**Prospectus**

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***Clean Energy Industry Workforce Research Study Design***

Summary: Efforts to develop and expand clean and renewable energy resources has accelerated in response to widespread concerns about climate change, global health and the opportunities associated with a clean energy economy. Yet, future investments in technology and new energy systems—including the many benefits they confer on the environment, health and economic prosperity—require that we have simultaneously prepared a highly-skilled clean energy workforce to meet the challenge. This Prospectus proposes a research-based initiative aimed at defining and recommending workforce education and training policies, programs and actions that can support regional and national energy employers, employees and stakeholders to lead the transition to a clean energy future.

Background: Global development and adoption of clean energy technologies has accelerated at a rapid pace. More than one-fifth of the world’s electricity is now produced by renewable energy. Solar and wind power has contributed the largest increases in recent years, as countries large and small have boosted renewable capacity in response to growing concerns about climate change, global warming and fossil fuel-based pollution that threatens environmental and human health.

In the U.S., investments by government and the private sector in renewable energy and energy efficiency has grown steadily, and the costs associated with renewables have declined considerably. Past DOE-funded research estimated that commercially-available renewables, in concert with a smarter and more flexible electric system, could supply more than 80 percent of total U.S. electricity generation needs by 2050.

With its abundance and diversity of renewable resources, the Western U.S. is especially well-positioned to advance its transition to a clean energy economy. States in the Western region are recognized leaders that have made substantial progress in advancing renewable resources—especially wind and solar PV, demand response strategies and programs, and energy efficiency. Western states are widely considered the vanguard for clean energy innovation and action. Each state has advanced and passed key legislation, promoted new policies, many have instituted aggressive renewable portfolio standards, and have implemented investment strategies and incentives that address climate change and help grow the clean energy economy.

Regional and state-specific energy policy goals, renewable portfolio standards and investments in renewables and efficiency have helped control costs and reduce greenhouse gas emissions. A greater reliance on renewables and distributed power generation has also boosted the region’s energy services sector, energy efficiency infrastructure and employment. This research initiative provides an opportunity to leverage this leadership and experience, and extend it to the benefit of other states and regions across the U.S.

Clean Energy serves as an important economic driver across the region, providing revenue for state and local governments, new business startups and expansion, high-paying jobs and career pathways for students and incumbent workers alike. Energy-sector jobs are also among the best employment options available in rural areas, sustaining and promoting other small businesses and supplier networks. Technology R & D for grid modernization, advanced renewable technologies, and greater energy efficiency provide high-end economic development opportunities across the region, nation and globe.

The missing link: Who will do the work?

Growing the clean energy economy will require a skilled and qualified workforce, yet efforts to ramp up education and training systems to prepare the next generation of clean energy employees—and to upskill existing workers—continue to lag investments in technology and economic development. There is increased emphasis on STEM preparation at the K-12 level, and new efforts to re-invigorate Career and Technical Education in secondary and post-secondary education, but more work is needed to align and enhance education and training systems and programs. Although mainstream funding for clean energy projects typically includes new job creation, we often limit or underinvest in proven workforce development strategies that can ensure that students and workers are well-equipped for clean energy careers.

Ensuring adequate workforce preparation is also forward-looking: Labor markets have become more competitive due to demographic shifts, changing retirement patterns and new demands for knowledge and skills required by technology innovations in the clean energy sector. The future workforce will consist of new generations of young people with different values and expectations about careers and work-life balance; research shows that they will also be more racially and ethnically diverse than ever before. Inattention to these and related workforce issues can jeopardize energy system reliability, cause delayed implementation, and result in inadequate installation, operations and maintenance capacity, and delayed infrastructure upgrades. Our ability to attract, develop and retain a skilled workforce is fundamental to propelling the new technologies, systems and infrastructure needed to support a vibrant clean energy economy.

**Study Design**

A more fulsome understanding and integration of state economic and workforce development is needed to accelerate and achieve the full potential of the region’s clean energy economy. The overall purposes of the proposed study are three-fold:

1. Current State: Identify and define the current state of the region’s clean energy sector and progress, while focusing on the industry-based workforce development characteristics and challenges to supporting a clean energy future.
2. Future State Solutions: Propose potential policies, strategies and solutions to ensure that the region’s workforce and education systems are aligned with efforts by industry and the public sector to advance the desired future state that achieve clean energy goals and potential.
3. Regional/National Replication: Design and pilot a promising workforce solution initiative that shows high-potential for impact, and that can be most readily adapted for replication and adaptation across the region and nationally. This step will require additional coordination, review and priority-setting with national partners to identify the potential, feasibility and priorities for replication in other states.

Research Activities:

1. Review: Regional and state status of clean energy policies, research, progress and development, including:
   1. Clean energy economic, environmental and societal goals and trends
   2. Clean energy technology developments and system change
   3. Education/training capacity, roles and alignment
   4. Ongoing challenges to supporting the Clean Energy Economy:
      1. Population change
      2. Generational issues, values and expectations
      3. Diversity of the labor market
      4. Education and training curriculum, structure and delivery
2. Data collection: Investigate the evolving structure of the clean energy industry and sectors (Generation, Transmission and Distribution, renewables, energy services, grid), and the implications for workforce development. Secondary data analysis using existing research and data sources (research literature, regional/state economic, industry, labor market and education data) will leverage existing work while informing next-step data collection methods, which may include employer surveys, structured interviews with technology and industry leaders, focus group processes, as appropriate.
   1. Detailed data on employment composition, trends, etc.—leverage 2013 study results
   2. Forecasts: Future employment, retirements, technology-driven changes
   3. Staffing Topics: Recruitment, development, retention, regional/local characteristics
   4. Education and training: Current and future needs, based on technology change, work organization, markets and skill requirements
3. Study findings and recommendations: Key findings of the study, including recommended policies and actions derived from the evidence and industry input. Findings and recommendations will emphasize action steps:
   1. Organized into related themes, results and topical areas
   2. Reviewed and verified by industry, workforce development, education and other stakeholders
   3. Recommended clean energy workforce policies, strategies and actions
   4. Value-added tools and best practices for clean energy employers, workforce education and development providers
4. Replication: Select high-potential, high-priority solutions that show promise for replicability nationally and regionally.
   1. Launch targeted pilot to test high-priority/high-potential solutions
   2. Engage regional and national stakeholders in pilot design and oversite
   3. Build momentum for regional and national adaptation and expansion
   4. Measure results and sustainability
   5. Culminating Clean Energy Workforce Policy Summit event, to promote a unified vision, collaborative leadership, emphasize the need for action among key regional and national stakeholders, and showcase pilot project results and potential for replication.
5. Funding Target Scenarios: $150,000 - $500,000, depending on final project scope, data/analysis/topic options and deliverables. The project could be designed and implemented as ‘building blocks’ or modules over time, based on available resources and stakeholder priorities :
   1. $150,000: Meta-analysis of clean energy trends, industry technology forecasts, existing research; targeted regional employer and occupation data collection and analyses; assessment of emerging workforce requirements; proposed foundational workforce policies, programs and best practices to advance the clean energy economy.
   2. $250,000: Includes all of above, but with a broader and more robust regional employer sample, occupational data collection effort and analyses. Also includes sector-specific (i.e., wind, solar, efficiency) analyses and recommendations; presentations to stakeholder groups to discuss and advise implementation of action steps.
   3. $500,000: Includes above, with individual reports for specific renewable sectors, policy and programmatic proposals, and a regional clean energy Policy Summit event featuring national and regional stakeholders and policy leaders, designed to extend and act upon the research findings, recommendations and pilot results.