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POISED FOR PROFIT II:  
PROSPECTS FOR THE SMART ENERGY SECTOR  
IN THE PACIFIC NORTHWEST

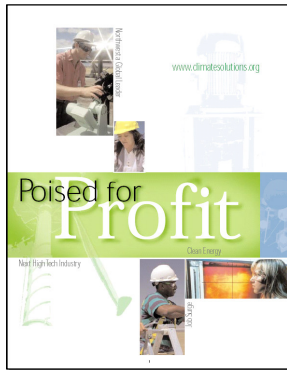
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### **POISED FOR PROFIT: PROMOTING A NORTHWEST CLEAN ENERGY INDUSTRY**



In 2001, eight economic development and energy agencies from Oregon, Washington, and British Columbia commissioned a study: *Poised for Profit: How Clean Energy Can Power the Next High-Tech Job Surge in the Northwest*. The resulting report revealed that the clean energy sector could be twice the size of the aircraft industry within 20 years. What's more, it could generate as many as 30,000 new jobs. That first report is available at [www.climatesolutions.org](http://www.climatesolutions.org).

A new partnership has come together to fund *Poised for Profit II*, follow-on research to support a world-class clean energy industry in the Northwest. Through the work of The Athena Institute, the project has produced a series of reports containing critical information for investors, entrepreneurs, and policymakers. These tools include:

- Research and analysis to pinpoint the largest and best opportunities
- Surveys of investor and utility plans
- Directories to research reports, related companies and helpful resources

This document is part of a research module called the Preliminary Analysis of Near-Term Opportunities. It reports on the market opportunities for Smart Energy technologies. Other documents in the module cover near-term prospects in wind, solar and fuel cells.

Turn to the Appendix for details on the project scope and methodology.

### **ABOUT THE PARTNERS**

*Poised for Profit II* was jointly funded and guided by the following organizations and members of the Poised for Profit Steering Committee:

- **BC Hydro:** Karen Leach and Bruce Sampson
- **Bonneville Power Administration:** Mike Hoffman, Kevin O'Sullivan and Mike Weedall
- **City of Portland:** Jeff Cogen and Curt Nichols
- **NW Energy Technology Collaborative:** Lee Cheatham and Jeff Morris
- **Oregon Institute of Technology:** Howard Thurston
- **Oregon Office of Energy:** Mark Kendall
- **Leading Edge British Columbia:** Anton Kuipers

- **Pacific Northwest National Laboratory:** Mike Lawrence
- **Portland Business Alliance:** Molly Moore
- **Portland Development Commission:** Ann Griffin
- **Portland General Electric:** Joe Barra
- **Seattle Office of Economic Development:** Ben Wolters
- **Washington Office of Trade and Economic Development:** Tony Usibelli and Tim Stearns

## ABOUT CLIMATE SOLUTIONS

The *Poised for Profit* initiative is managed by Climate Solutions, a public interest group that works to make the Pacific Northwest a global warming solutions leader. Since 1998, the group has targeted development of a Northwest clean energy technology industry cluster as a globally significant contribution the Pacific Northwest can make to reduce greenhouse emissions. Climate Solutions generates leading-edge information and knowledge on clean energy technology and the economic opportunities it presents. The organization issues reports, organizes conferences and builds cross-cutting alliances to further the goal of rapid energy transition.

## ABOUT THE ATHENA INSTITUTE AND THE CENTER FOR SMART ENERGY

**The Athena Institute** is a research organization that helps executives and organizations find success in emerging markets. Its methodologies and insights have been implemented by many organizations, ranging from Fortune 1000 corporations to public policy agencies. Athena manages the **Center for Smart Energy** ([www.centerforsmartenergy.com](http://www.centerforsmartenergy.com)), the industry's guide to the value chain. The Center is dedicated to making North America the leader in Smart Energy innovation. The Center's research and acceleration programs help businesses and investors pursue their strongest opportunities in the Smart Energy sector.

## ACKNOWLEDGEMENTS

The Athena Institute would like to recognize the following companies and individuals for their contributions to the *Poised for Profit* initiative in general and this report in particular.

For catalyzing the project and providing oversight, we acknowledge Climate Solutions, with special recognition to Rhys Roth.

For expert comments and research materials, we wish to thank:

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- Steve Hauser, Utility Automation, Inc.
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- Wal Van Lierop, Chrysalix Energy

We also acknowledge and thank the more than 135 individuals who gave of their time for discussions with Athena analysts during the course of this study. We are especially appreciative of the co-funders and members of the Steering Committee, who provided ongoing advice and assistance.

## **ABOUT THE RESEARCH INITIATIVE**

The Athena Institute was tasked to identify near-term market opportunities for selected energy technologies. At the direction of the Steering Committee, we focused on opportunities that could see commercial success within five years, with emphasis on “cluster opportunities” that could have positive economic impact for Oregon, Washington and British Columbia. The Milken Institute defines clusters as “agglomerations of interrelated industries that foster wealth creation in a region.” (For example, Washington’s King County is known for its aerospace and software clusters.) This report relates to the prospects for regional cluster success. It does not address the prospects for individual companies or the economic benefits related to constructing and operating clean energy facilities such as job creation from wind farms or the economic benefits of spending less on imported energy. Please see the Appendix for more details on the project’s scope and methodology.

Viewed through this filter, Smart Energy emerged as an area with significant near-term opportunities for the Northwest. Smart Energy is the application of digital technologies to the generation, delivery, and use of electric power. The use of the term “Smart” captures the fusing of intelligence into the existing system.

The challenge of the Smart Energy report was to create a coherent picture of an emerging sector not yet clearly defined. We first developed a way to organize and describe the sector. Then we uncovered those niches that represent the best opportunities for the Northwest. Because a taxonomy for this previously ill-defined industry has not yet been created, this Smart Energy sector report focuses at a broader level of analysis than the reports for fuel cells, solar, and wind.

## INTRODUCTION

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The world's electric power industry is in the early stages of an unstoppable change. A new wave of digital technology has arrived, promising to dramatically improve the generation, transport and use of electricity. Along the way will come enormous new opportunities, enormous new companies, and enormous new revenues.

The rewards will go to regions, companies and individuals that seize the chance. If the Pacific Northwest becomes one of those leaders, it can gain an industry of distinction to rival current mainstays such as aerospace, biotech, forest products and software.

This report outlines the sector, including its issues and market potential. It inventories the region, its assets and its challenges. And it reveals the opportunities -- the specific market niches that could bring near-term growth and revenue. It is divided into six areas:

- **Key Findings** -- an overview of the research results
- **Market Overview** -- an introduction to Smart Energy technologies and markets
- **Market Drivers** -- the factors promoting market growth
- **Market Barriers** -- the hurdles and obstacles
- **Market Potential** -- the segments with near-term growth potential around the world
- **Regional Potential** -- the Northwest's assets, challenges and specific opportunities, plus an overview of ways to accelerate progress

An appendix describes the project and its methodology.

## KEY FINDINGS

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The following section gives a quick scan of the research findings relevant to the Northwest. A more detailed executive summary of this report is available for download at [www.centerforsmartenergy.com](http://www.centerforsmartenergy.com).

**Smart Energy is currently a \$15B business worldwide.** Smart Energy, the application of digital technology to the electric power industry, represents a significant market opportunity. Growth is being driven by an aging infrastructure in need of upgrade, demand for premium power, the growing alternatives to centralized generation, new technologies now available, and by government support and market restructuring. Smart Energy will produce significant economic growth and export opportunities. The Pacific Northwest is ideally suited to build an industry of distinction that could be sustained for decades.

**Northwest-Based companies are already doing \$2B worth of business.** Economic development is always easier when building on strengths and successes. The Northwest is already home to a significant Smart Energy industry. The Northwest has a number of additional assets including world-class research facilities, transmission and distribution experience, transferable private sector skills, environmental consciousness, and an ideal test bed environment.

**The Northwest faces challenges** with access to ideas, capital, markets, and with lack of geographical proximity. Examples include difficulties in getting ideas out of the laboratories, a shortage of energy-friendly venture capital, and geographic distance and regional rivalry. These hurdles must be overcome to build an economic cluster.

**The Northwest has strong potential in several specific market niches.** Our research has uncovered five market niches that have potential for near-term growth and a good match with our regional strengths. They are 1) Advanced Metering Technologies, 2) Utility Back-Office Software, 3) Grid Monitors and Controls, 4) Transmission/ Distribution/ Substation Automation, and 5) Power Electronics. We also found four additional opportunities with moderate potential: Energy Management Systems, Building Automation and Controls, Energy Management Service Companies, and Workforce Automation. *Our comments relate to the potential for an economic cluster, not to the prospects for individual companies, some of which will find success whether or not a cluster arises in the Northwest.*

**The Northwest can accelerate the growth of a Smart Energy cluster.** Several efforts could speed progress and strengthen the smart energy sector:

- **Advocacy of regulatory changes** to affect rates, regulations, policies and incentives to favor deployment
- **Standards and test beds** to use shared cost facilities and regional utility cooperation to test and certify products
- **Market transformation** activities to improve market access
- **Business assistance** such as trade associations, incubators and accelerators, and workforce training to provide resources for growth
- **Outreach and education** to investors and the business community to increase the awareness and interest in the sector
- **Pursuit of major research opportunities** to attract R&D dollars from government, foundations, and private companies

A coordinated plan that links initiatives together could move the region forward quickly. The Northwest is well positioned to become a world-class leader in this emerging Smart Energy sector.

A full treatment of each of these research results can be found in the sections that follow.