

# 4<sup>TH</sup> ANNUAL COMBINED HEAT AND POWER (CHP) ROADMAP WORKSHOP

*Holiday Inn Chicago Mart Plaza  
350 N. Orleans Street ♦ Chicago, Illinois  
September 22-24, 2003*

## CHP ROADMAP BREAKOUT GROUP RESULTS

### UTILITY ISSUES BREAKOUT GROUP

Key issues and actions include:

1. Work with NARUC to sponsor and organize a report and workshop on utility barriers to CHP and DG, ways to overcome these barriers, and model rates and rules
  - Identify key commissions/staff/champions
  - Use regional CHP Initiatives to coordinate/reinforce
  - Develop new and use existing templates for standby energy charges, interconnection costs, processes, etc.
2. Create a methodology to monetize non-traditional benefits of CHP
  - Facilitate open disclosure of T&D upgrade sites, needs and costs
  - Include DG/CHP alternatives
  - Identify exit and standby fees in key geographic areas
3. Work with NARUC to establish “reasonable and customary” standby and exit fees or develop a process to establish them
  - Target one or two states
  - Hold workshops with key stakeholders
4. Develop locational pricing strategies and incentives
  - Encourage development of locational pricing theory and tariff structure
  - Identify locations with a likelihood of success

5. Work to pass legislation at the state level to adopt IEEE interconnection standard
  - Coordinate efforts with IEEE, PUCs, NARUC – Use Model Language as appropriate
  - Target Illinois to pass IEEE 1547
  - Publish lessons learned and IEEE 1547 Implementation Plan
  - Allow independent review of utility interconnect upgrades
  - Create database of interconnection progress
6. Use Midwest CHP Application Center as a guide for RACs around the country
7. Expand net metering up to 1 MW for CHP
  - Seek state legislative action and FERC implementation as appropriate
8. Create a “value proposition” for CHP
  - Create incentives for utilities to embrace DG and CHP
  - Prepare a white paper on quantifiable financial benefits of DG
  - Develop alternatives to “cost plus” utility scenarios
  - Present to key utilities, regulatory commissions, NARUC



## UTILITY ISSUES STORYBOARD RESULTS (CONTINUED)

<p><b>Issue model interconnection and tariff rules for Renewable, CHP</b> ◆◆◆◆</p>	<p><b>Allow individual review and estimate of utility interconnect upgrades. Create independent review board to oversee interconnection applications.</b> ◆◆◆◆</p>	<p><b>Expand net metering up to 1 MW for CHP (real-time pricing)</b> ◆◆◆◆◆</p>	<p><b>Create value proposition for</b></p> <ul style="list-style-type: none"> <li>– Recycled energy/CHP portfolio standard</li> <li>– Green Power</li> <li>– Environmental credits</li> </ul> <p><b>Create carrots for utilities who encourage customer-sited, customer-optimized DG (overhaul “cost-plus”) ◆◆◆◆◆</b></p>
<ul style="list-style-type: none"> <li>• Develop NARUC-approved model framework for network interconnection</li> <li>• Model standby methods</li> <li>• Model for value reactive power</li> </ul>	<ul style="list-style-type: none"> <li>• Create database of regulations for public access</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage state legislative action</li> <li>• Engage NARUC in this effort                             <ul style="list-style-type: none"> <li>– USCHPA lead</li> <li>– State – regional efforts</li> <li>– Engage end users</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Prepare white paper showing quantifiable financial benefits of DG, then showing which of those legally accrue to the regulated utility</li> <li>• Schedule USCHPA brainstorming on alternatives to “cost-plus” utility regs                             <ul style="list-style-type: none"> <li>– Compile state portfolio standards</li> <li>– Establish position on CHP portfolio standards</li> <li>– Present to key utilities/PSCs/NARUC</li> </ul> </li> </ul>

## CHP TECHNOLOGIES AND MARKETS

### Key Issues and Actions:

1. Establish new metrics for valuing multi-faceted CHP benefits
  - Focus on thermal performance
  - Make metrics easy for decision-makers to grasp
  - Utilize concept of CHP as “free work”
2. Work with ASHRAE to develop a BCHP standard for integrating CHP into HVAC design
  - Utilize on-going ASHRAE committee (1.10) to create the standard
  - Coordinate with ASERTTI, U.S. DOE, USCHPA and other design and integration professionals
3. Continue and Expand DE/CHP Road Shows
  - Expand program to reach out to trade associations, code officials, building associations, the environmental community
  - Focus on end-users
4. Monetize “non-market” revenue streams
  - Design innovative rates for ratepayers in all customer classes
  - Educate NASEO and NARUC members on the need – and structure – for tax incentives (credits and rebates)
5. Reach out to agricultural marketplace
  - Develop market entry strategy
  - Design new CHP designs and applications in agricultural environments (on-farm, processing, storage, etc.)
6. Promote innovative rate structures for CHP systems
7. Conduct market analysis of CHP
  - Target low-income/multi-family buildings, schools and hospitals, and federal buildings
  - Change tax code to increase use of municipal tax-exempt bonds to fund CHP in public buildings/facilities

8. Conduct RD&D on multi-fuel prime movers
  - Fossil and renewable fuels
  - Target DOE labs to sponsor work
  
9. Identify market opportunities driven by replacement or expansion of existing systems
  - Boiler Replacement
  - Collect data from states



## TECHNOLOGY & MARKETS STORYBOARD RESULTS (CONTINUED)

<p><b>Conduct detailed market analysis of CHP</b>          – Focus on value points and nuances          ♦♦♦♦♦♦♦♦</p>	<p><b>Conduct RD&amp;D on multi-fuel prime movers</b></p> <ul style="list-style-type: none"> <li>• Fossil             <ul style="list-style-type: none"> <li>– Coal gasification</li> <li>– Natural Gas</li> <li>– Diesel</li> </ul> </li> <li>• Renewable             <ul style="list-style-type: none"> <li>– Biogas</li> <li>– Solar</li> </ul> </li> </ul> <p>♦♦♦♦♦♦♦♦</p>	<p><b>Identify market opportunities driven by replacement and/or expansion of existing systems (i.e., boiler replacement)</b>          ♦♦♦♦</p>	<p><b>Design a metric for revealing CHP's financial and energy advantages to convince decision makers</b>          ♦♦</p>
<ul style="list-style-type: none"> <li>• Multi-family             <ul style="list-style-type: none"> <li>– Low income</li> <li>– Senior</li> <li>– Assisted living</li> <li>– Use state energy assistance funds to leverage private investment in CHP</li> </ul> </li> <li>• Change tax code to increase use of municipal tax exempt bonds to fund municipal CHP</li> <li>• Do market plan with details             <ul style="list-style-type: none"> <li>– Hospitals</li> <li>– Colleges/Universities</li> <li>– Low income housing</li> <li>– Federal sector</li> </ul> </li> <li>• Who:             <ul style="list-style-type: none"> <li>– ORNL</li> <li>– IDEA</li> <li>– CHP Application Centers</li> <li>– HUD/FHA's</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Target DOE Research Labs to sponsor work             <ul style="list-style-type: none"> <li>– Fund multi-fuel generators</li> <li>– Fund small gasifiers</li> <li>– Identify: low cost coal regions and bio-gas sites</li> </ul> </li> <li>• Make information available on USCHPA and other web sites</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate with EPA or state DEPs to form database of boilers that represent CHP opportunity</li> <li>• Identify key end-user organizations that have CHP potential benefit and engage with directed case studies             <ul style="list-style-type: none"> <li>– CMA, ASHRAE, ASME, NPRA</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Create a new metric – an activity- based accounting metric as a function of <u>process value</u>, not <u>commodity metering</u> <ul style="list-style-type: none"> <li>– By end of 2004, utilize existing application centers to collect energy consumption data per unit of economic activity and try to prove validity of new metric</li> </ul> </li> </ul>



## ENVIRONMENTAL ISSUES FOR CHP

### Issues and Actions:

1. Establish a basis for offset credits for CHP
  - Promote trading credits within the commercial and industrial (C&I) sectors as economic drivers for CHP
  - Develop guidance to establish credits on a national basis
  - Other suggestions: separate CO<sub>2</sub> from other emission types; allow distributed CHP sites to recover avoided distribution costs through credits; and establish lower emissions limits predicated on the heat rate of the local utility serving area (likely accomplished through an independent, third-party certification group)
2. Encourage and support local and national implementation of output-based standards
  - The U.S. EPA should primarily be responsible for accomplishing this, with assistance from the USCHPA and new CHP Application Centers where applicable
  - The U.S. EPA should aggressively reach out to states; attend Air Bureau Directors' meetings; and get the final version of its "How To" guidebook completed and out to the states
  - The USCHPA should continue to educate Congress on how/why output-based emissions fit into air pollution legislation
  - The new CHP Regional Application Centers should work to get utility regulators involved and educated on state implementation plans (SIPs)
  - All CHP Stakeholders should encourage EPA officials to accept output-based emission standards
3. Incorporate CHP criteria in Brownfields development.
  - Apply criteria for utilizing CHP into Brownfields redevelopment (as previously developed for the U.S. EPA and the U.S. DOE)
  - Hold between regular meetings of the U.S. EPA CHP partnership and U.S. EPA Brownfields teams
  - EPA and the USCHPA should provide information about CHP and Brownfields to the U.S. Green Buildings Council
4. Create a tax on output-based emissions
  - Accomplish this via acceptance of output-based emissions limits
  - Support tax credits could be provided for CHP systems; the use of taxes for such purposes in other countries (such as Sweden) should be studied and documented in an effort to accumulate "lessons learned"

- EPA and/or local economic development offices should develop and market an economic model based on output-based emissions
5. Establish emissions credits for CHP applications using alternative fuels
- Biomass a good example of such an alternative fuel
  - Find a way to link CHP with state renewable portfolio standards (RPSs); the existing CHP regional initiatives could work to achieve this

## ENVIRONMENTAL ISSUES STORYBOARD RESULTS

<b>Establish basis for offset credits for CHP</b> ♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦	<b>Support local and national implementation of output-based standards</b> ♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦	<b>Incorporate CHP criteria in Brownfields development</b> ♦♦♦♦♦♦♦♦♦♦	<b>Develop tax policy on output-based emissions</b> ♦♦♦♦♦♦♦♦	<b>Establish emissions credits for CHP applications using alternative fuels (e.g., biomass)</b> ♦♦♦♦
<ul style="list-style-type: none"> <li>• Promote trading credits within C&amp;I sector as economic driver to CHP</li> <li>• Separate CO2 from other emissions types</li> <li>• Develop guidance establishing national basis</li> <li>• Allow distributed CHP sites to recover avoided distribution costs through credits</li> <li>• Establish lower emissions limits predicated on heat rate of local utility serving area (would likely be accomplished through an independent third party certification group, e.g., Green-e, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Aggressive EPA outreach to states</li> <li>• EPA attend Air Bureau Director's meeting</li> <li>• EPA gets final "How to" guidebook for states out A.S.A.P.</li> <li>• On the national level, educate Congress on how/why output-based emissions fit in air pollution legislation (Multi-P)</li> <li>• Get utility regulators involved and educated on SIPs (state implementation plans);</li> <li>• Encourage Administration/high-up EPA officials to accept output-based emission standards</li> </ul>	<ul style="list-style-type: none"> <li>• Apply the criteria for CHP in Brownfields redevelopment (as developed for EPA and DOE)</li> <li>• Hold frequent/regular meetings between EPA CHP partnership and Brownfields teams</li> <li>• Provide information on CHP to LEEDS (EB) protocol at US Green Buildings Council</li> </ul>	<ul style="list-style-type: none"> <li>• Promote acceptance of output-based emissions limits (example: Southern California Air Qual. Monitoring District)</li> <li>• Provide tax credits for CHP systems</li> <li>• Document use of taxes in other counties (e.g., Sweden)</li> <li>• Develop and market economic model on output-based emissions</li> <li>• Have Surgeon General announce that power plant emissions are harmful to your health</li> </ul>	<ul style="list-style-type: none"> <li>• Find a way to link CHP with state RPSs</li> <li>• Structure at different levels (do not limit to alternative fuels only)</li> </ul>