

# **Leveraging Benefits Attributable to Centers within the Industrial Assessment Center Program**

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Engineering Science and Technology Division

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## ABSTRACT

The purpose of the research reported here was to assess the leveraging benefits attributable to the U.S. Department of Energy's (DOE's) Industrial Assessment Center (IAC) Program. The term *leveraging* as used in this study refers to any additional support received by a university-based, IAC-sponsored center that the center would not have received had the IAC Program not been in place. Twenty-two IACs provided information about 120 leveraging activities over the 1997–2001 period. IAC directors indicated that the support for 115 of these projects was linked to the existence of DOE's IAC Program and the experience gained from their participation in the program. Ninety-three of the IAC-influenced projects were quantified, for a monetary value of \$5,948,931. The average annual leveraged support was \$1,189,786 over the time frame examined. Typical contributors of leveraged support were state governments, utilities, industry, universities, and other DOE and federal agencies. Most of the support was provided to conduct assessments outside of IAC Program criteria (e.g., assessments of government buildings or large manufacturing plants). Significant leveraged support was also provided to IACs for educational activities—such as workshops, seminars, and training—and for miscellaneous energy-related technical projects.

## INTRODUCTION

The U.S. Department of Energy's (DOE's) Industrial Assessment Center (IAC) Program provides financial support to many universities to establish IACs to train students in conducting free energy, waste, and productivity assessments for industrial firms. Currently, the program supports 26 university-based IACs. Each center is required to spend at least 25 days per year conducting assessments. Benefits attributable to the IAC Program are numerous. For example, firms receiving assessments (referred to as *clients* in this report) benefit by saving energy, reducing energy costs, reducing waste, and enhancing productivity. Other benefits of the IAC Program include alumni who go on to have careers in the energy field and IAC Program web sites that provide energy assessment and related technical information to users in many different sectors throughout the United States.

The purpose of this research project was to assess the leveraging benefits attributable to the IAC Program. In this study, the term *leveraging* refers to support received by DOE IAC-sponsored centers in excess of the core funding from DOE for activities beyond the centers' basic mission of conducting assessments.<sup>1</sup> Such support would not have occurred if the base IAC sponsorships had not been in place. In addition to the assessment of leveraging benefits, the research reported here may serve to develop a better understanding of how IACs can leverage DOE funding to build larger and more diverse energy programs.

The next section discusses our approach to assessing leveraging benefits enjoyed by the IACs. The third section presents our assessment results. This short report concludes with several observations and recommendations.

## APPROACH

A phone survey was conducted with IAC directors in the spring and summer of 2001 to collect information on leveraging activities pursued by their centers during the years 1997–2001. Twenty-two IAC directors representing the universities listed in Table 1 responded to the phone survey. Not participating in the interview process were directors from four schools. With 26 centers in operation in 2001, this represents a response rate of 84.6%.

**Table 1. IACs participating in 2001 survey on leveraging benefits**

Participating IACs		Nonparticipating IACs
Bradley	Oklahoma State	Arizona State
Colorado State	Oregon State	Lehigh <sup>a</sup>
Florida	San Diego State	Louisiana-Lafayette <sup>a</sup>
Georgia Tech	San Francisco State	University of Miami <sup>a</sup>
Illinois-Chicago <sup>a</sup>	Syracuse <sup>a</sup>	
Iowa State	Texas A&M	
Loyola Marymount <sup>a</sup>	Texas-Arlington <sup>a</sup>	
Massachusetts	University of Dayton	
Michigan	Utah <sup>a</sup>	
Mississippi State	West Virginia	
North Carolina State	Wisconsin-Milwaukee	

<sup>a</sup> New IAC established in 2001.

<sup>1</sup>Future research efforts will address leveraging benefits generated by IAC clients, alumni, and web site users.

Each interview lasted about 20 minutes. Each director was asked to explain the purpose of each leveraging activity and who supported the activity. Also recorded were descriptions of the activity; the purpose, type, and value of the support; the dates the support covered; and the likelihood that the university would have received the support absent the IAC.

## RESULTS

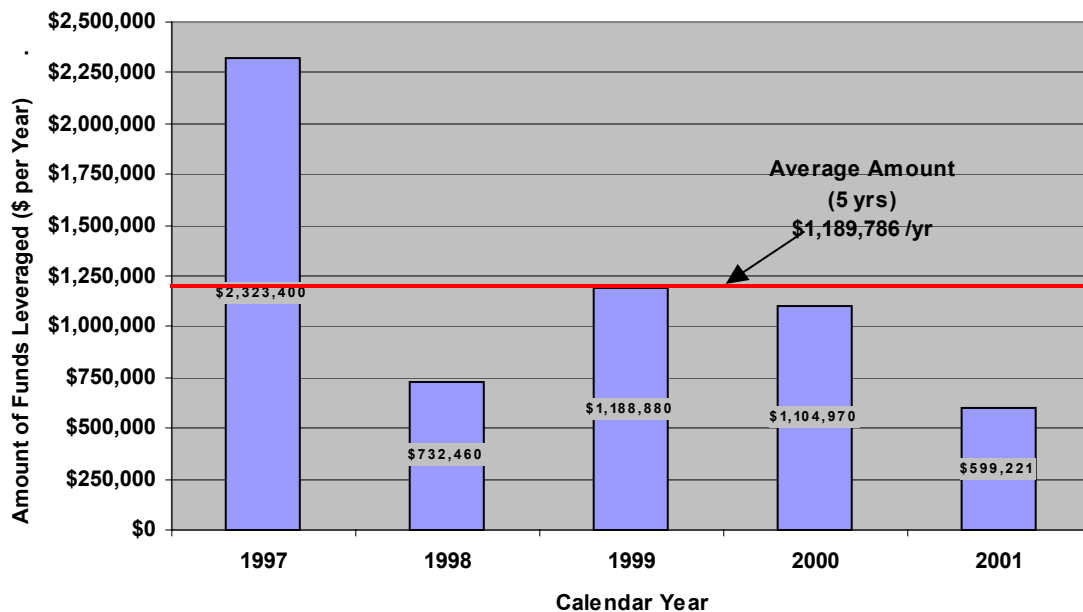
From the 22 IACs participating in this study, the survey collected information on 120 leveraging activities covering the period from 1997 through 2001. Of the 120 leveraged projects, directors indicated that it was “likely” to “extremely likely” that the support for 115 was due to the existence of the IAC Program and the experience gained from their participation in the program.

The IAC directors quantified leveraging benefits for 93 of these IAC-influenced projects. The total monetary value of these projects is \$5,948,931. Over the 5-year period addressed by this study, this works out to an annual average leveraging monetary benefit of approximately \$1,189,786 (Fig. 1).

Several centers contributed to the large influx of leveraged funds identified in 1997, with most of the funds designated for additional assessments, technical assistance, and specialized research. These centers were Georgia Tech, Oregon State, Oklahoma State, the University of Dayton, and the University of Massachusetts. During 1997, Oklahoma State received \$500,000 from oil overcharge funds to develop energy conservation plans

**Table 2. Summary of impact of leveraged activities in 22 IACs, 1997–2001**

Total number of leveraged projects .....	120
Projects leveraged as result of IAC program at university	
Number .....	115
% of total .....	96%
Total value of 93 leveraged projects .....	\$5.9M



**Fig. 1. Annual IAC-influenced leveraged funds, 1997–2001.**

for 125 companies. The centers at Oregon State and the University of Massachusetts each received \$125,000 to perform energy assessments or provide additional technical assistance, while Georgia Tech received \$200,000 from local industry and \$500,000 from the state of Georgia for similar assessment-related activities. Finally, the center at the University of Dayton received a total of \$335,000 in funding from non-IAC DOE sources, industry, and the state of Ohio for research projects on compression improvements and fiscal incentives for “green” businesses. Additional details on typical funding sources and leveraging activities for the 5-year period studied are provided in Tables 3 and 4.

The 5-year snapshot provided by Fig. 1 indicates that there may be considerable fluctuation in new leveraging funds from year to year. This is certainly true; however, a closer look at the project information provided by the centers reveals that the contract periods associated with the new funds are not necessarily limited to one year. Therefore, some fluctuation should be anticipated as centers land large contracts, complete the work over an extended period of time (i.e., 2–3 years), and then seek additional funding opportunities.

A breakdown of the leveraging activities by contributors of leveraging support is found in Table 3. Similarly, Table 4 breaks down the activities by type of collaboration. Several important observations that can be made about these results:

- The states are major contributors. The biggest single leveraging award was given to Georgia Tech by the state of Georgia—\$2.5 million awarded in 1997 and distributed in \$500,000 increments over 5 years through 2001—to perform plantwide assessments, provide technical assistance, and work on special projects. In general, the states provided funds for assessments and educational activities, such as workshops.

**Table 3. Contributors of IAC-influenced leveraging support, 1997–2001**

Contributors	Number of projects <sup>a</sup>	Estimated total value of projects (1997–2001)
States (energy and environmental offices)	19	\$3,025,700
Industry	13	\$1,079,250
Universities	11	\$586,500
Other DOE offices	15	\$511,948
Other federal agencies	11	\$192,173
Undetermined type of sponsor	3	\$190,000
Municipalities	3	\$183,000
Utilities	14	\$173,300
Energy service organizations	3	\$3,560
Nonprofit organizations	1	\$3,500
All contributors	93	\$5,948,931

<sup>a</sup>Includes only the 93 projects for which monetary value information was provided.

**Table 4. Types of activities funded by IAC-influenced leveraging support, 1997–2001**

Type of activity funded	Number of projects <sup>a</sup>	Estimated total value of projects (1997–2001)
Conducting assessments beyond base contract	31	\$3,525,771
Miscellaneous projects (e.g., research)	17	\$1,516,200
Supporting IAC operation	14	\$666,300
Educational service (e.g., workshop)	8	\$87,700
Outreach and client identification	16	\$78,380
Technical assistance	2	\$41,500
Collaboration on assessments	5	\$33,080
All types	93	\$5,948,931

<sup>a</sup>Includes only the 93 projects for which monetary value information was provided.

- Universities themselves provide support to the IACs. The most typical types of support are reductions in indirect cost rates, computers, and scholarships for students taking part in IAC activities.
- Overall, the IACs worked well with utilities and industry. Utilities typically provided in-kind support to identify new clients for the IACs. Industry sponsored numerous additional assessments and educational activities.
- Other DOE programs and other federal agencies provided significant support to the IACs. Among DOE contributors was the Federal Energy Management Program, which provided funds for assessments of federal industrial facilities and training for federal energy managers. Other federal agencies providing funds included the Army National Guard, the General Services Administration, the U.S. Environmental Protection Agency, the National Park Service, and the U.S. Department of Transportation. Most of the funding was to support additional assessments and special projects.
- The large number of leveraged assessment projects indicates that assessment expertise developed by IACs is transferable and in high demand in a number of other contexts, including state and federal buildings and large manufacturing plants.
- The large number of educational service activities—which include workshops, seminars, and special training sessions—indicates that there is a demand for the sharing of the knowledge of the IAC staff. This educational mission is wholly appropriate for university-based IACs.
- The large number of miscellaneous projects indicates that general IAC expertise in energy and production technologies is transferable and in high demand for all sorts of specialized applications (e.g., die casting, foundry sand reclamation, research on the effects of furnace designs, and metal casting).

The overall value of the leveraged activities of nearly \$6 million can be considered a conservative estimate of the overall leveraging benefits of the IAC Program for several reasons. First, the data collection exercise did not include 12 IACs that did not receive contract extensions during the recent recompetition. It is very likely that some of these former centers received leveraged support during the years 1997–2000. Since several of those programs had been in existence for many years, it can be argued that their leveraging activities would have resembled the activities for those IACs that were included in this study and probably would have contributed additional funds to the overall total.

Second, the IAC directors did not provide estimates of monetary value for 26 projects. While many of these activities were limited and provided only small, intangible benefits, such as helping with IAC outreach activities, several activities may have provided substantial financial benefits if quantified, such as universities' lowering indirect cost rates on funds received from DOE to support the centers.

Third, this project did not rigorously pursue how IAC clients, alumni, and web site users might have leveraged the services or training received from interactions with their IACs to implement energy saving, waste reduction, and productivity enhancement measures. This topic was broached with a few IAC directors during the interview process, but it soon became clear that they did not keep track of this type of information. Leveraging by clients, alumni, and web site users will be addressed by the next phase of research on the benefits of the IAC Program.

Lastly, as the eight new centers mature, it is expected that their ability to leverage DOE-IAC funds will improve, resulting in an overall increase of dollars leveraged.

## **CONCLUSIONS**

University-based centers are successfully leveraging their DOE IAC-supported activities to increase the scale and scope of their programs. On average, with \$3.9 million per year in DOE IAC funding (assuming that each of the 26 current centers received \$150,000 per year), centers were able to leverage an additional \$1.19 million, or 30%, in funds per year over the past 5 years. With the additional funding generated through leveraging, the IACs are providing value-added to states, utilities, industry, and other DOE and federal programs. Most of the support is for assessments of government buildings and large manufacturing plants—i.e., for assessment work beyond the basic criteria of the IAC Program. Because the evidence strongly suggests that centers are heavily involved in leveraging activities, it is highly recommended that DOE implement a means for continued tracking of such activities.

This study did not attempt to address in detail the leveraging benefits attributed to IAC clients, alumni, and web site users. Instead, the focus was purely on the leveraging activities generated by the centers themselves as they expanded the scope of their individual services and programs. Leveraging benefits accrued by the clients, alumni, and web site users will be addressed in future evaluation efforts.

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