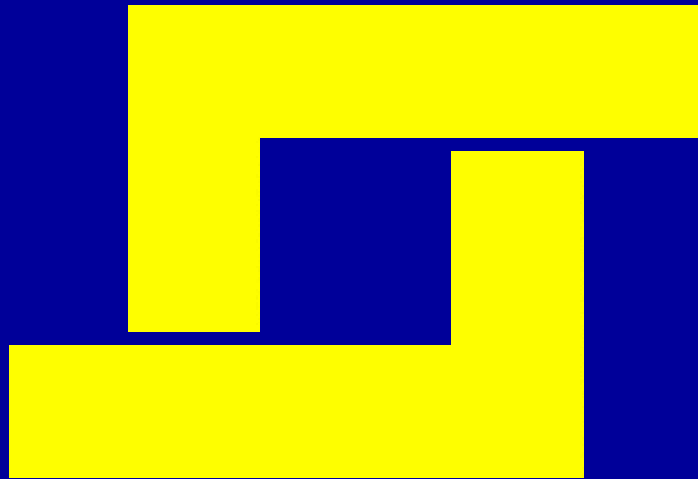# ICAT

INNOVATIVE CLEAN AIR TECHNOLOGIES

June 26, 2008

Grants for Promising Technologies

California Environmental Protection Agency

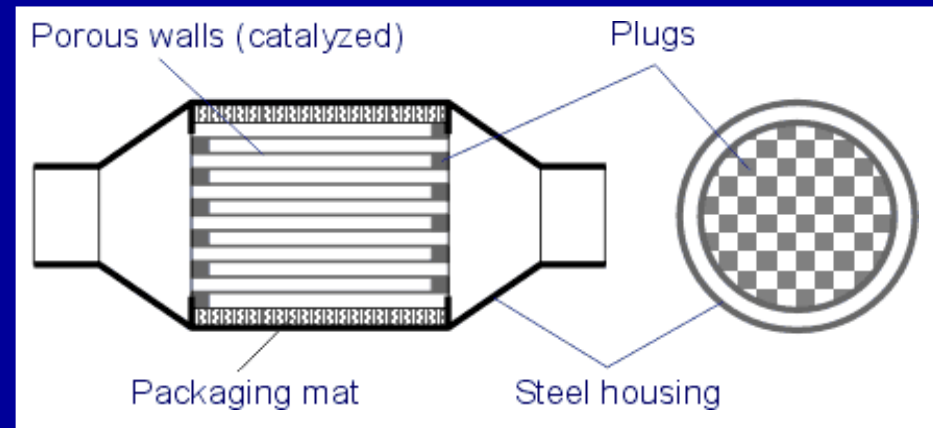Air Resources Board

Purpose of ICAT

- To promote:
  - Emission reductions
  - ARB initiatives
  - Improve public health
- By:
  - Co-funding demonstrations of new, beneficial technologies
- ICAT statistics, since inception:
  - 59 projects approved by Board
  - 28 completions
  - 16 in progress
  - 15 did not complete

Project Under Consideration

- Consider ICAT support for demonstration of new particulate matter (PM) sensor technology
  - Sensor would support on-board diagnostic (OBD) technology requirements for 2013 MY and later heavy-duty diesel vehicles
  - Fills a significant need for ARB's mobile source control programs

Diesel Particulate Filters Need to be Monitored

Honeycomb wall flow filter

- Diesels will turn increasingly to DPFs
  - As increasingly stringent PM emission standards take effect
- DPFs are highly reliable, but potential for in-use failure still exists
  - Regulations will require on-board detection and operator notification (OBD)
- Existing detection technologies are inadequate
  - For the low detection levels to be required

Example of typical failure

PM sensor Being Developed for OBD use

- New Honeywell Laboratories PM sensor measures particle charge

- ICAT project to demonstrate capability of sensor to perform reliably at future low OBD emission limits

- 12 month project, testing at University of Minnesota facilities
  - $199,812 ICAT support
  - $399,707 total cost

Practical Sensor Would Ensure Regulatory Benefits Are Achieved

- Would affect ~7,500 trucks in 2013, ~75,000 in 2016

- Estimate nominal cost at $50-$75 per engine

- Would enable statewide reduction of 0.6 tons/day PM in 2020

  – Engine lifetime PM reduction of 24 lbs

- Technology applicable to other vehicles (e.g., LDVs, locomotives)

Summary

- ICAT supports new technologies
- Project described would demonstrate innovative PM sensor technology that can support HDD OBD requirements
- Staff recommends Board's approval