

Technology Assistance and Incentive Programs

An Overview of Selected Programs

Presentation to the 1st Meeting of the AB32
Economic and Technology Advancement
Committee (ETAAC)
March 1, 2007

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Overview of Presentation

- Key points
- Objective
- Overview of funding programs
 - Research and Development
 - Commercialization
 - Incentives
- Summary

Key Points

- Many funding programs
- Most not established explicitly for climate change
- Varying requirements/funding levels
- Competitive/oversubscribed

Presentation Objective

Draw from a sample of existing programs to characterize the magnitude of existing funding opportunities that facilitate the development, commercialization, and/or broad deployment of cost-effective greenhouse gas mitigation technologies.

Overview of Funding Programs

- **Research and Development**
- Commercialization
- Incentives

California Energy Commission

<http://www.energy.ca.gov/research/index.html>

The screenshot shows a Mozilla Firefox browser window displaying the California Energy Commission's Research and Development Division website. The browser's address bar shows the URL <http://www.energy.ca.gov/research/index.html>. The website header includes the text "Welcome to the California Energy Commission" and the URL "WWW.ENERGY.CA.GOV / RESEARCH". The main content area is titled "Research and Development Division" and contains several sections:

- Commission Homepage**: Includes a link to "Division Programs" and "Energy Innovations & Small Grant Program".
- ANNOUNCEMENTS**: A section with a date "May 31, 2006" and the text "Staff Workshop Fuel Cells in California: Opportunities and Barriers". Below this is a link to "Also See Our Energy Calendar".
- Public Interest Energy Research (PIER)**: A section with the text "The Energy Commission's Public Interest Energy Research (PIER) Program supports research and demonstration (RD&D) projects that will help improve the energy efficiency, environmental safety, affordability and reliability of the energy system." Below this is a link to "PIER Program".
- Public Interest Natural Gas Research Program**: A section with the text "The research funded by this program improves natural gas energy efficiency and environmental quality, develop renewable technologies, and otherwise provide benefits to the public. The research program is administered by the California Energy Commission, and the annual budget for 2005 is not to exceed \$12 million." Below this is a link to "Public Interest Natural Gas Research Program".
- Energy Innovations Small Grant (EISG) Program**: A section with the text "The Energy Innovations Small Grant (EISG) Program provides up to \$95,000 for hardware projects and \$50,000 for modeling projects to small businesses, non-profits, individuals and academic institutions to conduct research that establishes the feasibility of new, innovative energy concepts." Below this is a link to "Energy Innovations Small Grant (EISG) Program".
- Contacts**: A section with the text "Please see our main Phone List Page." Below this is a link to "Phone List Page".

The browser window also shows a "Done" status bar at the bottom.

Projects: Energy related,
(e.g., Energy Innovations
Small Grant Program,
Environmentally-Preferred
Advanced Generation)
Funding: >\$70 million/year

Department of Energy

Small Business Innovation Research (SBIR)

<http://www.science.doe.gov/sbir/NEWWEB/Introduction.htm>



SBIR/STTR Introduction

A 1982 study found that small businesses had 2.5 times as many innovations per employee as large businesses, while large businesses were nearly three times as likely to receive government assistance. As a result, the SBIR Program was established to provide funding to stimulate technological innovation in small businesses to meet federal agency research and development needs. After more than a decade, the STTR program was launched. The major difference is that STTR projects must involve substantial (at least 30%) cooperative research collaboration between the small business and a non-profit

Projects: Energy related (e.g., fuel cells, solar roofing tiles)

Funding: \$102 million SBIR, \$12 million STTR, in 2005

research (SBIR) and Small Business Technology Transfer (STTR) are U.S. Government programs in which federal agencies with large research and development budgets provide funding for competitions among small businesses only. Small businesses that win awards in these programs keep the rights to any technology developed.

Federal agencies that participate in SBIR and STTR set aside 2.5% and 0.3%, respectively, of their extramural R&D budgets. For the DOE in FY 2005, these amounts were \$102 million and \$12 million, respectively.

Typically around the beginning of October, DOE issues a solicitation inviting small businesses to apply for SBIR/STTR Phase I grants. It contains technical information on the solicitation, including the solicitation number, the solicitation title, the solicitation description, the solicitation objectives, the solicitation evaluation criteria, the solicitation terms and conditions, the solicitation contact information, and the solicitation deadline. Grant applications submitted by small businesses MUST respond to a specific solicitation.

The SBIR/STTR program has three distinct phases. Phase I explores the feasibility of innovative concepts with awards up to \$100,000 for a period of up to one year. Phase II is the principal R&D effort, with awards up to \$750,000 over a two-year period. There is also a Phase III, in which non-Federal entities may receive up to 50% of the R&D. Also under Phase III, Federal agencies may award non-SBIR/STTR-funded, follow-on grants or contracts for products or services for further R&D.

The funding ratios are about 5-to-1 for Phase I and 2-to-1 for Phase II.

Other questions: Refer to www.science.doe.gov/sbir, telephone (301-903-1414) or e-mail (sbir-str@science.doe.gov).

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Stanford's Global Climate and Energy Project

(Supported by Toyota, GE, ExxonMobil, Schlumberger)

<http://gcep.stanford.edu/research/areas.html>

The screenshot shows a Mozilla Firefox browser window displaying the Stanford University Global Climate & Energy Project (GCEP) website. The browser's address bar shows the URL <http://gcep.stanford.edu/research/areas.html>. The website header includes the GCEP logo and navigation links: HOME, RESEARCH, EVENTS, NEWS, LEARN MORE, and ABOUT US. The main content area is titled "Research Areas & Activities" and lists various research areas being investigated by GCEP. A sidebar on the left contains a "Research Areas & Activities" menu with "Solar Energy" selected. Below the main content, there is a section for "Areas of investigation that will be considered by GCEP:" with links to "Energy Distribution and Infrastructure" and "Geoen지니어ing". At the bottom, there are links to "All Activities" and "Exploratory Projects". A "GCEP Brochure" link is also visible, with a thumbnail image of the brochure cover.

Projects: Solar, biomass, carbon sequestration, etc.

Funding: \$225 million over ten years

Overview of Funding Programs

- Research and Development
- **Commercialization**
- Incentives

California Air Resources Board

Innovative Clean Air Technologies (ICAT) Program

<http://www.arb.ca.gov/research/icat/icat.htm>

Research Activities: Purpose of ICAT - Mozilla Firefox

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Home Back Forward Reload Stop New Tab Print <http://www.arb.ca.gov/research/i> Go

Subject Top Page: I... Research Activiti...

Welcome to California

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Programs
What's New
Board Meetings:
Future

Air Resources Board

Purpose of ICAT
This page updated June 25, 2003.

Funding for basic research, such as development and proof of a concept, is often available from federal programs and other sources, both public and private. However, when basic research has been completed, funding for deploying prototypes and field demonstrations is often hard to obtain. If such funding is somehow obtained and the value of a new technology is demonstrated, venture capital then becomes available to move the technology into commercialization. The difficulty of finding funds for the steps intermediate to research and commercialization is shown schematically, below, as the "valley of death."

Idea Development
Proof of Concept
Pilot
Commercialization

Capital Availability

1
2
3
4
5
6

Phase of Development

The Innovative Clean Air Technologies (ICAT) funds are used to help businesses bridge this funding deficit for steps 3, 4 or 5. A successful ICAT project should help an innovator to obtain funds for commercial introduction of a new technology.

ICAT funds technically solid projects that can demonstrate the commercial utility in California of technical innovations that will improve emission prevention or control. ICAT assists technologies that can help reduce emissions while promoting new industries and jobs in California, improve industrial productivity and reduce control costs.

Webcasts
Workshops
Library
Fact Sheets,
Brochures & Videos
File a Complaint
Send Us Your Board
Item Comments

Done

Projects: air pollution
technology- stationary & mobile

Funding: \$1 million/year

South Coast AQMD

Technology Advancement Program

<http://www.aqmd.gov/tao/About/index.html>

Overview of the Technology Advancement Program - Mozilla Firefox

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SOUTH COAST AQMD

Inside AQMD Community Business Technology Health & Education

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Creating new site links via drag&drop...



Overview of the Technology Advancement Program

For Southern California to achieve the federal and state clean air standards, we will have to reduce emissions from both mobile and stationary sources much further than can be expected with our current technologies. Therefore, in 1988, the AQMD Governing Board established the Technology Advancement Office to expedite the development, demonstration and commercialization of cleaner technologies and clean-burning fuels.

Cooperative Partnerships

The AQMD's Technology Advancement Program fosters cooperative partnerships with private industry, academic and research institutions, technology developers, and government agencies to cosponsor projects intended to demonstrate the successful use of clean fuels and technologies that lower or eliminate emissions.

Typically, this public-private partnership enables the AQMD to leverage its public funds with an average of \$3 from outside sources for every dollar contributed by the AQMD. Many of the advanced technologies funded through these public-private partnerships are now being commercialized in the South Coast Air Basin.

Types of Projects Funded

Mobile source projects have included development and demonstration of less-polluting automobiles, buses, trucks, construction equipment, boats, locomotives and other off-road vehicles. This has been done through advancements in engine design, improved batteries, fuel cells (which convert fuel directly to electricity without burning it), and improved powertrains for electric vehicles. Other projects involve adapting or designing vehicles to run on clean fuels (such as natural gas, propane, methanol and hydrogen), and developing the infrastructure needed to produce and deliver those fuels.

On the stationary source front, technology advancement projects have included a wide array of low-NOx combustion systems, low-VOC coatings and processes, and clean energy production systems including fuel cells, solar power, and other renewable energy systems.

Projects: Clean vehicles, clean fuel, fuel cells, etc.

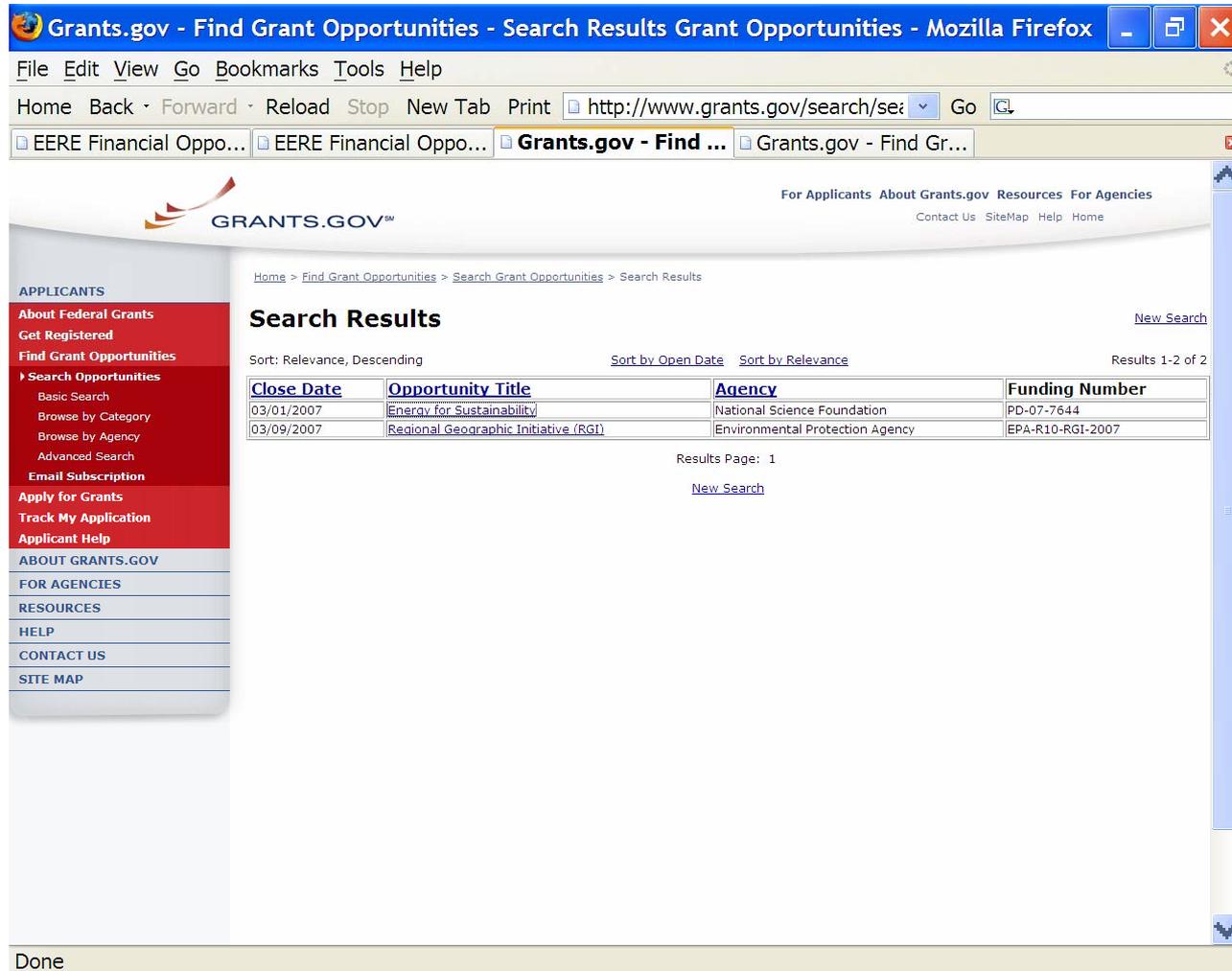
Funding: \$9 to 15 million/year

Carl Moyer incentive \$55 million/year

Applet frotate started

www.grants.gov is a Centralized Site for All Federal Government Grants

<http://www.grants.gov/>



The screenshot shows a Mozilla Firefox browser window displaying the Grants.gov website. The browser's address bar shows the URL <http://www.grants.gov/search/se>. The website header includes the Grants.gov logo and navigation links for Applicants, About Grants.gov, Resources, and For Agencies. A left sidebar contains various navigation options under 'APPLICANTS', 'ABOUT GRANTS.GOV', 'FOR AGENCIES', 'RESOURCES', 'HELP', 'CONTACT US', and 'SITE MAP'. The main content area is titled 'Search Results' and shows a table of search results. The table has columns for 'Close Date', 'Opportunity Title', 'Agency', and 'Funding Number'. Two results are listed: one from the National Science Foundation and one from the Environmental Protection Agency. The page also includes sorting options and a 'New Search' link.

Grants.gov - Find Grant Opportunities - Search Results Grant Opportunities - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Home Back Forward Reload Stop New Tab Print <http://www.grants.gov/search/se> Go

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GRANTS.GOVSM For Applicants About Grants.gov Resources For Agencies Contact Us SiteMap Help Home

Home > Find Grant Opportunities > Search Grant Opportunities > Search Results

Search Results [New Search](#)

Sort: Relevance, Descending [Sort by Open Date](#) [Sort by Relevance](#) Results 1-2 of 2

Close Date	Opportunity Title	Agency	Funding Number
03/01/2007	Energy for Sustainability	National Science Foundation	PD-07-7644
03/09/2007	Regional Geographic Initiative (RGI)	Environmental Protection Agency	EPA-R10-RGI-2007

Results Page: 1 [New Search](#)

Done

Overview of Funding Programs

- Research and Development
- Commercialization
- **Incentives**

California Incentive Funding

- Carl Moyer Program
- Alternative Fuel Incentive Program
- Low-emission School Bus Program
- Transportation Bond Funds
- Other Federal, State, and Local Incentive Programs

Vehicle Incentives

<http://www.driveclean.ca.gov/en/gv/incentives/index.asp?blnBtnHit=true>

DRIVECLEAN.CA.GOV - Incentives - Mozilla Firefox

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DRIVECLEAN.CA.GOV A ZERO & NEAR-ZERO EMISSION VEHICLE GUIDE BROUGHT TO YOU BY THE CALIFORNIA AIR RESOURCES BOARD

HOME DRIVE CLEAN CHARGING/FUELING INCENTIVES NEWS & EVENTS RESOURCES

INCENTIVES

SEARCH INCENTIVES BY:

Vehicle Type :

OR

Zip Code :

OR

City :

[List all Incentives](#)

Incentives by: List All

- 2005/06 Vehicle Incentive Program (VIP) for alternative fuel vehicles in the Bay Area, CA**
Public agencies in the BAAQMD's jurisdiction can apply for VIP funds if not subject to EPACT requirements. Up to \$4,000 available for natural gas vehicles, up to \$2,000 for hybrids, and up to \$5,000 for electric vehicles.
- City of Vacaville and City of Dixon Compress Natural Gas (CNG) Incentive Program**
CNG and Electric vehicles only. As of the moment, hybrids are not covered under this program, because it stresses alternative engines as opposing to those that use gasoline.
- City of Vacaville and Dixon EV Incentives**
Reduce leasing costs of EV's to \$600/month. City awards secured grants up to \$6,000 available per new EV purchased or leased.
- Clean Air Vehicle Decal (California)**
Drive with one occupant in the HOV lanes with a DMV Clean Air Decal
- Clean Fuel Vehicle Parking Incentive Program - San Jose, CA**
FREE parking at Downtown San Jose public parking facilities and on-street meters throughout the City for Clean-Fuel Vehicles with the Clean Air Decal in the City of San Jose. Only applies to vehicles purchased from San Jose dealerships, and only hybrid new vehicles can apply, purchased in San Jose.

FEATURED VEHICLE:
Subaru Forester (2.5X, 2.5X L.L.Bean)
[MORE INFO](#)

VEHICLE SEARCH

CONTACTS
FAQ
LINKS
CALIFORNIA AIR RESOURCES BOARD SITE
CLIMATE CHANGE
SITE DEFINITIONS

DID YOU KNOW?
Every vehicle found on DriveClean.ca.gov emits only 2 pounds or less of hydrocarbons when driven 100,000 miles. In comparison, a new 1965 car emitted about 2,000 pounds of hydrocarbons in 100,000 miles.

Done

Projects: Vehicle emissions (e.g., HOV decals, clean fuel tax incentives, EV free parking)

Funding: Variable

Summary

- Several funding programs
- Most not established for climate change
- Varying requirements/funding levels
- Competitive/oversubscribed
- Increase in demand for funding climate change projects expected