



**MEMORANDUM**

**DATE:** November 9, 2007

**TO:** GLOBAL CLIMATE CHANGE WORKING GROUP MEMBERS AND OTHER INTERESTED STAKEHOLDERS

**FROM:** KYLE DAVIS

**SUBJECT:** draft PacifiCorp Global Climate Change Action Plan

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Attached you will find the company's draft Global Climate Change Action Plan. We are seeking your input and would request comments and/or additional information be submitted to us electronically using the following e-mail address:

[GlobalClimateChangeWorkGroup@PacifiCorp.com](mailto:GlobalClimateChangeWorkGroup@PacifiCorp.com).

We are also asking that your comments be organized according to the draft document's existing sections and headings, and that each unique comment and/or question be numbered so the company may more easily track and respond to them. Finally, the deadline for submitting comments is November 30, 2007.

The company appreciates you taking the time to review the draft and I want to personally thank you for your participation in the Global Climate Change Working Group meetings, as well as your willingness to take the time to prepare comments and provide additional information.

Once the company has made its revisions to the text, the plan will be reformatted and filed with each state Utility Commission.

**PacifiCorp  
Global Climate Change  
Action Plan**

**December XX, 2007**

## **Executive Summary**

[Note: to be drafted once the report is finalized]

MidAmerican Energy Holdings Company (MEHC) made a commitment that within six months after close of the transaction, PacifiCorp would establish a global climate change working group composed of representatives of the regulatory, consumer, educational and environmental communities in the six states that PacifiCorp serves, as well as representatives of PacifiCorp and MEHC. PacifiCorp further committed to working with the global warming working group to identify cost-effective measures to reduce PacifiCorp's greenhouse emissions and was tasked with developing and filing with the state Commissions its strategy, which MEHC supports, for reducing its greenhouse gas emissions. This document is an action plan articulating PacifiCorp's current strategy.

PacifiCorp DRAFT

## **I. The Challenge Ahead**

Climate change is the most significant environmental challenge facing the world today. Recent analysis strongly suggests that the climate is warming and that human beings are contributing to this warming through the burning of fossil fuels. Both the effects of climate change and regulation of greenhouse gas emissions will directly impact business, society, and ecosystems and numerous local, state, regional, national and international efforts are underway that seek to mitigate the effects of climate change with, new far-reaching regulations. The production and use of electricity utilizing fossil fuels can contribute to the release of significant amounts of carbon emissions, which makes the sector an early target for regulation. The challenge then is for PacifiCorp and its regulators to develop strategies to reduce or avoid the release of carbon emissions, while providing safe, reliable electricity to its customers at a reasonable cost.

The challenge of developing a plan to transition away from the carbon emissions-intensive industrial economy that has fueled more than two centuries of economic growth and development cannot be underestimated. Poorly conceived policies that fail to identify a path to achieving greenhouse gas emissions reductions and, instead, impose arbitrary timelines with ill-conceived solutions will produce either political gridlock or bad public policy – which the United States cannot afford. Energy consumers, particularly lower income Americans who spend a disproportionately large percentage of their incomes on energy, will ultimately bear the costs of making the dramatic transformation needed to transition from a carbon-based economy. These costs are likely to include paying higher overall energy prices (not just energy from fossil fuels) as well as potential job losses if carbon-intensive industry relocates overseas in areas without carbon constraints. We should strive to develop a policy that does not economically disadvantage American workers and businesses in the near term while creating a template that can be integrated into a long-term global system and replicated in the developing world. Given that every dollar spent on reducing carbon emissions and avoiding potential impacts of future climate change is one less dollar that can be invested in education or disease eradication or even other environmental programs that directly protect human health, we must weigh risks and benefits carefully and spend our resources prudently. The economic and social costs of any climate policy will depend on several factors, including the timelines for implementing emission reduction requirements, the magnitude of the reductions, and the development and deployment of technologies to change the country's energy profile.

Recognizing that there are broad ranges of opinion among scientists, policymakers, and the public on the risks of climate change, we believe that it is prudent for the United States to develop a long-term plan to minimize the potential of worst-case scenarios and extreme climate disruptions over the next century. We believe the primary focus should be on achieving sustainable global emissions levels in the longer term, rather than implementing immediate and dramatic U.S. reductions. Put another way, the level of U.S. greenhouse gas emissions in 2012 is less important than the level of global greenhouse gas emissions in 2050—however, that doesn't mean that we should defer action.

In general, we have been disappointed by the debate to date in Congress. There has been far too much focus on the destination (i.e., emissions targets) and far too little attention paid to determining how we can get there (i.e., what is technically feasible). At PacifiCorp, we approach our key challenges through a multi-stage process whose primary components are – assess, plan, execute, measure and adjust. Applying these same tools to the challenge of dealing with carbon emissions and climate change, we recommend a multi-phased, economy-wide approach that matches emissions reduction goals to reasonable expectations of technology development.

Our recommendation is based primarily on concepts developed by the Electric Power Research Institute (EPRI) and described within their recently released study “The Power to Reduce CO<sub>2</sub> Emissions: The Full Portfolio.” In that document, EPRI describes a technology path for the electricity sector to return to 1990 emissions levels by 2030. This will require the long-term commitment of billions of dollars in energy research, development and deployment in every aspect of electric generation, transmission and consumption. EPRI establishes specific technology deployment targets in seven areas: efficiency, renewables, nuclear generation, advanced coal generation, carbon capture and storage (CCS), plug-in hybrid electric vehicles (PHEV) and distributed energy resources. While one could argue that carbon emission reductions from some of these targets could be slightly higher or somewhat lower, the overall picture is clear – we can get from here to a low carbon future, but only with substantial and consistent investment, the right policy choices and a realistic timeline. The most encouraging aspect of the study is that, as we move toward 2030, emissions levels can begin falling fairly dramatically and the potential of some of the more dire predictions of climate change can be minimized.

The emphasis here is that there will be a hierarchy of value in the dollars spent attempting to address climate change. It is critical to address technology research and development that will assist in long term solutions along with measures that offer immediate carbon benefits from investments in energy efficiency, renewable energy, and increasing the efficiency of existing fossil generation.

Increased funding for technology research and development is critical. Federal spending on energy research and development has decreased 85 percent since the early 1980s. Failing to take technology development timelines into account could well result in unintended consequences, such as large-scale fuel-switching to natural gas — which already is in tight supply and faces serious infrastructure constraints — and emissions shifting to countries without carbon controls. Large-scale fuel-switching to natural gas for electric generation will also require increased dependence on imported liquefied natural gas (LNG), exacerbating our balance of trade issues and reducing, not increasing, our energy security.

Regrettably, it is unrealistic to believe technology, energy efficiency and renewable energy alone will solve the global climate change challenge. It is inevitable that some lifestyle changes and adaptation will be necessary.

## II. Overriding Policy Issues

An investigation of the challenges and possible opportunities to reduce PacifiCorp's greenhouse gas emissions identifies a number of "game-changer" issues. These game-changers include both policies and technologies that facilitate emission reduction by streamlining efforts or providing commercialization incentives for new technology development, particularly in advancing low-carbon energy technologies. If implemented correctly, they foster innovation and accelerate commercialization. Without effective policies, technology game-changers often remain incomplete, delayed or unable to be brought to market on a timely basis. The right policies have much to do with bringing about technical and economic feasibility.

### **A. Policy: Carbon Credit and Valuation for Early Action**

Current uncertainty regarding the value of early action, in advance of state or federal carbon regulation, delays early carbon emissions reduction investments. A perverse result of the current uncertainty over carbon regulation is a delay in the development of cutting edge initiatives that could be overcome with timely and targeted policy intervention. The federal government or states should consider creating a banking mechanism, with clear underlying property rights attributable to the entity initiating early action, to allow value to be realized from carbon reductions resulting from that early action.

A uniform structure for quantifying carbon equivalent, establishing how it will be credited, certified and tracked, as well as defining a process to bank the credits, needs to be established to appropriately address the risk and reward of emission reductions. This action would supplement the numerous issues related to designing the ultimate carbon control regime. By clearly defining a process by which a risk-taking entity can receive future rewards under a carbon-control regime (while the environment benefits from emissions reductions that occur much earlier), government can liberate early action as well as provide a basis for liquidity in any future credit markets that may emerge. A stable set of early incentives for carbon-saving investment needs to be established in the United States. The combination of a banking system with clear underlying property rights will enable private entities to act on the basis of their own assessment of the future value of carbon credits.

#### **Renewable Energy Action Plan**

MidAmerican Energy Holdings Company made a commitment to work with the states to produce a Renewable Energy Action Plan as part of its acquisition of PacifiCorp. PacifiCorp committed to filing a 10-year plan, concurrent with its next Integrated Resource Plan filing, showing how it plans to acquire 1,400 megawatts of cost-effective renewable resources by 2015, including specific milestones over a 10-year planning period as to when resources will be added. PacifiCorp has filed an updated Renewable Energy Action Plan concurrently with its 2007 Integrated Resource Plan. The 2007 Integrated Resource Plan identified 2,000 megawatts of renewable resources targeted by the end of 2013. The Renewable Plan sets forth the objectives and action items to meet the commitment of acquiring cost-effective renewable resources by the target date. The Renewable Energy Action Plan is divided into four categories: Resource Acquisition, Institutional, System Operations and Transmission.

**B. Policy: A Unifying Strategy for a Utility's Climate-Related Programs**

Federal and state mandates relating to renewable and alternative energy development, vehicle fleet requirements, energy efficiency and demand-side management have traditionally been developed in isolation. These mandates fail to capture useful data on climate impacts and/or benefits and have the potential to result in unintended consequences. Furthermore, narrow requirements imposed by state programs, such as the requirement that a renewable resource be located in the regulating state, discourage cost effective ways to reduce climate impacts.

For example, PacifiCorp's multiple programs for clean and alternative energy development have been largely designed in isolation from one another, with the intent of stimulating innovation or improving environmental performance in each technology sub-category. Energy efficiency and demand-side management programs have individual budgets and targets. The Renewable Portfolio Standard (RPS) programs stimulate particular technologies up to a certain percentage of a particular state's electricity retail sales; solar photovoltaic programs aim to achieve specific capacity installation targets; heat rate improvement projects and higher efficiency generation technologies focus on fuel savings. Other opportunities in low- or zero-carbon energy development — such as waste heat recovery and methane capture — are not fully developed or recognized under existing RPS programs. While these are important programs individually, they do not include all technologies that can contribute to carbon emissions mitigation.

Policies should be adopted that either implement or allow a utility to pursue a generation portfolio strategy with carbon-equivalent savings as the unifying principle. All actions that result in such savings would contribute to carbon emissions reduction goals, thus providing an incentive for a utility and its customers to undertake what are now generally unrecognized beneficial carbon-reducing acts. Such a strategy would need to be supported by state utility regulators and potentially replace and/or unify all existing clean and alternative energy programs and mandates.

### **C. Policy: New Transmission and Carbon Dioxide Pipeline Route Identification and Permitting**

The Western United States has been identified to possess enough renewable resource and carbon dioxide sequestration reservoir potential to provide several times the West's current electricity needs and contribute substantially to greenhouse gas reductions. However, there are significant hurdles to developing these resources. Renewable resources are often located significant distances from load centers and lack adequate transmission infrastructure. Desirable carbon sequestration reservoirs also are located in remote locations. Many high potential areas have been minimally developed and many have a myriad of wildlife, archaeological and other siting issues that must be addressed before development of the resource can occur in earnest. Federal and state regulatory processes to site and permit projects can be arduous, lengthy and complex and, lacking the proper public policy framework, often result in third party litigation. The primary key to having more renewable energy supplied to the grid is improved transmission access for these resources. Similarly, access to pipelines for the transport of carbon dioxide to sequestration reservoirs is critical. In order to begin any project, land leasing and permitting is required. While all development projects face such challenges, specific permitting hurdles vary by technology, multiple levels of jurisdiction (federal, state and local) and associated processes when leasing land for development. There is also a lack of established interagency coordination for leasing, environmental review and permitting.

Government should adopt policies to identify and assess preferred transmission and pipeline routes within states, and develop a regional strategy, coordinated among state and federal agencies and other stakeholders, to facilitate both the prudent construction of those routes and development of transmission and pipeline infrastructure. This would reduce the time and costs, as individual project

#### **PacifiCorp's Transmission Plan**

In 2007, PacifiCorp announced plans to build more than 1,200 miles of new high-voltage transmission lines originating in Wyoming and connecting into Utah, Idaho, Oregon and the desert southwest. The projects are set for completion in year 2014. The \$4 billion-plus investment plan includes existing projects in the company's 10-year business plan and additional investments to address customers' increasing electric energy use. In addition to improving system reliability, these projects are also anticipated to facilitate wind and other renewable generation resources for customers throughout PacifiCorp's six-state service area and the western region.

The new lines will move power to high-growth areas, particularly in Utah and Wyoming. They also will support the needs of the West Coast states including PacifiCorp's existing customers in Washington, California and Oregon that are seeking increased use of renewable energy. Much of that renewable energy, particularly wind, is expected to come from Wyoming and adjacent states.

The new transmission projects are a "hub and spoke" design—creating common points or "transmission hubs" of major interconnection for load and resources. From these hubs, power will be collected then moved in different directions. This comprehensive approach allows the company to deliver power from a variety of generation sources such as coal, gas or wind, to where it is needed.

The lines will be the first major projects to be built under the oversight of the Northern Tier Transmission Group, a coalition of investor-owned and public utilities, state government agencies and transmission customers intent on pursuing regional transmission planning and expansion opportunities consistent with Order No. 890 requirements recently adopted by the Federal Energy Regulatory Commission. Northern Tier, formed in late 2006, will oversee the planning of the two lines and manage the public input process.

proponents would not have to do independent review and environmental impact statements for each project proposed. Joint environmental documents should be created and consolidated state and federal permits within an accelerated timeframe (i.e., one year).

#### **D. Policy: New Nuclear Development and the Handling of Spent Fuel**

Any long-term approach to climate change must consider a return to nuclear development in the United States. Unlike other zero carbon-emitting technologies, the main barrier to new nuclear projects in is not technological, but political: the ongoing failure of the federal government to meet its obligations regarding spent nuclear fuel. For more than two decades, utility customers have paid these fees, utilities have collected them, and the federal government has failed to meet its obligations. Without regulatory certainty on spent fuel, the financial community will hesitate to provide the capital necessary for these billion-dollar-plus projects. If governments are serious about addressing global climate change, they must open the door again to nuclear power.

#### **E. Technology: Carbon Capture and Sequestration (CCS)**

Broad commercial deployment of carbon capture and sequestration (CCS) technology is a critical component of achieving long-term reductions in greenhouse gas emissions for all types of fossil fuels (i.e., coal, natural gas, and biomass), yet markets for these technologies are immature. CCS refers to the separation (capture) of carbon dioxide from industrial and power generation sources, and transport to storage locations (via pipelines) for long term storage within deep geological formations (reservoirs). To date, there is relatively little experience at the federal or state level in combining carbon dioxide capture, transport, and storage into a fully integrated CCS system. Furthermore, regulatory uncertainties and legal issues regarding property rights and long term liability are significant barriers for CCS which must be resolved before the widespread commercialization of CCS can occur.

**Integrated Gasification Combined Cycle**  
PacifiCorp has joined with the Wyoming Infrastructure Authority Board to develop an integrated gasification combined cycle, or IGCC, demonstration power plant in Wyoming to help reduce carbon emissions from energy generation. The company was selected to establish a development partnership after the Wyoming Infrastructure Authority issued a request for proposals. This public-private partnership is a crucial step toward supporting U.S. environmental policies and goals to further the research and development of clean coal technologies. The authority will work with the Wyoming Congressional delegation, other members of Congress and the U.S. Department of Energy to secure federal funding under the Energy Policy Act of 2005. The proposed IGCC facility is planned for the company's Jim Bridger Plant complex near Point of Rocks, Wyoming. The new 500-megawatt demonstration plant will be designed to use Wyoming Powder River Basin coal and other Wyoming coals. The plant also will be planned and operated with carbon dioxide capture and sequestration, either through enhanced oil recovery or some other form of geologic sequestration.

Policies should, first and foremost, address the legal and regulatory barriers and issues associated with CCS, including the development of a legal framework to address long-term liability associated with carbon sequestration, as well as the regulatory framework for monitoring storage and ensuring compliance. There should also be an increase in the

number of CCS demonstration projects with an explicit assurance of full cost recovery associated with these demonstration projects.

### **F. Technology: Energy Storage**

Energy storage has the distinct capability of enabling higher penetrations of intermittent renewable energy in its portfolio. Other types of renewable sources – geothermal, biomass – are base-load resources and do not require storage. Some concentrating solar power projects will be built with heat storage to generate off-peak. The ability of electricity grids to absorb wind power has limits, which will be reached before the full potential of these sources is exhausted, unless resources are added to firm, balance, and integrate intermittent renewable generation. Pumped water, compressed air, or battery storage can firm wind resources and therefore create energy that can be scheduled to match customer demand as it fluctuates throughout the day. In addition, storage provides emergency power supply, backup and remote-area power supply. Coupled with advanced power electronics, storage systems can reduce harmonic distortions, and eliminate voltage sags and surges.

Storage technologies are particularly attractive for wind power, in effect overcoming the intermittent and frequently off-peak nature of wind power by storing the power for dispatch later. In this way, a variable generation source can be moved from off-peak to peak customer demand hours. Storage can firm wind capacity, and therefore avoid penalties for energy falling below the forecast, and utilize power above forecast. Wind energy then can increase its capacity credit, reduce grid connection rating, increase overall load penetration, and create profit maximization/price arbitrage. System operators and proponents of high wind energy penetrations recognize that energy storage systems can help mitigate the variability of intermittent resources, both for operating and capacity reserve needs. Storage can be on-site or centralized at utility facilities. Utility-scale central storage is much cheaper than on-site storage, but it requires more transmission to take the intermittent resource to the storage site or to load. Government should recognize the value of energy storage in enabling intermittent renewable sources and develop programs to encourage the advancement of energy storage technologies.

### **G. Technology: Smart Grid and Distributed Energy Resources (DER)**

Today's grid was designed to transmit electricity from central generation source to the point of consumption. A "smart" and interactive grid and communication infrastructure are necessary to enable the two-way flow of energy and data needed for widespread deployment of distributed energy resources, plug-in hybrid and dedicated electric vehicles (PHEV/EV) and end-use efficiency devices. Today's electricity grid is essentially 1950's infrastructure out of sync with modern telecommunications technologies and emerging on-site distributed generation technologies, such as small-scale solar photovoltaic system and wind turbines. Inadequate sensors limit transmission over congested lines and the technology necessary to enable more sophisticated management of both supply- and demand-side resources is lacking.

Government policies supporting a modernized grid would allow increasing amounts of distributed energy resources generated near load, which would reduce overall electricity system losses and result in additional carbon abatement. Two-way flow of energy and data would also allow customers to respond to price signals to reduce usage at peak times. Government

should facilitate utility efforts to upgrade distribution-level infrastructure to support both increased distributed generation penetration and the power flows associated with PHEV/EV. Key regulatory action will also be needed to support proposals to send price signals to customers via time of day pricing to promote PHEV/EV.

### **H. Technology: Plug-in Hybrid and Dedicated Electric Vehicles (PHEV/EV)**

Plug-in hybrid and dedicated electric vehicles (PHEV/EV) work as energy storage devices with the primary advantage that they can be charged at night time when excess electrical generating capacity is available. Electricity fuel for PHEV/EV should be treated differently by regulators compared to traditional electricity supply because it represents a potential cross-sector transfer of carbon emissions. As demand for electric transportation

#### **Demand Side Management and Energy Efficiency Market Potential Study**

PacifiCorp offers residential customers and businesses a variety of energy efficiency programs to help conserve resources and manage demand during peak usage periods. These programs help customers save money and allow PacifiCorp to meet its resource growth in a least-cost manner. The company is currently working with customers to achieve up to 450 average megawatts of energy efficiency by 2013 and 285 megawatts of customer load control initiatives.

MidAmerican Energy Holdings Company and PacifiCorp committed to a company-defined third-party market potential study of additional demand side management and energy efficiency opportunities within PacifiCorp's service territories. The objective of the study was to identify opportunities not yet identified by the company and, if and where possible, to recommend programs or actions to pursue those opportunities believed to be cost-effective. The study was completed in 2007. The results indicate a cumulative, system-wide, *technical* energy-focused potential of demand-side and supplemental resources (standby generation, on-site solar, and combined heat and power) of 9,258 average megawatts (aMW) of electricity over the 20-year planning horizon from 2008 to 2027. Initial estimates suggest approximately 1,049 aMW of the identified technical potential is expected to be cost-effective, based on the total resource cost criterion and proxies for avoided costs, and 639 aMW are assumed reasonably achievable once normal market and program delivery constraints are accounted for.

options grows, emissions that would otherwise have been the responsibility of the transport sector will shift to the electricity sector, even though the overall impact to the environment and contribution to carbon emission reduction goals will be positive. Any emissions cap for the electricity sector, absent mitigating measures, will make this otherwise desirable shift a liability for the complying entities. This will serve as a powerful disincentive for the energy sector to take actions that encourage the use of electricity to substitute for higher carbon emitting fuels used within the transportation sector. In some of PacifiCorp's states, transportation is the largest source of in-state carbon emissions (i.e., California, Oregon, and Washington).

In order to encourage the substitution of electricity for traditional petroleum transportation fuels, it is important that government implement policies that make the utility sector neutral with regard to incremental transportation load and any future emissions cap. Because the PHEV/EV market has the potential to supply distributed generation to the grid during peak hours or provide ancillary services in the future, this approach offers multiple benefits. PHEV/EV enables greater utilization of off-peak renewable resources and has the future potential to provide cleaner and less expensive peak and ancillary benefits.

#### **I. Technology: Light Emitting Diode (LED) Lighting**

Energy efficiency provides some of the most cost effective carbon emissions reduction potential, but missed opportunities remain, especially in the lighting sector. While there are numerous existing and emerging energy efficiency technologies that provide carbon abatement opportunities, next-generation light emitting diode (LED) lighting has the potential to completely transform the lighting market. To date, state support for LED lights has been lacking. LED technology provides the next-generation of lighting opportunities and can save up to 30 percent more energy than compact fluorescent light bulbs. Currently LEDs are being used in niche markets such as traffic signs and supermarket refrigerated case lighting. Government should develop regulations providing incentives for utilities to develop and implement aggressive deployment of current LED technology, as well as rapid development and demonstration of LED lighting suitable for general illumination, to achieve additional energy efficiency savings and carbon abatement potential.

#### **J. Customer Program: New Customer Tariff Allowing Customers to Voluntarily Contribute to a Carbon Offset Program**

PacifiCorp would propose to develop a new voluntary program that will provide customers the option to offset the carbon emissions associated with their energy use with a product other than renewable energy. PacifiCorp already offers the Blue Sky renewable energy program. The new voluntary program would be modeled after Pacific Gas and Electric's ClimateSmart program,<sup>1</sup> residential and business customers would sign up to help fund environmental projects aimed at reducing atmospheric carbon dioxide levels.

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<sup>1</sup> PG&E ClimateSmart Program, [http://www.pge.com/about\\_us/environment/features/climatesmart.html](http://www.pge.com/about_us/environment/features/climatesmart.html)

Carbon reduction projects would focus on forest restoration and conservation projects and possibly transportation-related beneficial fuel switching. Once a customer enrolls, PacifiCorp would calculate exactly how many pounds of carbon dioxide they are emitting based on monthly electricity usage. The customer would pay a monthly amount as determined by their calculated carbon dioxide emissions.

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### III. Preliminary Global Climate Change Action Plan

#### Background

MidAmerican Energy Holdings Company (MEHC) and PacifiCorp committed to establish a global climate change working group composed of representatives of the regulatory, consumer, educational and environmental communities in the six states that PacifiCorp serves, as well as representatives of PacifiCorp and MEHC, that would work to identify cost-effective measures to reduce PacifiCorp's greenhouse emissions.

Since the time of that commitment, a number of the states that PacifiCorp serves have adopted legislation to regulate greenhouse gas emissions or are in the process of developing regulations to address greenhouse gas emissions. Within the last eighteen months, California has undertaken a rulemaking to effectuate a statewide greenhouse gas cap-and-trade program. California and Washington have both promulgated rules that establish greenhouse gas emissions performance standards applicable to the electricity sector, which put a stop to PacifiCorp constructing a new coal-fueled power plant, designating it as a system resource, and using it to serve California and Washington retail load. Finally, of the states in which PacifiCorp either has generation assets or operates as a local electric utility, the Governors of Arizona, California, Oregon, Utah, and Washington have joined together to form the Western Climate Initiative,<sup>2</sup> which seeks to collectively develop a regional cap-and-trade program that would achieve an aggregate reduction of greenhouse gas emissions of 15% below 2005 levels by 2020. This changing landscape requires a significant change in focus as PacifiCorp develops its program to comply with these newly adopted laws, regulations, and climate policy initiatives.

As such, the primary purpose of the Global Climate Change Action Plan is to first identify and develop compliance strategies in response to specific legislation and/or regulation. Second, absent specific state or federal legislation and/or regulation, PacifiCorp will voluntarily pursue cost-effective strategies to mitigate future carbon risk that can be implemented within the existing state least-cost, least-risk resource planning requirements.

**Table 1. State Goals for Greenhouse Gas Reductions**

(Where PacifiCorp has generation assets or operates as a local electric utility)

	Short Term (2010-12)	Medium Term (2020)	Long Term (2040-50)
<b>Arizona</b>	not established	2000 levels by 2020	50% below 2000 by 2040
<b>California</b>	2000 levels by 2010	1990 levels by 2020	80% below 1990 by 2050
<b>Oregon</b>	arrest emissions growth	10% below 1990 by 2020	>75% below 1990 by 2050
<b>Utah</b>	not established	not established	not established
<b>Washington</b>	not established	1990 levels by 2020	50% below 1990 by 2050
<b>Notes:</b> Utah has committed to setting goals by June 2008			

<sup>2</sup> See, <http://www.westernclimateinitiative.org/>

Climate Policy Development /Research, Development, and Demonstration (RD&D)

As discussed in Section II, PacifiCorp believes it is important for the United States to implement responsible policies that address the risks and potential impacts of climate change in a long-term, sustainable fashion. Implementation of such a strategy must rely on transforming the energy economy through significant investments in RD&D.

**Action Item:** Develop legislative and regulatory proposals advancing the “overriding themes” identified within Section II.

**Action Item:** Participate in, support and fund activities that are designed to advance new technologies.

**Action Item:** Participate in state, regional and national stakeholder processes that are established to address greenhouse gas emissions.

PacifiCorp DRAFT

### The \$/ton Carbon Dioxide Adder

PacifiCorp was the first company to incorporate the potential cost of carbon dioxide emissions in its resource planning. An estimated cost for carbon dioxide emissions is built into its Integrated Resource Plan in two ways. First, it built in an assumption of an \$8 per ton value in its forecasts for natural gas prices and for emissions allowances for nitrogen oxide and sulfur dioxide over a 20-year period. This in turn affected the electric market price forecast. (Note that higher carbon dioxide values actually reduce costs associated with nitrogen oxide and sulfur dioxide emissions due to less coal-fueled generation and an associated rise in excess allowances.) These market prices then helped the company determine cost-effectiveness for different resource options and, with variations and multiple model runs, they also helped the company understand the risk associated with carbon dioxide regulation.

Second, carbon dioxide costs were attributed to emissions associated with different portfolios, with an assumption that emissions are capped at 2000 levels.<sup>3</sup> Conversely, portfolios with emissions below 2000 levels received credits associated with excess allowances that could be sold to other emitters.<sup>4</sup> This approach adds cost to thermal generation while effectively rewarding renewable energy and demand-side energy efficiency for their emissions-free attributes. Finally, PacifiCorp subjected each portfolio that survived initial cost and risk analysis to carbon dioxide values ranging from \$0 per ton to \$40 per ton to comply with the OPUC's 1993 order.

When applied to different resource portfolios, the higher carbon dioxide cost scenarios, particularly the \$25 per ton and \$40 per ton values, had the biggest impact on cost differentials among portfolios. Coal-heavy portfolios looked unattractive due to the cost of emissions above 2000 levels, while "balanced" portfolios that avoided excessive exposure to high gas prices while exhibiting a much lower emissions level than coal-heavy portfolios fared well due to the sale of excess emissions allowances.<sup>5</sup>

PacifiCorp's use of an estimated carbon cost is not limited to planning; it is also firmly tied into purchasing efforts. PacifiCorp built on its modeling efforts in the IRP by employing a forward price curve for electricity in evaluating procurement options that includes the impact of an \$8 per ton estimated cost for carbon dioxide. The curve serves as a market price referent for bids submitted to the utility's 2004 request-for-proposals for renewable resources. Of course, since the vast majority of renewables emit little to no carbon dioxide, the bids themselves do not face carbon dioxide costs, but the market price referent curve includes a market with thermal resources, so the carbon dioxide-free renewables benefit from incorporating carbon dioxide into the price referent.

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<sup>3</sup> PacifiCorp assumed that emissions costs would apply to new resources identified through the IRP, rather than emissions from existing generation. The assumption was based on a forecast of a cap-and-trade approach to GHG emissions, rather than a tax on all carbon dioxide emissions. The forecast also assumed that the cap-and-trade regime would "grandfather" existing generation and their emissions by issuing emissions allowances equal to their annual total, with cuts to come from subsequent resources. Since the IRP does not make decisions on whether a utility should own generation or acquire the output of generation owned by another entity, it does not address the question of whether there is carbon dioxide risk associated with power purchases.

<sup>4</sup> Customers would ultimately receive the credits earned by sales of excess allowances.

<sup>5</sup> Modeling results revealed that the \$25 per ton and \$40 per ton values substantially impacted the price for NO<sub>x</sub> and SO<sub>x</sub> emissions allowances as well as natural gas prices. Consequently, these carbon dioxide values had the biggest impact on electricity market prices.

PacifiCorp proposes to develop a carbon dioxide forward price curve that tentatively assumes a national cap and trade program beginning in 2012. Some number of the values produced by the forward price curve may be discounted based upon a probability curve to be developed to reflect federal policy uncertainty.

PacifiCorp expects to either develop such a curve internally or solicit contractor support to a carbon dioxide forward price curve(s). The company also expects that in addition to base case modeling runs, a number of sensitivity runs would be performed to analyze the impact of different key modeling assumptions.

**Action Item:** Evaluate the use of a carbon dioxide forward price curve in lieu of the existing \$8 per ton carbon adder in light of emerging state and possibly federal legislation.

PacifiCorp DRAFT

Demand-Side Management and Energy Efficiency Market Potential Study

PacifiCorp offers residential customers and businesses a variety of energy efficiency programs to help conserve resources and manage generation supply during peak consumer demand periods. These programs help customers save money and help PacifiCorp meet its resource growth in a least-cost manner. The company is currently working with customers to achieve up to 450 average megawatts of energy efficiency by 2013 and 285 megawatts of customer load control initiatives. The 2007 Integrated Resource Plan targets an additional 100 megawatts of load control (Class 1 demand-side management) beginning in 2010.

MidAmerican Energy Holdings Company and PacifiCorp committed to a third-party market potential study of additional demand-side management and energy efficiency opportunities within PacifiCorp's service territories. The objective of the study was to identify opportunities not yet identified by the company and, if and where possible, to recommend programs or actions to pursue those opportunities found to be cost effective. The study focused on opportunities to deliver demand side management and energy efficiency resources rather than technical potentials that may not be attainable. On-site solar and combined heat and power programs were also considered in the study. The study was completed in June 2007.

**Action Item:** Evaluate the resource opportunities identified in the study for their cost-effectiveness (in a comparable manner as supply-side options) within PacifiCorp's integrated resource planning process. Quantify the avoided emissions associated with those resources found cost-effective and achievable and incorporated in PacifiCorp's resource plans.

### Renewable Energy Action Plan

MidAmerican Energy Holdings Company (MEHC) made a commitment to work with the states to produce a preliminary Renewable Energy Action Plan as part of its acquisition of PacifiCorp. PacifiCorp committed to filing a ten-year plan, concurrent with its next Integrated Resource Plan filing to acquire 1,400 megawatts of cost-effective renewable energy, including specific milestones over a ten year planning period as to when resources will be added.

The Renewable Plan also includes a ten-year plan for installing transmission that will facilitate the delivery of renewable energy and the achievement of PacifiCorp's goal of acquiring at least 1,400 megawatts of cost-effective renewable resources by 2015. However, since the original commitment was announced, If PacifiCorp purchases the output and renewable energy credits of a new qualifying facility<sup>6</sup>, that resource is considered toward the 1,400 megawatt target. However, purchasing renewable energy credits from existing qualifying facilities does not count. If a customer sells to PacifiCorp new or existing renewable generation (i.e., existing generation the customer has the legal right to sell elsewhere), then that resource is also counted toward the 1,400 target. However, to the extent the company adds a finite term resource, then that resource will eventually need to be replaced with another resource. For this reason, long term resources are desired.

When PacifiCorp's 2007 Integrated Resource Plan was released, it called for the addition of 2,000 megawatts of renewable resources by 2013. As a result, the Renewable Energy Action Plan has been updated to reflect the 2,000 megawatts target.

**Action Item:** Implement the specific action items articulated within the Renewable Energy Action Plan to support the acquisition of 2,000 megawatts of cost-effective renewable resources and quantify the avoided emissions associated with those resources.

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<sup>6</sup> This opportunity is finite in nature and primarily limited to wind qualifying facilities in Utah or Idaho.

### The Existing Portfolio's Thermal Efficiency

Improving the efficiency of PacifiCorp's fossil fuel generation is embedded in the company's bi-annual Integrated Resource Plan. Fossil fuel generation efficiency is typically reported using average heat rate, measured in British Thermal Units (BTU) per kilowatt hour (Kwh). The efficiency of a generating unit is improved when the heat rate is decreased, and the efficiency of the company's fossil fuel generation is improved when the weighted average heat rate for the fleet is decreased. Fuel efficiency is improved by 1) emphasizing continuous improvement in the operation of existing generating units, 2) adding new fossil fuel generation with improved efficiency, and 3) in the long term, retiring old, less efficient fossil fuel units.

PacifiCorp's Integrated Resource Planning process uses the most recent four year historic average of heat rates for existing units. As such, efficiency improvements made to the existing fossil generating fleet are captured as the Integrated Resource Plan is updated. The efficiency of existing generating units is improved by operating as near to design efficiency as is economically practical. The efficiency of generating units degrades gradually as components wear overtime. Generating units undergo maintenance outages on a periodic basis to ensure the units operate reliably and to maintain design efficiency.

Prudent management of the existing generating units requires optimizing the generating output, reliability, efficiency, and production cost of each unit. PacifiCorp maintains an emphasis on continuous improvement of efficiency and, in general, annual improvement in the heat rate for existing fossil fuel generation is measured in tenths of a percent. The oldest generating units have the poorest efficiency because the units were designed to operate at lower pressures and temperatures. As the oldest units in the fleet retire, the average efficiency of the fleet improves. PacifiCorp also believes reforms to the federal New Source Review program would address compliance uncertainty and remove a significant regulatory barrier to additional efficiency improvement projects.

**Action Item:** Continue to identify opportunities to enhance the thermal efficiency of PacifiCorp's existing fossil-fueled fleet and measure the avoided emissions associated with these opportunities.

### Transmission Expansion Plan

Transmission expansion is disconnected from new generation resource decisions to ensure progress on this front keeps moving forward as resource decisions vary over the coming years. PacifiCorp publicly announced on May 30, 2007, its transmission expansion plan to build more than 1,200 miles of new 500-kilovolt transmission lines originating in Wyoming and connecting into Utah, Idaho, Oregon and the desert southwest, with completion targeted in 2014. The \$4 billion-plus investment plan includes projects already in the company's 10-year business plan and additional investments that will address customers' increasing electricity use. In addition to improving system reliability, these projects are aimed at delivering wind and other renewable generation resources to more customers throughout PacifiCorp's six-state service area and the western region.

The transmission expansion plan can be described as two major routes, with supplemental projects to meet commitments and accommodate regional needs and customer requests. The current plan also has the ability to be upsized above the base plan to align with additional regional and customer needs.

The electric transmission project will consist of two electric transmission line routes, a northern route and a southern route.

#### **Northern route**

- Double-circuit 500-kilovolt transmission line; PacifiCorp and Idaho Power Company are pursuing joint ownership of this line
- Will start from the Jim Bridger power plant in Wyoming to southeastern Idaho with a connection south along an existing transmission path from southern Idaho into northern Utah (Path C)
- Will be extended, likely at 345 kilovolts, to the Dave Johnston area in Wyoming
- Will be extended west across Idaho and into Oregon in a single-circuit 500-kilovolt construction
- 600-plus miles of line capable of delivering up to 3,000 megawatts of electricity from Wyoming to Idaho into Utah and up to 2,500 megawatts of new incremental capacity from Idaho west into Oregon

#### **Southern route**

- Double-circuit 500-kilovolt transmission line
- Will start from southwestern Wyoming (near the Jim Bridger power plant) with a connection into central Utah at the Mona substation located in Juab County
- Will extend from the Mona or Sigurd area into southern Utah and the desert southwest
- 600 miles of line capable of delivering up to 3,000 megawatts from Wyoming to Mona, and 3,000 megawatts from the Mona area into the desert southwest

The transmission projects are a "hub and spoke" design – meaning they create common points or transmission hubs of major interconnection for electric demand and generating

resources. From these hubs, power will be collected then moved through the regional transmission network. This comprehensive approach will allow PacifiCorp to deliver power where it is needed from a variety of generation sources such as coal, gas or wind.

**Action Item:** Implement the specific action items articulated within the Transmission Expansion Plan to to build more than 1,200 miles of new 500-kilovolt transmission lines originating in Wyoming and connecting into Utah, Idaho, Oregon and the desert southwest, with completion targeted in 2014.

PacifiCorp DRAFT

Multi State Process Revised Protocol (PacifiCorp System Resource Cost Allocations)

PacifiCorp is examining its Multi-State Process Revised Protocol and how it should be revised to accommodate mandatory state-specific renewable portfolio standards. The Revised Protocol defines a Portfolio Standard as: “a State law or regulation that requires PacifiCorp to acquire: (a) a particular type of Resource, (b) a particular quantity of Resources, (c) Resources in a prescribed manner or (d) Resources located in a particular geographic area.” Appendix A, page 4.

Under the Revised Protocol, PacifiCorp’s Resources are assigned to one of four categories for inter-jurisdictional cost allocation purposes; Seasonal, Regional, State or System. Portfolio Standards are included under the State Resources category. For costs associated with Portfolio Standards, the Revised Protocol states:

“Costs associated with Resources acquired pursuant to a State Portfolio Standard which exceed the costs PacifiCorp would have otherwise incurred acquiring Comparable Resources, will be assigned on a situs basis to the State adopting the Standard.” Section C. 2, page 6

Finally, the Revised Protocol defines Comparable Resources as:

“Resources with similar capacity factors, start-up costs and other output and operating characteristics.” Appendix A, page 1.

PacifiCorp supports an effort by the Multi-State Process Standing Committee workgroup to develop a methodology that is common among the states for quantifying the methodology and metric to determine the “above market” costs related to state renewable portfolio standards. An important and related challenge relates to the inter-jurisdictional assignment or allocation of the “non-energy attributes” of renewable resources. Each megawatt-hour of renewable energy possesses potentially valuable non-energy attributes that can be monetized through “renewable energy credit” sales. Renewable energy credits from renewable resources can be sold into the market and provide a revenue stream for customers that lowers overall revenue requirement. Finally, PacifiCorp would like to explore how the non-energy attributes (e.g., renewable energy credits) could be allocated differently among the states.

While the current revised protocol fails to adequately address cost allocation to meet state-specific renewable portfolio standards requirements, it also fails to address other beneficial allocations of renewable energy credits. If not used to directly meet a state-specific renewable portfolio standard requirement, renewable energy credits also provide value via banking for potential future renewable portfolio standard compliance and/or via inter-jurisdictional allocation transfer pricing (thus requiring appropriate inter-jurisdictional).

**Action Item:** Advance the Multi-State Process Revised Protocol dialogue to Address State Renewable Portfolio Standard Obligations.

**Action Item:** Identify which resources qualify for each state renewable portfolio standard (e.g., fuel type-, vintage-, and geographic-eligibility criteria).

**Action Item:** Register the resources according to the requirements established by each state and pursue their inclusion within a regional tracking system (i.e., WREGIS) beginning in 2008.

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### Fugitive Sulfur Hexafluoride (SF<sub>6</sub>) Emissions

As part of the transaction commitment, MidAmerican Energy Holdings Company and PacifiCorp committed to participate in the U.S. Environmental Protection Agency's Sulfur Hexafluoride (SF<sub>6</sub>) Emission Reduction Partnership for Electric Power Systems. Sulfur hexafluoride is a highly potent greenhouse gas used in the electric industry for insulation and current interruption in electric transmission and distribution equipment. Over a 100-year period, sulfur hexafluoride is 23,900 times more effective at trapping infrared radiation than an equivalent amount of carbon dioxide, making it the most highly potent, known greenhouse gas. Sulfur hexafluoride is also a very stable chemical, with an atmospheric lifetime of 3,200 years. As the gas is emitted, it accumulates in the atmosphere in an essentially un-degraded state for many centuries. Thus, a relatively small amount of sulfur hexafluoride can have a significant impact on global climate change.

Through its participation in the SF<sub>6</sub> partnership, PacifiCorp has committed to a sulfur hexafluoride emissions reduction goal and to annually report its estimated sulfur hexafluoride emissions. This not only reduces greenhouse gas emissions, it saves money and improves grid reliability. Since 1999, the Environmental Protection Agency's sulfur hexafluoride partner companies have saved \$2.5 million from the avoided gas loss alone. Use of improved sulfur hexafluoride equipment and management practices helps protect system reliability and efficiency.

**Action Item:** Continue to actively participate in the Environmental Protection Agency's Sulfur Hexafluoride (SF<sub>6</sub>) Emission Reduction Partnership for Electric Power Systems and measure avoided emissions associated with participation in the program.

**Action Item:** Identify additional opportunities to reduce fugitive sulfur hexafluoride emissions.

### Fugitive Chlorofluorocarbon (CFC) Emissions

Each year Americans dispose of roughly 13 million refrigerators and freezers and many of those contain chlorofluorocarbons that deplete the ozone layer and contribute to climate change. On October 27, 2006 the U.S. Environmental Protection Agency and eight utilities announced the launch of a new, voluntary Responsible Appliance Disposal program to promote environmentally responsible disposal of these household appliances, which will significantly reduce emissions as well as save consumers money. PacifiCorp is one of the eight utilities participating in the program

The new partnership will help utilities encourage the retirement and proper disposal of older household appliances while ensuring that chlorofluorocarbons, both in the insulation foam and in the refrigerant, are captured and destroyed or recycled. The U.S. Environmental Protection Agency is working with the utilities and many key sectors to quantify and reduce emissions and promote efficient technologies that are safer for the ozone layer and the earth's climate. Program participants will provide the U.S. Environmental Protection Agency with data on the quantity of chlorofluorocarbons recovered and destroyed or recycled along with other environmental information. The program also will promote the recovery and proper disposal of polychlorinated biphenyls or PCBs, mercury, and used oil contained in the appliances.

**Action Item:** Continue to actively participate in the Environmental Protection Agency's Responsible Appliance Disposal program and measure the avoided emissions associated with participation.

Participation in Voluntary Climate Registries and the Development of Project-Specific Reporting Protocols

PacifiCorp has been a member of the California Climate Action Registry and has certified or is in the process of certifying three years' worth of emissions data relative to its greenhouse gas emissions. The company is also participating in the development of project-specific reporting protocols. As The Climate Registry is developed, company representatives have participated on The Climate Registry Advisory Committee.

**Action Item:** PacifiCorp will continue to report and certify its greenhouse gas emissions through a registry and will evaluate participation in The Climate Registry.

**Action Item:** PacifiCorp will continue to support the development of project-specific greenhouse gas emissions reporting protocols.

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