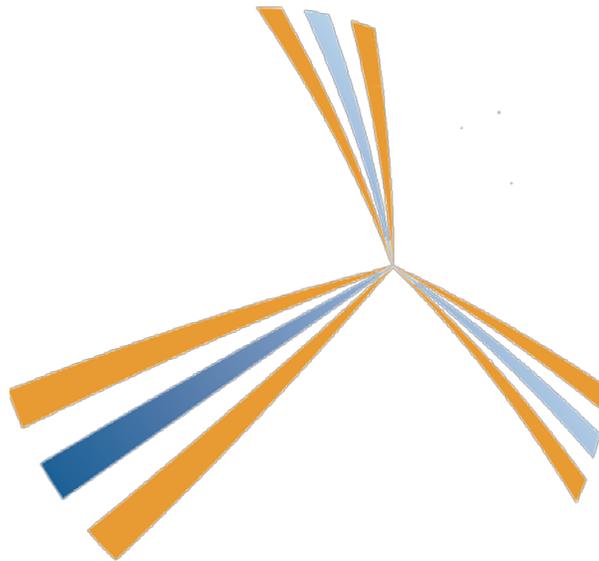


Charter
for
NAWEA
North American Wind Energy Academy

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Preamble

Purpose

The purpose of the North American Wind Energy Academy (NAWEA or “the academy”) is to facilitate the growth of wind power into a cost-effective, high-penetration, sustainable national energy source producing at least 10 times the 2012 electricity production levels. To meet this energy goal, the academy will expedite the creation of a critical new wind energy research and development agenda that bridges education, multiple disciplines, and diverse organizations, and fosters national and international collaborations.

Strategic Importance

Achieving a tenfold increase of current capacity requires overcoming numerous barriers including reducing cost, exceeding 2012 levels of service and performance, and evolving a new vision for grid interconnection and operation wherein renewable resources are a major contributor. The academy will address these lofty goals and challenges using a comprehensive approach sharply focused on advancing research, development, and deployment that is leveraged by educational resources and creatively uses public and private business models.



1.0 Vision and Mission

Vision

The North American Wind Energy Academy will be the leading organization within regions of close proximity to North America, including but not exclusive to the United States, Canada, and Mexico, that are engaged in research, technical, education, market, and policy advancements that will enable wind energy to achieve more than a tenfold increase in 2012 capacity and thereby produce over 20 percent of each region's or nation's electrical energy.

Mission

The mission of NAWEA is to bring together North America's foremost intellectual assets and to apply their collective talents to overcome the challenges of advancing wind power technology and its applications, optimizing its role in meeting national energy needs in an environmentally sustainable manner, while nurturing the development of future generations of technical, management, and policy experts to assure the continued sustainable advancement and optimization of wind power.

In executing its mission, NAWEA will both lead and support efforts to undertake and accomplish the following major activities:

- 1. Work to expand the breadth and competence of the wind energy academic and national laboratory communities to ensure the continued advancement of wind energy through:**
 - developing and disseminating a recommended wind energy curriculum;
 - developing and sponsoring activities that enhance and supplement undergraduate and graduate educational opportunities in North America;
 - developing a program that provides work experience for students to enhance their educational experience in collaboration with the wind industry; and
 - establishing a collaboration agreement among North American universities and with the European Academy of Wind Energy (EAWE) that facilitates joint projects and special educational programs in addition to the exchange of information, students, faculty, and postdoctoral researchers.

- 2. Foster research and development collaborations that bring together the necessary disciplines, agencies, and stakeholders to address topics critical to the advancement of wind energy, such as:**
 - wind energy system science and engineering;
 - grid integration and operations;
 - atmospheric sciences;
 - environmental and institutional impacts;
 - business, finance, and economics;
 - market barriers;
 - social acceptance; and
 - policy development.



- 3. Develop unbiased, accurate, and relevant scientific information on wind power’s benefits and impacts and actively communicate that information to decision makers and the general public through a variety of means such as workshops, symposia, and publications.**
- 4. Promote programs and activities that:**
 - continue the responsible advancement of wind technology;
 - accelerate the development of world-class manufacturing capability and jobs creation;
 - enhance appropriate widespread deployment; and
 - facilitate the full realization of the energy, environmental, and economic benefits offered by wind power in North America.
- 5. Conduct any and all other lawful activities consistent with accomplishing the foregoing purpose.**



2.0 Strategic Focus

2.1 Educational Program

Advancing the state of wind energy technology and providing accurate information to the public and to policy makers requires a strong academic and national laboratory foundation and partnership. The overall goal of the NAWEA Educational Program is to expand the breadth and competence of the wind energy academic community throughout the region by working collaboratively to develop relevant curriculum.

NAWEA educational activities are designed to do the following:

1. **Develop and disseminate a recommended wind energy curriculum model.** The wind curriculum model will bring together the best ideas and long-established concepts through collaborative efforts of the academy. Best practices and curriculum models established will guide the development of balanced, high-quality, wind energy instructional programs. The model curriculum will facilitate student exchange opportunities and maximize the use of online courses.
2. **Develop and sponsor activities that enhance and supplement undergraduate and graduate educational opportunities.** University members bring a broad set of diverse skills and expertise. It is envisioned that any student from any university may benefit from the breadth of course offerings among NAWEA university members. Student exchanges among the NAWEA university members will be developed and online instruction offered with course offerings on a multitude of unique topics.
3. **Develop an internship program to provide student work experience with the wind industry.** The wind energy industry plays an important role in NAWEA by providing students with valuable work experience through internship opportunities. Conversely, an internship program at undergraduate and graduate levels also provides the industry with insight into the skills and experience needed to address current technical challenges confronting industry.
4. **Establish a collaboration agreement among NAWEA member universities and EAWE that facilitates joint projects and special summer educational programs and the exchange of information, students, faculty, and postdoctoral researchers.** NAWEA will provide leadership for establishing, where feasible, the following educational opportunities:
 - An academy-wide interdisciplinary graduate student summer school covering all aspects of wind energy from science and technology to siting and policy.
 - An annual summer NAWEA meeting that provides opportunities for graduate students to present their research plans and accomplishments and interact with other graduate students, industry and laboratory researchers, and faculty from other institutions.
 - An annual graduate student technical paper competition.
 - Energy graduate fellowships.
 - An exchange program within NAWEA and EAWE that facilitates research collaborations, as well as student and faculty exchanges.



2.2 Research and Development Program

For wind energy to evolve into a cost-effective, high-penetration, sustainable national energy source that generates more than 20 percent of electricity production, new agendas are essential in wind energy research and development. The research agenda must bridge multiple disciplines and diverse organizations and foster national and international collaborations in order to address the science, engineering, economic, environmental, policy, and public acceptance issues that currently are impeding growth and acceptance of wind energy. Research areas the academy will address include the following:

1. **Wind energy system science and engineering** to address the cost and reliability issues that are currently limiting wind energy's use on land and off shore.
2. **Grid integration and management** constraints that limit – and opportunities that enhance – the widespread use of variable generation sources in the North American electrical system.
3. **Atmospheric sciences** uncertainties that limit our ability to model and predict wind plant operation, performance, reliability, and dynamic behavior.
4. **Environmental science** unknowns concerning the impacts of wind plants on the environment, wildlife, and humans, as well as research on methods to mitigate any impacts.
5. **Market barriers** and institutional barriers due to misperceptions, obsolete regulations, and outdated management paradigms.
6. **Social acceptance** research to address and mitigate real and perceived issues with the widespread application of wind energy.
7. **Policy research** to explore appropriate and balanced energy policies that treat all energy generation technologies equitably.
8. **Business and financial** model research and development to improve wind plant development and planning.
9. **Interdisciplinary research** to bridge the connections between the above disciplines and facilitate solutions that are not possible within one area alone.
10. **New research** on evolving issues and barriers as they emerge over time.

NAWEA will use the following means to facilitate research collaborations and partnerships:

1. **Research collaboration among the members.** NAWEA will promote research collaboration among members via faculty and staff exchanges and sharing of experimental facilities. Faculty, research staff at government and private laboratories, and researchers in industry will be able to participate.
2. **Research Topic Working groups.** NAWEA will facilitate the formation of working groups to explore and address emerging, evolving, or critical areas in wind energy research. The objective will be to establish ad hoc virtual topical external advisory working groups that develop topical white papers or other outcome. These mechanisms are essential components for establishing an effective and accurate flow of information, thus providing the academy with the agility it needs to ebb and flow with wind research needs and impact the research agenda.
3. **Outstanding Young Researcher Award.** NAWEA will sponsor an annual “Outstanding Young Researcher Award” to encourage and recognize the importance of new researchers and the need for innovative research in the wind community. (similar to the EAWF outstanding young doctoral researcher award)



- 4. Graduate student research exchanges.** NAWEA will facilitate opportunities for graduate students to work at other NAWEA member universities and at the national laboratories to enhance their research. This will help promote collaboration among the members, and enrich the graduate student experience. International exchange opportunities with EAWC members will be established.

2.3 NAWEA Activities and Initiatives

NAWEA activities will support its vision, mission, and initiatives. Examples of activities and initiatives include, but are not limited to, the following:

- 1. Annual Conference and Workshop.** NAWEA will sponsor an annual conference and workshop to enable the vision and mission. This conference will include presentations and interaction with those engaged in wind energy at the levels necessary to bring wind energy up to the tenfold increase as stated in the mission.
- 2. Meetings of the Board.** Meetings of the board will be held to set NAWEA's strategic agendas and activities. Representation is provided from institutional groups, academic groups, industry groups, and the NAWEA members at large. The results of these meetings will be available to the members of NAWEA.
- 3. Committees.** NAWEA will enlist committees to facilitate NAWEA activities. Committees may include the following:
 - Research Topic Committees
 - Curriculum Committee
 - Conference Committee
 - Outreach and Member Management Committee

Committee areas of scope and responsibilities are further detailed in ARTICLE VI of the By-laws.



3.0 Key Criteria for Success

Academy Goals and Major Activities	Types of Outcomes for Measuring Performance
Goals	
1. Fulfill the vision and mission stated in this charter through the actions and leadership of the governing board.	<ul style="list-style-type: none"> • Fulfillment of NAWEA’s vision and mission
2. Collaboratively and systematically engage North America’s foremost intellectual resources in wind power to enable full realization of the energy, environmental, and economic benefits offered by high penetration wind power to help meet the nation’s energy goals.	<ul style="list-style-type: none"> • Multi-institutional and multidisciplinary membership • Attendance and participation in NAWEA events • Industrial involvement • Governmental agency involvement
3. Advance the scientific, technological, and institutional knowledge base and capabilities to confront the challenges and realize the opportunities of strategic scale manufacturing, deployment, and operations of wind power.	<ul style="list-style-type: none"> • Systems and technological activities • Multimedia presentation of research and planning results by member collaborators/impact on the community • Activities to reduce cost, streamline institutional activities, and optimize system performance
4. Sustain its intellectual foundations by developing future generations of technical, management, and policy leaders as well as a pipeline to broader qualified workforce.	<ul style="list-style-type: none"> • Involvement of undergraduate, graduate students, collaborating professionals • New inter-institutional and interdisciplinary educational opportunities
Major Activities	
1. Foster research and development collaborations by convening the community to address critical issues in wind system science and engineering, grid integration, atmospheric sciences, environmental and institutional impacts, market barriers and social acceptance, and policy evolution.	<ul style="list-style-type: none"> • Number of NAWEA-sponsored events • Level of participation in events • Breadth of participation in events
2. Facilitate and promote beneficial educational programs necessary to ensure intellectual progress and a strong industry.	<ul style="list-style-type: none"> • Availability of a new generation of interdisciplinary education
3. Develop accurate and relevant information on wind power’s capabilities and actively communicate that information to decision makers and the general public.	<ul style="list-style-type: none"> • Written, web, and oral communications that educate and inform decision makers and the public
4. Encourage communication across disciplines, agencies, and stakeholder groups to affect holistic approaches to address key challenges.	<ul style="list-style-type: none"> • Educational program network • Mentoring program • Convening activities



4.0 Members and Organization

4.1 Members

Member types and privileges are fully described in the Bylaws, ARTICLE IV. NAWEA shall have the following member types:

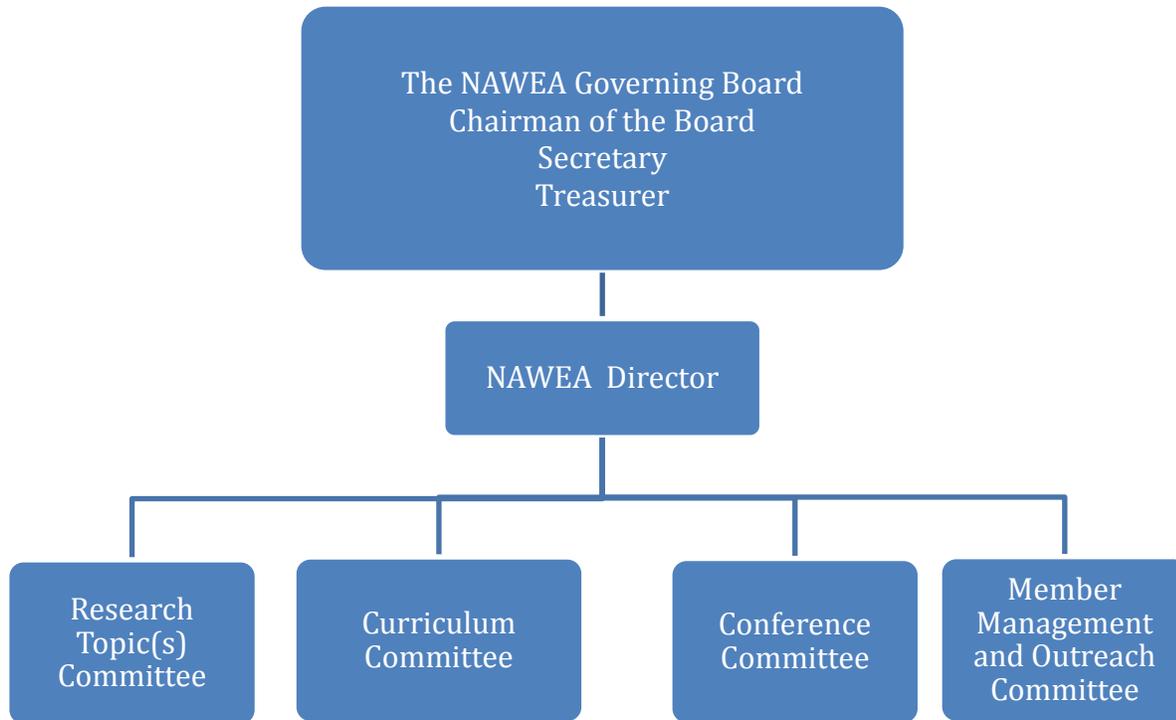
- Public Sector/Institutional Member
- Academic Member
- Individual Member
- Invited Member
- Private Sector/Industry

The following table delineates member roles and responsibilities to include governing board members.

Member Type	Role	Responsibility
Officers		
<u>Executive Committee (EC)</u>		
Director Director-Elect	Leadership and governance	Leads the academy’s development of its strategic plan
Chairperson	Leadership of the executive board	Manages the board
Chairperson-Elect	Assistant to chair	Acts as chair when needed
Treasurer	Financial officer	Ensures sound financial management
Secretary	Membership records and meeting minutes	Maintains accurate and comprehensive records of membership and meetings
Board		
All Board Members	Conduct the business of the academy	Ensure the academy follows strategic direction and remains financially solvent
Public Sector/Institutional	Board member	Research, technical representation
Academic	Board member	Educational and outreach representation
Individual	Board member	Members at large, general constituency representation
Private Sector/Industry	Board member, nonvoting	Industry representation
Invited	Invited and approved by governance board, nonvoting	Specialty areas identified by the board



4.2 Organization



5.0 Amending the Charter and the By-laws

Amending the Charter and Bylaws accomplished in accordance with ARTICLE XI of the Bylaws.

6.0 Financial Formation and Sustainment

The intent of the NAWEA is to be financially self-sustaining by collecting dues and sponsorships in support of operational and administrative expense The academy shall be a not-for-profit, U.S.-based 501c (3) organization.



7.0 Acknowledgements

NAWEA Charter Committee Members

Name	Affiliation
Doug Cairns, Charter Committee Chair	Montana State University
Patrick Butler	University of Iowa
Ed DeMeo	Renewable Energy Consulting Services, Inc.
Michael Knotek	Renewable and Sustainable Energy Institute
James Manwell	University of Massachusetts Amherst
Pat Moriarty	National Renewable Energy Laboratory
Will Shaw	Pacific Northwest National Laboratory
Diane Stults	Renewable and Sustainable Energy Institute
Andy Swift	Texas Tech University
Bob Thresher, NAWEA Director (Interim)	National Renewable Energy Laboratory
Case van Dam	University of California Davis
Paul Veers	National Renewable Energy Laboratory

Additional Contributors

- Tom Acker, Northern Arizona University (UNC)
- Stephan Barth, ForWind, University of Oldenburg, Germany (acted as a representative of the European Academy of Wind Energy (EAWE))
- Kevin Doran, RASEI
- Rupp Carriveau, University of Windsor, Canada
- Yves Gagnon, Université de Moncton, Canada
- Sue Haupt, University Corporation for Atmospheric Research (UCAR)
- Hogan Lovells
 - Kevin Doran, Renewable and Sustainable Energy Institute (RASEI) Research Professor, enlists Hogan Lovells (www.hoganlovells.com) legal counsel to assist the charter committee in drafting the by-laws framework on a pro-bono basis. Attorneys included: Dennis Arfmann (Denver), Brandon Wilson (WDC), Christian Ulrich (WDC)
- William Mahoney, University Corporation for Atmospheric Research (UCAR)
- Mike Robinson, National Renewable Energy Laboratory (NREL)
- J. Charles (Charlie) Smith, Utility Wind Integration Group (UVIG)



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