



U.S. Department of Energy

Office of Electricity Delivery and Energy Reliability

Electricity Advisory Committee

**Workforce Ad Hoc Committee
Proposal**

March 5, 2012

2012 Workforce Ad-Hoc Proposal

Proposal: Create an EAC Workforce Ad Hoc Working Group to review the workforce needs and make recommendations to ensure those with appropriate skills sets are available to support the future grid.

- Consists EAC members and invited participants
- Coordinate with others
- Committee activity will sunset after their recommendations
- Leadership:
 - Chairs: Wanda Reder
 - Vice-Chair: Tom Sloan
 - DOE Point of Contact: David Meyer, Gil Bindewald
 - Possible Technical Advisor: Anjan Bose

Drivers of Workforce Requirements

- Electric demand growing via electrification
- Infrastructure is aging
- Retirements are increasing while less experienced, culturally divergent workers, are entering
- Grid modernization has become a priority
- Societal needs are changing
- Major investments are needed
- Workforce readiness and preparedness is a national concern: ownership is varied
- Landscape is changing: many initiatives and recommendations

The reliability of the North American electric utility grid is dependent on the accumulated experience and technical expertise of those who design and operate the system. As the rapidly aging workforce leaves the industry over the next five to ten years, the challenge to the electric utility industry will be to fill this void...

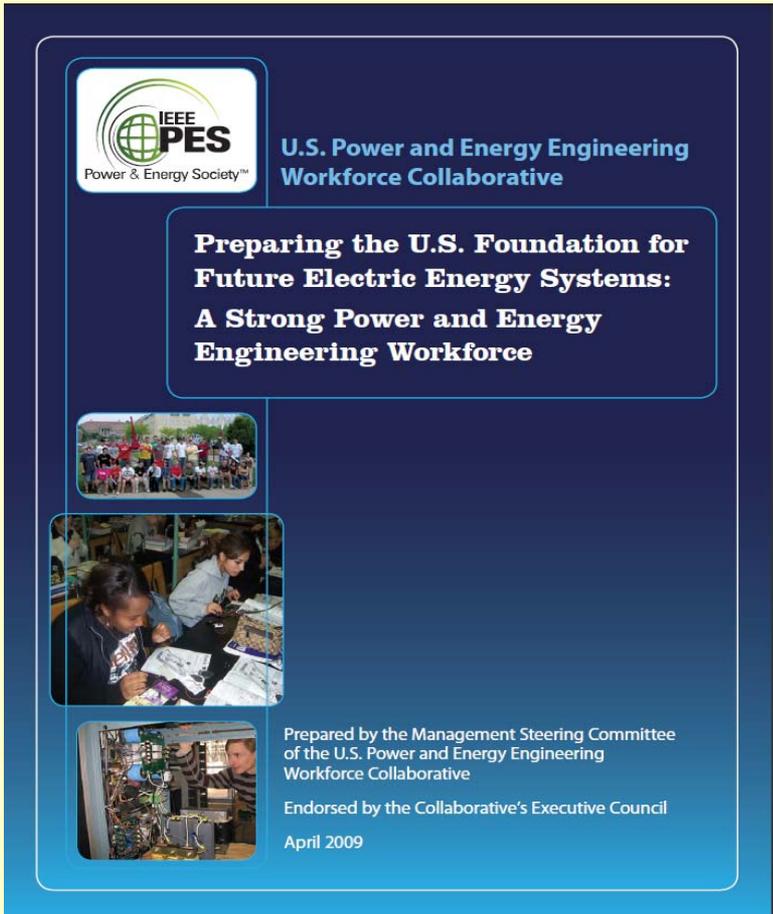
*2006 Long-Term
Reliability Assessment*

**North American Electric
Reliability Corp.**

IEEE PES Workforce Collaborative Goals

Published April, 2009

1. Double the number of power graduates
2. Provide \$4 million undergraduate power engineering scholarships
3. Create 2,000 internship opportunities
4. Hire 80 new power faculty members in the US over the next five years
5. Raise annual university research funding to \$50 million per year
6. Create five University Centers of Excellence to conduct power research and education



The image shows the cover of a report. At the top left is the IEEE PES logo, which consists of a globe with the letters 'IEEE' above it and 'PES' to its right, with 'Power & Energy Society™' written below. To the right of the logo is the text 'U.S. Power and Energy Engineering Workforce Collaborative'. Below this is a large blue box containing the title 'Preparing the U.S. Foundation for Future Electric Energy Systems: A Strong Power and Energy Engineering Workforce' in white text. Underneath the title are three small photographs: the top one shows a group of people outdoors, the middle one shows two people looking at a laptop, and the bottom one shows a person working on a complex electrical circuit board. At the bottom right of the cover, there is text: 'Prepared by the Management Steering Committee of the U.S. Power and Energy Engineering Workforce Collaborative', 'Endorsed by the Collaborative's Executive Council', and 'April 2009'.

U.S. Power and Energy Engineering Workforce Collaborative

Preparing the U.S. Foundation for Future Electric Energy Systems: A Strong Power and Energy Engineering Workforce

Prepared by the Management Steering Committee of the U.S. Power and Energy Engineering Workforce Collaborative

Endorsed by the Collaborative's Executive Council

April 2009

In easy-to-reference lists, the report outlines specific steps for industry, government and educators to meet these goals.

New Challenges



- Interoperability
- Cyber-security
- Grid reliability
- System monitoring, control and protection
- Communications
- Decentralized vs. centralized control
- Customer engagement
- Capital investment (utility, users)
- Access to information vs. privacy

Landscape is Changing

- Workers continue to delay their retirement due to the economy
- According to the CEWD 2011 Survey
 - Industry workforce has decreased by 11,000+ jobs since 2009
 - The average age of the workforce has increased to 46.1
 - Employees age 53 and above has increased by 5% since 2006
 - Employees 30+ years of service has increased by 5.2% since 2006
- Jobs that were anticipated have not incrementally been added
- Hiring and retaining the best and brightest can be challenging in lieu of a decreasing workforce
- Fewer new applicants can meet pre-employment requirements
- Out-sourcing is becoming more prevalent

Landscape is Changing

- Aging demographic of power engineering academics
- Emerging student interest in green jobs with large societal impact
- Many new initiatives -- scholarships, internships, career awareness, surveys, curriculum developed from stimulus funding
- Emerging competency requirements for the future grid (like cyber security)
- New curriculum has been developed
- Efforts to allocate research through Centers for Excellence

Questions for Workforce Preparedness

- What are the impacts from the changing landscape?
- Is there more or less stress about the workforce outlook?
- How are past recommendations impacted?
- Are the new programs working and sustainable?
- Is the pipeline adequate with appropriate skill development?
- Is a comprehensive plan or set of coordinated plans needed?
- Are collaboration efforts effective?



The “Charge”

- Create the Ad Hoc Committee
- Take a fresh look given the changing landscape
- Provide guidance to workforce preparedness questions
 - Reliability threat and other risks
 - DOE role
 - Out-of-the-box ideas for building career awareness
 - Changes needed for education
 - Workforce assessment, recommendations and coordinated plan
- Next steps

EAC Workforce Development Working Group

- DOE's interest in workforce development to collaborate with others and to target internal efforts to ensure competencies are available to:
 - Provide the nation with reliable energy
 - Create innovation to secure a leadership position with related technical advancements
 - Achieve the vision of the future grid
- Approach:
 - Utilize workforce findings and gaps that are being identified through the Smart Grid Education projects and other stimulus investments
 - Capitalize on all DOE efforts... competitions, STEM, research investments
 - Collaborate with the Department of Labor, Department of Education, National Science Foundation, Industry Associations and others to better leverage and connect efforts to achieve desired outcomes

Recommended Approach

1. Develop a list of potential partners and interested agencies
2. Define a list of potential topics for analysis – such as:
 - Performing a reassessment to quantify the challenge considering the changing landscape
 - Defining workforce gaps to achieve grid transformation
 - Identifying workforce development efforts and initiatives that can be further leveraged
 - Defining recommendations to address emerging areas such as cyber security, privacy and the convergence of technical domains in the educational process
 - Mapping a cohesive Energy Hub strategy that connects research investment to workforce development needs
 - Enhancing related career awareness and emerging opportunities through STEM
 - Defining an approach that aligns the needs for education, research and industry

EAC Workforce Development Working Group

3. With DOE's assistance, invite selected partners to a focused discussion on available data and programs, gaps and best practices.
4. Utilize inputs to outline an education plan for stakeholders
5. Seek EAC approval
6. Forward to DOE to help guide Department planning and foster relationships with other stakeholders.