

**MEHC – PacifiCorp
Combined Climate Change & Integrated Gasification Combined Cycle
Working Groups**

**Tuesday, November 28, 2006
9:00 am – 2:00 pm (Pacific Time)
10:00 am – 3:00 pm (Mountain Time)**

Meeting Summary

California	Not represented
Idaho	Not Represented
Oregon	Jesse Jenkins (Renewable NW Project), Ed Durrenberger (OPUC), Steve Weiss (NW Energy Coalition), Irion Sanger (ICNU), John Volkman (Energy Trust), Angus Duncan (BEF), Phil Carver (ODOE), Jim Edelson (OIGWC), Jason Eisdorfer (CUB), Wayne Lei (PGE), Lisa Schwartz (by phone, OPUC)
Utah	Sam Liu (DPU), Cheryl Murray (CCS), Carol Revelt (UT-PSC), Charles Peterson (DPU), Thomas Brill (DPU), Adel Sarofim (Univ of Utah), Kevin Whitty (Univ of Utah), Regg Olsen (Utah DAQ), Rusty Ruby (Utah DAQ), Glade Sowards (Utah DAQ), Cheryl Heying (Utah DAQ), Ron Daniels (Utah Energy Policy), Phil Porlick (Utah DNR), David Curtis (Univ of Utah), Ray Levey (Univ of Utah), Phil Powlick (Utah UGS), Betsy Wolf (SLCAP), JoAnn Lightly (Univ of Utah), Sarah Wright (UCE), Gary Bryner (BYU), Eric Eddings (Univ of Utah)
Wyoming	Steve Ellenbecker (Wyoming Governor's Office), Bryce Freeman (WY-OCA)
PacifiCorp	Salt Lake City: Nick Rahn, Ian Andrews, Greg Betenson, David Taylor, David Eskelsen Portland: Brent Leonard, Greg Duvall, Mike Liljenwall, Pete Warnken, Cathy Woolums (MidAmerican Energy Holdings Co) Phone: Kyle Davis, David Kvamme
Other	Kevin McCauley (Babcock & Wilcox), Abe Baltazar (Babcock & Wilcox), Kathy VanDame (Wasatch Clean Air Coalition), Milind Deo (Univ of Utah), Roger Swenson (E-Quant), Eric Guidry (Western

Resource Advocates), Brian McPherson (SW Partnership on Carbon Sequestration), Wayne Lei (PGE)

Phone-In

Nancy Kelly (Utah CCS), Joel Levin (CCAR), Robyn Camp (CCAR), Vicki Stamp (CO₂ Program Manager-DOE), Andrea Coon (DPU), David Kvamme (PacifiCorp), Don Beiderman (WY-Staff), Lisa Schwartz (OPUC), Robert Pomeroy (Holland & Hart)

Introduction

This was a combined meeting of the second Climate Change Working Group and the sixth meeting of the Integrated Gasification Combined Cycle (IGCC) Working Group. The following presentations and discussions were made:

PacifiCorp's 2005 CO₂ Emissions Production portfolio - Kyle Davis (PacifiCorp)

Power/Utility Sector Reporting Requirements for California Climate Action Registry (CCAR) - Robyn Camp (Program Director, CCAR)

CCAR Status Report on development progress for a multi-state registry - Joel Levin (Vice President, CCAR)

CO₂ risk allocation discussion - Andrea Kelly (PacifiCorp)

CO₂ profiles of PacifiCorp's IRP portfolios - Greg Duvall (PacifiCorp)

Oxy-Fuel Combustion - Kevin McCauley (Babcock & Wilcox)

Summary of Presentations

The meeting was held in Salt Lake City and video-linked with PacifiCorp's Portland office. A number of individuals also participated via phone. The meeting agenda and presentations were posted on the PacifiCorp IGCC Working Group site (<http://www.pacificorp.com/Article/Article66610.html>) on November 27, 2006.

The first presentation was made by Kyle Davis of PacifiCorp; Kyle presented information on PacifiCorp's 2005 carbon emissions. There was some discussion about the challenges associated with determining and allocating emissions associated with purchased power.

The next presentation was made by Robyn Camp of the California Climate Action Registry on the efforts to develop the green house gas emissions registry. This registry is proposed to baseline emissions, allocate future emission reductions, and to develop an inventory for a cap-and-trade allocation process. One issue that was raised was the need to develop a methodology to address emissions allocations from combined heat and power applications. The next presentation was made by Joel Levin on efforts to use the Climate Change Action Registry for multi-state reporting and inventorying.

PacifiCorp facilitated a discussion to address an acquisition commitment for the IGCC Working Group to discuss “the allocation of risk between shareholders and ratepayers of additional carbon dioxide emissions in the event PacifiCorp proceeds with a coal unit that is not able to capture and store carbon emissions.” The overall discussion was lively and reflected a variety of views and concerns. Some of the positions and viewpoints that were expressed include:

- “What investment decisions would the company take if the shareholder was responsible future carbon risk?”
- How will the company move forward if Oregon does not acknowledge the IRP.
- The company should delay any baseload investment decision pending more clarity on technology risk issues and should accomplish this by building bridging gas-based resources, more demand side management resources, and more renewables.
- “There is ten times more DSM available than currently projected.”
- The company should consider building wave power to meet a portion of its coastal loads.
- The issue cannot be confined to single state inasmuch as PacifiCorp operates an integrated system; the states that are large carbon producers (Wyoming and Utah) are also the major sources of energy for the system.
- In the event some states do not acknowledge coal-based resources are they willing to accept the market based risk.
- The returns that utilities are able to achieve do not warrant them taking on unnecessary risk.
- Need to know how the state regulators will address the risk.
- There is “gross regulatory failure” if the regulators allow the company to proceed with three coal-fired plants.
- Reliability of the power supply is a major factor in evaluating resource options.
- Consensus that there is a lot of uncertainty.
- “We do not know enough to make an informed decision.”
- IGCC resources presented in any IRP scenario analysis should include carbon capture and sequestration capability.

Following the general discussion, PacifiCorp made a presentation on the estimated CO₂ emissions for the various candidate portfolios that were modeled for the draft 2006 Integrated Resource Plan process. One issue that was raised is an understanding why the CO₂ emissions were relatively insensitive to high CO₂ carbon tax rates, notably for the case with a \$61 per ton. A request was made the company provide emissions data on the existing generation fleet. The PacifiCorp IRP group had an action item to explain why one of its candidate portfolios with extra wind (Scenario CP3) had higher emissions for the later part of the forecast period than a similar one without the extra wind (Scenario CP1).

The final presentation was made by Babcock and Wilcox on their oxy-fuel combustion research and Saskpower’s proposal to build an oxy-fuel combustion plant. Babcock and Wilcox is a major supplier of large utility power and industrial boilers, heat recovery

equipment, and air quality control systems. The technology would have application for both new generation plant and retrofits. Saskpower has selected the Shand site for the plant, if the company decides to proceed with the project. For the Saskpower project, Babcock and Wilcox would have the responsibility for the power boiler and gas clean up system. One of the potential benefits of the technology in new generation configurations, other than CO₂ capture, is that it would potentially eliminate the need for the selective catalytic reduction system and the stack. For retrofit applications this technology may require additional CO₂ purification due to issues associated with air-in leakage. A copy of the Babcock and Wilcox presentation is posted on the IGCC Working Group webpage (<http://www.pacificorp.com/Article/Article66610.html>).

Future Meeting Topics

The group identified the following as potential topics or areas of interest for the next meeting:

1. Presentation on the estimated costs of energy for different technologies with CO₂ capture.
2. Provide cost curves for retrofit CO₂ capture technologies.
3. A presentation by other suppliers, other technologies, DOE/EPRI projects looking at CO₂ capture on pulverized coal plants (Identified at the October IGCC Working Group Meeting).
4. A comparison of mercury emissions capture technology from both pulverized coal and IGCC plants (Identified in separate email after the October IGCC Working Group Meeting).
5. Review IGCC / GCC working group plans for 2007 (review objectives).

PLEASE FORWARD IDEAS FOR FUTURE TOPICS FOR IGCC WORKING GROUP MEETINGS TO IAN ANDREWS (Ian.Andrews@pacificorp.com, 801-220-4286). PLEASE FORWARD IDEAS FOR FUTURE TOPICS FOR CLIMATE CHANGE WORKING GROUP MEETINGS TO KYLE DAVIS (Kyle.L.Davis@pacificorp.com, 503-813-6601).

Next Scheduled Meetings of the Climate Change & IGCC Working Groups

The next IGCC Working Group Meeting is scheduled for the morning of Thursday, January 25, 2007 starting at 10:00 AM (Mountain), 9:00 AM (Pacific). The next meeting of the Climate Change Working Group is scheduled for the afternoon of same day, starting at 1:00 PM (Mountain), Thursday, January 25.

The meetings in Salt Lake City will be held in room 130 K at the North Temple Office, 1407 West North Temple, Salt Lake City, Utah.

The meetings in Portland will be held in PacifiCorp's offices in room 956 at the Lloyd Center Tower, 825 NE Multnomah, Portland, Oregon. *Please note the new room 956 for the Lloyd Center Tower on the 9th Floor.*

A video-link will connect the two meetings. A proposed agenda and dial-in information will be circulated in the meeting notices.