Senator Lawrence, Representative Sachs, and distinguished members of the Energy, Utilities and Technology Committee,

Good morning,

I am David Gibson, a resident of Morrill. I am testifying in support of LD 1967: Resolve, to Establish the Maine Home Energy Navigator and Coaching Pilot Program

I work for College of the Atlantic in Bar Harbor as the Director of Energy. My primary responsibility is transitioning the campus facilities off fossil fuels by 2030, and I teach half time and engage students throughout the energy transition process. I have more than 15 years of experience in the energy efficiency, clean energy, and building decarbonization. I have transitioned our own home In Morrill, a post and beam farmhouse built in 1828, as well as more than 20 buildings in Bar Harbor owned by COA, off of heating oil and propane.

As you're probably aware, Maine has some of the oldest and most poorly insulated housing stock in the country. Efficiency Maine does a good job, but at their current rate of providing ~3,000 insulation rebates a year, it will take more than 200 years to insulate all the housing units in Maine.

To address climate change, and to retain billions of dollars a year in our state economy that is currently spent importing fossil fuels from out of state, we need to transition every home and building across the state to clean energy. This requires engaging and working with every homeowner and resident across the entire state.

Transitioning a building off of fossil fuels is a complex process. At COA, we have tried to streamline it as much as possible, and have developed a 10-step process that we call 'Ten Steps to a Zero-Emissions Home' (attached), with prioritize the most cost-effective steps first to maximize energy savings while reducing total costs. While every home is different, they all have similar needs. Typically it requires working with three to five different contractors, one for air sealing and insulation the building shell, another to install heat pumps, a plumber for a heat pump water heater, an electrician to install an EV charger or a new electric panel, and yet another contractor to install solar. You also might need someone to address asbestos, lead, mold, or structural problems along the way. We need to do this in every home statewide in the next 25 years. Nearly everyone needs support in getting through this process.

In my experience, Mainers are very frugal, and like people everywhere, prefer to avoid paying for contractors. We have a strong ethos of doing things ourselves. This is problematic when it comes to energy improvements, because building science isn't taught in schools. People will either add insulation without air sealing, or will air seal for themselves. Both of these options can have destructive repercussions. Insulation doesn't work if air is leaking through it, and can increase problems like roof dams and rot. However, air sealing without an energy audit can be even worse, with the potential to trap moisture, carbon monoxide, propane leaks in the house, or even cause the boiler or furnace to backdraft.

It is important to have a home energy audit to understand the specific circumstances for each home, and to identify any hazards that need to be addressed. It is especially important for residents to have a guide through the complex process of making the whole-home energy transition. This program will address both of these needs, and offer the energy navigators as independent 3rd-parties that are not tied to any particular company or product.

Thank you for your time. Please vote in favor of LD1967.

Thank you,

David Gibson, Morrill

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Ten Steps to a Zero Emissions Home

☐ **1. EPA WaterSense shower heads** *Energy savings of $100+/year, often more than $200/year*

- A 1.5GPM shower head uses 40% less water and thus 40% less energy to heat the water.
- A family of 4 will save ~10,000 gallons/year of hot water with WaterSense shower heads.

☐ **2. LED light bulbs** *Energy savings of $50+/year*

- LEDs use 85% less energy than incandescent bulbs.
- Don't forget to replace outdoor lighting too!

☐ **3. Window Dressers** *Whole home energy savings of 5-10%*

- Insulated window inserts improve indoor comfort and energy efficiency for less than 1/10th the cost of replacing windows. www.windowdressers.org

☐ **4. Heat pump water heater (HPWH)** *Whole home energy savings of 10-20%*

- Use 70% less energy than a standard electric water heater.
- Significant rebates available through Efficiency Maine that increase their affordability.
- Side benefit of helping dehumidify the space they're in, like a damp basement.
- Make sure to insulate the pipes (hot and cold) to reduce heat loss and condensation.

☐ **5. Electric appliances** *Whole home energy savings of up to 10%*

- Measure your refrigerator's energy use and upgrade to an EnergyStar model as needed.
- Replace gas cooking equipment with induction or electric for health and safety.

☐ **6. Energy audit** *Health and Safety*

- Have a comprehensive audit to assess air leakage and insulation needs for your home.
- Measures energy use, identifies opportunities for improvements, and identifies moisture problems or health and safety needs like ventilation and mold remediation.

☐ **7a. Basement/crawl space** *Whole home energy savings of 10-30%*

- Sealing the basement or crawlspace blocks rodents and heat loss.
- Vapor barrier prevents ground moisture from getting into the house - reducing mold.
- We recommend 3" of spray foam (R-21) from the basement floor up over the rim joist to air seal and retain heat. This is an incredible improvement for fieldstone foundations.
- Make sure the contractor uses HFO/5th generation/low-Global Warming Potential spray foam. Older HFC blowing agents have 500x the carbon emissions!

☐ **7b. Attic and wall air sealing and insulation** *Whole home energy savings of 10-25%*

- Because warm air rises, a significant portion of heat loss is through the attic.
- Air sealing first ensures that insulation works properly.
- We recommend 18-24" of cellulose insulation to achieve R60-R80 in attics.
- Add continuous insulation to outside walls when you replace the exterior siding.

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☐ **8. Air source heat pumps** *Whole home energy savings of 10-40%*

- Provide winter heating and summer cooling and dehumidification for your home.
- Work in temperatures as low as -15F, and can be the sole source of heat if your home is well insulated.

☐ **9. Electric vehicle and home charger**

A 2020 study by Consumer Reports found that the lifetime ownership costs were significantly lower for EVs. Most EVs saved $6,000 - $10,000 over their lifetimes.

☐ **10. Solar** *Energy production up to 100%*

- Install rooftop solar to supply all your electricity needs.
- 30% federal tax credit and financing options are available.
- Battery backup is needed for solar to work during a power outage

Other: High-efficiency wood stove

New high-efficiency wood stoves are up to twice as efficient as older models, cutting wood consumption by up to half while providing as much heat to the home. Wood stoves are a great source of backup heat during power outages.

Other: Whole-home surge protection

As we electrify our energy consumption, and especially with the complex electronics in these systems, it is essential to install whole-home surge protection. These devices can cost $100-400, and need to be installed by an electrician. A single surge event can cause more damage than the upfront cost of the surge protector.

Other: Ventilation

As we seal our buildings and reduce air leakage (drafts), mechanical ventilation becomes more important. In many homes, exhaust fans in the kitchen and bathrooms are adequate. When homes are very tight, ventilation that both exhausts stale air and brings in fresh air is needed. Energy-recovery and heat-recovery ventilators exchange heat between the incoming and outgoing air, to temper the fresh air coming in and reduce heat loss.

Efficiency Maine: Rebates and support

Efficiency Maine's website has additional information on federal tax credits and energy rebates available in Maine. They are a great source for finding a contractor in your area to help with any of these improvements: www.efficiencymaine.com/at-home/

More information about our program: www.MaineUP.org