IMPLEMENTATION GRANTS APPLICATION TECHNICAL APPENDIX

This technical appendix explains the methodology and assumptions used for developing the estimated greenhouse gas (GHG) emissions and co-pollutant emissions, as applicable, reduced for each measure included in the proposal.

Measure 1: Pre-Weatherization and Weatherization
NHDES partnered with Rewiring America to estimate the potential residential building emission reductions when an existing single-family home in New Hampshire with inadequate insulation is upgraded with a basic insulation package. Rewiring America developed a model named "The Cube" that calculates GHG and co-pollutant emissions reductions, among other outputs, resulting from weatherization upgrades at an individual household, city, or county level. The Cube uses state-energy data from the U.S. EIA and statistical sampling of New Hampshire's housing stock from NREL's ResStock model.

The Cube model assumed the following:

- All values are per-household averages for a standard, single-family home in New Hampshire.
- Attic floor insulation up to International Energy Conservation Code (IECC)-Residential 2021 levels depending on climate zone, which is R-60 for New Hampshire's 5A and 6A climate zones.
- General air sealing to achieve a 30% reduction in Air Changes per Hour @ 50 Pascals (ACH50).
- Duct sealing to 10% leakage.
- R-13 drill-and-fill insulation (if the home currently has wood stud walls with no insulation).
- Estimates of emission reductions use emission factors from NREL's Cambium Tool based on a 95% decarbonized electricity generation sector by 2050, and then are levelized over 15 years with a 3% discount rate.

Table A-1 shows results of The Cube's per-household annual average emission reduction estimates at the county level for $MTCO_2e$, NH_3 kg; SO_2 kg, NOx kg, VOC kg, and $PM_{2.5}$ kg. Although the emission reduction estimates of Table A-1 rely on broad approximations and assumptions, they are sufficient for evaluating emission reductions associated with upgrading homes that would benefit from a basic insulation package at scale.

Table A-1. Per-Household Average Annual Emission Reduction Estimates after Upgrading a Standard Single-Family Home in New Hampshire that has Inadequate Insulation with a Basic Insulation Package.

County	Baseline Fuel	$MTCO_2e$	NH_3 (kg)	SO2 (kg)	NOx (kg)	VOC (kg)	$PM_{2.5}$ (kg)
Belknap	Fuel Oil	1.7	0.06	0.01	1.12	0.04	0.13
	Natural Gas	3.0	0.39	0.01	1.82	0.11	0.01
	Propane	6.0	0.02	0.02	4.96	0.19	0.02
Carroll	Fuel Oil	3.1	0.11	0.03	2.05	0.08	0.24
	Natural Gas	0.2	0.02	0.00	0.11	0.01	0.00
	Propane	3.0	0.01	0.01	2.48	0.10	0.01
Cheshire	Fuel Oil	4.2	0.16	0.04	2.81	0.11	0.33
	Propane	1.8	0.01	0.01	1.50	0.06	0.00
Coos	Fuel Oil	5.0	0.19	0.04	3.34	0.13	0.40
	Propane	1.2	0.00	0.00	0.95	0.04	0.00
Grafton	Fuel Oil	3.6	0.13	0.03	2.38	0.09	0.28

County	Baseline Fuel	$MTCO_2e$	NH_3 (kg)	SO2 (kg)	NOx (kg)	VOC (kg)	$PM_{2.5}$ (kg)
	Natural Gas	1.1	0.14	0.00	0.68	0.04	0.00
	Propane	2.8	0.01	0.01	2.32	0.09	0.01
Hillsborough	Fuel Oil	3.5	0.13	0.03	2.32	0.09	0.27
	Natural Gas	1.9	0.25	0.01	1.20	0.07	0.01
	Propane	3.2	0.01	0.01	2.60	0.10	0.01
Merrimack	Fuel Oil	3.5	0.13	0.03	2.32	0.09	0.27
	Natural Gas	2.8	0.37	0.01	1.76	0.10	0.01
	Propane	1.9	0.01	0.01	1.57	0.06	0.00
Rockingham	Fuel Oil	2.7	0.10	0.02	1.77	0.07	0.21
	Natural Gas	3.1	0.41	0.01	1.93	0.11	0.01
	Propane	1.0	0.00	0.00	0.86	0.03	0.00
Strafford	Fuel Oil	3.3	0.12	0.03	2.17	0.09	0.26
	Natural Gas	0.5	0.06	0.00	0.28	0.02	0.00
	Propane	5.6	0.02	0.02	4.58	0.18	0.01
Sullivan	Fuel Oil	5.1	0.19	0.04	3.40	0.13	0.40
	Propane	2.0	0.01	0.01	1.68	0.07	0.01

To broadly quantify GHG and co-pollutant emission reductions from a weatherization measure in New Hampshire, NHDES used the data in Table A-1 to estimate reductions based on the number of households that would utilize a basic insulation package each year starting in 2025. NHDES used the following methodology in its calculations:

- Applied the percentage of population for each county within in the state to the percentages of the number of households in the state (i.e., approximately 557,220 households distributed by county population).
- Assumed that New Hampshire could weatherize 500 homes (i.e., 100 homes per year for 5 years from 2025 to 2029).
- Assumed that number of weatherization upgrades at homes would be implemented on an equivalent percentage basis per year across all New Hampshire counties and fuel types.

Based on modeling results and the aforementioned assumptions and methodology, Table A-2 provides a summary of estimated annual average GHG and co-pollutant emission reductions if New Hampshire pre-weatherizes and weatherizes 100 homes.

Table* A-2. *Average Annual GHG and Co-Pollutant Emission Reductions if 100 Homes that Need Weatherization are Pre-Weatherized and Upgraded with a Basic Insulation Package.

	$MTCO_2e$	NH_3 (kg)	SO2 (kg)	NOx (kg)	VOC (kg)	$PM_{2.5}$ (kg)
Emission Reductions	286.4	13.9	1.8	197.7	8.5	13.5

During the five-year period of performance of the CPRG grant, NHDES expects that it could incentivize total of 500 low-income households in LIDACs and other areas to pre-weatherize and weatherize their homes. Assuming 100 homes are weatherized per year, Table A-3 summarizes cumulative GHG and co-pollutant emissions reductions from 2025 to 2030 and 2050 if 500 homes that need weatherization are pre-weatherized and upgraded with a basic insulation package (i.e., 100 per year from 2025 to 2029).

Table A-3. Cumulative GHG and Co-Pollutant Emissions Reductions from 2025 to 2030 and 2050 if 500 Homes that Need Weatherization are Pre-Weatherized and Upgraded with a Basic Insulation Package (100 per year from 2025 to 2029).

	$MTCO_2e$	NH_3 (kg)	SO2 (kg)	NOx (kg)	VOC (kg)	$PM_{2.5}$ (kg)
Cumulative Emission Reductions Between 2025 – 2030	5,729	277	37	3,953	170	269
Cumulative Emission Reductions Between 2025 – 2050	34,372	1,663	222	23,720	1,018	1,616

NHDES assumed annual emissions reductions from the measure would begin in 2025 and additional reductions would be achieved each year at the same magnitude in each successive year until 2029. Therefore, as the measure is implemented between 2025 to 2029, the annual reductions increase as the measure is implement each year. After 2029 (i.e., after the completion of measure implementation), the annual emissions reductions would not increase but the total annual emission reductions achieved by 2029 would persist and are accounted for in calculations for cumulative reductions between 2025 to 2030 and between 2025 to 2050.

Measure 2: Deploy EVSE for EVs and PHEVs
To estimate GHG and co-pollutant reductions from installing publicly accessible charging stations for EVs and PHEVs, NHDES used the Charging and Fueling Infrastructure Emissions Calculator (CFI) of the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) tool that was developed by Argonne National Laboratory for U.S. DOE's Clean Cities Coalition Network. Co-pollutant estimates include CO, NOx, PM_{10}, $PM_{2.5}$, VOCs, and SOx. The CFI calculator incorporates factors, such EV charging utilization, vehicle mix, upstream emissions, and the electric generation grid fuel mix specific to certain regions of the country.

To broadly quantify annual GHG and co-pollutant emission reductions from installing EVSE in New Hampshire, NHDES used the following in the CFI:

- Assumed that total incentive costs for a Level 2 charger would be approximately $9,500 per Level 2 charging station and $160,000 for a 150-kw direct current fast charger (DCFC) station. This assumption is based on cost data from the Alternative Fuels Data Center Charging Infrastructure and Procurement webpage, which sources its data from the U.S. Department of Energy's National Laboratories, Levelized Cost of Charging EVs in the United States article.
- Assumed $9.5 million to provide incentives to install EVSE at a ~3:1 ratio for Level 2 chargers to DCFC.
- Based on the aforementioned assumptions, assumed that 151 Level 2 chargers and 50 DCFC chargers could be installed with approximately $9.5 million, and assumed that the number of installations would be equal each year during the 5-year period of performance of the grant.
- CFI's defaults for high predicted weekly utilization of chargers (instead of low or medium utilization). For Level 2 charging, the defaults of the venues were: 6.5 weekly sessions per week per charger (s/w/c) for parking lots; 7.0 s/w/c for retail and leisure; and 9.0 s/w/c for education. For DCFC, the defaults of the venues were: 26 s/w/c for parking lots, retail and leisure, and education.

- CFI's defaults for charge times. For Level 2 chargers, the defaults for parking lots and education were 150 minutes, and the default for retail and leisure was 90 minutes. For DCFC, the default for all venues was 90 minutes.
- CFI's defaults for average power session, which are 4 kW for Level 2 chargers and 24 kW for DCFC.
- The electric grid mix that the CFI used for New Hampshire was the area covered by the Northeast Power Coordinating Council, Inc. (NPCC).

NHDES assumed annual emissions reductions from the measure would begin in 2025 and would be achieved at the same magnitude in each successive year from 2025 through 2029 (i.e., the 5-year period of performance of the CPRG grant). After 2029, Therefore, the emission reductions of each year after 2025 included the sum of annual reductions achieved during the year and the reductions achieved in the prior years.

Table A-4 provides a summary of the results of CFI's estimated annual average emissions reductions of GHGs and co-pollutants if three (3) Level 2 chargers and one (1) DCFC stations are installed at publicly accessible locations in New Hampshire.

Table A-4. Average Annual GHG and Co-Pollutant Emission Reductions if three (3) Level 2 Chargers and one (1) DCFC stations are Installed at Publicly Accessible Locations.

	$MTCO_2e$	CO (kg)	NOx (kg)	PM_{10} (kg)	$PM_{2.5}$ (kg)	VOC (kg)	SOx (kg)
Average Annual Emission Reductions	20.35	85.34	2.04	0.20	0.17	8.09	0.13

If 151 Level 2 chargers and 50 DCFC stations are installed during the five-year period at of 10% in year 1, 25% in year 2, 25% in year 3, 25% in year 4, and 15% in year 5, then New Hampshire's cumulative GHG emissions reductions from 2025 to 2030 and 2050 would be approximately 5,129 $MTCO_2e$ and 85,728 $MTCO_2e$, respectively. NHDES assumed annual emissions reductions from the measure would begin in 2025 and additional reductions would be achieved each year at the same magnitude in each successive year until 2029. Therefore, as the measure is implemented between 2025 to 2029, the annual reductions increase as the measure is implement each year. After 2029 (i.e., after the completion of measure implementation), the annual emissions reductions would not increase but the total annual emission reductions achieved by 2029 would persist and are accounted for in calculations for cumulative reductions between 2025 to 2030 and between 2025 to 2050.

New Hampshire would also reduce emissions of CO, NOx, PM_{10}, $PM_{2.5}$, VOCs, SOx, by implementing the measure, as shown in Table A-5.

Table A-5 Cumulative GHG and Co-Pollutant Emissions Reductions from 2025 to 2030 and 2050 if 151 Level 2 Chargers and 50 DCFC Stations are Installed at Publicly Accessible Locations.

	$MTCO_2e$	CO (kg)	NOx (kg)	PM_{10} (kg)	$PM_{2.5}$ (kg)	VOC (kg)	SOx (kg)
Cumulative Emission Reductions Between 2025 – 2030	4,103	17,205	411	40	34	1,631	25
Cumulative Emission Reductions Between 2025 – 2050	24,619	103,231	2,466	242	205	9,783	152

Measure 3: Support and Expand Public Transportation Options

NHDES used the Federal Transit Administration's (FTA) Transit Greenhouse Gas Emissions Estimator (version 3.0) to estimate GHG emissions reductions that result from a case evaluation of public transit options. The calculator uses inputs of annual vehicles miles traveled (VMT) for a selected transit option and annual VMT of the vehicle displaced by the selected transit option to calculate both upstream and downstream GHG emissions. NHDES incorporated direct emissions reductions from transportation efficiency (i.e., decreased use of passenger light-duty vehicles (LDVs) when occupants ride transit) and land-use efficiency, which is the decreased use of passenger LDVs in the community through changes in land use resulting from transit service, such as more compact development.

In the estimator, NHDES selected "Sedan/Auto" to compare emissions from LDVs to emissions from a battery electric bus (BEB) for public transportation. Based on 2022 passenger mile data submitted to the National Transit Database for public bus transit systems in New Hampshire, NHDES assumed that each new BEB would increase passenger miles by 165,000, and those miles would replace travel in LDVs. NHDES assumed a 75% incentive for the cost of a BEB and charger, that $4.713 million (i.e., the amount allocated for subawards in NHDES's CPRG budget) could be used for those incentives, which could purchase 4 BEBs and chargers. NHDES assumed that the total cost of a single BEB and charger will be $1.585 million based on the following data from NREL's Financial Analysis of Battery Electric Transit Buses:

- The cost of a BEB is $887,308/BEB.
- The cost of a fast charger is $495,636/charger.
- The cost to install a charger is $202,811/charger.

Based on those assumptions, CPRG funding will provide 4 new BEBs and chargers (i.e., $1.585 million * 75% ≈ $1.189 million; $4.713 million / $1.189 million ≈ 4). NHDES would increase BEB passenger miles by 660,000 (i.e., 165,000 passenger miles/BEBs * 4 BEBs ≈ 660,000 passenger miles), and reduce LDV passenger miles by 660,000 per year.

To determine VMT values of LDVs and buses associated with increasing bus service by 660,000 passenger miles, NHDES assumed a mode shift factor of 0.329 and a transit multiplier (i.e., transportation land-use efficiency) of 6.03, which were median values calculated for transit systems by the National Academies of Sciences, Engineering, and Medicine (NASEM) in a 2021 study. Taken together, that mode shift factor and transit multiplier mean that 1 million transit passenger miles would see a total reduction of 1,983,870 VMT in LDVs, as shown in the following equation.

- 660,000 passenger miles x 0.329 mode shift factor = 217,140 avoided VMT.
- (217,140 VMT x 6.03 transit multiplier) – 217,140 VMT = 1,092,214 land use efficiency VMT savings.
- 217,140 VMT + 1,092,214 VMT = 1,309,354 VMT.

Data from NASEM study included total 2018 VMT and passenger miles reported to the National Transit Database by four of New Hampshire's bus transit systems: 11,442,469 passenger miles and 2,155,707 VMT, which is approximately 5.3 passenger miles per VMT. Based on that ratio, NHDES determined 1 million bus transit passenger miles results in approximately 188,395 of bus transit VMT.

NHDES assumed the following in FTA's Estimator to approximate annual GHG and co-pollutant emission reductions if New Hampshire transit systems were to add 660,000 passenger miles of bus service.

- Sedan/auto vehicles are fueled by gasoline.
- Bus transit systems are fueled by electricity (i.e., BEBs).
- 660,000 passenger miles is approximately equal to 124,342 VMTs for BEBs (i.e. 660,000 passenger miles/5.3 passenger miles per VMT = 124,342 VMT) will displace 1,309,354 VMT of sedan/auto vehicles per year.
- When NHDES selected "New Hampshire" in the estimator, the estimator applied the electric grid mix area covered by NPCC New England (i.e., NEWE eGrid).

NHDES assumed annual emissions reductions from the measure would begin in 2025 with one BEB/charger installed, which would be achieved again each successive year through 2028 for a total of 4 BEBs/chargers. Emission reductions of each year after 2025 included the sum of annual reductions achieved during the year and the reductions achieved in the prior years. However, after 2028, annual reductions remain static because no additional buses are reducing GHG emissions.

Table A-6. Annual GHG Reductions of a Single BEB, and Cumulative GHG Emission Reductions from 2025-2030 and 2025-2050 if 4 BEBs are Put in Service Each Year from 2025 to 2028 and Displace a total of 660,000 LDV passenger miles.

	$MTCO_2e$ Emissions Reductions per 165,000 Passenger Miles	$MTCO_2e$ Cumulative Emission Reductions Between 2025 – 2030 (1 BEB/yr from 2025 to 2028)	$MTCO_2e$ Cumulative Emission Reductions Between 2025 – 2050 (1 BEB/yr from 2025 to 2028)
Battery Electric Bus	113	2,041	11,114

Measure 4: Wastewater and Drinking Water Systems

Emission Reductions Estimate Method:

Each comprehensive process level energy audits (CEA)-identified energy efficiency and renewable energy project includes estimated energy savings associated with implementation. The basis of these estimates are actual measurements for each existing piece of equipment and vendor/equipment supplier data for proposed equipment. Engineering estimates, aeration modeling, efficiency pump curves are all used to generate measure-related data or other outputs and the GHG emission reduction or sequestration estimate. The bulk of the measures are related to reducing power-plant emissions through energy conservation projects which will reduce GHG emissions as well as co-pollutants such as NOx, SOx, $PM_{2.5}$, VOCs and NH_3. Additional identified fossil fuel efficiency projects or electrification projects will result in further reductions of GHG emissions.

Models/Tools Used:

The USEPA Avoided Emissions and geneRation Tool (Avert) Wed Edition, v4.2 was used to calculate the GHG and co-pollutant emission reductions) estimate.

Measure Implementation Assumptions:

The following key assumptions about measure implementation were used to quantify emissions reductions for this measure:

While aeration is typically the largest energy user for wastewater facilities and pumping is typically the largest energy user for drinking water facilities, the inefficiencies inherent in each system can be unique. Due to this uniqueness, a CEA is needed to identify appropriate energy conservation projects and renewable energy projects at each facility.

- Emission reduction estimates are based on the following:
  - 52 wastewater treatment facility CEAs
  - 7 wastewater pumping system CEAs
  - 40 drinking water system CEAs
- Wastewater CEAs have averaged a 28% overall potential energy use reduction with an average 3.2 year simple payback before any incentives and not including renewable energy projects.
- Drinking water CEAs have averaged a 24% overall potential energy use reduction with an average 2.6 year simple payback before incentives and not including renewable energy projects.
- The simple payback of individual projects ranges from immediate to up to approximately 15 years.
- Total estimated costs of energy conservation and renewable energy projects recommended in CEAs exceeds $30M. Many projects have been implemented to date. However, many projects have not yet moved forward due to lack of funding for implementation.
- When equipment is replaced or the operation is optimized, the related operation and maintenance costs may actually be reduced overall.

Emission Reduction Estimate Assumptions:

NHDES maintains a list of implementation-ready energy efficient and renewable energy projects at drinking water and wastewater facilities that includes total estimated project costs and kWh saved (including energy saved with renewable energy technologies) if implemented. NHDES sorted the list by most cost-effective projects relative to energy savings, and identified energy efficiency projects that would cost a total of $4,104,069 and save 7,234,364 kWh each year. However, NHDES assumed that 35% of those costs (i.e., $1,435,424) would by offset with rebates from the NHSaves energy efficiency program, bringing the total cost down to $2,667,645. Considering the total subaward budget for this measure is estimated at $9,199,999 (i.e., budget portion for actual project implementation), NHDES assumed that the remaining $6,532,354 (i.e., $9,199,999 - $2,667,645) would be allocated to solar PV renewable energy projects on NHDES's project list. The solar PV installed at those facilities would provide a total of 1,286 kW of distributed solar PV capacity. Therefore, NHDES entered 7.234364 gigawatt-hours into the "Reduce total energy generation by" field and 1.286 MW into the "Distributed (rooftop) solar PV total capacity" field of the AVERT Tool. Since the AVERT Tool produces results in imperial units, all results were converted to metric units.

The following key assumptions that were used to quantify estimated emission reductions for this measure:

- One-third of the total electricity savings and solar PV capacity are achieved equally in 2025, 2026, and 2027, with annual reductions from the measure remaining static beginning in 2028.
- Actual operations data for each wastewater and drinking water facility evaluated.
- Actual energy use for each major piece of equipment evaluated.
- Evaluation of energy bills for each facility evaluated.
- Biowin modeling for aeration optimization for wastewater treatment as needed.
- Evaluation of alternative operational scenarios.

- Estimates do not include emission reductions associated with reductions of fossil fuel use at project sites.
- NHDES selected “New Hampshire” in the tool, and the tool applied the electric grid mix area covered by NPCC New England (i.e., NEWE eGrid).

Reference Case Scenario:

Without the requested CPRG implementation grant funding, many wastewater and drinking water system owners would not be able to implement the recommendations from the CEA. This would result in both higher than necessary energy bills and sustained higher GHG emissions. These systems, especially those serving low-income and disadvantaged communities, have limited ability to address the many needs of their systems. Reliable and efficient wastewater and drinking water systems are crucial to developing thriving communities. This grant is an important step toward helping communities thrive.

Measure-Specific Activity Data and Implementation Tracking Metrics:

The implementation of measures identified in CEAs will be the basis of implementation tracking metrics. Selected projects will also be subject to post-implementation confirmation of the predicted energy savings. These energy savings will be documented as GHG emission reductions from the following:

- Electric energy use reduction
- Fossil fuel use reduction
- Renewable energy production

GHG and Co-pollutant Emissions Reduced:

Based on output from the AVERT Tool, implementation of this measure is anticipated to reduce emissions as shown below in Table A-7 and Table A-8:

Table A-7. Total Estimated Annual GHG and Co-Pollutant Emission Reductions if Electricity Generation in the NPCC Region is Reduced by 7.23 GWh Per Year and 1.286 MW of Solar PV are installed Due to the Measure.

	$MTCO_2e$	NOx (kg)	SO_2 (kg)	$PM_{2.5}$ (kg)	VOCs (kg)	NH3 (kg)
Estimated Annual Emission Reductions	5,170	2,390	2,080	410	200	300

Table A-8. Cumulative Total Estimated Annual GHG and Co-Pollutant Emission Reductions from 2025-2030 and 2025-2050 if Electricity Generation in the NPCC Region is Reduced by 7.23 GWh Per Year and 1.286 MW of Solar PV are installed Due to the Measure.

	$MTCO_2e$	NOx (kg)	SO_2 (kg)	$PM_{2.5}$ (kg)	VOCs (kg)	NH3 (kg)
Cumulative Emission Reductions Between 2025 – 2030	23,451	5,420	4,717	930	454	680
Cumulative Emission Reductions Between 2025 – 2050	117,254	27,102	23,587	4,649	2,268	3,402

Measure 5: Waste and Materials Management

Emission Reductions Estimate Method:

NHDES used [EPA's Waste Reduction Model (WARM) Tool](), Version 16, to estimate GHG emissions reductions based on a case evaluation of reductions to food waste, concrete, and asphalt concrete disposed at New Hampshire's landfills. GHG emissions reductions could be higher depending on subaward projects that focus on material management of other waste types.

Tonnage data input into the WARM Tool were sourced from a combination of data including NHDES Annual Facility Reports (AFRs) submitted by permitted disposal facilities in New Hampshire, and EPA waste composition estimates from 2018.

Measure Implementation Assumptions:

The following key assumptions about measure implementation were used to quantify emissions reductions for this measure:

- All implementation tasks and milestones will be met on time, achieving maximum GHG emissions reductions and LIDAC benefits.
- Food waste reduction and diversion will be a large portion of subaward projects due to significant impacts on reducing GHG emissions, community interest, and needing to implement New Hampshire's statutory food waste disposal ban starting February 2025.
- Subaward recipients will use purchased infrastructure and equipment through 2030 and beyond, to reach GHG reductions.
- Subaward recipients will uphold operation and maintenance costs, associated with their project, through 2030 and beyond.
- Part of subawards will be granted to LIDACs.

Emission Reduction Estimate Assumptions:

The following key assumptions about emission reductions were used to quantify emission reductions for this measure:

- Assumed annual GHG emissions reductions would be the same each year, adding up to the cumulative estimates for 2025-2030 and 2025-2030.

Model/Tool Input Assumptions:

- Used emission rates and factors, for each waste type and alternative management method, determined by the WARM Tool Version 16.
- Used EPA reports, and Facts and Figures on Materials, Wastes, and Recycling to make assumptions about the composition of New Hampshire's waste stream.

Reference Case Scenario:

The assumed GHG emission reductions were based on the follow scenario. It looks at three waste types and the use of alternative materials management methods other than disposal:

- Estimated the current amount of food waste landfilled and incinerated in New Hampshire using the total short tons of reported MSW disposed in 2022 from in-state sources. Based on reports submitted to NHDES, a total of 1,128,570 short tons of MSW were disposed in New Hampshire facilities in 2022. Of that total, 546,409 short tons of MSW was generated from New Hampshire sources.

- Based on EPA estimates, NHDES assumed that 24% of the reported in-state MSW was food waste.
- To align with GHG emission reduction goals and disposal reduction targets specified under New Hampshire's RSA 149-M:2, NHDES assumed that New Hampshire residents could reduce food waste by 3.6% per year, compost 10% of food waste per year and use anaerobic digesters to break down an additional 10% of food waste per year.
- Estimated the current amount of concrete and asphalt concrete disposed at New Hampshire's landfills using the total short tons of reported C&D in 2022 from in-state sources. Based on reports submitted to NHDES, a total of 266,333 short tons of C&D were landfilled in New Hampshire in 2022. Of that total, 259,205 short tons of C&D was generated from New Hampshire sources.
- Based on EPA estimates of the general composition of landfilled C&D, NHDES assumed that approximately 50% and 3% of in-state generated C&D is concrete and asphalt concrete, respectively.
- NHDES assumed that New Hampshire could reduce asphalt concrete waste by 5% per year and recycle asphalt concrete and concrete 5% and 10% per year, respectively.

Measure-Specific Activity Data and Implementation Tracking Metrics:

Relevant activity data that will be used for estimating GHG emission reductions includes the reported tons of waste reduced and diverted from disposal from subaward recipients – which will be used to calculate GHG emission reductions using EPA's WARM Tool, level of participation from LIDACs, number of equipment purchases or infrastructure installments.

GHG Emissions Reduced:

Under this scenario, implementation of this measure is anticipated to reduce 40,715 mtCO_2 e per year with 244,288 cumulative mtCO_2e for the period between 2025 – 2030, and 1,058,581 cumulative mtCO_2e for the period between 2025 – 2050. GHG emissions reductions could be higher depending on subaward projects that focus on material management of other waste types.

Measure 6: Workforce Development

Workforce programs focused on energy represent a crucial investment in the infrastructure necessary for sustainable energy practices and measures that would reduce GHG emissions. While these programs may not directly produce immediate energy savings or emissions reductions, their impact lies in equipping individuals with the knowledge, skills, and resources needed to implement energy-efficient measures effectively. By fostering a skilled workforce adept at identifying inefficiencies, implementing best practices, and utilizing cutting-edge technologies, these programs enable businesses, organizations, and communities to realize substantial energy and cost savings over time. Moreover, a well-trained workforce can drive innovation, streamline processes, and optimize energy systems, resulting in long-term benefits, including implementing measures that would reduce GHG emissions. While the direct impact of workforce programs on energy savings and GHG emissions reductions may not be immediately apparent, their pivotal role in facilitating and maximizing energy efficiency efforts cannot be overstated.