



Regional CHP Application Centers

End of the Year Report
December 24th, 2004

Ted Bronson, Power Equipment Associates

ORIGINS – RACs

- **BCHP Working Group**
 - USDOE, ORNL, Utilities, R&D Organizations
 - 1999 Consensus Roadmap
- **US DOE / EPA CHP Challenge ('98)**
- **2000 CHP Roadmap**
- **Selection of UIC's ERC as Pilot RAC**
- **Initial Scope:**
 - Education and outreach
 - Project Support





BCHP Working Group



REPORT
TECHNOLOGY



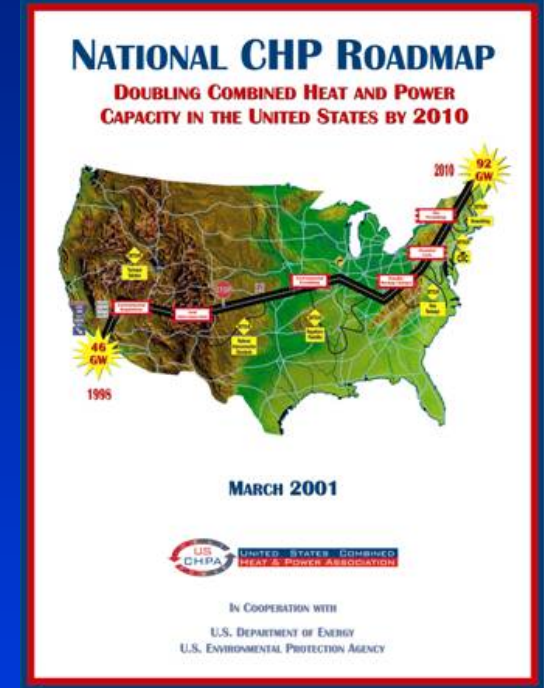
U.S. DEPARTMENT OF ENERGY
Energy Efficiency



U.S. DOE CHP Vision and Technology Roadmap

REGIONAL RECOMMENDATIONS:

- 1) Raise CHP Awareness - Create new and support existing CHP awareness efforts by Regional and State Groups
- 2) Conduct a coordinated outreach campaign to educate architects, building designers, and local building and other code officials about CHP
- 3) Provide SWAT team technical assistances to those interested in installing CHP Systems

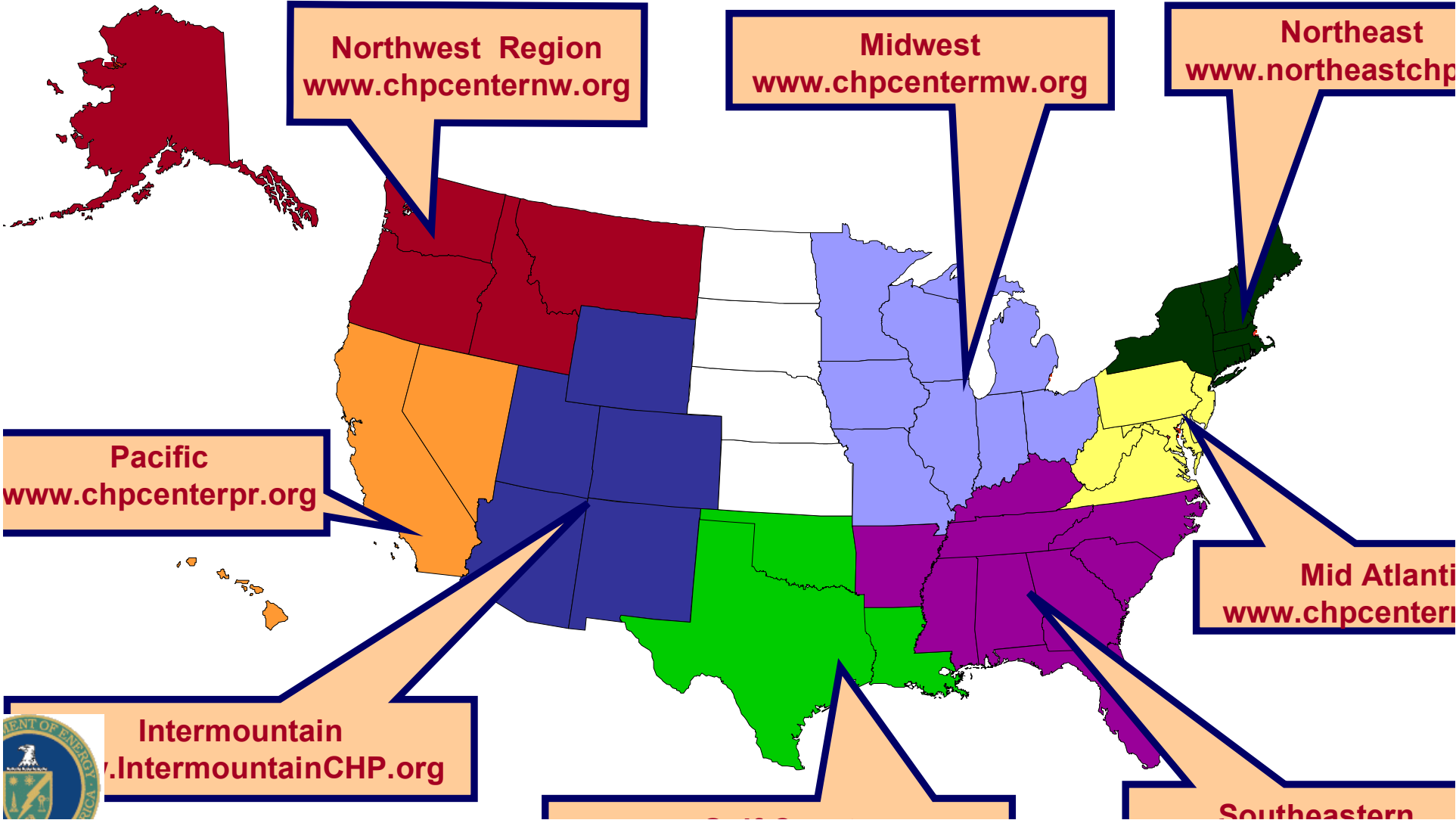


Regional CHP Application Centers

- **Purpose: DOE Headquarters Program to lead regional deployment of CHP technologies thru:**
 - **Educating regional players on benefits of CHP technologies, while reducing perceived risks**
 - **Providing project specific support**
 - **Providing feedback to DOE and industry regarding future R&D program needs**
 - **Providing regional coordination and implementation of DOE projects**



Regional application centers will promote combined heating and power (CHP) technology and practices, serve as a central repository and clearinghouse of information for CHP projects nationwide, and identify and help implement regional CHP projects.



RACs and Initiatives

- RAC – DOE Funded entity providing Education and Outreach and Project Support to develop CHP market
- Regional Initiatives – Voluntary, Ad-hoc organizations driving roadmap actions and Advocacy efforts in the Regions
 - Provide insight and direction to RAC
 - RAC provides HP to implement ideas



RAC Services Offered

- **Education and Outreach**
 - Website (Available & Updated)
 - Focused Training and Educational Courses
 - Workshops / Conferences
 - Regulatory Interactions
- **Project Support**
 - Site Evaluations (Screening)
 - Application Analysis (Tech / Financial)
 - Technical Assistance



Tools (Developed by RACs)

- **RAC Protocols – Guidebook, Case Studies, Baselines**
- **Training Courses / CHP Primer (MW)**
- **Best Practices Installation Seminar for Project Developers (NE, MW)**
- **CHP Graduate Level Education (MW)**
- **CHP Site Walkthrough Screening Guide (MW)**
- **Environmental Permitting Guidebook (MW, NE)**
- **CHP Resource Guidebook (MW)**
- **Hospital / Healthcare Targeted Market Materials (ORNL, MW)**



Tools (Developed by USDOE / ORNL and other agencies)

- **US DOE / ORNL CHP Education and Outreach Projects**
 - **University Case Studies (IDEA)**
 - **Opportunity Fuels Report (RDC)**
 - **Project Installation Database (EEA)**
 - **Industrial Association Outreach (USCHPA)**
 - **Urban Planning (GTI)**
 - **State Issue Project (EEA and ACEEE)**
- **Recycled Energy Materials**
- **Other Govt Agencies**
 - **HUD CHP Guidebook**
 - **Steam Program, CHP Analysis Tool**
- **Economic Analysis Tools**
- **USDOE / ORNL Product Development and Deployment**



Midwest Regional CHP Application Center

States

- Illinois
- Indiana
- Iowa
- Michigan
- Minnesota
- Missouri
- Ohio
- Wisconsin



Key Partners

- UIC Energy Resource Center
- Gas Technology Institute

Strengths

- Engineering / Site Analysis
- Hospital / Schools / Ethanol



Intermountain Regional CHP Application Center

States

- **Arizona**
- **Colorado**
- **New Mexico**
- **Utah**
- **Wyoming**

Key Partners

- **etc. Group**
- **Southwest Energy Efficiency Project (SWEET)**

Strengths

- **Energy Efficiency**
- **Regulatory**
- **Winter Resorts**



Mid-Atlantic Regional CHP Application Center

States

- Delaware
- Maryland
- New Jersey
- Pennsylvania
- Virginia

Key Partners

- University of Maryland
- Rutgers University

Strengths / Focus

- CHP Building Equipment (Lab)
- Federal Sector



Northeast Regional CHP Application Center

States

- **Connecticut**
- **Maine**
- **Massachusetts**
- **New Hampshire**
- **New York**
- **Rhode Island**
- **Vermont**

Key Partners

- **University of
Massachusetts –
Amherst**
- **Pace University**
- **NYSERDA**

Strengths / Focus

- **Policy**
- **Grid Relief**
- **WW Treatment**



Northwest Regional CHP Application Center

States

- **Alaska**
- **Idaho**
- **Oregon**
- **Montana**
- **Washington**

Key Partners

- **Washington State University (Lead)**
- **State Energy Offices**

Strengths / Focus

- **District Energy**
- **Large Industrials**



Pacific Regional CHP Application Center

States

- California
- Hawaii
- Nevada
- Pacific Territories

Key Partners

- San Diego State University
- University of California at Berkeley
- University of California at Irvine

Strengths / Focus

- Cooling Applications
- Ultra Clean Technologies



New Regional Application Centers

- **Southeast**

- Arkansas, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Kentucky, Tennessee
- Mississippi State University and North Carolina State University

- **Gulf Coast**

- Texas, Louisiana, and Arkansas
- Houston Advanced Research Center



RAC Accomplishments

- **General**

- **Regional Roadmap Workshops**

- » **In 2004, all 6 RACs have been engaged in developing these roadmaps to identify regional areas of focus**
 - » **Some RACs used forum to build Stakeholder advisory groups or Initiatives**

- **Websites**

- » **Following the Lead of the Midwest, each RAC has an established website as an educational source to end-users, policy makers and other stakeholders**

- **Baseline Studies**

- » **Each RAC is in the process of completing State Baseline studies to understand the CHP landscape in their states**



RAC Accomplishments

- **Midwest**

- **Installations - > 100 MWs affected**

- » **Leading efforts for Schools, Hospitals, Office Buildings, and the Ethanol markets; Numerous workshops.**
 - » **Developed several courses and tools to analyze and assess CHP installations and potential**

- **Education and Outreach**

- » **Regulatory Education**

- **Interconnect Workshop**
 - **Tariff Workshop**

- » **Targeted Markets (hospitals, schools, ethanol)**



RAC Accomplishments

- **Intermountain**

- **Significant involvement through Utah PSC with Gas and Electric utilities establishing CHP as a resource**
 - » **PSC Demand Side Management Task Force**
 - » **Distributed Energy Task force**
 - » **Utah Power / Questar Joint CHP-DE Assessment**
 - **IMRAC identified 10 candidates for CHP – will screen further**
 - **Feasibility Study at the University of Utah**
- **Outreach to**
 - » **Western State Energy Users**
 - » **Colorado DG Roundtable**
 - » **Questar Gas Customers**
 - » **Utah Resources Forum**
 - » **National Conference of State Legislatures**



RAC Accomplishments

- **Mid-Atlantic**

- **Used Regional Roadmap process to develop advisory group of key Regional Stakeholders**
 - » **Developed MAAC Action Plan**
- **Outreach**
 - » **National Energy Education Development (NEED)**
 - » **Participated in Optimizing Steam System Performance Workshop**
- **Project Support / Feasibility Studies**
 - » **National Aquarium**
 - » **Metal Finished Products Company – Organic Rankine Cycle Application**
 - » **USPS Sorting Facility**



RAC Accomplishments

- **Northeast**

- **Meeting with State Energy Offices to identify key market segment focus areas:**
- **Outreach**
 - » **Meetings with large commercial real estate developers to educate on incentives and opportunities**
 - » **Seminar on CHP Best Practices for project developers and design firms**
- **Project Support / Feasibility Studies**
 - » **Large Commercial Real Estate Developments**
 - » **Country Clubs**



RAC Accomplishments

- **Northwest**

- **Project / Technical Support:**

- » **Seattle South Lake Union District Energy Project**
 - » **720 MW BP refinery at Cherry Point, WA**
 - » **Renton Sewage Treatment Plant**
 - » **Bremerton Naval Complex**

- **Outreach**

- » **Northwest Power Planning Council**
 - » **International District Energy Association**
 - » **Northwest Industrial Gas Users Association**
 - » **Oregon's Fair and Clean Energy Coalition**
 - » **Northwest CHP Industrial End Users Strategy Meeting**



RAC Accomplishments

- **Pacific**

- **Outreach activities to**

- » **Rebuild Hawaii / Hawaii DG /CHP Workshop**
 - » **CA University facility managers working group**
 - » **Sempra Energy account managers to target potential CHP customers**
 - » **Strategic Energy Plan of Contra Costa County -- 3 recommended CHP projects**
 - » **Nevada Energy Efficiency / Renewable Energy Task Force**



RAC Coordination Activities

- **Purpose:**
 - To leverage work already done to optimize performance of RACs
 - To identify regional strengths that can be applied nationally
 - To coordinate ongoing work, especially for market sector development (i.e. hospitals, schools, industrial)



RAC Coordination Activities

- **Regional Kickoff Meetings**
 - Set expectations / communication
 - Identify Strengths
- **Quarterly Working Group Calls**
- **Semi-Annual Face to Face Meetings**
 - To educate RACs on results of DOE and Industry Projects and Products
 - » New Packaged Systems
 - » US DOE CHP Demonstration Systems
 - » ASERTTI Test Protocols
 - » EPA CHP Partnership
 - To exchange information on best practices and new tools
 - To build relationships between the Regions



The Future of RACs

- **RACs are now well positioned and in action to:**
 - **engage and educate key state and regional organizations to promote CHP as an option in Regional Power Planning**
 - **engage key target markets in their region to educate them on benefits of CHP**
 - **identify key potential CHP projects for project development and technical support –**
 - **work together to leverage resources and optimize overall program success.**



For Further Information

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