

Enabling Access to Energy Efficiency, Decarbonization, and Healthy Homes Coalition
New Mexico Energy, Minerals & Natural Resources Department (EMNRD)

TECHNICAL APPENDIX

1. Measure-Specific Documentation

a. Community Energy Efficiency Development (CEED) Program

Overview

This measure supports scaling up New Mexico EMNRD's CEED Program. The CEED Program provides block grants to local governments in partnership with community-based organizations for improvements to residential buildings in LIDAC to reduce energy consumption, energy-related operating costs, and/or the carbon intensity of energy consumption. The total budget for this measure is \$31,575,504 and will result in energy efficiency and building electrification retrofits for 2,500 housing units concentrated in LIDAC between 2025 and 2030.

Assumptions

To estimate upfront capital costs for building shell upgrades, data from the New Mexico Mortgage Finance Authority's weatherization program was used. For annual fuel and GHG savings from building shell upgrades, data from the New Mexico Energy Minerals & Natural Resources Department (EMNRD) CEED Program was used. The program estimates were primarily calculated utilizing the New Mexico Technical Resource Manual, the U.S. Department of Energy (DOE) Building America Solution Center, the EPA Greenhouse Gas Equivalencies Calculator, local NM Utility rates, data from the New Mexico Mortgage Finance Authority (MFA) NM Weatherization Assistance Program (WAP) and the E3 developed NM PCAP technical appendix. While all dwellings targeted by this measure are assumed to receive building shell upgrades, it was assumed that 30% of dwellings will receive heat pump installations as part of a building electrification package. This assumption was made because a significant segment of homes will require an electric panel upgrade prior to receiving a heat pump.

Table 1. Community Energy Efficiency Activity Parameters

Parameter	Unit	Value	Source
Building Shell Upgrade Cost, per home	\$/dwelling	\$7,400	MFA WAP
Ducted Air-Source Heat Pump Cost, per home	\$/dwelling	\$11,500	E3 Internal Costing Tool, MFA WAP
Annual Fuel Savings from Shell Upgrade	MMBtu/dwelling/year	37.641	NM EMNRD CEED Program
Annual GHG Savings per Building Retrofit	MT CO ₂ e/dwelling/year	4.4124	NM EMNRD CEED Program
Annual Fuel Savings from Heat Pump	MMBtu/dwelling/year	29.5	E3 Estimate, MFA WAP
Natural Gas Emissions Factor	MT CO ₂ e/MMBtu	0.0531	EPA
Additional GHG savings from Heat Pump	MT CO ₂ e/dwelling/year	1.57	Calculation

The calculation logic for this measure, which uses the parameters found in the table above, can be found below:

Equation 1. Annual GHG Reductions for Community Energy Efficiency

Aggregate GHG Reductions = Building Retrofit GHG Reductions + Heat Pump GHG Reductions

Heat Pump GHG Reductions = Energy Saved from Heat Pump * Natural Gas Emissions Factor

With regards to the completion of the 2,500 energy efficiency retrofits, it was assumed that a maximum of 1000 retrofits could be completed per year, based off previous construction rates of the New Mexico WAP program. The annual retrofit deployment schedule assumes a planning and outreach year to provide technical assistance to eligible cities, towns, counties and tribes to apply, and then ramps up each year. The deployment schedule can be found below:

Table 2. Community Energy Efficiency Retrofit Schedule

Year	Annual Retrofits	Cumulative Retrofits
2025	0	0
2026	200	200
2027	300	500
2028	500	1,000
2029	700	1,700
2030	800	2,500

Outcomes

This measure will result in combined emissions reductions **of 28,806 metric tons of CO₂e by 2030**, and a total of **272,283 metric tons of CO₂e reduced by 2050**. In terms of air quality impacts, the measure is expected to reduce the following pollutants by 2050: **NH₃ by 1 metric ton, NO_x by 111 metric tons, PM_{2.5} by >1 metric ton, VOC by 1 metric tons, and SO₂ by 6 metric tons.**

b. Pre-Weatherization of New Mexico LIDAC Program

Overview

The pre-weatherization measure aims to supplement Weatherization Readiness Funds and will focus on maintaining low deferral rates to the Weatherization Assistance Program (WAP) in New Mexico. Residential dwellings that have structural issues such as roof damage, mold, etc. require remediation prior to receiving WAP funding and further energy efficiency retrofits. This measure therefore enables homes to receive energy efficiency retrofits where they otherwise would not have. The total budget for this measure is \$17,999,800 and will target 920 homes.

Assumptions

The major assumption for this measure was the average cost of a pre-weatherization renovation. Due to the highly heterogenous nature of structural remediation, an estimation of \$19,565 per home was made based on WAP program history. Parameters related to annual fuel savings and GHG savings of weatherization were sourced from MFA, and can be found in the table below:

Table 3. Pre-weatherization Activity Parameters

Parameter	Unit	Value
Cost of Pre-Weatherization per Home	\$/dwelling	\$19,565

Annual GHG abatement from weatherization, per home	MT CO ₂ e	4.41
Annual Fuel Savings per home from weatherization	MMBtu	29.3
Annual Fuel Savings from Heat Pump	MMBtu/dwelling/year	29.5
Natural Gas Emissions Factor	MT CO ₂ e/MMBtu	0.0531

Assumptions were made around the percentage of homes that received pre-weatherization work that went on to weatherize and receive building electrification work: 90% of homes were assumed to go on to weatherize, and 10% were assumed to receive a heat pump installation. It was also assumed that 25% of weatherization emissions reductions can be attributed to pre-weatherization work. This logic can be seen in the formula below, where emissions reduction for the measure is discounted by this value:

Equation 2. Annual GHG Reductions for Pre-weatherization

Aggregate GHG Reductions = [Number of Homes * (% of Homes that Weatherize * GHG savings from Weatherization + % of Homes that receive HPs * GHG savings from HPs)] * % attributed to pre-weatherization work

Outcomes

This measure will result in combined emissions reductions **of 4,747 metric tons of CO₂e by 2030**, and a total of **23,735 metric tons of CO₂e reduced by 2050**. In terms of air quality impacts, the measure is expected to reduce the following pollutants by 2050: **NH₃ by 35 kg, NO_x by 7219 kg, PM2.5 by 31 kg, VOC by 43 kg, and SO₂ by 397 kg.**