



2019 Energy Jobs & Market Trends Report



We Are AEE

Over 18,000 professionals in 105 countries trust the Association of Energy Engineers (AEE) to promote the interests of those engaged in the energy industry and to foster action for sustainable development. Our members operate in the dynamic fields of energy engineering, energy management, renewable and alternative energy, power generation, energy services, sustainability, and all related areas.

Our Mission

“To promote the scientific and educational interests of those engaged in the energy industry and to foster action for Sustainable Development.”

- » Connect our members globally, while meeting their needs locally.
- » Enhancing and solidifying the value of your AEE membership.
- » Addressing the urgent global environmental and energy needs with certified and qualified professionals.



A Sustainable Energy Future

AEE surveys our members annually to gain their insights into key issues and trends in the global energy market. We asked energy professionals in commercial, industrial and institutional sectors questions about themselves, the energy jobs market and what they as insiders see, and finally how they will influence the future. With respondents from more than 88 countries, the report provides a global perspective. New this year, we also asked thought leaders involved with AEE to provide their insights and opinions.

Energy efficiency and the work done by energy professionals including AEE members can meet almost 40% of the climate reductions goals pledged by the Paris Climate Agreement. At the same time, our members are saving energy, we are contributing to your organization's bottom line, creating jobs and driving economic development.

We need to continue to invest in people. Almost half of those surveyed in the US plan to retire in the next 10 years, and 66% said there is currently a shortage of energy professionals. At the same time, many consultants, ESCOs and utilities plan to hire energy staff in the next 12 months.

One thing is certain, AEE members and certified professionals are energy influencers and will drive the change needed for a clean energy future. More than 50% of those surveyed have carbon reduction and energy reduction as integral components of their organization's strategic goals for 2020, with more than 40% also including water efficiency and increasing renewable energy in their plans.

Enjoy the report, and join AEE in making a positive change in the world – now and for the future.



Bill Kent, CEM
Executive Director
Association of Energy
Engineers

Who We Surveyed

Over 2,300 energy professionals, from 88 countries responded to our open survey to share their demographics, roles, and responsibilities. This insight allows us to see the distribution of those that work to improve energy efficiency throughout the industry.



What is Your **Relationship** with AEE?

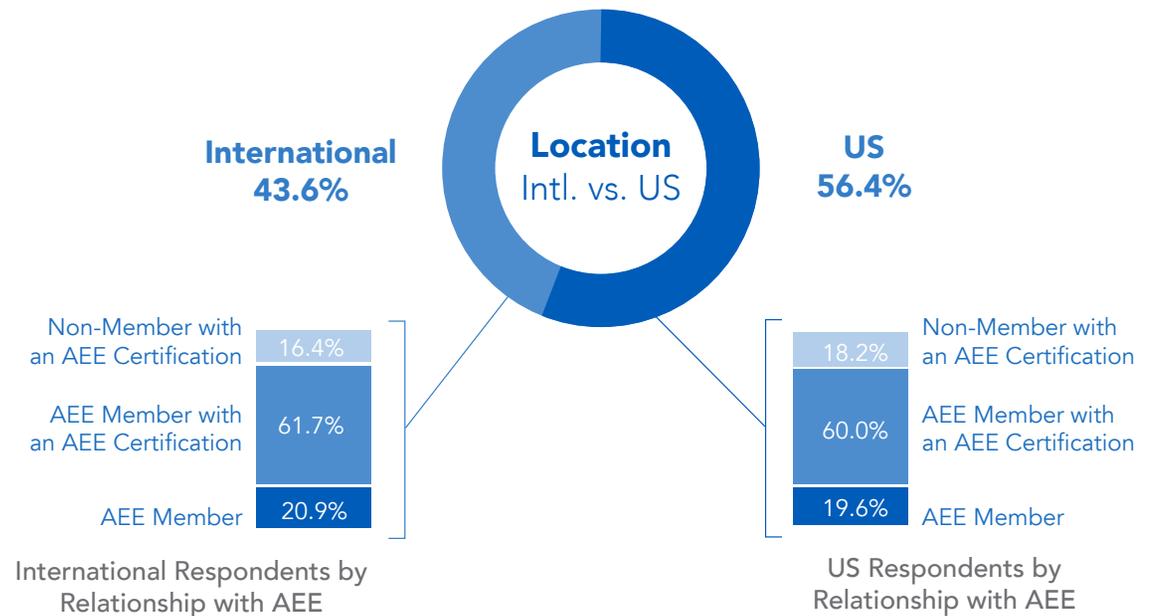


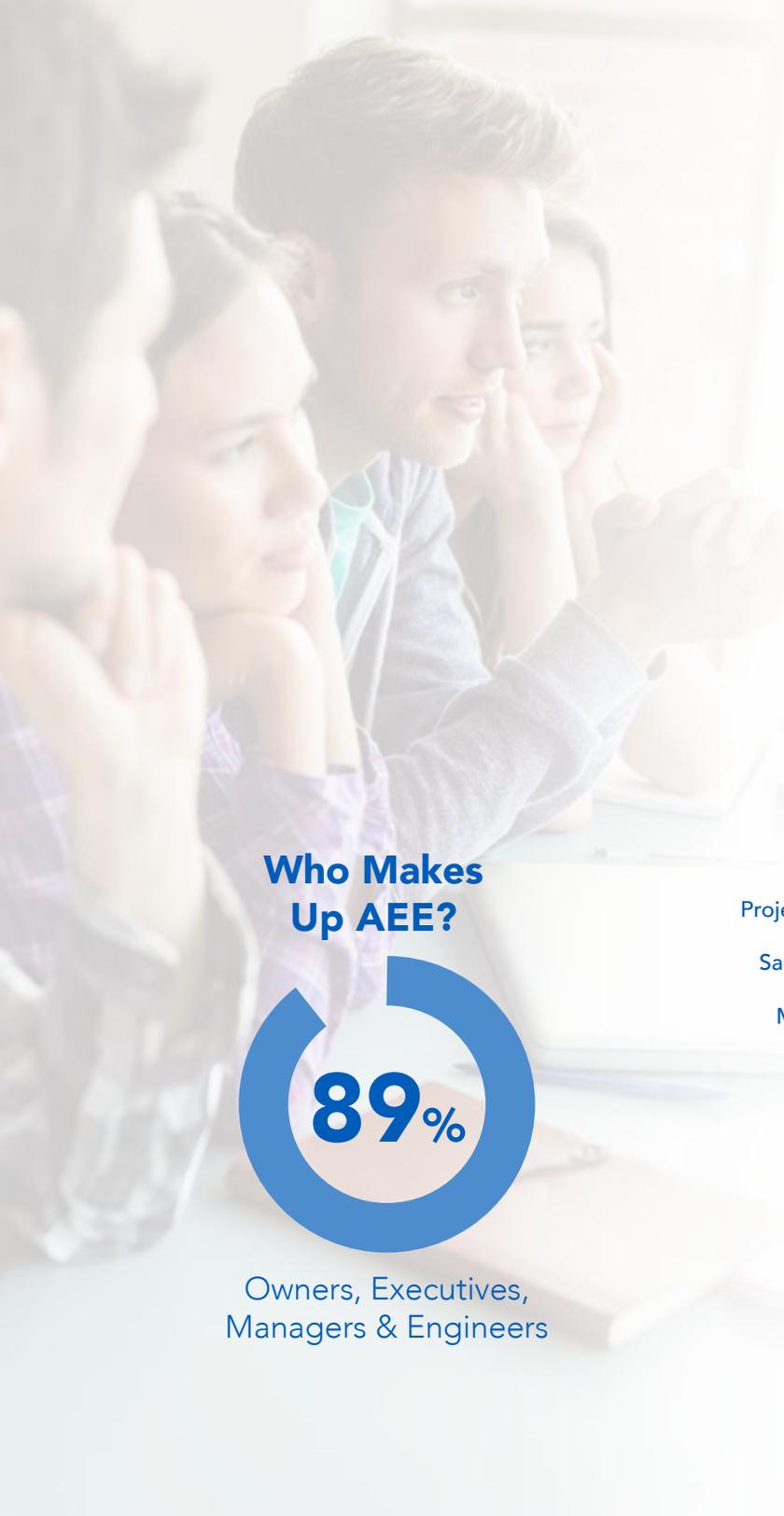
In What **Country** Do You Work?

We received responses from individuals that are associated with AEE in 88 countries.

The distribution of members, non-members, and certified individuals were consistent when compared between the US and the rest of the world.

See Appendix A on page 25 for country specific data.





What is your **Role** in Your Company or Organization?

The majority of respondents hold engineering and management positions. Higher-level executives and firm owners are also highly represented.

Who Makes Up AEE?



Owners, Executives, Managers & Engineers

	Member	Member with an AEE Certification	Non-Member with an AEE Certification	
Owner	2.3%	7.9%	1.7%	Percentage per Role
Executive	1.9%	4.3%	0.8%	
Manager	5.0%	17.8%	5.1%	
Engineer	7.0%	22.0%	7.2%	
Projects/Integration	1.4%	4.4%	1.2%	
Sales/Marketing	0.5%	2.2%	0.6%	
Maintenance	0.4%	1.1%	0.2%	
Education	0.3%	0.5%	0.2%	
Retired	0.4%	0.2%	0.1%	
Student	0.8%	0.0%	0.0%	
	20.3%	60.9%	17.2%	Non-AEE Member, Non-AEE Certified 1.7% Total

Percentage per Respondent Group

How Would You **Classify** Your Company or Organization?

A high percentage of energy consultants responded to our survey, along with government end-user and ESCO's employees.

	Member	Member with an AEE Certification	Non-Member with an AEE Certification	
Contractor	2.0%	5.0%	1.5%	Percentage per Classification
Consultant	6.2%	20.5%	6.4%	
Commercial End User	0.6%	21%	0.5%	
Government End User	2.2%	6.9%	1.9%	
Institutional End User	1.6%	3.8%	0.6%	
Industrial End User	1.1%	3.0%	0.9%	
ESCO	1.9%	8.1%	2.7%	
Utility	1.5%	6.9%	1.4%	
Manufacturer	1.9%	4.8%	1.4%	
	19.3%	61.8%	17.6%	

Percentage per Respondent Group

Non-AEE Member, Non-AEE Certified
1.4% Total

What is Your Primary **Responsibility** in Your Company or Organization?

Over 50% of respondents say their primary responsibility within their firm is energy efficiency.

	Member	Member with an AEE Certification	Non-Member with an AEE Certification	
Building(s) Management	0.9%	1.7%	0.4%	Percentage per Responsibility
Executive Management	3.4%	8.3%	2.4%	
Energy Efficiency	10%	35.1%	10.5%	
Facility Management	2.4%	7.5%	1.3%	
Sustainability Management	1.1%	4.2%	1.5%	
Energy Procurement	0.7%	1.7%	0.5%	
Account Management	1.0%	3.3%	1.0%	
	19.4%	61.8%	17.5%	

Percentage per Respondent Group

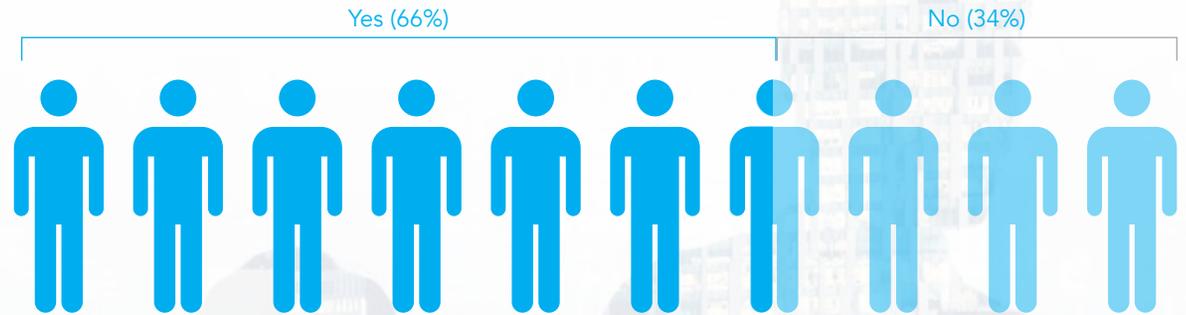
Non-AEE member, Non-AEE Certified
1.3% of Total

Energy Jobs Market

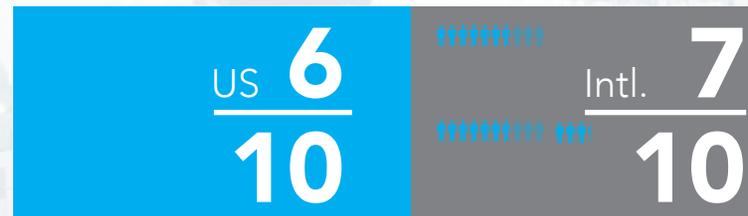
Energy Professional Demand

The majority of respondents believe there is a shortage of energy professionals in the current jobs market.

Is there a shortage today of energy efficiency professionals?



Who Said Yes... Respondents US vs. International

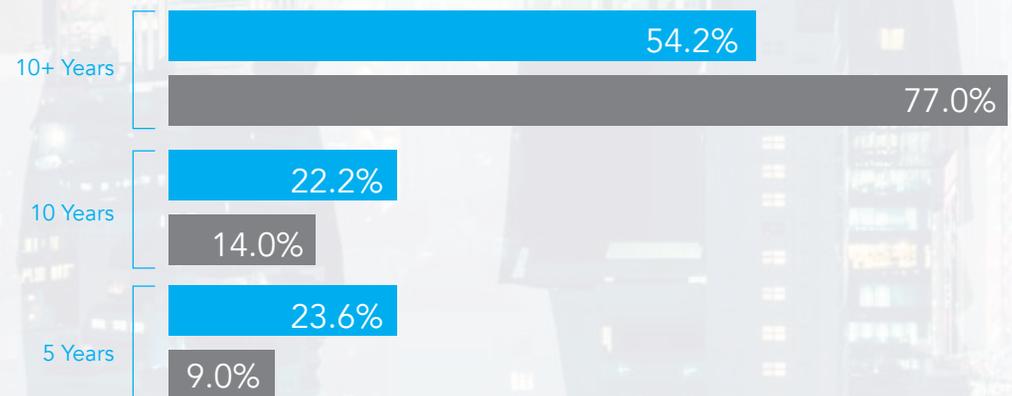


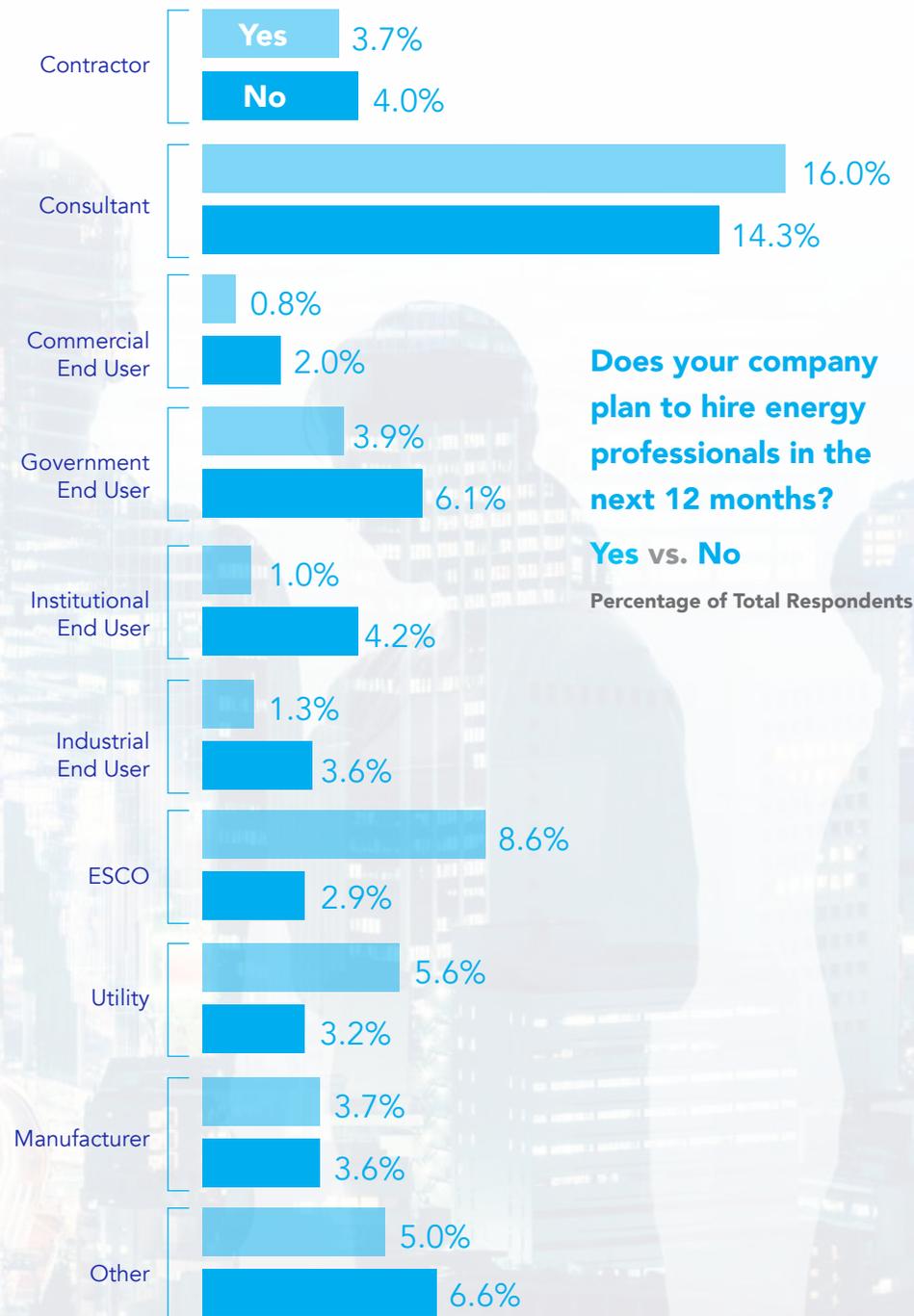
Energy Professional Supply

The majority of current energy professionals will retire in over ten years. Responses from the US show significant differences. The difference in when individuals plan to retire is in part due to the maturity of the US energy-efficiency market as a whole when compared to developing markets globally.

When do you plan to retire?

Respondents US vs. International





Employment Prospects

When we look at the ratios of responses, we can see possible trends in each of the market areas. The employment market across end-users, whether that's in the commercial or government space, is potentially suppressed. Employees of ESCO's and Utilities are telling us their companies and organizations are hiring. The comparison of energy professional shortage and age of the current workforce may dictate the need for new energy efficiency professionals. Good news for those wanting to enter this growing industry.



Opinion

Eric Woodroof, PhD, CEM
Owner | Profitable Green Solutions
AEE Instructor & Past President

“As the industry gets more dynamic, we need more people. I am seeing an increased attendance of young professionals at the AEE energy manager training programs I teach. These are the individuals I see filling the new roles emerging in energy management.”

Energy Jobs Market: Opinion

What do Industry Insider's see?

We asked our most recent AEE Presidents for their opinions on what they see in their companies, across their region or the industry as a whole. This is what they told us...





Samer Zawaydeh

MSC, CRM, REP

Independent Engineer
AEE President 2020

“ The industry needs hundreds of thousands of certified, energy-efficiency professionals throughout the world to retrofit existing buildings and improve energy performance. In my region, the industry needs to drive improvements and the development of the workforce. For example, we need an increase in energy projects that help reduce the overall Energy Use Index (EUI) and develop the skills and experience of energy efficiency professionals working on these projects. Therefore we need new energy projects to drive development in line with a maturing workforce.

The need for energy managers will continue to grow. There are over 600 million people without electricity, according to IEA 2019 reports, and it is expected the worldwide population to increase by 2 billion people by 2050. These facts, coupled with the increase in energy demand, means energy management will remain one of the essential jobs for the next few decades. ”

Samer is an internationally recognized energy expert with over 26 years global experience and is also a lecturer at the Al Hussein Technical University in Jordan. He is currently focused on the Jordan Renewables Readiness Assessment (2020-2025) with IRENA, and the Jordan Climate Change Stakeholders Dialogue.



Lori Moen

CEM, CSBA

Manager of Solutions
Design and Management
Seattle City Light
AEE President 2019

“ I’ve been in this industry for 30 years, so I do see the workforce maturing. I’ve seen many pioneers retire or leave the industry. These are the people who wrote the books and forged the profession. But, recent postings in my organization have resulted in an abundance of qualified candidates for routine energy management positions. We have recruited solid caliber individuals with both engineering and business/policy backgrounds. What is missing from the applicants’ skill set is experience in emerging areas of energy management, such as integrating the “smart” systems that reach beyond the meter.

I also see opportunities across the industry. Energy Management is here to stay. With changes in technology over the last decade, energy efficiency in meaningful terms is a reality. There are increasing numbers of policies at all levels forcing attention and action; there are rapidly changing technologies that manage and integrate systems, and there are developing economies that have no borders to dramatic change. ”

Lori has over 30 years of diverse experience in the energy industry. Her innovative approaches to sustainable design, distributed generation, capital improvements, behavior change, and financing programs have resulted in millions of dollars in verified resource savings.

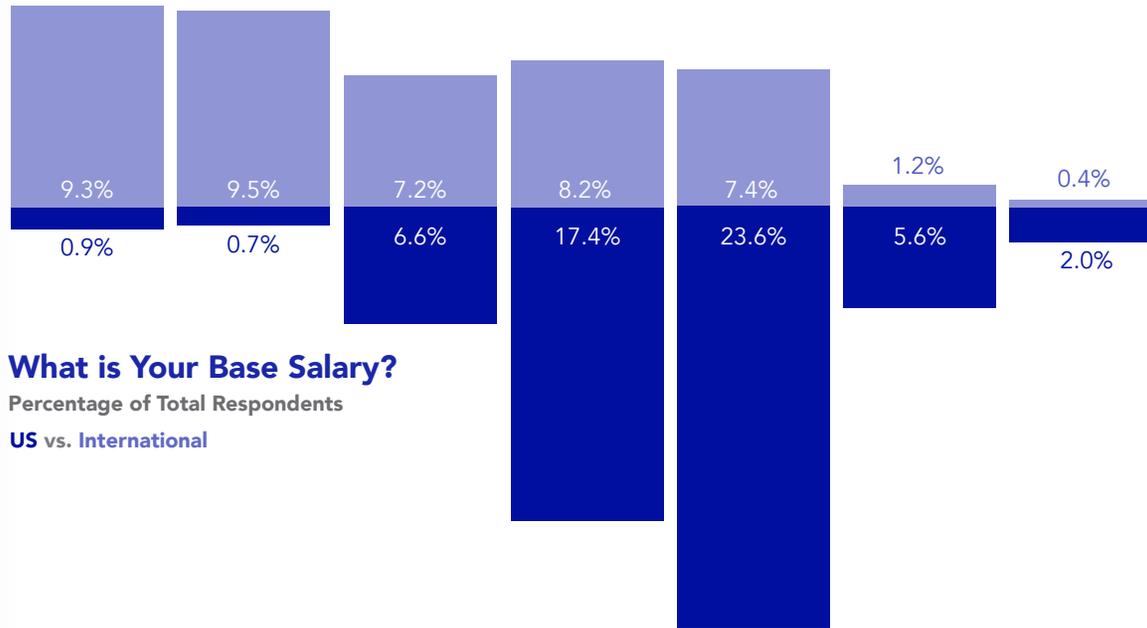
A man with a beard in a dark suit and a woman with short white hair and glasses in a dark jacket are looking at a tablet together in a factory setting. In the background, a worker in a yellow hard hat and white shirt is visible.

AEE Insights - CEM's Do Better!

- » The comparison of salaries when looking solely at Certified Energy Managers shows **CEM's are compensated at higher levels.**
- » CEM's also take up a higher proportion of respondents at each merit bonus level, and more importantly, **EVERY CEM reported receiving a merit bonus.**

Industry Experience & Compensation

The data collected from members, non-members, and certified individuals represents the value of work across the fields of energy efficiency and energy management. We have highlighted the difference between the US and international employment, and compared this to the responses given from Certified Energy Managers. The compensation levels for energy professionals have never been better. The current attention given to global environmental concerns, and the role of an energy manager in the ability to mitigate the impact of climate change through efficient energy use, means earnings have growth potential in the coming years.



What is Your Base Salary?

Percentage of Total Respondents

US vs. International

10.2%	10.2%	13.8%	25.6%	31.0%	6.8%	2.4%
Up to \$25,000	\$25,000 to \$50,000	\$50,000 to \$75,000	\$75,000 to \$100,000	\$100,000 to \$150,000	\$150,000 to \$200,000	Over \$200,000
8.11%	8.17%	11.56%	27.59%	35.63%	7.22%	1.73%
Compared - Percentage of Responses by Respondents holding a CEM® Certification						



Amount of Bonus Received?

Percentage of Total Respondents

US vs. International

8.2%	16.6%	11.5%	9.8%	4.6%	1.4%	1.2%
Up to \$1,000	\$1,000 to \$5,000	\$5,000 to \$10,000	\$10,000 to \$20,000	\$20,000 to \$30,000	\$30,000 to \$40,000	\$40,000 to \$50,000
5.53%	11.99%	8.55%	7.72%	3.58%	0.88%	0.93%
Compared - Percentage of Total Respondents - Distribution by CEM Certification						
Outliers. 1.9% of all respondents received bonuses over \$50,000. Of this group 97% are currently Certified Energy Managers.						

Salaries

The responses show the difference in compensation levels between the US and the international. The median average compensation for energy professionals in the US is significantly higher than their international counterparts.

» See next page for salary distribution based on years of experience.

Merit Bonus

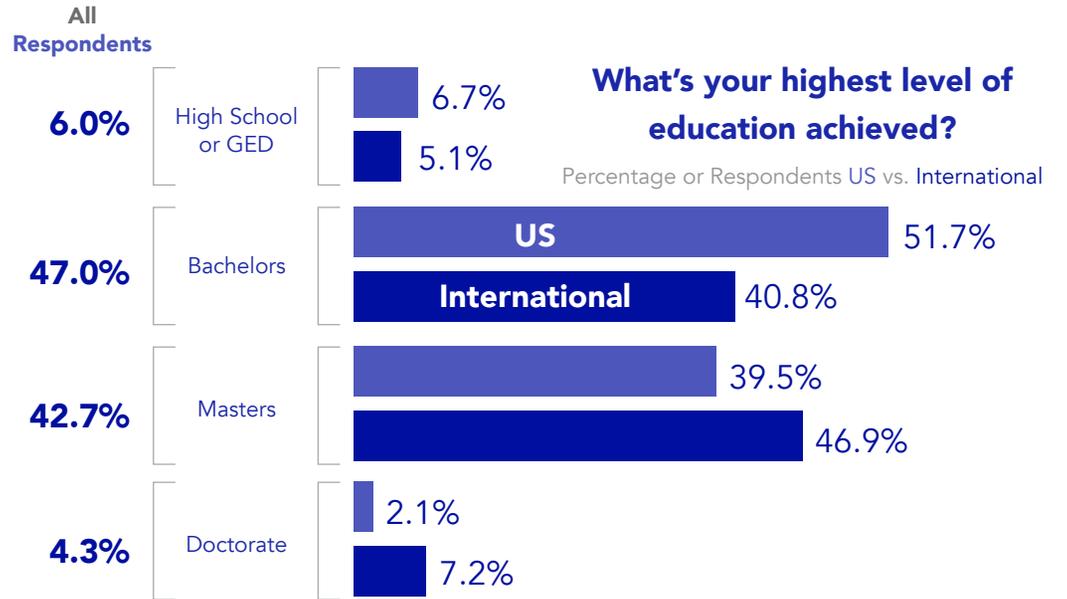
The majority of energy professionals (56%) received some form of merit bonus in 2019. The US/International difference is illustrated opposite. Again, we see the median average bonus in the US is more than double of that internationally (\$5,000 - \$10,000 compared to \$1,000 - \$5,000).

Educated Professionals

The majority (94%) of respondents have university-level education. While outside the US, there is a marked increase in energy professionals holding a higher level degree.

Experience Factor

We compared the distribution of salary against years of experience. The median values show respondents have 11-15 years of experience and earn salaries of \$75,000-100,000.



How many years of energy efficiency experience do you have?

Salary vs. Years of Experience

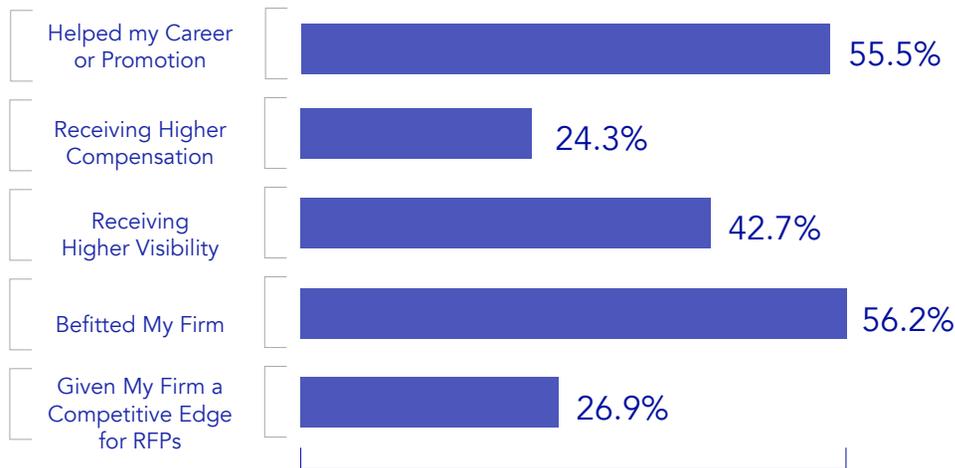
	0 - 5	6 to 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	35+	
Up to \$25,000	4.4%	2.8%	1.2%	0.8%	0.4%	0.2%	0.3%	0.2%	Percentage per Salary Level
\$25,000 to \$50,000	2.8%	3.7%	2.2%	0.7%	0.3%	0.3%	0.1%	0.1%	
\$50,000 to \$75,000	3.9%	4.1%	2.5%	1.2%	0.5%	0.7%	0.2%	0.5%	
\$75,000 to \$100,000	4.5%	8.3%	5.1%	3.0%	1.6%	1.3%	0.9%	0.9%	
\$100,000 to \$150,000	1.4%	5.4%	7.1%	5.1%	3.9%	3.5%	2.5%	2.2%	
\$150,000 to \$200,000	0.1%	0.6%	0.9%	1.0%	1.1%	1.0%	1.0%	1.0%	
Over \$200,000	0.0%	0.1%	0.2%	0.5%	0.2%	0.4%	0.5%	0.3%	
	17.1%	25.0%	19.3%	12.2%	8.1%	7.5%	5.5%	5.3%	

Percentage per Age Group.

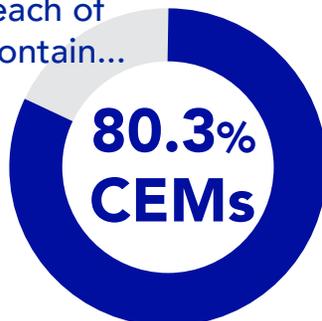
What credentials do you hold? Percentage of Total Respondents



Which of the following have been achieved since gaining an AEE certification? Percentage of Total Respondents



On average, each of these groups contain...



Credentials of Value

Year-after-year, we continue to see a large portion of AEE Members and professionals that keep an AEE Certification also hold the engineering professions highest standard licensure - P.E.

*Includes CEM's with additional AEE certifications

When we asked the question, "Which of the following have been achieved since gaining an AEE certification?" there was a higher representation of CEM's (+5% on average) in every response group. Overall, obtaining a professional certification ultimately helps an individual's career and benefits the employer. But a CEM certification benefits you more in every aspect.

Opinion

Lori Moen, CEM ,CSBA

“ I think AEE members will agree, NOW more than ever ENERGY is cool. Who would have ever thought a residential thermostat could be trendy (Nest, Ecobee, etc.)? There is no doubt that our skill sets and experience will need to grow. The question to me in this crazy growing environment is, how does a skilled professional stand out as the right person for the job when the required body of knowledge is so large? ”

Opinion

Middle East and North Africa (MENA) Region Report by Alain Aoun

Blockchain & Energy Consultant
ME, MSc, BE, CEM, CBCP, BEP, REP, CMVP, CEA, CLEP, LEED GA

Significant changes are taking place in the MENA region regarding energy efficiency, with reforms being implemented by governments that include electricity and fuel pricing increases, reduction in fuel subsidies, support for the energy jobs market, and the launch of new energy efficiency projects and programs.



Barriers to Action

Across the MENA region, I would consider insufficient government policy frameworks and regulations to be the most significant barrier facing the implementation of energy efficiency programs, especially in the industrial sector. Subsidies for fossil fuel-based energy negatively affect our industry, and sparse grid infrastructure is also a critical factor. This last factor, although not as crucial in the GCC countries, is especially important in the Levant and North Africa, such as Lebanon. Similarly, insufficient private financing and limited financing experience among banks for energy efficiency projects is the fourth most crucial barrier in the Levant and North Africa countries.

Slow Growth for ESCOs

In general, the energy efficiency and energy services market in MENA countries is still underdeveloped. One of the reasons for the slow development was the lack of Energy Service Companies (ESCO). For an ESCO market to flourish, there are several vital necessities needed, such as available financing, expertise, and a mature legal system. The need for energy efficiency was largely overlooked when energy costs were low. So, although finance was available to promote rapid growth, the lack of necessity combined with the immaturity of the legal system led to a poor environment for ESCO market growth. In recent years, there has been a strong push by several governments to accelerate the development of the energy efficiency market through the creation of government bodies to assist in regulating the industry, develop projects, and market education.

Fossil Fuels

MENA region holds over half of the world's crude oil and a third of its natural gas reserves, with a substantial portion of this reserve owned by the Gulf Cooperation Council (GCC) countries. Naturally, this has pushed these countries to become heavily dependent on fossil fuels. Most Arab countries spend significant portions of their GDP on subsidies for electricity and fuel to market prices well below the global average. This subsidization results in a financial burden for these countries, especially when global oil prices drop, and it also affects the level of energy consumption in the region, leading to extremely high energy intensities and electricity consumption per capita.

Since 2015, most MENA region countries, specifically GCC countries, have been accelerating a trend to develop more open energy markets with reduced subsidies to ease the burden on government budgets already strained by the prolonged global oil price slump. In addition to electricity, a variety of fuel reforms are also underway. While it is difficult to predict the exact speed of change across the region, it is clear that the private sector is working hand-in-hand with the public sector, helping to accelerate the reform process and facilitate the transition.

Potential for the Jobs Market

The energy efficiency jobs market in Arab countries is still young and suffers from a shortage of energy efficiency professionals. However, countries such as UAE and KSA have introduced new regulations that mandate a minimum number of certified staff for the licensing of energy service and energy efficiency companies. While others, such as Jordan and Egypt, are supporting certification programs offered by the Association of Energy Engineers and the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE). These efforts need time to make an impact on the region. A recent report of the World Economic Forum on the future of jobs in MENA countries states that the energy efficiency sector is expected to be the single largest generator of new jobs within the UAE, and is projected to create more than 65,000 jobs by 2030. The UAE's broader Green Growth Strategy alone aims to create 160,000 new jobs and boost GDP by 4-5% by 2030.

Industrial Sector is Critical

Globally and in the MENA region, the industrial sector consumes more primary energy than any other and accounts for more than half of global energy consumption. Industrial sectors vary in composition in MENA countries. For example, Saudi Arabia has large cement, iron & steel, and petrochemical industries. The UAE has large aluminum, cement, and petroleum refining industries. While in Oman, the largest industrial sectors are metals, chemicals, and petroleum refining, cement, and food manufacturing. All of these industries are energy-intensive and are heavily impacted by increasing energy costs. Only seven Arab states have comprehensive industrial EE policies, namely Algeria, Egypt, Kuwait, Jordan, Morocco, Tunisia, and Lebanon, and some of these policies are not fully enforced. The desire to reduce energy consumption (especially with the reduction in government subsidies), increase business efficiency, and reduce the operating costs are the main drivers for energy efficiency in the industrial sector.

Renewable Energy is Advancing

Renewable energy is the most advancing energy sector. Renewable energy has advanced rapidly in MENA countries and especially in GCC countries since 2014. Record-breaking bids in renewable energy auctions in the United Arab Emirates (UAE) and Saudi Arabia made solar power cost-competitive against conventional energy technologies. Abundant resources, together with robust enabling frameworks have led to solar PV prices of below 3 cents (USD 0.03) per kilowatt-hour and dispatchable concentrated solar power (CSP) of 7.3 cents per kilowatt-hour, which is less than some utilities in the region pay for natural gas. Countries such as UAE, Egypt, Tunisia, and Jordan have made remarkable progress in this sector.

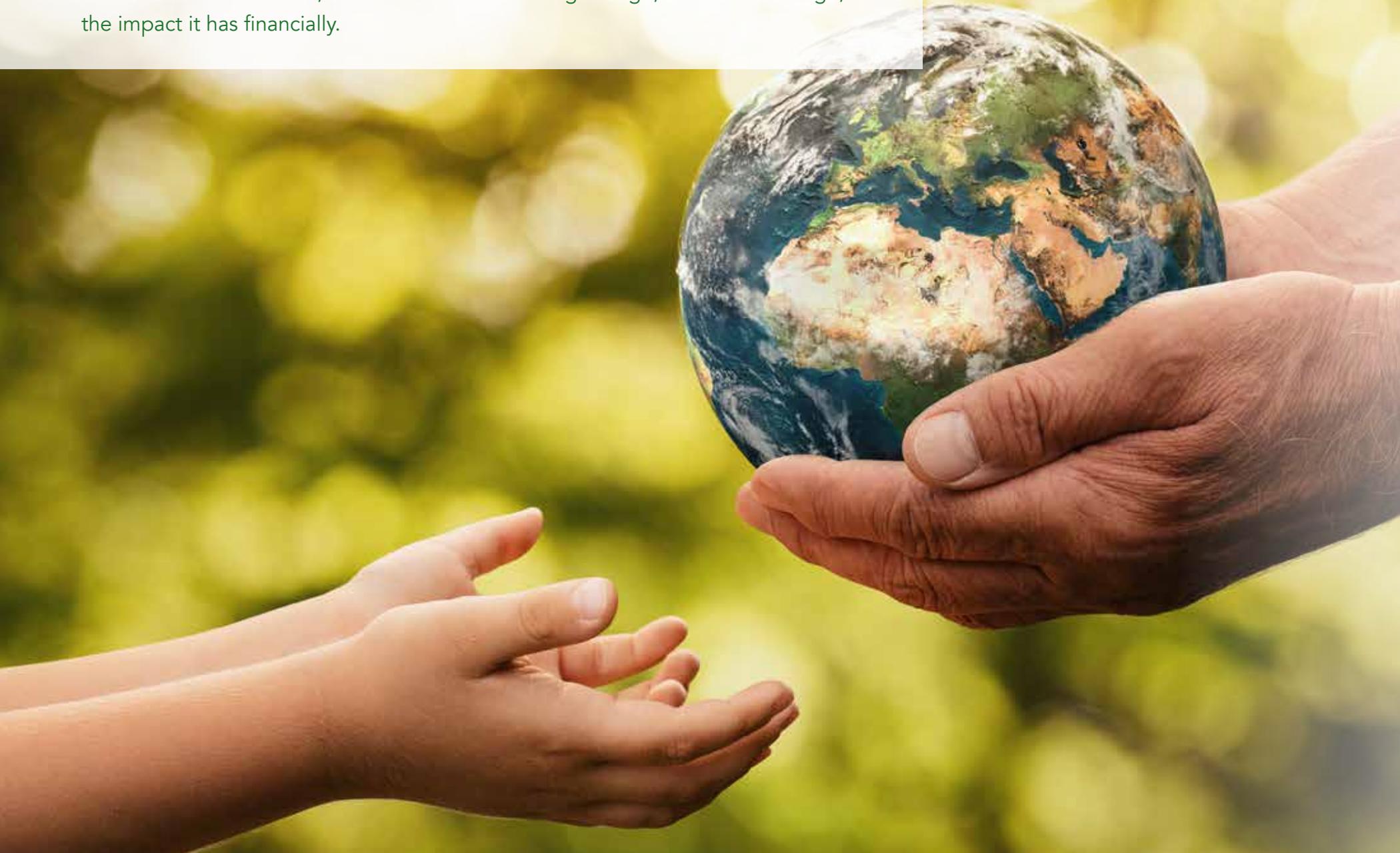
Measures to Boost Energy Efficiency

Improving energy efficiency can provide significant benefits to the MENA region, especially considering there is a tremendous opportunity for energy efficiency improvements. There is a wide array of measures on both the supply and demand sides for energy, to boost energy efficiency levels by promoting stringent environmental, energy-saving policies to combat climate change. Formal energy efficiency programs and voluntary measures combined will help the region to maintain its economic strength. Energy conservation programs in residential, commercial, and industrial sectors can significantly reduce carbon emissions and augment energy supply in the Arab region. A robust regulatory and institutionalized framework can help to achieve a reduction in GHG emissions through a bundle of non-market based and market-based instruments. ””

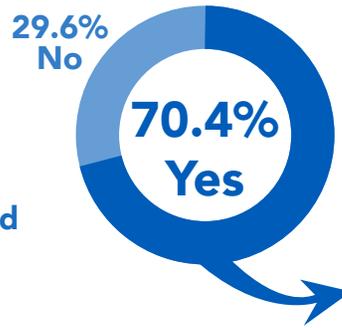
Alain has over 15 years of experience as an engineering consultant, trainer, entrepreneur, and expert in the fields of blockchain, energy, and electrical engineering. Awarded the MENA region Energy Engineer of the year 2018, he is an accredited Energy Management and Building Commissioning trainer.

Our Members Influence Change

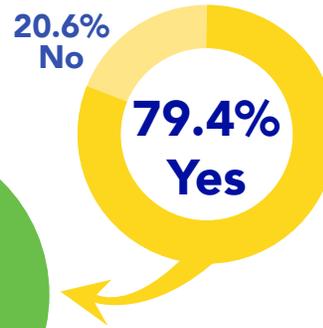
We wanted to measure how involved or influential energy managers are on their organization's strategic goals related to energy efficiency and sustainability. The data shows relative awareness, the factors that are driving change, the rate of change, and the impact it has financially.



Are you aware energy efficiency measures can meet almost 40% of the carbon reductions pledged in the Paris Climate Agreement.



Do you make or influence your organization's energy efficiency decisions?

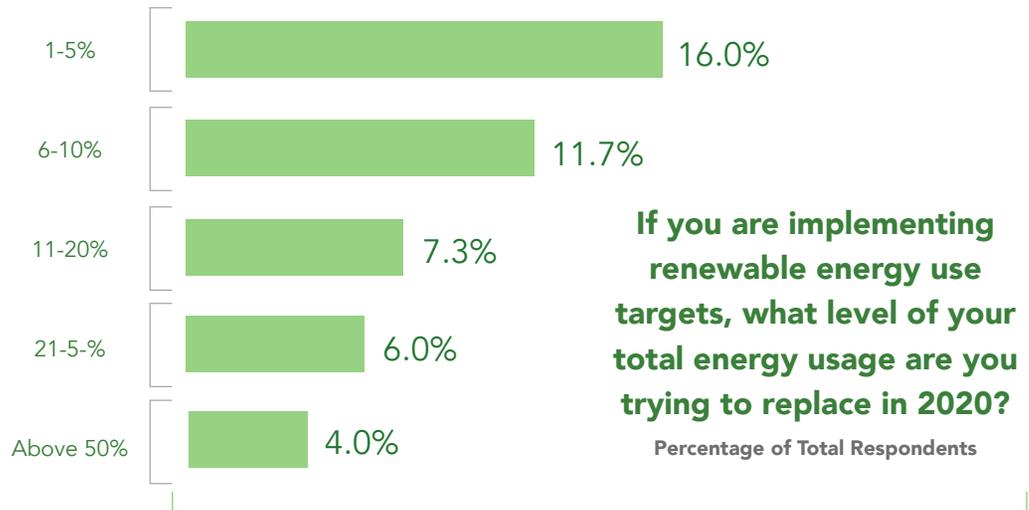


We Call Them "AEE Influencers"

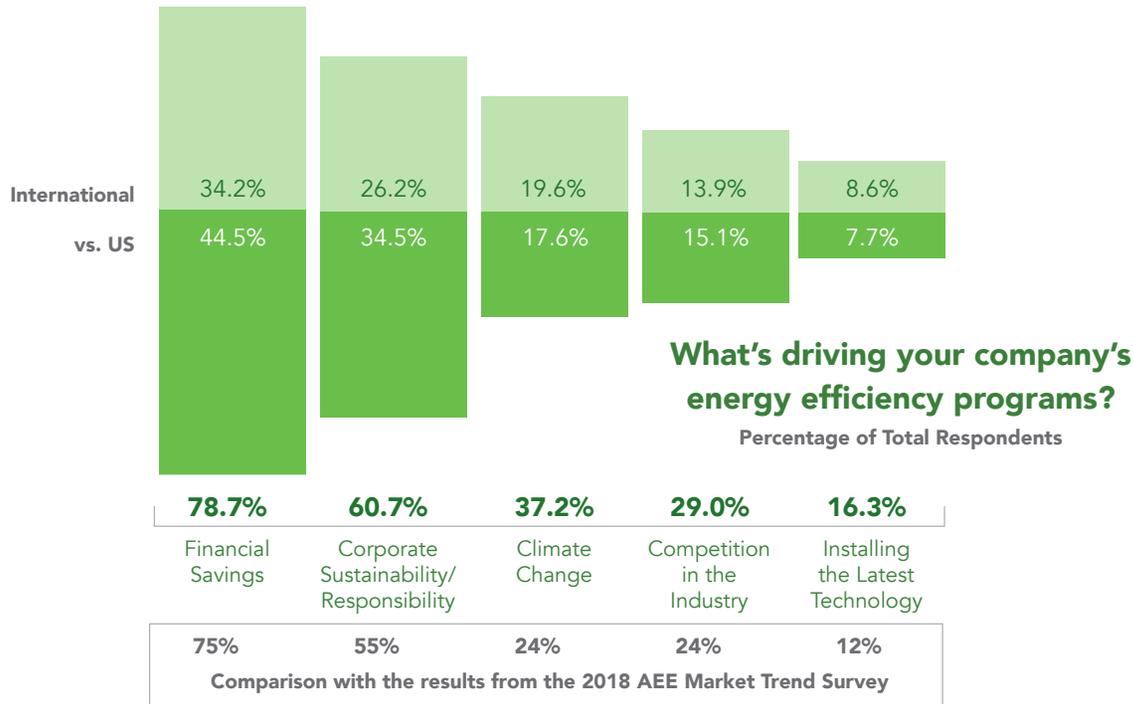
88.4% of the respondents that answered yes to both questions are AEE certified.

Awareness and Influence?

AEE Certified individuals believe they are more aware and are more influential in their organization's energy efficiency decisions.

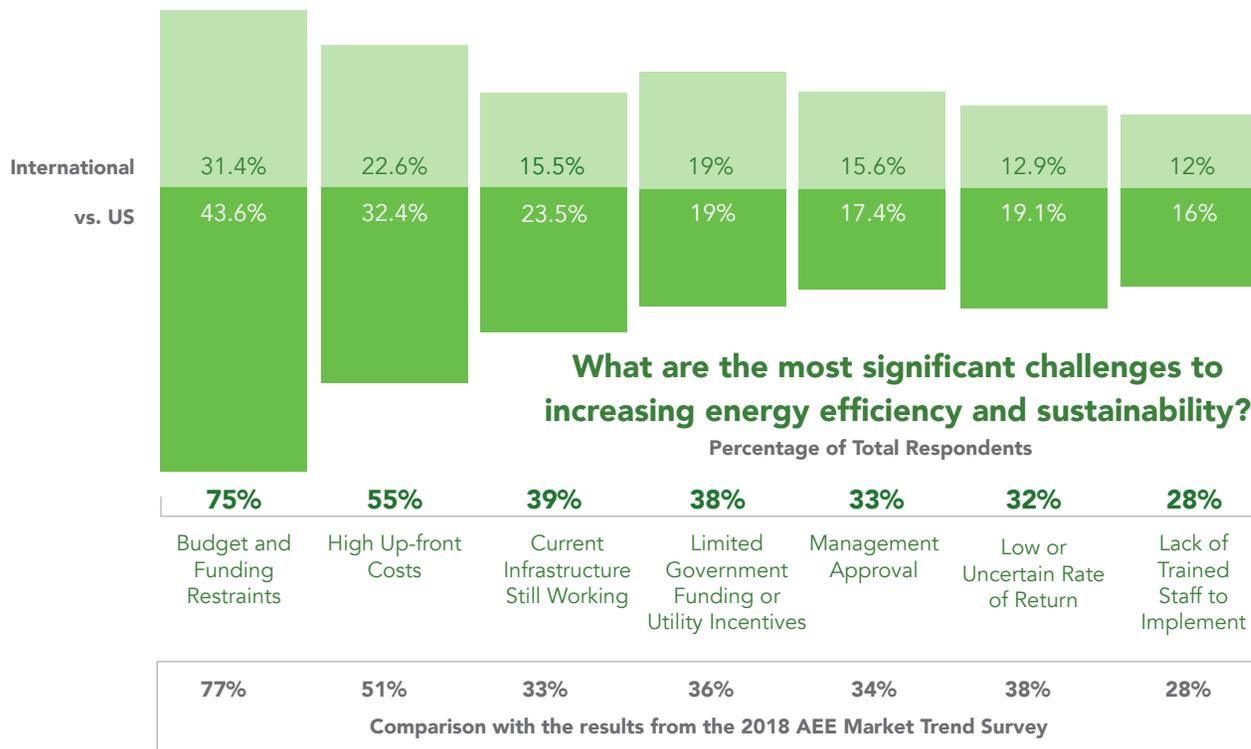


The amount of "AEE Influencers" in each of these groups.



What's **Driving** Change?

Each year we see financial savings driving companies to adopt energy efficiency projects and programs. We see a consistent increase in responses compared to 2018 (approx. 5%). The one exception to this trend is the topic of climate change, which increased over 12%. This topic is also more relevant to international energy professionals.

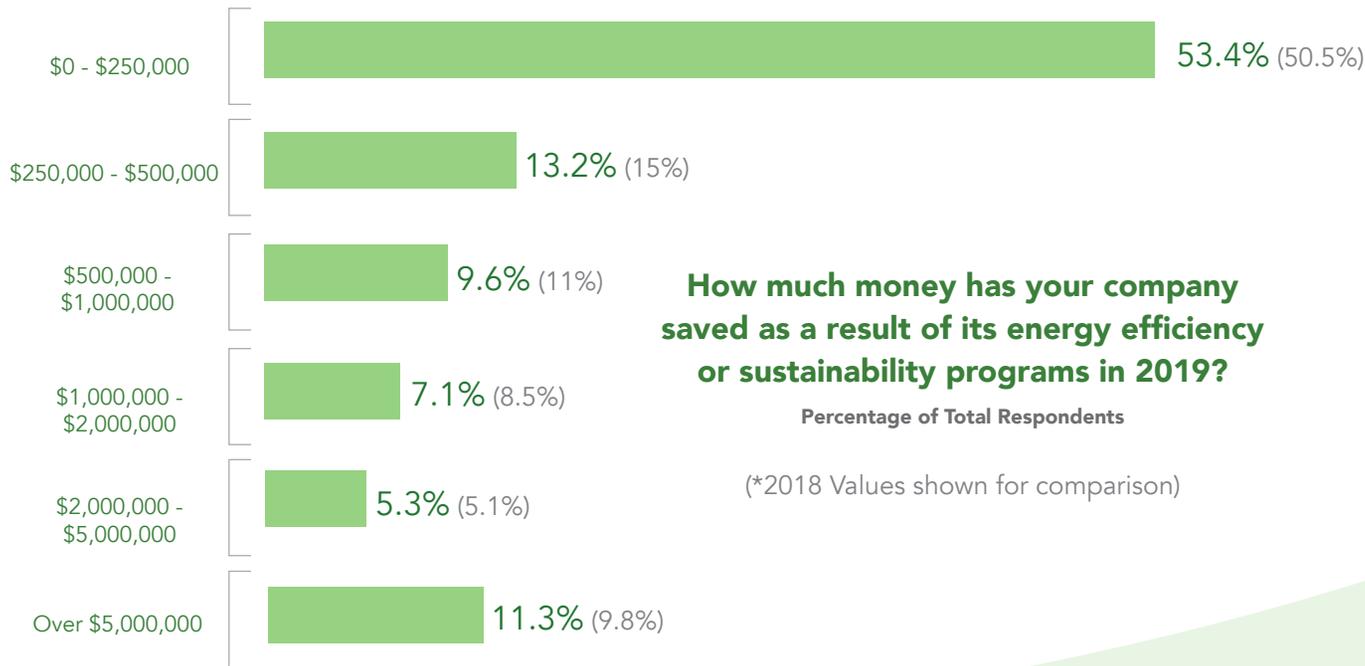


Challenges You Face?

Once again, we see available finances impacting energy efficiency projects. The overall responses align with the demographics of those surveyed, with the exception that government funding appears to be more of a challenge internationally. The most significant comparison to 2018 is that of management approval. Could the awareness of climate change be impacting management decisions?

Impacting the **Bottom Line**

The vast majority of energy professionals make a significant impact on the bottom lines of firms year over year. Again, the data shows (next page) significant numbers of those professionals hold AEE certifications.



How much money has your company saved as a result of its energy efficiency or sustainability programs in 2019?

Percentage of Total Respondents

(*2018 Values shown for comparison)

On average, each of these groups contain...



“Opinion”

There are many barriers to energy efficiency projects. At the company level, helping persuade management is the most prominent. But, for many, the cost of energy is critical, and so the availability of high-efficiency technology at a competitive price can be a significant driver. At the market level, and depending on the industry, regulatory frameworks may drive change, such as annual GHG emissions for the international aviation industry starting in 2020.

Samer Zawaydeh, MSC, CRM, REP

Most of my clients are making public pledges for sustainability in the form of mission statements. I see companies that are closer to the consumer setting actual goals and targets for renewable energy use. Each company, whether large or small, has its struggles to improve energy efficiency, but management approval/priority is often #1. Many companies or organizations need a “compelling event” to drive change, such as a rebate expiring. I see more companies act out of “Competitive Fear”. They do not want to look bad or be the last on a company list of “sustainability rankings” against their peers.

Eric Woodroof, PhD, CEM

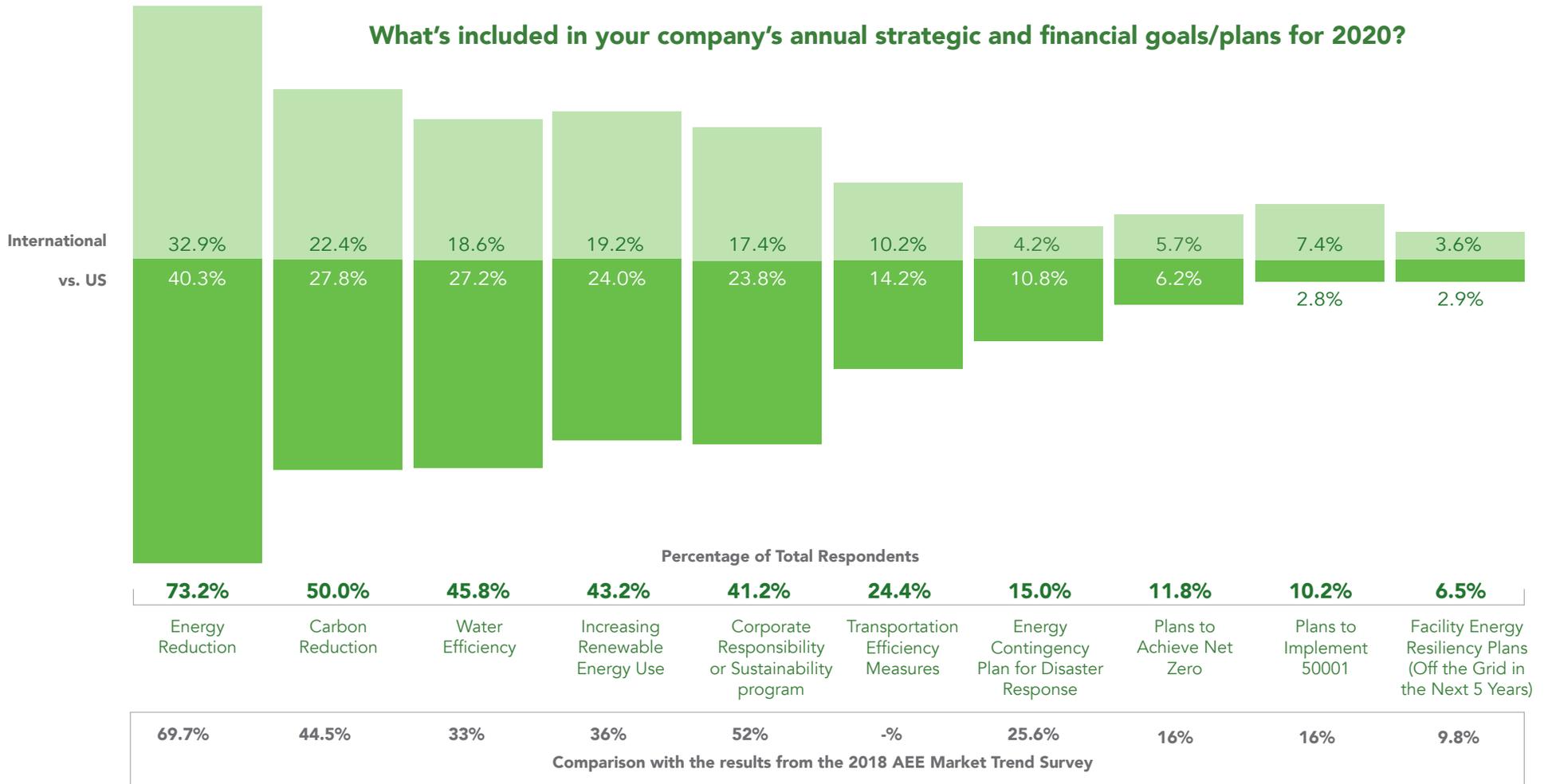
In many cases, companies that are choosing to set goals are driving the industry – they ARE early adopters that are setting themselves apart from the competition. For these companies, money isn’t as much an issue when they understand the “BRAND” value that energy efficiency offers. There are top-down drivers from mandated policies, required building benchmarking, audits, tune-ups, and even building performance targets. On the flip side, many companies are well beyond these tactics. Energy efficiency and sustainability build brand and market value, and energy efficiency lowers operating costs. The choices a company makes to focus on one or the other, or not, will certainly depend on how competitive the market place is and how narrow their bottom line is.

Lori Moen, CEM, CSBA

Priorities for 2020

The responses show the areas that firms are working towards in 2020. Many of the priorities align when comparing the US versus International responses, with two exceptions. Making emergency contingency plans for disaster response is significantly more important in the US while making plans to implement ISO 50001 is more prominent internationally. When compared to 2018 answers for the same question, there seems to be a significant increase in the top four energy efficiency goals for 2020.

What's included in your company's annual strategic and financial goals/plans for 2020?



Impact the Future: Opinion

What do Industry Insider's see making an impact in coming years?



Samer Zawaydeh

MSC, CRM, REP

Independent Engineer

AEE President 2020

“ The most significant change that we will see in the next few years is the electrification of transportation and artificial intelligence. The transportation sector remains one of the largest energy-consumers in most countries, plus many of the larger car companies are moving to electric. This will substantially increase the electrical load in each country, and put stresses to develop new electric infrastructure for transportation. Hopefully this new electrical demand will be covered by Solar PV, and demand will be managed to consider “Sun” peak hours.

While Solar PV has seen an exponential increase in use over the past ten years, it is still waiting for a reduction in associated PV Storage before it can expand further. Hopefully, within a few years, storage technology will improve and become less expensive. This may change conventional grid operation from a single energy producer model to multiple energy producers and open the sector to Virtual Power Plants.

Adapting to rapid energy cost reductions from Solar PV and Wind is driving nations to change their energy mix. If they do not, their industries will find it difficult to compete globally. This, in turn, may reduce the dependency on fossil fuels and subsequent reduction in the fossil fuel supply chain. ”



Eric Woodroof

PhD, CEM

Owner

Profitable Green Solutions
AEE Instructor & Past President

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Global climate commitments and progress do not get as much attention in the US as it does in other countries, possibly due to lack of political alignment and focus. I think we are one or two major events away from taking the issue seriously, such as a natural disaster, or a refugee movement that impacts the US on a more personal level.

Sometime in the future, perhaps people will be demanding that companies are “climate neutral”, similar to the shift we experienced with “leaded gasoline” and cigarette use. On these issues, people became polarized, you either “are” or you “aren’t.” When that happens to clean energy use and sustainability in business in the US, the ones that aren’t will be “placed” out of business. At that point, I hope that the energy-efficiency community is in the right place to help businesses, whether large or small, make the “transition” to a sustainable model. In 2019, a single statement Robert Swan made at the AEE World Energy Conference, is very useful in this respect - “don’t count on anybody else to solve the climate crisis.” I hope his call to action compels energy professionals in the US to drive change and make an impact globally. ”



Lori Moen

CEM, CSBA

Manager of Solutions
Design and Management
Seattle City Light
AEE President 2019

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Seattle City Light electricity supply is predominately hydro and has been carbon neutral since 2005. It isn’t uncommon for customers to ask about other renewable energy options such as REC purchases, installing their own distributed generation, and/or investing in local renewable energy projects. In this city that is known for its rain and gloomy weather, Seattle has over 25MW of connected solar.

Fossil fuel usage is also a current topic of great discussion on the west coast. There have been proposals and debates at both the state and city levels. The race is on to see who will get to carbon-neutral first. That said, there are many questions to be answered. How do we ensure resiliency during outages, especially if we are limiting heating fuels? What are the costs of upgrading non-fossil fuel capacity and infrastructure? How does the resource need to build that new infrastructure impact climate change? How do we recover the costs of infrastructure that might become obsolete? It is obvious a cradle to grave analysis is appropriate. ”

Appendix

Country Data

Individuals from **88 countries** responded to the 2019 Annual AEE Survey.

Afghanistan	Grenada	Philippines
Albania	Guatemala	Poland
Antigua and Barbuda	Hungary	Portugal
Argentina	India	Qatar
Australia	Indonesia	Republic of Korea
Austria	Iraq	Romania
Bahamas	Ireland	Saint Lucia
Bahrain	Israel	Saudi Arabia
Bangladesh	Italy	Singapore
Barbados	Jamaica	Slovakia
Belgium	Japan	South Africa
Botswana	Jordan	Spain
Brazil	Kazakhstan	Sri Lanka
Canada	Kenya	State of Palestine
Chile	Kuwait	Swaziland
China	Lebanon	Switzerland
Colombia	Luxembourg	Tajikistan
Côte D'Ivoire	Malawi	Thailand
Croatia	Malaysia	Trinidad and Tobago
Cyprus	Mauritius	Tunisia
Czech Republic	Mexico	Uganda
Denmark	Morocco	Ukraine
Dominican Republic	Namibia	United Arab Emirates
Ecuador	New Zealand	United Kingdom
Egypt	Nigeria	United States
France	Norway	Uruguay
Georgia	Oman	Vietnam
Germany	Pakistan	Zambia
Ghana	Panama	Zimbabwe
Greece	Papua New Guinea	

Top 20 Non-North American Countries

Percentage of Total International Respondents Shown

South Africa	7.3%
Spain	7.3%
Saudi Arabia	6.4%
United Arab Emirates	5.9%
Ireland	4.8%
Kenya	4.8%
Jordan	4.1%
UK & Northern Ireland	4.1%
China	3.5%
Italy	3.5%
India	3.0%
France	2.9%
Lebanon	2.7%
Australia	2.6%
Brazil	2.1%
Nigeria	2.0%
Chile	1.7%
Pakistan	1.7%
Bangladesh	1.5%
Egypt	1.4%

Over 2,300 energy professionals, from 88 countries responded to the Association of Energy Engineer's open survey to share their demographics, experiences and the challenges they face. This data provides unique insight into the energy jobs market and how these industry insiders will influence the future.



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