

ESTIMATED COST: **$8,400**

Find new food sources

In order to meet our objective, Willing Hands will need to develop partnerships with new food donors. These relationships will take time and resources to develop.

ESTIMATED AVOIDED EMISSIONS: **120,000 pounds CO_2e**

WORK PLAN ACTIONS:

✔ Locate new potential partners

- Map our existing farms to their respective wholesale partners to establish connections and possibly build relationships with their distributors.
- Map all major perishable food distribution providers in VT/NH and build a list of contacts for future food recovery. Potential sources may include:
  - *Food Banks*
  - *Retail*
  - *Wholesale*
  - *Dairy and meat processors*
  - *Large commercial farms*
  - *Bakeries*
- Identify the scale and quality of food that could come from each of these prospective sources.
- Determine contacts' relationships with VT Gleaning Collective and NH Gleans.

✔ Create a realistic, multi-year plan to expand Willing Hands food recovery activities

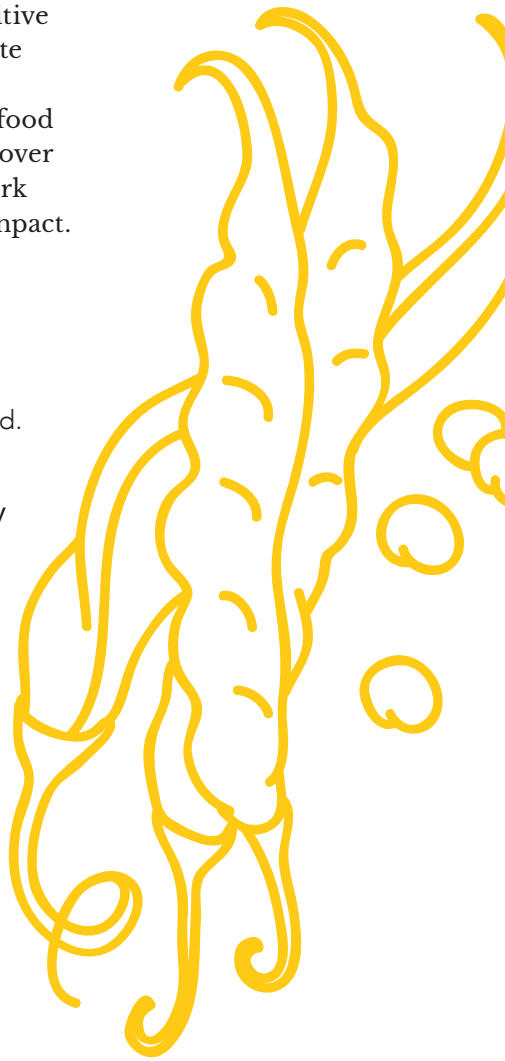
- Locate an organization or company that has done something similar in the past and learn what we can from their process and findings.
- Research and identify key points in the food system of VT and NH where food often goes to waste.
  - *E.g. Buyer rejection, packhouse losses, overproduction, trimmings and byproducts*
- Understand the corporate structure and politics of the food recovery landscape in NH, VT and around New England.
  - *Determine whether it would be more beneficial to create partnerships with administrative or operations teams.*
  - *Identify existing partnership models and briefly define how they work. Determine from this research which models would be most appropriate for Willing Hands to emulate. E.g.: Farm to plate; trade associations; farm to institution; working groups*

ESTIMATED COST: **$35,000**

Phase 2 Actions

Build a New England perishable food recovery network (PFRN)

Using our learnings from above, we will determine the feasibility of building a New England Perishable Food Recovery Network (PFRN) to connect large, time-sensitive food donations with charitable food organizations that have capacity to distribute them. Willing Hands has had several opportunities in the past to engage in food recovery at a larger scale, but has not had the network to do so, resulting in that food going to waste. There is currently insufficient regional capacity to effectively recover and redistribute such quantities of food in a timely manner. Building this network would reduce regional food insecurity, and yield a significant positive climate impact.



ESTIMATED AVOIDED EMISSIONS: **450,000 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Research the logistics of forming inter-state partnerships.
  - Map food recovery programs across VT/NH and the rest of New England.
- ✔ Examine similar programs in New England and nationwide (if they exist).
- ✔ Upon completion of the above feasibility studies, create a realistic plan to lay the groundwork for the PFRN.
- ✔ Identify operational changes that would have to be implemented to effectively manage this influx of food, including identifying a realistic upper limit for food intake.

ESTIMATED COST: **Unknown**

Reduce food waste at delivery sites where possible

Willing Hands does our best to separate edible and inedible food when we receive large deliveries. This reduces waste, increases food quality satisfaction at delivery sites, and allows us to ensure that the already-spoiled food is composted. Sometimes, however, for efficiency we have to eyeball a box of food and compost the whole thing when there is likely some salvageable food still inside.

In 2022, over 75 percent of our delivery sites said that they used at least 90 percent of the food we delivered. The majority of delivery sites dispose of any unused food through compost and animal feed, but a few unfortunately still send waste food to the landfill (less than 1 percent of all food we deliver ends up in the trash at the delivery site before it goes into someone's home). Willing Hands does not have the ability to track in-home food waste after the food leaves the food shelf.

While we are proud to produce so little waste, we recognize that there are potential opportunities to reduce waste even further. However, we anticipate that many of these strategies would be relatively high effort and low reward in terms of carbon savings.

ESTIMATED AVOIDED EMISSIONS: **42,000 pounds CO_2e avoided** if half of delivery site waste which is currently composted/landfilled was used by humans or animals instead; **8,000 pounds CO_2e avoided** if Willing Hands recovered 10 percent of the food that is currently composted before delivery

WORK PLAN ACTIONS:

- ✔ Increase volunteer-powered culling at the Willing Hands warehouse to recover food that would otherwise be composted in bulk.
- ✔ Research the benefits and drawbacks of establishing and encouraging alternative forms of food disposal.
  - Determine whether Willing Hands produces enough compost to warrant a partnership with an anaerobic digestion project.
  - Determine the carbon benefits of partnering with farms producing worm castings.
  - Actively connect food shelves with farmers or large-scale composting operations.
- ✔ Determine what measures Willing Hands could take to reduce in-home food waste of our products, like providing kitchen implements, examining efficiency of delivery systems etc. ****We are currently engaged in a funded project to determine the efficiency of our delivery systems at income-eligible housing sites. We will create and implement an improvement plan based on our findings.****

ESTIMATED COST: **$8,320**

Improve food handling

ESTIMATED AVOIDED EMISSIONS: **9,700 pounds CO_2e avoided** if Willing Hands were to lightly process and distribute 10 percent of the food that is currently composted on-site annually; **29,000 pounds CO_2e avoided** if we increased the amount of meat, dairy, bread and prepared foods we recover by 1 percent each

WORK PLAN ACTIONS:

- ✔ Make a plan to improve food handling and safety at all stages of Willing Hands deliveries.
- ✔ Research feasibility of implementing light processing at Willing Hands.
  - Processing and packaging (e.g. cutting up and freezing food, making sauces/jams) at Willing Hands will increase the longevity of food and possibly increase its utility in the homes of our recipients, thereby reducing in-home waste of Willing Hands food.
  - Determine the legal and practical ramifications of this programming.
  - Implement more official independent volunteers to engage in light processing of Willing Hands cull at home, like making zucchini bread, applesauce, tomato sauce, jams, etc.
  - Freezing food for longevity.
  - Developing a partnership with a community kitchen or an apprentice-type program.
- ✔ Solicit donations of meat, dairy products, and prepared foods to establish a more "carbon dense" food mix.

ESTIMATED COST: **$29,000**

Reducing Direct Emissions

Background

Willing Hands' direct emissions come from three primary sources: vehicle fuel, refrigerant, and propane. It is important to note that we have not included electricity in our emissions assessment because Willing Hands currently produces enough solar power to cover all of our electricity. Any electrical usage above our production level would still be considered carbon neutral since our electric utility, Green Mountain Power, is carbon neutral. As our electrical usage increases over time, we plan to scale up our solar production accordingly.

FUEL

The Phase 1 actions will reduce fuel usage by 20 percent.

Most years, vehicle fuel is the primary source of our direct emissions. The Willing Hands fleet currently consists of three refrigerated box trucks. We use large amounts of gasoline and diesel fuel to power vehicles on a near-daily basis to get produce to and from our warehouse and into the hands of food-insecure neighbors.

Since 2020, our annual emissions from fuel has decreased 27 percent. This can be attributed partially to the removal of our Saturday route. Transitioning the fleet to include smaller vehicles, electrifying vehicles when possible, and always using the smallest vehicle for any given task will help further reduce fuel usage.

REFRIGERANT

The Phase 1 actions will reduce refrigerant loss by 80 percent.

Refrigerants are an essential element of keeping our produce fresh. Willing Hands uses refrigerant in two walk-in refrigerators, a walk-in freezer, the office air conditioner, and in the trucks' refrigeration units. Our refrigerant use has been steadily increasing since 2020 when the organization dramatically expanded our infrastructure in order to meet the high level of food insecurity in the community.

Since then, we have had to replace the refrigerant in two of our trucks after the refrigeration units broke down. Small quantities of refrigerant result in disproportionately high emissions and if there is a leak, refrigerant exits the system very quickly and almost undetectably. Five leak events tripled our refrigerant usage between 2021 and 2022, partly because the contractor used a high GWP (global warming potential) refrigerant.

Refrigerant usage in the walk-in refrigerators and walk-in freezer remains steady. In 2023 we decommissioned the leaky air conditioning unit in the office. Reducing our refrigerant losses due to faulty truck refrigeration units will dramatically reduce our carbon footprint.

PROPANE

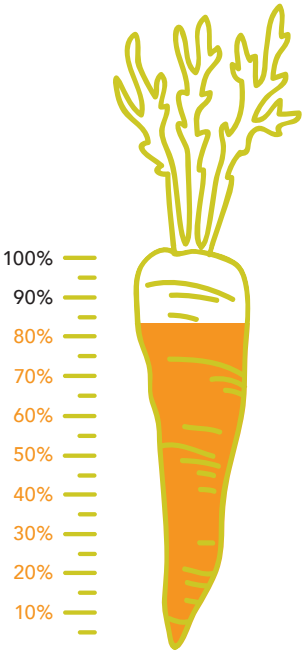
The Phase 1 actions will reduce propane usage by 90 percent.

We currently use about 1,000 gallons per year of Liquid Propane Gas (LPG) to heat the office air and water. We conducted two blower-door tests with different providers

since purchasing the property in 2019. Based on their recommendations, we added insulation where needed and sealed everything we can. There is still some leakage in a crawl space, but it is relatively minimal and would require extensive work to reach.

Our current heating system uses hot-water exchange baseboard heaters and is on a timed thermostat which drops to maintenance temperatures at night. Willing Hands' main hot water use comes from an office shower that is used once or twice a week.

In 2021 we installed an air exchanger that monitors and improves air quality. It works using forced air and is suitable for connection with a heat pump.



Phase 1 Actions

Implementing these actions would result in a 73 percent decrease in annual direct emissions and get us 83 percent of the way to our objective of decreasing annual direct emissions by 100,000 pounds CO_2e.

Improve efficiency of refrigeration systems

We are currently working with an Efficiency Vermont consultant who is helping identify the source of inefficiencies in our truck refrigeration units. We may reach out to Global Cold Chain Alliance for additional guidance if needed.

ESTIMATED EMISSIONS REDUCTION: **56,000 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Make a plan with Efficiency Vermont consultant to reduce leak events in trucks and coolers.
- ✔ Institute regular checks to monitor potential refrigerant leaks for trucks and coolers.

ESTIMATED COST: **$10,000**

Install a heat pump in the Willing Hands office

The office heating system currently relies on propane. After decommissioning the leaky air conditioning unit in 2023, we believe it is a good time to switch to a heat pump for heating and cooling. A contractor determined that we can install a ducted system using the existing ducts, which will significantly lower our financial barrier to entry. We have decided not to install a heat pump in the warehouse, since that heating system gets used so infrequently.

ESTIMATED EMISSIONS REDUCTIONS: **≥9,000 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Take necessary action to receive reimbursement for installing a heat pump from the state of Vermont.
- ✔ Raise funds necessary to cover the rest of the cost.
- ✔ Schedule heat pump installation.

ESTIMATED COST

- ✔ Total Upfront Cost = $9,092
- ✔ Total Annual Savings= $2,000

Increase truck route efficiency by 10 percent

Our trucks drive 40,000 miles annually to pick up and deliver food across the Upper Valley region. We believe there are likely opportunities to make the routes more efficient.

ESTIMATED EMISSIONS REDUCTION: **6,500 pounds CO_2e**

WORK PLAN ACTIONS:

- Map out the daily routes and measure total distance.
- Identify reasonable opportunities for improvement, i.e. whether some sites should be removed from the daily route and instead pick up from Willing Hands.
- Commit to consistently using the smallest Willing Hands vehicle available for non-regular route trips.

ESTIMATED COST: **$5,000**

Purchase an electric van for gleaning

The gleaning van is the most logical vehicle to electrify first because it travels fewer miles than the daily delivery trucks, and returns to the Willing Hands facility often, which would allow it to be repeatedly charged during the day. An electric gleaning van will function as a great test vehicle for electrifying the fleet.

ESTIMATED EMISSIONS REDUCTION: **≥5,000 pounds CO_2e**

WORK PLAN ACTIONS:

- ✔ Determine when would be an appropriate time to plan to purchase the van.
- ✔ Determine whether we will need a charging station for the van.
- ✔ Plan a capital campaign to raise money for the van.
- ✔ Conduct a capital campaign for the van and potential charging station.
- ✔ Purchase van.

ESTIMATED COST: **$75,000**

Ullas, a Willing Hands volunteer.

Replace hot water heater

Installing an on-demand electric tankless water heater in the Willing Hands office to bypass our current propane-based tank is a simple way to further reduce our propane use.

ESTIMATED EMISSIONS REDUCTION: **3,200 pounds CO_2e**

WORK PLAN ACTIONS:

- Research pricing and incentives for on-demand tankless water heaters.
- Request quote.
- Schedule installation appointment.

ESTIMATED UPFRONT COST: **$3,000**

- ✔ Estimated Annual Savings: $700

Replace the daily delivery truck with a van

We have determined that we could effectively move the same amount of food daily in a smaller, more fuel-efficient vehicle. This will have a co-benefit of reducing the barrier to entry for drivers, who currently need a DOT card to drive the large box truck.

ESTIMATED EMISSIONS REDUCTION: 3,100 pounds CO_2e

WORK PLAN ACTIONS:

- ✔ Install appropriate refrigeration unit in the existing Willing Hands van.
- ✔ Sell 2017 Isuzu box truck and recycle refrigerant.

ESTIMATED COST: $26,000

Foster a culture of efficiency

Willing Hands values efficiency, and there are several things we can do to embody this value in our work.

ESTIMATED EMISSIONS REDUCTION: Unknown

WORK PLAN ACTIONS:

- ✔ Encourage carpooling among volunteers to reduce the vehicle fuel use associated with gleaning and garden volunteer sessions. It will have an additional co-benefit of encouraging socialization among volunteers and creating closer personal connections to Willing Hands.
  - Develop a low-effort, sustainable plan to encourage volunteers to carpool to gleans and garden sessions.
  - Explore "carpool" functionality in our volunteer management software.
  - Include carpool encouragement and reminders in weekly emails and social media.
- ✔ Better utilize building heater timer outside of work hours.
  - Set timer to begin heating the building later in the morning, and stop earlier in the evening.
  - Set a lower maintenance temperature.
- ✔ Institutionalize data practices to better measure Willing Hands' vehicle and staff fuel use across programs. We currently track emissions from vehicle fuel based on annual delivery truck mileage. This is imperfect and depends on the average price of gas for the year, rather than the actual gallons used. We have adjusted our data collection system in 2023 to correct this.
  - Institute data collection practices to improve our understanding of fuel use.
    - *Continue tracking gallons of fuel use instead of extrapolating based on mileage.*
    - *Track our diesel use separately from gasoline use.*
    - Develop a system for tracking employee fuel use.

COST: Unknown

Phase 2 Actions

Hire VEIC (Vermont Energy Investment Corporation), or other similarly reputable source to write a vehicle replacement plan for Willing Hands

The plan would take into account useful vehicle life, the expense and availability of potential electric replacements, fuel economy, and the climate impact of the vehicles' materials. This would help us with long-term goal setting as we wait for the availability of electric vehicles to increase.

ESTIMATED EMISSIONS REDUCTION: **Unknown**

WORK PLAN ACTIONS:

- ✔ Determine which contractor would be the best fit to write this kind of plan.
- ✔ Clearly define goals and target timeline for the plan.
- ✔ Incorporate vehicle replacement plan into Climate Action Plan.

COST: **Unknown**

Investigate the potential of retrofitting vehicles and walk-in coolers with refrigeration systems that support lower-GWP refrigerants

Many of our current refrigerants have high GWPs. Aside from being extremely bad for the environment (Freon, also known as R-404A is 3,920 times more potent as a greenhouse gas than CO_2), it will become more expensive and difficult to source these refrigerants in coming years due to EPA efforts to phase out the supply. Furthermore, depending on upcoming legislation, we may no longer be allowed to purchase it at all.

ESTIMATED EMISSIONS REDUCTION: **17,000 pounds CO_2e**

COST: **Unknown**

Be prepared to improve insulation/sealing in the office where necessary

The current insulation and sealing in the office is sufficient, as confirmed by blower door tests. For a heat pump to work efficiently, we must maintain a tight building, and should therefore have a reasonable budget set aside to insulate and seal the building if any leaks are found.

ESTIMATED EMISSIONS REDUCTION: **Unknown**

COST: **Unknown**

Track independent volunteer driving miles

Approximately 600 Willing Hands volunteers attend 250 volunteer sessions annually throughout the Upper Valley region, and most of them drive to the session alone in a personal vehicle. This is Scope 3 emissions (*see Process and Methodology section*) but it could potentially be a useful metric to track over time. This is far off, as we are still working to refine our existing data systems, but understanding the carbon impact of these tasks would be the first step toward developing a more sophisticated carpool program.

ESTIMATED EMISSIONS REDUCTION: **Unknown**

WORK PLAN ACTIONS:

- ✔ Continue to record volunteer vehicle information for volunteers doing Scope 1 work for Willing Hands.
- ✔ Set up a system for volunteers to record their miles driven on behalf of Willing Hands (Scope 3).
- ✔ Extrapolate and aggregate CO_2e produced by volunteers on behalf of Willing Hands and use this knowledge to make decisions about programming.

COST: **Unknown**

Volunteers after gleaning at Cedar Circle Farm.

Outreach

Background

In addition to our goal of doubling our negative carbon footprint, we believe Willing Hands has an important role to play in inspiring others to take meaningful action.

As a well-established, well-respected, and well-loved community organization, we have the opportunity to leverage our community influence in support of climate action. We also have a compelling and easy-to-understand story to share with decision makers and other stakeholders beyond our community about how reducing food waste is an effective climate solution at the local scale. Finally, we have an opportunity to share our learnings and to serve as a model for other organizations looking to engage in community-scale food recovery.

This outreach is essential to the success of our Climate Action Plan because addressing climate change requires strong partnerships and broad support across communities.

Willing Hands' communications and outreach efforts have expanded over the past few years in parallel with the organization's growth and community impact. We currently have approximately 1 FTE (out of 10 total) allocated toward outreach and communications. Broadly speaking, Willing Hands has a large reach within the Upper Valley community and there is compelling evidence that our cumulative outreach efforts have been successful. Our volunteer programs are one of the key ways to spread our message, and we often hear that folks learn about us through word of mouth from friends or family members who have volunteered.

Phase 1 Actions

Note: It is not currently possible to estimate CO_2e or the associated cost for any of these actions.

Create a replicable Climate Action Plan for other organizations

We want to share our learnings and make it as easy as possible for other organizations to create their own Climate Action Plans. We have received initial interest from at least two current partners who might want to replicate our work in their organizations.

- ✔ Create a replicable Baseline Report.
- ✔ Create a Climate Action Plan template.
- ✔ Create a "toolkit" or cover page for the CAP that includes:
  - Overarching "why do this?"
  - Things to consider before you begin
  - Step by step process recommendations

Commit to integrating climate/environmental narratives into our work wherever possible.

- ✔ Identify key stakeholders in the VT and NH food systems and make a plan for developing relationships with them.
- ✔ Connect with local, state and national organizations to give a presentation about Willing Hands' work.
- ✔ Develop relationships with local media to help share our story.
- ✔ Incorporate climate messaging into our existing communications channels and give partners (food donors, recipient orgs) the tools to do this too.
- ✔ Identify opportunities to engage donors specifically around climate.
- ✔ Create a suite of audiovisual content that explains the impact of Willing Hands' work
  - Follow the food video
  - Commission infographics and diagrams from our graphic design consultant
  - Video about the connection between food waste and climate

Phase 2 Actions

Identify opportunities for education initiatives that meet Willing Hands' mission

Enhancing our education initiatives will attract groups that may not be familiar with our work already, and will further engage existing volunteers. Some potential programs include:

- ✔ Follow the food tour: Design an experience for different audiences (volunteers, school groups, donors) that involves witnessing the full cycle of food going from a local farm to Willing Hands to a food shelf to someone's basket.
- ✔ Teaching garden: there could be value in having a "test plot" that measures carbon sequestration over time and serves as a tool for teaching the community about climate-friendly food production.
- ✔ Other potential education themes to explore:
  - Reducing food waste is a community-scale climate solution
  - Food sovereignty and food security
  - Resilient landscapes
    - Root causes of food waste and food insecurity
    - Nutrition equity

Create a calendar of events that brings the community to Willing Hands

- ✔ Open house/tour: come see our climate work in action! Heat pumps, pallets of food, electric vehicles, etc.
- ✔ Volunteer appreciation event.
- ✔ Food donor appreciation event.
- ✔ Recipient site partner appreciation event.
- ✔ Small-group donor stewardship events.

Community event at the Willing Hands facility.

Community Hub

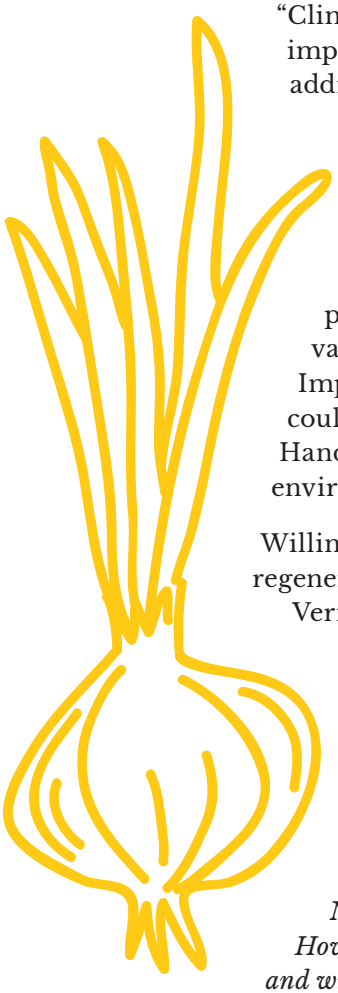
Transform the Willing Hands facility at 198 Church Street into a Community Hub where the community can gather to learn about food security, food waste and climate, and participate in volunteer opportunities that meet our mission. This might include:

- ✔ Planting more perennials like fruit trees and shrubs.
- ✔ A teaching garden, where visitors can learn about soil carbon sequestration.
- ✔ A pavilion, gazebo, or other gathering space.
- ✔ A trail between Willing Hands and the Marion Cross School.
- ✔ Renting out the upper barn for events that benefit the community.
- ✔ Creating a mural or other form of community art on the warehouse or barn.

Resilience

Background

The humanitarian and environmental effects of climate change in the Upper Valley are well documented, and intersect with Willing Hands' mission in key ways. The winter power outages and summer flooding of 2023 had an outsized impact on people living with food insecurity. In order to best serve these individuals, Willing Hands should be prepared to respond to such events with greater frequency.



"Climate resilience" is the ability to prepare for, adapt to, and recover from the impending impacts of climate change. Resilience can be a challenging topic to address, as it often functions as a catch-all term for climate strategies that aren't specifically related to emissions, covering everything from agriculture to community and architecture.

Willing Hands owns a 10-acre property which includes a garden, small orchard, wetland, compost facility, and more. Additionally, we grow food on four garden plots around the Upper Valley. As the steward of these properties, we have an opportunity to utilize them in ways that reflect our values: efficiency and lack of waste, generosity and caring for the community. Implementing reasonable climate-resilient strategies on these properties could provide modest climate benefits. The resilience strategies that Willing Hands has the most direct control over are soil health and sequestration, and environmentally responsible land use and management practices.

Willing Hands is currently practicing almost all of the conservation and regenerative agriculture strategies recommended by Project Drawdown and the Vermont Climate Action Plan. Our gardens are no-till, utilize cover cropping, use no herbicide or pesticide, and only organic fertilizers (such as fish emulsion) and compost are applied. All of these practices encourage mycelium growth, soil health, and carbon sequestration. This style of farming is extremely labor-intensive.

Phase 1 Actions

Note: It is not currently possible to estimate CO_2e or costs associated with these actions. However, these actions do perform many other environmental functions and co-benefits, and will likely yield increased public engagement in Willing Hands' work.

Enhance Soil Carbon Sequestration

Sequestration is the process of removing carbon dioxide from the atmosphere and storing it in soil through responsible agricultural techniques in Willing Hands' garden plots and compost. Some experts believe sequestration has a high potential to mitigate carbon emissions, but it is highly variable depending on the specific location.[3] Agricultural carbon sequestration is particularly important for climate action because these practices have numerous co-benefits, including improved soil productivity, water quality, and resistance to extreme weather events.[4]

3. Vermont Climate Council, Kristin Clouser, Julie Moore, Anson Tebbetts, Erica Bornemann, Joe Flynn, June Tierney, Sean Brown, and Lundsay Kurrle. 2021. *Initial Vermont Climate Action Plan*. https://climatechange.vermont.gov/readtheplan, 208.

4. Vermont Climate Council, *Initial Vermont Climate Action Plan*, 109.

Improving soil carbon sequestration at Willing Hands' gardens will begin with measuring what we are currently storing. Soil carbon storage has a limit and eventually reaches equilibrium in any given plot. Once soil reaches this point, it no longer stores carbon and can even become a source of emissions if disturbed. Therefore it is doubly important to know whether Willing Hands' garden plots are sequestering carbon because if they are not, they are likely a source of emissions. Whatever the findings, it is unlikely that Willing Hands will stop gardening, but we should take stock of our impact, positive or negative, and adjust accordingly.

Examining Compost Practices

Willing Hands should identify opportunities to make our compost practices more sustainable. We could do this by measuring the methane output of our composting operation, or recruiting a master composter to assess our current system, and, based on their recommendations, establish a written protocol for our compost management. We could also explore additional practices to enhance our compost such as vermiculture and adding biochar to the compost pile. These activities could likely be managed by a small group of enthusiastic garden volunteers.

A volunteer plants seedlings in the Willing Hands garden.

Agricultural Intensification

"Agricultural intensification" is an increase in agricultural output per unit of input. Willing Hands could explore tree intercropping, where trees are deliberately planted next to more traditional food crops. The trees can either intensify food production (like fruit or nut trees), or have another positive function for the soil/plant community. Either way, tree intercropping enhances carbon sequestration. This could also include the cultivation of perennial crops such as blueberries, raspberries, rhubarb, asparagus, and others. An important co-benefit would be the creation of a long-term, relatively low-maintenance and high yield food supply for our food shelf partners.

Phase 2 Actions

Plant a pollinator garden

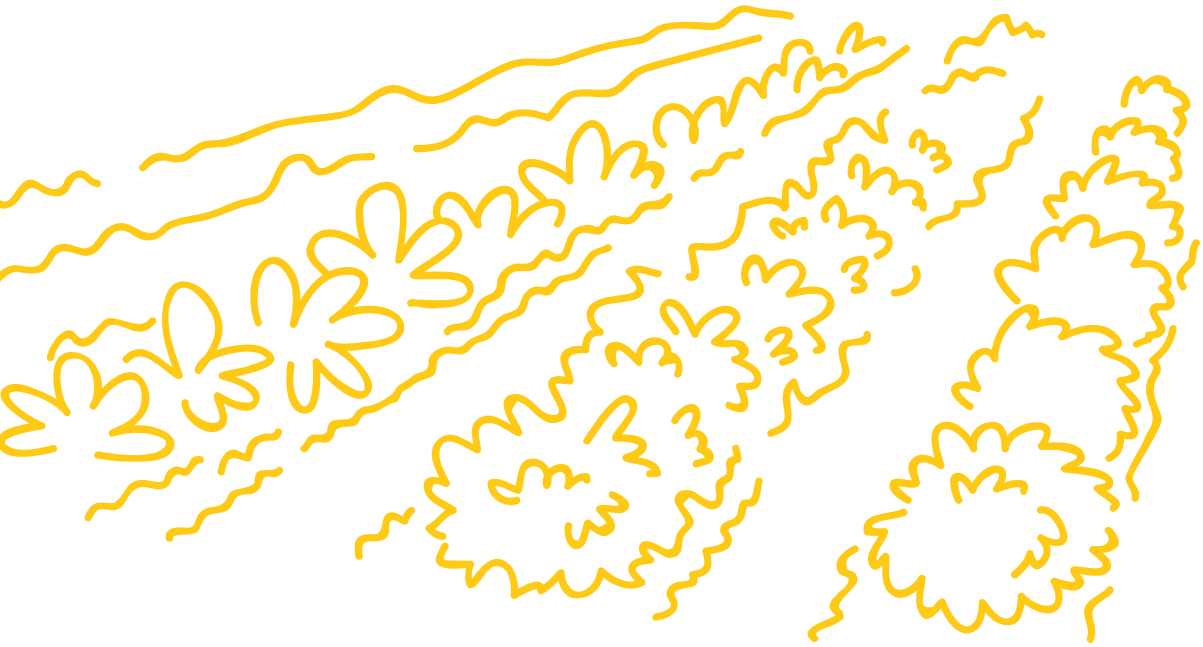
Adding a pollinator garden to one or more of our garden locations could enhance biodiversity, and would be attractive and popular with the public.

Monitoring water use

Reducing water use where possible is valuable for reducing waste and for buffering against the effects of drought, which could become more common in the future. Some easy actions include continuing our practice of using drip irrigation on a timer system, and exploring ways to reduce water use during bin-washing. Other more creative solutions include rainwater harvesting and recycling water from the Willing Hands building as greywater for irrigation.

Assessing wetland health

In addition to providing critical habitat to support biodiversity, wetlands provide buffers from heavy rainfall and flooding as well as retaining water in times of drought. These qualities enhance their potential for supporting human infrastructure as extreme weather events increase in frequency.[5] Willing Hands could test the current integrity of the wetland on our 10-acre parcel and see what (if anything) could be done to increase its productivity and make sure we aren't engaging in any harmful practices.



5. Vermont Climate Council, *Initial Vermont Climate Action Plan*, 168.

Process and Methodology

Process

This project was conceived in the fall of 2021 as a tool for measuring the climate impact of Willing Hands' mission-based work.

The first step was understanding our current position. To do that, former Willing Hands Board Member Andy Friedland and then-graduate student Brody McNutt of the Dartmouth College Environmental Studies Department did a careful analysis of the climate impact of Willing Hands' direct emissions and food recovery activities. There are many food waste impact calculators, but because Willing Hands recovers more produce and less meat, dairy, and prepared foods than the food mix assumed by conventional calculators, their outputs tend to overestimate the organization's avoided carbon emissions. To address this, Brody compared six calculators, and adapted their methodology to suit Willing Hands' unique food mix. The result is a powerful, custom calculator that establishes Willing Hands' baseline carbon footprint (2021 data) and allows us to input data annually to track progress toward our goals and identify areas of improvement year by year.

With funding from the Cotyledon Fund, in 2022 Willing Hands hired a project manager (Katie Ryan-O'Flaherty) to assist with the research, writing, and implementation of the Climate Action Plan. To establish a blueprint for Willing Hands' Climate Action Plan, Katie conducted a thorough literature review of climate action plans from a variety of local organizations and businesses, as well as VT and NH's state climate action plans. This process was key to determining the values of Willing Hands' plan (data and mission focused, with an emphasis on our unique position to mitigate emissions through food recovery), and the types of actions we could take to align with existing climate efforts.

In the fall of 2022, Willing Hands established a committee of community advisors to help guide content creation, establish priorities, and troubleshoot challenges associated with the Climate Action Plan. Willing Hands sought out a local committee of experts and stakeholders to provide multiple perspectives on the project, and who would be well positioned to advocate for Willing Hands' work in the community.

In early 2023, using her knowledge from other climate action plans and a deep understanding of Willing Hands' operations and corresponding emissions, Katie drafted climate actions for each impact area: direct emissions, food recovery, outreach, and resilience. The committee met six times over the course of eight months to discuss the content, presentation, and practical considerations for each section.

Next, we developed and refined a ranking tool to help determine which actions should be taken in Phase 1 and Phase 2. In 2024, will draft an implementation plan and continue making progress on the Phase 1 actions, many of which are already underway.

Methodology

BASELINE DATA

When writing a climate action plan, a baseline refers to the organization's starting point for annual emissions before embarking on their climate journey. In other words, a year that best represents the organization's day to day activities before taking measures to reduce emissions or be more climate positive. For Willing Hands, the year that best represents our baseline is 2021. While we began tracking our climate data in 2020, Willing Hands' activities scaled up dramatically in 2021 and became more representative of our ongoing operations.

SCOPE

"Scope" is a framework for thinking about the different levels of an organization's climate impact.

Generally speaking, Scope 1 refers to CO_2e produced "from sources that are owned or controlled by the company."[6] Scope 2 pertains only to CO_2e associated with electricity purchased by the company. Every other source of indirect CO_2e is included in Scope 3.[7] Initially, Willing Hands tried to apply these definitions to our emissions, but it quickly became clear that the groupings didn't make sense for Willing Hands' scale and circumstances. Instead of abandoning the concept, we chose to develop and define our own categories of scope:

- ✔ **Scope 1:** All emissions produced by Willing Hands' vehicles and within Willing Hands' properties. This includes not only vehicle fuel but refrigerant and propane.
- ✔ **Scope 2:** Emissions produced on behalf of Willing Hands by staff in their personal vehicles and by volunteers performing tasks that would normally be completed by staff.
- ✔ **Scope 3:** Emissions produced by volunteers on their way to and from Willing Hands events and activities.

To address Willing Hands' climate impact at a manageable scale, we have measured and prioritized Scope 1 emissions in this Climate Action Plan. There are some Phase 2 actions that fall into Scope 2 and 3.

6. World Resources Institute, and World Business Council for Sustainable Development. *A Corporate Accounting and Reporting Standard the Greenhouse Gas Protocol*. 2015, 25.

7. World Resources Institute, and World Business Council for Sustainable Development. *A Corporate Accounting and Reporting Standard the Greenhouse Gas Protocol*. 2015, 25.

Appendix

Phase 1 Action Table

Phase 1 Action	Objective	Estimated CO_2e reduction (pounds)	Upfront Cost ($)	Annual Cost ($)	Timeline	Dollar cost per pound CO_2e avoided
Install a heat pump	Direct Emissions	9,000	$10,592	-$2,000	Winter 2024	-$0.10
Replace hot water heater with on-demand electric	Direct Emissions	3,200	$3,250	-$700	Winter 2024	-$0.12
Foster a culture of efficiency	Direct Emissions	1,000	$3,000	-$500	Summer 2024	-$0.20
Increase truck route efficiency by 10 percent	Direct Emissions	6,500	$13,900	-$6,250	Fall 2025	-$0.75
Replace the 2017 Isuzu box truck with a refrigerated van	Direct Emissions	3,100	$26,000	-$6,648	Summer 2024	-$1.31
Increase gleaning yield	Food Recovery	16,000	$1,950	$20,000	Summer 2025	$1.26
Purchase an electric gleaning van	Direct Emissions	5,000	$75,000	-$1,875	Winter 2024	$1.13
Find new food sources	Food Recovery	120,000	$1,950	$36,400	Fall 2024	$0.30
Increase food recovery from existing sources	Food Recovery	214,800	$1,950	$36,400	Winter 2024	$0.17
Improve efficiency of refrigeration systems	Direct Emissions	56,000	$10,000	$2,250	Spring 2025	$0.06
Enhance soil carbon sequestration	Outreach + Resilience	n/a	$70	$175	Spring 2025	n/a
Examine compost practices	Outreach + Resilience	n/a	$3,500	$5,250	Spring 2025	n/a
Agricultural intensification	Outreach + Resilience	n/a	$10,500	$36,400	Spring 2025	n/a
Create a Climate Action Plan template for other organizations to replicate our work	Outreach + Resilience	n/a	$7,100	n/a	Spring 2024	n/a
Integrate climate messaging into our work (and give partners the tools to do the same)	Outreach + Resilience	n/a	$1,400	$3,640	Summer 2024	n/a

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