



**BUREAU OF ENERGY AND
TECHNOLOGY POLICY**

November 18, 2021

2022-2024 Conservation and Load Management Plan

Technical Meeting
Department of Energy and Environmental Protection



Meeting Logistics

During the Meeting:

- This meeting will be recorded. Recordings and slides will be available on DEEP's C&LM webpage after the meeting.
- Please remain on mute.
- Refrain from using the chat function for side conversations.

Public Comments and Questions

- There will be opportunity for public comments at the beginning and end of each day.
- We will begin with those that pre-registered to comment, then open the floor for additional comments.
- If you did not register but would like to make a comment, please raise your hand and we will recognize you, in order, as time allows.
- Please keep comments to no more than three minutes.
- Attendees can ask questions of presenters using the chat function. DEEP will facilitate these questions.

Conservation and Load Management Plan Review

Completed:

- The Utilities worked to develop the 2022-2024 Conservation and Load Management Plan with guidance from the Energy Efficiency Board, Consultants, and DEEP.
- The Energy Efficiency Board held public input sessions on the draft 2022-2024 Plan, most recently in August.
- The Energy Efficiency Board approved the 2022-2024 Plan text in September and the budgets and savings tables in October.
- The Utilities filed the 2022-2024 Plan with DEEP on November 1, 2021.
- DEEP issued Requests for Information regarding the 2022-2024 Plan to the Utilities on November 4, 2021. The Utilities began issuing responses to these Requests on November 12, 2021.

In Progress:

- DEEP is holding three public meetings to inform its review of the 2022-2024 Plan:
 - November 16 Technical Meeting
 - November 17 Public Input Session
 - November 18 Technical Meeting
- DEEP will issue a Draft Determination on the 2022-2024 Plan. At that time, there will be an opportunity for written comments.
- DEEP will issue a Final Determination on the 2022-2024 Plan that considers information received during this process.

Where can I find C&LM planning documents?

DEEP C&LM webpage:

- News and information about upcoming DEEP meetings
- Current and approved C&LM plans, including the proposed [2022-2024 Plan](#)
- Archived C&LM planning documents
- Related DEEP initiatives, including the Equitable Energy Efficiency Proceeding and Weatherization Barrier Remediation Program.

DEEP Energy Filings:

- Filed C&LM Plans and annual updates
- DEEP Determinations, including compliance conditions
- Utility responses to compliance conditions, requests for information, annual reporting, and other items
- Records of ongoing DEEP proceedings

Energy Efficiency Board Website:

- C&LM planning documents
- Schedules of Board and Committee meetings
- Presentations from Board and Committee meetings, including quarterly and annual reporting from the Utilities
- Program evaluation report and annual legislative reports
- [Statewide Energy Efficiency Dashboard](#) of program activity

Energize CT Website:

- Customer-facing information on solutions, incentives, programs, and events
- Electric Supplier Rate Board

Today's Schedule – November 18

9:00-9:30	Opening remarks and public comment
9:30-12:30	Residential Portfolio Presentations <ul style="list-style-type: none"> • Portfolio Overview: Utilities • HES Vendor Perspective: Lorenzo Wyatt, Home Comfort Practice • Regional Heat Pump Overview: Richard Faesy, Energy Futures Group
12:30-1:30	Break
1:30-3:15	Education, Workforce Development, and Outreach Presentations <ul style="list-style-type: none"> • Portfolio Overview: Utilities • Vicki, whenever you begin talking, your mic is weak for the first Coordination: Niall Dammando, OWS • Capital Workforce Partners Training Program: Leticia Colon de Mejias, Efficiency for All
3:15-4:30	Demand Response Presentations <ul style="list-style-type: none"> • Portfolio overview: Utilities
4:30-5:00	Public comment and closing remarks

Public Comment

- We will begin with those that pre-registered to comment, then open the floor for additional comments.
- If you did not register but would like to make a comment, please raise your hand and we will recognize you, in order, as time allows.
- Please keep comments to no more than three minutes.
- Please unmute yourself when recognized and return to mute when you are finished.



Part of the AVANGRID Family

November 18, 2021, 9:30 AM-12:20 PM

2022-2024 Energy Efficiency Plan Residential Portfolio

Agenda

- Priorities
- Residential Programs

Priorities

Equity

Equitable distribution of benefits of EE and ADR programs across state, communities, market segments, and customer types

Decarbonization

Reducing greenhouse gas emissions from building sector to meet legislative/regulatory goals re: air pollutants and climate change

Energy Affordability

Promoting economic development through lower energy bills, enhanced energy security, and increased reliability

Priority No. 1: Equity

- Use DEEP's new Energy Efficiency Equity baseline (E3b) to identify areas of the state with lower participation and to inform new targeted customer outreach efforts
- Market to customers in non-English languages to increase audience engagement
- Continue to analyze customer data and target customers in distressed municipalities and environmental justice communities and market sectors with untapped potential
- Include extra weighting for certified minority-owned, women-owned, and veteran-owned businesses when evaluating/scoring competitive requests for proposals for program vendors

Priority No. 2: Decarbonization

- Promote sustainable building practices (Zero Energy Homes, LEED, and Passive House) to residential new construction market actors
- Expand ADR offerings to support electrification and carbon neutrality, including smart thermostats, air conditioning load control, battery storage, and electric vehicle chargers
- Educate consumers on benefits of heat pump technologies and develop contractor locator tool to direct customers to qualified installers
- Maintain Qualified Products List to standardize efficiency and qualifying criteria for heat pump technologies in Northeast

Priority No. 3: Energy Affordability

- Leverage funding from Low-Income Heating Energy Assistance Program and American Rescue Plan Act to address weatherization health and safety barriers
- Increase stocking and sale of efficient equipment at retailers
- Enhance and deploy web-based resources to educate customers about low-carbon technologies, high-efficiency products, and active demand response offerings
- Continue to offer virtual pre-assessments through HES/HES-IE programs to support installation of EE and ADR measures
- Introduce Census Tract Tool to streamline customer outreach efforts for contractors



Residential Programs

Retail Products

**HVAC and Water
Heating Equipment**

**Residential New
Construction &
Additions**

**Home Energy
Solutions**

**Home Energy
Solutions-Income
Eligible**

**Multifamily
Building**

**Behavioral
Strategies**

Retail Products

- Include induction cooktops and advanced power strips to ENERGY STAR® Retail Products Platform
- Expand Instant Discount offering to include room air conditioners, dehumidifiers, and air purifiers
- Include room A/Cs to Appliance Recycling
- Add dehumidifiers to online marketplace
- Remove LED bulbs (and resulting energy savings) from program, except in certain distressed municipalities or environmental justice communities/areas

2022-2024 Planned Results	Total
Number of Products Sold (appliances & lighting)*	1,226,360
Total Program Lifetime Savings, Electric (MWh)	212,383
Total Program Lifetime Savings, Oil (Gal)	9,575
Total Program Lifetime Savings, Propane (Gal)	113,441
Total Program Lifetime Savings (MMBtu)	736,340
Lifetime CO ₂ Emissions Reduced (tons)**	85,856
Total Program Lifetime Benefits (\$000)	\$50,715
Total Program Costs (\$000)	\$13,901
<p><i>*Products sold include lighting and appliances (e.g., air purifiers, clothes washer, clothes dryer, refrigerators and freezers, induction cooktops, dehumidifiers, soundbars, power strips).</i></p> <p><i>**Please note that these are short tons.</i></p>	

HVAC and Water Heating Equipment

2022-2024 Planned Results	Total
Number of Units Sold (HVAC and water heating equipment)*	203,376
<i>Number of Heat Pumps Sold (included above)**</i>	27,039
Total Program Lifetime Savings, Electric (MWh)	342,877
Total Program Lifetime Savings, Natural Gas (ccf)	54,406,605
Total Program Lifetime Savings, Oil (Gal)	22,532,978
Total Program Lifetime Savings, Propane (Gal)	5,969,594
Total Program Lifetime Savings (MMBtu)	10,438,639
Lifetime CO ₂ Emissions Reduced (tons)***	895,535
Total Program Lifetime Benefits (\$000)	\$276,108
Total Program Costs (\$000)	\$74,651
<i>*Includes heat pumps, central A/Cs, room A/Cs, water heaters, and smart thermostats. **This number is included in the total number of units sold (HVAC and water heating equipment). ***Please note that these are short tons.</i>	

- Focus on decarbonization/heat pump technologies
- Promote Clean Heating & Cooling Calculator
- Encourage contractors to replace central A/C (ducted) systems with central heat pumps
- Establish heat pump water heater standards, increase Uniform Energy Factor requirements (as appropriate)
- Continue to offer midstream incentives for energy-efficient boilers/furnaces
- Offer traditional incentives for split HVAC systems
- Offer upstream incentives for ENERGY STAR certified natural gas water heaters
- Provide technical training opportunities
- Investigate eliminating natural gas incentives where condensing equipment previously in place

Decarbonization and Heat Pumps

- Maintain online learning center
- Create a heat pump landing webpage on EnergizeCT.com
- Establish customer tool to help customers identify qualified contractors
- Develop heat pump specialist for customer consultative service
- Collaborate with manufacturers and distributors to identify trained/untrained contractors
- Maintain regional Qualified Products List for air source heat pumps
- Host collaborative channel partnership trainings
- Integrate heat pumps with ADR offerings
- Promote heat pump integrated controls
- Work with International Ground Source Heat Pump Association to support trainings
- Establish incentives for air-to-water heat pumps based on performance and criteria standpoint
- Align CT ground source heat pump efficiency requirements with MA Program Administrators

Residential New Construction & Additions

- Offer permanent Major Renovations & Additions pathway
- Continue to offer all-electric package for new construction projects
- Increase Passive House design/certification and collaborate with CT Passive House Alliance for accreditation and workshops
- Promote sustainable building practices and decarbonization
- Offer bonus incentives for homes built to Passive House, ENERGY STAR Homes, LEED for Homes, National Green Building Standard, and/or DOE Zero Energy Ready Home standards
- Prepare new construction market actors for adoption of IECC 2021 through code training series and outreach/technical support
- Support equity/affordable housing through Whole Building Performance Initiative, work with Habitat for Humanity/other groups
- Continue to hold Zero Net Energy Challenge

2022-2024 Planned Results	Total
Number of Homes	5,861
Total Program Lifetime Savings, Electric (MWh)	200,608
Total Program Lifetime Savings, Natural Gas (ccf)	32,406,886
Total Program Lifetime Savings, Propane (Gal)	2,304,309
Total Program Lifetime Savings (MMBtu)	4,229,594
Lifetime CO ₂ Emissions Reduced (tons)*	335,661
Total Program Lifetime Benefits (\$000)	\$88,431
Total Program Costs (\$000)	\$19,171

**Please note that these are short tons.*

Home Energy Solutions

2022-2024 Planned Results	Total
Number of Homes Served	68,767
Total Program Lifetime Savings, Electric (MWh)	255,185
Total Program Lifetime Savings, Natural Gas (ccf)	26,497,418
Total Program Lifetime Savings, Oil (Gal)	38,945,019
Total Program Lifetime Savings, Propane (Gal)	3,810,004
Total Program Lifetime Savings (MMBtu)	9,346,527
Lifetime CO ₂ Emissions Reduced (tons)	865,003
Total Program Lifetime Benefits (\$000)	\$288,909
Total Program Costs (\$000)	\$93,898

**Please note that these are short tons.*

- Develop Virtual Concierge service, promote add-on measures recommended during HES assessment
- Implement “Final Score” to DOE Home Energy Score process for customers who opted for Initial Score and completed at least one recommended EE upgrade
- Coordinate with DEEP’s selected Weatherization Barrier Remediation Program vendor to increase number of households weatherized in CT
- Launch pay-for-performance pilot to analyze energy usage data to determine realized savings from weatherization measures
- Focus decarbonization efforts on increased air sealing, duct sealing, and insulation projects and look for ways to market them as bundles
- Continue to offer Virtual Pre-Assessment
- Provide technical training opportunities to vendors

Home Energy Solutions-Income Eligible

- Introduce DOE Home Energy Score
- Increase insulation and comprehensive home performance projects
- Deploy Census Tract Tool to allow communities/vendors to select income-eligible areas of state to focus marketing efforts:
 - Tool allows vendors to print out single customer information to attach to HES-IE applications as “proof of income”
 - For select census tracts, such as distressed/environmental justice communities, all residents will be eligible to receive HES-IE services
- Continue to offer Virtual Pre-Assessment
- Continue to cost share EE measures for DOE Weatherization Assistance Program projects
- Leverage funding from LIHEAP/ARPA to address weatherization and other health safety barriers in CT homes
- Focus decarbonization efforts on increased air sealing, duct sealing, and insulation projects and look for ways to market them as bundles
- Provide technical training opportunities

2022-2024 Planned Results	Total
Number of Homes Served	56,675
Total Program Lifetime Savings, Electric (MWh)	116,612
Total Program Lifetime Savings, Natural Gas (ccf)	35,635,369
Total Program Lifetime Savings, Oil (Gal)	18,592,916
Total Program Lifetime Savings, Propane (Gal)	1,767,300
Total Program Lifetime Savings (MMBtu)	6,804,819
Lifetime CO ₂ Emissions Reduced (tons)*	578,080
Total Program Lifetime Benefits (\$000)	\$234,172
Total Program Costs (\$000)	\$94,271

**Please note that these are short tons.*

Multifamily Initiative

- Continue to work with CT Housing and Financing Authority and CT Department of Housing to leverage Fund dollars to increase efficiency of multifamily homes and make them more affordable
- Look to collaborate with state agencies to offer technical and funding support for affordable housing projects funded through the American Rescue Plan Act of 2021 (\$7 million)
- Continue to focus on several high-efficiency measures that help multifamily buildings optimize their energy performance, including triple-pane windows, heat pump water heaters, electric resistance to heat pump conversions, and gasketed A/C cover sleeves
- Increase engagement with multifamily building owners
 - Host additional series of landlord roundtables in 2022
 - Partner with ethnic-based, community-based organizations to hold multilingual roundtables
 - Explore more opportunities to communicate peer-to-peer with landlords (including landlord testimonials)

Behavioral Strategies

- New approach/delivery models for Companies
- Offer customized energy usage insights to customers through natural digital touchpoints (emails, when paying bill online)

Energy Insights (Eversource)

- Customized usage insights and recommendations
- Traditional one-on-one outbound marketing allows personalization at scale

Global Energy Manager Platform (United Illuminating)

- Harnesses Advanced Metering Infrastructure to give customers insight into how they use energy and how to make better choices
- Delivered through multiple digital touchpoints on UI website
- Continue to deliver behavioral reports to compliment Energy Manager Platform

2022-2024 Planned Results	Total
Number of Homes Served	489,837
Total Program Lifetime Savings, Electric (MWh)	14,924
Total Program Lifetime Savings, Natural Gas (ccf)	1,625,946
Total Program Lifetime Savings (MMBtu)	218,231
Lifetime CO ₂ Emissions Reduced (tons)*	17,759
Total Program Lifetime Benefits (\$000)	\$5,626
Total Program Costs (\$000)	\$2,015

**Please note that these are short tons.*



2022-2024 C&LM Plan - Technical Meeting

November 18, 2021

A Vendor's Perspective

Lorenzo Wyatt, Home Comfort Practice

Agenda

- What is working with the current Plan?
- What could be improved?
- Priority issues going into 2022-2024 Plan

What is working with the current Plan?

- Companies' marketing campaigns
- HES-IE Comprehensive Incentive (IQT), merged
- HES rebates and financial incentives
- TrackSys customer tracking system
- Overall, 2021 has been a good year

What could be improved?

- Ratepayer rebates and incentives, bundling
- EFI timely payment of rebates
- Relief from data collection/administrative workload
- Weatherization Barrier Remediation Program
- Apply inflation impacts for 2022-24 program pricing



Priority issues going into 2022-24 Plan

Cost of Goods Sold

- Materials inflation
- Labor/wage inflation
- Gasoline & Diesel inflation

Priority issues going into 2022-24 Plan

	<u>4/2020</u>	<u>10/2021</u>	<u>% change</u>
R19	\$0.34	\$0.45	33%
R21	\$0.65	\$0.83	28%
Cellulose	\$7.00	\$9.25	32%
Gasoline	\$2.43	\$3.55	46%
Diesel	\$2.85	\$3.71	30%
	<u>2018</u>	<u>2021</u>	<u>% change</u>
CT minimum wage	\$10.10	\$13.00	29%

Heat Pumps in Northeast Energy Efficiency Programs

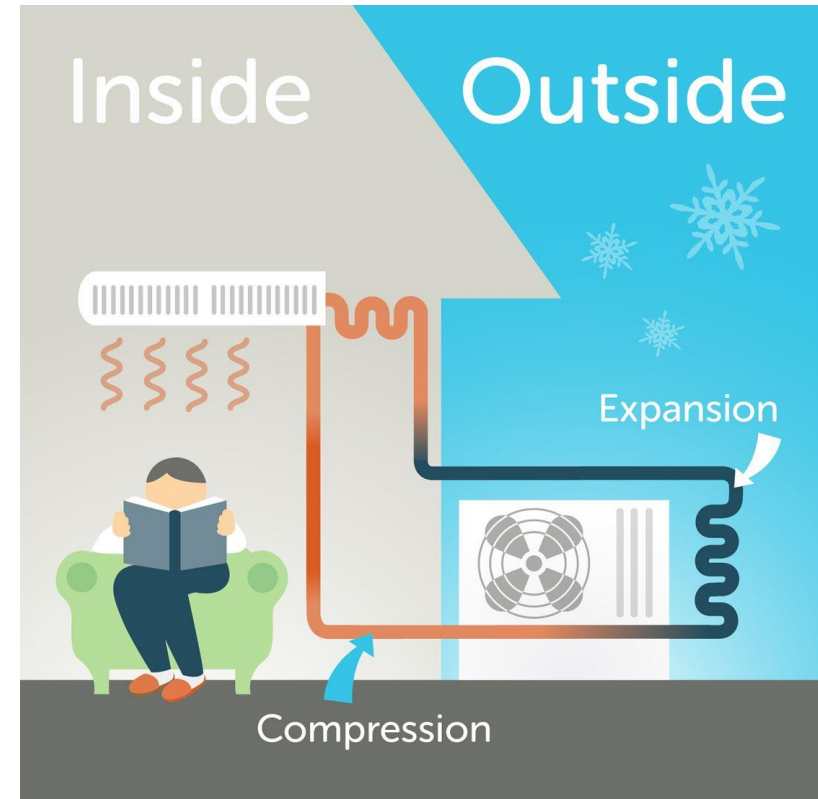
For the Connecticut Department of Energy and Environmental
Protection

Richard Faesy – EEB Technical Consultant

November 18, 2021

How do Heat Pumps Work?

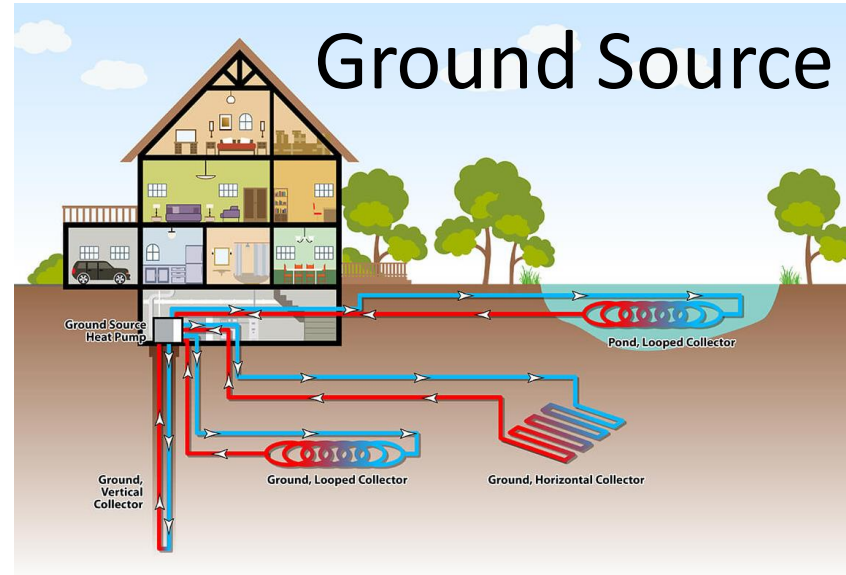
- Transfers heat energy from outside the home to inside the home in winter
 - And the opposite in the summer
 - Does not *create* heat, but *moves* it
- Consists of two major components
 - Outdoor unit and indoor air handler
- Like an air conditioner, the heat pump has refrigerant that absorbs heat, moves it, and “rejects” it inside in the winter and outside in the summer.



Types of Heat Pumps



Air Source



Types of Heat Pump Distribution Systems

Hydronic



Mini-Ducted



Ductless



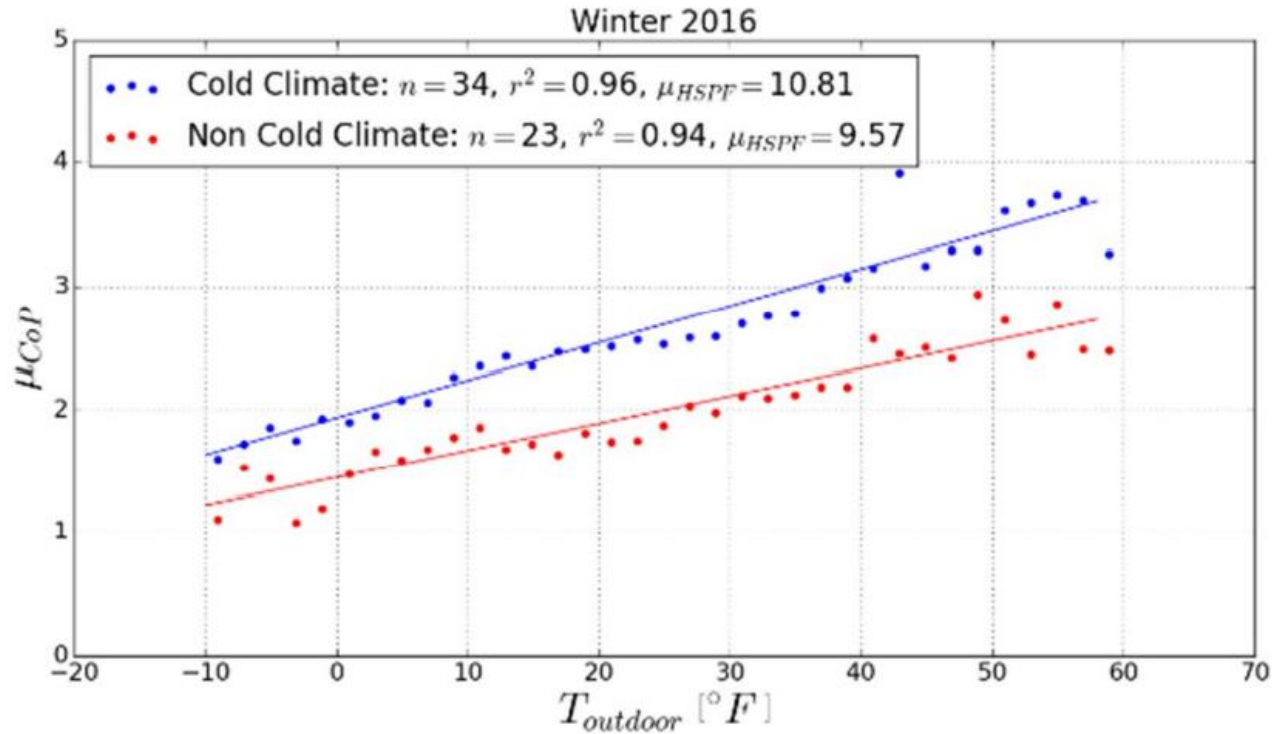
Ducted

Heat Pump Water Heaters



Improved Efficiency

Figure ES-5. Average Heating COP vs. Outdoor Air Temperature for Cold-Climates and Non-Cold-Climates Systems—Winter 2016



Notes: 1) All cold-climate unit sites contained single-head units only.
2) DMSHP manufacturers offer units that claim high performance at very cold (below 0 ° F) outdoor ambient temperatures. The evaluation team used the Efficiency Vermont Technical Reference Manual that was current during the study's planning phase to identify cold-climate units. As the report shows, units not characterized as cold climate can operate at 0 ° F, although there are not the same claims of high performance at very cold temperatures.



Benefits of Cold Climate Heat Pumps



Effective for cooling and heating



Efficient heating at cold temperatures



Versatile with ducted or ductless options



Greater cost stability with electricity vs delivered fuels



Reduce carbon footprint compared to fossil fuel options

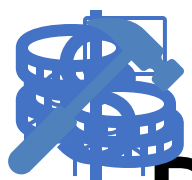


Pairs well with solar



Most efficient heating system can reduce heating costs compared to most fuels

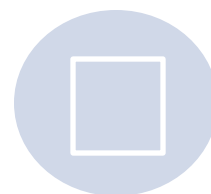




Drawbacks of Heat Pumps



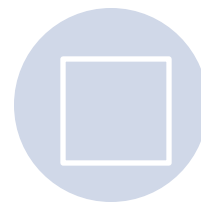
Upfront costs



May not be more cost-effective than natural gas systems



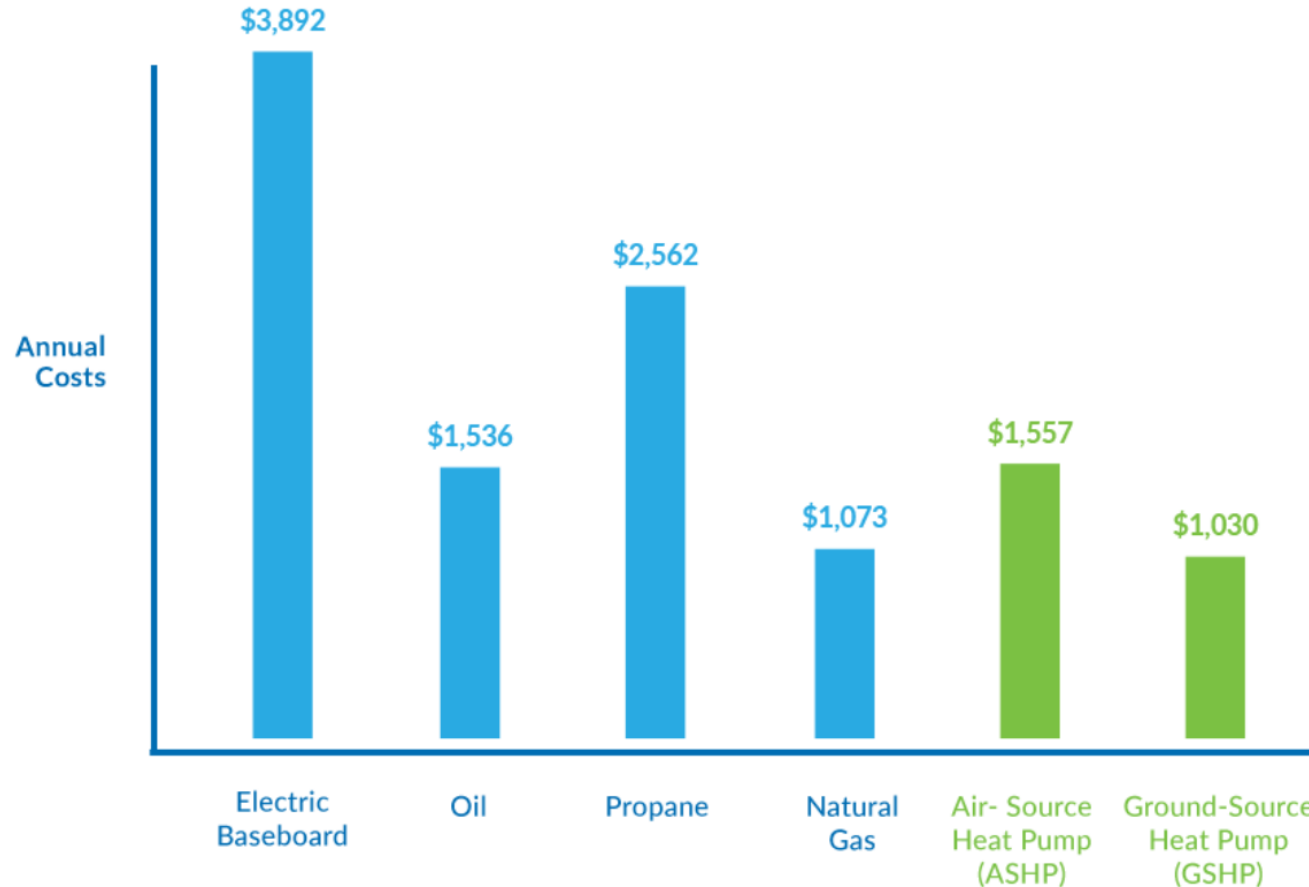
New technology which may be unfamiliar to some HVAC contractors



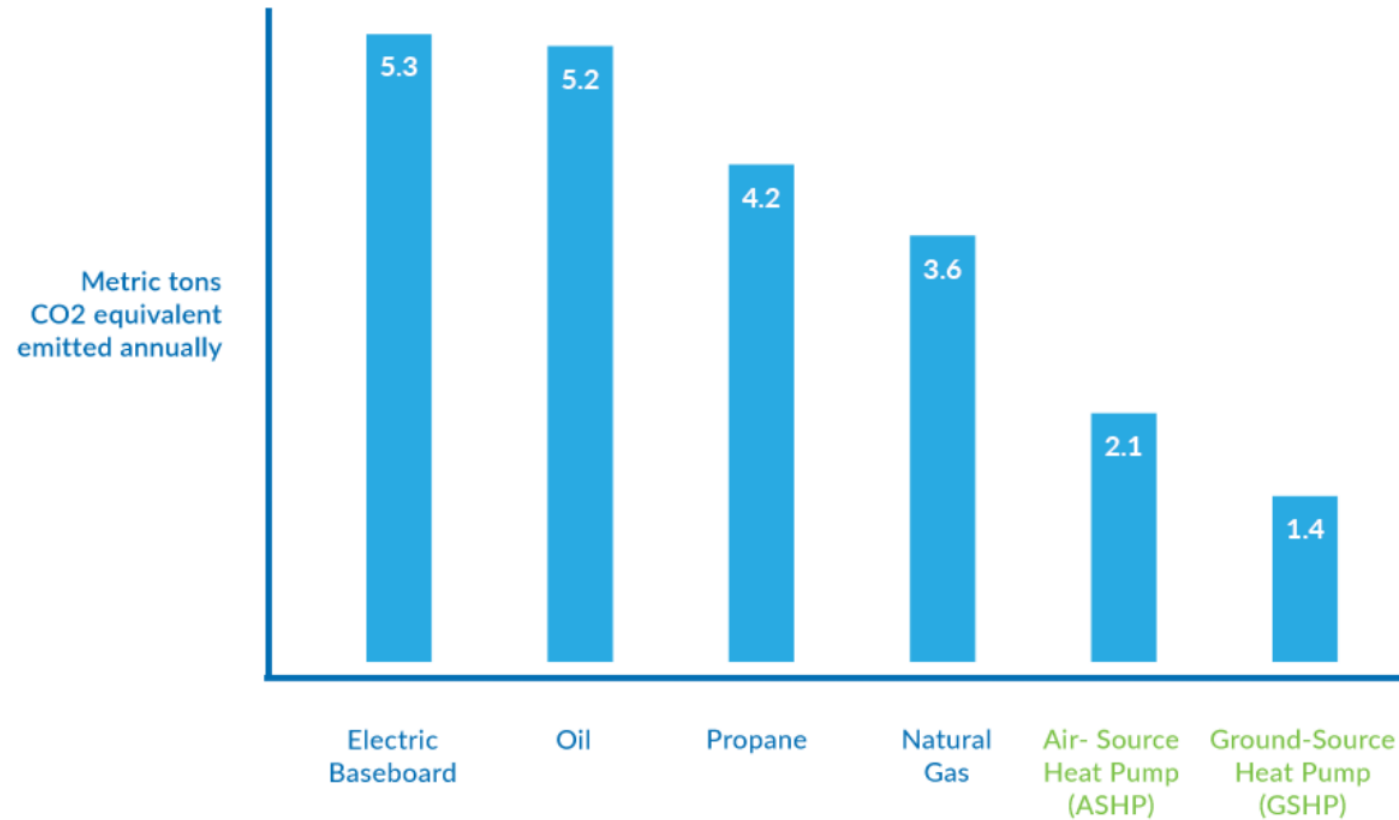
Challenges with full replacement vs partial displacement



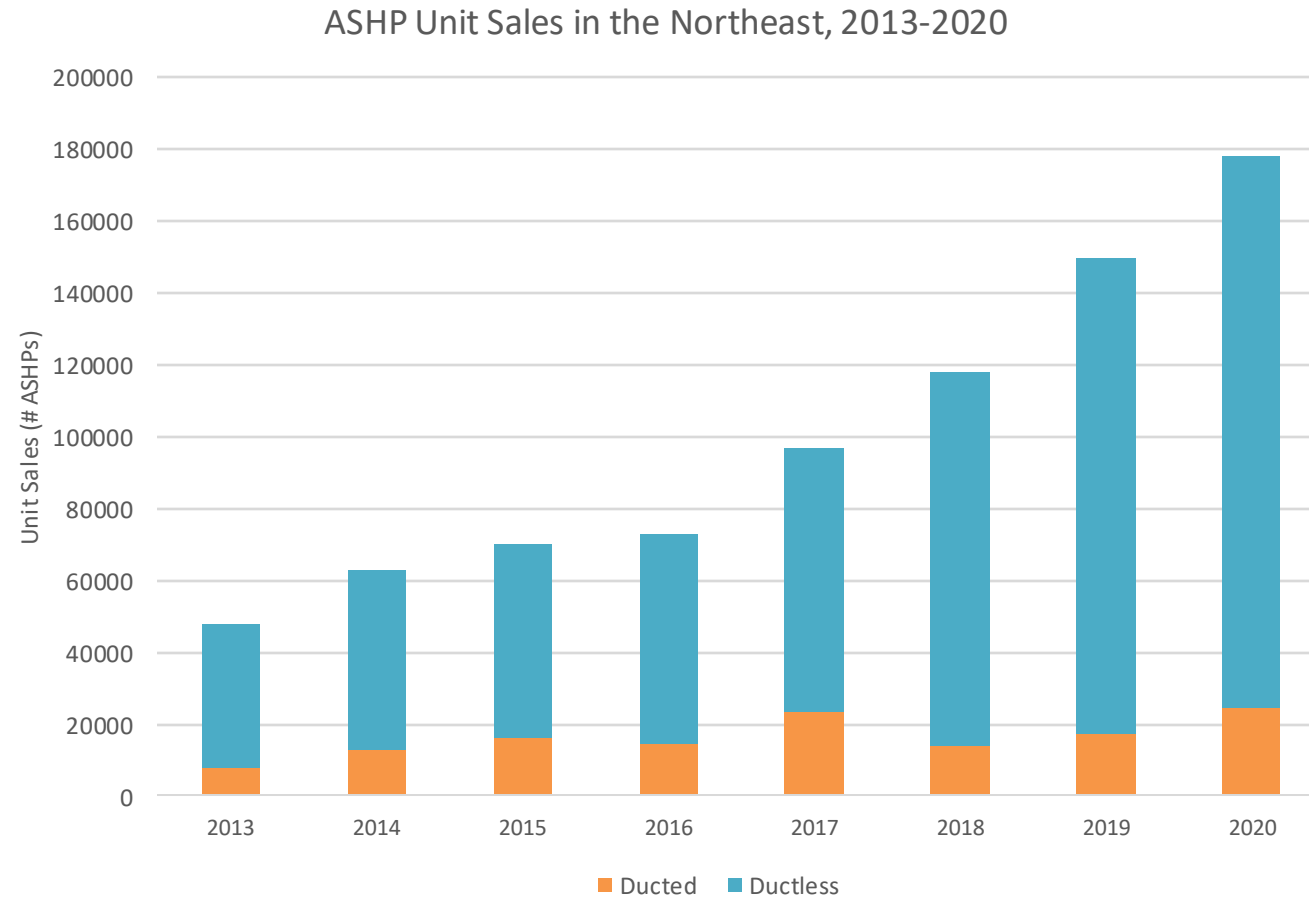
Annual Heating Costs



Carbon Impact



Growing Popularity of Heat Pumps



Based on HARDI sales data for New York & New England.

Energize CT

Heat Pump Rebates

	Ducted/Ductless Multizone	Ductless Mini-Splits
Tier 1	\$250/ton	
Tier 2	\$500/ton	
Tier 2 with HES	\$1,000/ton	
Air Source (Electric Only)	\$1,500/ton	
Air Source Pilot (Oil/Propane Heated Homes)	\$1,500/ton	\$1,250-\$1,500/ton
Ground Source (Electric/Natural Gas Heated Homes)	\$750/nominal AHRI-rated cooling ton, up to \$15,000	
Ground Source (Oil and Propane Heated Homes)	\$1,500/nominal AHRI-rated cooling ton, up to \$15,000.	

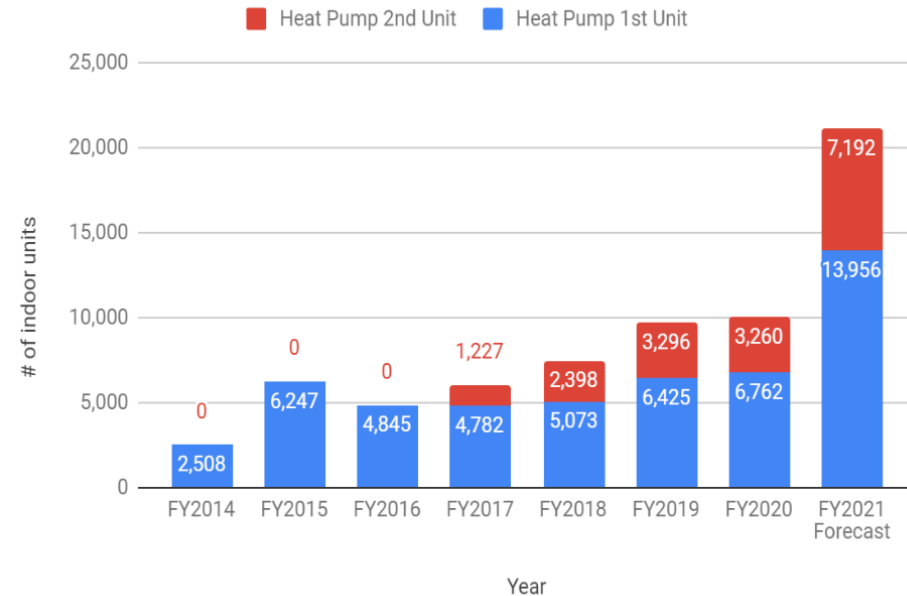
Eligibility

- Ductless mini-splits are instantly rebated through midstream incentives.
- Ducted and ductless mini-split heat pumps through the HES program and ground source heat pumps are mail-in rebates.
- Tier 1:
 - Single zone- 18 SEER or greater, 10 HSPF or greater
 - Multi-zone- 16 SEER or greater, 9.5 HSPF or greater
- Tier 2:
 - Single zone – 22 SEER or greater, 10 HSPF or greater
 - Multi-zone – 20 SEER or greater, 10 HSPF or greater
- Central Air Source Heat Pump
 - 16 SEER or greater, 9.5 HSPF or greater

Efficiency Maine

Eligibility

- Use a Residential Registered Vendor
- Install a Tier 1 or Tier 2 heat pump
 - Tier 1: HSPF 12.0 or greater for systems with single indoor unit or HSPF 10.0 or greater for systems with multiple indoor units or ducted indoor unit
 - Tier 2: HSPF 12.5 or greater, single zone, wall-mounted indoor unit. Cannot have a natural gas account.
- Customer completes rebate form
- Low- and moderate-income qualified ratepayers may receive higher rebates for ductless heat pumps



Heat Pump Rebates

	Tier 1 Heat Pump	Tier 2 Heat Pump	Low- to Moderate-Income
1st Indoor Unit	\$400	\$800	\$2,000
2nd Indoor Unit	\$200	\$400	\$400

Mass Save

Eligibility

- Must use a licensed heating contractor for install and equipment must be on the qualified products list
- Energy optimization rebate for oil, propane (requires integrated controls), or electric resistant heat conversions for ductless mini-split of \$1,250/ton
- Complete rebate form or receive a discount at time of purchase
- Income qualified ratepayers may be eligible to receive equipment at no cost

Heat Pump Rebates

Central Heat Pump or Ductless Mini-Split	Energy Optimization Rebate (Oil, Propane, or Electric Resistance Heating Only)	Air-to- Water Heat Pump (Oil or Propane Only)	Ground Source Heat Pump
\$250/ton	\$1,250/ton	\$1,250/ton	\$2,000/ton up to \$15,000/site

Mass Save 2022 Heat Pump Rebates

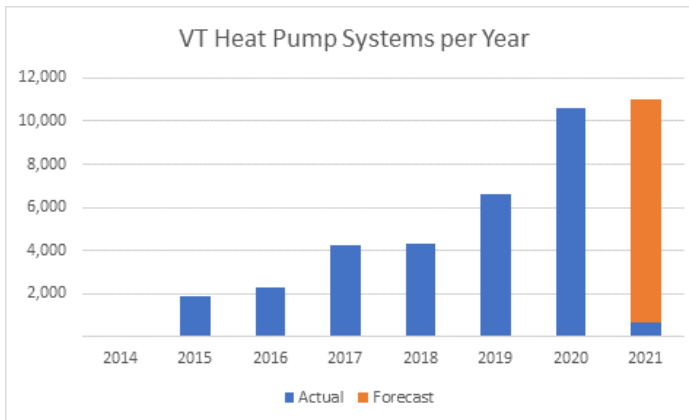
Equipment Type	Rebate Amount
Air Source Heat Pumps	\$1,250/ton (partial-home)
	OR
	\$10,000/site (whole-home)
Air to Water Heat Pumps	\$10,000/site (whole-home)
Ground Source Heat Pumps	\$15,000/site (whole-home)

Beginning in 2023, residential rebates will only be available for heat pumps that are installed by participating Mass Save Heat Pump Installers.

Efficiency Vermont

Eligibility

- Depending on the program, use an Efficiency Excellence Network contractor or participating distributor from a Qualifying Products List
- Complete rebate form or receive a discount at time of purchase
- Income eligible customers can receive bonus rebates, ranging from \$200-\$800 based on income and number of persons in the household.



Heat Pump Rebates

	Air-to-Water Heat Pump	Ductless Mini-Split	Ducted Heat Pump (Instant Discount)	Ground Source Heat Pump
Per Ton	\$1,000/ton			\$2,100/ton
Under 2 tons		\$350/system	\$1,000	
2 tons or greater		\$450/system		
2 tons to less than 4 tons			\$1,500	
4 tons or greater			\$2,000	

Additional Vermont Rebates

Burlington Electric Department (BED) and Green Mountain Power (GMP) offer heat pump rebates

		Ductless Mini-Split	Geothermal	Central Ducted	Air-to-Water
GMP	Midstream Rebate	\$400/per condenser unit	\$1,800/ton		
	Efficiency Vermont Adder		\$300/ton		
BED	Contractor Rebate	\$350-450/unit		\$1,000-\$2,000 based on capacity	
	Customer Rebate	\$2,100/system less than 2 ton and \$2,500/system for more than 2 ton	\$1,500/ton	\$1,250-\$6,250 based on capacity	\$2,000/ton
	Enhanced Rebate for Qualified Customers	\$400			

Note: BED rebates are capped at 75% of the installed costs.

Savings Results

DISTRIBUTION OF ENERGY SAVINGS

10%-40%	4 homes
41%-80%	14 homes
81%-100%	6 homes

HIGHEST SAVINGS

98%

in fossil fuel
and grid-based
electric savings

\$3,885

in annual
energy cost
savings

AVERAGE: \$1,861

- **AVERAGE PROJECT COST \$54,565**
- **AVERAGE INCENTIVE & REBATE \$13,022**
- **AVERAGE RETURN ON INVESTMENT 5.58%**



ngs in
PV.

NH Saves

Eligibility

- Equipment must meet eligibility requirements based upon SEER, EER, or HSPF, depending on technology type
- Rebate must be completed within 30 days of installation

Heat Pump Rebates

Ductless Mini-Split 15 SEER or higher and 12.5 EER or higher	Cold Climate Central Air or Ductless Mini-Split 18 SEER or higher, 12.5 EER or higher, and 10 HSPF or higher
\$70/ton	\$400/ton

RI Energy Savings Programs

Eligibility

- Install qualified equipment by a licensed contractor
- Enhanced electric resistance rebates requires a EnergyWise Home Energy Assessment and for the home to be fully insulated and weatherized as recommended.
- Enhanced oil/propane heating replacement rebates are funded through RGGI Proceeds

Heat Pump Rebates

Heating Type	Central Heat Pump	Mini-Split Heat Pump
Electric Heating	\$50/ton	\$350/ton ducted \$150/ton ductless
Enhanced Rebates for Electric Resistance	\$1,250/ton	\$1,250/ton ducted or ductless
Enhanced Rebates for Oil/Propane Heating	\$650/ton	\$650/ton ducted \$850/ton ductless

Comparison of NE Heat Pump Rebates

Rebates
calculated for
Tier 1 single
head 1.5 ton
unit heat pump

	System Type	Electric	Fossil Fuel	Electric Resistance
Energize CT	Any Type	\$375	\$375	\$375
Efficiency Maine	Any Type	\$400	\$400	\$400
Mass Save	Ductless Mini-Split	\$375	\$1,875	\$1,875
Efficiency Vermont	Ducted	\$1,000	\$1,000	\$1,000
	Ductless Mini-Split	\$350	\$350	\$350
GMP	Ductless Mini-Split	\$400	\$400	\$400
BED	Ducted	\$2,250	\$2,250	\$2,250
	Ductless Mini-Split	\$2,100	\$2,100	\$2,100
NH Saves	Cold Climate	\$600	\$600	\$600
RI Energy Savings Program	Heat Pump	\$100	\$975	\$1,875
	Ductless Mini-Split	\$225	\$1,275	\$1,875
	Ducted Mini-Split	\$525	\$976	\$1,875

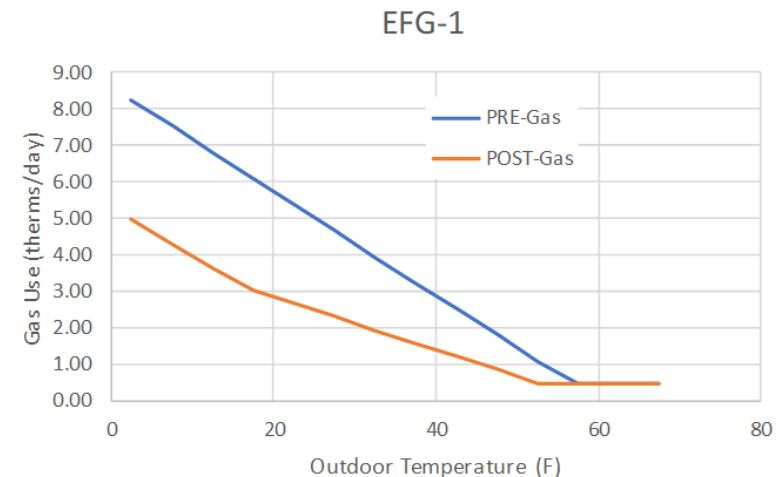
NYSERDA HVHPP Case Study – Early Results



Site 1:

- 1500 sq. ft.
- Original heat: gas boiler with hydronic baseboard
- 1.5 ton ASHP installed: 1 to 1 single zone
- Boiler used for back up, supplemental heating
- ASHP not used for cooling
- Installed in late 2017; monitoring began 12/17
- Installed cost (after incentives): \$5238

Heating Only	PRE-Retrofit	POST-Retrofit	Savings
Gas (therms/yr)	852.7	445.5	407.2
HP Electric (kWh/yr)		4,016	(4,016)
Total Heating Costs	\$ 565	\$ 697	\$ (132)
Implied Seasonal COP			2.3



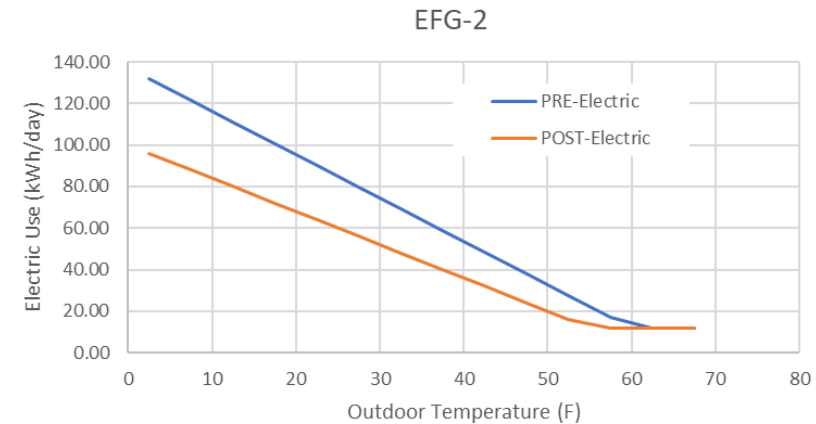
NYSERDA HVHPP Case Study – Early Results



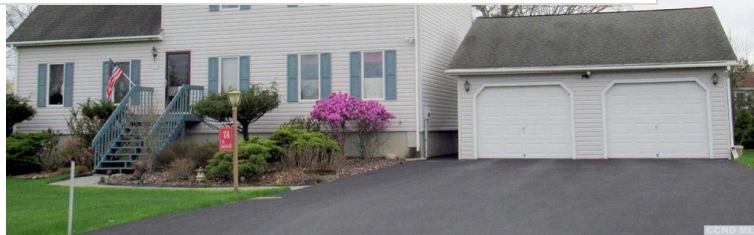
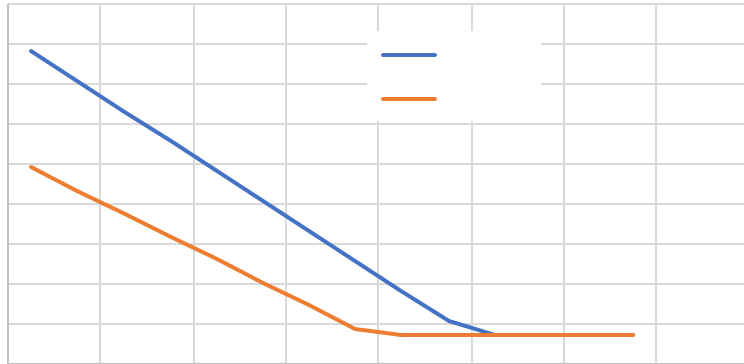
Site 2:

- 2,000 sq. ft.
- Original heat: electric baseboard
- 2.5 tons ASHP: 1 outdoor **multi**, 2 indoor zones
- Existing electric used for supplemental heating
- ASHP frequently used for cooling
- Installed 11/14/2017; monitoring began 1/2018

Heating Only	PRE-Retrofit	POST-Retrofit	Savings
Electric (kWh/yr)	13,273.0	9,343.7	3,929.3
		-	-
Total Heating Costs	\$ 1,991	\$ 1,402	\$ 589
Implied Seasonal COP			1.8



Case Study – Early Results

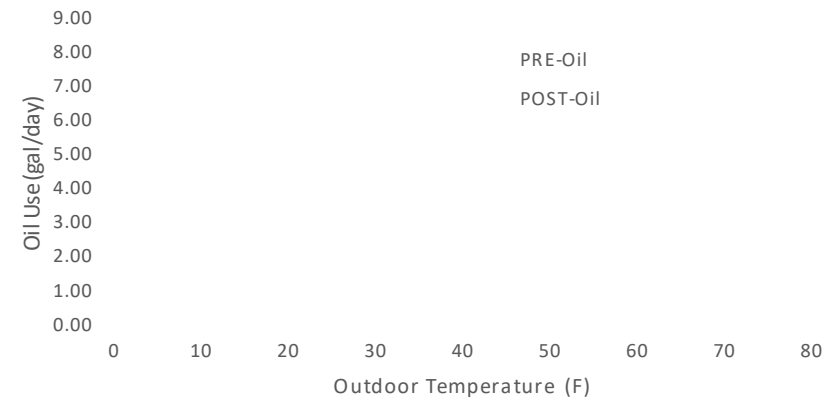


Site 3:

- 2,000 sq. ft.
- Original heat: oil boiler with hydronic baseboard
- 3.0 tons ASHP: 1 outdoor multi, 3 indoor zones
- Boiler used for back up, supplemental heating
- ASHP frequently used for cooling
- Installed 1/19/2018; monitoring began 4/2018
- Installed cost (after incentives): \$11,450

Heating Only	PRE-Retrofit	POST-Retrofit	Savings
Oil (gal/yr)	745.5	412.2	333.3
HP Electric (kWh/yr)		4,489	(4,489)
Total Heating Costs	\$ 1,854	\$ 1,474	\$ 380
Implied Seasonal COP			2.5

EFG-3



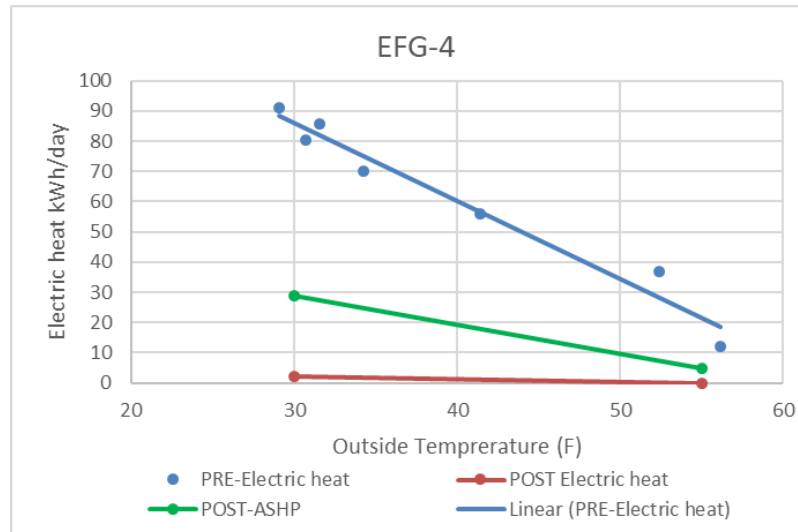
NYSERDA HVHPP Case Study – Early Results



Site 4:

- 1600 sq. ft.
- Original heat: electric baseboard
- 1.25 ton ASHP installed: 1 to 1 single zone
- Existing electric used for supplemental heating
- ASHP not used for cooling
- Installed 12/20/2017; monitoring began Jan'18
- Installed cost (after incentives): \$4,499

Heating only	PRE-retrofit	POST-retrofit	Savings
Resistance (kWh/year)	13374	309	13065
ASHP (kWh/year)		5026	-5026
Total Heating Costs	\$ 2,407	\$ 960	\$ 1,447
Implied Seasonal COP			2.7
Implied COP including resistance			2.5



Financing Opportunities for Heat Pumps

- Energize CT
 - Heating Loan Program – 0.99% financing up to \$15,000 for up to 12 years. Requires 10% down payment.
 - CT Green Bank Smart-E Loan – Rates from 4.49%-6.99% depending on loan terms ranging from 5-12 years.
- Mass Save
 - Mass Save HEAT Loan – 0% financing up to \$25,000 for 7 years.
- Efficiency Maine
 - Home Energy Loans – Rates as low as 4.99% up to \$15,000 for 15 years. Health and safety measures not to exceed 25% of loan amount.

Financing Opportunities for Heat Pumps

- Efficiency Vermont
 - Home Energy Loan for Low- and moderate-income participants - 0% financing up to \$20,000 for 5 years, with rates increasing based upon income and loan terms up to 6.99%. Up to 50% of the total loan can be used for health and safety repairs. 100% of project can be financed.
 - NeighborWorks of Western Vermont Energy Loan- 5% up to \$40,000 for 10 years. Green Mountain Power customers can repay on electric bill. 100% of project can be financed.
- NH Saves
 - Residential Energy Efficiency Loan Program – 0-2% financing, dependent upon income, up to \$15,000 for up to 10 years.
- RI Energy Savings Programs
 - HEAT Loan Program – 0% financing up to \$25,000 for up to 7 years. Available for owner and non-owner-occupied residences.

CT Heat Pump Summary

- Heat pumps can be a viable clean heating and cooling solution for CT
- There are many different heat pump technology options for different housing situations
- Heat pump performance is proven in cold climates, but can vary based on occupants and how they use them
- Cost-effectiveness and customer economics vary based on baseline fuel and installed system
 - Analysis currently under development
- Assessing the appropriate role for C&LM programs to support the transition from fossil fuels to heat pumps for space and water heating
 - Informed by current analysis and direction from DEEP

Meeting Break

This meeting will reconvene at 1:30 p.m.

BUREAU OF ENERGY AND
TECHNOLOGY POLICY



Meeting Logistics

During the Meeting:

- This meeting will be recorded. Recordings and slides will be available on DEEP's C&LM webpage after the meeting.
- Please remain on mute.
- Refrain from using the chat function for side conversations.

Public Comments and Questions

- There will be opportunity for public comments at the beginning and end of each day.
- We will begin with those that pre-registered to comment, then open the floor for additional comments.
- Please keep comments to no more than three minutes.
- Attendees can ask questions of presenters using the chat function. DEEP will facilitate these questions.

Today's Schedule – November 18

9:00-9:30	Opening remarks and public comment
9:30-12:30	Residential Portfolio Presentations <ul style="list-style-type: none">• Portfolio Overview: Utilities• HES Vendor Perspective: Lorenzo Wyatt, Home Comfort Practice• Regional Heat Pump Overview: Richard Faesy, Energy Futures Group
12:30-1:30	Break
1:30-3:15	Education, Workforce Development, and Outreach Presentations <ul style="list-style-type: none">• Portfolio Overview: Utilities• Office of Workforce Strategy Coordination: Niall Dammando, OWS• Capital Workforce Partners Training Program: Leticia Colon de Mejias, Efficiency for All
3:15-4:30	Demand Response Presentations <ul style="list-style-type: none">• Portfolio overview: Utilities
4:30-5:00	Public comment and closing remarks



Part of the AVANGRID Family

November 18, 2021, 1:20 PM-3:05 PM

2022-2024 Energy Efficiency Plan Education, Workforce & Community Outreach

Agenda

- Priorities
- Education
- Community Outreach
- Workforce Development

Priorities

Equity

Equitable distribution of benefits of EE and ADR programs across state, communities, market segments, and customer types

Decarbonization

Reducing greenhouse gas emissions from building sector to meet legislative/regulatory goals re: air pollutants and climate change

Energy Affordability

Promoting economic development through lower energy bills, enhanced energy security, and increased reliability

Distressed Municipalities/Environmental Justice Communities

Distressed Municipality

Conn. Gen. Stat. § 32-9p: Department of Economic & Community Development (DECD) designated municipality based on high unemployment and poverty, aging housing stock, and low or declining rates of growth in job creation, population, and per capita income

Environmental Justice Communities

A community on the DECD list of distressed municipalities or in a defined US census block not in municipalities that are “distressed,” however, they have census block groups with 30% of population living below 200% of federal poverty level

Priority No. 1: Equity

- Use Community Partnership Initiative to reach more customers, particularly those in distressed municipalities, and environmental justice and non-English speaking communities
- Introduce *Energize CT Energy in Action* mobile exhibit. Sixty percent of school tours and community events will be in distressed municipalities and environmental justice communities
- Implement proactive Workforce Development Strategy focusing on growing energy efficiency workforce and recruiting/training workers from underrepresented communities, such as ethnic and racial minorities, and women

Priority No. 2: Decarbonization

- Leverage manufacturer/distributor education and training efforts to promote heat pump technologies
- Encourage contractors to attend and complete manufacturer-led heat pump trainings to broaden base of qualified installers
- Coach contractors to recognize prime opportunities such as replacement of end-of-life air conditioning systems with heat pumps
- Support communities choosing the heat pump goal of the Community Partnership Initiative

Priority No. 3: Energy Affordability

- Provide energy efficiency seminars to schools/community-based organizations to help educate students and educators on various careers/paths in EE available to students
- Target residential and small business customers in distressed municipalities, and environmental justice and non-English speaking communities through community outreach campaigns

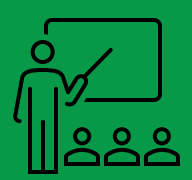


Programs

Education

Workforce Development

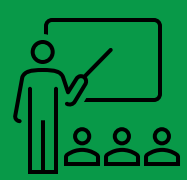
Community Outreach



Education

Instill energy-efficient ethic in Connecticut's K-12 schools and empower students/educators to be agents of change in their communities

- Implement tracking survey/evaluation and implement modifications based on educator/student feedback
- Conversion of all K-12 lessons into online format (web-based)
- Continue Teacher Mini Grants and integrate winning educator-developed lessons/learning sequence plans into curriculum and professional development workshops
- Conduct Train the Trainer workshops to build district and statewide capacity
- New milestones for Green STEP (Sustainable Technical Education Program)
 - May introduce skills training workshops (teamwork, problem solving, interpersonal skills training)
 - Exploring ways to effectively track and monitor Green STEP metrics and outcomes
 - Include Building Analyst and Envelope training/certification pathway, in addition to existing Building Science Principles and GPRO certifications



Green STEP Milestones

Grade 9

- **Introduction to Green STEP Workshop.** Reviews Green STEP, how to read an electric/natural gas bill, and how to read an electric meter

Grade 10

- **Introduction to Energy 101 - Home Performance Workshop.** Reviews basics of EE and clean energy technologies, home performance services, energy conservation, and sustainability
- **Introduction to Fair Workshop.** Reviews scientific method, how to begin projects, and potentially compete in annual fair. Green STEP career and science educators participate (1-3 projects per school)

Grade 11

- **eesmarts Workshops.** *eesmarts* Solar Curriculum and PLT *GreenSchools Investigations* (Energy and Water)
- **Employer & Career Fairs.** There are 3-4 fairs at locations across state. Includes workshops and opportunities for networking, internships, and full-time employment
- **CSEF Projects.** Students continue projects, potentially compete in CSEF. Green STEP career and science educators participate (1-3 projects per school)

Grade 12

- **Trade-Related Trainings.**
 - *Duct blasting* (HVAC and Plumbing, Heating & Cooling departments)
 - *Blower door* (Carpentry, Masonry, and Architecture departments)
 - *Heat pump water heaters* (Plumbing & Heating or Plumbing, Heating & Cooling departments)
 - *Lighting design and energy codes* (Electrical and Bioscience Environmental Technology departments)
- **CSEF Projects.** Students continue projects, potentially compete in the Fair. Green STEP career and science educators participate (1-3 projects per school)
- **Optional Track: BPI Building Science Principles Certification.** There are 3-4 trainings per school year - locations across state, minimum 1 per region
- **Optional Track: BPI Building Analyst and Envelope Certification.** There are 3-4 trainings per school year - locations across state, minimum 1 per region



Community Outreach: Mobile Exhibit

Energize CT Energy in Action Mobile Exhibit

- Inspire EE advocacy through entertainment-based and interactive learning programming and exhibit
- Focus on EE topics including energy conservation behaviors, weatherization services, clean energy sources and technologies, and energy-efficient technologies
- Exhibit will also explore career opportunities in the energy efficiency workforce and highlight the Workforce Development Initiative
- Tour 40 K-12 schools and 40 community events annually, 60% in distressed municipalities and environmental justice communities
- Educator resource guide developed with pre- and post-experiments, cross-curricular link, digital resources
- Survey to track metrics (school will be pre- and post-survey)



Community Outreach: Community Partnership Initiative

- **Community Partnership Initiative**

- Open to community-based organizations, non-profit organizations, and municipalities
 - *Focus on distressed municipalities and environmental justice communities*
- Recently closed Round 1 of application
- Proposed 10 projects within 9 municipalities (Bethel, Branford, Hamden, Hartford, Middletown, New London, Waterbury, West Hartford, and Wilton)
- Projects aim to champion:
 - HES
 - HES-Income Eligible
 - Residential Rebates (insulation and heat pumps)
 - Small Business Energy Advantage



Workforce Development

- Developing scope of work to study energy efficiency labor market
 - Study will establish baseline to inform Companies' strategy on best practices to establish in metrics and training workforce development goals
- Invest in upskilling current EE workforce through trainings, contractor education, and outreach
- Facilitate multiple trainings geared toward recruiting diverse suppliers
- Increase outreach to schools, community colleges and community-based organizations to promote technical trainings and certifications as pathways into workforce

CareerConneCT

Office of Workforce Strategy



Governor's Workforce Council (GWC) Overview

Data & Performance

Credential Registry; My CT Journey; Dashboards & Standard Evaluation Framework; CTHires Enhancements

Diversity, Equity, and Inclusion

Re-entry; Veterans; People with Disabilities (Supportive Employment Services); Youth; BIPOC

Business Leadership

- Regional Sector Partnership
- Skills Based Hiring
- Quality Jobs
- CampusCT (Retaining College Graduates)

Sector Training

- Manufacturing
- Healthcare
- IT
- Construction / Clean Energy
- Bioscience

Education & Career Pathways

- **Pathways Policy & Development (High School to Post Secondary)**
 - Dual Credit/Dual Enrollment
 - WBL (Business Leadership Partnership)
 - Career Exploration & Advising
 - Teacher Professional Development
- **Adult Education**

Barriers to Employment

Childcare/ECE; Transportation; Benefits Cliffs; Cross Barrier Solutions

Governor's Workforce Council (GWC) Overview (CONT'D)

The Governor's Workforce Council
WORKFORCE STRATEGIC PLAN
2020



- After one year of development, the GWC released its Workforce Strategic Plan on October 28, 2020.
- The Plan puts forward a coordinated, statewide strategy for **building an equitable, inclusive, and innovative workforce** that meets the needs of the current economic environment.
- The Plan recommends strategies in four key areas: business leadership, education, equity and access, and data.
- This Plan was a collaborative effort and solicited feedback and recommendations from industry representatives, educators, philanthropic and community-based organizations, and other key groups.
- Feedback or questions can be sent to gwc@ct.gov



The Office of Workforce Strategy (OWS)

The Office of Workforce Strategy serves as the administrative staff to the Governor's Workforce Council

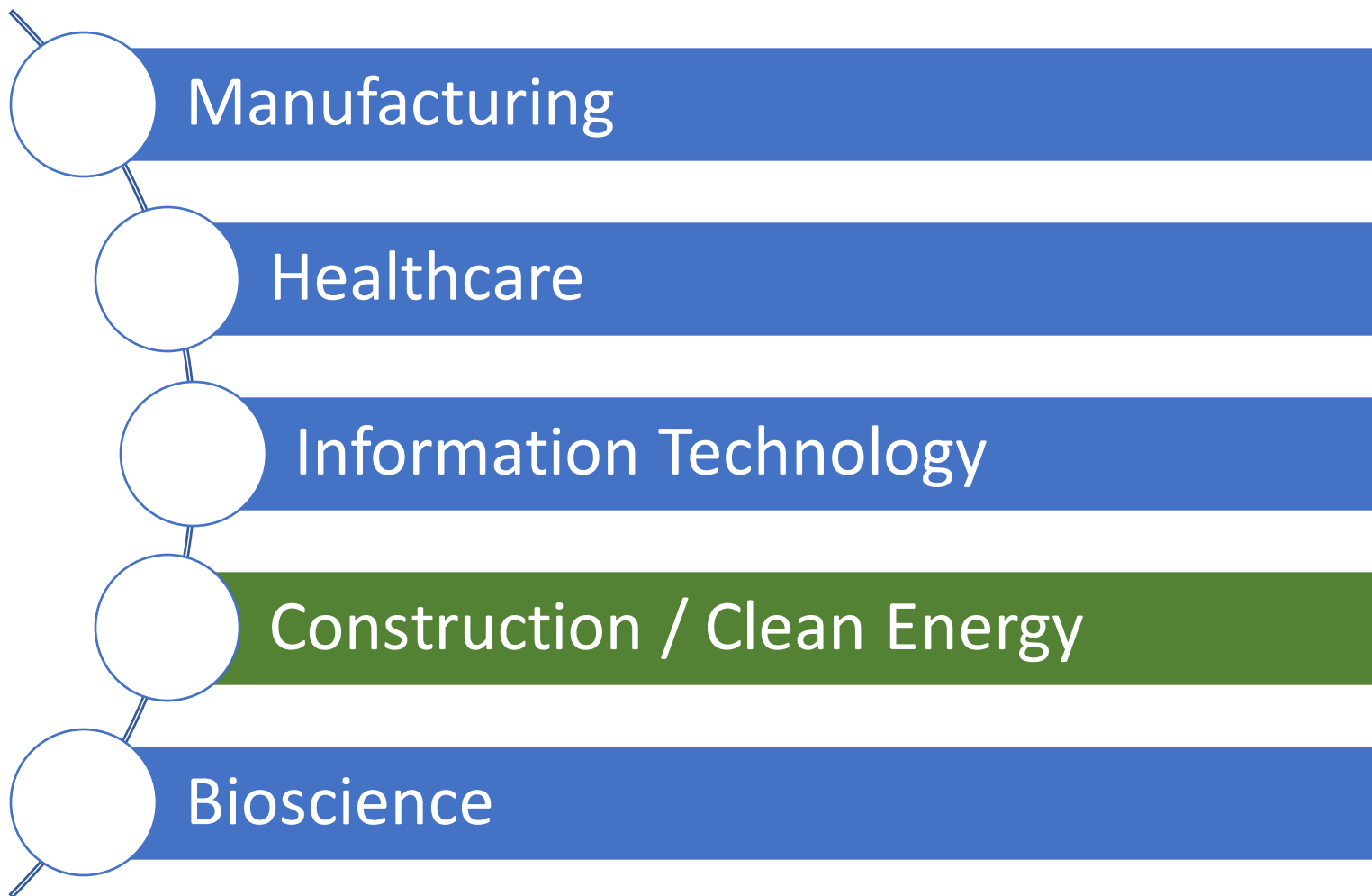
- **Our vision** is for every Connecticut resident to have access to a meaningful career pathway and the support needed to fulfill their aspirations and for every Connecticut business to have access to a skilled workforce
- **Our mission** is to build the systems, teams, and approaches that will make Connecticut a talent environment that attracts and motivates students, career builders, and companies alike

Key Charges of the Chief Workforce Officer and OWS:

- Be the principal advisor to the Governor for workforce development policy, strategy, and coordination
- Be the lead state official for the development of employment strategies and initiatives
- Be the chairperson of the Governor's Workforce Cabinet
- Develop, and update as necessary a state workforce strategy in consultation with the GWC
- Collaborate with the regional WDBs to adapt best practices for workforce development established by such boards
- Coordinate the measurement and evaluation of outcomes across education and workforce development programs
- Issue guidance to state agencies, the GWC, and the WDBs in furtherance of the state workforce strategy
- Coordinate, in consultation with DOL and the WDBs, to ensure compliance with state and federal laws for the purpose of furthering the service capabilities of programs offered pursuant to WIOA
- Liaison and ensure the coordination of workforce programs across all Connecticut State Agencies



Connecticut In-Demand Industry Pillars



Clean Energy Double Click

- Energy Efficiency
- Solar Energy
- Offshore Wind
- Transportation
- Thermal / Heat Pumps
- Climate Resilience

CareerConneCT Overview

Program Overview

Focus

- CareerConneCT is primarily designed to support getting individuals affected by COVID-19 back to work through training programs that provide reskilling, upskilling, or next-skilling opportunities through industry-recognized credentials that create pathways to employment in high-quality in-demand careers

Awards

- Total available pool of **\$61 million** of American Rescue Plan Act Funding
- **Regional Training Applications:**
 - Award periods of no more than three years
 - Awards up to \$3,000,000
- **Statewide Training Applications:**
 - Award period of no more than four years
 - Awards in the following range: \$5,000,000 - \$18,000,000
 - *In order to qualify for the statewide thresholds, an application must incorporate all five workforce regions of the State*

CareerConneCT Overview (CONT'D)

Eligibility, Allowable Uses, and Timing

Eligibility

- Entities that are eligible to apply for these grant funds as a **lead applicant** include but are not limited to the list below:
 - Regional workforce development boards
 - Community-based or non-profit organizations
 - Individual, or a consortium of, institutions of higher education
 - Additional Entities or Collaborators include:
 - Institutions that offer a form of postsecondary education
 - Businesses and industry partners / associations
 - Individual training providers listed on Connecticut's eligible training providers list (ETPL)
 - Local governments
 - Adult education providers
 - Public K-12 schools / consortium of public-school districts
 - State agency partners
- Entities are **encouraged to collaborate** with other eligible recipients and / or partners in the **same industry and / or regions** on a single application
- *Collaboration with a lead applicant's respective workforce development board is encouraged and will minimize duplication of services being provided to training participants (e.g. data collection, recruitment, placement, etc.)*

Allowable Uses (non-exhaustive)

Training costs (tuition, instructor costs, etc.)	✓	Technologysystems development or sustainment	✗
Case management and placement services	✓	Workforce-related research initiatives	✗
Childcare support services	✓	Systems improvement activities (e.g., process redesign)	✗
Transportation support services	✓	Politically-related activities	✗
Housing support services	✓	Entertainment	✗
Mental health support services	✓	Fines and penalties	✗
Food support services	✓	Donations	✗
Technologysupport services	✓	Fundraising activities	✗
Benefits Cliff Support	✓	Individual memberships and subscriptions	✗
Additional State sponsored supportive service programs	✓	Capital Equipment	✗
Participant training equipment	✓		
Data collection, monitoring, and evaluation	✓		
Recruitment and marketing	✓		
Legal/Admin services	✓		
Program or curriculum development	✓		

CareerConneCT Overview (CONT'D)

Fund Allocation Process

Timing

- Applications must be submitted during the bi-annual application windows, **during the last two weeks of every February and August** (i.e. the 14th – 28th of every February and 17th – 31st of every August) until funding is depleted
- The Office of Workforce Strategy will complete its review of applications within two months following an application window close. Applications will be reviewed based on the order in which they were received.
 - *(i.e. If an applicant submits in the February window, they will receive notice by the end of April; if an applicant submits in the August window, they will receive notice by the end of October)*

Process

- The Office of Workforce Strategy has designated separate Technical Assistance Review Teams:
 - The **Technical Assistance Team** will work with applicants to ensure applications align with the Governor's Workforce Council Strategic Plan and statewide strategy
 - The **Review Team**, made up of at least one member from OWS and a minimum of two other to be identified educational, community and industry expert volunteers (including members of the GWC DEI Committee) all who do not stand to benefit from funding and none of whom will be providing technical assistance, will be screening applications in accordance with the criteria summarized on the next slide

CareerConneCT Overview (CONT'D)

Application Criteria

- The **Review Team** will be scoring applications based on the below **summarized criteria and weightings**
 - *Additional detail will be provided in the complete Application Guidance Document*
- In order to qualify for funding, applicants must provide all necessary documentation and earn an average score of **85% of total allotted points (i.e. 140/165 points)**

Criteria	Points
1. Is the proposed workforce training program tailored toward those most affected by the COVID-19 pandemic , and to increase the workforce participation of historically marginalized and underserved populations ?	30
2. Is the application collaborating with partners on a cross-regional or statewide approach ?	25
3. Does the proposed training program align to current employer demand in Connecticut?	25
4. Does the proposed training program offer pre-training assessment for participants?	20
5. Does the proposal include the minimum services required, including but not limited to: recruitment, assessment, case management, placement support, supportive services (transportation, housing, food, technology, etc.)	15
6. Does the application include a narrative detailing how the program will be sustained after CareerConneCT funding has expired?	15
7. Does the proposal incorporate career coaching support for individuals enrolled in training including job placement services and continued employability coaching? OR, Does the proposal include additional training beyond entry level positions to provide for long-term career pathways ?	10
8. Does the proposal mention any commitments of public or private matching investments?	10
9. Does the application clearly provide a plan to meet the proposed performance metrics (95% completion rate, 85% placement rate, etc.)?	10
10. Does the average cost per participant remain under \$10,000?	5
Total Available Points	165

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Efficiency For All Paving the Way to Equity and Opportunity

Building Bridges as we Tear Down Walls- A path to a stable income is the best way to create sustainability in our families and develop generational wealth in our communities

www.efficiencyforall.org



America is Facing a Shortage of skilled workers and the Pandemic has not helped

Many industries need skilled workers- [E4theFuture report released 10/2021](#)

Proprietary and Intellectual Property of EFA www.encyclopediaforall.org

A photograph showing a person's hand reaching into a field of tall, green grass. The background is a clear blue sky. The text "With Crisis comes Opportunity" is overlaid in white.

With Crisis comes
Opportunity

Simple as A,B,C

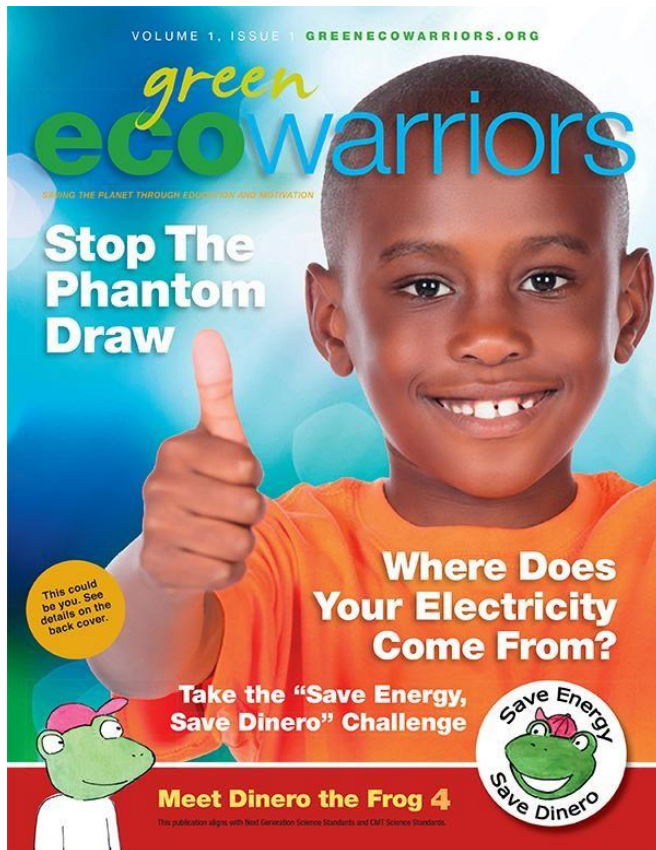
ABC- Adults, Buildings with a B, you can create Careers.

Expanding EE Jobs = Connects Communities to Opportunities
= Career paths with living wages.

EE lifts the communities by lowering energy burdens, lowering health impacts, increasing positive health outcomes, and lowering energy bills at the source.

EE does this all while fighting environmental harms by directly lowering our use of nonrenewable fuels to create electricity, or to heat and cool our homes, schools, and communities.

Knowledge is Power



Paving the way to Inclusion and Equity - Empowering Minds and Lives

- ❖ Historically minorities have been under represented in energy efficiency and clean energy careers.
- ❖ Black Americans represented only 12% of the workforce. *Source: U.S. Energy and Employment Report (2020)*
- ❖ Latinos represented 16% of the workforce. *Source: U.S. Energy and Employment Report (2020)*
- ❖ To reach inclusion and equity levels we must close the gap.

Changing Lives While Taking Climate Action

Knowledge is Power and Equity requires us to Empower those who have been left behind.

People can not meaningfully engage if they are unaware of the topic and how it relates to them as an individual.

Knowledge is Power. It Informs, Engages and Inspires growth and change.

The Solutions !

1. Fast track training which connects directly to paid work experience and local careers.
2. Cradle to Career Pathways- Engage and connect communities - Creating the Future we desire.
3. Provide the right supports, and the right certifications for career placements.

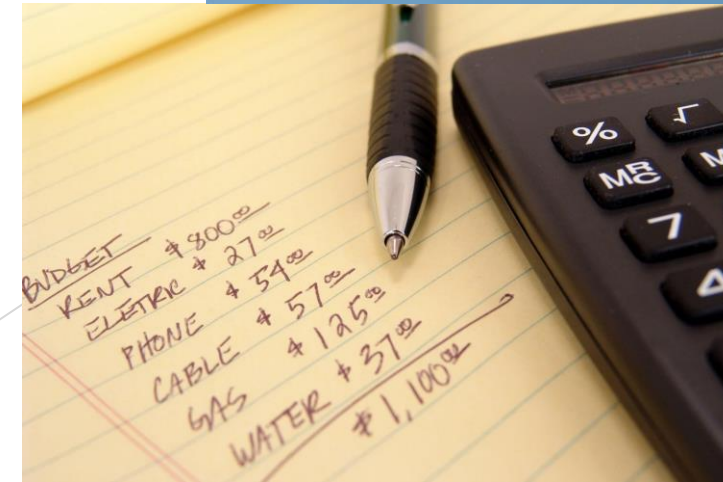


Start with the “Essentials” Prosperity Planning

Meet people where they are at.

Essential Skills include Prosperity Planning:

- Goals-Planning for today & the future
- Budgeting- How to use what you earn to leverage long term financial success
- Inclusive, Diverse, Engaging approaches.
- Paths to a stable, sustainable, resilient life.
- Maintain growth - set reach goals which inspire examples: Car ownership, Home ownership - improved lives for children and families.



Creating the Future.... Together

All Things are Connected- Participants worked to raise their level of understanding of the interconnectedness of our lives to our energy plans, our community, our health and wellbeing, the planet, civics, and our economic outcomes. *Pulling one string may affect another

Diverse thought creates diverse outcomes

Diverse planning create Diverse participation and more inclusive results.

Lifting those left behind increases our overall positive outcomes.



Certified - Workers

- **BPI Building Analyst** – Learn how to perform comprehensive, whole-home assessments, identify problems at their root cause, and prescribe and prioritize solutions based on building science.
- **BPI Envelope Professional** – Learn to prescribe improvements to tighten the building envelope (shell), stop uncontrolled air leakage, and optimize comfort, durability, and HVAC performance.
- **Infiltration and Duct Leakage** – Gain the skills needed to offer duct leakage and blower door tests, in compliance with IECC codes for new home construction or existing home remodels.
- **Healthy Home Evaluator** – Healthy Home Evaluators assess home-based environmental health and safety hazards and provide a prioritized list of recommendations to address those hazards.

Certification cont.

- **Occupational Safety and Health Administration (OSHA)** – OSHA 10 teaches basic safety and health information to entry-level workers in construction and general industry. It is part of the OSHA Outreach Training Program, which explains serious workplace hazards, workers' rights, employer responsibilities and how to file an OSHA complaint.
- **Lead Renovation, Repair and Painting Rule (RRP)** – EPA's Lead Renovation, Repair and Painting Rule (RRP) Rule requires that firms performing renovation, repair and painting projects that disturb lead-based paint in homes, child care facilities and pre-schools built before 1978 be certified by EPA (or an EPA-authorized state), use certified renovators who are trained by EPA-approved training providers and follow lead-safe work practices.
- DOE Home Energy Score Assessor

Prepared for real careers!
Training is followed by
PAID work experience at a
BPI Energize CT contractor-

Hands on success is
realized success.

Thank you EFA contractor network!

Proprietary and Intellectual Property of EFA www.encyforall.org



Having our Cake ...and Eating it too.

Together All things are possible

What is the
point of
baking cake
if we don't
get to Eat
it ??



Feedback....

- I am looking forward to... “making generational wealth.” - Rashad
- “When I arrived at class, I was overjoyed to see people *like me*, not just in the class, but teaching the class as well.” - Matthew H.
- At this time in my training, I feel ... “more confident in any job that comes my way in this field.” Andrew G.
- General thoughts on your goals for this experience... “that I will have my home, my family safe and supported.” Francisco G.

Sustainable. Goals and Plans

Better Outcomes. All things are connected.

1. Contractors/ Mentor partners should be enrolled early and often. Support Growth of SBA and WMBE's
2. Trainees should meet the contractors at the start. As we Seek to Inspire and Engage in real actions/tangible.
3. Recruiting - *we need to eliminate transportation barriers and childcare barriers.*
4. Participants should be coached on how to save money while earning, to plan for the new career based life changes. (car purchases- childcare- timing)

Resources: Use them wisely. Sharing is caring.

Workforce Programs which prepare participants for life changes that accompany working full time are essential to long-term success. Childcare, driving, cooking= life.

This provides opportunities to leverage new funding sources which can help provide a Hand UP vs a Hand OUT.

Examples of cash match models :

Partners support basic training, partner support Certification funding, partners support stipends/wrap-around services.

*Leverage incoming Federal Funds, and current state funds.

Transportation Access.

We can't work or learn if we can't get to the location.

Program should consider financial for travel during training, and ways to save for a vehicle purchase, and public transportation coaching. *There are more than one way to get to work, school, home.*



Proposed Solutions:

Personal savings accounts that start at enrollment to support transportation goals and needs.

EV Grants or hybrid car donations to Training Programs

Rideshares and planning with the contractor network

Lack of affordable Childcare

One Solution- We built our own childcare program
Science -Music Outdoors -Leadership -
Civic engagement



Short Trainings and REAL careers at t

- Train residents for careers that have a present and a future. (*avoid bridges to nowhere*)
- Consider skills that can be leveraged from underemployed or career changers.
- Meet people where they are at.
- Ensure we use wrap around supports - see a human as a total person.
- Consider where they have been, where they want to be, and the steps to get there.

Avoid Start Stops

Have planned cohorts schedules to support ongoing enrollments

Ensure stable funding approaches.

Flexible Training needs - on and off ramps

Keep the pipeline moving to avoid loss of participants, contractor interest, or skilled trainers and mentors.

Aspire to Do More



Before I understood the connection between energy and climate change and pollution and health and the impacts on my own family, I didn't have any reason to care about climate change or energy use.



EE is one of the fastest growing economic drivers.

Energy Efficiency employment grew the most significantly of the five surveyed sectors over the past 5 years, adding just over 400,000 jobs. Its growth rate of 20 percent was over three times that of the overall economy. Today, the EE sector employs nearly 2.38 million Americans.

Source: U.S. Energy and Employment Report (2020)

Why then might minority groups be underrepresented?

- ❖ They may not see these careers in their immediate communities.
- ❖ Do not see people like themselves in the roles.
- ❖ Are unaware of the programs, services, and deeper non-energy impacts such as health improvements, environmental gains, and lowered energy expenses.
- ❖ Do not have access to science as part of early education which leads to a steeper learning curve.

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Why get involved?

Learning about Energy and Climate Change

- ☐ I breathe air and my kids breathe air.
- ☐ Felt **compelled** to **protect my children's future**.
- ☐ Desired to **lower the health effects of pollution**.
- ☐ **Raise awareness of our personal human impact on our energy stability and energy affordability.**
- ☐ **Wanted to connect my community to opportunity.**
- ☐ We knew we could reach ²⁴ areas that were missed.
- ☐ **Connect people to a sense of control and duty.**

At Risk Populations

- May not feel included in the issues
- Have pressing issues which may seem more urgent
- Don't know how to get involved
- Aren't sure of facts
- May not feel empowered
- Don't have access to the same level of data in a format they can understand
- May think the problem is too BIG!
- Make it simple and relatable.

You Don't Know What You Don't Know

What drove me to Take Action?

PEOPLE CARE about an issue when...

- ☐ They understand the problem.
- ☐ They are emotionally evoked.
- ☐ They **FEEL** they **CAN MAKE A DIFFERENCE.**





STEP 2: Identify Possible Solutions

Education + Motivation + Supports = **Change**

Effectively communicate:

1. Housing and energy impacts on health & life
2. Choices = Our Survival & Success
3. Simplify the message
4. Hit home with messages that motivate
5. Provide education and training
6. Set inclusion based metrics
7. Represent all people in the materials

CAMBIO = CHANGE

What can we do about the problem?

Meet people where they are at.
Engage. Inspire. Connect.

Use Existing Networks.

Networks such as faith based organizations, community groups, schools, community meeting places such as libraries or outdoor events, Department of labor, workforce training centers, social service providers, fuel banks, and food banks.



Address Lack of Awareness



STEP 3: If we truly want to connect to underrepresented populations we must:

- ❖ Provide youth and family based education that speaks to diverse populations by ensuring materials truly reflect and represent the populations we are trying to reach.
- ❖ Utilize Multi-lingual formats.
- ❖ Simplify the message and make it encouraging.
- ❖ **Make the path to careers clear, accessible, affordable, inclusive, and exciting!**
- ❖ **Count the benefits** - Focus on EQUITY²⁸- beyond energy savings, expansion of diversity and inclusion in energy efficiency and clean energy careers is a way to lift our nation, strengthen our energy stability, grow our economy, hire locally, and connect people to healthier living.

If you want to reach Urban and Minority populations you need to:

1. Tailor your message
2. Include them
3. Connect to them- lift stories that are about their communities- vs “what you want to talk to them about.”

Avoid helicoptering

Education & Outreach Changes Lives



Goal =

Reach Urban and Minority Populations with the Message of Conservation



STEP 4 - TEST THE PLAN

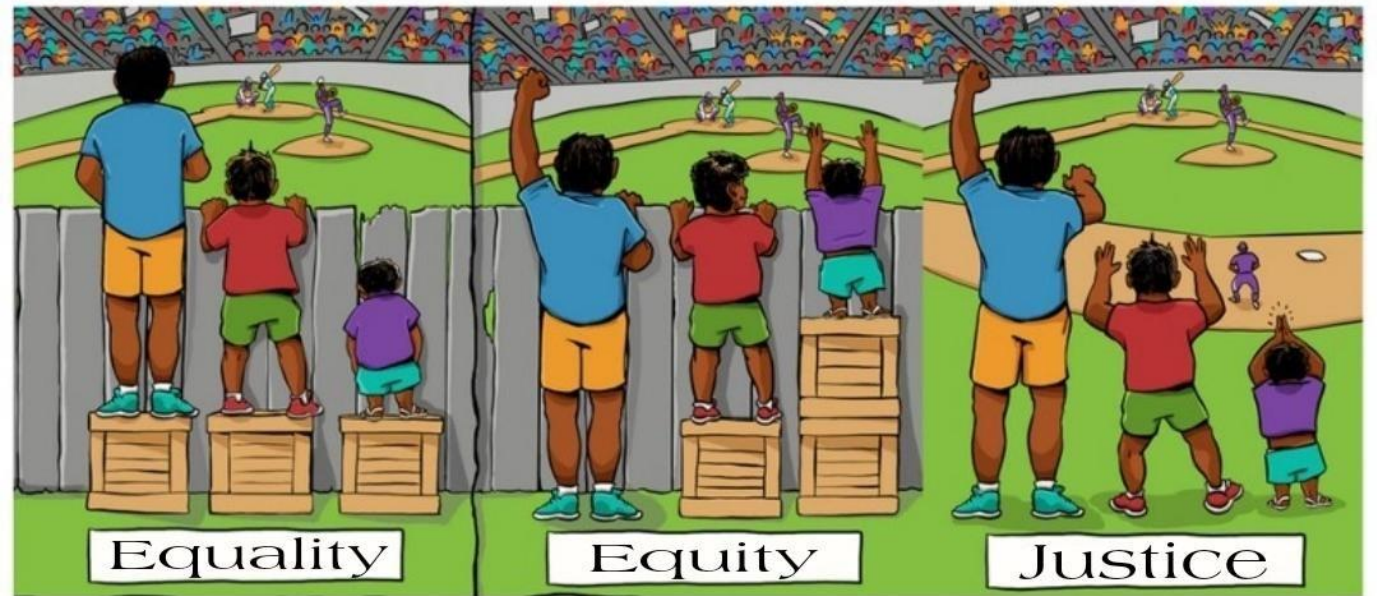
- We made sure to include urban and minorities in our processes
- Tailored our messages to the groups we set out to reach
- Featured minority characters and role models
- Hired Minorities and Urban residents for key roles
- Embedded diverse language
- Used diverse story themes
- Nontraditional approaches to learning
- Interactive learning presentations
- Went to the communities in person
- Social media, Video, TV and the Web
- Made it a **Challenge**

30



STEP 5: Measure Outcomes

- ☐ Job Creation
- ☐ New local Businesses
- ☐ Youth Education increased
- ☐ + Workforce Programs
- ☐ Leadership Development
- ☐ Reduced Health Impacts
- ☐ Reduced Carbon Emissions
- ☐ Urban access to solar/wind
- ☐ More comprehensive projects annually
- ☐ National Recognition



This is Everyone's Problem

- ☐ Urban and minority populations are 40% more likely to be affected by asthma.
- ☐ Home energy retrofits reduce pollution and its effects. Reduces in home air quality issues such as mold and dirty air infiltration into duct systems.
- ☐ Aetna study found a 67% decline in emergency room visits due to energy retrofits!
- ☐ Reducing energy waste reduces air-pollution.

Note (3): <http://www.nytimes.com/ref/health/healthguide/esn-asthmachildren-ess.html>



The screenshot shows a webpage from SmartPlanet. The header features the SmartPlanet logo and social media icons for Twitter, Facebook, and YouTube. Below the header is a navigation bar with links for Home, Business, Technology, and Innovation. A secondary navigation bar lists various industries: Aerospace, Architecture, Cities, Design, Education, Energy, Finance, Food, Government, Healthcare, and Science. The main content area displays a blog post titled "Home energy retrofits reducing healthcare costs" by David Worthington, dated December 7, 2012. The article discusses how WegoWise, a start-up, has partnered with a national non-profit to upgrade low-income housing in Baltimore, Maryland. It highlights a pilot project that resulted in a 67% decrease in emergency room visits among residents. The article also mentions that buildings in the U.S. waste an average of 20 percent of the US\$400 billion spent on energy annually, and that homes that are not sufficiently weatherized can be hazardous to health. It notes that WegoWise and Green & Healthy Homes Initiative (GHHI) are partnering to help economically disadvantaged families fix weatherization issues. A photo of a young child using an inhaler is included, with a caption stating that many asthma incidents in children are due to insufficient home weatherization. The article concludes by stating that WegoWise provides a Web application to track and analyze utility data, and that building owners would use it to identify their most wasteful properties and greatest potential savings with upgrades. The entire process is automated by the application, which is available to anyone in the U.S. as a monthly subscription. WegoWise saved the GHHI from having to scour through spreadsheets to target homes that were in the greatest need of health and energy upgrades. 31 homes were selected for repairs.

Save Energy Save Dinero!

- In Home Energy Education
- Immediate Energy Savings
- Reduced Carbon Emissions
- Increased Renewables in Urban areas
- Exceed set goals for outreach

Featured Success Stories

Save Energy, Save Lives

East Hartford, CT



WORKING MOM SAVES ENERGY & HEALTH

"I am so grateful the this program was able to help my family. My home is safer and more comfortable. We are now saving over \$300 a year on our energy bills. This is important to me as a single mother of two wonderful girls. I was able to use these savings to help pay for my daughter's college books.

Thank God that the team located a large gas leak at my home. They were able to have the gas leak fixed right away. The office staff helped me understand the process from start to finish.

I recommend this service to everyone. It was such a help to my family. **It was a relief to have lower bills** and they **located that gas leak in my home**, protecting my girls from harm.

I only wish I had known about the services sooner, so I could have started saving years ago. I hope other communities and families take advantage of the wonderful services offered through the ratepayer funded energy efficiency programs.

-Tenille Rosario, East Hartford

Communicate Success and Savings

Connect to Health and Prosperity Messaging

NOTE: Both Evelyn and her
son now work for EES!

Home Energy Solutions - Income Eligible Success Story

Plainville, CT



Customer Feels the Savings

"I was really surprised at the amount of work that they did in my home. They changed our lights to LEDs, they caulked and foamed, they checked my heating system, and they gave us information on more ways to save money."

I decided to take their advice and get insulation, and I was so happy when I found out my co-pay was only \$150 dollars. That was awesome because with my kids, work, and life I didn't have a lot to spend on insulation. After they insulated my house in March of 2017 we started to notice that our heat came on less frequently, but we still felt warm. My kids' room is next to the attic, so we noticed a difference immediately.

I feel very appreciative to EES and the program for helping us stay warmer and saving us money. People should use this program because it helps save money makes a home safer and more comfortable. It helps with asthma too, because it reduces local carbon emissions and air pollution. That is important to all kids and our future."

Evelyn Tineo - Plainville, CT



**ENERGY
EFFICIENCIES
SOLUTIONS**

77 Pierson Lane
Windsor, CT 06095
860.580.9076
www.eesgogreen.com

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Empowering you to make
smart energy choices

EVERSOURCE
ENERGY



Workforce Programs

Over 500 Presentations on Climate Change and its relation to urban populations, health, and affordability.

PARTNERSHIPS: Adult learning programs, high schools, trade schools, and local workforce boards to support BPI training and certification pathways. Provided paid summer internship opportunities.



HOW CAN we
DO MORE ?

HOW CAN WE
REACH MORE
PEOPLE?

HOW CAN WE GET
PEOPLE TO CARE?

HOW CAN WE
INFLUENCE LONG
TERM CHANGE?

How can we reach millions of people with this message?

AND THEN IT CAME TO ME... Let them take it HOME ...

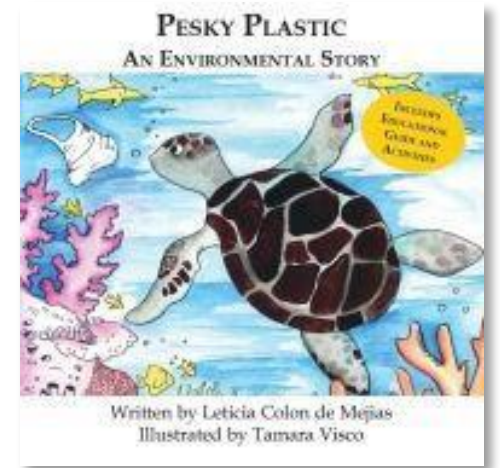
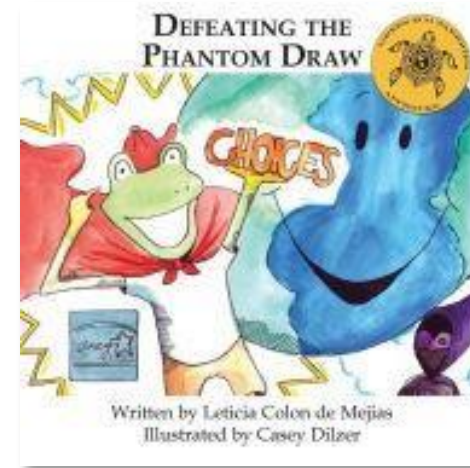
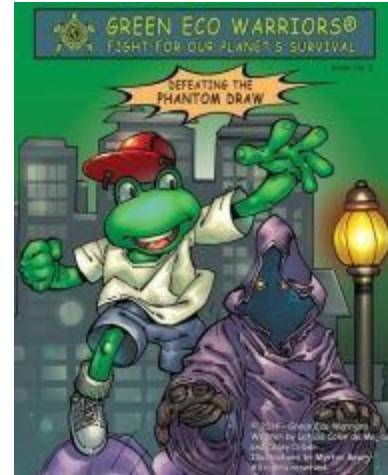
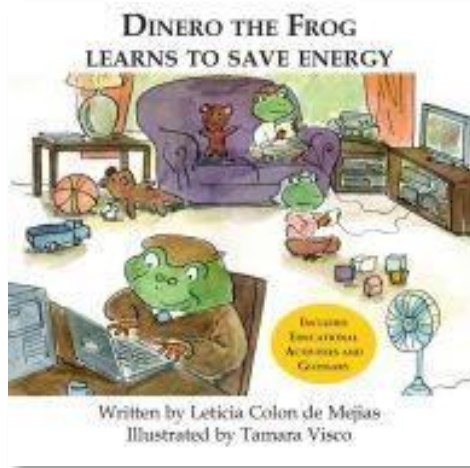


Early Engagement- Youth Education

- ☐ Over 40,000 thousand Youth engaged through our Climate and Energy -NGSS materials
- ☐ Reached historically missed populations in CT, MA, NY, CA, FL
- ☐ Focused on Urban and Minority Populations - direct ties and evidence based work
- ☐ Hired local minority youth to work with our teams, and on our teams



Creating a Culture of Sustainable Thinkers™



Aligned with National STEM Education Standards
Vetted by third party education experts
Culturally aligned for Urban Populations
Featuring Diverse Heroes

Green Eco Warriors has reached over 40,000 youth and families in communities that were previously overlooked, using new methods and demonstrating real results.



Betances STEM Magnet School-**600 students**
Dr. James H Naylor/CCSU Leadership Academy-**25 students**
Central Connecticut State University-**100 students**
Alfred G Zanetti Montessori School-**74 students**
Berkshire Hills Seventh Day Adventist-**15 students**
William N Deberry School-**300 students**
The Discovery School at Four Corners-**240 students**
Sanderson Academy- **150 students**
Arthur T. Talmadge Elementary-**300 students**
Berkshire Trail Elementary- **80 students**
First Church Early Learning Center-**14 students**
Center for Latino Progress- **101 students**
Stearns Elementary-**225 students**
Tatham Elementary-**240 students**
Farmington River School-**132 students**
Northfield Elementary-**25 students**
Alfred E Burr Elementary-**80 students**
Bulkeley High School- **100 students**
Elias Brookings Magnet School-**376 students**
Colrain Central School-**120 students**
Sumner Avenue Elementary-**80 students**
New Britain Youth Build- **60 students**
Milner School-**150 students**
New Britain Satellite Career Academy-**25 students**
Oliver Ellsworth Elementary-**300 students**
John F Kennedy Elementary-**120 students**
Hartford Neighborhood Centers- **75 students**
Goodwin College-**30 students**
Loomis Chafee School- **30 students**
Tolland Public Library-**35 students**
South Windsor Farmers Market-**275 adults/children**
Energize CT Evergreen Walk-**420 adults/children**
CBIA-**80 adults/children**
OpenHouse Betances STEM Magnet School-**300 adults/children**
Hartford Faith Based Initiative Event-**60 adults/children**
Earth Day community clean up event-**100 adults/children**
Energy Fair-**40 adults/children**
Wapping Fair-**300 adults/children**
Goodwin Community Event-**100 adults/children**
Latinas in Power-**160 adults/children**
Presentation at DEEP-**50 adults**
DEEP Forum- **100 adults**
Home Depot-**80 adults**



Building Science identifies home health issues before it is too late.

- ☐ Focus on reducing health related issues through building science: High CO, Mold, gas leaks, CAZ failures*
- ☐ Admissions to hospitals for respiratory conditions drop by 43%

☐ Days off school reduce by 23%

Health Benefit Studies on Retrofitted Houses

☐ Causal links between cold and damp housing and poor health

☐ Psychological and stress benefits

☐ Comparative risks to respiratory health established



* EES works in the HES & HESIE programs through Energize CT.

Note (1): <http://onlinelibrary.wiley.com/doi/10.1111/resp.12245/abstract>

Note (2): <http://www.nchh.org/LinkClick.aspx?fileticket=2lvaEDNBIdU%3d&tabid=229>

Minority or non-minority, we all have the same BASIC needs:

1. Safe Air
2. Safe Water
3. Healthy Food
4. Shelter from the elements free of mold, drafts, and dangerous chemicals.
5. Education- The ability to access education which allows for continued growth.
6. Employment- The ability to provide for self and family.



No matter our race or condition, we have the same desires for success.

Including Local Minority is a WIN-WIN



- ☐ Hiring minorities increases outreach to diverse populations
- ☐ Helps raise communities out of poverty
- ☐ Creates local training pipelines
- ☐ Keeps our economy stable and growing
- ☐ Creates local jobs-lowering unemployment rates
- ☐ Lowers crime rates
- ☐ Develops community connections
- ☐ Raises community involvement and participation
- ☐ Shows that it is not just lip service
- ☐ Provides real opportunities

The More People
Know

The More they
Care



THE TIME FOR CHANGE IS **NOW**

We need to work together and take immediate action to engage historically missed urban and minority populations in the conversation on Climate Change and energy related issues.

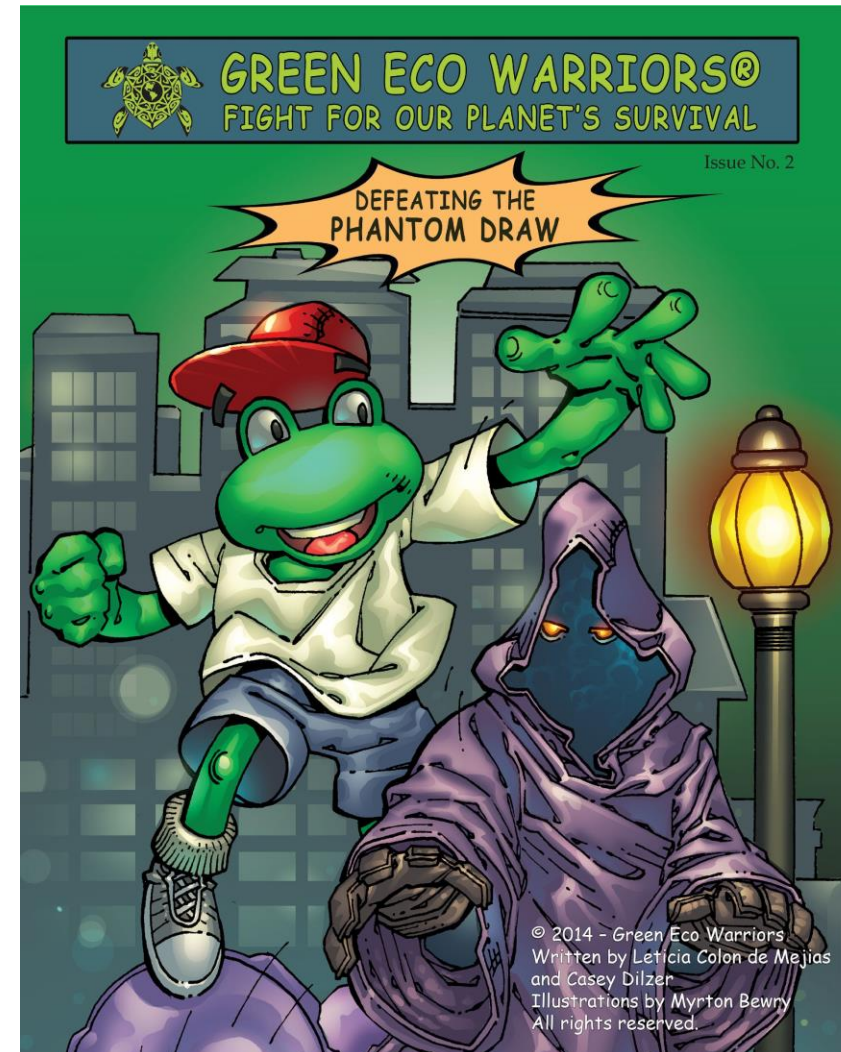
1. Encourage metric based hiring of urban and minorities to work in the fields related to environmental causes.
2. Develop funding to support continued outreach and education on STEM, sustainability, and environmental issues for urban and minority populations.
3. Recognize and reward role models and companies who are reaching these populations.
4. Get the facts out. Implement full-scale education on climate and energy and how they relate to these populations.
5. Create easy ways that **ALL** people can get involved.

Contact

Information: Leticia
Colon de Mejias

www.encyclopediaforall.org

www.greenecowarriors.org



Questions?



Part of the AVANGRID Family

November 18, 2021, 3:15 PM-4:30 PM

2022-2024 Energy Efficiency Plan Demand Management Programs

Agenda

- Passive and Active Demand Response Definitions
- Electric Demand Response (DR) programs
- Gas Demand Response (DR) programs

Background— Electric Passive and Active DR

- Demand resources can take many forms—such as a capacity product, type of equipment, system, service, practice, or strategy—almost anything that verifiably reduces end-use demand for electricity from power system
- All demand resources provide a kW benefit and fall into two general categories

Passive Demand Resources

- Designed to save electricity across many hours; cannot change amount saved in response to a dispatch instruction
- Examples include traditional EE measures and passive behind-the-meter generation (solar)

Active Demand Resources

- Dispatched by utility or ISO
- **Automatic ADR:** directly dispatched via predetermined DR strategy pre-programmed into customer's EMS, BMS, or PLC
- **Active ADR:** involves end-use customer manually shedding load or using on-site generator or storage device rather electricity from grid





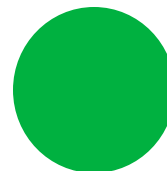
ADR Strategies

C&I



Targeted Curtailment

- Technology agnostic
- 8 events/summer; 5 events/winter
- \$35 per kW



Daily Dispatch

- Lithium ion/thermal batteries
- 60 events/summer
- \$200 and \$100/kW

Residential



Bring-Your-Own-Device (BYOD) Thermostats

- 15 events/summer
- \$25 per enrollment/device
- \$20 per participation/event



Residential Batteries

- BYOD Battery
- 60 events/summer
- \$225 per kW



Electric Vehicle (EV) Charging Stations

- Pilot
- Throttling and cut-off power
- 15 events/month
- \$300 new EVSE and \$200 old models + \$50/year

Avangrid Gas DR Pilots

Objectives:

- Shave peak demand and reduce need for marginal gas supplies
- Alleviate temporary physical pipeline constraints in low pressure areas
- Reduce amount of pipeline capacity needed to be purchased
- Reduce emissions by reducing overall gas usage

Goals:

- Understand magnitude of net load reduction that customers can provide based on three different gas DR strategies
- Test feasibility of incentivizing customers to provide net reductions of natural gas
- Collect information on successful customer use reduction strategies
- Inform process of setting program incentive levels
- Test baseline methodologies
- Provide data on reliability and repeatability of total reductions during events, as an input to Avangrid's peak day gas demand forecasting process

Avangrid Gas DR Pilots

All pilots will run for 2 consecutive Winter Capability Periods and will cover the following:

- 2021/2022 Winter Capability Period: November 1, 2021 — March 31, 2022
- 2022/2023 Winter Capability Period: November 1, 2022—March 31, 2023
- Event typically held when outside average daily temperature forecasted at 18°F or below

C&I Performance Based Gas Demand Response

Incentivizes customers to provide net reductions of natural gas demand during a 24-hour period, on a peak gas demand day on the coldest winter days

Residential Direct Load Control – Gas DR Reductions

Incentivizes customers to provide net reductions of natural gas demand during a 4-hour period, on a peak gas demand days on the coldest winter days

2021 Avangrid – CT Gas C&I DR Strategies

Performance Based Curtailment

- Technology agnostic and marketed to all SCG/CNG Large and Medium General Service Customers with Daily Demand Service and not currently on interruptible rate
- Minimum enrollment value of 50 Therms of Net Load Relief per gas day
- Customers responsible for their participation strategy on gas DR event days
- DR strategies: voluntary gas load curtailment or reduction of gas usage by fuel-switching to electric during event days.
- Fuel switching to liquid fuels not permitted: pre-heat spaces, decrease temperature set points, decrease plant water temperature, and suspend economizer outdoor air provision
- 6 events per winter season when outside avg. daily temperature is forecasted at 18°F or below
 - Events last 24 hours (10 am - 10 am the following day)
 - Customers given 24-hour notice of all gas DR events



2021 Avangrid – CT Gas Residential DR Strategies

Residential Direct Load Control

- Similar gas DR strategy to existing BYOD Thermostat DR Program
- Targets all SCG and CNG residential customers on Rate RSH (Residential Heating)
- Opt-in pilot and reactively target residential gas customers with Wi-Fi thermostats
- \$75 enrollment incentive plus \$25 end-of-winter season incentive
- Open to Nest, Honeywell, and Ecobee thermostats
- DR Event Length: 4 hours
- Events per season: up to 6 events
- Customers give 24-hour notice of all gas DR events
- DR Strategy: thermostat setback of 3 deg. w/preheat of 2 deg. for 1 hr.
- Temperatures set point will not go below a minimum of 60 deg.
- Customers have ability to opt out of DR events
- Participants also able to participate in one voluntary 24 hr. event per season
- Participants would receive additional \$100 incentive if they do not opt out
- Pilot results used to determine larger strategy that could potentially stagger customer events over a full 24 hours





Part of the AVANGRID Family

Appendix

PURA Dockets with Demand Response

- **Docket No. 17-12-03RE03, Electric Storage Program (January 1, 2022)**
 - Includes declining block upfront incentive and performance-based incentive structure for 580 MW by 2030
 - Connecticut Green Bank will administer upfront incentive and marketing/communications
 - Electric Distribution Companies will administer performance-based incentive
 - Upfront incentive adder to prioritize electric storage deployment in environmental and distressed communities
 - 50% Residential customers and 50% C&I customers
 - Eversource will monitor PURA program to determine how to integrate its battery storage offerings
- **Docket No. 17-12-03RE04, Electric Vehicle Charging (January 1, 2022)**
 - Establishes nine-year statewide program to develop self-sustaining zero emission vehicle market
 - Electric Distribution Companies to administer program in respective service territories
 - Five program areas to optimize deployment of electric vehicle supply equipment
 - Eversource will monitor PURA program to determine how to integrate its electric vehicle offerings

Meeting Break

This meeting will reconvene at 4:30 p.m.

BUREAU OF ENERGY AND
TECHNOLOGY POLICY



Public Comment

- We will begin with those that pre-registered to comment, then open the floor for additional comments.
- If you did not register but would like to make a comment, please raise your hand and we will recognize you, in order, as time allows.
- Please keep comments to no more than three minutes.
- Please unmute yourself when recognized and return to mute when you are finished.

Thank you for attending!

Next Steps:

- DEEP will issue a Draft Determination on the 2022-2024 Plan. At that time, there will be an opportunity for written comments.
- DEEP will issue a Final Determination on the 2022-2024 Plan that considers information received during this process

Resources:

- [2022-2024 Conservation and Load Management Plan](#)
- [DEEP C&LM Webpage](#)
- [DEEP Bureau of Energy and Technology Policy Energy Filings](#)
- [Connecticut Energy Efficiency Board](#)
- [Energize CT](#)

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