



# The Benefits of Bioheat®

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# OUR PURPOSE TODAY IS TO...

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**Arm you with information** about the profound changes (cleanliness & price) about heating oil as well as illustrate how Bioheat in Connecticut is cleaner than natural gas.



# RENEWABLE FUELS

The top of the image features a colorful illustration of three renewable energy scenarios. On the left, three white wind turbines stand on a green hill under a blue sky with white clouds. In the center, a row of blue solar panels is mounted on a hill, with a bright yellow sun and a few clouds above them. On the right, a grey biomass processing plant with a tree logo is situated on a hill, with stacks of wood nearby. The background consists of rolling green hills and a clear blue sky.

## WIND ENERGY

- Produced by converting the kinetic energy into electricity
- Reduces need for fossil fuels when used as an energy source
- Wind reduces carbon dioxide emissions by 98.6%

## SOLAR ENERGY

- Energy derived from the sun converted into usable energy
- Reduces need for fossil fuels when used as an energy source
- One megawatt hour offsets 1 ton of CO<sub>2</sub>

## BIOMASS ENERGY

- Biological material derived from both plant and animal material
- Reduces need for fossil fuels when used as an energy source
- Can be produced as needed
- Biomass crops produce oxygen and use up carbon dioxide

# TWO TYPES OF BIOMASS

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## BIODIESEL

**100% renewable**  
Made from plant oils  
**Can be blended with other fuels or  
used as a pure product (B5-B100)**  
Enhances food supply



## ETHANOL

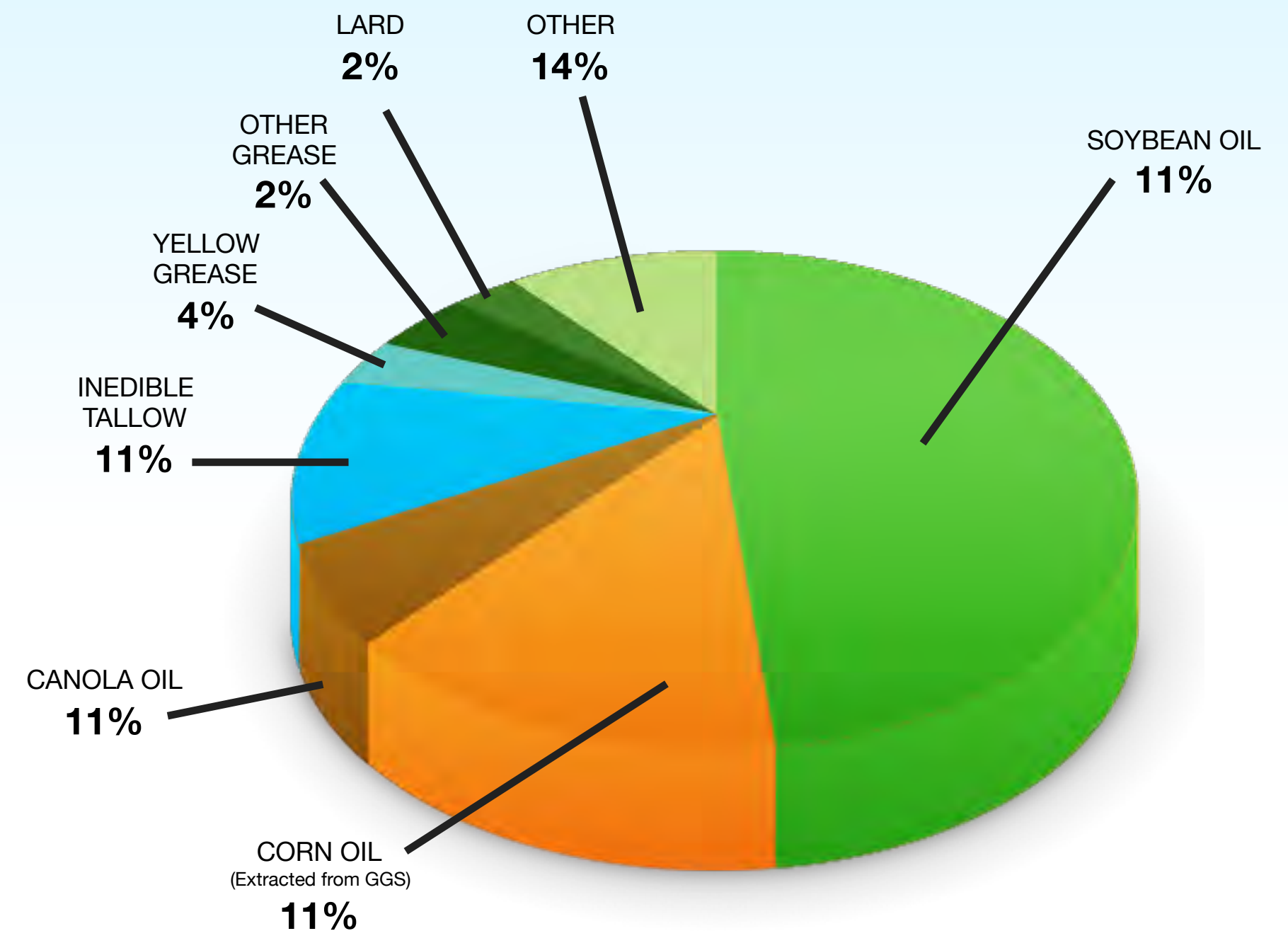
**Alcohol-based biofuel produced  
from sugar-based crops**  
Blended with gasoline to produce  
cleaner burning gas

# WHAT IS BIODIESEL?

Biodiesel comes from plant oils such as soybean and palm oil, animal fats, or recycled restaurant oils. It is a 100% renewable fuel and contains nearly 0% sulfur content. Biodiesel must be designated as B100 and meet all of the current requirements of ASTM D-6751 to be certified as Biodiesel.

## What is Biodiesel made from?

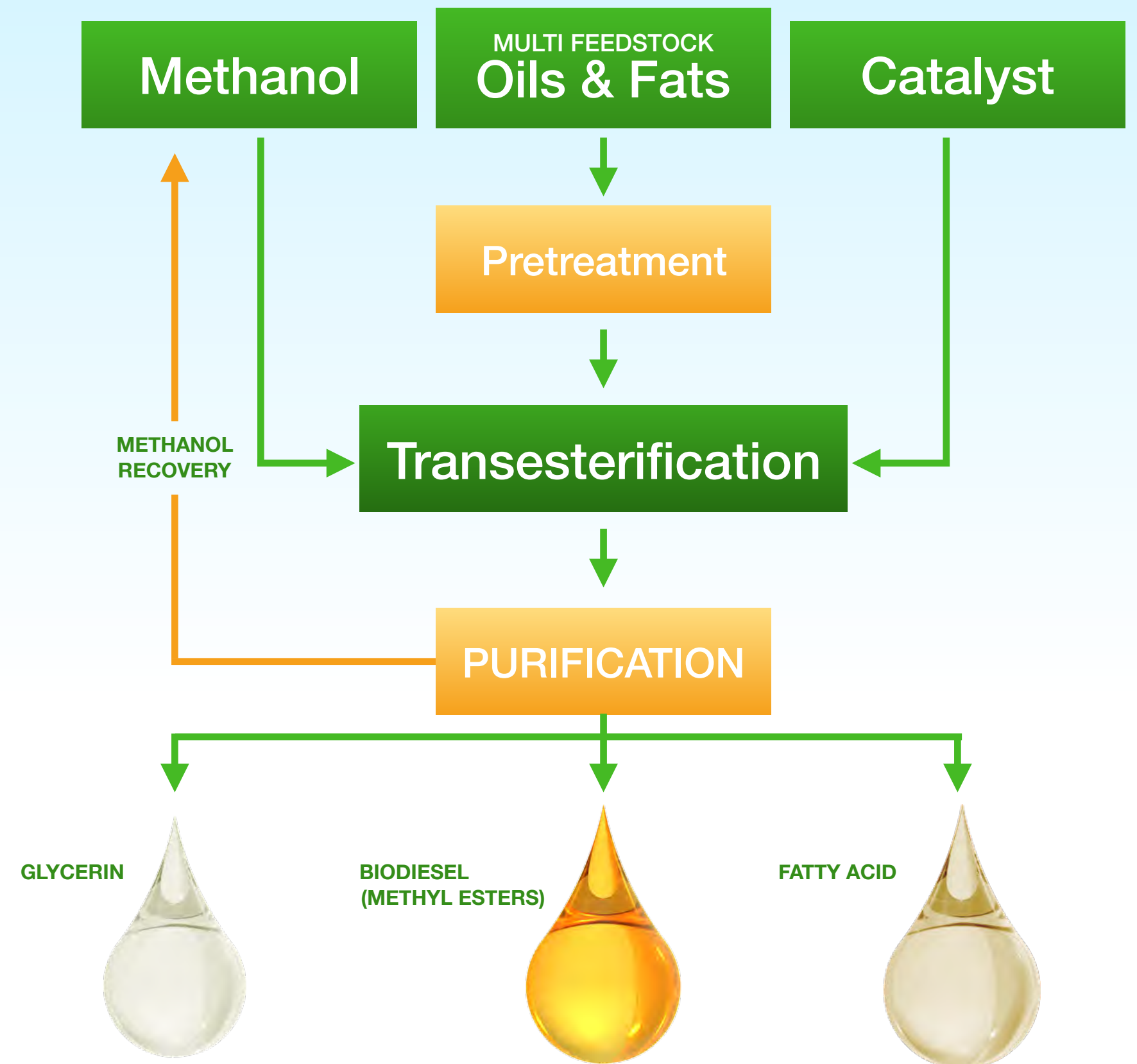
Feedstocks that meet the ASTM quality specifications as defined under ASTM D-6751



# PRODUCTION OF BIODIESEL

Biodiesel is produced when solid particles are removed from fats or plant oils. The solid particles, glycerin, are then used to create many household products including soaps. The remaining liquid is the biodiesel.

This chemical process is called transesterification.



# QUALITY ASSURANCE IN BIODIESEL AND BIOHEAT®

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ASTM International sets technical standards globally. D-6751 is their code number for pre-blended Biodiesel fuel, which is also the only renewable diesel fuel with approved ASTM specifications. Here are some of the specifications that prove the quality of Biodiesel and Bioheat®:

- Biodiesel must be B100 and ASTM certification D-6751 (or current version)
- EPA registration is required to sell Biodiesel
- #2 Heating Oil - ASTM D-396 (inclusive of up to 5%, B100 Biodiesel)
- Diesel Fuel - ASTM D-975 (inclusive of up to 5%, B100 Biodiesel)

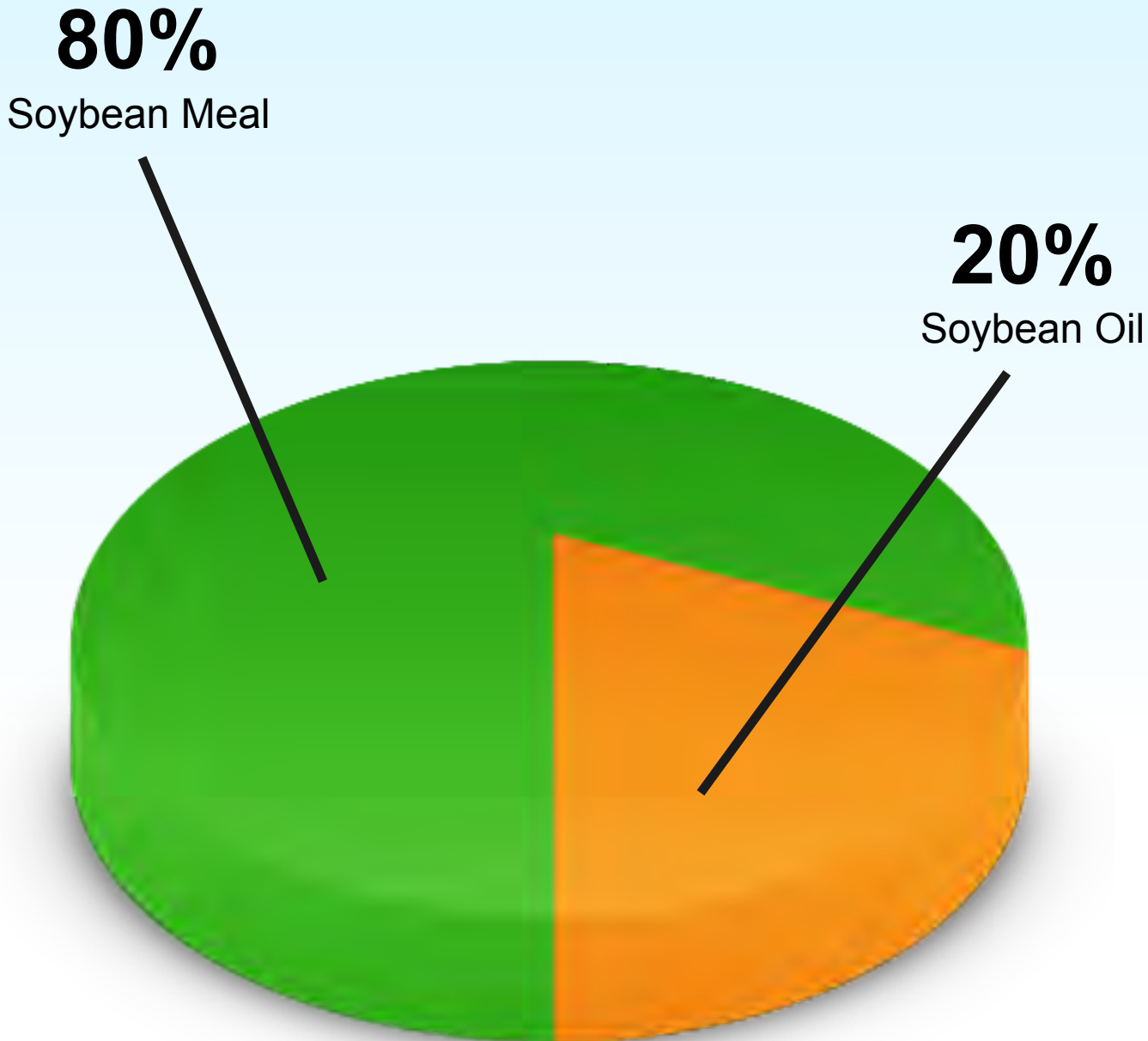
You will also see BXX. XX is the volume percentage of Biodiesel. For example B5 means there is 5% Biodiesel blended.



# WHAT DOES BIODIESEL HAVE TO DO WITH THE WORLD'S FOOD SUPPLY?

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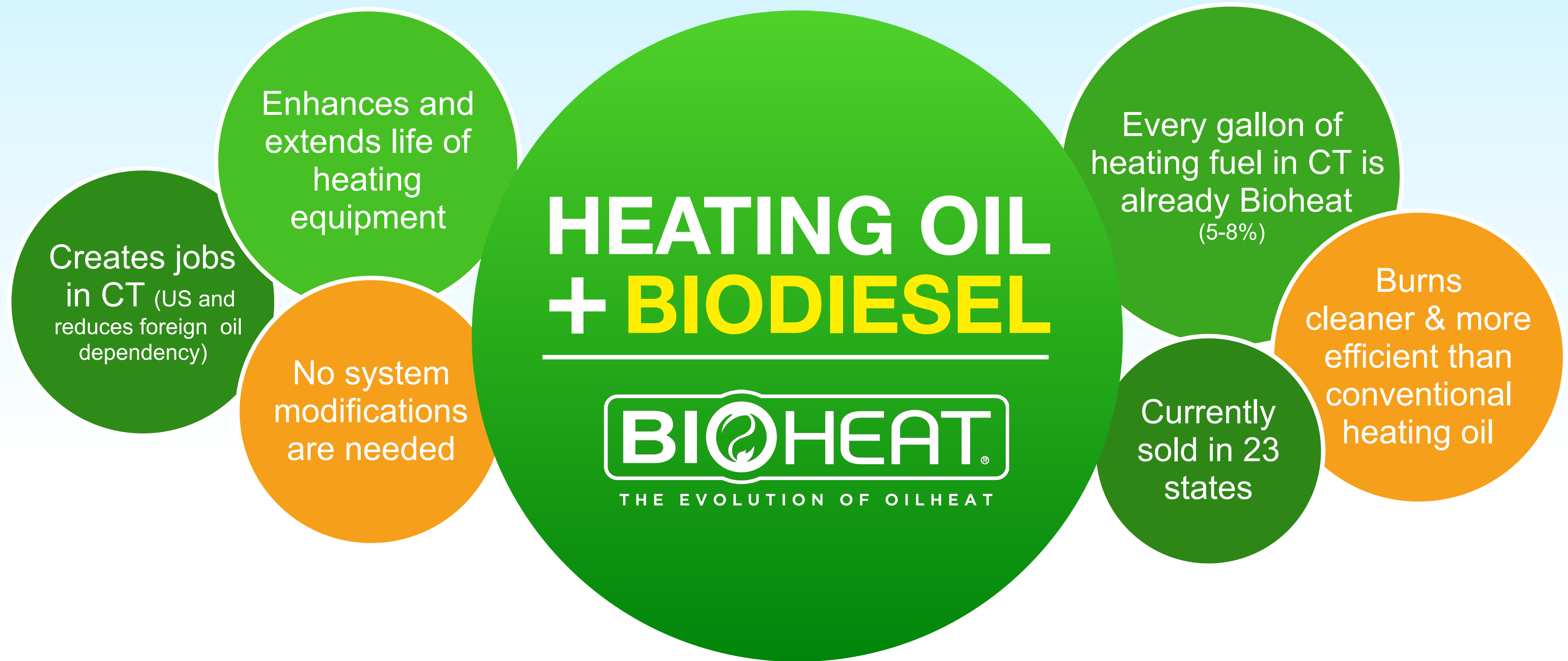
Soybeans are primarily grown to be used as a high protein meal for livestock. But, not all of it is used as food. Nearly 20% is a by-product, which otherwise would have been discarded, and is in the form of oil. And, as the demand and value increases for soybean oils that are used in Biodiesel production, the cost for the proteins used in feed for livestock and food comes down.





# BIOHEAT (THE ADVANTAGES)

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# BIOHEAT VS NATURAL GAS

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THE EVOLUTION OF OILHEAT



## Cleaner Than Natural Gas

A Brookhaven National Laboratories study has concluded that Bioheat blends as low as 1.8%, is cleaner than natural gas



## Helps Communities

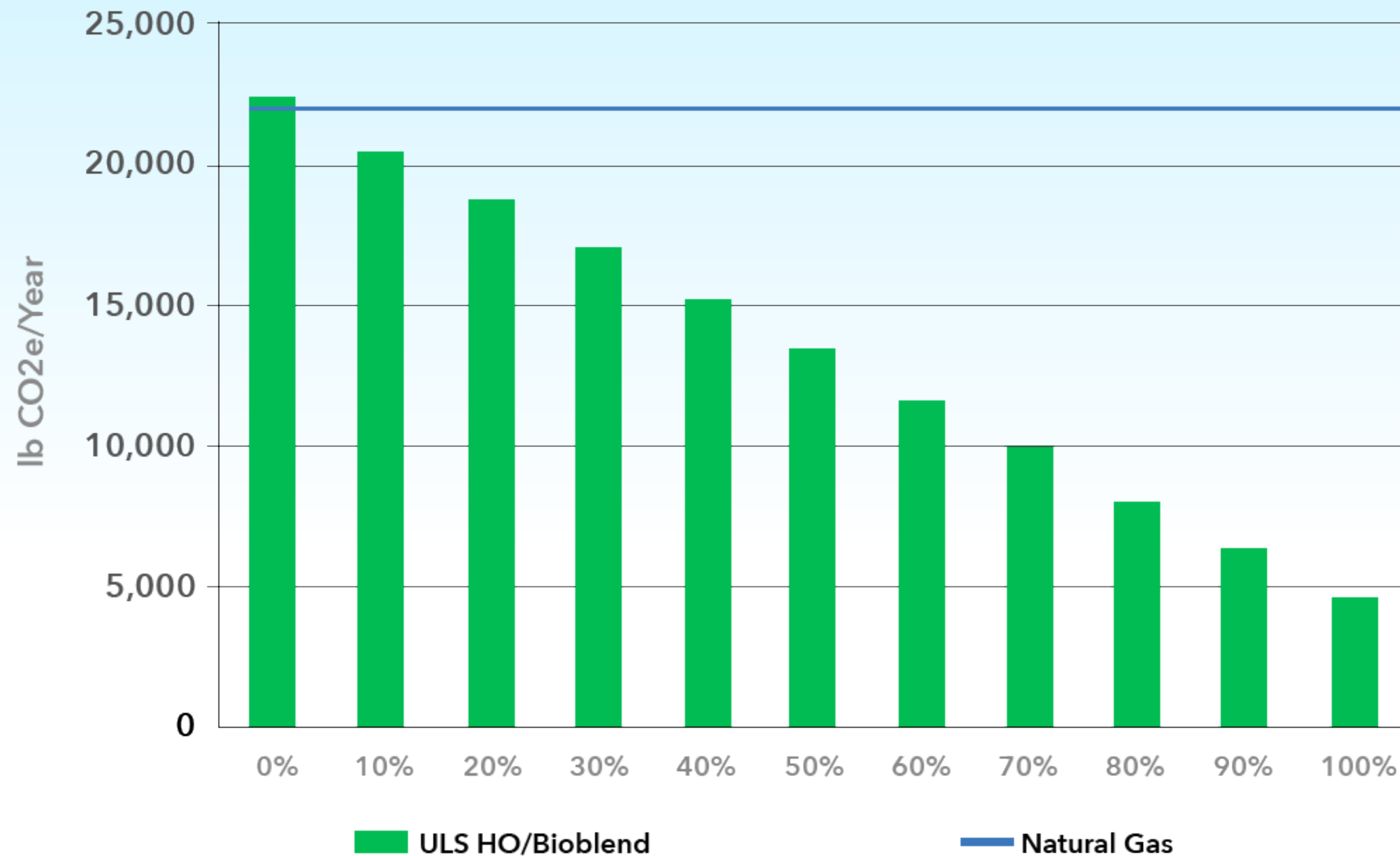
Heating oil companies delivering Bioheat are typically local, family-owned businesses committed to the communities they serve

## Natural Gas

- X** Methane—the green house gas) emitted by natural gas – *is far **more toxic** than carbon dioxide*
- X** In the northeast, the natural gas infrastructure is so old and antiquated that there is methane being emitted into the atmosphere at dramatic rates
- X** Natural gas pipelines cannot meet current capacity requirements placing even greater strain on the aging pipelines and delivery reliability
- X** Natural gas utilities operate as monopolies in the state of CT as it is **NOT** a deregulated commodity



# BIOBLEND GHG EMISSIONS BY BLEND PERCENT VERSUS NATURAL GAS 20 YEAR ATMOSPHERIC LIFETIME (WITHOUT INDIRECT LAND USE)



Source: February 2007: ICF Report entitled, "Final Report Resource Analysis of Energy Use and Greenhouse Gas from Residential Boilers and Hot Water Heaters"

# BIOHEAT IS BETTER



THE EVOLUTION OF OILHEAT

Safer

Cleaner

Environmentally  
Friendly

Renewable

Sustainable

Creates American  
Jobs

No Modifications  
Required

Enhanced Equipment  
Operability

More Efficient

Additional  
Improvements as  
blends increase

Biodegradable

Comparable Value to  
Generic Heating Oil

Virtually Sulfur Free

Marketable

Natural Gas  
Performance Parity

blends increase

# ADDITIONAL INFO

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**Additional information for the advantages of Bioheat can be found on the following links:**

**[BioheatNow.com](#)**

**[MyBioheat.com](#)**

**[AskBen.info](#)**

**[BioDiesel.org](#)**

**[OilHeatAmerica.com](#)**

