



U.S. Department of Energy
**Energy Efficiency
and Renewable Energy**

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

Vehicle Technologies Program

Overview of DOE Fuel & Lubricant Technologies R&D

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Vehicle Technologies Program Mission

*To develop more energy efficient and environmentally friendly highway
transportation technologies that enable America to use less petroleum.*

--EERE Strategic Plan, October 2002--



- ❑ Undertake High-Risk Mid- to Long-Term Research
- ❑ Utilize Unique National Lab Expertise and Facilities
- ❑ Help Create a National Consensus
- ❑ Work Cooperatively with Industry



Advanced Petroleum Based Fuels & Lubricants

- ❖ Develop advanced fuels and lubricants that will decrease consumption of imported petroleum, maximize engine efficiency, and improve emissions of existing and future vehicles
- ❖ Identify fuel-property requirements to fully exploit advanced IC engines
- ❖ Expand kinetic modeling of base-fuel properties that affect operation of advanced IC engines



Non-Petroleum Based Fuels

- ❖ Identify fuels and fuel-blending components suitable for advanced-combustion-regime engines, which have the potential to directly displace petroleum
- ❖ Develop and optimize vehicle engines that take advantage of the fuel properties of high ethanol fuel blends, such as E85, to improve expected fuel economy and performance
- ❖ Develop database on the impacts of intermediate blends of ethanol (E15, E20) on current and legacy vehicles and non-road engines



Fuels Technologies R&D

Industry

Fundamental Research

Applied Research

Technology Maturation & Deployment

Basic Science R&D

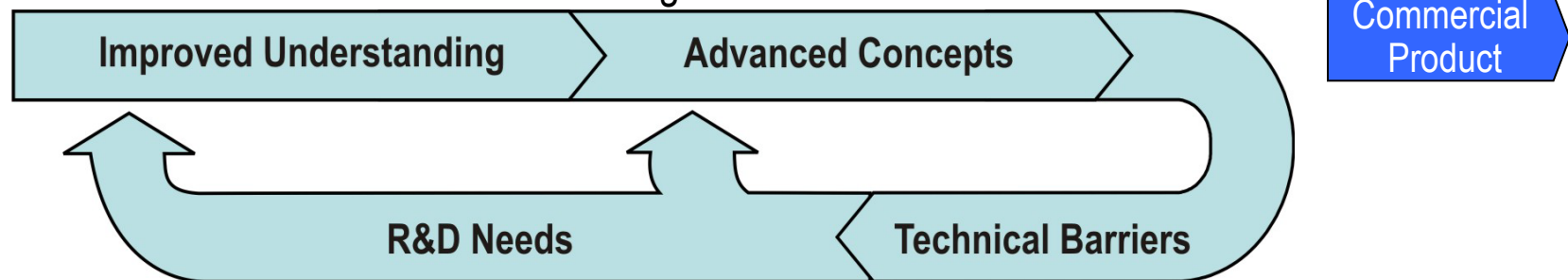
- SNL – Low Temperature Combustion
- PNNL – Unconventional hydrocarbon fuels
- LLNL – Chemical kinetics models (LTC and emissions)
- Universities – Complementary research

Basic-to-Applied Bridging R&D

- NREL – Ignition quality of fuels, fuel quality for alternative fuels, ASTM standards development, intermediate ethanol blend testing
- ORNL – Experiments on fuel impacts on engines and emission control systems (bench-scale to fully integrated systems), Intermediate blend testing
- ANL – Lifecycle analysis & International Agreements

Competitively Awarded Cost-shared Industry R&D

- Auto OEMs and Suppliers – ethanol-optimized engine development





Fuel Technologies R&D Budget by Activity

Major Activities	FY 2009 Appropriation	FY 2010 Appropriation	FY 2011 Request
Fuels Technologies	19,560	24,095	11,000
Advanced Petroleum Based Fuels	5,808	6,451	0
Non-Petroleum Based Fuels	13,752	16,641	10,692
SBIR/STTR	0	674	308

(Thousands of Dollars)