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CONGRESSIONAL TESTIMONY

The Advanced Technology Program

**Testimony before the
Homeland Security and Government Affairs
Committee, United States Senate**

May 26, 2005

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My name is Brian Riedl. I am the Grover M. Hermann Fellow in Federal Budgetary Affairs at The Heritage Foundation. The views I express in this testimony are my own, and should not be construed as representing any official position of The Heritage Foundation.

Federal spending now tops \$22,000 per household, the highest inflation-adjusted total since World War II, and \$5,000 per household more than in 2001. Budget deficits topping \$400 billion are forecast as far as the eye can see. Given the nation's budgetary challenges, the Advanced Technology Program (ATP) remains one of the least justifiable programs. The President and the House of Representatives both support ATP's abolition. The Senate should join them.

ATP was created in 1988, supposedly to provide research and development grants to help small businesses develop profitable technologies. In reality, ATP funnels taxpayer dollars to *Fortune* 500 companies. Between 1990 and 2004, 35 percent of all ATP funding was granted to *Fortune* 500 companies. Among the recipients:

- IBM has received \$127 million;
- General Electric has received \$91 million;
- General Motors has received \$79 million; and
- Motorola and 3M have each received \$44 million.

All in all, 39 *Fortune* 500 companies have received a total of \$732 million in ATP subsidies. Mr. Chairman, this is the kind of spending that outrages taxpayers. At a time when the federal budget is deep in the red, there is no justification for taxing waitresses in Tulsa, or cashiers in Flint, in order to lavish hundreds of millions of dollars on *Fortune* 500 companies.

ATP's defenders claim that these subsidies generate greater technological innovation. They point out all the technologies on the market that ATP funded. Of course, ATP grants have funded some successful products. But the key question is whether the market would have produced those products even without ATP. Both economic theory and practice say, "Yes."

ATP does not fund basic science research. Rather, it funds the commercialization of research so that businesses can profit from it. Basic economic theory states that profit-seeking companies have every incentive to fund profitable R&D themselves. If these projects are as promising as claimed, the companies should have no problem convincing their shareholders to fund the projects, or tapping into the \$150 billion that private investors annually spend on R&D. The 39 *Fortune* 500 companies that have received ATP funds report a combined \$1.4 trillion in annual revenues. To suggest they cannot afford their own research and development is baseless. Yes, ATP partially funded HDTV and flat-panel televisions, but if they hadn't, a line of investors and businesses surely would have.

The economic argument that ATP merely subsidizes existing R&D is also backed up by surveys of ATP participants. Although the program is supposed to be a "financier of last resort" for companies that have exhausted all other options, a survey shows that 65 percent of ATP applicants never bothered to seek any private funding before going to the government. And among the near-winners who claimed that ATP was their final hope, 50 percent suddenly found private funding soon after their ATP application was rejected.

Among the other 50 percent who did not secure private funding, many either didn't bother to look or decided to continue playing the ATP lottery for years to come.

Not only is ATP a give-away for wealthy companies that merely subsidizes existing research, but evidence shows that Uncle Sam is a poor investor. Only 1 out of every 3 ATP projects ever brings a new product to the market. One reason for this abysmal track record is that ATP officials try to minimize conflicts of interest by seeking outside grant reviewers with little or no knowledge of the technology markets. And even if they sought market knowledge, most private companies in these markets conceal their research agendas, leaving ATP officials to guess where the market openings are. This blindness results in grants for projects that either duplicate existing private research, or are doomed to fail. Consequently, ATP has granted money for technologies that had already been developed, patented, and marketed by other companies years earlier. It has granted money to projects that have been discredited by their entire industry. Simply put, investors have better knowledge and more skill investing than government officials.

In conclusion, technological advancement is vitally important to the nation's economy. Yet when governments try to pick the market's winners and losers by micromanaging technological innovation, the results will always disappoint. ATP subsidizes *Fortune* 500 companies that already have the money and incentive to fund their own profitable projects. Too many companies see ATP as an ATM machine to finance projects they would never spend their own money on. With federal spending growing uncontrollably, ATP should be the first target for lawmakers seeking savings.

Appendix:

Congress Should Follow the President and Eliminate the Advanced Technology Program

Brian M. Riedl, Heritage Foundation *Background* No. 1828, March 1, 2005

President George W. Bush's 2006 budget request calls on Congress to terminate or drastically reduce funding for over 150 ineffective and wasteful programs. This is a much-needed step to control spending.

If lawmakers want to demonstrate that they are serious about controlling spending, terminating these 150 low-priority programs is the right place to start. They must take these steps if they are to pave the way for reforming larger and more politically sensitive programs such as Social Security, Medicare, and Medicaid. The Advanced Technology Program (ATP), a corporate welfare boondoggle that costs taxpayers \$150 million annually, should be the first program from the President's list that Congress terminates.

The ATP has long been considered corporate welfare at its worst. In 1988, America was briefly fixated on the Japanese economic "miracle." Believing that Japan's system of bypassing the free market in favor of government subsidies and protections to preferred businesses was the new path to prosperity, Congress created the ATP to "bridge the gap between the research and the market place" by providing matching grants to businesses engaged in commercial research in such areas as information technology, electronics, and biotechnology. Congress did not design the ATP to support basic scientific research; instead, taxpayers would fund projects with a "significant commercial payoff" that could make substantial profits for businesses.

The Japanese economy has since stagnated, and so has the ATP. Since its inception, the program has cost taxpayers \$2 billion, with more than 35 percent going to *Fortune* 500 companies. Most ATP-funded projects could have been funded by the private sector, and only one-third of ATP projects successfully bring new products to the market. Taxpayers fund these investments, but businesses receive all the profits.

Budget reformers from both parties have made several attempts to defund the ATP. Congress passed legislation eliminating the program in 1995, but President Bill Clinton vetoed the bill. President Clinton again blocked the elimination of the ATP in the following year, inducing Congress to try to reform the troubled program. These reforms failed to fix the program, and the House of Representatives has voted in every year since 2000 to terminate the ATP, only to have the Senate restore funding each time in conference committee.

President Bush recently joined the movement to close down the ATP after his own reform attempts proved futile. Only the Senate stands in the way of saving taxpayers \$150 million per year and setting an example for other corporate welfare programs.

Welfare for Fortune 500 Companies

The Advanced Technology Program's status as a corporate welfare program is beyond dispute:

- Five companies—IBM, General Electric, General Motors, 3M, and Motorola—have received a combined total of \$385 million in ATP grants, or 19 percent of total program expenditures, since 1990;
- More than 35 percent of ATP funding¹ has been distributed to a group of 39 *Fortune* 500 companies; and
- These 39 companies had combined revenues of \$1.4 trillion in 2003.² (See Table 1.)

These corporate giveaways are unjustifiable. For example, IBM, with revenues that topped \$89 billion in 2003, does not really need the \$126 million in taxpayer funding that it has received since 1990. Such companies can certainly afford to finance their own profitable research projects.

¹National Institute of Standards and Technology, Advanced Technology Program, “ATP Active and Completed Projects by State,” at www.atp.nist.gov/eao/states/statepartners.htm (February 22, 2005), and “ATP Awards by State,” at www.atp.nist.gov/eao/02awards_state.htm (February 22, 2005). The data are current through February 2005.

²Revenue figures are from “The 2004 Fortune 500,” *Fortune*, at www.fortune.com/fortune/fortune500 (February 22, 2005).

Table 1
Fortune 500 Companies Have Been Granted over \$700 Million ATP Dollars

<i>Fortune 500 Corporation</i>	F-500 Rank	2003 Revenue	ATP Grants 1990-2004
IBM	9	\$89,131,000,000	\$126,583,013
General Electric	5	\$134,187,000,000	\$91,032,423
General Motors	3	\$195,645,000,000	\$78,554,789
Motorola	61	\$27,058,000,000	\$44,270,242
3M	105	\$18,232,000,000	\$44,200,860
Honeywell International	76	\$23,103,000,000	\$31,573,685
Ford	4	\$164,496,000,000	\$30,339,175
Oracle	208	\$9,475,000,000	\$24,623,388
Caterpillar	77	\$22,763,000,000	\$24,350,768
Xerox Corp	130	\$15,701,000,000	\$23,582,852
Dow Chemical Co.	44	\$32,632,000,000	\$23,041,706
United Technologies	51	\$31,034,000,000	\$21,943,658
NCR	322	\$5,598,000,000	\$21,382,928
Eastman Chemical Co.	317	\$5,800,000,000	\$15,623,233
Sun Microsystems	173	\$11,434,000,000	\$13,843,000
DuPont	59	\$27,730,000,000	\$12,175,975
Praxair	321	\$5,613,000,000	\$11,916,803
Science Applications Intl.	289	\$6,457,000,000	\$11,453,060
Boeing	21	\$50,485,000,000	\$10,102,331
Lucent	243	\$8,470,000,000	\$9,400,000
Hewlett-Packard	11	\$73,061,000,000	\$7,804,654
ConocoPhillips	7	\$99,468,000,000	\$7,769,860
Lockheed Martin	48	\$31,844,000,000	\$7,262,632
Edison	163	\$12,156,000,000	\$5,871,000
Air Products & Chemicals	295	\$6,297,000,000	\$4,104,914
PPL	324	\$5,587,000,000	\$3,840,023
Cummins	296	\$6,296,000,000	\$2,786,800
ChevronTexaco	6	\$112,937,000,000	\$2,695,200
Northrop Grumman	55	\$28,686,000,000	\$2,382,000
Wyeth	125	\$15,851,000,000	\$2,379,000
Johnson & Johnson	30	\$41,862,000,000	\$2,000,000
Dana Corporation	193	\$10,071,000,000	\$2,000,000
Medtronic	263	\$7,665,000,000	\$1,998,000
Texas Instruments	197	\$9,834,000,000	\$1,971,000
Owens Corning	350	\$4,996,000,000	\$1,900,000
Armstrong Holdings	495	\$3,259,000,000	\$1,870,000
York International	424	\$4,076,000,000	\$1,488,812
Applied Materials	392	\$4,477,000,000	\$1,297,677
Baxter International	220	\$9,087,000,000	\$975,000
TOTAL		\$1,372,554,000,000	\$732,390,461

Sources: ATP grant data (as of February 2005) is located at <http://www.atp.nist.gov/eao/states/statepartners.htm>. Revenue figures from the 2004 Fortune 500 list, located at <http://www.fortune.com/fortune/fortune500>.

Although most Americans strongly oppose corporate welfare, programs like the ATP are kept alive by Members of Congress who seek to “bring home the bacon” by helping constituents and donors apply for grants. Yet the ATP does not bring home a significant amount of government spending for most lawmakers.

While taxpayers in every state are forced to pay for the program, more than half of all ATP funding is distributed to companies in five states: California, Michigan, Massachusetts, New York, and New Jersey. (See Table 2.) Meanwhile, 29 states average less than \$1 million each in annual grants.³

In short, legislators wishing to bring home the bacon should not assume that their constituents receive sufficient benefits to justify the cost in taxes.

Table 2
Five States Receive Half of All ATP Dollars

State	Projects	Grants	Percent of grant dollars
California	184	\$471,647,330	23%
Michigan	54	\$222,130,375	11%
Massachusetts	76	\$148,618,696	7%
New York	51	\$125,416,779	6%
New Jersey	36	\$110,397,147	5%
Total - Top five states	401	\$1,078,210,328	52%
Total - All other states	367	\$994,875,878	48%

For projects involving several firms, the state of the lead firm is credited with the project.

Sources: ATP grant data (through February 2004) is located at

<http://www.atp.nist.gov/eao/states/statepartners.htm>.

ATP's database excludes nearly \$200 million of ATP's \$2.3 billion in grants

Subsidizing Existing Research

Many people confuse the ATP's mission with that of the National Science Foundation (NSF). The NSF spends over \$5 billion per year supporting basic scientific research, such as astronomy and pure mathematics. It exists to fund basic research that, despite its importance, is “so far removed from commercial application that private firms have little incentive to undertake it on their own.”⁴

The ATP, by contrast, does not fund basic research: It commercializes research so that businesses can profit from it. Companies should have every incentive to fund this kind of profitable research on their own. Not surprisingly, businesses and investors already spend \$150 billion annually on commercial research and development. Since these businesses and stockholders profit from the research, they should be the ones to fund it.

³National Institute of Standards and Technology, “ATP Active and Completed Projects by State” and “ATP Awards by State.”

⁴U.S. General Accounting Office (now Government Accountability Office), *Federal Research: Challenges to Implementing the Advanced Technology Program*, GAO/RCED/OCE-98-83R, March 2, 1998, at 161.203.16.4/paprpdf2/160140.pdf (February 22, 2005).

Instead, the ATP shifts those business expenses to the taxpayers. For example, the promise of huge profits is motivating several private companies to invest millions of dollars in high-definition television (HDTV) technology. Yet Congress used \$28 million of the taxpayers' money to subsidize HDTV research by a group led by the Sarnoff Corporation and another \$7.3 million for research on flat panel television by another group of manufacturers.⁵

If these technologies will be as successful as ATP advocates claim, the businesses should have no problem either in funding the research internally or in recruiting outside investors. These grants also give the recipient companies an unfair advantage over their unsubsidized competitors.

ATP officials claim that the program leads to economic growth by funding innovative and profitable projects that fail to secure private funding. This is unlikely. Investors vote with their dollars, and a business's inability to secure funding from investors signals the market's lack of confidence that the project will succeed and earn a profit.

Far from functioning as a "financier of last resort," the ATP is the first place to which many businesses apply for funding. A mid-1990s survey revealed that 65 percent of ATP recipients did not seek any private funding before applying for a federal grant.⁶ Program administrators responded by tightening the requirements mandating that firms must first seek private funding.

Nevertheless, the application questions remain vague, and applicants have every incentive to overstate their efforts to obtain private funding. The Department of Commerce admits that "project proponents have better information than the ATP about the prospects for private funding, and also have an incentive to conceal this information."⁷ Applicants, in fact, have little reason to be honest. Even under the tightened requirements, the ATP has approved grants to firms that refused to answer whether or not they attempted to obtain outside funding.⁸

Of the rejected research projects, 50 percent of the "near winners"—which supposedly had already exhausted all options for private funding—found private funding *after* the ATP rejected their grant application. Of the other 50 percent, most of the companies had never sought private funding before applying to the ATP, and it is unlikely that they diligently sought private funding after rejection. Instead, many simply continued to reapply for ATP grants.⁹

⁵National Institute of Standards and Technology, Advanced Technology Program, "A Technology Boost for U.S. Manufacturers of Flat Panel Displays," December 2001, p. 2, at statusreports-atp.nist.gov/reports/90-01-0060PDF.pdf (February 24, 2005), and "Digital Video in Information Networks (September 1995), HDTV Broadcast Technology," project brief, at jazz.nist.gov/atpcf/prjbriefs/prjbrief.cfm?ProjectNumber=95-04-0026 (February 24, 2005).

⁶U.S. General Accounting Office, *Measuring Performance: The Advanced Technology Program and Private-Sector Funding*, GAO/RCED-96-47, January 11, 1996, at www.gao.gov/archive/1996/rc96047.pdf (February 22, 2005).

⁷U.S. General Accounting Office, *Federal Research*.

⁸*Ibid.*

⁹Near-winners who sought private funding before applying for an ATP grant were nine times as likely to continue a project after being rejected as those who had not sought private funding. See U.S. General Accounting Office, *Measuring Performance*.

Taxpayer-Financed Failures

While businesses profit from the ATP's successes, taxpayers fund both its failures *and* its successes. Only one in three ATP projects successfully brings a new product to the market. The rest either fail completely or result in research that has not made it to the market.¹⁰ It is difficult to assess whether or not ATP officials simply approve the wrong applications, because program officials do not keep records of which projects are rejected and why.

One reason that so many projects fail is that many ATP officials lack sufficient knowledge of the relevant markets. This inevitably occurs because officials seek outside reviewers who have no conflicts of interest with the project. Such conflicts are reduced by ensuring that grant reviewers have knowledge of the relevant science and technology, but not of the market. Accordingly, their lack of market knowledge frequently causes grants to be awarded to projects that the market does not demand.¹¹

Another reason that projects fail is that ATP grant reviewers do not know whether a certain project would duplicate research performed by other companies. Most businesses conceal their research agendas, not wanting to tip off their competitors. Consequently, ATP officials often have to guess whether a grant application represents new or duplicative research. This duplicative research adds little value to the relevant industry and provides an unfair advantage to the government-subsidized firm.

These and other factors explain the following examples of taxpayer-financed ATP boondoggles:¹²

1. In the early 1990s, several private companies were investing tens of millions of dollars in efforts to increase the data transmission capacity of fiber optic cables. In 1993, Accuwave applied for an ATP grant so that it could also enter this market. Accuwave's approach of using "volume holography" had been so discredited by the rest of the industry that no other private company even considered it. Yet, despite an already competitive market, a discredited scientific approach, and a rejection recommendation from the ATP's own business reviewers, ATP managers still approved the \$2 million grant. Predictably, the other companies' research led to more than 2,000 new patents, full market commercialization, and a \$40 billion industry in 2003. Accuwave's technique failed, and the firm declared bankruptcy in 1996.
2. In 1991, ATP officials gave the Communications Intelligence Corporation (CIC) \$1.2 million for initial research into computer recognition of cursive handwriting, despite the fact that similar technology had already been developed, patented, and marketed. ATP grant makers needed only to open an issue of *PC Week* to see how many other companies were concurrently improving that technology. The other companies' research resulted in 450 new patents, while the taxpayer-financed CIC project provided negligible benefits to the industry.
3. Agridyne Technologies received \$1.2 million in 1992 for a project intended to

¹⁰U.S. General Accounting Office, *Federal Research*.

¹¹U.S. General Accounting Office, *Advanced Technology Program: Inherent Factors in Selection Process Could Limit Identification of Similar Research*, RCED-00-114, April 24, 2000, at www.gao.gov/archive/2000/rc00114.pdf (February 22, 2005).

¹²All examples are from National Institute of Standards and Technology, Advanced Technology Program, "ATP Status Report Database," at statusreports-atp.nist.gov/basic_form.asp (February 22, 2005), and U.S. General Accounting Office, *Advanced Technology Program*.

- reduce the human side effects of certain pesticides. Agridyne lacked the resources to commercialize the product and declared bankruptcy in 1995. Biosys then purchased Agridyne, declined to continue the project, and declared bankruptcy a year later. Finally, Thermo Trilogly acquired Biosys's assets and patents and determined that the pesticide project was both obsolete and unprofitable.
4. A group led by Boeing received \$5.2 million in 1992 to develop a common framework for automating different types of circuit boards. Although much of the technology was completed, company upheavals have prevented it from being fully commercialized. A project review explained that participating companies had prioritized their own mergers and acquisitions at the expense of completing this project and that reductions in other government contracts created "turmoil" for three of the four participating corporations.
 5. ETOM Technologies received \$1.4 million in 1993 to increase the storage capacity of compact disks. The technology was developed, but ETOM was unable to acquire the green lasers needed for the product. Additionally, the market for video-on-demand service, which would have used this technology, never developed. ETOM declared bankruptcy in 1998.
 6. Hampshire Instruments received \$900,000 in 1991 to improve the miniaturization of computer chips. Within two years, Hampshire Instruments fell into financial distress, declared bankruptcy, and was liquidated. No other firms have offered to purchase this research for further development.

Conclusion

Many lawmakers agree that the Advanced Technology Program is just another shameless exercise in taxpayer-funded corporate welfare. Before every important vote, however, many lawmakers ask themselves whether a future opponent could use their vote against them. In the ATP's case, a vote to continue the status quo is always safe, while a vote to terminate could be misconstrued as a vote against business and technology.

Legislating by worst-case political scenarios is neither a formula for effective public policy nor a reliable reflection of political reality. The majority of Representatives and Senators in the current Congress have voted to defund or significantly reduce the ATP at some point between 1995 and 2004. Lawmakers could easily win public support by explaining the importance of eliminating such unnecessary and wasteful spending.

Eliminating the ATP is both smart public policy and smart politics. By eliminating the ATP, lawmakers can show taxpayers that Congress can responsibly confront unnecessary and wasteful government spending.

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