Energy Efficiency Stakeholder Meeting

June 20, 2024

Agenda

1. Re-cap of Last Meeting
2. New Jersey Energy Efficiency Programs
3. Energy Efficiency Updates
    - NJCEP Updates
        - New Construction Program Update
        - Community Energy Plan Grant / Community Energy Plan Implementation Grant Update
        - Benchmarking Update
        - Rutgers EE Workforce Report
    - Utility Updates
    - Regulatory Updates
        - Triennium 2 Filings Review
4. Guest Presentation – HVAC Heat Recovery
5. General Q&A
6. Items of Interest
7. Next Meetings

Recap of Last Month

May Meeting Recap

What we covered:

- ✓ NJCEP Updates
  - ✓ NJCEP New Construction Program
  - ✓ Whole House Pilot Program Update
  - ✓ Inflation Reduction Act Request for Information
  - ✓ Community Energy Plan Grant / Community Energy Plan Implementation Grant Update
  - ✓ Benchmarking Update
- ✓ Utility Updates
- ✓ Regulatory Updates
  - ✓ Triennium 2 Filings Review
- ✓ Guest Presentation: Heat Pump Water Heaters
- ✓ Q&A

New Jersey Energy Efficiency Programs

New Jersey Energy Efficiency Programs

www.NJCleanEnergy.com/TRANSITION

NJBPU and NJCEP Administered Programs

- New Construction (residential, commercial, industrial, government)
- Large Energy Users
- Energy Savings Improvement Program (financing)
- State Facilities Initiative*
- Local Government Energy Audits
- Combined Heat & Power & Fuel Cells

*State facilities are also eligible for utility programs

Utility Administered Programs

- Existing buildings (residential, commercial, industrial, government)
- Efficient Products
  - Lighting & Marketplace
  - HVAC
  - Appliance Rebates
  - Appliance Recycling

NJBPU and Utility Co-Administered Programs

Energy Efficiency Program Information

www.NJCleanEnergy.com/TRANSITION

Press Room | Library | FAQs | Calendar | Newsletters | Contact Us | Site Map

Search

HOME | RESIDENTIAL | COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT | RENEWABLE ENERGY

NEW JERSEY'S CLEAN ENERGY PROGRAM

- ABOUT NJCEP
- BOARD OF PUBLIC UTILITIES
- POLICY UPDATES & REQUEST FOR COMMENTS
- CALENDAR
- CLEAN ENERGY STAKEHOLDER GROUPS - MEETINGS
- GRANTS & SOLICITATIONS
- TRAINING RESOURCES
- PRESS ROOM
- PUBLIC REPORTS AND LIBRARY
- CONTACT US

New Jersey's Energy Efficiency Program Transition

Transición del Programa de Eficiencia Energética de Nueva Jersey

Electric Utility Contact Information

Utility Name	Commercial & Industrial Programs	Residential Programs
Public Service Electric & Gas	Website and Email Phone: 844-300-7734	Website and Email Phone: 855-846-2895
Atlantic City Electric	Website, Email and Phone: 833-223-7297	Website, Email and Phone: 866-353-0007
Jersey Central Power & Light	Website, Email and Phone: 800-662-3115	
Rockland Electric	Website, Email and Phone: 877-434-4100	

Gas Utility Contact Information

Utility Name	Commercial & Industrial Programs	Residential Programs
Public Service Electric & Gas	Website and Email Phone: 844-300-7734	Website and Email Phone: 855-846-2895
New Jersey Natural Gas	Website and Email Phone: 877-455-6564	Website and Email Phone: 877-455-6564
South Jersey Gas	Website and Phone: 888-263-7372	Website and Phone: 833-493-0691
Elizabethtown Gas	Website and Phone: 888-263-7372	Website and Phone: 833-493-0692

Check the GIS utility finder to determine who your provider or providers are.

Clean energy is ... in New Jersey

Program Updates

- Energy Master Plan Update
- Solar Scam Warning
- School and Small Business Energy Efficiency Stimulus Program
- Energy Efficiency Program Transition

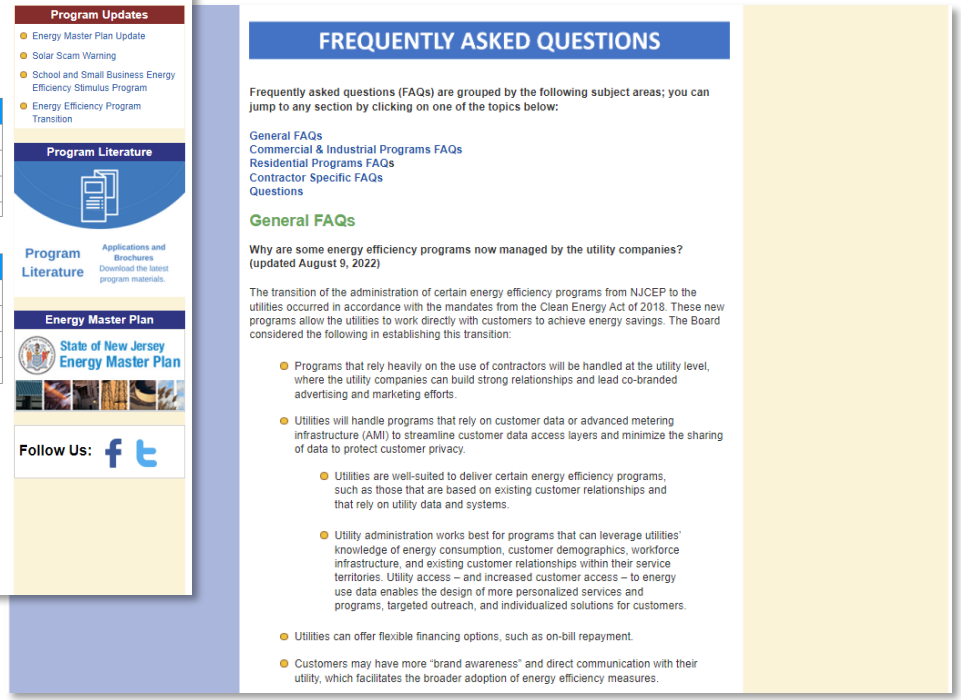
Program Literature

Program Literature — Applications and Brochures. Download the latest program materials.

Energy Master Plan

State of New Jersey Energy Master Plan

Follow Us:



FREQUENTLY ASKED QUESTIONS

Frequently asked questions (FAQs) are grouped by the following subject areas; you can jump to any section by clicking on one of the topics below:

General FAQs
Commercial & Industrial Programs FAQs
Residential Programs FAQs
Contractor Specific FAQs
Questions

General FAQs

Why are some energy efficiency programs now managed by the utility companies? (updated August 9, 2022)

The transition of the administration of certain energy efficiency programs from NJCEP to the utilities occurred in accordance with the mandates from the Clean Energy Act of 2018. These new programs allow the utilities to work directly with customers to achieve energy savings. The Board considered the following in establishing this transition:

- Programs that rely heavily on the use of contractors will be handled at the utility level, where the utility companies can build strong relationships and lead co-branded advertising and marketing efforts.
- Utilities will handle programs that rely on customer data or advanced metering infrastructure (AMI) to streamline customer data access layers and minimize the sharing of data to protect customer privacy.
  - Utilities are well-suited to deliver certain energy efficiency programs, such as those that are based on existing customer relationships and that rely on utility data and systems.
  - Utility administration works best for programs that can leverage utilities' knowledge of energy consumption, customer demographics, workforce infrastructure, and existing customer relationships within their service territories. Utility access – and increased customer access – to energy use data enables the design of more personalized services and programs, targeted outreach, and individualized solutions for customers.
- Utilities can offer flexible financing options, such as on-bill repayment.
- Customers may have more "brand awareness" and direct communication with their utility, which facilitates the broader adoption of energy efficiency measures.

New Jersey's cleanenergy program

Energy Efficiency Updates:

New Jersey's Clean Energy Program

More NJCEP Information

Quarterly Newsletter:

www.NJCleanEnergy.com/NEWSLETTER

Clean Energy Program Filings:

www.NJCleanEnergy.com/FILINGS

Clean Energy Program Monthly Progress to Goal Report

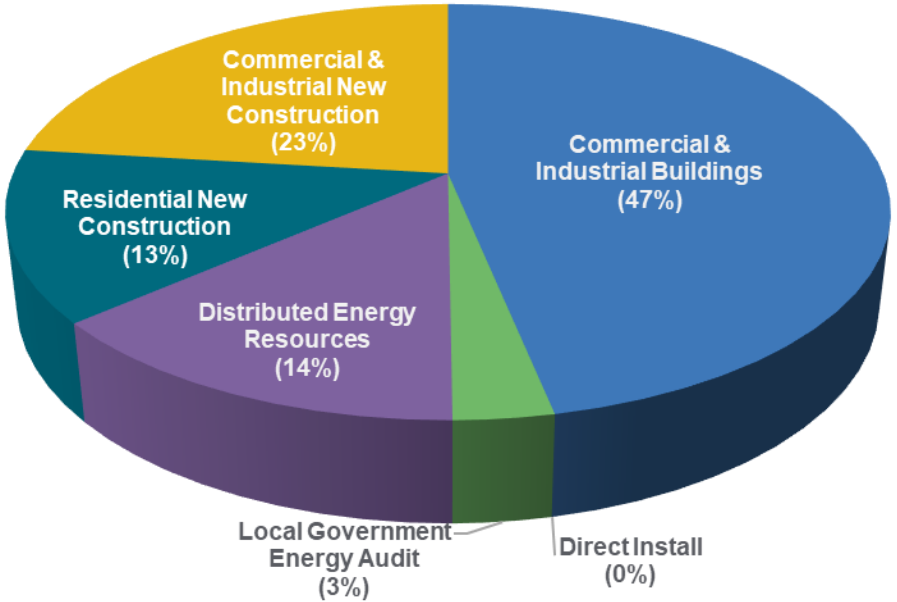
www.NJCleanEnergy.com/EE - Meeting Materials Archive

Progress to Goals Report is posted with post-EE Stakeholder Meeting resources after this meeting

Budget Break-down by Program

FY24 TRC Managed Programs

Incentive Budget: $146,536,918



New Jersey's cleanenergy program

Energy Efficiency Programs FY24

NJCEP/TRC Managed

Closed

- Residential Products & HVAC
- Residential Existing Homes
- Direct Install
- SmartStart Retrofit

Closing Out

- C&I Buildings (existing buildings)
- Pay for Performance Existing Buildings
- School & Small Business Stimulus Program (federally funded)

NJCEP/TRC Managed

Open

- New Construction

  Was: Residential New Construction, SmartStart New Construction, Pay for Performance New Construction, Customer Tailored Energy Efficiency Pilot New Construction

- Large Energy Users
- Local Government Energy Audit
- Distributed Energy Resources

BPU/Utility Managed

Comfort Partners

What is the New Construction Program?

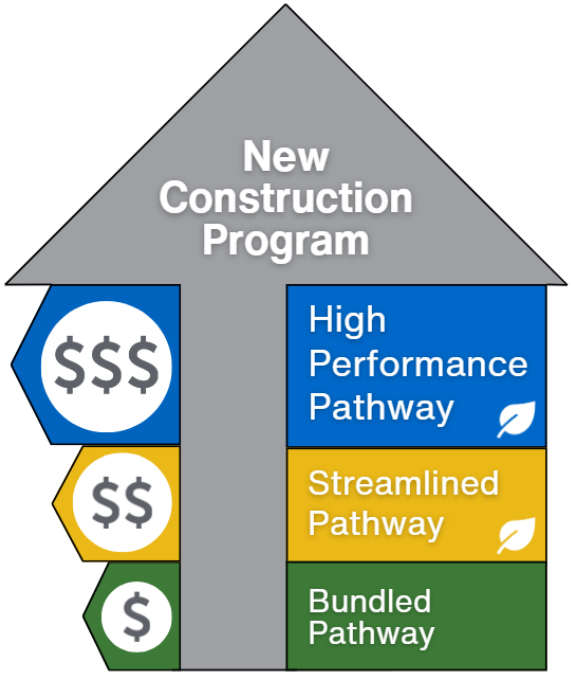
COMING SOON

ABOUT THE PROGRAM — Three pathways to fit your needs to achieve greater energy savings

INCENTIVES — Based on selected pathways and size

WHO IS ELIGIBLE — All new construction buildings or eligible major renovation projects

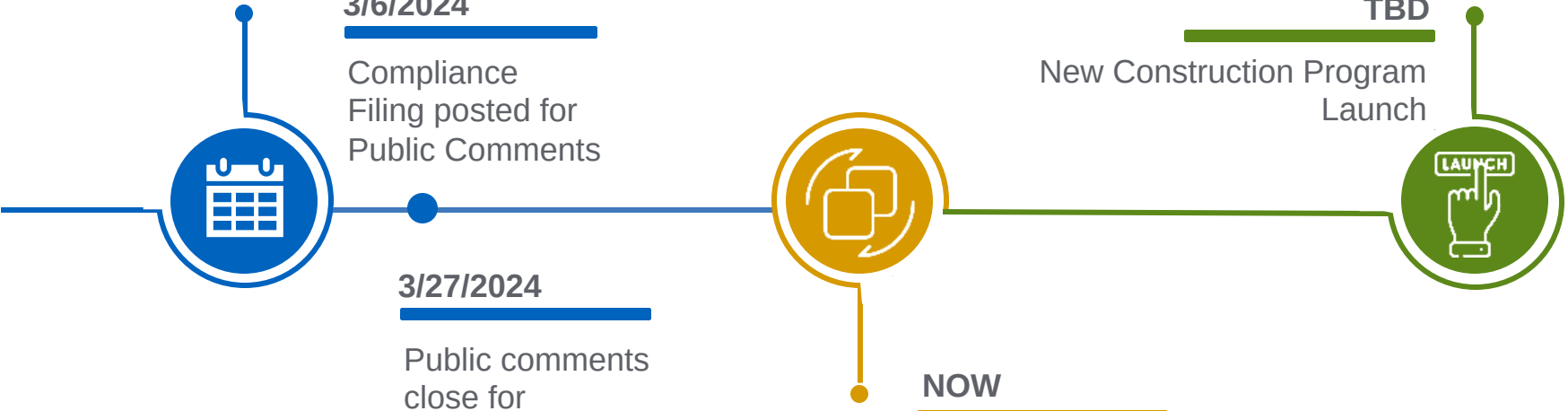
ADDITIONAL OPPORTUNITIES — Incentives for energy efficiency beyond code requirements, encouraging greater energy savings



New Jersey's cleanenergy program

New Construction Program Timeline

COMING SOON



3/6/2024

Compliance Filing posted for Public Comments

3/27/2024

Public comments close for Compliance Filing

NOW

Current programs remain open until the transition to New Construction Program

TBD

New Construction Program Launch

Watch for BPU **Energy Efficiency Listserv** updates, attend **Energy Efficiency Stakeholder Meetings**, or attend an upcoming program overview or **trade ally webinar** event for details.

Community Energy Plan Grant & Community Energy Plan Implementation Grant Update

These two grant programs support municipalities with community-level clean energy initiatives.

Community Energy Plan Grant (CEPG) Program

- Grants for municipalities to develop community energy plans aligned with their respective needs
- Two grant award levels
  - $10,000
  - $25,000 – overburdened municipalities

Community Energy Plan Implementation (CEPI) Grants

- Grants for municipalities to implement community energy projects
- Applicants eligible for $250,000 with possibility of additional awards if funds remain after all priority projects are funded.

Sustainable Jersey will provide Technical Assistance for applicants, with a focus on assistance for overburdened municipalities

Community Energy Plan Grant & Community Energy Plan Implementation Grant Update

Application window closed on Friday, May 24

- **CEPG**
  - 92 applications, 15 from OBMs
- **CEPI**
  - 29 municipalities applied, 89 total project proposal

Staff anticipates presenting recommended awardees to the Board on July 24

Benchmarking Update

- As of April 2nd, postal mailings were sent to commercial building owners
  - Some mailings were inadvertently sent to public and other tax exempt buildings that do not need to complete benchmarking reporting
  - As of May 2nd, corrected postal mailings were sent to those public and other tax exempt building owners

- The submission deadline is July 1, 2024 for this reporting year (2023)
  - Building owners will have a 90-day grace period after the July 1st date to report

- A Helpdesk is available to answer questions about the benchmarking program and Portfolio Manager
  - To view frequently asked questions, submit a general inquiry or an exemption request, receive instructions for how to report, and obtain training resources and important updates: https://nj.beam-portal.org/helpdesk/
  - To submit an inquiry to the Helpdesk, please visit: https://nj.beam-portal.org/helpdesk/ and select "New Ticket"
  - To respond to a previously submitted ticket or a received email, please email njbpubenchmarking@beam-portal.org or call 888-533-4571

Benchmarking Update

- To learn more about the benefits of benchmarking a building, please watch the following short video presentation:

- English: https://drive.google.com/file/d/1bIM_xjgi6EsbTQVJh8ouShLvvm5xMRMq/view?usp=sharing

- Spanish: https://drive.google.com/file/d/1rAdlTGPlaOXlLpDPeUDwEiTY6_WSQouL/view?usp=sharing

New Jersey's Energy Efficiency Workforce Needs, Infrastructure, and Equity Assessment

Brittney Donovan
Grace Maruska
Sahar Sherwani
Stephanie Walsh, Ph.D.

Agenda

- Background
- Landscape in New Jersey
- Findings and Themes
- Strategies for Improvement
- TREC

Background

Purpose

- The BPU ongoing efforts to inform equitable workforce and upcoming expansion activities
- Recent commitments to clean energy transition
- Two research *objectives*:

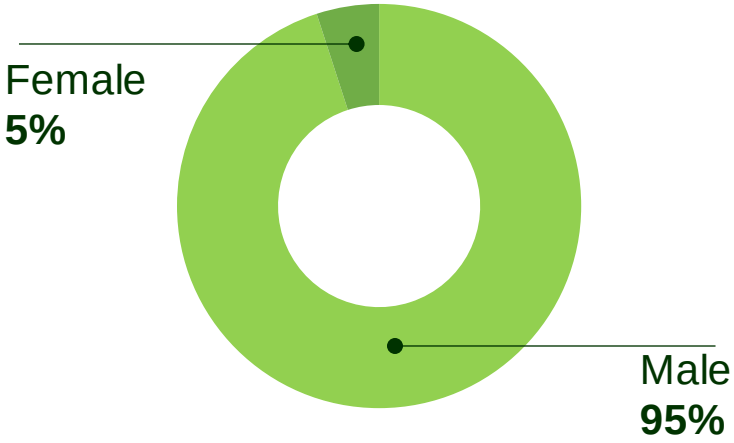
1. Better understand and document community needs and areas for growth in **training**, **recruiting**, **hiring**, and **retaining** students, trainees, and workers in the energy efficiency sector in New Jersey
2. Produce **strategies** for improving workforce development infrastructure for state agencies to consider

Research Activities

- Analyzed New Jersey **labor market and job posting data**
- Collected and analyzed **350** **survey responses** from students, trainees, workers, and business owners
- Conducted **36** **interviews** with employers, education and training providers, nonprofits, community-based organizations, associations, and unions

Workforce Trends

- Overwhelmingly lacks gender diversity (**5%** female)
- Greater representation among Latino workers (**22%**), with Black (**6%**) and Asian (**4%**) workers underrepresented
- Many job postings without education requirements (**52%**) and/or required minimum experience (**46%**)



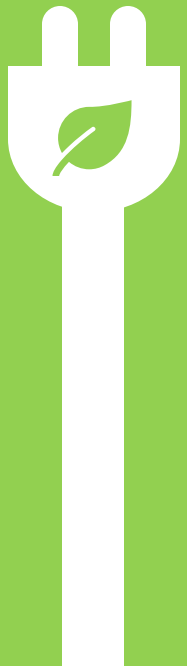
Findings and Themes

Key Themes

Our findings are bucketed based on the following key themes:

1. **Pipeline and Career Pathways**
2. **Availability and Accessibility of Education and Training Programs**
3. **Equity in Workforce Development Infrastructure**

Pipeline and Career Pathways



"The things we often see are lacking simple math skills—the ability to use a ruler, to do some basic calculations. That's a real problem."

— Employer

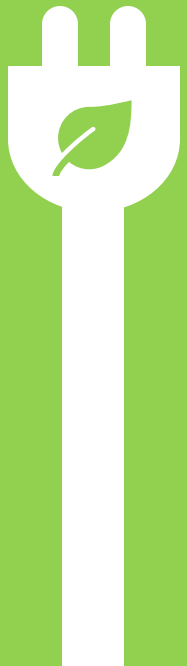
"There's a large number of people that do not yet know that these fields exist."

— Education and training provider staff member

Pipeline and Career Pathways

Key Theme	Findings
Pipeline and Career Pathways	**Finding 1:** Lacking sector awareness and insufficient accessible information hinders the pipeline and career pathways. **Finding 2:** Some education and training programs are misaligned with sector needs. **Finding 3:** Skills gaps, licensing and industry-recognized credentials, and entry-level requirements may encumber students, trainees, and workers in pursuing careers in the energy efficiency sector. **Finding 4:** Stakeholder partnerships often face internal and external barriers.

Availability and Accessibility of Education and Training Programs



"You make a lot more money in the field rather than education. It's always a struggle to find people who are willing to teach."

— Education and training provider staff member

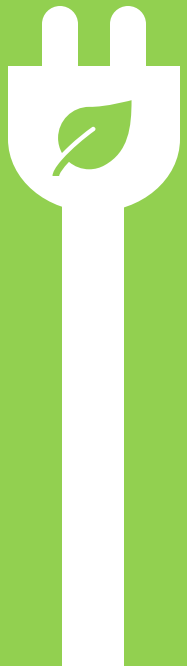
"Transportation is a huge barrier, and I think it keeps people from some of these higher paying energy efficiency jobs."

— Community-based organization staff member

Availability and Accessibility

Key Theme	Findings
Availability and Accessibility of Education and Training Programs	**Finding 5:** Difficulty hiring qualified instructors and underdeveloped curricula impact the availability and accessibility of education and training programs. **Finding 6:** The cost of participating in education and training programs, as well as facility location and access to transportation, frequently limit the ability to participate.

Equity in Workforce Development Infrastructure

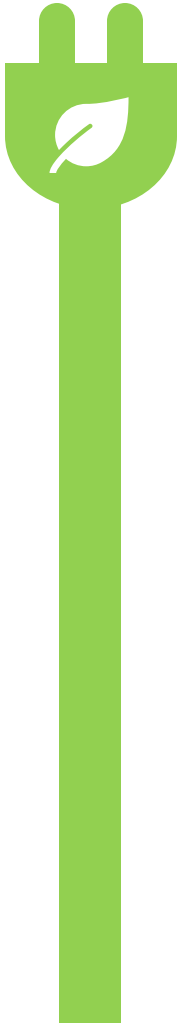


“You have to set up an environment that makes them feel welcome and shows that you’re invested in them and happy to have them as part of your team."

— Employer

“More opportunities offered by my employer would give me a better chance at a promotion, which would give me more experience under my belt to find a better job in the future.”

— Technician apprentice



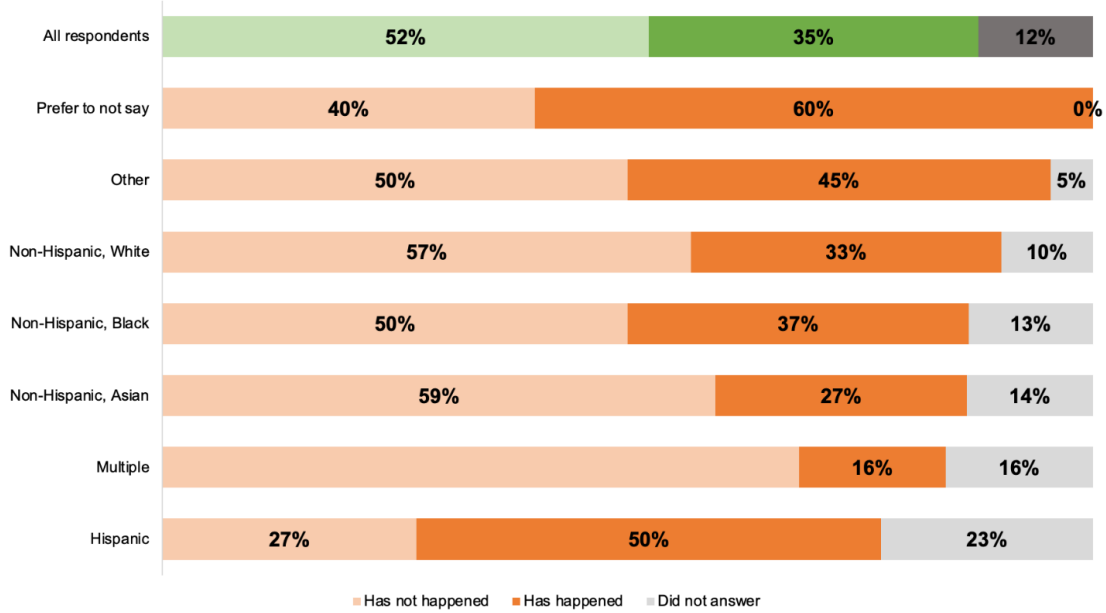
Equity in Workforce Development

Key Theme	Findings
Equity in Workforce Development Infrastructure	**Finding 7:** Individuals from disadvantaged and historically underserved communities frequently have negative experiences* in the workplace. **Finding 8:** Employment practices can undermine efforts to advance equity.

Note: The full report examines survey questions that fall under **treatment** or **advancement and promotion opportunities** by race or ethnicity, gender, and disability. This presentation only presents select results related to Finding 7.

Treatment by Race

Figure 4.3. *Treated as less competent or valuable*



Treatment by Gender

	Man (N = 239)	Woman (N = 65)	Other (N = 46)
Treated as less competent or valuable (N = 307)	28%	**57%**	43%
Passed over for the most important projects and assignments (N = 303)	22%	**42%**	28%
Heard or read comments, insults, or slurs directed at you by a manager/supervisor (N = 298)	13%	**28%**	17%
Heard or read comments, insults, or slurs directed at you by co-worker (N = 299)	16%	**32%**	20%
Heard or read comments, insults, or slurs directed at co-worker by manger/supervisor (N = 302)	21%	**29%**	20%
Heard or read comments, insults, or slurs directed at co-worker by co-worker (N = 301)	25%	**37%**	22%
Assigned tasks that were undesirable or unwanted by others (N = 312)	40%	**48%**	48%

Advancement and Promotion Opportunities by Disability

	With disability (N = 21)	Without disability (N = 282)	Prefer not to say (N = 24)
Were denied a promotion (N = 299)	**43%**	26%	17%
Earned less than a co-worker doing the same job (N = 301)	**67%**	35%	13%
Were denied a raise (N = 305)	**52%**	29%	21%
Received less advice, less feedback, or fewer opportunities for performance evaluation (N = 301)	**57%**	29%	17%

Strategies for Improving Workforce Development Infrastructure

Strategies

Strategy 1: Create and implement a statewide integrated career pathways tool to bridge the gap between education and training to employment.

Strategy 2: Engage relevant stakeholders to strengthen awareness of energy efficiency careers among youth.

Strategy 3: Develop public-private partnerships to address gaps in the workforce and create feedback loops between employers and training providers to ensure curricula can better meet sector needs.

Strategy 4: Partner with the New Jersey Department of Labor to establish more registered apprenticeships for jobs in the energy efficiency sector and offer incentive mechanisms that encourage employers to increase apprenticeship participation among women, individuals of color, individuals with disabilities, and formerly incarcerated individuals.

Strategies, Cont.

Strategy 5: Establish opportunities that provide financial support to individuals pursuing education and training programs.

Strategy 6: Require all state-sponsored or -funded education and training programs to include externships and/or an experiential learning component.

Strategy 7: Provide stipends, bonuses, and/or rewards to field practitioners willing to instruct classes.

Strategy 8: Leverage stakeholder partnerships to provide and/or connect students and trainees with wraparound services, such as transportation, counseling, and childcare, to reduce participation barriers.

Strategy 9: Facilitate, establish, and maintain community partnerships that help connect graduates of education and training programs with high-quality, good-paying jobs.

Strategies, Cont.

Strategy 10: Who does recruitment and outreach matters. Build trust between communities and stakeholders in the energy efficiency sector by meeting them where they are at.

Strategy 11: Implement geographic-based hiring targets to ensure equitable access to employment opportunities across region.

Strategy 12: Require stakeholders to better collect and track equity measures.

Leveraging Research Findings

TREC Funding Opportunity

U.S. Department of Energy State-based Home Energy Efficiency Contractor Training Grant

Purpose: To **(1)** reduce the cost of training contractor employees; **(2)** provide access to workforce development tools for contractors including, but not limited to, testing and certification; and **(3)** partner with community organizations to develop and implement an equitable state program.

Goal: To address barriers to a more fully developed EE workforce and meet job demand.

HOME ENERGY EFFICIENCY CONTRACTOR TRAINING ECOSYSTEM

Thank you

If you have any questions, please email Stephanie Walsh at stephanie.walsh@ejb.rutgers.edu

Energy Efficiency Updates:

Utility Updates

Utility Updates

NJ Energy Efficiency Stakeholder Meeting

Todd Van Aken, New Jersey Natural Gas

on Behalf of The NJ Joint Utilities – June 20, 2024

atlantic city electric™ AN EXELON COMPANY

ELIZABETHTOWN GAS

Jersey Central Power & Light A FirstEnergy Company

New Jersey Natural Gas

PSE&G

Rockland Electric Company

SOUTH JERSEY GAS®

Utility Updates

- **All utilities submitted their filings for the Second Triennium (1/1/2025-6/30/2027)**
  - All utilities continue to work with the parties toward settlement
- **Status of the Extension Requests for the First Triennium (to cover 7/1/2024-12/31/2024)**
  - Extensions were approved for Elizabethtown Gas, New Jersey Natural Gas and South Jersey Gas on April 30th
  - Extensions were approved for all EDCs on May 22
- **Joint Utility Contractor Calls**
  - Next Residential HPwES contractor call scheduled for July 18
  - Next HVAC contractor call to be held in the fall
- **Community Events**
  - ACE is participating in the following upcoming community events:
    - ***Winslow TWP Juneteenth;*** June 22, 2pm-6pm***;*** Peter Volpa Park at 569 Sickler Ave, Sicklerville, NJ 08081
  - JCPL attended the Warren County Ballon Festival on June 1st.
    - Registered to attend the 10th Annual MAREJ Apartments and Multifamily event on June 18th in Edison
  - South Jersey Gas will be sponsoring the Stone Harbor Green Fair on July 18th
  - New Jersey Natural Gas at the Blue Claws on June 29th
  - Rockland Electric recent events
    - Mahwah Senior Center - Health and WellnessExpo 6/8
    - Greenwood Lake Air show 6/14-6/16

Utility Updates

Earth Month Campaigns

- PSE&G
  - External communications promoting the Earth Month smart thermostat sale
    - Bill inserts, Residential e-newsletter, Google Postcard , MyEnergy Postcard , MyEnergy Challenge Email, PSEG.com Homepage Banner, Social media on PSEG's Facebook, Instagram, and X accounts

- NJNG
  - Discounts on smart thermostats via the NJNG Marketplace extended through July 30th
  - Omnichannel marketing approach communicating promotion to residential customers using historical marketplace purchase data and propensity modeling for further personalization and segmentation.
    - Primary channels: marketplace banner, direct mail postcard, social ads, social posts, drip emails and customer newsletter

- ETG, and SJG are offering promotions on their Efficient Products marketplaces
  - www.elizabethtowngasmarketplace.com
  - www.southjerseygasmarketplace.com

New Jersey Natural Gas Primary Updates

NJNG x Sustainable Jersey Energy Outreach Technical Assistance Renewed

- Includes engagements that guide municipalities through completing a residential or commercial energy efficiency outreach campaign.
- Participants receive:
  - Technical assistance to plan and implement an energy efficiency outreach campaign.
  - Customized outreach materials (program signage, social media graphics, etc.)

Quick Home Energy Checkup+ (QHEC+) $1 Promotion

- From June 12 through Sept. 30, 2024, NJNG customers can schedule a QHEC+ for $1.
- Promotional channels:
  - Email
  - Bill insert and door hangers
  - Direct mail
  - Social media ads
  - Publication advertising

Bonus Incentive:
Various smart thermostats are on sale or will be discounted for Independence Day. Customers can take advantage of these deals and have their new device installed for free during their QHEC+.

Energy Efficiency Updates:

Regulatory – State & Federal

Triennium 2 Filings Review (Docket No. QO23030150)

- February 26, 2024 – Presiding Commissioners' Orders
  - Summaries of proposed utility programs, budgets, cost recovery mechanisms
  - Rulings on motions to intervene and participate
    - New Jersey Natural Gas Company (QO23120868)
      - Intervenors: EEA-NJ, NJLEUC, NRDC, NJPEEC, Sierra Club
      - Participants: Uplight, Joint Utilities
    - Elizabethtown Gas Company (QO23120869)
      - Intervenors: EEA-NJ, NJLEUC
      - Participant: Uplight, Joint Utilities
    - South Jersey Gas Company (QO23120870)
      - Intervenors: EEA-NJ, NJLEUC
      - Participant: Uplight, Joint Utilities
    - Atlantic City Electric Company (QO23120871)
      - Intervenors: EEA-NJ, NJLEUC
      - Participants: Convergent, CPower, Google, Uplight, Joint Utilities
    - Jersey Central Power & Light Company (QO23120872)
      - Intervenors: EEA-NJ, NJLEUC
      - Participants: Convergent, CPower, Google, Joint Utilities
    - Public Service Electric & Gas Company (QO23120874)
      - Intervenors: EEA-NJ, NJLEUC, NRDC, NJPEEC, Sierra Club
      - Participants: Convergent, CPower, Google, United, Uplight, Joint Utilities
    - Rockland Electric Company (QO23120875)
      - Intervenor: EEA-NJ
      - Participant: CPower, Joint Utilities

Advanced Energy United (United), Convergent Energy and Power Inc. (Convergent), Energy Efficiency Alliance of NJ (EEA-NJ), Natural Resources Defense Council (NRDC), NJ Large Energy Users Coalition (NJLEUC), NJ Progressive Equitable Energy Coalition (NJPEEC)

Triennium 2 Filings Review (Docket No. QO23030150)

- Status:
  - Prehearing orders: procedural schedules, issues to be resolved
    - PSE&G: March 28
    - ACE, JCP&L, RECO: April 12
    - NJNG, SJG, ETG: April 23
  - Further commissioner orders suspending procedural schedules during settlement: https://www.nj.gov/bpu/agenda/presidingcommissionerorders.html
  - Settlement conferences (March–June 2024) – budgets, programs, incentives
  - Public hearings (May–June 2024)
  - Board action (summer–early fall 2024)
  - Triennium 2 starts January 1, 2025

Guest Presentation:
Energy Recovery Ventilation

Paul Meierdierck, PE
New Jersey Institute of Technology (NJIT)

Energy Recovery Ventilation (ERV)

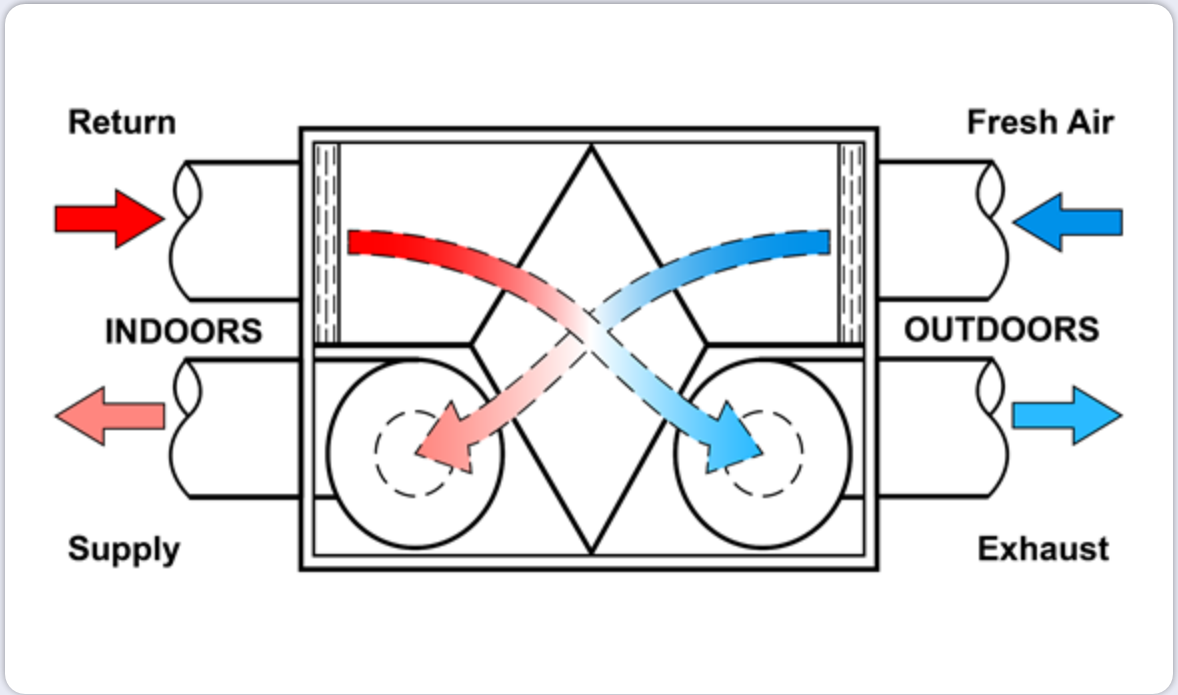
TOPICS COVERED

- What is Energy Recovery Ventilation?
- How an ERV Works
- Benefits of Recovered Heat
- Applications
- Design Considerations
- Operational and Maintenance Concerns
- Final Tips and Takeaways

NJ·CELC
NEW JERSEY CLEAN ENERGY LEARNING CENTER

WHAT IS ENERGY RECOVERY VENTILATION?

- Energy Recovery Ventilation (ERV) is the transfer of thermal energy from building exhaust air to the make up air entering the building



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NEW JERSEY CLEAN ENERGY LEARNING CENTER

WHAT IS ENERGY RECOVERY VENTILATION?

- ERV differs from Heat Recovery Ventilation (HRV)
- ERV recovers both sensible heat and latent heat from exhaust air
- HRV only recovers sensible heat
- Moisture or water vapor in the air contains latent heat
- Latent heat is associated with a phase change

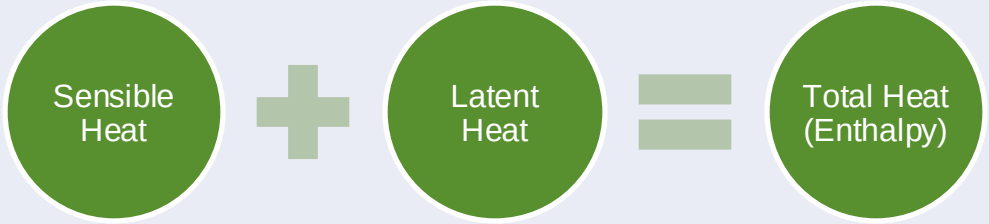
SENSIBLE HEAT AND LATENT HEAT

Sensible Heat

- "Sensed" with a thermometer
- When heat is added, the temperature increases

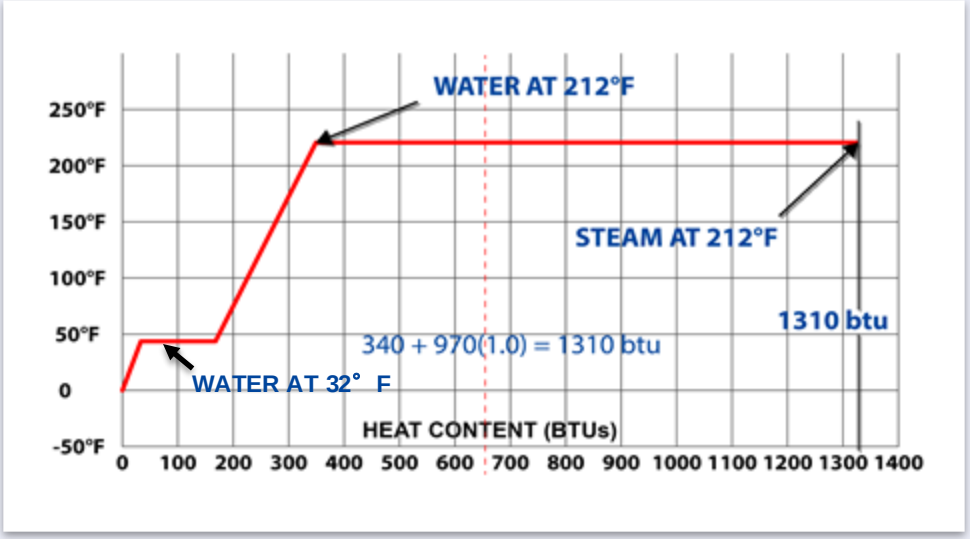
Latent Heat

- Referred to as "hidden heat"
- When heat is added, no temperature change occurs until a change of phase



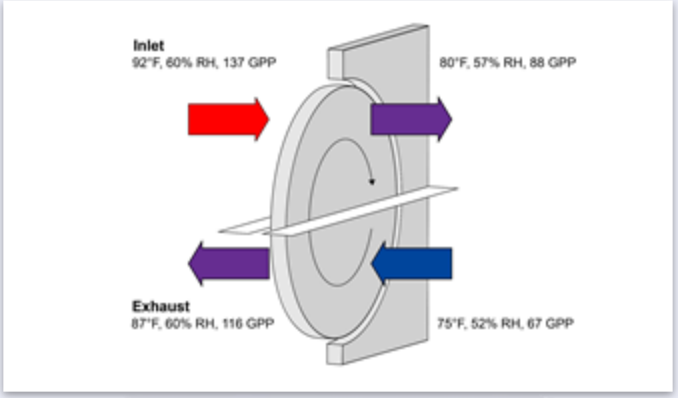
SENSIBLE HEAT AND LATENT HEAT (CONT.)

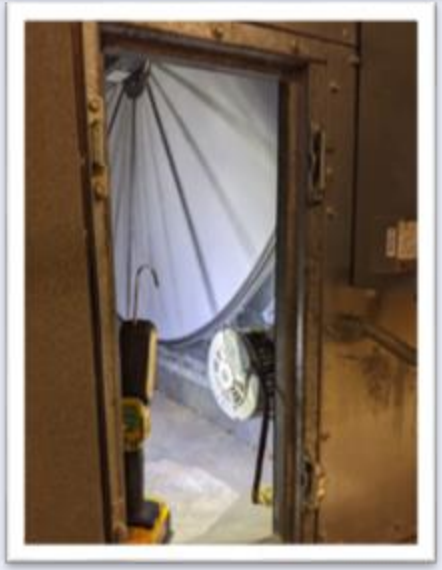
- 32°F – 212°F, takes 1 BTU per pound to raise the temperature of water 1°F
- As heat is added to liquid water at 212°F, temperature does not change
- To change liquid water to steam requires 970 BTU/lb., (latent heat)
- Humid air contains water vapor (steam), therefore contains latent heat



ENTHALPY WHEEL ERV

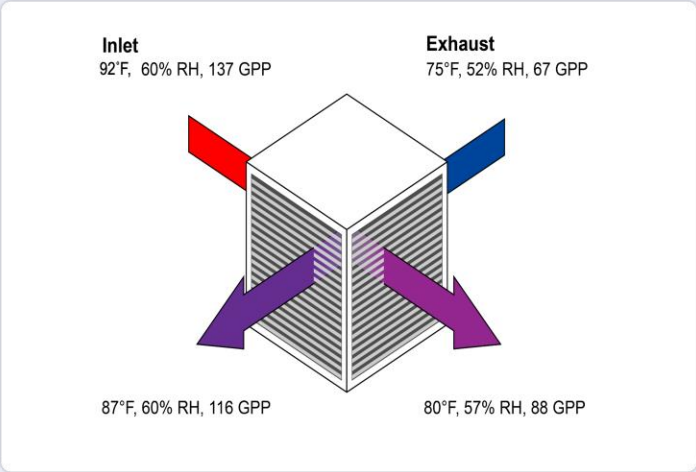
- Made of material that absorbs both heat and moisture
- Core of wheel can be made of various materials
- Rotates between outgoing and incoming exhaust air ducts
- Units generally include a filter and fan
- Enthalpy wheels are one of the most common types of ERVs

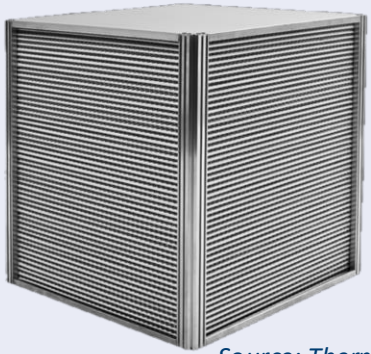




Source: airexchange.com

FIXED PLATE ERV





- No moving parts
- Intake and exhaust air are routed through a series of alternating parallel plates
- Heat is moved from one air stream to another
- Moisture can be transferred in addition to heat through the use of semipermeable materials that separate the air streams
- Many fixed plate exchangers are made of aluminum and are therefore HRVs rather than ERVs.

Source: Thermalnetics.com

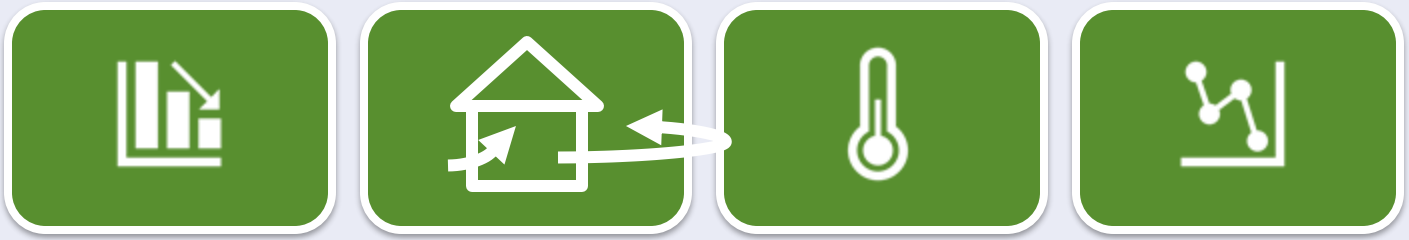
ERV IN HEATING MODE

- Heat and moisture are transferred from warm exhaust air to the cold outside make up air
- The load on the heating equipment is reduced
- The need for humidification is reduced

ERV IN COOLING MODE

- By cooling and dehumidifying the moist warm intake air, the load on air conditioning equipment is reduced
- In cooling mode, the core heat exchanger cools the warm incoming outside air
- Moisture is also removed in the cooling mode from the incoming outside air and transfers it to the exhaust air

BENEFITS OF ERV



Reduces energy usage for heating and cooling

Enables increased ventilation that is energy efficient

Provides better humidity control

Lowers peak demand

Cuts expenditures of electricity and fuel

Lowers carbon footprint

Improves indoor environmental and air quality

Improves occupant comfort

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COSTS AND SAVINGS OF ERV

- Costs for an ERV system are generally known
- ERV in new construction can be more cost effective
- Savings can vary significantly depending on building type and climate
- Buildings with large ventilation requirements have increased opportunities for savings
- Paybacks are generally greater in extreme hot or extreme cold climates

APPLICATIONS OF ERV

- Buildings with high ventilation requirements
- Hospitals
- Research laboratories with high fume hood ventilation requirements
- Single family residential buildings in New Jersey
- Commercial kitchens
- Aquatic Centers

CONCEPTUAL FEASIBILITY

- Consider ERV in the context of whole building approach
- How will ERV affect operation and energy use in other building systems?
- Will ERV serve partial areas of the building or the entire building?
- Is ERV or HRV the appropriate choice?
- Is ventilation required for life safety post-COVID for existing buildings?
- Is ERV required for new construction building codes?

DESIGN CONSIDERATIONS

- Does the building have existing ductwork?
- Requires that exhaust air duct and supply air duct intersect
- Is ERV required by jurisdictional code for new construction?
- Is humidity control critical to the building's operation?

DESIGN CONSIDERATIONS (CONT.)

- Local climate conditions
- Is AHSRAE 90.1 required for a new building's construction?
- Does ERV for a particular building fit into its plan to meet 2030 and 2050 decarbonization goals?
- Is the building intended to be a high-performance building per ASHRAE 189.1?

OPERATIONAL CONSIDERATIONS

- Controls strategy and sequencing
- Connect to Building Automation System (BAS)
- Functional testing
- Added electrical usage

MAINTENANCE CONSIDERATIONS

- Intake and exhaust screens accessible for maintenance
- Clean heat exchange surfaces
- Clean surfaces required to operate as designed
- Dirty surfaces reduce heat transfer
- Add energy recovery devices to preventative maintenance schedule
- Include maintenance costs in payback calculations
- Create a budget line item for routine maintenance

FINAL TIPS AND TAKEAWAYS

- Always seal and insulate before sizing the ERV
- ERV allows year-round fresh air to building space
- Health benefit from increased fresh air
- Mitigation of infectious disease
- Potential energy and cost savings
- Thermal energy savings contribute to lower greenhouse gas emissions and decarbonization

Thank You!

General Q&A

To submit questions in advance for next month:
EnergyEfficiency@bpu.nj.gov

Items of Interest

Next Meetings

Energy Efficiency Stakeholder Meetings

NJCleanEnergy.com/EE

3rd Thursday of the Month, 1-2:30pm

July 18, 2024
August 15, 2024
September 19, 2024
October 17, 2024
(no November meeting)
December 19, 2024

More Information

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THANK YOU