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WEATHERIZING DUCTWORK

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✓ This presentation is not intended to be a comprehensive program covering all aspects of this topic.

✓ All participants are encouraged to read and follow applicable standards, codes, and regulations related to this topic.

✓ The views and opinions expressed are the presenter's opinions and not necessarily the official position of the National Air Duct Cleaners Association.

DO NOT ALTER THIS SECTION

“WEATHERIZATION” = SEALING FOR LEAKAGE

- What term could be better used to describe the service (sealing)
- Why is this performed?
- When is this performed?
- Which types of properties/facilities?

COMMERCIAL - “WEATHERIZATION” = SEALING FOR LEAKAGE



\$2.9 BILLION
annual energy cost from duct leakage



75% OF BUILDINGS
have 10-25% duct leakage



#3 HVAC-RELATED
energy-saving opportunity is duct sealing



#1 ENERGY SAVING
opportunity is duct sealing

DUCT LEAKAGE = ENERGY LOSS

BUILDING FAULTS	ANNUAL COST
Duct Leakage	\$2.9B
HVAC left on when unoccupied	\$1.9
Lights left on when unoccupied	\$1.7
Airflow not balanced	\$0.7
Improper refrigerant charge	\$0.7
Dampers not working properly	\$0.5
Insufficient evaporator airflow	\$0.3
Improper controls set up	\$0.2
Control component failure	\$0.2
Software programming errors	\$0.1

Source: eScholarship - University of California, <https://escholarship.org/uc/item/7dq5k3fp>

RESIDENTIAL “WEATHERIZATION” = SEALING FOR LEAKAGE

Factory-Designed Efficiency	Delivered Efficiency with Unsealed Ducts				
	2% or Less (SEALED)	10% Leakage	20% Leakage	30% Leakage	
A/C and Heat Pumps	24 SEER	23.3	20.3	16.6	12.9
	22 SEER	21.3	18.6	15.2	11.9
	20 SEER	19.4	16.9	12.9	10.8
	18 SEER	17.5	15.2	12.5	9.7
	16 SEER	15.5	13.5	11.1	8.6
14 SEER	13.6	11.9	9.7	7.6	
Furnaces	95% AFUE	93	85	76	67
	90% AFUE	88	81	72	63
	85% AFUE	78	72	64	56

Average Savings in the US and Canada - 8 – 15%

- Depends on:
 - Heating and cooling type
 - Region
 - Home construction
 - Several other factors

Source: Comfort Institute. Based on Department of Energy Research and FL Energy Office Research Report: FSEC-CR-397-91

Source: Modeling using the ASHRAE 152 standard for Distributed Efficiency

“WEATHERIZATION” = SEALING FOR LEAKAGE

- What are the overall steps to the process? What must be done first?
- What are the different ways to weatherize/seal?
 - How do you know what’s right for the job? What factors and variables come into play?
- How do you check your work to make sure the ducts were sealed properly?

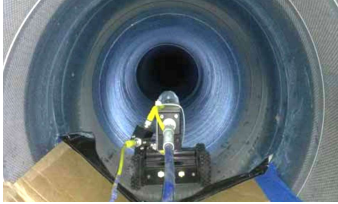
TRADITIONAL BUCKET & BRUSH



SPRAY APPLIED - EXTERIOR



SPRAY APPLIED - INTERIOR



SPRAY APPLIED - INTERIOR BEFORE/AFTER



AEROSOLIZED WITH AUTOMATED TESTING- INTERIOR



ROLLED MASTIC SEALANT – “TAPE”



DOS AND DON'TS OF WEATHERIZING/SEALING

- What are some important things to keep in mind when it comes to putting this service into practice?
- What are the implications of weatherizing gone wrong?
 - Material coming in contact with your tools
 - Over spraying, like with spray coatings
 - Cautionary tales

COMMERCIAL INCENTIVES - INFLATION REDUCTION ACT

Program	Agency	Bureau	Amount	Summary	Funding Type
Assistance for Latest and Zero Building Energy Code Adoption	Department of Energy	Office of State and Community Energy Programs	\$1,000,000,000	Adopt updated building codes	Grants
Advanced Industrial Facilities Deployment Program	Department of Energy	Office of Manufacturing and Energy Supply Chains, Office of Clean Energy Demonstrations	\$5,812,000,000	Industrial / mfg facilities engaged in energy-intensive industrial processes	Grants, Rebates, and/or Cooperative Agreements
Assistance for Federal Buildings	General Services Administration	Real Property Activities	\$250,000,000	Convert GSA Facilities to high-performance green buildings	Direct Federal Spending
			Total		

Source: <https://www.whitehouse.gov/eonenergy/inf/india-reduction-act-guidebook/>

RESIDENTIAL INCENTIVES – IRA, STATE, UTILITY

- Inflation Reduction Act - 25C**
 - Tax Incentive to Homeowner for qualifying home improvements – Insulation and / or Air Sealing
 - 30% of price paid, up to \$1,200 per year through year 2035
 - Example:
 - \$1,600 price = \$480 tax incentive
 - Position as a coupon that you don't have to fund
- State and Utility Rebates**
 - 13 States - Range from \$250 - \$1250
 - AZ
 - CT
 - DE
 - GA
 - IL
 - MD
 - MA
 - MN
 - MO
 - NH
 - OK
 - TX
 - WA

Source: <https://www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-https://what-is-it>


EXAMPLE OF A FEDERAL EXAMPLE

- Search example:**
 - Wylie, TX (zip code 75098)
 - Duct/Air Sealing
- Results:**
 - Rebate Program (residential)
 - Program overview
 - Link to program
 - Amount – 50% of cost
 - Max Incentive - \$500


Geographic Area	Wylie
Category	Appliances/Refrigeration
State	Texas
Program Type	Rebate Program
Web Site	http://www.gribco.com/energy/energy/energy/energy/energy
Administration	Local/State or Utility
Address	City of Garland
Energy Resources/Other Technologies	Refrigeration
Energy Efficiency Technologies	Lighting, Heat pumps, Air conditioners, Cooling/Heating or cooling, Ductless heating, Building materials, Windows, Doors, Other (S)
Applicable Sectors	Commercial, Industrial, Residential, Federal Government
Applicable Amount	Commercial: 50% of eligible installed Residential: 50% of eligible installed Cost of Air Conditioning, kWh: \$100 per unit, depending on efficiency Central Heat Pump, kWh: \$100 per unit, depending on efficiency

STATE AND FEDERAL INCENTIVES

- DSIRE – Database for State Incentives for Renewables & Efficiency
- www.dsireusa.org
- Shows State and Federal:
 - Financial Incentives
 - Rules, Regulations & Policies
 - Related Programs & Initiatives
- Searchable for Duct/Air Sealing



Questions?



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Thank You for Participating!
