

National Council for
Science and the Environment



**ENERGY PROGRAMS IN HIGHER EDUCATION
IN THE UNITED STATES:
ASSESSING TRENDS ACROSS TWO PATHWAYS
TO KNOWLEDGE DEVELOPMENT**

NOVEMBER 2018



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- Research and Education
- Leadership and Community
- Policy and Decision-making

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Overview

Across all levels of higher education, boundary-spanning majors, minors, departments, centers, and certificates are proliferating and attracting greater numbers of students. Such programmatic developments are among the ways in which higher education evolves and adapts to changing societal demands. The evolution of the field of energy education is indicative of this larger process in which long-standing disciplinary structures are blurred and bridged, and new inter- and transdisciplinary programs emerge. This process is epitomized in particular by the recent growth of degree programs oriented to the development of and transition to forms of energy that are affordable, accessible, clean, and sustainable.

Whether one's primary concern is national security, economic progress, or environmental sustainability, the boundary spanning development of knowledge focused on solutions to our energy challenges, and of qualified graduates who possess that knowledge, is essential. But what sorts of knowledge are required, and what sorts of educational programming and institutional structures will best support its development? More specifically, what is the appropriate mix between energy-oriented education that fosters the scientific knowhow that is a prerequisite for technological innovation, and energy-oriented education that fosters the holistic consideration of complex interconnections that is a prerequisite for informed decision-making?

While the drivers of evolution within the higher education landscape include a combination of forces – students' demands, professors' inspirations, administrators' constraints, funders' visions, employers' needs and labor markets – it is also possible that the processes through which institutions develop programs that meet their own needs may result in a deficit in aggregate and at the national level. In this report, we seek to provide a foundation for addressing these questions and concerns. To do so, we draw on the results of a recent census conducted by the National Council for Science and the Environment to characterize trends in energy-oriented programming in higher education in terms of two pathways to knowledge development, one focused on technological innovation and the other on complex decision making.



Introduction



FINDING SOLUTIONS
TO ENERGY-RELATED
PROBLEMS REQUIRES
THE DEVELOPMENT
OF KNOWLEDGE
ACROSS THE
NATURAL AND
SOCIAL SCIENCES
AS WELL AS
ENGINEERING AND
OTHER TECHNICAL
DISCIPLINES.

In September of 2017, the National Council for Science and the Environment (NCSE) reported on the results of a 2016 census of interdisciplinary environmental, sustainability, and energy-oriented (IESE) programming in higher education in the United States (Vincent et al. 2017). The results of the census, when compared to the previous NCSE census conducted in 2012 (Vincent et al. 2012), indicate a significant expansion in the number of IESE degrees offered over that four-year period, as well as an increase in the number of institutions offering IESE related programming.

Within the broader domain of IESE programming in the US, although the overall number of programs focused on energy remains low, energy-related programming represents an area of significant growth. Energy-oriented degree programs

showed the second highest levels of growth (62 percent) for all degree program types. Indeed, if we leave aside degree programs oriented to the broad category of sustainability (which grew by 89 percent) and focus on those degree programs oriented to a substantive domain within sustainability, energy programming showed the highest levels of growth, ahead of degree programs in coastal and marine systems (33 percent growth) and in water resources/watershed management (16 percent growth) (Vincent et al. 2017).

Finding solutions to energy-related problems requires the development of knowledge across the natural and social sciences as well as engineering and other technical disciplines. No single degree program can provide both the breadth and depth of knowledge that is required. While different pathways of knowledge development can be complementary, they may not necessarily be compatible within the same academic program (or within the same individual mind, for that matter). Cultivation of knowledge related to current energy challenges thus calls for a balance between pathways that drill down into the technical specifics of renewable forms of energy on the one hand, and, on the other, pathways that train students to think across the ethical, social, political and economic dimensions of issues in ways that are necessary to inform and facilitate difficult decisions.

In an article in the 2010 edition of the Oxford Handbook of Interdisciplinarity, scholar Daniel Sarewitz, who directs the Consortium for Science, Policy, and Outcomes at Arizona State University, contrasts two alternative

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pathways of knowledge development. Path 1 entails the development of reductive knowledge intended to lead to innovation and technological development. Path 2 entails the development of holistic knowledge intended to lead to better decision making. While Path 1 is an essential source of societal development and transformation, Path 2 becomes necessary precisely because of the unanticipated consequences of technological development along Path 1.

“[The] context independence of science allows reductionist knowledge to be embodied in engineered artifacts that themselves behave predictably, regardless of context. Holistic scientific inquiry, in stark contrast, strives for insight that embraces and explains context and complexity, that enhances comprehension of human and natural systems—the very systems that are continually being rendered more complex and incomprehensible due to the technological fruits of reductionist inquiry.” (Sarewitz 2010, page 68).

Sarewitz expresses skepticism as to the ability of Path 2 forms of inquiry to live up to our expectations. While Path 1 knowledge development has given us the wonders and benefits of travel to far places at high speeds, he points out, Path 2 has yet to meaningfully address the negative implications of these technological advances, such as the accumulation of atmospheric greenhouse gases that results from their use. As he sees it, the degree of complexity that holistic inquiry must embrace – from individual behavior to geopolitical maneuvering – mitigates against its effectiveness in moving the lever for our most serious socio-technical challenges. While Sarewitz does not directly address the field of energy education, one might infer that he would caution against an overemphasis on Path 2 forms of knowledge development at the expense of adequate investment in the technical capacities fostered along Path 1, such as those pertaining to wind and solar energy, for example, or energy-efficient agriculture and building methods.

By contrast, David Blockstein, the first Executive Director of the National Council for Science and the Environment, along with his co-authors in a 2015 article in the *Journal of Sustainability Education*, makes a strong case for the importance of holistic inquiry in energy education. Although the article does not make Sarewitz’s distinction, the authors clearly advocate for the importance of Path 2 knowledge development across the energy education landscape. After observing critically that education relevant to the energy industries has been siloed within the natural and physical sciences and engineering, the authors argue for the need for a new integrative academic field of “energy studies.”

“The practical study of energy in academia today is really the study of components of the energy industries. A graduate knows how to make the machines of his or her specialty work, and he or she may know the basics of production costs and sales prices of the energy produced by their particular industry. They are less likely to know about the environmental, political, economic and ethical contexts surrounding their industries. Many have never considered questions of equity and social justice that connect to decisions about new energy. Similarly they probably have little experience analyzing alternative energy choices.” (Blockstein et al. 2015, page 2).

While Sarewitz and Blockstein express contrasting concerns, our aim here is to use them to illuminate an understanding of the energy program data we present here. There is certainly both room and need within the energy education landscape for programs that lead students along Path 1 and Path 2, as well as those that attempt to be inclusive of both. Distinguishing between these two pathways, and assessing the current landscape through the lens and context of this distinction, allows for a critical and strategic look at the field and can inform continuing efforts to invest in educational programming that meets society’s changing needs.

Methodology and Data

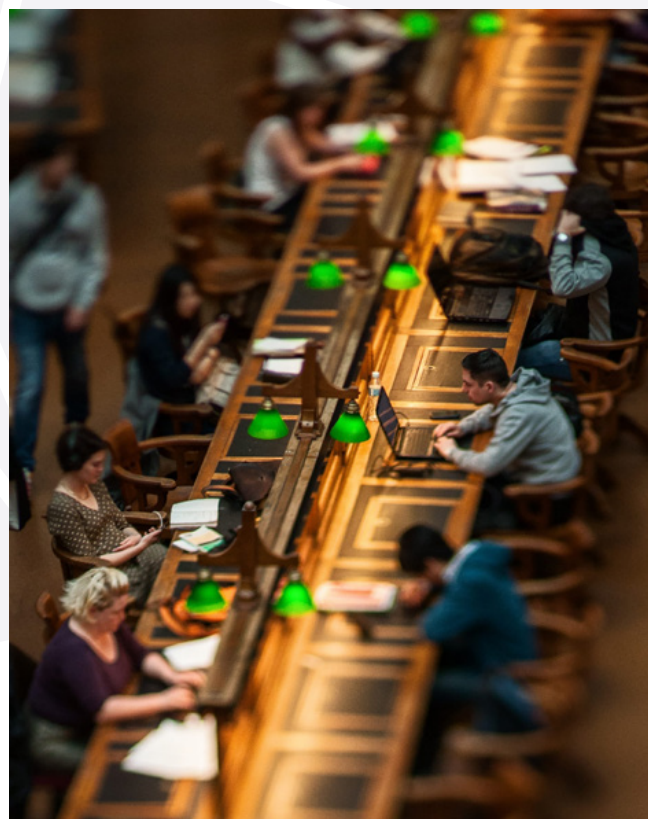
To assess the trends in pathways in energy education and explore synergies and different foci, we used data generated by two recent censuses conducted by NCSE of US baccalaureate and graduate programs, one conducted in 2012 and one in 2016. Both sought to comprehensively characterize the scope of baccalaureate and graduate degree programs in environment, sustainability, natural resources, energy and other interdisciplinary programs focused on the environment (such as marine sciences, earth systems science and water resources and watershed management). Also included were disciplinary degrees and degrees in professional fields with formal IESE specializations, as well as certificate and minor programs. Full results of the censuses are available to NCSE institutional members (contact NCSE for these reports).

Each census was conducted by reviewing the websites and online catalogs of all four-year colleges using the comprehensive Carnegie Classification List. In 2012, the website and catalogs of 1,602 four-year colleges were reviewed, and in 2016 this number increased to 1,690 (see Appendix, Table A, for a breakdown of the different types of Carnegie Classified Institutions reviewed, including the total number of doctoral institutions, tribal colleges, etc.).

Each census identified a subset of IESE programs focused on energy. Specifically, the censuses sought to identify and characterize “non-traditional broad energy” (NTBE) academic programs. Non-traditional broad energy programs were defined as those that focus on energy sources other than fossil fuels, hydroelectric power and nuclear energy and those that focus on energy broadly. This includes programs focused on renewable and alternative energy, energy and sustainability, energy in the context of business or organizational management, energy efficiency, energy policy and law, and energy public affairs and planning. Not included in the census were programs focused on traditional energy sources or programs that could not be identified by name (such as programs in geosciences or engineering with substantive energy content but without a formal specialization).

Following the overall structure of the censuses, three types of NTBE programs were identified: 1) disciplinary/professional-based degree programs with energy specializations, 2) interdisciplinary/general NTBE energy programs, and 3) energy-oriented minors and certificate programs. The energy related programs were identified by degree and specialization names, not by curricular content. In Tables B-D in the Appendix, these three types of programs identified in the 2016 census are listed by name, institution (and whether it is a public or private non-for-profit university), academic unit, and degree level (bachelors, masters, or doctorate).

In the spring of 2018, preliminary work for the development of a report focused on the energy related programs was passed on to Drs. Valerie Luzadis and Paul Hirsch. Data received by Luzadis and Hirsch included lists of each of the three types of energy programs in the 2016 census (included in the Appendix as Tables B-D), as well as tabular data on numbers of programs coded according to fields and topics. Corresponding data were available



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for the 2012 census in a 2013 report published by NCSE that focused on NTBE programming (Vincent et al. 2013). Field/topic categorizations changed slightly between 2012 and 2016 to accommodate new program offerings, for example in Architecture Design and Planning.

In order to parse the data to understand the different trajectories of energy-related programming in higher education, we used the field categorizations as assigned by Vincent's team of census researchers to make a further distinction according to Sarewitz's distinction between Path 1 and Path 2 knowledge development. Field designations categorized as Path 1 and Path 2 are listed below¹.

Path 1 Fields /Topics: Agriculture, Biofuels, Alternative/Renewable Energy, Bioenergy, Biology, Chemistry, Geosciences, Engineering & Technology, Science/Technology, Physics, Wind/Solar/Nuclear Energy

Path 2 Fields /Topics: Architecture, Built Environment, Business, Climate, Design & Planning, Economics, Education, Energy and Environment, Environmental Studies/Science, Global Energy, Law, Leadership, Management, Natural Resources, Policy, Public Administration and Affairs, Social Science, Sustainability, Systems

Results

The 2012 census identified 310 NTBE degree programs: 164 programs in disciplines and professional fields with non-traditional energy specializations, 37 interdisciplinary or general degree programs, and 109 minor and certificate non-traditional energy programs. The 2016 NCSE census identified 460 NTBE degree programs: 211 programs in disciplines and professional fields with non-traditional energy specializations, 57 interdisciplinary or general non-traditional energy academic degree programs, and 192 minor and certificate non-traditional energy programs. Table 1 shows a comparison between the numbers of different types of energy programs in 2012 and 2016, along with the percent increase in each type.

Table 1. Comparison of Energy Programs, 2012 to 2016

	2012	2016	% Increase
Overall # of NTBE Programs Identified	310	460	48%
NTBE programs in disciplines and professional fields	164	211	29%
NTBE interdisciplinary or general degree programs	37	57	54%
NTBE minors and certificates	109	192	76%

The 2016 census identified 460 NTBE degree, minor or certificate programs, of which 268 are degree programs and 192 are minor or certificate programs. Tables 2 – 4 show the breakdowns for numbers of institutions and programs, according to Carnegie Classifications and public or private status.

¹ A few programs were coded as belonging to more than one field and in some cases this resulted in them being counted in both Path 1 and Path 2.

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**Table 2. Number of NTBE Disciplinary/Professional Degree Programs,
According to Carnegie Classifications - 2016 Census**

	NTBE Disciplinary/Professional Degree Programs					
	Public		Private		Total	
	Institutions	Programs	Institutions	Programs	Institutions	Programs
Doctoral Universities - Highest Research Activity	29	70	14	41	43	111
Doctoral Universities - Higher Research Activity	16	25	8	17	24	42
Doctoral Universities - Moderate Research Activity	4	4	3	5	7	9
Master's Colleges and Universities - Large Programs	9	10	4	5	13	15
Master's Colleges and Universities - Medium Programs	5	7	6	8	11	15
Master's Colleges and Universities - Smaller Programs	0	0	0	0	0	0
Baccalaureate Colleges - Arts and Sciences	2	2	3	6	5	8
Baccalaureate Colleges - Diverse Fields	2	4	4	4	6	8
Baccalaureate/Associate's Colleges - Mixed	2	2	0	0	2	2
Special Focus Four-Year			1	1	1	1
TOTAL	69	124	43	87	112	211

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**Table 3. Number of NTBE Interdisciplinary/General Degree Programs,
According to Carnegie Classifications - 2016 Census**

	NTBE Interdisciplinary/General Degree Programs					
	Public		Private		Total	
	Institutions	Programs	Institutions	Programs	Institutions	Programs
Doctoral Universities - Highest Research Activity	9	16	10	13	19	29
Doctoral Universities - Higher Research Activity	6	8	0	0	6	8
Doctoral Universities - Moderate Research Activity	1	1	0	0	1	1
Master's Colleges and Universities - Large Programs	8	8	3	3	11	11
Master's Colleges and Universities - Medium Programs	0	0	0	0	0	0
Master's Colleges and Universities - Smaller Programs	0	0	2	2	2	2
Baccalaureate Colleges - Arts and Sciences	0	0	0	0	0	0
Baccalaureate Colleges - Diverse Fields	2	2	2	3	4	5
Baccalaureate/Associate's Colleges - Mixed	1	1	0	0	1	1
Special Focus Four-Year	0	0	0	0	0	0
TOTAL	27	36	17	21	44	57

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**Table 4. Number of NTBE Minors and Certificate Programs,
According to Carnegie Classifications - 2016 Census**

	NTBE Minors and Certificate Programs					
	Public		Private		Total	
	Institutions	Programs	Institutions	Programs	Institutions	Programs
Doctoral Universities - Highest Research Activity	24	49	18	38	42	87
Doctoral Universities - Higher Research Activity	19	23	8	11	27	34
Doctoral Universities - Moderate Research Activity	4	6	2	2	6	8
Master's Colleges and Universities - Large Programs	12	17	7	10	19	27
Master's Colleges and Universities - Medium Programs	5	7	2	2	7	9
Master's Colleges and Universities - Smaller Programs	5	8	1	1	6	9
Baccalaureate Colleges - Arts and Sciences	1	1	3	3	4	4
Baccalaureate Colleges - Diverse Fields	2	2	3	5	5	7
Baccalaureate/Associate's Colleges - Mixed	5	5	0	0	5	5
Special Focus Four-Year	0	0	2	2	2	2
TOTAL	77	116	46	73	123	192

Comparisons of Path 1 and Path 2 programs are shown in Table 5, where we further distinguish among NTBE programs according to degree name alignment with Path 1 or Path 2, for both the 2012 and 2016 census data. The data indicate that the number of Path 1 aligned programs has stayed fairly constant between the two time periods - both those that have been classified as Disciplinary/Professional in orientation, and those that have been classified as General/Interdisciplinary. However, there has been a significant increase in Path 2 Energy Programs. Interestingly, the trend for Minors and Certificate programs is the opposite: a significant increase in the numbers with degree names corresponding to Path 1; no significant change in numbers with degree names corresponding to Path 2.

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Table 5. NTBE Programs, Path 1 and Path 2 Comparisons

	Disciplinary/ Professional NTBE Programs		Interdisciplinary/General NTBE Programs		NTBE Minors and Certificate Programs	
	2012	2016	2012	2016	2012	2016
Path 1 - Science & Technology Focus	89	91	21	19	65	103
	Not a significant change		Not a significant change		58% Increase	
Path 2 - Decision Making Focus	69	94	29	48	90	89
	36% Increase		66% Increase		Not a significant change	

Tables 6-8 show the breakdowns of the different categories according to specific field, and according to whether the program was at the bachelors, masters, professional, or doctoral level. Tables 6A and 6B below show field and topic categorizations for the 2012 and 2016 census in disciplinary and professional oriented degree programs with energy specializations. Tables 7A and 7B show field and topic categorizations for the 2012 and 2016 census for interdisciplinary/general NTBE degree programs; and Tables 8A and 8B show field and topic categorizations for the 2012 and 2016 census for minors and certificate programs. Path 1 Fields/Topics are shaded green, while Path 2 Fields/Topics are shaded blue.

Table 6A. Fields and Topics of Disciplinary Degree Programs with Energy Specializations - 2012 Census

Path	Fields/Topics*	Bachelors	Masters	PhD	Total
Path 1	Agriculture/Biofuels	5	1	0	6
	Geosciences	2	1	0	3
	Engineering & Technology	29	37	14	80
Path 1 Totals		36	39	14	89
Path 2	Business Administration/ Management	9	9	0	18
	Environmental Policy/ Management	4	4	0	8
	Environmental Studies, Science, or Systems	13	1	0	14
	Law/Policy/Public Affairs	1	21	3	25
	Sustainability	4	0	0	4
Path 2 Totals		31	35	3	69

* A total of 6 programs were categorized as “other” in the 2012 census and were not included in this analysis.

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**Table 6B. Fields and Topics of Disciplinary Degree Programs with Energy Specializations -
2016 Census**

Path	Fields/Topics	Bachelors	Masters	PhD	Total
Path 1	Agriculture	3	0	0	3
	Biology	1	0	0	1
	Chemistry	3	1	1	5
	Engineering & Technology	33	29	14	76
	Geosciences	3	2	0	5
	Physics	0	1	0	1
Path 1 Totals		43	33	15	91
Path 2	Architecture, Design & Planning	0	2	0	2
	Business/Management/ Economics	13	11	1	25
	Environmental Policy and Management	6	4	2	12
	Environmental Studies, Science, or Systems	15	2	0	17
	Law, Policy, Public Administration and Affairs	2	26	1	29
	Social Science & Humanities	2	0	0	2
	Sustainability & Derivatives	6	1	0	7
Path 2 Totals		44	46	4	94

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Table 7A. Fields and Topics of Interdisciplinary/General NTBE programs - 2012 Census

Path	Fields/Topics	Bachelors	Masters	PhD	Total
Path 1	Alternative/Renewable Energy/ Bioenergy	5	3	1	9
	Science/Technology	7	3	2	12
Path 1 Totals		12	6	3	21
Path 2	Energy and Environment	4	3	3	10
	Energy Management	2	1	0	3
	Energy Policy	4	4	3	11
	Energy and Sustainability	3	0	0	3
	Energy Systems	0	1	1	2
Path 2 Totals		13	9	7	29

Table 7B. Fields and Topics of Interdisciplinary/General NTBE programs - 2016 Census

Path	Fields/Topics	Bachelors	Masters	PhD	Total
Path 1	Alternative Energy	1	5	0	6
	Engineering and Technology	5	4	3	12
	Geoscience	1	0	0	1
Path 1 Totals		7	9	3	19
Path 2	Design and Planning	1	1	0	2
	Energy Management	8	2	0	10
	Energy Policy	6	5	3	14
	Energy and Sustainability	7	4	0	11
	Energy Systems	1	3	2	6
	Global Energy	1	0	0	1
Path 2 Totals		24	15	5	44

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Table 8A. Fields and Topics of Energy Minors and Certificate Programs - 2012 Census

Path	Fields/Topics	Under-graduate	Graduate	Professional	Total
Path 1	Alternative/Renewable Energy	20	7	2	29
	Engineering/Technology/Science	17	7	3	27
	Wind, Solar, or Nuclear Energy	4	3	2	9
Path 1 Totals		41	17	7	65
Path 2	Built Environment	3	0	0	3
	Business Administration/ Management/Economics	16	7	1	24
	Energy Law	0	3	0	3
	Energy Policy	3	2	0	5
	Energy Studies/General	10	2	0	12
	Resources/Water	4	0	0	4
	Sustainability/ Environment/Climate	24	6	4	34
	Systems	3	1	1	5
Path 2 Totals		63	21	6	90

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Table 8B. Fields and Topics of of Energy Minors and Certificate Programs - 2016 Census

Path	Fields/Topics	Under-graduate	Graduate	Professional	Total
Path 1	Engineering	21	7	2	30
	Science & Technology	47	21	5	73
Path 1 Totals		68	28	7	103
Path 2	Business and Economics	3	4	0	7
	Climate	2	0	0	2
	Design and Planning/ Built Environment	2	1	2	5
	Education	0	1	0	1
	Environment & Sustainability	26	9	6	41
	Management and Leadership	4	8	1	13
	Natural Resources	3	0	0	3
	Policy & Law	5	12	0	17
Path 2 Totals		45	35	9	89



Limitations

There are several limitations to this analysis that should be considered in interpreting the results and deriving implications. First, we may have been unable to identify some programs that focus on environment, sustainability, natural resources or energy because they do not explicitly refer to these categories in the program name. Newly established programs and recent changes to existing programs may also not be represented. Second, defining the focus of census data as on energy sources other than fossil fuels, hydroelectric power and nuclear energy limits understanding of how programs focused on these traditional energy sources might be changing, especially in relation to non-traditional programs.

In addition, there is a possibility that Path 1 programs may be diversifying content to add more social dimensions. If this is the case, we may not be seeing the full magnitude of growth in Path 2 forms of knowledge development. We also have not analyzed enrollments of the different types of programs; the demographics and diversity of different programs may also shed light on

programmatic balance. We can assume in the positive direction that we do not often see program growth without enrollment growth (typical of higher education trends). It remains possible, however, that even though there are fewer institutions hosting Path 1-type programs, enrollments may be increasing.

Discussion

The significant finding from this analysis is that to tell the full story regarding the evolution of energy education programming in higher education we must look beyond the overall increase in NTBE programming, even if we account for the different trajectories of disciplinary/professional, interdisciplinary/general, and minors & certificates. By distinguishing NTBE programming according to fields or topics that correspond to Sarewitz's distinction between Path 1 and Path 2 approaches to knowledge development, we can characterize trends in a way that allows for substantive and critical discussion of prevailing trends.

It is most significant to note that, while overall NTBE programming increased by 48 percent from 2012 to 2016, there was no growth in that time period in degree programs classified as Path 1, either in the professional/ disciplinary category or in the interdisciplinary/general category. For Path 1 fields, all of the significant growth occurred within minors and certificate programs, which grew by 58 percent. Conversely, there was significant growth in Path 2 fields, both in programs classified as disciplinary/professional (36 percent increase) and those classified as interdisciplinary/general (66 percent increase). Path 2 fields however saw no significant increase in minors and certificate programs.

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On the one hand, these findings confirm Blockstein's insight that energy is more than a technical challenge for society. At the same time, we note Sarewitz's concerns that innovative potential not be diminished due to a shift in attention to Path 2. It is interesting to note that the growth in minors may be a nod to this concern in some way. One might understand a growth in minors and concentrations as being a way of enhancing technical and physical science knowledge for students in Path 2. Conversely, one might be concerned that unless we also have a critical mass of educational activity along Path 1, a minor may not allow for the technical innovations we might need to transform as we would desire.

One of the benefits of having a diversity of educational offerings within the energy education landscape is that different types of students are attracted to different types of programs. Opening up alternative pathways to knowledge development results in greater diversity of students who are engaging with energy education. Recognizing the importance of the growth in Path 2 educational opportunities, the question we ask in the academy, then, is: how do we ensure the disciplinary foundations for technical and scientific innovations related to sustainable energy pathways? One of the challenges in Path 1 from an academic perspective is appropriately keeping up with technical changes in the field, which requires ongoing investment at multiple levels. Given this, we might consider that the growth of Path 2 programs in fact may support Path 1 programs by appropriate attention to policies that support sustainable energy pathways.

These issues are not only of academic import. Educational programs that emphasize different pathways of knowledge development will provide different mixes of the training and skill-sets that employers are asking for and students are hoping to provide. The reality of higher education, furthermore, is that enrollment varies in part on the basis of labor markets. The fluctuating prices of energy (which have gone down since 2008) have depressed much of the labor market around traditional energy resources, which is growing at a slower rate now. At the same time, job creation in the fields of renewable energy and energy efficiency has increased². This might explain some of the change in balance between Path 1 and Path 2.

The interplay between higher education and labor markets is complex and dynamic – educational programmers must both adapt to fluctuating labor markets *and* forge the way towards needed societal developments and transitions yet to come. As we work to achieve the right balance of energy programming in the US higher education landscape, therefore, we would do well to heed the reminders of both Sarewitz and Blockstein and co-authors. Sarewitz reminds us not to focus so intently on Path 2 that we forget to invest in Path 1; Blockstein reminds us that technical innovation needs to be coupled with societal engagement for greatest impact, thus we must not fail to invest in Path 2. In a very real way, students who follow these complementary pathways to knowledge development in the field of energy will define the energy landscape going forward.

² <https://www.usenergyjobs.org/report/>
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APPENDIX

Table A. Carnegie Classifications Included in the 2016 Census

Carnegie Code	Basic Carnegie Classification	2010 Carnegie Data	2015 Carnegie Data		
15	Doctoral Universities: Highest Research Activity	108	116		
16	Doctoral Universities: Higher Research Activity	98	106		
17	Doctoral Universities: Moderate Research Activity	75	93		
Total Doctoral Universities		281	315		
18	Master's Colleges and Universities: Larger Programs	381	371		
19	Master's Colleges and Universities: Medium Programs	165	191		
20	Master's Colleges and Universities: Small Programs	96	121		
Total Master's Colleges and Universities		642	683		
21	Baccalaureate Colleges: Arts and Sciences	266	244		
22	Baccalaureate Colleges: Diverse Fields	323	262		
23	Baccalaureate/Associate's Colleges: Mixed Baccalaureate/Associate's	58	79		
14	Baccalaureate/Associate's Colleges: Associate's Dominant (new in 2015)	-	72		
Total Baccalaureate Colleges		647	657		
33	Tribal Colleges	32	35		
Total Four Year		1,602	1,690		
24	Special Focus Four-Year: Faith-Related Institutions	298	304		
25	Special Focus Four-Year: Medical Schools & Centers	50	50		
26	Special Focus Four-Year: Other Health Professions Schools	162	134		
27	Special Focus Four-Year: Engineering Schools	6	5		
28	Special Focus Four-Year: Other Technology-Related Schools	3	4		
29	Special Focus Four-Year: Business and Management Schools	20	26		
30	Special Focus Four-Year: Arts, Music and Design Schools	60	59		
31	Special Focus Four-Year: Law Schools	29	29		
32	Special Focus Four-Year: Other Special Focus Institutions	16	26		
Total Special Focus Four Year		644	637		
Special Designations		Four-Year	Special Focus	Four-Year	Special Focus
Historically Black College and Universities		82	5	82	7
Hispanic-serving Institutions		65	5	112	15
Minority-serving Institutions		168	23	309	31
Women's Colleges		45	1	40	1

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APPENDIX *continued*

Table B. Disciplinary/professional degree programs with energy specializations (2016 NCSE Census)

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity			
Arizona State University	Public	School of Electrical, Computer and Energy Engineering; Ira A. Fulton Schools of Engineering	Bachelor of Electrical Engineering: Electric Power and Energy Systems
		School of Sustainability	BS Sustainability: Sustainable Energy, Materials and Technology, PhD in Sustainable Energy
		The Design School; Herberger Institute for Design and the Arts	MS Built Environment: Energy Performance and Climate Responsive Architecture
		School for Engineering of Matter, Transport and Energy; Ira A. Fulton Schools of Engineering	Professional Science Master's: Solar Energy Engineering and Commercialization
Columbia University	Private NFP	School of International and Public Affairs	Master of International Affairs: Energy and Environment
			Master of Public Affairs: Energy and Environment
		Department of Earth and Environmental Engineering; School of Engineering and Applied Science	MS Earth Resources Engineering: Sustainable Energy
Cornell University	Private NFP	School of Chemical and Biomolecular Engineering; College of Engineering	Master of Engineering in Chemical Engineering: Energy Economics and Engineering
			PhD Chemical Engineering: Energy Economics and Engineering
Duke University	Private NFP	Division of Environmental Sciences and Policy; Nicholas School of the Environment	Master of Environmental Management: Energy and Environment
Florida State University	Public	Department of Mechanical Engineering; College of Engineering	MS Mechanical Engineering: Sustainable Energy
George Washington University	Private NFP	School of Law	Master of Laws in Environmental and Energy Law: International Environmental Law
			Master of Laws in Environmental and Energy Law: Government Procurement and Environmental Law
			Master of Laws in Environmental and Energy Law: Environmental Law
			Master of Laws in Environmental and Energy Law: Energy and Environmental Law

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
Indiana University Bloomington	Public	Integrated Program in the Environment; College of Arts and Sciences and School of Public and Environmental Affairs	BA Environmental and Sustainability Studies: Sustainable Energy and Resources
		School of Public and Environmental Affairs	Master of Public Affairs: Energy
		School of Public and Environmental Affairs	MS Environmental Science: Energy
Iowa State University	Public	Department of Mechanical Engineering; College of Engineering	Master of Engineering: Energy Systems Engineering
North Carolina State University at Raleigh	Public	Department of Chemical and Biomolecular Engineering; College of Engineering	BS Chemical Engineering: Sustainable Engineering, Energy and the Environment
			MS Chemical Engineering: Biofuels and Renewable Energy Technology
The Ohio State University	Public	School of Architecture; College of Engineering	Master of City and Regional Planning: Energy, Environment and Sustainability
Oregon State University	Public	Environmental Science Undergraduate Program, College of Earth, Ocean, and Atmospheric Sciences	BS Environmental Sciences: Alternative Energy
		School of Public Policy; College of Liberal Arts	BS Political Science: Environmental and Energy Politics
Pennsylvania State University	Public	Department of Geosciences, College of Earth and Mineral Sciences	BS Earth Science and Policy: Energy
		Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences and College of Business	BS Engineering: Energy
			BS Energy Business and Finance: Energy Systems
			MS Energy and Mineral Engineering: Energy Management and Policy, Fuel Science or Environmental Health and Safety
			PhD Energy and Mineral Engineering: Energy Management and Policy, Fuel Science or Environmental Health and Safety
		Department of Chemical Engineering; College of Engineering	BS Chemical Engineering: Energy and Fuels Engineering
Rice University	Private NFP	Policy Studies Program; School of Social Sciences	BA Policy Studies: Energy Policy Studies
		Department of Economics; School of Social Sciences	Master of Energy Economics

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
Stanford University	Private NFP	Public Policy Program; School of Humanities and Sciences	BA Public Policy: Resources, Environment and Energy Policy
			Master of Public Policy: Resources, Environment and Energy Policy
		Earth Systems Program; School of Earth, Energy and Environmental Science	BS Earth Systems: Energy, Science and Technology
		Department of Civil and Environmental Engineering; School of Engineering	BS Civil and Environmental Engineering: Atmosphere and Energy
			MS Civil and Environmental Engineering: Atmosphere and Energy
			PhD Civil and Environmental Engineering: Atmosphere and Energy
		Department of Energy Resource Engineering; School of Earth, Energy and Environmental Science	BS Engineering: Energy Resource Engineering
			MS Engineering: Energy Resource Engineering
			PhD Engineering: Energy Resource Engineering
Temple University	Private NFP	Department of Mechanical Engineering; College of Engineering	BS Mechanical Engineering: Energy Systems
			MS Mechanical Engineering: Energy Systems
		Center for Technology, Engineering and Management	BS Engineering Technology: Environmental Technology or Energy Technology
Texas Tech University	Private NFP	Rawls College of Business	Bachelors of Business Administration: Energy Commerce
Tulane University	Private NFP	School of Law	Master of Laws: Environmental and Energy Law
University of Arizona	Public	School of Architecture; College of Architecture, Planning and Landscape Architecture	MS Architecture: Design and Energy Conservation

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of California, Berkeley	Public	Engineering Science Program; College of Engineering	BS Engineering: Energy
		Center for Law, Energy and the Environment	Master of Laws: Environmental and Energy Law
		Department of Civil and Environmental Engineering; College of Engineering	MS Civil and Environmental Engineering: Energy, Civil Infrastructure and Climate
			PhD Civil and Environmental Engineering: Energy, Civil Infrastructure and Climate
		Department of Agricultural and Resource Economics; College of Natural Resources	PhD Agriculture and Resource Economics: Environmental and Energy Economics
		Center for Law, Energy and the Environment	Juris Doctor: Environmental and Energy Law
University of California, Davis	Public	Department of Environmental Science and Policy; College of Agricultural and Environmental Sciences	BS Environmental Policy Analysis and Planning: Energy and Transportation Planning
University of California, Santa Barbara	Public	Bren School of Environmental Science and Management	Master of Environmental Science and Management: Energy and Climate
University of Colorado Boulder	Public	Environmental Engineering Program; College of Engineering and Applied Science	BS Environmental Engineering: Energy Conversion
University of Delaware	Public	Environmental Science and Studies Program; College of Earth, Ocean and Environment	BS Environmental Science: Energy and Environment
		Center For Energy and Environmental Policy	PhD Energy and Environmental Policy: Energy Policy
University of Houston	Public	Department of Finance; Bauer College of Business	Bachelor of Business Administration: Global Energy Management
			MS Business: Global Energy Management
		Environment, Energy and Natural Resources Center; College of Law	Master of Laws: Energy, Environment, and Natural Resources Law
University of Illinois at Chicago	Public	Department of Mechanical and Industrial Engineering; College of Engineering	Master of Energy Engineering

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of Illinois at Urbana-Champaign	Public	Department of Agricultural and Biological Engineering; College of Agricultural, Consumer, and Environmental Sciences	BS Technical Systems Management: Renewable Energy Systems
			BS Agricultural Engineering: Renewable Energy Systems
			MS Agricultural and Biological Engineering: Energy and Sustainability Engineering
			PhD Agricultural and Biological Engineering: Energy and Sustainability Engineering
		Department of Civil and Environmental Engineering; College of Engineering	BS Civil Engineering: Energy-Water-Environment Sustainability, Sustainable and Resilient Infrastructure Systems, or Environmental Engineering and Science
		Department of Civil and Environmental Engineering; College of Engineering	MS Civil Engineering: MS Energy-Water-Environment Sustainability, Sustainable and Resilient Infrastructure Systems, or Environmental Engineering and Science
University of Michigan-	Public	Department of Civil and Environmental Engineering; College of Engineering	PhD Civil Engineering: Energy-Water-Environment Sustainability, Sustainable and Resilient Infrastructure Systems, or Environmental Engineering and Science
		Engineering Sustainable Systems Program; College of Engineering	Master of Engineering: Energy Systems
University of Minnesota Twin Cities	Public	Energy System Engineering Program; College of Engineering Integrative Systems and Design	Master of Energy System Engineering
		Department of Bioproducts and Biosystems Engineering; College of Food, Agriculture and Natural Resource Sciences and College of Science and Engineering	BS Sustainable Systems Management: Energy Systems
University of Nebraska-Lincoln	Public	Department of Agricultural Economics; School of Natural Resources; College of Agricultural Sciences and Natural Resources	BS Natural Resources and Environmental Economics: Energy Economics
University of North Texas	Private NFP	College of Business	Master in Business Administration: Energy
		Department of Mechanical and Energy Engineering; College of Engineering	BS Engineering: Mechanical and Energy Engineering
			BS Engineering: Mechanical and Energy Engineering
University of Oklahoma	Public	College of Business	Bachelor of Business Administration: Energy Management

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of Pennsylvania	Private NFP	Department of History and Sociology; School of Arts and Sciences	BS History and Sociology: Energy, Environment and Technology
University of Pittsburgh	Public	Graduate School of Public and International Affairs	Master of International Development: Energy and Environment
			Master of Public Administration: Energy and Environment
University of South Florida	Public	Patel College of Global Sustainability	MA Global Sustainability: Sustainable Energy
University of Southern California	Private NFP	Environmental Studies Program; College of Letters, Arts and Sciences	BA Environmental Studies: Sustainability, Energy and Society
			BS Environmental Studies: Sustainability, Energy and Society
		Department of Civil and Environmental Engineering; School of Engineering	PhD Environmental Engineering: Energy and the Environment
University of Tennessee-Knoxville	Public	Bredesen Center for Interdisciplinary Research and Graduate Education; College of Arts and Sciences; College of Agricultural Sciences and Natural Resources; College of Engineering and Oak Ridge National Laboratory	PhD Engineering: Energy Science and Engineering
University of Texas at Austin	Public	Department of Geological Sciences; John A. and Katherine G. Jackson School of Geosciences	MA Geosciences: Energy and Earth Resources
			MS Geosciences: Energy and Earth Resources
		Department of Materials Science and Engineering; Cockrell School of Engineering and Texas Materials Institute	MS Engineering: Clean Energy Materials
			PhD Engineering: Clean Energy Materials
		Department of Electrical and Computing Engineering; Cockrell School of Engineering	MS Electrical Engineering: Energy Systems
			PhD Electrical Engineering: Energy Systems
		School of Law	Masters of Laws: Global Energy, International Arbitration and Environmental Law
		LBJ School of Public Affairs	Master of Global Policy Studies: International Energy, Environment and Technology
		McCombs School of Business	Master of Business Administration: Energy Finance

Energy Programs In Higher Education In The United States:
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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of Utah	Public	Department of Mechanical Engineering; College of Engineering	BS Mechanical Engineering: Thermal Science and Energy Engineering
		Department of Chemical Engineering; College of Engineering	BS Chemical Engineering: Energy Engineering
		Wallace Steger Center for Land, Resources and the Environment; College of Law	Master of Laws: Energy, Environmental, and Natural Resources Law
University of Wisconsin-Madison	Public	La Follette School of Public Affairs	Master of Public Affairs: Energy and Environmental Policy certificate
		La Follette School of Public Affairs	Master of International Public Affairs: Energy and Environmental Policy certificate
Washington State University	Public	Department of Biological Systems Engineering; College of Agricultural, Human, and Natural Resource Sciences	MS Biosystems Engineering: Bioenergy and Bioproducts
			PhD Biosystems Engineering: Bioenergy and Bioproducts
Washington University in St Louis	Private NFP	Department of Energy, Environmental and Chemical Engineering; College of Arts and Sciences	PhD Engineering: Energy, Environmental and Chemical Engineering
		Department of Earth and Planetary Sciences; College of Arts and Sciences	BS Environmental Earth Sciences: Climate and Energy
		Department of Energy, Environmental and Chemical Engineering; College of Arts and Sciences	Master of Engineering in Energy, Environmental and Chemical Engineering: Advanced Energy Technologies
			Master of Engineering in Energy, Environmental and Chemical Engineering: Energy and Environmental Management
			Master of Engineering in Energy, Environmental and Chemical Engineering: Energy and Environmental Nanotechnology
			PhD Engineering: Energy, Environmental and Chemical Engineering
West Virginia University	Public	College of Law	Master of Laws: Energy and Sustainable Development Law
Yale University	Private NFP	Department of Geology and Geophysics; Yale College	BS Geology and Geophysics: Environmental and Energy Geoscience
		School of Forestry and Environmental Studies	Master of Environmental Management: Energy and the Environment

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Higher Research Activity			
Catholic University of America	Private NFP	Department of Physics; School of Arts and Sciences	MS Physics: Nuclear Environmental Protection
Florida Institute of Technology	Private NFP	Department of Chemistry; College of Science	BS Chemistry: Renewable Energy and Catalysis
			MS Chemistry: Renewable Energy and Catalysis
			PhD Chemistry: Renewable Energy and Catalysis
Illinois Institute of Technology	Private NFP	Department of Chemical and Biological Engineering; Armour College of Engineering	MS Chemical Engineering: Energy and Environmental Economics
			Master of Chemical Engineering: Energy and Environment Economics
			PhD Chemical Engineering: Energy and Environment Economics
Illinois State University	Public	School of Biological Sciences; College of Arts and Sciences	BS Biological Sciences: Bioenergy
Indiana University-Purdue University-Indianapolis	Public	Department of Mechanical Engineering; Purdue School of Engineering and Technology	BS Engineering: Energy Engineering
Lehigh University	Private NFP	Energy Systems Engineering Institute; College of Engineering and Applied Science	Professional Master of Engineering: Energy Systems Engineering
Mississippi State University	Public	Department of Agricultural and Biological Engineering; College of Agriculture and Life Sciences; Division of Agriculture, Forestry, and Veterinary Medicine	BS Engineering Technology: Bioenvironmental Systems, Renewable Energy
Montana State University	Public	Sustainable Food and Bioenergy Systems Program; Department of Land Resources and Environmental Science, Department of Plant Sciences and Plant Pathology, Department of Health and Human Development and Department of Animal and Range Sciences, College of Agriculture	BS Agriculture: Sustainable Food and Bioenergy Systems
New Mexico State University	Public	Department of Engineering Technology and Surveying Engineering; College of Engineering	BS Mechanical Engineering Technology: Renewable Energy Technology
			BS Electronics and Computer Engineering Technology: Renewable Energy Technology
North Carolina A & T State University	Public	School of Technology	MS Technology Management: Energy Security and Sustainability

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Higher Research Activity - <i>continued</i>			
Northern Illinois University	Public	Institute for the Study of the Environment, Sustainability, and Energy	BA Environmental Studies: Energy Studies
			BS Environmental Studies: Energy Studies
		Department of Technology; College of Engineering and Engineering Technology	BS Technology: Energy and Environmental Technology
Ohio University	Public	Department of Mechanical Engineering; College of Engineering and Technology	BS Engineering: Energy Engineering
Southern Illinois University-Carbondale	Public	Department of Agribusiness Economics; College of Agricultural Sciences	BS Agribusiness Economics: Energy and Environmental Policy
		Environmental Resources and Policy Program; Graduate School	PhD Environmental Resources and Policy: Energy and Mineral Resources
University of Colorado Denver	Public	Business School	MS Management: Global Energy Management
University of Dayton	Private NFP	Department of Mechanical and Aerospace Engineering; College of Engineering	MS Engineering: Renewable and Clean Energy
University of Denver	Private NFP	Environmental Policy and Management Program; University College Professional and Continuing Studies	Master of Applied Science: Environmental Policy and Management: Energy and Sustainability
University of Idaho	Public	Department of Biological Engineering; College of Engineering	BS Biological Engineering: Bioenergy Engineering
			Master of Engineering: Biological and Agricultural Engineering: BioEnergy
			PhD Engineering: Biological and Agricultural Engineering: BioEnergy
University of Maine	Public	School of Economics; College of Natural Sciences, Forestry and Agriculture	BA Economics: Renewable Energy
			BS Economics: Renewable Energy
University of Montana	Public	Environmental Studies Program; College of Humanities and Sciences	BA Environmental Studies: Sustainability Studies - Food, Water, Energy, Business
University of New Hampshire	Public	Department of Chemical Engineering; College of Engineering and Physical Sciences	BS Chemical Engineering: Energy
University of North Carolina at Charlotte	Public	Department of Civil and Environmental Engineering; College of Engineering	BS Civil Engineering: Water Resource and Environmental Engineering, Energy Infrastructure
University of North Dakota	Public	Institute for Energy Studies; School of Engineering and Mines	PhD Engineering: Energy or Environmental
		Energy Systems Engineering Graduate Program; School of Engineering and Mines	MS Engineering: Energy Systems Engineering
			Master of Engineering: Environmental Engineering, Energy Systems Engineering

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Higher Research Activity - <i>continued</i>			
University of Tulsa	Private NFP	School of Energy Economics, Policy and Commerce; College of Business	BA Economics: Energy Management
			BS Economics: Energy Management
			Master of Energy Business
			Masters of Business Administration: Energy Management
		College of Law	Master of Laws in Energy and Natural Resources Law for Foreign Lawyers
			Master of Jurisprudence in Energy Law
Worcester Polytechnic Institute	Private NFP	Department of Chemical Engineering; Division of Engineering	BS Chemical Engineering: Energy
Doctoral Universities - Moderate Research Activity			
Boise State University	Public	Department of Public Policy and Administration; School of Public Service	Master of Public Administration: Energy Policy and Administration
Edgewood College	Private NFP	Department of Chemistry, Geosciences and Physics; School of Arts and Science	BS Physics: Renewable Energy Emphasis
			BS Chemistry: Renewable Energy Emphasis
Indiana University of Pennsylvania	Public	Department of Geoscience; College of Natural Sciences and Mathematics	BS Geology: Energy Resources
Rochester Institute of Technology	Private NFP	Department of Manufacturing and Mechanical Engineering; College of Applied Science and Technology	BS Mechanical Engineering: Clean and Renewable Energy
			BS Electrical Engineering: Clean and Renewable Energy
San Francisco State University	Public	School of Engineering; College of Science and Engineering	MS Engineering: Energy System
University of Hartford	Private NFP	Department of Mechanical Engineering; College of Engineering, Technology and Architecture	BS Mechanical Engineering: Energy and Sustainability
Wright State University	Public	Department of Mechanical and Materials Engineering; College of Engineering and Computer Science	MS Engineering: Renewable and Clean Energy
Master's Colleges and Universities - Large Programs			
Appalachian State University	Public	Department of Sustainable Technology and the Built Environment; College of Fine and Applied Arts	MS Engineering: Renewable Energy Engineering
California State University-Chico	Public	Department of Geological and Environmental Sciences; College of Natural Sciences	BS Environmental Science: Energy and Earth Resources
Eastern Kentucky University	Public	School of Applied Arts and Technology; College of Business and Technology	BS Agriculture: Agricultural Energy Systems Management

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Master's Colleges and Universities - Large Programs - <i>continued</i>			
Excelsior College	Private NFP	School of Business and Technology	BS Technology Management: Renewable Energy
Maharishi University of Management	Private NFP	Department of Sustainable Living	BA Sustainable Living: Renewable Energy
Oklahoma City University	Private NFP	Energy Program; Meinders School of Business	MS Laws: Energy Legal Studies
			MS Business: Energy Management
Saint Francis University	Private NFP	Department of Mathematics, Engineering, and Computer Science; School of Sciences	BS Environmental Engineering: Renewable Energy
San Jose State University	Public	Department of Environmental Studies; College of Social Sciences	BS Environmental Studies: Energy
Sonoma State University	Public	Department of Environmental Studies and Planning; School of Social Sciences	BA Environmental Studies and Planning: Energy Management and Design
			BS Environmental Studies and Planning: Energy Management and Design
Southeast Missouri State University	Public	Department of Industrial and Engineering Technology; School of Polytechnic Studies	BS Technology Management: Sustainable Energy Systems Management
Stockton University	Public	Sustainability Program; School of Natural Science and Mathematics	BS Sustainability: Energy
University of Central Missouri	Public	School of Environmental, Physical and Applied Sciences; College of Science and Technology	BS Chemistry: Alternative Energy
University of Colorado Colorado Springs	Public	College of Engineering and Applied Science	Master of Engineering: Energy Engineering
Master's Colleges and Universities - Medium Programs			
Arizona State University Polytechnic	Public	School of Electrical, Computer and Energy Engineering; Ira A. Fulton Schools of Engineering	BS Electronic Engineering Technology: Alternative Energy Technologies
			MS Technology: Alternative Energy Technologies or Environmental Technology Management
Ferris State University	Public	College of Engineering Technology	BS Engineering: Energy Systems Engineering
Franklin Pierce University	Private NFP	Masters of Business Administration: Energy and Sustainability Studies Program; College of Graduate and Professional Studies	Master of Business Administration: Energy and Sustainability Studies
Humboldt State University	Public	Department of Environmental Resources Engineering; College of Natural Resources and Sciences	BS Environmental Resources Engineering: Energy Resources
			MS Environmental Systems: Energy Technology and Policy

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Master's Colleges and Universities - Medium Programs - <i>continued</i>			
John Brown University	Private NFP	Department of Engineering; Division of Engineering and Construction Management	BS Engineering: Renewable Energy
Kettering University	Private NFP	Department of Mechanical Engineering	MS Engineering: Sustainable Energy and Hybrid Technology
Minnesota State University-Moorhead	Public	Department of Physics and Astronomy; College of Social and Natural Sciences	BS Sustainability: Energy Sustainability
Minot State University	Public	Department of Accounting and Finance	BS Business: Energy Economics and Finance
Union Graduate College	Private NFP	Department of Geology	BA Environmental Policy: Energy and Sustainability BS Environmental Science: Energy
University of the Southwest	Private NFP	School of Business and Professional Studies	Bachelor of Business Administration: Energy Management
Wheeling Jesuit University	Private NFP	Department of Environment and Sustainability	BS Environment and Sustainability: Sustainable Biofuels BS Environment and Sustainability: Sustainable Energy Systems
Baccalaureate Colleges - Arts and Sciences			
College of the Atlantic	Private NFP	Human Ecology Program	BA Human Ecology: Climate Change and Energy
Gettysburg College	Private NFP	Department of Environmental Studies	BA Environmental Studies: Energy and the Environment BS Environmental Studies: Energy and the Environment
Lewis and Clark College	Private NFP	Law School	Master of Studies in Environmental, Natural Resources, and Energy Law Master of Laws: Environmental, Natural Resources, and Energy Law Juris Doctor: Environmental, Natural Resources, and Energy Law
SUNY Canton (College of Technology)	Public	School of Engineering Technology	Bachelor of Technology: Alternative and Renewable Energy Systems
University of Pittsburgh-Johnstown	Public	Department of Energy and Earth Resources; Natural Science Division	BS Energy and Earth Resources: Energy Resource Geology or Environmental Geology

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Baccalaureate Colleges - Diverse Fields			
Dordt College	Private NFP	Department of Engineering	BS Engineering: Energy Systems
Keystone College	Private NFP	Division of Natural Sciences and Mathematics	BS Environmental Resource Management: Petroleum and Alternative Energy Sources
Marietta College	Private NFP	Department of Business and Economics	BA Management: Land and Energy Management
Oregon Institute of Technology	Public	College of Engineering, Technology and Management	BS Engineering: Renewable Energy Engineering
		Department of Civil Engineering; College of Engineering, Technology and Management	BS Civil Engineering: Environmental
		Renewable Energy Engineering Program; College of Engineering, Technology and Management	MS Engineering: Renewable Energy Engineering
Oklahoma Baptist University	Private NFP	Paul Dickinson College of Business; Graduate College	Master of Business Administration: Energy Management
University of Minnesota-Crookston	Public	Department of Agriculture and Natural Resources	BS Agricultural Systems Management: Bio-Fuels and Renewable Energy
Baccalaureate/Associate's Colleges - Mixed			
Pennsylvania College of Technology	Public	School of Construction and Design Technologies	BS Electrical Technology: Renewable Energy Technologies
SUNY College of Agriculture and Technology at Cobleskill	Public	Center for Environmental Science and Technology; School of Agriculture and Natural Resources	Bachelor of Technology: Environmental and Energy Technologies
Special Focus Four-Year			
Vermont Law School	Private NFP	Law School	Master of Laws: Energy Regulation and Law

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APPENDIX *continued*

Table C. Interdisciplinary/general non-traditional broad energy degree programs (2016 NCSE Census)

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity			
Boston University	Private NFP	Department of Earth and Environment; College of Arts and Sciences	MA Energy and Environment
Carnegie Mellon University	Private NFP	Carnegie Institute of Technology; Department of Civil and Environmental Engineering and Department of Engineering and Public Policy	MS Energy Science, Technology and Policy
		Energy Science, Technology and Policy Program; College of Engineering	MS Energy Science, Technology and Policy
Cornell University	Private NFP	Department of Earth and Atmospheric Sciences; College of Engineering	Master of Energy Studies
Georgetown University	Private NFP	Program in Science, Technology and International Affairs; School of Foreign Service	BS Science, Technology, and International Affairs: Energy and Environment
Harvard University	Private NFP	Graduate School of Design	Master in Design Studies: Energy and Environments
Iowa State University	Public	Wind Energy Science, Engineering, and Policy Program; College of Engineering; College of Liberal Arts and Sciences and College of Agriculture and Life Sciences	PhD Wind Energy Science, Engineering, and Policy
Northeastern University	Private NFP	Energy Systems Program; Graduate School of Engineering	MS Energy Systems
		Department of Civil and Environmental Engineering; Graduate School of Engineering	MS Engineering and Public Policy: Energy and Environment
Pennsylvania State University	Public	Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences	BA Energy and Sustainability Policy BS Energy and Sustainability Policy
		Renewable Energy and Sustainability Systems Program; Penn State World Campus (online)	Master of Professional Studies: Renewable Energy and Sustainability Systems
Syracuse University	Private NFP	Department of Physics; College of Arts and Sciences	BA Energy and Its Impacts
Texas A & M University- College Station	Public	Texas A & M Energy Institute	MS Energy
Texas Tech University	Private NFP	National Wind Institute	BS Wind Energy
			PhD Wind Energy
University of California, Berkeley	Public	Energy and Resources Program; Graduate College	MA Energy and Resources
			MS Energy and Resources
			PhD Energy and Resources

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of California, Davis	Public	Energy Systems Program; Graduate College	MS Energy Systems
			PhD Energy Systems
University of Delaware	Public	Center for Energy and Environmental Policy	BS Energy and Environmental Policy
			Master of Energy and Environmental Policy
			PhD Energy and Environmental Policy
University of Pennsylvania	Private FP	Vagelos Integrated Program in Energy Research; School of Arts and Sciences and School of Engineering and Applied Science	BS Vagelos Integrated Program in Energy Research
University of Rochester	Private NFP	Department of Chemical Engineering; School of Engineering and Applied Sciences	MS Alternative Energy
University of Tennessee, Knoxville	Public	Bredesen Center for Interdisciplinary Research and Graduate Education; College of Arts and Sciences; College of Agricultural Sciences and Natural Resources; College of Engineering and Oak Ridge National Laboratory	PhD Energy Science and Engineering
Wayne State University	Public	Alternative Energy Technology Program; College of Engineering	MS Alternative Energy Technology
West Virginia University	Public	Division of Resource Management; Davis College of Agriculture, Natural Resources, and Design	BS Environmental and Energy Resources Management
Doctoral Universities - Higher Research Activity			
Illinois State University	Public	Department of Technology; College of Applied Science and Technology	BS Renewable Energy
Miami University (Ohio)	Public	Institute for the Environment and Sustainability; College of Arts and Science	BA Energy
			BS Energy
Michigan Technological University	Public	Department of Social Sciences; College of Arts and Sciences	MS Environmental and Energy Policy
			PhD Environmental and Energy Policy
North Carolina A & T State University	Public	Energy and Environmental Systems Program; College of Arts and Sciences	PhD Energy and Environment Systems
Southern Illinois University, Carbondale	Public	Advanced Energy and Fuels Management Program; Graduate School	Professional Science Master's: Advanced Energy and Fuels Management
University of Wyoming	Public	School of Energy Resources	BS Energy Resource Management and Development

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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Doctoral Universities - Moderate Research Activity			
SUNY College of Environmental Science and Forestry	Public	Department of Forest and Natural Resource Management	BS Sustainable Energy Management
Master's Colleges and Universities - Larger Programs			
Central Washington University	Public	Institute for Integrated Energy Studies; College of the Sciences	BS Integrated Energy Management
Creighton University	Private NFP	Energy Technology Program; College of Arts and Sciences	BS Sustainable Energy Science
Eastern Illinois University	Public	Sustainable Energy Program; Graduate School	MS Sustainable Energy
James Madison University	Public	Department of Integrated Science and Technology; College of Integrated Science and Technology	BS Integrated Science and Technology: Energy
New York Institute of Technology	Private NFP	Department of Energy Management; School of Engineering and Computing Sciences	MS Energy Management
Santa Clara University	Private NFP	Sustainable Energy Program; School of Engineering	MS Sustainable Energy
SUNY Cortland	Public	Department of Physics	PSM Professional Science Master's: Sustainable Energy Systems
University of Michigan-Flint	Public	Department of Earth and Resource Science; College of Arts and Sciences	BS Energy and Sustainable Systems
University of Wisconsin-Platteville	Public	Department of Electrical Engineering; College of Engineering, Mathematics and Science	BS Sustainable and Renewable Energy
Western Illinois University	Public	Interdisciplinary Studies Renewable Energy Program; Honors College	BS Interdisciplinary Studies: Renewable Energy
Western Washington University	Public	Department of Energy Studies; University Interdisciplinary Programs	BA Energy Policy and Management
Master's Colleges and Universities - Smaller Programs			
Green Mountain College	Private NFP	Environmental Studies Program	BA Renewable Energy and Ecological Design
Harrisburg University of Science and Technology	Private NFP	Integrative Sciences: Environmental Science and Renewable Energy Program	BS Integrative Sciences: Environmental Science and Renewable Energy
Baccalaureate Colleges - Diverse Fields			
Everglades University	Private NFP	Land and Energy Management Program	BS Alternative and Renewable Energy Management
			BS Land and Energy Management
Rogers State University	Public	Department of Technology and Justice Studies; School of Professional Studies	Bachelor of Applied Technology: Renewable Energy Management

Energy Programs In Higher Education In The United States:
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APPENDIX *continued*

Institution	Control	Academic Unit	Degree Programs
Unity College	Private NFP	School of Environmental Citizenship	BS Sustainable Energy Management
University of Pittsburgh-Bradford	Public	Energy Institute	BS Energy Science and Technology
Baccalaureate/Associate's Colleges - Mixed			
Lake Michigan College	Public	Hanson Technology Center	BS Energy Production and Distribution

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APPENDIX *continued*

Table D. Energy minor and certificate programs (2016 NCSE Census)

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Highest Research Activity			
Arizona State University-Tempe	Public	School of Electrical, Computer and Energy Engineering; Ira A. Fulton Schools of Engineering	GR Certificate: Nuclear Power Generation
Arizona State University-Tempe	Public	School of Sustainability	UG Certificate: Energy and Sustainability
Boston University	Private NFP	Department of Mechanical Engineering; College of Engineering	GR Certificate: Energy and Sustainability
Boston University	Private NFP	Department of Earth and Environment; College of Arts and Sciences	UG Minor: Sustainable Energy
Clemson University	Public	Department of Industrial Engineering; College of Engineering, Computing and Sciences	UG Certificate: Renewable Energy
Cornell University	Private NFP	School of Chemical and Biomolecular Engineering, College of Engineering	UG Minor: Sustainable Energy
Duke University	Private NFP	Gendell Center for Engineering, Energy & the Environment; Nicholas School of the Environment, and Trinity College of Arts and Sciences	UG Certificate: Energy and Environment
Duke University	Private NFP	Energy Engineering Program; Pratt School of Engineering	UG Minor: Energy Engineering
George Mason University	Public	Department of Physics and Astronomy	UG Minor: Renewable Energy
George Washington University	Private NFP	Department of Mechanical and Aerospace Engineering, Department of Engineering Management and Systems Engineering; School of Engineering and Applied Science	GR Certificate: Energy Engineering and Management
George Washington University	Private NFP	Department of Engineering Management and System Engineering; School of Engineering and Applied Science	GR Certificate: Environmental and Energy Systems Management
Georgia Institute of Technology-Main Campus	Public	School of Mechanical Engineering; College of Engineering	UG Minor: Energy Systems
Harvard University	Private NFP	Environmental Science and Public Policy Program; Harvard University Center for the Environment	UG Minor: Energy and Environment
Iowa State University	Public	Engineering - LAS Online Learning; College of Engineering; College of Liberal Arts and Sciences	GR Certificate: Energy Systems Engineering
Massachusetts Institute of Technology	Private NFP	Department of Earth, Atmosphere and Planetary Sciences; School of Science	UG Minor: Energy Studies
Northeastern University	Private NFP	College of Engineering	GR Certificate: Energy Systems Management
Northeastern University	Private NFP	College of Engineering	GR Certificate: Renewable Energy
Northeastern University	Private NFP	College of Engineering	GR Certificate: Energy Systems

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Highest Research Activity - <i>continued</i>			
Northeastern University	Private NFP	College of Engineering	GR Certificate: Sustainable Energy Systems
Northeastern University	Private NFP	College of Engineering	UG Minor: Sustainable Energy Systems
Northwestern University	Private NFP	Institute for Sustainability and Energy	UG Certificate: Sustainability and Energy
Pennsylvania State University	Public	Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences	UG Minor: Energy Engineering
Pennsylvania State University	Public	Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences	UG Minor: Energy Business and Finance
Pennsylvania State University	Public	Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences	UG Minor: Global Business Strategies For The Earth, Energy, And Materials Industries
Pennsylvania State University	Public	Department of Energy and Mineral Engineering; College of Earth and Mineral Sciences	GR Minor: Energy And Mineral Engineering
Pennsylvania State University	Public	Department of Geosciences; College of Earth and Mineral Sciences	UG Minor: Watersheds and Water Resources; Energy Resources
Princeton University	Private NFP	Program in Sustainable Energy; Andlinger Center for Energy and the Environment and Department of Mechanical and Aerospace Engineering; College of Engineering	UG Certificate: Sustainable Energy
Purdue University	Public	Department of Mechanical Engineering; College of Engineering	UG Minor: Energy
Rice University	Private NFP	Department of Civil and Environmental Engineering; Brown School of Engineering	UG Minor: Energy and Water Sustainability
Stanford University	Private NFP	Department of Energy Resource Engineering; School of Earth, Energy and Environmental Science	GR Minor: Energy Resources Engineering
Stanford University	Private NFP	Department of Energy Resource Engineering; School of Earth, Energy and Environmental Science	UG Minor: Energy Resources Engineering
Syracuse University	Private NFP	College of Engineering and Computer Science	UG Minor: Renewable Energy
Syracuse University	Private NFP	Integrated Learning Majors; College of Arts and Sciences	UG Minor: Energy and its Impacts
Syracuse University	Private NFP	Department of Mechanical and Aerospace Engineering; College of Engineering and Computer Science	UG Minor: Energy Systems Engineering; Renewable Energy
Texas A & M University-College Station	Public	Texas A&M Energy Institute	GR Certificate: Energy
Texas Tech University	Private NFP	National Wind Institute	GR Certificate: Wind Energy (Technical)
Texas Tech University	Private NFP	National Wind Institute	GR Certificate: Wind Energy (Managerial)
Texas Tech University	Private NFP	Area of Energy, Economics, and Law; Rawls College of Business	UG Certificate: Energy

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Highest Research Activity - <i>continued</i>			
Texas Tech University	Private NFP	National Wind Institute	UG Certificate: Wind Energy
Texas Tech University	Private NFP	National Wind Institute	UG Minor: Wind Energy
The University of Texas-Austin	Public	Texas Executive Education; McCombs School of Business	GR Certificate: Energy
The University of Texas-Austin	Public	Graduate Portfolio Program in Energy Studies; The Energy Institute	GR Certificate: Energy Studies
The University of Texas-Austin	Public	Red McCombs School of Business	GR Certificate: Energy Management
The University of Texas-Austin	Public	Kay Bailey Hutchison Center for Energy, Law, and Business; McComb School of Business	GR Certificate: Global Energy, International Arbitration, and Environmental Law
Tulane University	Private NFP	School of Law	GR Certificate: Energy and Environmental Law
University of Arkansas	Public	Great Plains AG*IDEA Consortium (University of Arkansas, Kansas State University, Oklahoma State University and South Dakota State University)	GR Certificate: Bioenergy and Sustainable Technology
University of California-Berkeley	Public	Engineering Science Program; College of Engineering	UG Minor: Energy Engineering
University of California, Berkeley	Public	Energy and Resources Group	UG Minor: Energy Resources
University of California, Berkeley	Public	Environmental and Energy Law Program; College of Law	GR Certificate: Law Specialization in Energy and Clean Tech
University of California, Berkeley	Public	School of Law	GR Certificate: Program in Energy and Environmental Law
University of California, Davis	Public	Department of Biological and Agricultural Engineering; College of Agricultural and Environmental Sciences	UG Minor: Energy Science and Technology
University of California, Davis	Public	Department of Biological and Agricultural Engineering; College of Agricultural and Environmental Sciences	UG Minor: Energy Efficiency
University of California, Davis	Public	Department of Environmental Science and Policy; College of Agricultural and Environmental Sciences	GR Certificate: Conservation Management: Energy and Transportation Planning
University of California, Davis	Public	Department of Biological and Agricultural Engineering; College of Agricultural and Environmental Sciences	UG Minor: Energy Policy
University of Colorado Boulder	Public	Renewable and Sustainable Energy Institute	UG Certificate: Renewable and Sustainable Energy
University of Colorado Boulder	Public	Renewable and Sustainable Energy Institute	GR Certificate: Renewable and Sustainable Energy
University of Colorado Boulder	Public	Renewable and Sustainable Energy Institute	Professional Certificate: Renewable and Sustainable Energy
University of Hawai'i at Manoa	Public	Renewable Energy and Island sustainability	GR Certificate: Renewable Energy and Island Sustainability

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of Houston	Public	Global Energy Management Program; Department of Finance; Bauer College of Business	UG Certificate: Global Energy Management
University of Houston	Public	Graduate and Professional Programs; C.T. Bauer College of Business	GR Certificate: Economics of the Energy Value Chain
University of Houston	Public	The Honors College	UG Minor: Energy and Sustainability
University of Houston	Public	Graduate and Professional Programs; C.T. Bauer College of Business	GR Certificate: Energy Investment Analysis
University of Houston	Public	College of Liberal Arts and Social Sciences	GR Certificate: Global Energy, Development, and Sustainability
University of Houston	Public	Graduate and Professional Programs; C.T. Bauer College of Business	GR Certificate: Energy Finance
University of Houston	Public	Graduate and Professional Programs; C.T. Bauer College of Business	GR Certificate: Energy Risk Management
University of Iowa	Public	Department of Mechanical and Industrial Engineering; College of Engineering	UG Certificate: Wind Energy
University of Kansas	Public	School of Law	GR Certificate: Environmental, Energy and Natural Resources Law
University of Michigan	Public	Program in the Environment; School of Natural Resources and Environment and the College of Literature, Science, and the Arts	UG Minor: Energy Science and Policy
University of Nebraska-Lincoln	Public	Nebraska Center for Energy Sciences Research	UG Minor: Energy Science
University of Nebraska-Lincoln	Public	School of Natural Resources; College of Agricultural Sciences and Natural Resources	UG Minor: Food, Energy and Water in Society
University of North Texas	Private NFP	Department of Mechanical and Energy Engineering; College of Engineering	GR Certificate: Energy
University of North Texas	Private NFP	Department of Mechanical and Energy Engineering; College of Engineering	Professional Certificate: Energy Assessment of Buildings
University of North Texas	Private NFP	Department of Mechanical and Energy Engineering; College of Engineering	GR Minor: Mechanical and Energy Engineering
University of North Texas	Private NFP	Department of Mechanical and Energy Engineering; College of Engineering	UG Minor: Mechanical and Energy Engineering
University of Notre Dame	Private NFP	Department of Aerospace and Mechanical Engineering; College of Engineering	UG Minor: Energy Engineering
University of Notre Dame	Private NFP	Center for Sustainable Energy	UG Minor: Energy Studies
University of Oklahoma	Public	College of International Studies	UG Minor: Global Energy, Environment, and Resources
University of Pennsylvania	Private FP	Energy and Sustainability Minor Program; School of Engineering and Applied Science; College of Arts and Sciences	UG Minor: Energy and Sustainability

Energy Programs In Higher Education In The United States:
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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Highest Research Activity - <i>continued</i>			
University of Pennsylvania	Private FP	Kleinman Center for Energy Policy	GR Certificate: Energy Management and Policy
University of South Florida	Public	Patel College of Global Sustainability	GR Certificate: Energy Sustainability
University of Wisconsin-Madison	Public	Wisconsin Energy Institute	UG Certificate: Engineering: Energy Sustainability
University of Wisconsin-Madison	Public	Nelson Institute for Environmental Studies and the La Follette School of Public Affairs	GR Certificate: Energy Analysis and Policy
University of Wisconsin-Madison	Public	Nelson Institute for Environmental Studies and the La Follette School of Public Affairs	GR Minor: Energy Analysis and Policy
University of Wisconsin-Milwaukee	Public	Department of Mechanical Engineering; Graduate School of Engineering	GR Certificate: Energy Engineering
Washington University in Saint Louis	Private NFP	International Center for Advanced Renewable Energy and Sustainability	UG Certificate: Renewable Energy and the Environment
Washington University in Saint Louis	Private NFP	Department of Energy, Environmental & Chemical Engineering; School of Engineering & Applied Science	UG Minor: Energy Engineering
Wayne State University	Public	Alternative Energy Technology Program; College of Engineering	GR Certificate: Alternative Energy Technology
Doctoral Universities - Higher Research Activity			
Ball State University	Public	Department of Natural Resources and Environmental Management; College of Sciences and Humanities	UG Minor: Energy
Colorado School of Mines	Public	Energy Minor Program; Renewable Energy Materials Research Science and Engineering Center	UG Minor: Energy: Renewable Energy
Illinois Institute of Technology	Private NFP	Environmental and Energy Law JD Program; Chicago-Kent College of Law	GR Certificate: Environmental and Energy Law
Illinois Institute of Technology	Private NFP	Chemical and Biological Engineering Department; Armour College of Engineering	GR Certificate: Current Energy Issues
Indiana University-Purdue University-Indianapolis	Public	Department of Mechanical Engineering; Purdue School of Engineering and Technology	GR Certificate: Energy Management and Assessment
Lehigh University	Private NFP	Department of Mechanical Engineering and Mechanic,, College of Engineering and Applied Science	UG Minor: Energy Engineering
Mississippi State University	Public	James W. Bagley College of Engineering	UG Certificate: Energy
New Mexico State University	Public	Department of Engineering Technology and Surveying Engineering; College of Engineering	UG Minor: Renewable Energy Technologies
Oklahoma State University	Public	Biobased Products and Bioenergy Certificate Program; Biobased Products and Energy Center	GR Certificate: Bioenergy and Sustainable Technology
Portland State University	Public	Nohad A. Toulan School of Urban Studies and Planning; College of Urban & Public Affairs	GR Certificate: Energy Policy and Management

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Higher Research Activity - <i>continued</i>			
Rensselaer Polytechnic Institute	Private NFP	Interschool Minor in Energy, Science and Technology Studies; School of Humanities, Arts and Social Sciences	UG Minor: Energy
San Diego State University	Public	Center for Energy Studies	UG Minor: Energy Studies
South Dakota State University	Public	Department of Agricultural and Biosystems Engineering	GR Certificate: Bioenergy and Sustainable Technology
Southern Methodist University	Private NFP	Executive Education Programs; Cox School of Business	GR Certificate: Global Enterprise Leadership in the Energy Industry
Texas Christian University	Private NFP	TCU Energy Institute; College of Science and Engineering and Neeley; School of Business	UG Minor: Energy Technology and Management
The University of Montana	Public	Energy Technology Program; Department of Applied Computing and Engineering Technology	Professional Certificate of Applied Science: Sustainable Energy Technology
University of Alaska-Fairbanks	Public	Department of Science; College of Rural and Community Development, Bristol Bay Campus	Professional Certificate: Sustainable Energy
University of Dayton	Private NFP	Sustainability, Energy and the Environment Initiative	UG Minor: Sustainability, Energy and the Environment
University of Denver	Private NFP	Environmental Policy and Management Program; University College Professional and Continuing Studies	GR Certificate: Energy and Sustainability
			Professional Certificate: Energy and Sustainability
University of Maine	Public	Renewable Energy Program; College of Engineering and the College of Natural Sciences, Forestry, and Agriculture	UG Minor: Renewable Energy Economics and Policy
University of Maine	Public	Renewable Energy Program; College of Engineering and the College of Natural Sciences, Forestry, and Agriculture	UG Minor: Renewable Energy Engineering
University of Maine	Public	Renewable Energy Program; College of Engineering and the College of Natural Sciences, Forestry, and Agriculture	UG Minor: Renewable Energy Science and Technology
University of Massachusetts Boston	Public	School for the Environment	UG Minor: Clean Energy and Sustainability
University of Massachusetts Boston	Public	School for the Environment	UG/GR Certificate: Clean Energy and Sustainability
University of Massachusetts Lowell	Public	Electrical and Computer Engineering Department; Francis College of Engineering	GR Certificate: Energy Conversion
University of Nevada, Las Vegas	Public	Department of Civil and Environmental Engineering; College of Engineering	UG Minor: Solar and Renewable Energy
University of Nevada, Las Vegas	Public	Department of Civil and Environmental Engineering; College of Engineering	GR Certificate: Solar and Renewable Energy

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Doctoral Universities - Higher Research Activity - <i>continued</i>			
University of Nevada, Reno	Public	Department of Civil and Environmental Engineering; College of Engineering	UG Minor: Renewable Energy
University of North Carolina Charlotte	Public	Department of Civil and Environmental Engineering; College of Engineering	UG Minor: Energy Analytics
University of Toledo	Public	Department of Bioengineering; College of Engineering	UG Minor: Renewable Energy
University of Tulsa	Private NFP	Energy Management Program; School of Energy Economics, Policy and Commerce; College of Business	UG Minor: Energy Management
University of Tulsa	Private NFP	College of Law	GR Certificate: Sustainable Energy and Resources Law
Utah State University	Public	Department of Plants, Soils and Climate; College of Agriculture	UG Minor: Climate Change and Energy
Doctoral Universities - Moderate Research Activity			
Arizona State University-Downtown Phoenix	Public	School of Community Resources and Development; College of Public Service and Community Solutions	UG Certificate: Energy and Sustainability
Clarkson University	Private NFP	Clarkson Center for Sustainable Energy Systems	UG Minor: Sustainable Energy Systems Engineering
Robert Morris University	Private NFP	Department of Science; School of Engineering, Mathematics, and Science	UG Minor: Alternative Energy and Sustainability
SUNY College of Environmental Science and Forestry	Public	Department of Environmental Resource Engineering	UG Minor: Renewable Energy
University of Louisiana at Monroe	Public	Biofuel Production Operations Program; Sustainable Energy and Going Green Programs; Division of Continuing Education	Professional Certificate: Biofuel Production Operations
University of Louisiana at Monroe	Public	Wind Energy Professional Program; Sustainable Energy and Going Green Programs; Division of Continuing Education	Professional Certificate: Wind Energy Professional
University of Louisiana at Monroe	Public	Solar Power Professional Program; Sustainable Energy and Going Green Programs; Division of Continuing Education	Professional Certificate: Solar Power Professional
Wright State University	Public	Department of Mechanical and Materials Engineering; College of Engineering and Computer Science	UG Minor Engineering: Renewable and Clean Energy
Master's Colleges and Universities - Larger Programs			
Arkansas State University - Jonesboro	Public	College of Agriculture and Technology	UG Minor: Renewable Energy Technology
California State Polytechnic University, Pomona	Public	College of Engineering	UG Minor: Energy Engineering
Central Washington University	Public	Geography Department; College of the Sciences	UG Minor: Energy Studies

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Master's Colleges and Universities - Larger Programs - <i>continued</i>			
Citadel Military College of South Carolina	Public	Department of Mechanical Engineering; School of Engineering	GR Certificate: Power and Energy
Creighton University	Private NFP	Energy Technology Program; College of Arts and Sciences	UG Minor: Sustainable Energy Science
Lawrence Technological University	Private NFP	Department of Mechanical Engineering; College of Engineering	GR Certificate: Energy Engineering
Lawrence Technological University	Private NFP	Department of Mechanical Engineering; College of Engineering	UG Minor: Energy Engineering
New York Institute of Technology-Old Westbury	Private NFP	Department of Energy Management; School of Engineering and Computing Sciences	GR Certificate: Energy Technology
New York Institute of Technology-Old Westbury	Private NFP	Department of Energy Management; School of Engineering and Computing Sciences	UG Minor: Energy Science, Technology and Policy
Saint Francis University	Private NFP	School of Business	Professional Certificate: Renewable Energy
San Jose State University	Public	Environmental Studies Department; College of Social Sciences	UG Minor: Energy Policy and Green Building
Santa Clara University	Private NFP	Sustainable Energy Program; School of Engineering	GR Certificate: Renewable Energy
St Mary's University	Private NFP	Department of Physics and Earth Sciences; School of Science, Engineering and Technology	UG Minor: Energy Science and Technology
St Mary's University	Private NFP	Department of Physics and Earth Sciences; School of Science, Engineering and Technology	UG Minor: Energy Science and Policy
SUNY-Buffalo	Public	Department of Engineering Technology	UG Minor: Energy Systems
The University of Tennessee-Chattanooga	Public	College of Engineering and Computer Science	Professional Certificate: Electrical Engineering Smart Grid
The University of Tennessee-Chattanooga	Public	College of Engineering and Computer Science	Professional Certificate: Electrical Engineering Smart Power Distribution
The University of Tennessee-Chattanooga	Public	College of Engineering and Computer Science	Professional Certificate: Engineering Management Power Systems Management
The University of Tennessee-Chattanooga	Public	College of Engineering and Computer Science	Professional Certificate: Sustainable Electric Energy Certificate
University of Alaska-Anchorage	Public	Community and Technical College	UG Certificate: Sustainable Energy
University of Detroit Mercy	Private NFP	Interdisciplinary Engineering Graduate Programs; College of Engineering and Science	UG Certificate: Advanced Electric Vehicles

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Master's Colleges and Universities - Larger Programs - <i>continued</i>			
University of Minnesota-Duluth	Public	Department of Electrical Engineering; Swenson College of Science and Engineering	UG Minor: Energy Engineering
University of Southern Maine	Public	Department of Environmental Science; School of Environmental, Health, and Life Sciences, College of Science, Technology, and Health	UG Minor: Applied Energy
University of Southern Maine	Public	Department of Environmental Science; School of Environmental, Health, and Life Sciences; College of Science, Technology, and Health	UG Certificate: Applied Energy
University of Wisconsin-Platteville	Public	Department of Electrical Engineering; College of Engineering, Mathematics and Science	UG Minor: Renewable Energy
Western Washington University	Public	Department of Energy Studies; University Interdisciplinary Programs	UG Minor: Energy Policy
Western Washington University	Public	Department of Energy Studies, University Interdisciplinary Programs	UG Minor: Energy Science
Master's Colleges and Universities - Medium Programs			
Arizona State University-Polytechnic	Public	School of Community Resources and Development; College of Public Service and Community Solutions	UG Certificate: Energy and Sustainability
Franklin Pierce University	Private NFP	College of Graduate and Professional Studies	GR Certificate: Energy and Sustainability Studies
John Brown University	Private NFP	Department of Renewable Energy; Division of Engineering and Construction Management	UG Minor: Renewable Energy
Montana State University-Billings	Public	Department of Industry; City College at MSU Billings	GR Certificate: Sustainable Energy Technician
			Professional Certificate: Sustainable Energy Technician
			UG Certificate: Sustainable Energy Technician
Northern Michigan University	Public	Department of Engineering Technology; School of Technology and Applied Sciences	UG Minor: Alternative Energy
The University of Texas of the Permian Basin	Public	Department of Physical Sciences, College of Arts and Sciences	UG Minor: Energy Studies
University of Alaska-Southeast	Public	Department of Construction Technology; School of Career Education	Professional Certificate: Building Energy Retrofit Technician (Occupational Endorsement)
Master's Colleges and Universities - Smaller Programs N = 9			
Eastern Connecticut State University	Public	Department of Environmental Earth Science	UG Minor: Sustainable Energy Studies
Green Mountain College	Private NFP	Environmental Studies Program	UG Certificate: Renewable Energy and Ecological Design Certificate

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Master's Colleges and Universities - Smaller Programs N = 9 - <i>continued</i>			
SUNY-Oneonta	Public	Department of Earth and Atmospheric Sciences; School of Natural and mathematical Sciences	UG Minor: Energy
University of Hawaii-Hilo	Public	Energy Science Certificate Program	UG Certificate: Energy Science Certificate
University of Houston-Downtown	Public	Department of Management, Marketing and Business; College of Business	UG Minor: Energy Management
University of Wisconsin-Stevens Point	Public	Human Dimensions of Natural Resource Management Discipline; College of Natural Resources	GR Certificate: Energy Education
University of Wisconsin-Stevens Point	Public	Human Dimensions of Natural Resource Management Discipline; College of Natural Resources	UG Minor: Sustainable Energy
University of Wisconsin-Stevens Point	Public	Department of Paper Science and Engineering	UG Minor: Biofuels Engineering
University of Wisconsin-Stevens Point	Public	Human Dimensions of Natural Resource Management Discipline; College of Natural Resources	UG Certificate: Sustainable Energy
Baccalaureate Colleges - Arts and Sciences			
Alfred University	Private NFP	Renewable Energy Engineering Program, Inamori School of Engineering	UG Minor: Renewable Energy Engineering
Lewis and Clark College	Private NFP	Environmental and Natural Resources Law Program; Law School	GR Certificate: Environmental, Natural Resources, and Energy Law
Pennsylvania State University-Berks	Public	Energy Systems Certificate program, Electrical Engineering Technology; Division of Engineering, Business, and Computing	GR Certificate: Energy Systems
Union College-Schenectady	Private NFP	Energy Studies program minor, Department of Mechanical Engineering; College of Engineering	UG Minor: Energy Studies
Baccalaureate Colleges - Diverse Fields			
Embry-Riddle Aeronautical University-Prescott	Private NFP	College of Arts and Sciences	UG Minor: Alternative Energy
Marietta College	Private NFP	Department of Petroleum Engineering and Geology	UG Minor: Energy System Studies
Marietta College	Private NFP	Department of Petroleum Engineering and Geology	UG Minor: Energy System Engineering
Montana Tech of the University of Montana	Public	Trades and Technical Department	Professional Certificate of Applied Science: Energy Technology - Wind
Oklahoma Baptist University	Private NFP	Paul Dickinson College of Business; Graduate College	GR Certificate: Energy and Land Management
Oklahoma Baptist University	Private NFP	Paul Dickinson College of Business; Graduate College	GR Certificate: Energy Management
University of Maine-Presque Isle	Public	Environmental Science and Sustainability Program; College of Arts and Sciences	UG Certificate: Environmental Science, Energy and Climate Change

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APPENDIX *continued*

Institution	Control	Academic Unit	Minors and Certificates
Baccalaureate/Associate's Colleges - Mixed			
Bismarck State College	Public	Energy Program	UG Certificate: Energy Services and Renewable Technician
Lake Michigan College	Public	Energy Production Line Worker Program	UG Certificate: Energy Production Line Worker
Madison Area Technical College	Public	School of Applied Science, Engineering and Technology	UG Certificate: Wind Energy Technology
North Seattle College	Public	Sustainability Department	UG Certificate: Sustainable and Conventional Energy and Control Technology
Oklahoma State University	Public	Division of Science, Technology, Engineering and Mathematics	UG Certificate: Renewable and Sustainable Energy
Special Business/Law			
Pinchot University	Private NFP	Dean's Office	GR Certificate: Sustainable Energy Solutions
Vermont Law School	Private NFP	Certificate in Energy Law Program	GR Certificate: Energy Law