

A stylized, colorful illustration of a landscape. The foreground features rolling green hills with a dark brown path. On the left, there is a green tree, a purple flower, and an orange flower. A small red bird is flying in the sky. The background consists of light blue and white wavy lines representing a sky or water.

# Refrigerant Management for County and Local Governments in New York

Ulster County Forum  
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# Important Facts About Refrigerants

- Refrigerants are widely used and they are incredibly powerful greenhouse gases
- Refrigerants in well-sealed appliances or in storage tanks are fine; the problem is “leaking” refrigerants
- There are good companies doing the important work of recycling or denaturing used refrigerants
- Drawdown.org ranks “Refrigerant Management” as the #1 solution to reducing greenhouse gases

# Refrigerants: Powerful GHGs

- *GWP = Global Warming Potential*
- *GWP of Carbon Dioxide = 1*
- *GWP of Methane = 34*
- *Refrigerants:*
  - *R22 (older air conditioners)*
  - *R410A (current air conditioners)*
  - *R134A (car air conditioners)*

<i>Gas</i>	<i>GWP</i>
<i>Carbon Dioxide</i>	<i>1</i>
<i>Methane</i>	<i>34</i>
<i>R22</i>	<i>1,810</i>
<i>R410A</i>	<i>2,088</i>
<i>R134A</i>	<i>1,430</i>

# Implications of GWPs



This dehumidifier holds 7.75 ounces of R410A, which has a GWP of 2088

Burning 1 gallon of gasoline yields 18.9 pounds of CO<sub>2</sub>

Leaking 7.75 ounces of R410A yields 1011 pounds of CO<sub>2</sub>e or "CO<sub>2</sub> equivalent"



# CO<sub>2</sub> Equivalence

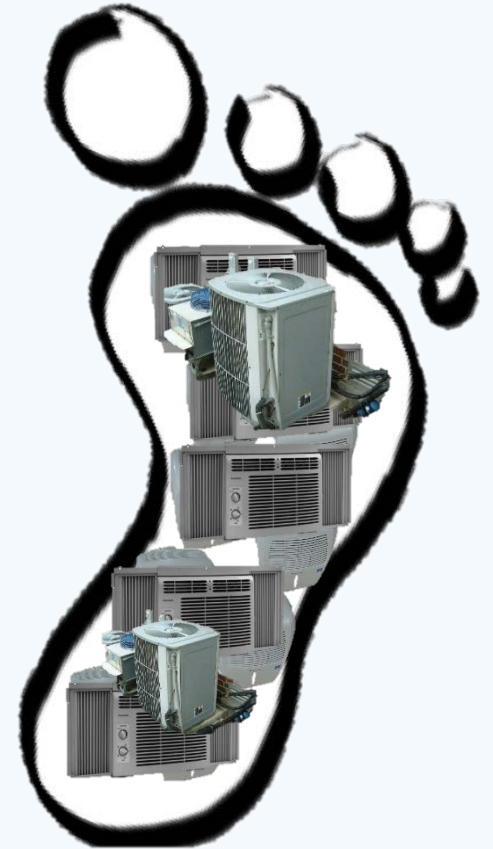
The average American drives 13,500 miles/year and the average car here gets 24.7 mpg.

This activity uses 545 gallons of gasoline and generates a carbon footprint of 10,300 pounds of CO<sub>2</sub>.



1 pound of R410a has the same Global Warming Potential as 2088 pounds of CO<sub>2</sub>.

So about 5 pounds of R410a can create a greenhouse gas footprint equivalent to that of an average car driven for one year



One could find that much R410a in 20 air conditioning units

# *Before Modern Refrigerants*



# A Simple History of Modern Refrigerants

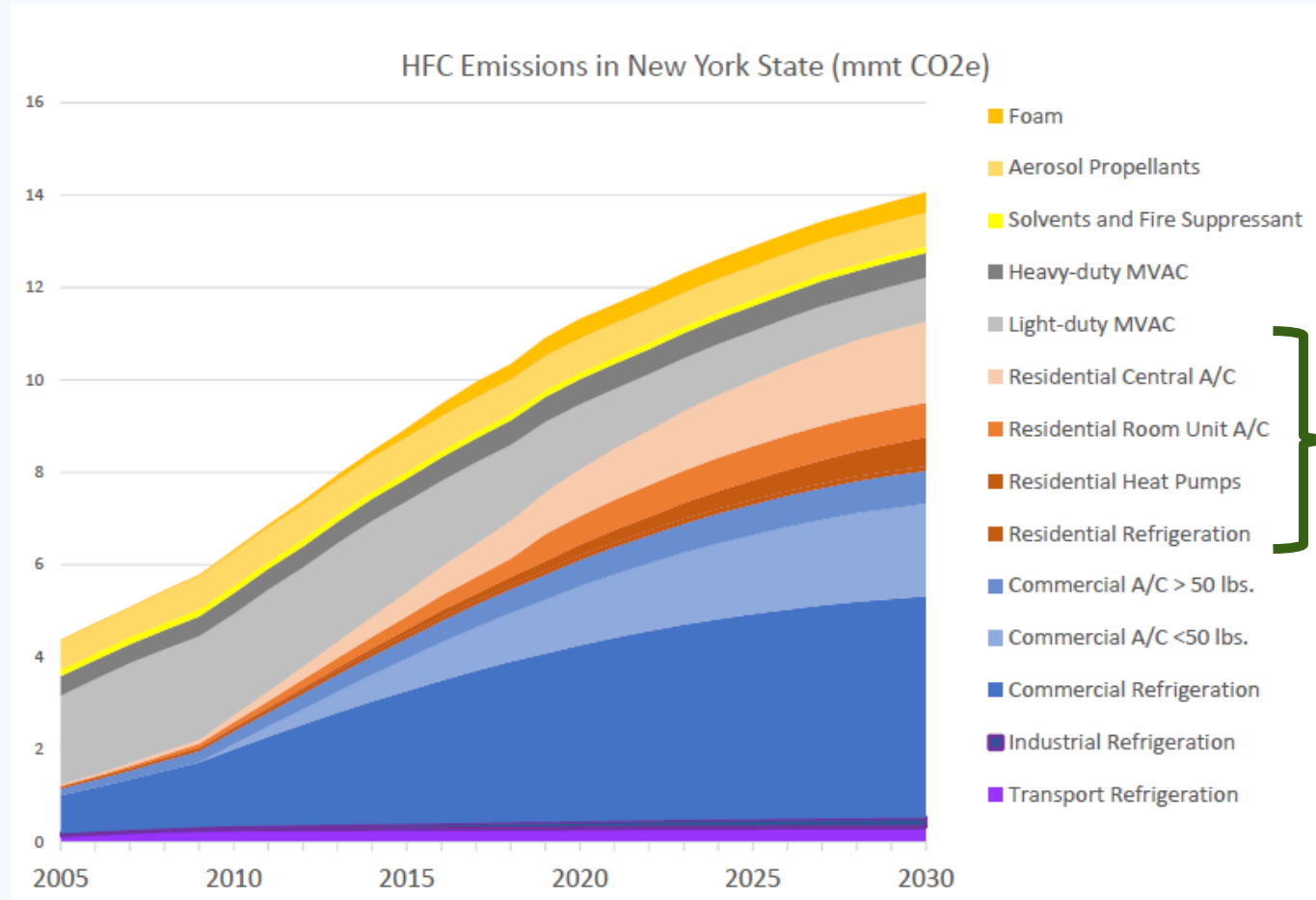
Era	Refrigerants	Ozone Depletion?	High GWP?	Difficult to Denature?
Early	CFCs & HCFCs	Yes	Yes	Yes

Freon?

- 1987 Montreal Protocol
  - Recognized CFCs and HCFCs as Ozone Depleting Substances (or ODSs)
  - Established an international agreement to phase them out
  - It's working!
- 2016 Kigali Amendment to the Montreal Protocol
  - Will start phasing out HFCs in 2019 in wealthiest countries
  - Fully implemented by 2028 -- could reduce global warming by 1°F by 2100
  - Will the U.S. follow the Kigali Protocol?
  - Will New York adopt its own regulations?



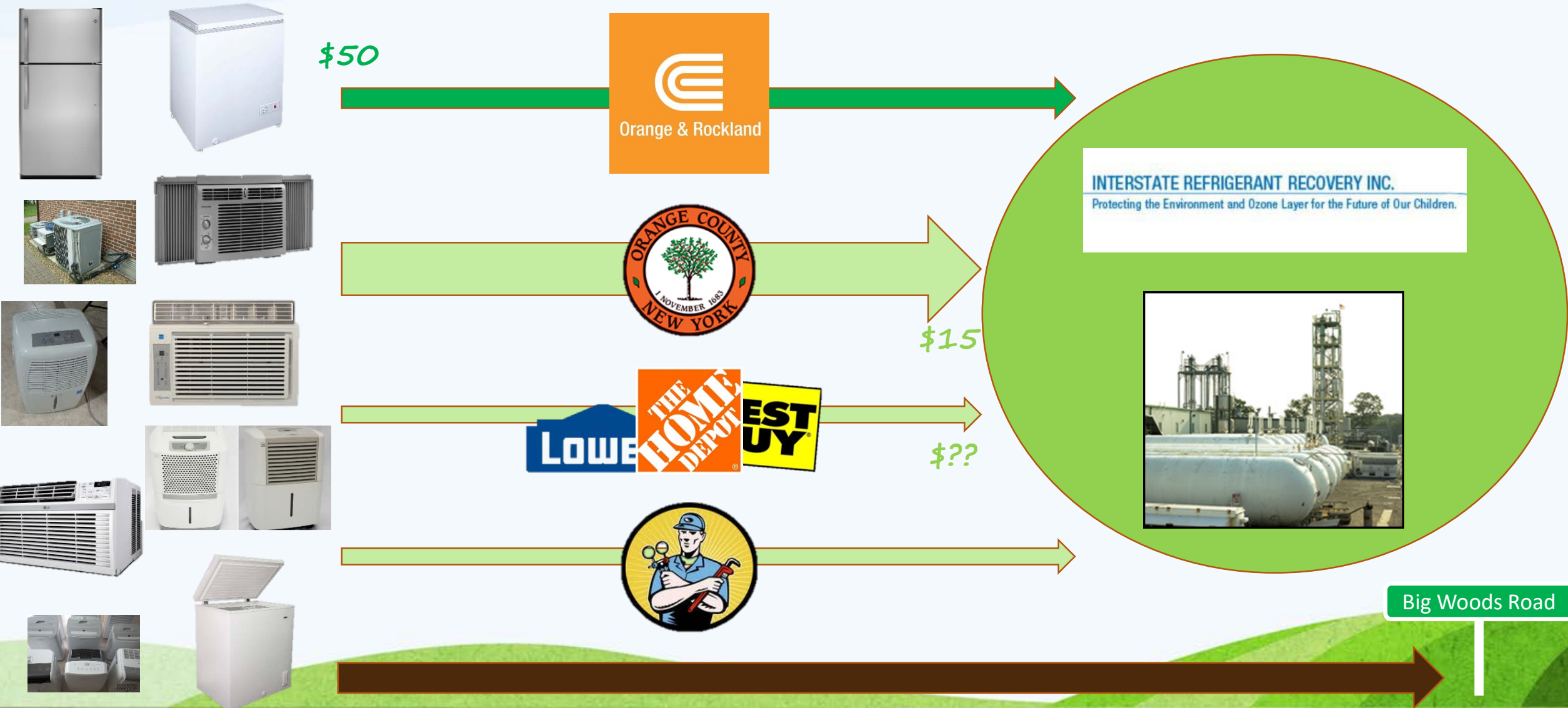
*In the big picture of refrigerant management, local actions will be essential to success*



*These parts of the problem will need strong local efforts*



# Where do old refrigerants go in Orange County?





*For some citizens of  
Big Woods Road:*

*“Paying to throw out garbage  
is only for people with more  
dollars than sense.”*

**Big Woods Road**

# What citizens need to know

1. When store bought appliances reach the end of life, they go to the transfer station and the \$15 fee is for a good reason

What if I don't have the 15 bucks?

With HVAC technicians over central air heat pump work, the standard is no leaks

3. When buying new appliances or upgrading systems, be aware of new alternatives

Get it from a tree-hugging friend

What if I don't have any tree-hugging friends?

Awareness of how new policies are implemented, national and international level

Dude! Get more friends!



# What local officials need to know

1. Baseline appliance collection numbers for your jurisdiction
2. What equipment needs to be properly maintained and upgraded
3. The Climate Smart Communities program will reward innovative programs for managing refrigerants
4. Staff of DEC and P21 are enthusiastic about helping with refrigerant management

# Thanks to...

- Sustainable Warwick
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