AMMEX

Alliance for Materials Manufacturing Excellence

DOE's Industrial Technology Program - Co-Investing in Materials Manufacturing Innovation

The Industrial Technologies Program [ITP] at DOE is meeting its government-established goals [reduced dependence on foreign oil, reduced environmental impact, job growth and retention by advancing industrial competitiveness] by accelerating the rate of technological change in six sectors—glass, aluminum, steel, forest products, chemicals and metal casting. It is an investment shared jointly by government and industry and its benefits accrue to both. ITP should be alive and growing and the notion it is corporate welfare should be dead. Sadly, without drastic change, the reverse will be true.

Dating back through its predecessor programs, ITP was established by Congress in the late 1980's to address specific government objectives:

1. to reduce US dependence on foreign oil [save energy]
2. to improve the environmental performance of US materials manufacturers
3. to increase the competitiveness of US materials manufacturers [job retention/growth]

Advances developed under ITP in all three of the areas above are penetrating deeply into the US economy, as examples later show. At a time when the program's successes should be compelling greater federal investment, the casual use of the term "corporate welfare" by the uninformed on Capitol Hill, has resulted in severe cuts. The purpose of this paper is to clearly explain all aspects of the program so it is no longer possible to associate the Industrial Technologies Program with corporate welfare.

DOE and Energy-Efficiency

The United States has a department of energy in part [some would say "in large part"] to develop technologies that are energy-efficient. This is seen through such programs as FreedomCar, ITP, Clean Coal and the various Hydrogen Initiatives and makes the point energy-efficiency is clearly in the public interest and important public policy. This is also clear in the specific ITP goals above—all of which benefit the public at large [and industry]. It stands to reason then, the development of energy-efficient technology, by definition, is appropriate for investment of federal funds.

The Myth of "Corporate" Welfare

Corporate welfare means companies are receiving the "welfare" [i.e., the federal money]. This is where corporate welfare and the ITP Program really part company. Under ITP, companies don't receive the money, they put money in! Companies are investors, just like DOE. Our industrial participants from steel, glass, metal casting, chemicals, forest products and aluminum share research and development costs with DOE and also are responsible for testing developed technologies in their plants. The research work is typically done in laboratories and universities around the country—would anyone consider a research project at a university which helps 5 students earn their degrees to be inappropriate? Are there exceptions where a company may be a subcontractor for a particular task? Yes, and there are strict rules requiring the sharing of such work with all project partners [ensuring no one company is a sole beneficiary—in fact such a project would never pass the most fundamental project screening criteria].

The key point here is companies put money into the research just like DOE. We are co-investors in projects the government has deemed appropriate for federal funding. We get out benefits at the same time DOE does—when a successful technology is deployed which meets our goals above.

Implementation

Under ITP, each sector has produced a roadmap or priority assessment of the technological advances that will save energy, emit less pollutants and enable competitive advantage, i.e., meet the government-established goals. The requirement that the proposed technologies need to be identified in the roadmaps compels any project funded to be of strategic importance to a sector [e.g., glass, aluminum, etc] and not the pet project of an elected official or one company's CEO. All projects under consideration are tested against rigorous criteria by DOE and industry experts and industry contributes 1/3 to ½ [or more] of the project cost. This results in the selection of high priority, high-risk projects that align with industry and government goals. Since ITP's inception, every sector has gone through at least one serious business downturn. The fact industry has continued to invest its money in the program through the downturns speaks volumes about the value of the ITP work.

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Industry—Government Cooperation

Although we have established our country believes in investing in development of energy-efficient technologies, there are those who do not believe in the general concept of government-industry cooperation, i.e., they think government has no legitimate role "in business".

First, government involvement in business is a fact as has been the case since the Founding Fathers put quill to paper. Tax policy, interest and exchange rate policy and regulatory policy all affect the cost of doing business in the United States [and usually negatively]. Collaborative research is one government involvement in business sure to have a positive impact.

The ITP program is <u>the only program</u> where materials manufacturers can develop technologies that will provide competitive advantage, save energy and improve our environment. Can US materials manufacturers conduct collaborative research among themselves without DOE funding? Yes, but at a rate 2 to 3 times slower…..and that's the whole point. The ITP program allows us to do more and do it faster---save more energy, be more cost-effective and more sustainable. Such speed is the price of competing in the global marketplace today. It's necessary.

Here are some examples from the ITP program that show how the program is meeting the objectives established by government [see above]:

In the Steel sector, ten [10] ITP projects leveraging only $4.2 million of federal funding, have been focused on the development of advanced high strength steels or AHSS. AHSS permit the design of automobiles that are lightweight while retaining all the safety and affordability of basic carbon steel. AHSS are rapidly being adopted by automakers. The following benefits are calculated using a market penetration of only 7% of AHSS- type vehicles, a low hurdle given the rapid adoption already evidenced:

Item	Savings per year	Savings per yr per federal $ spent	Dollar savings per year at $34/barrel
Barrels of oil	4,071,429	0.84 barrel	$138,428,586
CO_2 emissions reduction (tons)	2,100,000	0.5	N.A.

In the Chemicals sector, two projects leveraging only $3.2 million of federal funds developed technologies impacting the energy-efficiency of chemical processes. One developed advanced Ethylene Furnace Tubes, whose increased durability increases productivity of making ethylene, one of the most energy-intensive processes in the chemicals sector. The second project targeted the separation, recovery and recycling of valuable feedstocks ["olefins"] from off-gas streams. Together these technologies, which are in commercial use today are saving the equivalent of 3.4 barrels of oil annually per federal dollar spent, as shown in the chart below. Using a 6% adoption rate, the annual savings grows to 58 barrels of oil per federal dollar spent in 2020, when 100% market penetration has occurred.

Item	Savings per year	Savings per year per federal dollar spent	Dollars saved per year at $34/barrel
Barrels of oil saved [2004]		3.4	$369,920,000
Barrels of oil saved [2020]	185,600,000	58	N.A.

In the Metal Casting sector, several projects leveraging 11.1 million dollars of federal funds have led to the implementation of lightweight castings [aluminum and magnesium] replacing iron in automobiles on the road today. This has led to reductions in total vehicle weight, resulting in the following energy savings per year:

Item	Savings per year [2001]	Savings per year per federal dollar spent [2001]	Dollars saved per year at $34/barrel [2001]
Barrels of oil	49,900,000	4.5 barrels	$1,696,600,000
CO_2 emissions reduction [tons]	20.1	1.81	N.A.

In the Glass Sector the "Oxy-Fuel Combustion" technology was developed under the ITP program at a

cost to taxpayers of $1.035 million. Since its general acceptance around 1994, it has been adopted in over 100 furnaces around the country. Overall savings through 2002 are estimated at 33 trillion BTUs, or about 5.6 million barrels of oil. In addition to these savings, it has resulted in NOx reductions of about 2,300 tons of NOx. It has increased furnace production rates by up to 25% over combustion with ambient air

Item	Savings per year	Savings per year per federal dollar spent	Dollars saved per year at $34/barrel
Barrels of oil	680,000	0.66 barrel	$23,120,000
NOx emissions reduction	280 tons	N.A.	N.A.

It is hard for us to believe a program that will save large quantities of oil per federal dollar spent, along with tons of CO_2 [and other] emissions for that same federal dollar, is being drastically cut rather than growing.

Summary

The member organizations of the Alliance for Materials Manufacturing Excellence [AMMEX] believe in the ITP Program. We want to put money into it—we want to expand the program because that will expand the benefits—to [literally] everyone. We need to dispel the idea this program is corporate welfare, because that one false label is retarding growth and sustainability in our industries. We hope you see the program now for what it is. If not, we would appreciate your letting us know what aspect of ITP still concerns you.

Chemical Industry VISION2020 Technology Partnership

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Glass Service

Gas Technology Institute

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