

Memorandum

To: Washington State Utilities Commission  
From: Alan H. Lockwood, MD, FAAN, FANA  
Emeritus Professor of Neurology, University at Buffalo  
Chairman, Environment and Health Committee, Physicians for Social  
Responsibility  
Date: September 13, 2013  
Subject: Inclusion of Coalstrip Steam Electric Plant in 20 year resource plan

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Inclusion of the Coalstrip Steam Electric Plant (the Plant) in your 20 year resource plan (the Plan) would be a setback to public health and contribute substantially to environmental degradation. This opinion is the result of years of research that culminated in the publication of *The Silent Epidemic: Coal and the Hidden Threat to Health* by the MIT Press in the fall of 2012. In addition, I have toured the Pacific Northwest and Montana during recent book tours, and had the opportunity to meet with citizens and health professionals in your area.

The crux of the argument opposing inclusion of the Plant in the Plan rests primarily with an analysis of the adverse health effects associated with emissions from the Plant, but also includes adverse health effects sustained by miners, the Coalstrip community, individuals involved with coal transport, and finally, the potential for further health and environmental damage associated with the storage of the vast amount of coal combustion waste generated by coal (roughly 10%, by weight, of the coal burned.)

Carefully performed epidemiological studies published in leading peer-reviewed medical journals (as opposed to fact sheets published by advocacy organizations) have clearly linked coal-derived air pollutants with the four leading causes of death in the United States. These are heart disease, malignant neoplasms, respiratory diseases, and stroke. Emerging data suggest strongly that neurodegenerative diseases, such as Alzheimer's Disease, and Type II diabetes mellitus will soon be added to this list. If exposure to coal-derived pollutants was listed on death certificates, it would easily rank among the top ten. The table below summarizes just some of the toxicants released into the environment by the Plant and some of their health effects. Note: this is only a partial list.

To place these data in an appropriate perspective, one need only to consult the most recent report to Congress published by the US Environmental Protection Agency (EPA, or the Agency). This report is mandated by the Clean Air Act as amended. The controls on pollutants emitted largely by coal-fired power plants, such as the Coalstrip Plant, have resulted in substantial reductions in several of criteria pollutants, most notably small particles (those with an aerodynamic diameter of 2.5 microns or less, or PM<sub>2.5</sub>) oxides of nitrogen, the precursor to ground-level ozone, oxides of sulfur, a precursor to PM<sub>2.5</sub>. In its analysis, supported by similar analyses by other governmental agencies, the EPA predicts that by 2020, i.e. during the lifetime of the Plan, the act will prevent

2230,000 premature deaths each year and save about \$2 trillion per year in the healthcare costs associated with non-fatal illnesses. The cost to industry: approximately \$65 billion per year.

These figures do not include costs associated with climate change. The Nobel Prize winning Intergovernmental Panel on Climate Change has concluded with increasing certainty that the increase in atmospheric carbon dioxide, largely from the combustion of fossil fuels, especially coal, is causing the steep rise in global temperatures that has been observed during the past 50 years. Although the Plant's web site claims that it has modern pollution control devices, the Plant still emits huge quantities of pollutants as shown in the table. These devices have no effect on carbon dioxide emissions that, if the plant operates at its present capacity, will continue at a rate of over 15 million tons per year. The Plant's carbon dioxide emissions are more than twice as great as the standard that is expected to be established for new plants in a regulation due to be posted by the EPA on or about September 20, 2013. Global warming, with attendant increases in heat illnesses, drought, crop failure and starvation, spread of infectious diseases, floods, severe weather, etc. is arguably the greatest public health challenge faced by all of us on Earth.

Luckily, there are alternatives, but vigorous action and continued research supported by an increase in the emphasis on education are needed now. Off-the-shelf technology such as wind turbines, capturing solar, wave, tide, and geothermal energy supplemented by improved energy efficiency can meet the power needs of the state. As a bonus, these are job-creating steps that also protect public health.

#### Coalstrip Steam Electric Station Emissions

Chemical	Emissions	Health Effects (selected)
Arsenic Compounds	25,100 lb*	Death, cancer, diabetes, peripheral nerve damage, cardiovascular damage
Barium Compounds	8,403,910 lb*	Respiratory, cardiovascular
Manganese Compounds	1,442,970 lb*	Neurological (parkinsonism)
Mercury Compounds	1,270 lb*	Neurodevelopment, cardiovascular
Nitrogen oxides	17,516.049 tons**	
Sulfur dioxide	15,919.378 tons**	
Carbon dioxide equivalent	15,471,751.168 tons**	
Carbon dioxide	2352.2276 lb/MWh**	

\* Source: 2011 Toxics Release Inventory

\*\* Source: 2009 eGRID