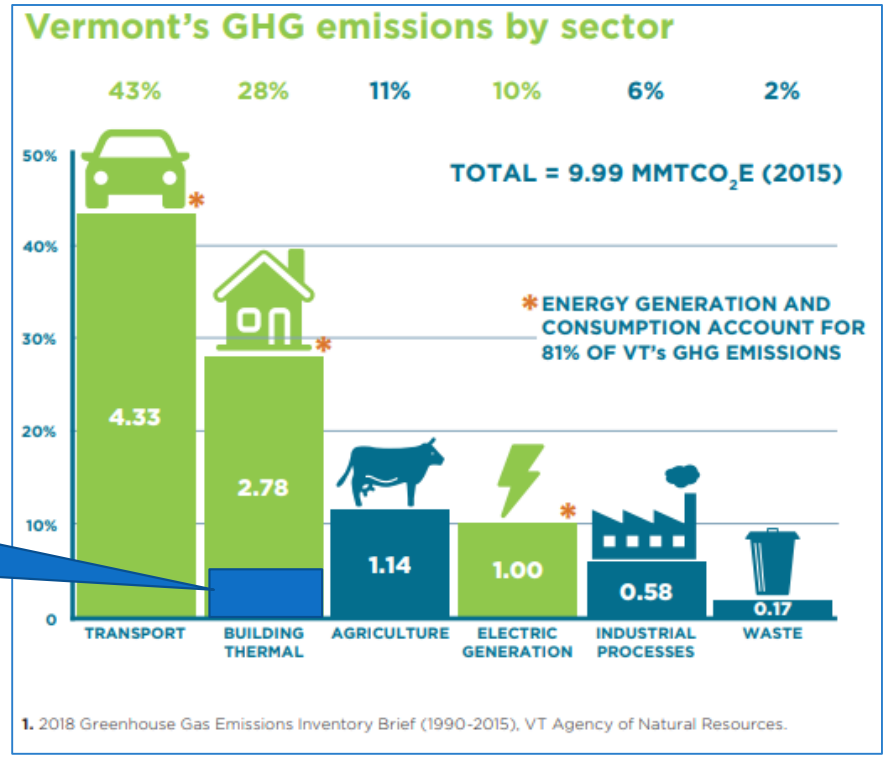
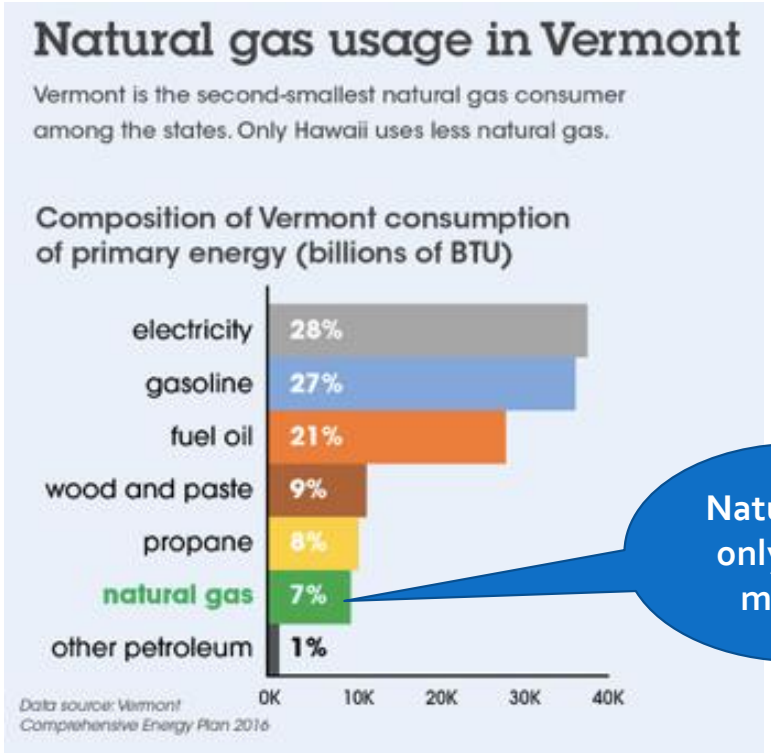
Vermont Gas Today & Tomorrow

April 11, 2019

Today



Natural Gas only 6% of GHG



Natural Gas only 7% of mmbtu

Natural Gas in Vermont

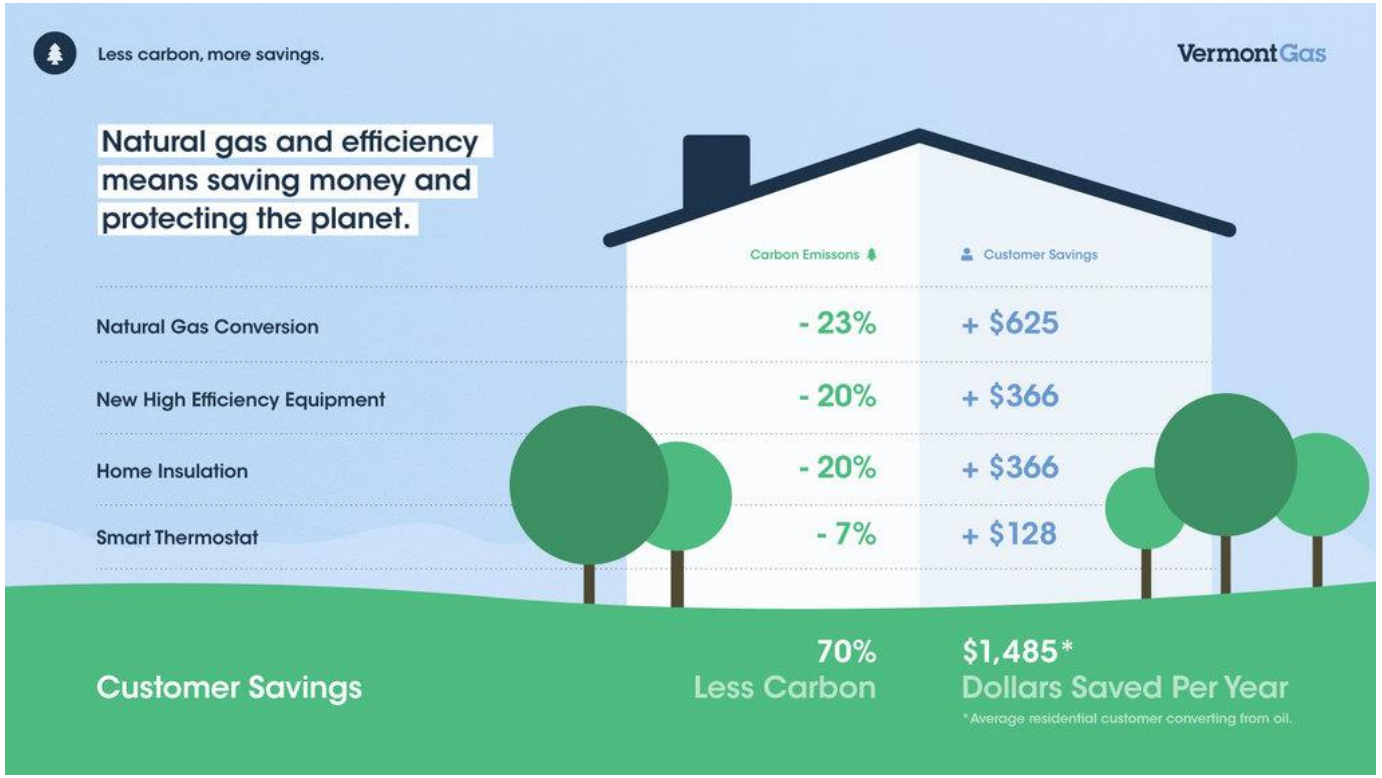
The Customer Experience

Customers are paying 30% LESS on heating bills than they were in 2008.

Access to award winning efficiency programs

24/7 access to service and energy experts

High marks from customers: 95%+ Rate VGS good to excellent.



Business Value

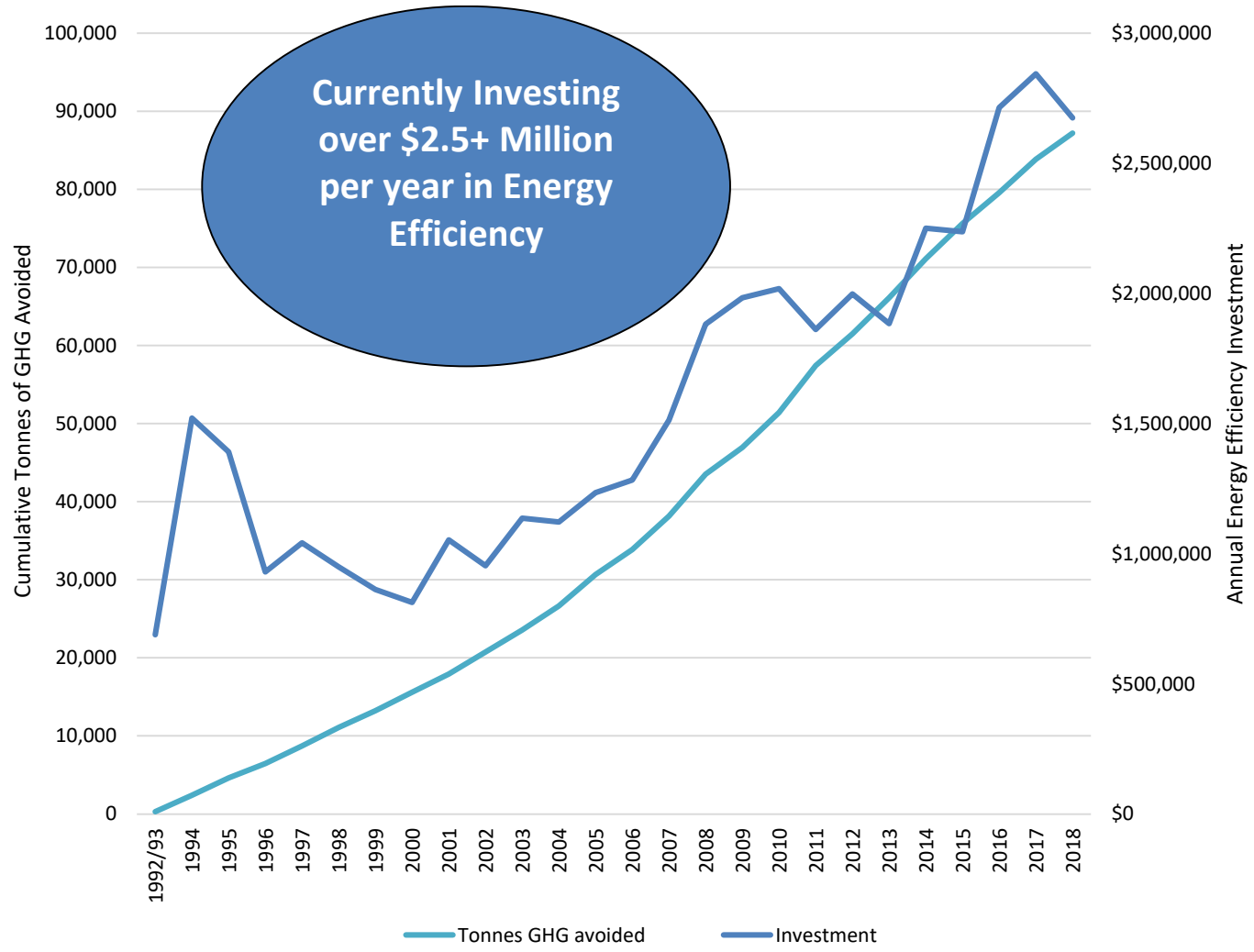
Top 10 Customers use 3,000,000 mmbtu/yr. for a cost of ~$16m/yr., if converted to electricity the cost would be ~$85m/yr.

Key Economic Development Tool-"if you don't have access to natural gas, you won't attract new business"*

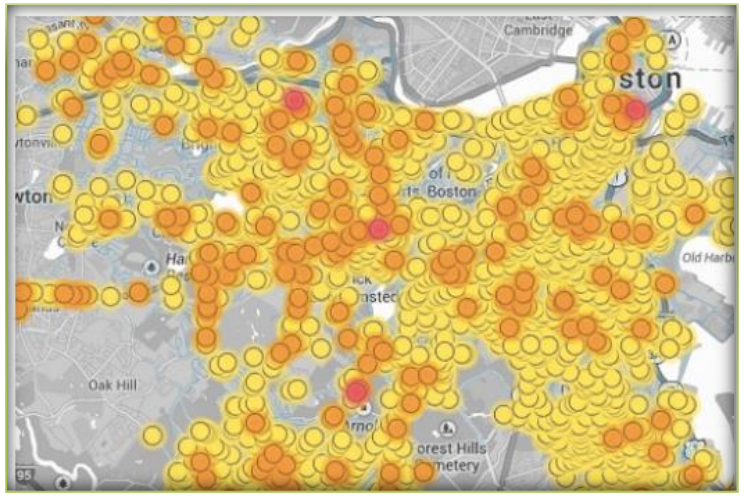
*Keynote Speaker at Vermont Chamber Economic Conference in 2018

CABOT
Agri-Mark
The University of Vermont
St. Albans Co-op Creamery
Dairy Farmer Owned
FranklinFoods
Re-Inventing Cream Cheese®
Global Foundries
Collins Aerospace
WestRock
1878
Champlain College
1800
Middlebury College

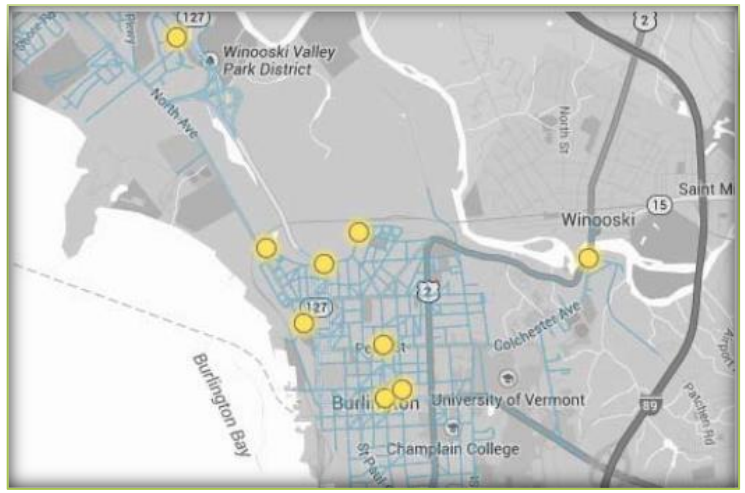
Investments in Efficiency Programs Result in Significant GHG reductions



2014 EDF Methane Study: VGS Has Efficient System



Boston, Massachusetts



Burlington, Vermont

Clean Energy Advocates

Member -Natural Gas Supply Collaborative

Focused on sustainability and best practices in supply sector

Member-Downstream Natural Gas Initiative

Focused on best practices for reducing carbon at the utility level

Advocating for stronger EPA GHG reporting

Tomorrow

Pathways to Decarbonizing VGS' System

Step 1-Renewable Natural Gas:

VGS is the first Gas Utility in the U.S. with a Retail RNG Program.

RNG is biomethane capture at landfills and digesters, then injected into the pipeline

VGS working toward 5-20% RNG

in the coming years

Step 2-Hydrogen Injection (2022):

Renewable Electricity can be converted in hydrogen and injected into VGS system, a.k.a. "Energy Storage".

VGS working with electric utilities to develop a hydrogen pilot.

Potential to except 5-20% Hydrogen.

Step 3-Carbon Capture-Syn-Gas (2030)

By 2030 Carbon Capture systems will likely be mandated for large emmitters.

Blending Carbon with Hydrogen creates RNG.

Renewable Natural Gas- Salisbury Vermont

- VGS, Middlebury College and Vanguard Renewables have partnered on a Farm/Food Waste Digester
- Project received VT PUC approval and is slated to be online in 2020
- Middlebury College will be able to achieve 100% Renewable Energy by 2028
- Remaining RNG can provide over 400 homes with 100% RNG.
- Clean Energy, Clean Water, Act 148 and Farm Sustainability

Possibilities: 80% Decarbonized by 2050

- Efficiency Reductions
- Renewable Natural Gas
- -Biomethane
- -Hydrogen
- -SynGas/CCS
- Responsibly produced natural gas
- Smart T-stats/Smart Grid
- Carbon offset

Proposed H.51 Bill Impacts

- 800 homes and 150 businesses have signed up to get VGS service
- VGS is investing millions in maintaining and upgrading the safety and integrity of our system, requiring a variety of permits and approvals
- VGS has promised to build the pipeline to connect the Vanguard renewables project
- VGS is working with developers on new Vermont-based digester projects and other renewable gas production projects
- VGS is working with customers considering significant business expansions

The Future is Bright

Questions?