



# Union of Concerned Scientists

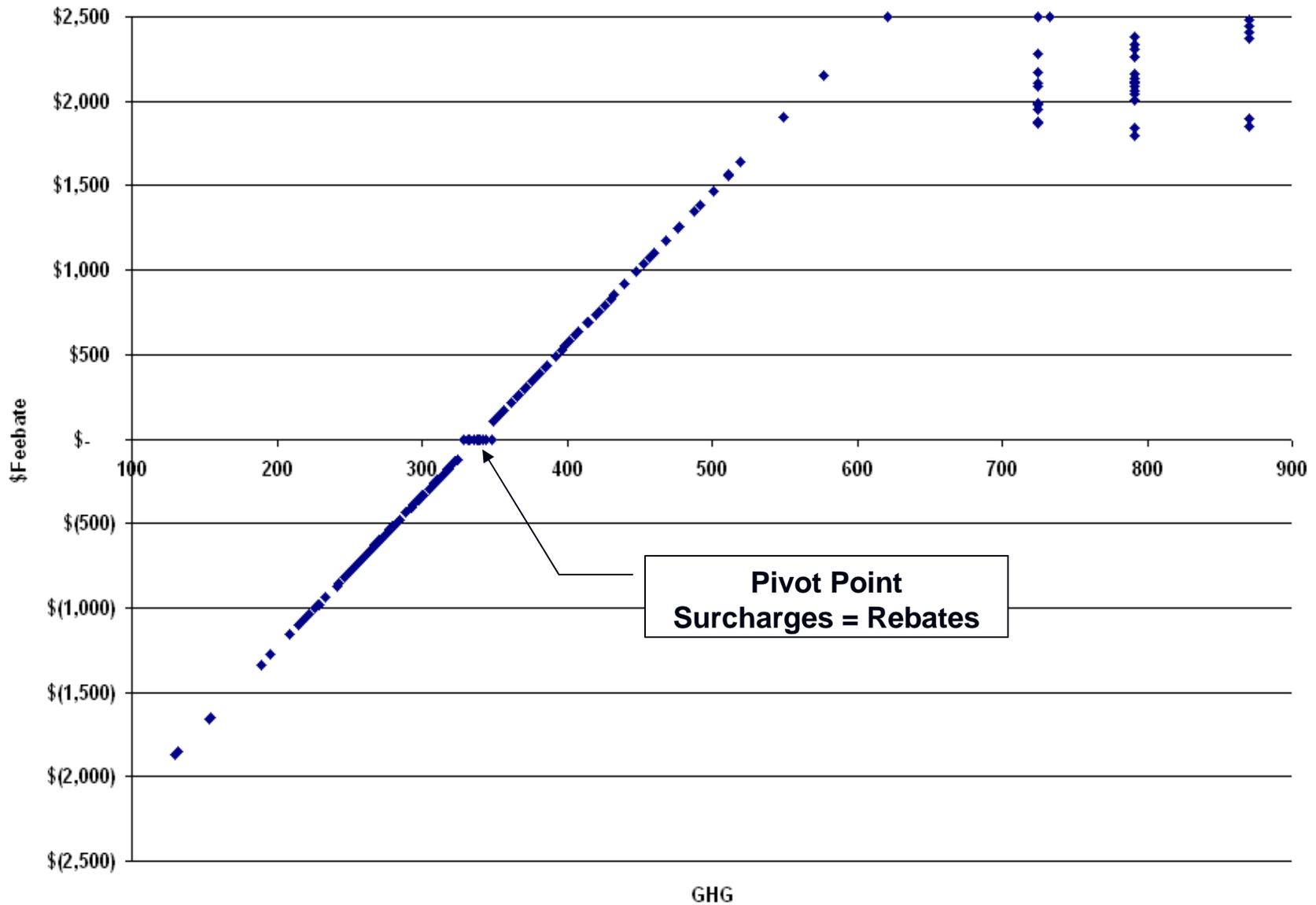
- **Leading national science-based nonprofit working for a healthy environment and a safer world. West Coast office in Berkeley, CA.**
  - **UCS combines sound and independent scientific research with citizen action to develop innovative, practical solutions and secure responsible changes in government policy, corporate practices, and consumer choices.**
- |                                  |                                      |
|----------------------------------|--------------------------------------|
| ◆ <b>Global Warming</b>          | ◆ <b>Renewable Energy</b>            |
| ◆ <b>Clean Transportation</b>    | ◆ <b>Nuclear Safety and Security</b> |
| ◆ <b>Sustainable Agriculture</b> | ◆ <b>Scientific Integrity</b>        |

*Founded in 1969 by MIT faculty members*

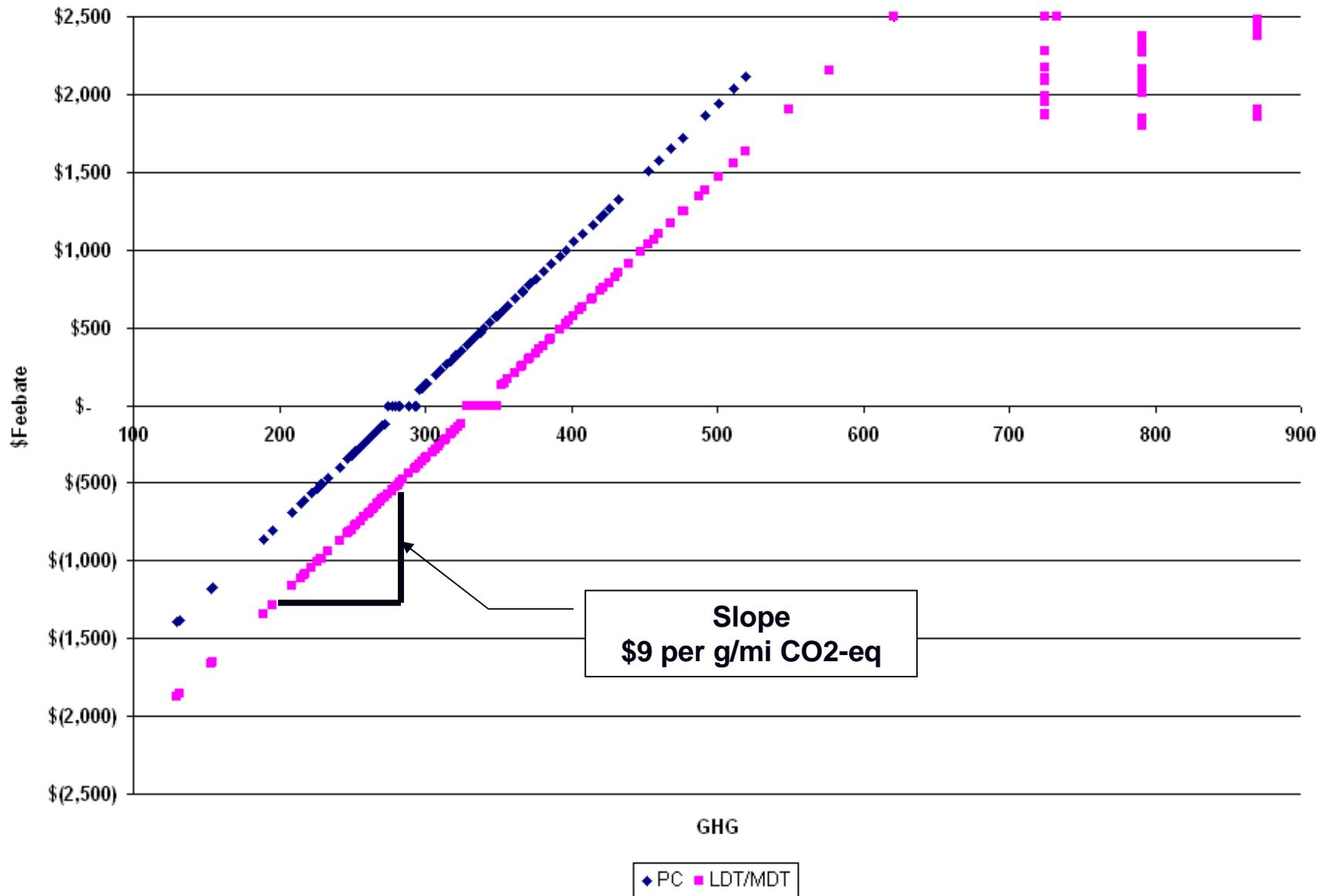
# Feebate Designs

- **Single Fleet**
- **Multiple Class**
- **Doughnut or \$0-Band**
- **Attribute (Size) Based**

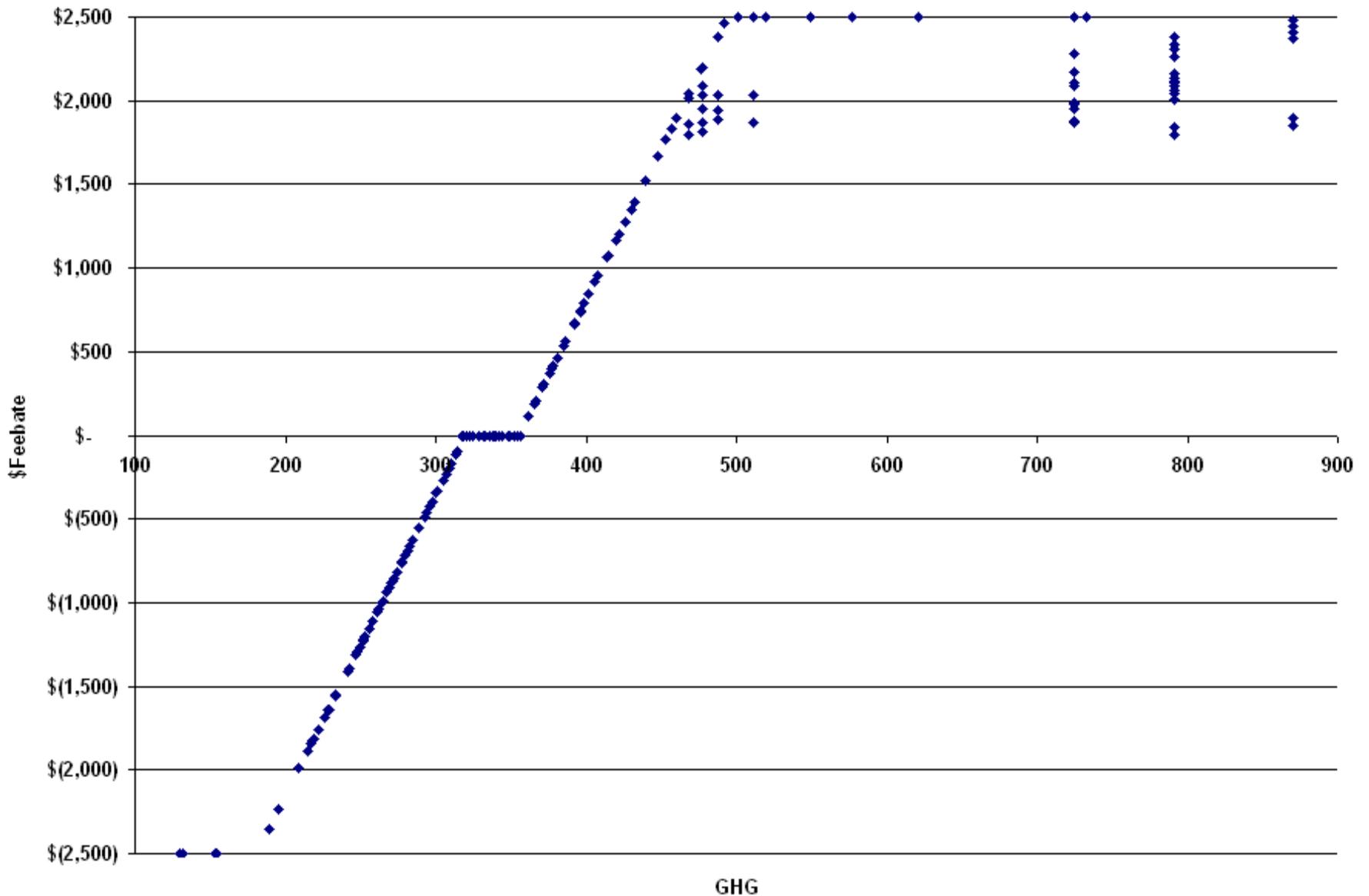
# Base Feebates Program



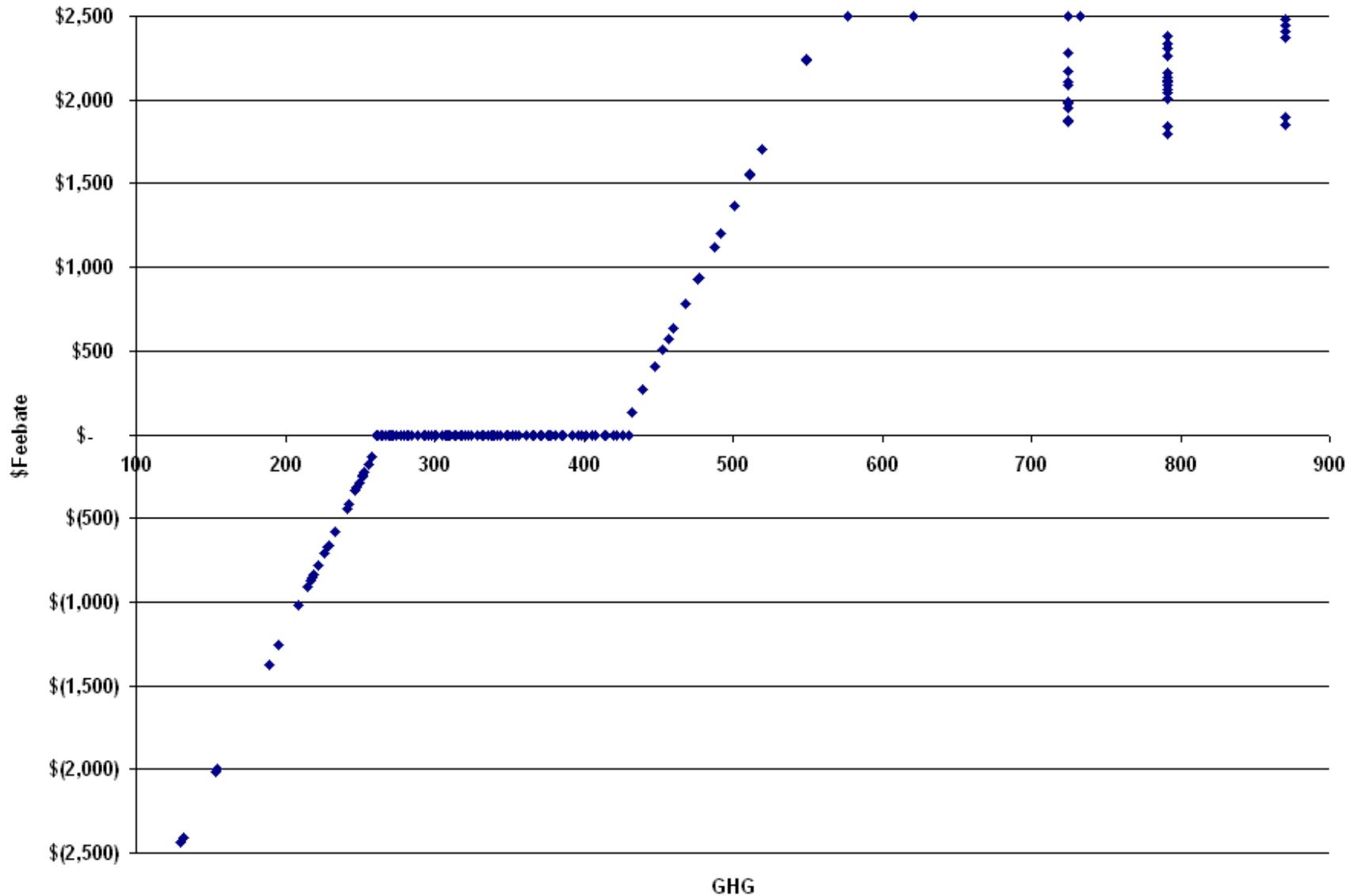
# Class Based



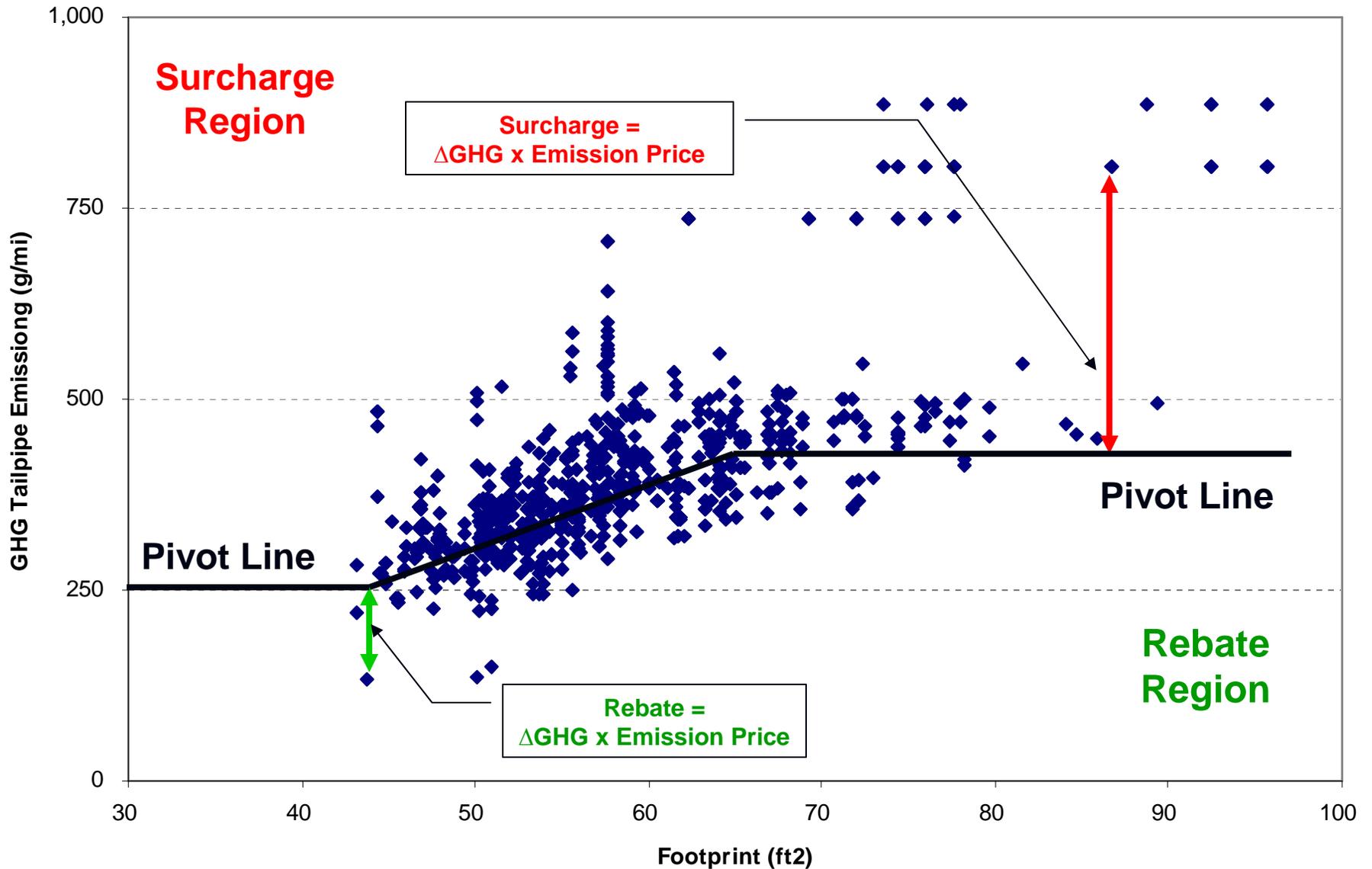
# \$0-Band or Doughnut Hole



# Shrinking Doughnut Hole



# Attribute (Size) Based



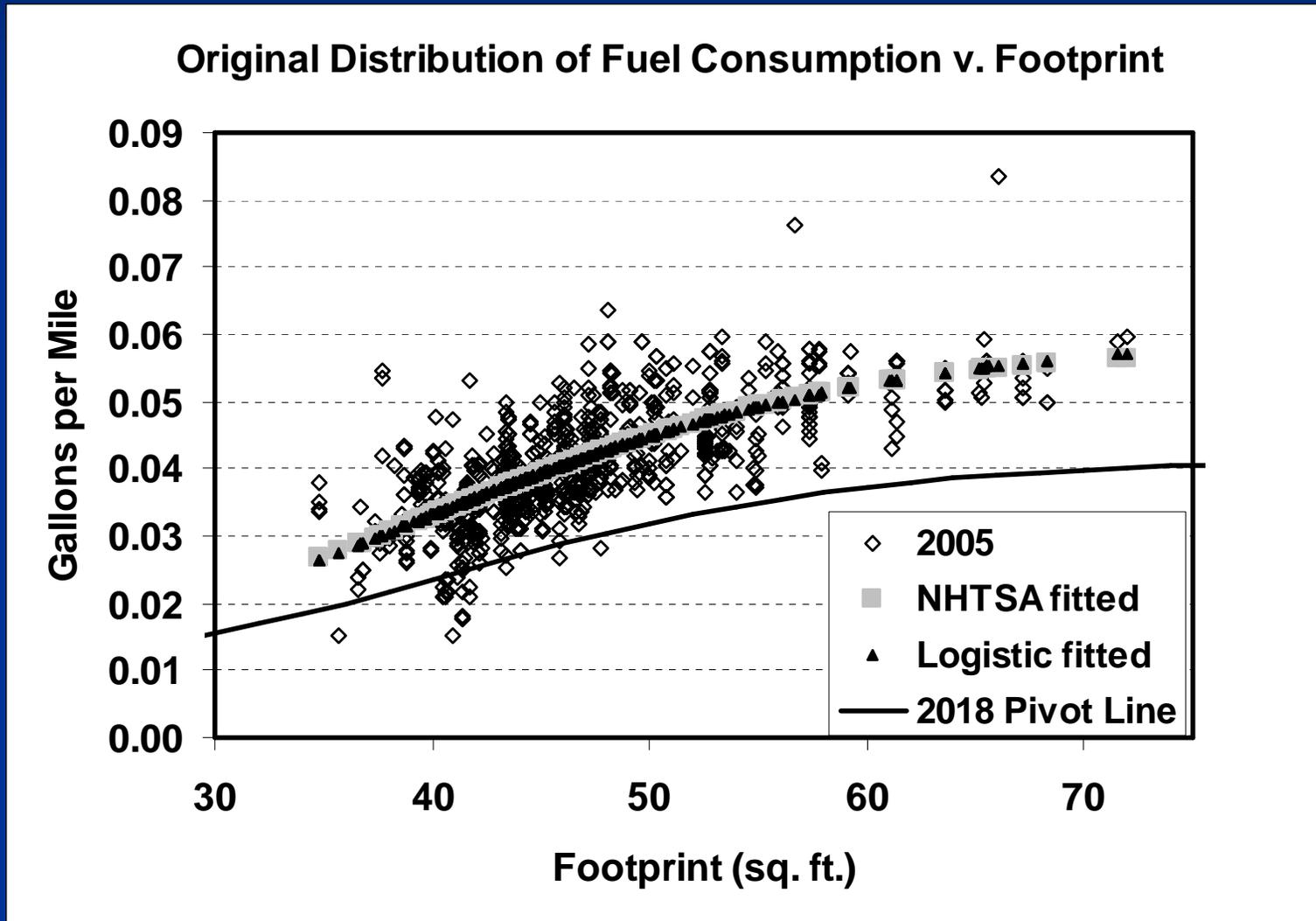
# Examples - 2005 CA Fleet

Vehicle	Base \$9/g	Zero \$18/g	Dough \$18/g	Class \$9/g
Honda Civic HEV	-2500	-2500	-2016	-1184
Toyota Corolla	-1838	-1574	-598	-476
Ford Escape	-298	-210	0	-160
GMC Sierra 1500	931	560	0	431
Dodge Caravan	117	0	0	0
Saturn Vue	-685	-421	0	-337
Toyota Tacoma	561	357	0	260
Ford Excursion	2500	2500	2500	2500

# Other Design Options

- Varying slope
- Manufacturer vs. Consumer feebate
- Passenger-based (MA) attribute
- Volume-based attribute

The feebate “pivot point” could be a function of footprint, like the footprint standard. The function could be lowered over time to manage revenues from the feebate.



# Attribute-Based Systems

Greatly reduces or eliminates:

- (A) Impacts on customer choice (size mix shifts)
- (B) Competitive impacts between manufacturers (wealth transfers)
- (C) Any perceived safety effect

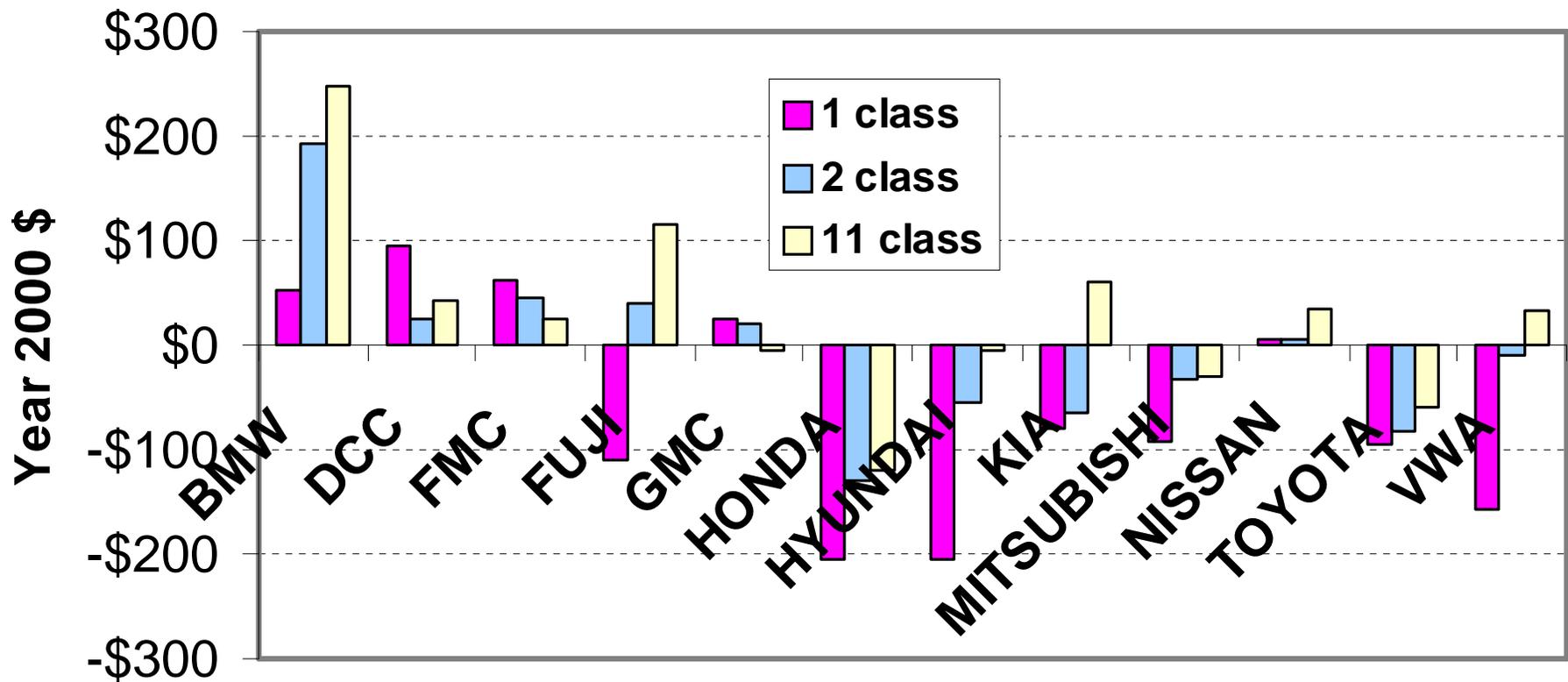
**Little impact on overall effectiveness**

Note that attribute-based systems can be used with either:

- FE standards (to fix the amount of efficiency improvement)
- Incentive programs (to fix the cost of efficiency improvements)

# Increasing number of pivot points reduces the disparity of impacts

**Average Feebate per Vehicle by Manufacturer**  
(Negative values indicate consumer received rebate)



Greene, D. L., P. D. Patterson, M. Singh, and J. Li. "Feebates, Rebates and Gas-Guzzler Taxes: A Study of Incentives for Increased Fuel Economy." Energy Policy, vol. 33, no. 6, 2005