



**INDUSTRIAL
ASSESSMENT
CENTERS**

A Program of the U.S. Department of Energy

Beginning in 1976, the Industrial Assessment Centers (IACs) have provided small- and medium-sized manufacturers with site-specific recommendations for improving energy efficiency, reducing waste, and increasing productivity through changes in processes and equipment.

FALL NEWSLETTER 2021

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BIPARTISAN INFRASTRUCTURE LAW EXPANDS IAC PROGRAM

The Infrastructure Investment and Jobs Act (Public Law 117-58), also known as the Bipartisan Infrastructure Law (BIL), is a once-in-a-generation investment in infrastructure that will create a more sustainable, resilient, and equitable economy by enhancing U.S. competitiveness in the world, creating good jobs, and expanding access to these economic benefits for underserved communities. The BIL appropriates more than \$62 billion to the U.S. Department of Energy (DOE) to deliver a more equitable clean-energy future for the American people by investing in American manufacturing and workers, expanding access to energy efficiency and clean energy, and building the technologies of tomorrow through clean-energy demonstrations.



Secretary Granholm (left) attends the White House signing ceremony for the Infrastructure Investment and Jobs Act on November 15, 2021.

Specifically, Section 40521 of the BIL provided a total of \$550M over the next five years and directed DOE to increase the scope and impact of the IAC program through the following strategies:

- Identify up to five Centers of Excellence among the highest-performing IACs whose primary purpose will be to mentor and coordinate the efforts of the other Centers with respect to new technologies, practices, and tools to expand the scope and impact of the assessments carried out by the centers;
- Establish a network of IACs at community colleges, trade schools, and union training programs that maintain the primary focus of the program, while considering the varying strengths, capabilities, and characteristics of these alternate educational platforms;
- Develop a nationwide internship/apprenticeship program for students to work with or for industries, manufacturers, and energy service providers to implement energy efficiency and productivity improvement recommendations;



SIGN UP for an assessment at <http://iac.university> or contact your nearest center.

PROGRAM HIGHLIGHTS

- Promote R&D projects for alternative energy sources for energy intensive industries;
- Leverage the resources from regional, state, local, tribal, and utility energy efficiency programs and increase coordination with other complementary Federal programs;
- Provide a national clearinghouse for technical assistance resources; and
- Create an implementation grant program – up to \$300,000 per awardee with a 50 percent cost-share – for entities that have had an energy assessment completed by an IAC, CHP TAP, or equivalent third-party assessor and that involve greater potential for energy efficiency gains or greenhouse gas emissions reductions

Standing up these provisions will require a substantial effort on DOE's part and will necessarily involve a long-term outreach and engagement strategy from both existing and new stakeholders. DOE has already begun soliciting informal input from labor unions, community colleges, manufacturers, universities, state energy programs, and others; and the program anticipates deploying more formal mechanisms (e.g., listening sessions, Notices of Intent, Requests for Information) in the not-too distant future.

As part of a whole-government approach, the expansion of the IAC program will encourage the meaningful engagement with, and participation of, underserved communities and underrepresented groups. Consistent with Executive Order 14008, all the preceding IAC provisions will be designed to ensure that at least 40% of the benefits will be delivered to underserved and overburdened communities. ■

CLIENT TESTIMONIALS

San Francisco State University

“Thank you so much, this helps my evaluation, I appreciate the extra effort this took. We have acted on some of your team's suggestions already. And even if the solar panels are not a viable solution at this time, we can cut energy costs with other lower cost approaches as well, until we can get solar panels. I know this is a government subsidized program, and if you ever need a client recommendation this is the second company I have had assessed by SFSU so I am a repeat user and a big fan!”

– Wynn Ray, Quality Manager,
UHV Sputtering,

Tennessee Tech University

“I wanted to send a quick note as appreciation for the excellent assessment that TTU performed under your leadership. The level of professionalism and willingness that your group demonstrated during the past few months was outstanding. Our company is pleased with the results of the assessment and for the recommendations to improve our energy consumption. It will help our site to achieve targeted cost savings and energy conservation KPI's. This assessment will be used as a reference to implement similar studies in our sister sites within North America region. Please extend my recognition to the students that participated, they were very professional and supportive.”

– Mario Aguilera,
Technology Development Sr. Manager,
Schott Gemtron,

CENTER HIGHLIGHTS

SAN FRANCISCO STATE UNIVERSITY CELEBRATES ITS 30TH ANNIVERSARY

Since 1992, the San Francisco State University (SFSU) IAC has been helping Central and Northern California manufacturers produce simple everyday goods – from the milk at breakfast to a glass of wine after dinner – in a more energy efficient and sustainable fashion. The program provides small and medium-sized manufacturers free assessments of energy use, waste generation and water consumption. These assessments are conducted by SFSU engineering students under the supervision of expert faculty, making it an excellent training ground for energy engineers.

“It's great to know that not only is the IAC kind of the gold standard to me, but it has that educational value as well,” said Aaron Stainthorp, sustainability manager at Jackson Family Wines. He's worked with the IAC for six different audits over the past few years and says the reports he receives from SFSU students are often far more comprehensive than those he would receive from a commercial audit.



Assistant Director Ryan Swanson (left) and graduate student Tsegahaimanot “Andy” Andegiorgis (right) taking data at a steam-to-hot water heat exchanger during an audit. All photos courtesy of SFSU

Funded by the DOE, SFSU’s program is one of two IAC programs in California and one of 32 in the United States. Nationwide, IACs provide assessments to manufacturers and water/wastewater treatment facilities that have an annual energy bill between \$100,000 and \$3.5 million. Most clients are located within 150 radial miles of San Francisco, though the team has traveled to Humboldt and Fresno Counties and has gone as far as Arizona.

The University’s IAC assessed four of Jackson Family Wines’ locations, but Stainthorp noted that the impact extended beyond any one winery. Advice for one location could often be implemented across multiple sites. The IAC also helped the company develop their own rudimentary tools so they can track their own energy systems over time, giving them a self-sufficient pathway for continual improvement.

Each audit is performed by a team of undergraduate and graduate students who have undergone extensive training. After collecting and analyzing energy and water information from the plant, the students perform an on-site inspection, take measurements and collect energy and water related information. Two to three months after the visit, the team provides manufacturers with a detailed assessment report which includes recommendations for improvement. (Stainthorp’s most recent assessment was about 130 pages.)

“Historically, about 60% of the projects that we recommend are implemented,” said IAC Director and SFSU Professor of Mechanical Engineering Ahmad Ganji. He started the center nearly 30 years ago and has seen over 150 students perform more than 575 assessments, resulting in approximately \$91 million in recommended cost savings.

“By the time they graduate, students are full-fledged energy engineers that basically need very, very little training,” Ganji explained. Many students get job offers before they even graduate.

Shelby Saji (M.S., ’19) worked with the IAC for nearly two years during graduate school and is now an energy and sustainability engineer at ICF International. Although IAC was her first professional experience, she feels like her training perfectly prepared her for her current position working on another DOE project. Her biggest takeaway was how to communicate assessments with clients and stakeholders, a key skill she continues to use to this day.

“This is definitely a platform where you can learn so many skills other than just engineering,” she said. “It’s not just about that. It’s about so much more.”

Current master’s student Joe Murphy came to the IAC with more than 20 years of professional experience as a mechanical engineer and high school science teacher. Even with years of engineering experience, Murphy has learned a lot. “One thing that’s been [especially valuable] is just the variety of industries that we visit,” he said.



Student engineer Vincent Huynh and Director Dr. Ahmad Ganji

Given SFSU’s proximity to wine country, the University’s IAC has assessed a lot of wineries. But IAC students have also worked with Blue Diamond Almonds, Crystal Creamery, tortilla manufacturers, wastewater treatment facilities for the City of San Francisco, metal fabrication facilities and more.

“All of the staples that we all buy every day and all of the things that we need to do to make our economy more resilient — I think this energy efficiency piece, it is so key,” Stainthorp said. “It’s often behind the scenes, but it impacts all of us, just probably in ways we don’t see.” ■

IAC Program Quarterly Results

Between July and September of 2021, IACs conducted 123 assessments (Table 1). This represents an increase of approximately 8 percent over the previous quarter and the level of assessment activity is nearing that experienced prior to the COVID-19 pandemic. During these assessments, IACs made 777 recommendations that identified nearly \$16.4 million in potential cost savings.

IDENTIFIED SAVINGS

	Total Recommended Annual Savings	YTD
Total Assessments	123	
Total Recommendations	777	
Energy Savings	13.3 M Therms	54.5 M Therms
Electricity Savings	113,508,303 kWh	449,043,134 kWh
Generation Reduction (approx.)	12.96 MW	51.27 MW
Natural Gas Savings	-0.9 M Therms	4.3 M Therms
CO₂ Reduction	0.09 tons	0.35 tons
TOTAL Cost Savings	\$16.36 million	\$60.82 million
- Energy Related Savings	\$9.57 million	\$41.40 million
- Productivity Savings	\$6.68 million	\$18.01 million
- Waste & Water Savings	\$0.11 million	\$1.41 million

Table 1. July – September 2021

LOCATIONS

Plants assessed were located in 34 states (Figure 1). The assessed plants represent a broad range of industries, with plastics and rubber, transportation equipment, and chemical manufacturing being the most common (Table 2)



Figure 1. IAC Assessments Nationwide, July – September 2021

Plastics and Rubber Products Manufacturing (326)	17
Transportation Equipment Manufacturing (336)	16
Chemical Manufacturing (325)	10
Fabricated Metal Product Manufacturing (332)	9
Food Manufacturing (311)	9
Machinery Manufacturing (333)	7
Beverage and Tobacco Product Manufacturing (312)	6
Nonmetallic Mineral Product Manufacturing (327)	5
Textile Mills (313)	5
Electrical Equipment, Appliance & Component Manufacturing (335)	4
Printing and Related Support Activities (323)	3
Wood Product Manufacturing (321)	2
Primary Metal Manufacturing (331)	2
Computer and Electronic Product Manufacturing (334)	2
All Other Manufacturing	7
Others	19

Table 2. July – September 2021 Assessments by NAICS Industrial Category

A total of 288 engineering students were active across the 31 centers; and only ten percent of these were new to the program.