

To: Public Service Commission  
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From: Utah Physicians for a Healthy Environment  
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Re: In Matter of the Acknowledgement of PacifiCorp's  
Integrated Resource Plan 2007  
Docket No. 07-2035-01

Dear Commissioners:

The Utah Physicians for a Health Environment (UPHE) and the Utah Moms for Clean Air are pleased to have the opportunity to comment on PacifiCorp's 2007 Integrated Resource Plan (IRP).

The UPHE is an informal association of unpaid, volunteer physicians and medical consultants with a unique expertise in the effects of environmental degradation on public health, with an emphasis on air quality related health impacts. As independent practitioners intimately aware of the breadth and scope of medical research on these issues and devoid of any financial or other incentive to potentially compromise our objectivity, UPHE has an important role to play in helping third parties, such as the Public Service Commission, understand the scientific basis for the medical and health consequences of air pollution that should dictate appropriate public policy. (UPHE has applied for Utah Non-Profit corporate status).

Utah Moms for Clean Air is a non-profit, grassroots organization of Utah mothers and allies who share a concern about the health impacts of Utah's dirty air. We are committed to addressing the root causes of the poor air quality in Utah, one of which is the pollution contributed by coal-fired power plants. We are concerned that the PacifiCorp Integrated Resource Plan fails to accurately and thoroughly address the negative externalities that are imposed on the public by an over-reliance on out-dated and dirty coal-fired power plants. We share the concern cited by the Western Resource Advocates (WRA) that there has been an insufficient consideration of alternative sources of power, including improved efficiency and demand management, conservation, and aggressive development of renewable energy supplies such as wind, solar and geothermal energy. We also note the observation by WRA that

PacifiCorp has failed to seriously consider the economic impacts of anticipated federal regulation of carbon dioxide.

While PacifiCorp's recent Integrated Resource Plan addresses the state's increasing need for energy, it fails to adequately address externalities such as public health and air pollution. It is with this in mind that UPHE and the Utah Moms for Clean Air agree with, and support the comments submitted by, the Western Resource Advocates on August 31, for IRP Docket No. 07-2035-01. In light of the anticipated catastrophic public health, environmental, and economic impacts of further build-out of more coal-fired power plants, we respectfully call on the Public Service Commission to not acknowledge the current IRP.

We acknowledge the hard work that has gone into the IRP process and commend PacifiCorp for voluntarily increasing its investment in renewables; however, we feel the Company and the IRP are still far too reliant on conventional power for the generation of electricity. PacifiCorp should be obligated to substantially invest in sustainable technologies such as solar and wind that reduce and/or eliminate dangerous greenhouse gases and other pollutants. Continuing to allow PacifiCorp to rely on technologies that emit millions of tons of CO<sub>2</sub> and other air pollutants into our atmosphere is not in the best interests of our community or the region.

#### AIR POLLUTION FROM COAL PLANTS

Using a broad base of scientific studies, mainstream medical organizations like the American Lung Association have estimated the nationwide annual number of premature deaths caused by the air pollution from coal power plants at 22,000 to 26,000. That is an average of 40 deaths per year per plant. Causes of these deaths include heart attacks, strokes, respiratory failure, various cancers especially of the lung and a variety of events unique to the pediatric population. In assessing the economic impact of fatalities, the EPA uses a figure of over \$6 million per life lost. Using their methodology the total economic loss to the nation from these fatalities would amount to a staggering 156 billions dollars per year. Non-fatal impacts such as congestive heart failure episodes, asthma exacerbations, nonfatal cancers, low birth weight syndrome and premature births, combine to affect hundreds of thousands of additional people. According to the California EPA, the total health care costs associated with the air pollution from coal plants exceeds \$170 billion. If charged directly to the consumer, the costs of the public health impacts of coal power plant air pollution would essentially double the cost of the electricity.

There is the temptation to dismiss the importance of coal plants to the overall contamination of the air shed in the Western US because there are fewer coal plants than in the Eastern US, where pollution and "acid rain" have long been recognized as serious environmental problems. This perspective however ignores the proliferation of medical studies in the last ten years that consistently and unequivocally demonstrate that there is no safe level of air pollution. There is no level below which there is no health effect. Therefore, every measurable increase in air pollution even in the West will have measurable adverse health effects, including statistically meaningful increases in overall mortality rates.

Furthermore, the air pollution from coal plants extends far beyond the plant sites. In a study from 2003 during an electrical outage that resulted in the shut down of 100 coal plants in the upper Midwest, within 24 hours monitoring stations hundreds of miles downwind showed a decrease in SO<sub>2</sub> of over 90%, ozone decreased 50% and particulate matter decreased 70%. The Journal of Geophysical Research sites evidence that the majority of particulate matter in the air shed of the West Coast United States originates in China, specifically from their rapidly expanding network of coal power plants. In turn pollution from Los Angeles is the likely reason that ozone measurements in Canyonlands National Park are almost as high they are in Bountiful, Utah despite the fact that Canyonlands obviously has no source of air pollution of its own.

This means that coal power plants in Utah will aggravate air pollution problems as far away as the East Coast and possibly even Europe. Therefore, any modeling done that only examines the likely impact of coal power plants on local air quality significantly underestimates the contribution to the total air pollution burden nationwide.

### TOXICITY OF FLY ASH HEAPS

The coal industry has been successful in pacifying public opinion about the environmental consequences of coal combustion by widely broadcasting the term “clean coal”. While recent coal combustion technological advances for new plants decrease stack emissions of many criteria pollutants, they are far from eliminating them. Because of the inherent contamination of coal with such things as sulfur, heavy metals, and radioactive isotopes these improvements in stack emissions are off set by an increase the contamination of the post combustion residue. In fact to the same degree that the toxicity of stack emissions have been decreased, the toxicity of “fly ash heaps” have been increased.

Fly ash heaps have been known to cause contamination of ground water, even when sequestered in appropriately managed land fills with state of the art liners. The problem can become enormous after decades of use, as illustrated by the slag heap that currently surrounds the IPP project in Delta which is now 50 ft. high, 100 ft. wide and 4 miles long. Fifty-five different contaminants within coal are known to effect children’s brain or physical development. Twenty-four are known, or likely to be, carcinogens. According to the EPA, children who are exposed to coal combustion waste could have a considerably higher risk of developing cancer and other serious illnesses later on in life. The most significant of these toxic substances is mercury, but other heavy metal contaminants like lead and arsenic may act synergistically with mercury to enhance the toxicity.

### MERCURY CONTAMINATION FROM COAL

Special attention should be given the problems of environmental mercury contamination. Utah has only recently begun testing for mercury but already 6 major waterways have been found to harbor heavily contaminated fish; Utah recently achieved the dubious distinction of

having the only waterfowl consumption advisories in the nation. Measurements from the Great Salt Lake have recently revealed some of the highest mercury levels ever recorded. Some rivers in Idaho have 150 times the level of mercury found in some of the worst polluted streams in the Eastern US.

The EPA considers mercury the most toxic component of air pollution and 43% of the atmospheric mercury released in this country comes from coal power plants. Incidentally, no newly proposed coal power plants in Utah currently have specifications for dedicated mercury capture. This is something that the Public Service Commission should take note of and work to address. It is unconscionable for utilities or corporations to operate without having state of the art, best available technology, pollution controls in place.

Mercury is emitted as a vapor in three chemical states. Elemental mercury, oxidized or bivalent mercury, meaning it has been stripped of two electrons, typically as mercuric chloride, and as an adsorbent to particulate matter. The atmospheric life of the first type can be as long as two years and this is the type that can drift from one continent to another. The other two types are usually deposited within 50 to 100 miles of the source because they remain in the atmosphere for only a few days. The EPA has estimated that 66% of the mercury deposited in the US originates in the US.

The dangers of mercury toxicity have been known since the 1800s. The term “Mad Hatter” described the mental disturbances experienced by people who handled mercury in making hats. We now know that a serious and often fatal disorder in children in the 1930s called acrodynia, or Pink Disease, was caused by mercury that was used as an ingredient in teething powders and antiseptic solutions like Mercurochrome. Mercury is a potent neurotoxin. It is the second most toxic substance on earth on a per wt. basis; 1/70 of a teaspoon will contaminate all aquatic life in a 25 acre lake.

Because the brains and nervous systems of children and fetuses are absorbing nutrients and developing rapidly, they are the most vulnerable to mercury toxicity. In fact a fetus is about 10,000 times more susceptible to the effects of mercury compared to an adult. To make matters worse, mercury is concentrated in umbilical cord blood, averaging twice as high as maternal blood.

The consequences of prenatal and infant exposure can be mental retardation, cerebral palsy, deafness and blindness. Even very low doses can cause lower IQs, developmental delays, attention deficit disorders, and motor dysfunction. As little as one serving of a highly contaminated fish can expose a developing child to excessive levels of mercury. The National Academy of Sciences warned that such exposure can result in significant learning disabilities.

Mercury’s role in the nationwide epidemic of autism is controversial even within the medical community. However, it must also be stated that mercury is the leading suspect, in part because there are as yet no other suspects. Mercury cannot be destroyed, cannot be combusted and does not degrade. Therefore, it is intuitive that the overall ecological mercury burden and cumulative population exposure has steadily increased since the world wide use of coal power plants began in the 1930s. This parallels a 1000% increase in the incidence of autism in the US

since 1982. Nationally it's now 1 in every 166 children and even higher than that in Utah. One in every six children has a developmental or behavioral disorder. It is an alarming epidemic.

Recent studies by several investigators, including a former FDA senior research scientist, suggest a small subset of children have a genetic deficiency in the production of glutathione which is the body's most important antioxidant and metals detoxifier. A non-toxic exposure for most children may be devastating in children with this genetic deficiency. It has recently been shown that testosterone potentiates the toxicity of mercury and that estrogen is protective. This correlates with the findings that boys are four times as likely as girls to have autism. Autism now is found in one in every 79 Utah boys.

An examination of the association between environmentally released mercury and special education and autism rates in Texas showed a striking correlation. For every 1,000 lbs of environmentally released mercury there was a 43% increase in the rate of special education services and a 61% increase in the rate of autism.

Dr. Stephanie Cave who runs an institute for the treatment of autism testified before Congress that, "it is rare that we find a child with developmental problems who does not have increased levels of mercury in the urine." One in six US women has dangerous levels of mercury in their blood and they give birth to 380,000 to 630,000 children annually that are at risk for brain damage. In a recent study one out of every four New York City residents was found to have blood mercury levels above the threshold considered safe by the EPA.

There are also a number of adult diseases that medical research suggests have a chronic mercury toxicity component, such as Alzheimer's, coronary artery disease, obesity, ALS, asthma, and autoimmune disorders.

## NUCLEAR RADIATION FROM COAL PLANTS

Coal power plants are the major source of radioactive materials released into the environment. A typical 1000 megawatt plant will burn 4 million tons of coal per year and that coal will contain about 18 tons of radioactive material primarily uranium and thorium. The nuclear fuel present as a contaminant in coal has more energy content than the coal itself. From that stand point, coal combustion wastes more energy than it produces.

Some Utah coals are much higher in uranium than the national average. The uranium and thorium are in equilibrium with many other decay products like radium, radon, and polonium which are even more radioactive. The total release of nuclear radiation from coal power plants every year is 155 times the release from the famous Three Mile Island nuclear accident.

Nuclear power plants are strictly regulated, and yet the radiation effective dose equivalent from coal plants is higher than that allowed for a nuclear plant. The fact that coal power plant stack emissions and fly ash heaps are not regulated for their radioactive content represents a serious regulatory loop hole. Coal plants emit unacceptable levels of radionuclides which are explicitly listed by the EPA as Hazardous Air Pollutants

The nuclear radiation is disseminated up the smoke stack but it also becomes concentrated in the post combustion residue because contaminants like uranium and thorium are not combustible. Because the half lives of these contaminants are virtually infinite, the radioactive risk may be small at first but becomes magnified over time. According to the Oak Ridge National Laboratory, “significant quantities of nuclear materials are being treated as coal waste, which might become the clean up nightmare of the future.”<sup>1</sup>

Wide spread use of coal fired power plants is now in its 7<sup>th</sup> decade, and Utah coal plants are in their fourth decade.. Like so many of our concerns the nuclear radiation exposure risk will be much greater with the passage of time and the threat to our children and subsequent generations is very real.

## CONCLUSION

Given the widespread public health impacts of conventional coal power resources, The Utah Physicians for a Healthy Environment and the Utah Moms for Clean Air respectfully request that the Public Service Commission consider not acknowledging PacifiCorp’s IRP until it has been revised to include a more complete analysis of the costs, risks and impacts the plan will pose to public health. We urge that PacifiCorp’s procurement decisions be based on strategies that include substantial investment in renewable and energy efficient technologies and provide a better analysis of the negative environmental, economic, and health impacts of electricity generated by fossil fuels. Thank you for your time and consideration of this important matter. If you have any questions on these comments, please contact Dr. Brian Moench at (801) 243-9089.

Sincerely,

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<sup>1</sup> Gabbard, Alex. “Coal Combustion: Nuclear Resource or Danger” Oak Ridge National Laboratory, URL: <http://www.ornl.gov/info/ornlreview/rev26-34/text/colmain.html>