WVU POLLUTION PREVENTION NEWSLETTER

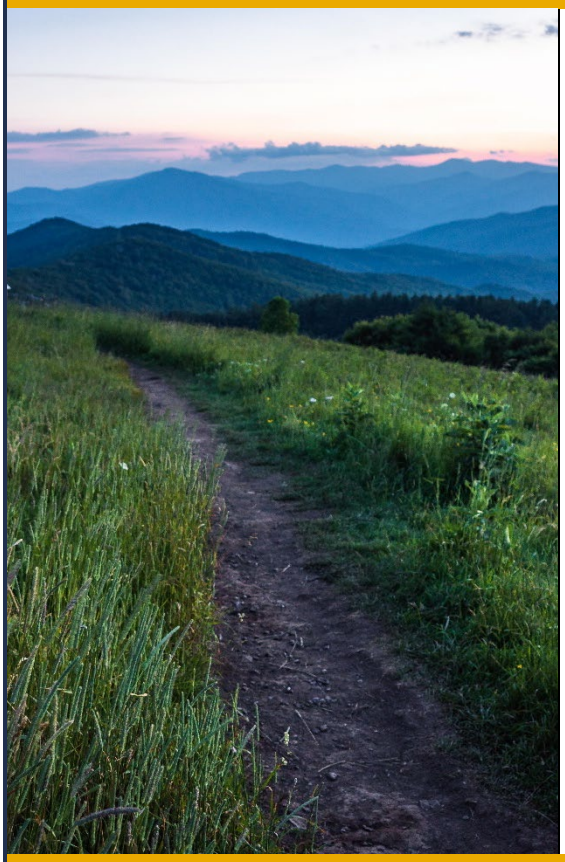
NOVEMBER 2025

ADVANCING ENERGY EFFICIENCY: HEAT PUMPS AND SAFER CHOICE FOR A SUSTAINABLE FUTURE

Welcome to this edition of the WVU Pollution Prevention Newsletter! This issue highlights two powerful strategies for advancing sustainability and operational excellence: the adoption of high-efficiency heat pump technology and the integration of Safer Choice-certified products. Discover how modern heat pumps provide superior heating and cooling while slashing energy costs and reducing environmental impact. Alongside, learn how our recent Safer Choice survey reveals growing consumer demand for safer, more transparent products, empowering businesses to make informed choices that protect both people and the planet. Together, these initiatives strengthen West Virginia's commitment to a cleaner, more productive, and health-conscious industry. Stay connected as we continue to drive innovation for a sustainable future.

FEATURED IN THIS EDITION

WHAT IS POLLUTION PREVENTION



Pollution Prevention (P2) is one of the key approaches towards an initiative to improve the energy efficiency and productivity of key industries while prioritizing environmental sustainability. The initiative focuses on reducing or preventing pollution at its source.

The primary objective of our Pollution Prevention program is to provide technical assistance to Small and Medium Enterprises in **key industries** in West Virginia by assisting with the identification, development, and implementation of P2 methods. The recommendations provided to the industries are designed to help the business lower operational costs by reducing expenditures, water and energy usage, waste, and disposal costs, while at the same time maintaining and often improving productivity.

Key Industries:

1. Food and Beverage Manufacturing and Processing
2. Chemical Manufacturing, Processing, and Formulation
3. Automotive Manufacturing and Maintenance
4. Aerospace Product and Parts Manufacturing and Maintenance
5. Metal Manufacturing and Fabrication

OUR SERVICES

1. **Pollution Prevention Assessments:** The project team will make a planned visit to your facility to assess and gather data on energy, water, material, and personnel use. Assessment data, along with input from the facility managers, will be used to develop P2 recommendations. A detailed report based on the findings will be submitted to the facility shortly after the on-site assessment.

2. **Energy Audits/Assessments:** Applying for a USDA-REAP grant and need an assessment? Want to save money? The project team will visit your facility and identify opportunities to improve energy efficiency. A detailed report will be provided to the business, including estimates of implementation costs, energy use savings, energy cost savings, and simple payback period for each identified opportunity.

3. **Training Workshops:** Training workshops will be conducted to help businesses learn P2 Best Practices, tools, techniques, and resources available, and how to modify their process or site to improve energy efficiency, productivity, and environmental sustainability.

4. **Technical Assistance:** The project team can provide on-site or off-site technical assistance on a variety of industrial concerns related to topics including pollution prevention, energy efficiency, sustainability, environmental impact, and process improvement. Contact us for assistance!

5. **USDA-REAP Application Assistance:** Applying for grant funding can be a challenge, especially for the small businesses that do not have an expert at grant-writing on the payroll. Our project team can help you navigate the application process and assist with completing the application for USDA-REAP funding.

POLLUTION PREVENTION FOCUS

HEAT PUMPS: THE SMART CHOICE FOR BUILDING COMFORT

Heat pumps are efficient systems that provide both heating and cooling in one unit. They work by transferring heat from one place to another, rather than generating it through the burning of fuel. This makes them more efficient than traditional HVAC systems.

How Heat Pumps Work

Heat pumps transfer heat from one area to another using refrigerant technology. In winter, they extract thermal energy from outdoor air or ground sources to warm indoor spaces. In summer, the cycle reverses, removing heat from inside your facility to provide cooling. This transfer process requires less energy than generating heat through combustion.

Main Types:

- **Air Source:** Most common type, uses outside air
- **Geothermal:** Uses stable ground temperatures, highest efficiency
- **Absorption:** Can use solar, gas, or steam for power

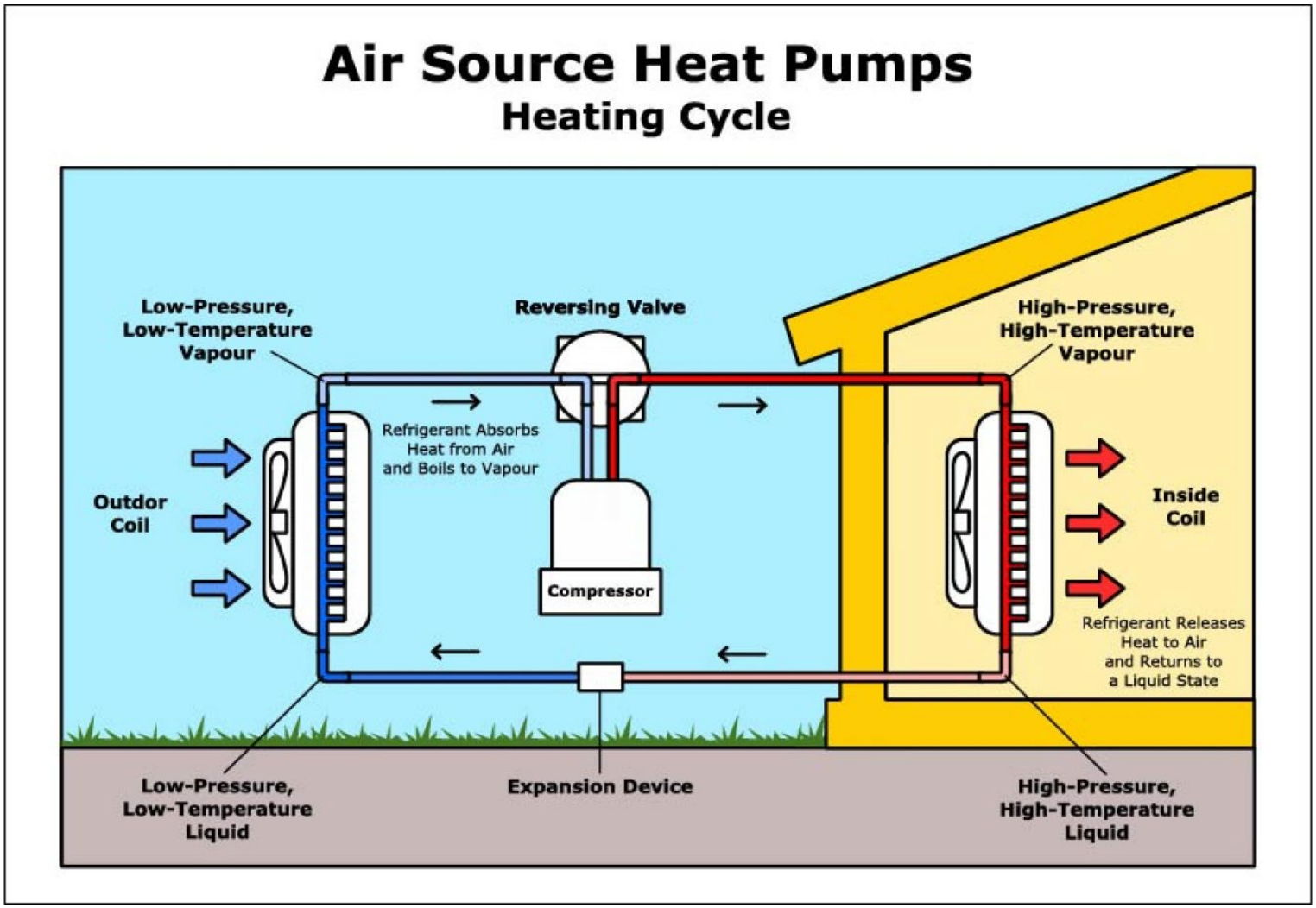


Figure.7¿Air.source.Heat.Pump

HEAT PUMPS: THE SMART CHOICE FOR BUILDING COMFORT (CONT.)

Key Benefits

- Save 30-50% on heating costs vs conventional systems
- One system handles both heating and cooling
- Better air quality and consistent temperatures
- No combustion means enhanced safety
- Lower maintenance and longer lifespan

Choosing the Right System –

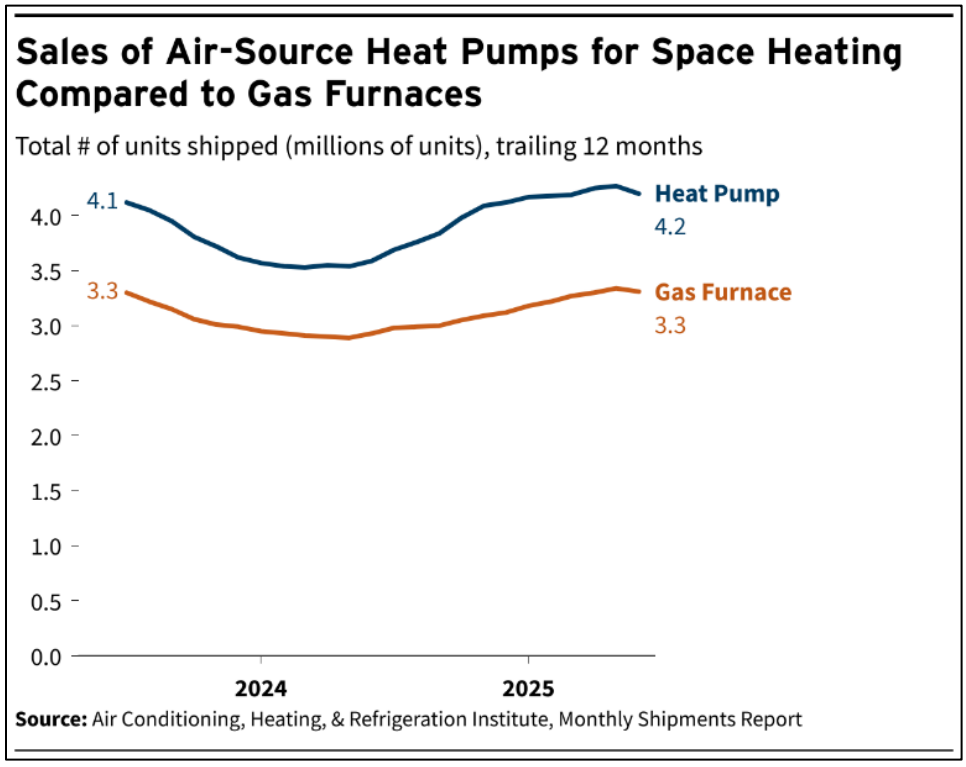
- **SEER 16+** (cooling efficiency) – This tells you how efficiently the heat pump cools your home in summer. A higher SEER means it uses less electricity to give the same cooling.
- **HSPF 9+** (heating efficiency) - This shows how efficiently the heat pump heats your home in winter. A higher HSPF means more heat is produced for each unit of electricity used.
- **COP 3.0+** (overall performance) – COP tells you how many units of heat you get for 1 unit of electricity. A COP of 3.0 means the system gives three times more heat than the electricity it uses. Higher COP = more comfort and bigger savings.

Professional Installation Matters:

- Proper sizing is critical
- Qualified installers ensure optimal performance
- Climate-appropriate models available for all regions

Ideal Applications

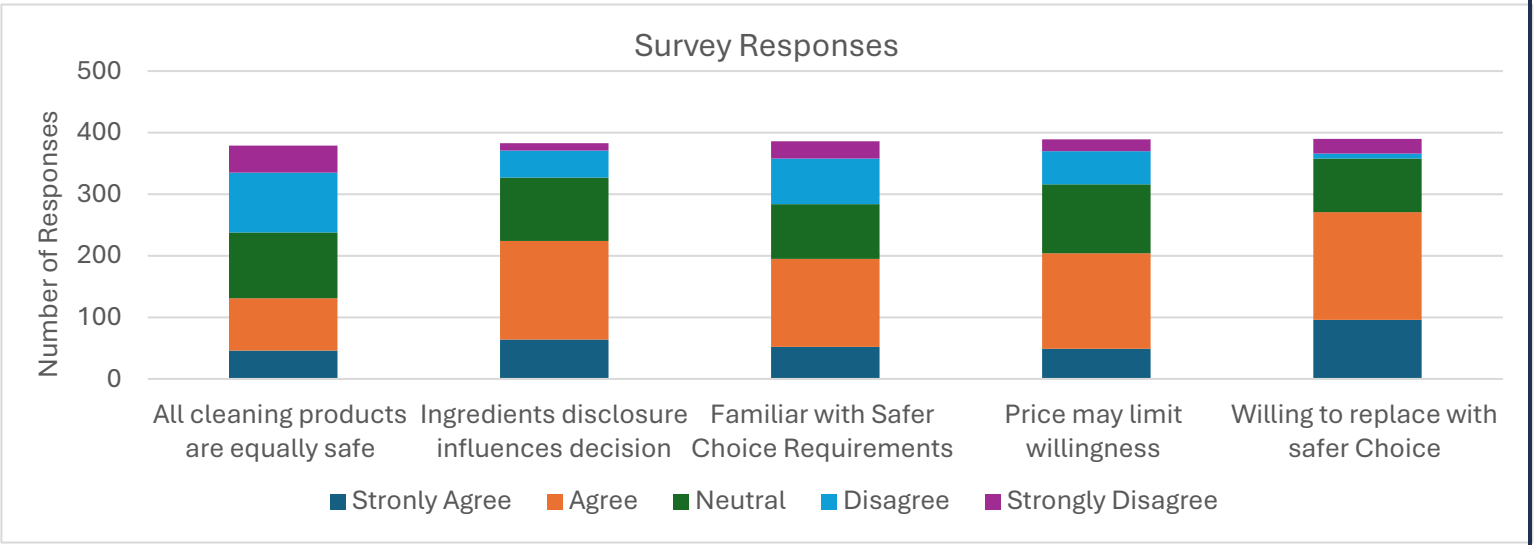
- Commercial offices with variable occupancy patterns
- Healthcare facilities requiring strict climate control
- Educational buildings with seasonal usage demands
- Industrial spaces needing zoned temperature management



Heat pumps reduce operational costs while delivering precise environmental control through superior COP performance exceeding 3.0 in most applications. Market adoption is accelerating rapidly, with heat pump shipments reaching 4.2 million units compared to 3.3 million gas furnaces in 2025, which demonstrates a clear market preference for this energy-efficient technology.

EMPOWERING CHANGE: INSIGHTS FROM THE WVU POLLUTION PREVENTION TEAM'S SAFER CHOICE SURVEY

Our **Pollution Prevention (P2) Team** recently conducted a survey exploring how consumers perceive and adopt **Safer Choice-certified products**. Using Qualtrics, the team collected **375 valid responses**, providing valuable insight and offering meaningful insights into consumer attitudes across five key dimensions: readiness to adopt safer alternatives, perceived barriers, knowledge and awareness of the label, expectations around product transparency, and overall perceptions of Safer Choice products.



Positive Outlook on Adoption

Most respondents expressed a strong desire to replace their current products with **Safer Choice-certified alternatives**. The majority either agreed or strongly agreed with statements about adopting safer products, signaling broad openness toward environmentally responsible purchasing. Only a small minority reported hesitation, suggesting limited resistance among consumers.

Barriers: Price and Availability

Despite this positive sentiment, responses highlighted persistent **practical barriers**. While some participants were unconcerned about cost and accessibility, a significant portion identified **price sensitivity and product availability** as key challenges. These findings suggest that greater affordability and distribution could further drive adoption.

Awareness and Understanding

Survey data indicated **moderate familiarity** with the Safer Choice label. While most participants recognized it, fewer had a deep understanding of its certification standards. This gap points to an opportunity for the program to enhance its **communication and education efforts**, emphasizing what the label guarantees and why it matters.

Value of Transparency

Participants strongly favored **greater transparency in labeling**, with broad agreement on the importance of ingredient disclosure and clarity around what makes a product "safer." This preference aligns with the core mission of the Safer Choice initiative to empower consumers with clear, trustworthy information.

Overall Perception

Overall, respondents viewed Safer Choice products as **trustworthy, effective, and environmentally responsible**. Many agreed that these products help create healthier workspaces while reducing environmental harm. The findings affirm that the program's claims resonate with consumers and that continued outreach could further strengthen trust and adoption.

HIGHLIGHTING OUR IMPACT

The WVU Pollution Prevention (P2) team takes great pride in the impact we have within the borders of West Virginia since January of 2023. From energy savings to CO_2 reduction, the recommendations we develop for these businesses not only help these businesses improve their sustainability, but also their bottom line!

Look at the impact of the opportunities we have found! →

33 Energy Efficiency/P2 Assessments

79 Recommendations

With Annual Savings of…

$939,400 in Energy Costs

7,331 MWh of Electricity

16,080 MMBtu of Natural Gas

5,810 Metric Ton CO_2 Equivalent

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Inquire About Our Services

Questions or Comments?