



***Second National People of Color Environmental  
Leadership Summit - Summit II***

**Resource Paper Series  
October 23, 2002**

**Indigenous Peoples and Renewable Energy: Thinking Locally, Acting Globally  
~ A Modest Native Proposal for Climate Justice from the Northern Great Plains  
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Disclaimer: The Summit II Resource Paper Series was commissioned and assembled by the Environmental Justice Resource Center at Clark Atlanta University with funding support from the Ford Foundation, Turner Foundation, Public Welfare Foundation, Agency for Toxic Substances and Disease Registry, National Institute for Environmental Health Sciences, U.S. Department of Energy, and U.S. Environmental Protection Agency. The opinions expressed in this commissioned paper represent those of the author(s) and not those of the commissioning institutions or the funding agencies.

# **Indigenous Peoples and Renewable Energy: Thinking Locally, Acting Globally**

## **~ A Modest Native Proposal for Climate Justice from the Northern Great Plains**

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### **Abstract**

This author examines the relationship between climate change and energy generation. He provides an outline of a potential climate justice strategy involving the use of large-scale renewable wind energy generation by North America Indian Tribes. He discusses an environmental justice demonstration project that provides a plan for the cooperative intertribal wind power that encourages the phased development of significant wind energy generation on Indian Reservations in the northern Great Plains as a viable strategy for community revitalization. The Intertribal Council On Utility Policy is seeking partners to help Tribes realize the economic, environmental and climate benefits of their clean renewable energy resources.

### **Introduction**

The Earth, through the ingenuity of its dominant species, is engaged in an irreversible experiment of global proportion involving altering the temperature and humidity of the atmosphere with critical implications for all life of the planet. The Earth is bearing witness to several extraordinary, sharply rising, human-induced and energy-related growth curves. These exponential growth curves include: our fossil fuel consumption and the associated production of carbon dioxide, a critical greenhouse gas; the size of the human population on the planet; the rise of the average annual temperature around the globe; and our scientific understanding of the nature and potential social, economic and environmental costs and human consequences of a rapidly changing climate. These unprecedented growth curves have particular implications for the traditional cultures of subsistence-based native peoples and local communities within the developing conceptual framework of environmental justice.

No portion of humanity is more at risk to the impact of the anticipated and presently occurring climatic disruptions than the world's marginalized poor and indigenous communities. As a group, the world's indigenous peoples are the most vulnerable to climatic disruptions as they are disproportionately dependent upon intact natural habitats for both subsistence and culture. Indigenous peoples are also the least responsible for the current voracious consumption of fossil fuels and for the rapid accumulation of greenhouse gases (such as carbon dioxide) in the atmosphere which are the direct result of that combustion. Thus, for indigenous peoples who are often the first and worst impacted by climatic disruptions, increased variability and extreme weather events, climate change becomes an issue of climate justice.

This paper examines the relationship between climate change and energy generation and then outlines a potential climate justice strategy involving the use of large-scale renewable wind energy generation by North America Indian Tribes. It is set in the context of climate justice as a "no regrets" strategy for the reduction of carbon emissions and for the development of sustainable homeland economies on a score of Indian reservations in the northern Great Plains.

This environmental justice demonstration project provides a plan for the cooperative intertribal wind power that encourages the phased development of significant wind energy generation on Indian Reservations in the northern Great Plains as a viable strategy for community revitalization and capacity building through the development of sustainable homeland tribal economies:

- 1) to address past and ongoing environmental injustices resulting from the building of the mainstem dams on the Missouri River to the detriment of Indian culture and reservation economies, and
- 2) to provide for future tribal economic, cultural and community revitalization sustainability and capacity building based upon renewable energy generation to federal and private markets within and beyond the region.

## **1. Human Beings Are A Part Of, Not A Part From The Nature Of This Planet**

The Earth's ability to sustain life, as we have become accustomed to know it, is due in large measure to the presence of a thin film of gases that separates the surface of the planet from the relative vacuum of space. Virtually every form of plant and animal life on this planet is found where it thrives due to the presence of its accustomed range of warmth and water. Thus, the distribution of the biological and ecological diversity on our planet is largely a function of the range of temperature and relative humidity found under the seemingly endless skies that surround the Earth. But consider this: If the Earth were the size of an apple, our life-granting atmosphere would be less than the thickness of the apple's peel. The air above us is far from "endless." The relative stability we have enjoyed during the short course of human history is apparently far more vulnerable to human perturbations and disruption than the careless nature of our collective industrial behavior of filling the skies with a variety of natural and unnatural atmospheric emissions would seem to warrant.

Global warming is clearly a natural physical process in the dynamic equilibrium found on our planet, and it has unquestionably occurred time and again over Earth's long history. The exchange of carbon dioxide between the air and both the oceans and terrestrial life forms (plants and animals) has shaped the surface and nature of the planet and is ever present. But the addition of destabilizing amounts of carbon into the atmosphere has never occurred at such a rapid rate or scale in human history, and this sharp acceleration happens to have the fingerprint of our industrial behavior. Our unique species too often chooses to see itself as outside of, or above, Nature and the natural world. We use such terms as "human", "man-made", or "artificial" as opposed to "natural" in describing our handiwork. But we are intimate participators in this natural world and increasingly so in many of its processes. While we may tend to favor ourselves as "*apart from*" the natural world, we are also unquestionably "*a part of*" it, capable of affecting as well as being affected by its processes. Today, the chemical composition of the Earth's atmosphere has become as much an "artifact" of human ingenuity as are arrowheads or airplanes

The present-day carbon deposits in the northern Great Plains, for example, are the result of a natural carbon sequestration process occurring some 50 to perhaps as much as 200 million years ago. Carbon sequestration is the slow removal of atmospheric carbon through the absorption of carbon dioxide gas (CO<sub>2</sub>) from the air through the growth of plants. That natural process once produced lush, tropical swamps and shallow seas across what is today the Great Plains. Slowly but steadily, this biologically bound carbon was deposited in vast geological beds of coal and trapped gas. Ever so gradually, the chemical composition of our regional airsheds and global atmosphere has changed. This sequestration process helped to stabilize the carbon exchange some 50 million years ago, taking billions of tons of carbon out of the atmosphere and placing it under the earth and in the oceans, removing it from planet's shorter-term atmospheric carbon cycling.

With the reduction of this natural greenhouse gas in the atmosphere over geologic time, the Earth's average annual temperature dropped only a few degrees. Yet even this slight atmospheric cooling reduced the air's capacity to hold moisture, allowing a great deal of water to be stored as ice at the Earth's polar regions and at high altitudes as glaciers and multi-seasonal snowpack. This change in the planet's atmospheric chemistry has dramatically altered the long-term climate of the North American Great Plains, transforming once shallow seas into semi-arid plains and prairies.

The exponential growth in our combustion of fossil fuels has now coupled with other chemical emissions that have been produced over the past century and a half – the mere blink of an eye in the geological timeframe. In the opinion of the overwhelming majority of the world's climate scientists, we humans are now upsetting the Earth's atmospheric chemistry and have apparently begun to rapidly reverse the carbon sequestration process. Rapid destabilization of our relatively quiescent atmospheric balance by accelerated shifts in the carbon load spells dramatic disruption in the familiar range of temperature and humidity that sustains habitats upon which the diversity of life on this planet has grown accustomed.

## 2. The Climate Change Decade

In this first decade since the initial People of Color Environmental Leadership Summit in 1991, humans have come to recognize that the world has been traveling on several very steep and interrelated growth curves involving energy, population and climate change. In his most recent work, entitled “The Hydrogen Economy”, Jeremy Rifkin points out that:

The fossil-fuel energy surge has led to an explosion of human population over the past 150 years. It took from the very beginning of human history until 1825 for the human population to reach one billion. With the onset of the coal revolution and a steep rise in energy throughput, the human population doubled to two billion in less than one century. Another billion people were added between 1925 and 1960 with the birth of the oil age. World population rose to four billion between 1960 and 1975 and to five billion twelve years later in 1987.<sup>1</sup>

By the turn of the Millennium, each of us now shares the Earth with 6 billion other human beings, many with an insatiable appetite for energy. Our release of long sequestered carbon – through the deliberate combustion of supplies temporarily stored in the form of coal, gas and oil since the age of the dinosaurs – has resulted in the accelerated build-up of millions of tons of heat-trapping carbon dioxide gas. That carbon dioxide gas has now been put back into the Earth’s exceedingly thin but life-sustaining atmosphere at an unprecedented pace.

The reports produced over the past decade by the U.S. National Assessment on Climate Change and the Intergovernmental Panel on Climate Change catalog the enormous progress we have made nationally and internationally in our global awareness and comprehension of the realities of climate change with its consequences for life on this planet. We have learned to more accurately understand the phenomena associated with an increase in the average global temperature. “Global warming”, or more accurately “climate change”, may actually result in the cooling of portions of the planet. Northern Europe, for example, has been accustomed to a relatively moderated climate (given its latitude) due to ocean currents that bring the warm Gulf Stream waters north. The northern reach of these currents is controlled by a number of factors including the relative temperature and salinity of the North Atlantic and Arctic oceans. These currents may be altered by increased warming of the polar air and the decrease in salinity of the Arctic waters due to the melting of the polar ice caps. A shifting of the Gulf Stream southward would plunge northern and central Europe into a far less temperate climate.

The world has already witnessed significant and scientifically documented evidence of dramatic climatic shifts which have occurred with only very small increases in average annual temperatures over the past several decades. Examples are the thinning of the Arctic sea ice, the retreat of glaciers worldwide, shifts in the location and intensity of precipitation (particularly as intense rainfall), the increased frequency and intensity of droughts in Asia, Africa and North America, and increased costs associated with drought, flood and storm damage.

The potential consequences of a destabilized climate can already be seen in the increased economic costs of property insurance claims due to weather related damages. Property insurers lost an average of \$2 billion a year to damage from extreme weather events around the world in the 1980s. By the 1990s, losses averaged more than \$12 billion annually. Weather-related losses for the first 10 months of 1998 - some \$89 billion - exceed the total losses for all the 1980s.<sup>2</sup> It has been reported that a large European insurance company has estimated that the impacts of climate change could cost some “\$300 billion annually by 2050 in terms of weather damage, pollution, industrial and agricultural losses and other expenses. Companies may also face unexpected expenses because of compliance with future regulations, fines, taxes and caps on products that produce greenhouse gases.”<sup>3</sup>

This past decade has also seen a sharp reduction in most industrial emissions, with the exception of carbon dioxide – the heat-trapping gas that most scientists consider to be the prime contributor to global warming. The historically unprecedented rise in the average global temperature has been accompanied by a well-documented increase in the variability and intensity of extreme weather events. The net increase in carbon dioxide in our atmosphere comes from burning fossil fuels, often for the production of electricity. In 2001,

even the current U.S. administration, which has stood alone against the world in refusing to endorse the Kyoto requirements, has acknowledged that carbon dioxide appears to be linked to rising temperatures.

### 3. Climate Justice and Energy Equity

Indigenous cultures around the world continue, as they always have, to depend primarily upon intact natural habitats for their subsistence survival. They are the least responsible for, and yet are the first and hardest hit by, the impacts of a destabilized climate. This occurs even while those populations sheltered by affluence enjoy a temporary buffer, often several steps removed in the food chain from direct contact with the Earth and her changes. Many indigenous communities still depend principally upon biomass resource use - use such as the direct burning of dwindling supplies of wood, peat or dung for cooking and warmth. Often they are far removed from participation in the cash economy or lack the technical capability to exploit the kinds of conventional resources relied upon by the rest of the world.

Climate inequities are involved in the disproportionate distribution of impacts from extreme weather variability and subsequent habitat disruption. This situation is of global proportion and approaches the level of an extreme environmental injustice for indigenous peoples worldwide. It is recognized that the poor, indigenous, and communities of color will be disproportionately impacted by a global climate change in three major ways: health, economic and cultural disruption. These human-induced inequities herald a call for "*climate justice*" from international leaders for those who stand to suffer most but benefit least, and who have had virtually no responsibility for this rapidly deteriorating situation created by the rapid desequstration of long-trapped carbon.

Some, especially those who happen to benefit most from existing energy arrangements based upon the use of fossil fuels, may seek to downplay the enormity of the climate change scenario. They may seek temporary comfort in the supposed scientific uncertainties and question the measures and models underlying the scientific investigations of climate change. They may urge waiting "until all the facts are in" while ignoring the necessity of exercising the precautionary principle which makes particular sense in the climate change context "not only because our actions today will have consequences for the future, but also because climate change is irreversible and no amount of action later can make up for lack of action today. Using the precautionary principle as a basis for responding to global warming can reduce the costs associated with adapting, as it has for other environmental problems."<sup>4</sup>

Some may grudgingly grant that climatic shifts are occurring, yet deny that humans have played any active role in causing so grand a problem, that human impact upon the warming of the atmosphere is but a small part in the context of natural warming cycles such as the Earth has experienced in the past, or that humans cannot do anything to restore the balance without harming their national economies. The simple fact remains that human beings may be the "swing vote" with regard to destabilizing the carbon balance of the planet, and it may be in our best interest as a species to consider the long-term consequences of our actions and inaction most carefully.

While the theoretical debates, scientific analysis and political posturing continue, many of the world's 300 million indigenous peoples are already suffering from the direct and immediate impact of global climate change – a consequence not of their own making – and their prospects for the future only grow worse if we continue on this planetary path.<sup>5</sup>

The issue of "*climate justice*" in the context of this growing world crisis may be seen most clearly in terms of "*energy equity*." In total number, the world's indigenous peoples comprise a population about equal in size to that of the U.S. population. Yet by and large they represent the absolute opposite end of the continuum with regard to their use or abuse of this planet's air, water and land resources, and with the desequstration of the Earth's stored fossil fuels. The per capita consumption of fossil fuels and CO<sub>2</sub> emissions is 10 times higher in North America than in the developing regions, where most of the world's Indigenous live.<sup>6</sup> Interestingly, the same would appear to hold true for the indigenous peoples of North America, who are 10 times more likely not to have the level of electrical services enjoyed and taken for granted by the rest of American households.<sup>7</sup>

Many Indigenous Peoples (including Native Americans) as well as the ecological integrity of the shrinking habitats upon which their traditional cultures depend, face an imminent crisis of cultural, economic, political, and climatic instability and ecological destruction on a global scale. Traditional subsistence activities (whether involving caribou, sheep, or buffalo; marine fisheries or salmon; or various forms of plant harvesting of corn, beans, squash, wild rice, sacred and medicinal plants, birchbark, or maple sugar) and previously sustainable cultural and economic survival techniques and strategies fundamentally depend upon healthy, intact, diverse habitats, which in turn depend upon relatively stable and predictable climatic patterns. Rapidly changing and erratic climate patterns and extremely variable weather events are increasingly being experienced around the world. Traditional subsistence habitats, already made extremely vulnerable from the industrial pollution of our 20<sup>th</sup> century industrial economy, are now further threatened by this onslaught of unprecedented climate change that is, in large measure, fired-up by our accelerated burning of the Earth's fossil fuels.

Both climate change and climate policies such as the Clean Development Mechanism created within the Kyoto framework will disproportionately affect the poor, communities of color, and Indigenous Peoples. National and international policymakers must address these differential impacts. Representatives from these communities must be involved in climate policy discussions and decisions, and indeed can take a leadership role in developing both local and global solutions. Social and energy equity may be best achieved by stabilizing the climate system through the replacement of fossil fuels with other, "greener" sources of energy. This is the most fundamental step in terms of the well being of our children, future generations, the poor, society as a whole, and non-human species. We cannot have a just society in a world of ever rising food and energy costs, shifting and severe weather patterns, rising sea levels, species extinctions, and emerging diseases.<sup>8</sup>

#### **4. Renewable Energy Potential and Kyoto Targets**

The Native Peoples on North America occupy a unique position as Indigenous Peoples living on the continent with the greatest contribution of greenhouse gas emissions (over 25% of the world's total) into the atmosphere. It is a position of marvelous opportunity in the context of this global crisis. American Indians hold legally enforceable treaty rights and territorial authority over an enormous wealth of solar, wind, geothermal and biomass renewable energy resources. The development of even a portion of this abundance could displace significant amounts of electric power currently generated by fossil fuels in North America. Indigenous development of the renewable potential far exceeds the Kyoto targets presently set for the U.S. and Canada, and at the same time contributes to the development of sustainable homeland economies for these native communities.

Indigenous peoples who have survived into the 21st century are the living carriers of ancient cultures that respect what Lester Brown calls the "ecological truth" of their territories. These cultures have not forgotten that economies are a subset of the ecologies. The carriers of these cultures are the human voices capable of articulating the ecological wisdom and traditional knowledge that have been gained gradually over millennia and transferred culturally through countless generations of life in those habitats.

Indigenous communities include both peoples and their habitats. These communities are the "miner's canaries" in the irreversible experiment of climate altering that fossil fuel based industrialization (with its resulting elevated levels of CO<sub>2</sub> emissions) has unleashed upon the atmosphere of this planet. Indigenous cultures have a significant role to play in understanding, informing and effecting human sustainability on this planet. This perspective on climate justice and sustainability needed to be incorporated into the discussions at Johannesburg at the World Summit on Sustainable Development. It certainly needs to be included in all of the future discussions on the Kyoto Protocol.

Indigenous peoples can lead the way in the application of climate justice in both developing and developed countries. In developing countries, the relatively small and often remote indigenous communities can use modern renewable energy technologies to meet local energy needs. Village power models can utilize renewable energy technologies designed for remote off-grid applications - ones that do not require conventional central-station fossil fuel generation or expensive grid construction.

In developed regions, particularly those that are currently or potentially the greatest CO<sub>2</sub> emitters on the planet (such as North America), Native Americans can meet local needs through small and intermediate scale applications, as well as by employing larger-scale renewable energy technologies for power sales into regional and national markets.

Across the United States and throughout North American, Native American nations, tribes, bands, villages and communities occupy a wide diversity of ecological zones and share a variety of potential vulnerabilities to climate change. Information on these topics may be found in the final report of the Native Peoples/Native Homelands Climate Change Workshop, conducted as part of the U.S. National Assessment.<sup>9</sup>

According to the U.S. Energy Information Administration, while both the European Union and Japan are relatively on track to achieve their 2010 Kyoto targets, North American CO<sub>2</sub> emissions have steadily increased since 1990 and by 2000 were 16% above the 1990 levels. North America must now achieve a 23% reduction below current levels to comply with its Kyoto targets for 2010.<sup>10</sup> In the face of global warming and growing Kyoto targets, Indian tribes from every part of the U.S. have endorsed renewable energy as a "no-regrets" strategy to meet local sustainable economic development needs as well as for an export product to help meet regional energy demands. Indian Tribes in North America have a tremendous abundance of renewable resources. For example, just the 12 Indian reservations in North and South Dakota have a wind power potential of at least twice that necessary to meet the Kyoto target for the entire United States for the 1999 emission levels.<sup>11</sup>

Encouragement to "Think Globally, Act Locally" is a good first step. Clean air is necessary for both our personal and planetary health. For clean air where we live, we need to support clean energy upwind! Since CO<sub>2</sub> production has a global impact, we can also "Think Locally and Act Globally" by supporting the displacement of the most carbon-intensive coal power with clean, inexhaustible renewable energy while significantly meeting the energy needs of the world's single largest carbon dioxide emitters. Perhaps the greatest wind regime in the world on the Great Plains sits just upwind of the largest load center on the planet in the northeastern United States and southeastern Canada.

Thus, Native America communities can initiate a "Think Locally and Act Globally" strategy in terms of building sustainable homeland economies on the reservations, while at the same time addressing global warming. North American Indians can take the lead in fulfilling the repeated demands and declarations of the world's indigenous communities. These have sought a lesser reliance on carbon sinks such as the tree farms and plantations encouraged under the Kyoto Clean Development Mechanisms to extract atmospheric carbon in the developing areas, along with a greater utilization of renewable energy in the developed countries to reduce emissions at their industrialized world source.

## **5. Climate Justice Opportunities on the North American Plains**

Returning to the case of the Great Plains of North America, we find that in the more recent millennia this region has developed vast aquifers of clean, carbon and calcium filtered groundwater. Since the last ice-age, this region has also enjoyed a relatively stable climate providing glaciers and seasonal snowpack in the Rocky Mountains and distributed rainfall across upper the Missouri River basin. Additionally, in the last 50 years the settlement patterns and agricultural and industrial practices have relied upon the increased oxidation (burning) of the low BTU coal resources found in the region. Today, such coal burning utilities in the northern Great Plains generate more CO<sub>2</sub> per mega-watt hour of electricity than anywhere else in the United States. By a variety of our own practices, we are depleting our fresh underground water resources faster than the diminishing rains can replenish them, while the sky is, once again, filling up at an unprecedented rate with a warming blanket of green house gases (especially carbon dioxide). We have spent a century disrupting the natural habitats long found in this region. These habitats depend upon specific ranges of temperature and water. We alter them through our farming and land use practices and now through our energy generation and consumption.

Such conditions are consistent with the predictions of the available climate change models where precipitation, now more frequently rainfall rather than accumulating mountain snowpack, shifts out of the

northern Rockies and upper Missouri basin (the watershed above the Oglala aquifer). Rain and snow now fall more regularly to the east where chronic flooding has become a regular feature of life on the lower Missouri and Mississippi rivers. These conditions have reduced the river flows available for hydropower production in the upper reaches of the rivers and have reduced water releases in the lower reaches for flood control. This causes Federal hydropower administrators and their customers to rely even more upon carbon based electricity generation to meet regional energy demands.

The conventional utility assurances that this nation has a 400 to 500 year coal reserve is less reassuring in the context of climate change when the burning of that reserve represents the accelerated undoing of 200,000,000 years of carbon sequestration. Further, as mentioned above, all of our conventional energy industries rely upon the presumed abundance of fresh water for steam generation and cooling. The increasingly limited availability of water may present far more of a developmental bottleneck than the tapping and delivery of natural gas resources.

The habitats in the native homelands of indigenous peoples worldwide face environmental destruction. Concomitantly, Indigenous human rights are violated by this endlessly escalating demand for energy, primarily in the forms of oil for transportation and coal and natural gas for the production of electricity. Here in North America, the United States is responsible for some twenty-five percent (25%) of the world's carbon emissions in the form of carbon dioxide. CO<sub>2</sub> is a recognized green house gas that contributes to global climate change and extreme weather variability. Each week, we Americans consume about twice our personal body weight in coal, gas and oil.

## **6. Environmental Justice in Watersheds and Windsheds**

The Northern Plains Tribes in the upper Missouri River Basin are strategically arrayed along the Western American transmission grid – a grid which could serve as a renewable wind energy collection system. There are some 200 giga-watts of utility scale wind resources to be found on the reservations in the Dakotas, Montana, Wyoming, Nebraska and Minnesota. Tapping this ocean of clean renewable energy could significantly reduce CO<sub>2</sub> emissions and help break the positive feed-back loop presently at work in the Northern Plains where reduced hydropower results in even greater reliance on the most intensive CO<sub>2</sub> generating electricity. Since domestically produced energy from distributed renewable generation adds to our long-term national security, the contributions from the best wind regime in the country ought not to be overlooked.

The inexhaustible power of the wind represents perhaps our most valuable tribal energy resource. Its development and marketing depends almost entirely upon tribal access to, and the capacity of, the integrated transmission grid operated by their federal treaty partner (the U.S. government) through the Western Area Power Administration and its client electricity generation and transmission utilities. Wind generation can lay a firm basis for an expanded "green tags" program, wherein WAPA could serve as a single federal purchaser of wind power from the northern Plains Tribes to help efficiently and economically meet any federal green power goal. Utility purchases of tribal "green power" under PURPA could also become economically feasible. "Green credit" purchases by private and institutional energy consumers who receive the downwind benefits are an additional possibility.

The northern Great Plains may also be seen as the "headwaters" for air quality conditions across the Great Lakes and Ohio River Valley and on to the New England and Mid-Atlantic states, delivered "downwind" on the prevailing westerlies. Wind development provides environmental attributes and lack of emission impacts on the air quality locally and along the windshed. A significant amount of generation can be very quickly and economically installed - in only a matter of months compared to the many years required for the more conventional fossil and nuclear generation facilities. Financial investment from those living downstream into cleaner generation upstream creates a "wind-win" situation for all of us living in the central to northeastern windshed.

The recent U.S. energy crisis has forced policy makers to consider the policies and regulations that govern the entire energy industry. Although Americans are aware of the California energy crisis, few know that in many instances American Indian Tribes are affected more than the general population by a chronic energy

crisis. Nationwide, Indian lands are grossly underserved by electricity services. According to a recent Energy Information Administration report, an average of 14.2% of tribal households in the country are without electricity.<sup>12</sup> This is ten times the average for the rest of America! Unlike other governments, tribal governments have had very little control over the quality or the cost of electric service, yet tribal members living on tribal lands spend more of their often meager incomes on electricity, in comparison to the rest of the population.

Many Tribes' economic and social development is hindered by the unavailability of reliable electricity at reasonable costs. Ironically, 20% of the energy resources in the U.S. are located in Indian Country, which combined together occupy land areas equal to the size of Texas. Our fossil fuel and hydropower resources have been and still are exploited by and for non-Indian use. Tribes receive only a portion of their potential benefit. We believe that the potential for reservation based renewable energy development to provide for sustainable homeland economies offers Tribes a unique opportunity to begin to restore a balance for the past environmental injustices plus the present and coming climate injustices suffered under those fossil and hydropower projects. American Indians can work with their federal treaty partners to help realize this potential.

Under several provisions of the Energy Policy Act of 1992, both the Departments of Energy and the Interior have explicit responsibilities to work with American Indian Tribes on a variety of energy issues, including renewable energy development.<sup>13</sup> Many of these provisions, however, remain to be implemented. Most of the Indigenous Peoples of North America (American Indian Tribes, Native American, First Nations) have treaty and trust relationships with the US and Canadian governments. These include recognized land bases upon which indigenous communities could develop their own energy infrastructures and conduct their own carbon reduction projects in the areas of:

**Energy efficiency:** Tribal housing stock and industrial infrastructure is largely constructed at very low cost, often with cheap materials and with no concern for the lifecycle costs of such construction. Tribal infrastructure is often extremely inefficient with regard to energy usage.

**Carbon sinks:** American Indians nations, with recognized tribal sovereignty within the United States and Canada, enjoy demarcated territorial boundaries and jurisdictional authorities often lacking among other indigenous communities. Therefore the international concerns raised by indigenous declarations regarding the problems of CDMs are far less a concern in North America. Indian reservations have many opportunities for forest and prairie restoration. As it happens, at least one Tribe in the Pacific Northwest is already engaged in a forestry/carbon sink project via parties in the UK. Also, plains, prairies and grasslands may be far more efficient in sinking carbon, since at least 70% of all organic matter on the prairies is actually underground. There it is far less susceptible than forests have proven to be to both fire and a relatively more immediate return of that carbon to the atmosphere.

**Renewable energy resources:** Tribes have tremendous wind, solar, biomass and geothermal resources, (measured in the many 100's of giga-watts) along with an abundance of coal, oil, gas (including coal bed methane) and uranium. Climate policies should seek to encourage Tribes in developing sustainable homeland economies based upon renewable, as opposed to conventional (fossil and nuclear (extractive)) energy industries. (Initial entry into renewable energy generation paves the way for a significant role as producers in the hydrogen economy as the fuel of the not too distant future).

## **7. Towards An Environmentally Just Future**

Look at any photograph or map of North America. The northern Great Plains is America's heartland. Long, long before Columbus ever strained his eyes into an Atlantic sunset, or Lewis and Clark ever dreamed of venturing up the Missouri River, America's vast, natural bounty cultivated magnificent indigenous communities who graciously welcomed the warm blessing of the morning Sun into their lives and who humbly commended the ancestor spirits to the power of creation at the end of the day. They once carefully gardened the broad floodplains of her meandering rivers and communally hunted her thundering buffalo herds from horizon to horizon, until there came a day when a rising tide of settlers from the East flooded her immense prairie grasslands, wooded hillsides and river bottoms. Miners and merchants, cattle

barons and immigrant farmers, bringing their railroads, telegraph lines and interstates, hydropower dams and high voltage transmission lines, all came to change the shape of her landscape, the flow of her rivers, the complement of her flora and fauna, the taste of her water, the smell of her air, in short, the nature and balance of her creation.

These indigenous cultures marked, maintained and defended their sacred and powerful places, even when compelled to withdraw from their boundless prairies to a score of relatively small, scattered, windswept reservations. These diminished aboriginal homelands were federally reserved and protected by solemn promises, enshrined in international treaties and federal law as permanent homelands for what was presumed to be a conquered and vanishing race.

Neither presumption, however, has proven to be quite true. Most of the Plains Indian Tribes such as the Lakota, while never defeated in war have ironically had to endure a loosing peace through a century of settlement and economic imbalance. These Tribes, confined to a score of reservations scattered across the northern plains, have suffered the loss of lands, water, wildlife, medicines, jurisdiction, sacred sites, cultural resources and economic opportunities. But like the enduring prairie winds and grasses, they have remained a constant presence, often culturally and politically quiescent, yet potentially powerful, deeply rooted, and growing in presence and importance.

Today, Tribes have experienced the largest natural growth of any identifiable population in the United States, none of which comes from immigration. Tribes are, in fact, the youngest and fastest growing communities in America's heartland. Tribes have come to successfully assert express and implied treaty rights as indigenous nations in a number of areas. Tribes have achieved the rightful recognition of their status as distinct and permanent governmental authorities entitled to the regulation and enjoyment of their resources. Tribes have sought and obtained the protection, use and benefit of the waters of the Missouri River basin, including entitlement as "preference customers" for access to the federal hydroelectric power coming from the storage of millions of acre-feet of fresh water confined behind the massive earthen dams built along the mainstem of the Missouri River.

Further, Tribes have demanded just compensation and remedial action over the loss of cultural habitat and resources associated with the flooding by the reservoirs of their promised homelands – homelands supposedly "permanently reserved for their exclusive use and benefit." They have demanded the same compensation and action for the ongoing assault to their cultural values and human dignity when the remains of ancient ancestors are eroded into the river and the remains of those buried within living memory resurface due to fluctuation in water levels created by the management and operation of the reservoirs. Looking ahead, these Tribes currently seek the assessment, development, control and utilization of their remaining resources in sustainable ways to adequately provide for the future of their growing populations within the limits of their reservation homelands.

Between the Pacific Coast and Rocky Mountains to the west and the Great Lakes and industrialized and heavily populated Northeast, sits the northern Great Plains at the continental divide of the largest machine in the world – the interconnected electric transmission grid system. A significant portion of this transmission system was built over the last seventy years by federal funds. It is owned and operated by federal agencies and meant to deliver electrical energy produced from the confinement of the Missouri River waters in extensive reservoirs behind dams built for flood control, irrigation and the generation of low-cost hydropower.

This strategic location happens also to be the site of the richest wind regime in the world. The Dakotas are in a "sweet zone" for wind development. There the winds are not of the great extremes such as you may find closer to the Rocky Mountains to the west, yet they are stronger and of greater duration than those found in the more wooded areas to the east. The Great Plains lie at an appropriate altitude and enjoy enough open space for gentle sustaining winds to develop and carry across the Plains. Engineering for both technologies and turbine arrays is more economical in this region.

Indian tribes and intertribal organizations such as the Intertribal Council On Utility Policy, in conjunction with the Inter-Tribal Energy Network (ITEN) and the regional Native America Wind Interest Groups

(NAWIG), are working with their federal treaty partners in the Departments of Energy, Defense, Interior, other federal agencies (such as the Environmental Protection Agency) and along with a number of private partners to assess their wind resources and to promote policies and programs favorable for the development of those resources. This includes federal “green tags” and “windshed” marketing.

Tribes are also engaged in federal policy discussions with the Western Area and Bonneville Power Administrations, the U.S. Army Corps of Engineers, and the Bureau of Reclamation to investigate the integration of wind and hydropower for a more diverse national energy mix in the face of climate change and national energy security.

The Intertribal Council On Utility Policy has proposed an Environmental Justice Revitalization Demonstration Project for an initial installation of approximately 50 to 80 megawatts of wind energy generation in clusters of 10 megawatts on each of up to eight participating reservations along the Western Area Power Administration’s hydropower transmission grid as a means to supplement the diminishing hydropower generation. There are currently some 2,500 megawatts of installed capacity available on the mainstem dams operated by the Army Corps of Engineers. The environmental and economic inequities addressed in this project are described in a paper entitled: “Restoring A Balance”, a version of which was published in “Native Americas.”<sup>14</sup> Ultimately, tribes may look to increasing the penetration of renewable energy into the federal transmission grid. The actual electrons would be sold to WAPA or one of the regional incumbent utilities (probably at an extremely low cost, called “avoided cost” by the utilities) with the economic value of the true cost covered through the purchase of green tags from federal and later non-federal sources.

The COUP proposal seeks to have an intertribal renewable energy project selected as an EJ revitalization demonstration project that addresses existing economic and environmental inequities in the arena of energy production. It helps to prevent and reduce new inequities in the context of environmental and climate justice by building sustainable homeland economies based upon renewable energy generation and the reduction of CO<sub>2</sub> emissions.

The phased development of large utility scale wind generation on tribal lands could replace diminishing hydropower resources and eliminate the need for many thousands of megawatts of new coal generation to meet projected load growth. Renewable energy generation would significantly reduce CO<sub>2</sub> emissions and the threat of climate destabilization while significantly reducing downwind deposition of nitrogen, sulfur oxides, and mercury. Such development would also provide for new, ecologically sustainable industry options for tribal economies.

Tribes have suffered from outside management of tribal resources that undermines the social and political integrity and degrades the environmental resources of the Tribes. In the past, the Federal government approved projects that directly or indirectly affected tribal lands and resources. Tribes were excluded from the decision-making process and had no opportunity to develop the technical or policy capacity to influence critical decisions. In the last 25 years, Tribes have made great progress through court decisions and national legislation that supports tribal rights to control energy development, including environmental regulating and permitting authority on tribal lands. However, Tribes have unfortunately still been left with a legacy of having their best reservation lands flooded for hydropower reservoirs, with environmental hazardous wastes poisoning their territories, with insufficient infrastructures, and with extremely energy inefficient homes and public buildings that the Tribes must heat and cool.

Tribal governments have to work within several paradigms concurrently while providing services to their people. Many Tribes are forced into a survival mode that focuses their attention on housing for their rapidly expanding population; adequate, convenient health care; and economic development opportunities, or job creation within the tribal community. All of these factors, however, are dependent upon the availability of clean electricity at reasonable costs. The availability of power is a driving factor in the planning of projects on tribal lands. Insufficient supply and inadequate electricity infrastructure are major inhibitors to tribal social and economic development. Tribally owned renewable energy generation can turn this situation around locally, and at the same time help reduce the global accumulation of carbon in our atmosphere.

## **8. EJ Community Revitalization Through Renewables**

The Intertribal Council On Utility Policy is presently seeking partners to help Tribes realize the economic, environmental and climate benefits from the tribal development of their clean renewable energy resources in order to bring these benefits to our entire windshed, including the world's largest load center of the northeastern United States and, in the context of climate justice, the entire planet by meeting new energy demands without increasing the production of carbon dioxide emissions.

This tribal wind power demonstration project plan will serve as a tribally generated road map to meet the challenge of tribally controlled renewable energy development. This plan is designed to revitalize tribal communities and economies across the Northern Great Plains through clean energy generation. It will provide guidance and obtainable goals through the stage-by-stage realization of a five-year comprehensive plan for the transition to tribally controlled sustainable homeland economic development based upon the integration of renewable wind energy into the existing federal electrical grid. It is, of course, understood that each Tribe is a sovereign, and that the particular activities of any Tribe would take precedent over this proposed plan. Some Tribes may not wish to participate at all, others may be limited by land base, or other concerns. Neither Rosebud nor the Intertribal Council On Utility Policy could or would wish dictate the activities of any other Tribe. However, the mission of Intertribal COUP and the experience of the Rosebud Sioux Tribe converge in the development of the EJ Revitalization Demonstration Project for the use and benefit of other Great Plains Tribes. It has been said that: "If you don't know where you are going, any road will take you there." This plan lays out this vision of where Tribes can go if they so choose to achieve a sustainable homeland economy based upon the use of an abundant and inexhaustible resource and provides a road map to get us there.

This EJ Revitalization Demonstration Project is rooted in the perspective of tribal environmental justice in the context of energy development past, present and to come. The disparate impacts of hydropower development upon northern Great Plains Tribes continue devastate both tribal culture and reservation environments. Tribally controlled wind energy generation will be a sustainable basis for community revitalization, sustainability and capacity building. This demonstration project will proceed in five distinct but inter-related phases: Pilot, Demonstration, Distribution, Expansion, and Replication. Ideally, this EJ Revitalization Demonstration Project will focus on Phases Two and Three.

Phase One is the Pilot Phase consisting of the unprecedented installation of a single 750 kW utility scale wind turbine to be owned and operated by the Rosebud Sioux Tribe. This installation is scheduled to be completed in 2002.

Phase Two is the Demonstration Project Phase, which occurs in three parts:

Part A. The model for tribal ownership piloted at Rosebud on a single turbine will be demonstrated with an additional federally partnered, multi-megawatt (50 MW) installation on the Rosebud. The Tribe has already completed initial feasibility studies and sample turbine arrays based upon additional anemometer studies at a second site on the Reservation. The Tribe, based upon its experience with the single turbine will develop a commercial wind farm with power to be sold to one of at least three utilities in the region: WAPA, Basin or Nebraska Public Power. It will seek to sell either Green Power or Power and Green Tags to the federal power purchasers. It will seek to help model the relationship of a wind / hydropower system, through cooperation with the Western Area Power Administration and the Corps of Engineers. This phase will require direct involvement of several federal agencies, including the U.S. Army Corps of Engineers, in the Department of Defense (DOD) and the Western Area Power Administration (WAPA/DOE) and the National Renewable Energy Laboratory (NREL/DOE), the Rural Utilities Service (RUS) in the Department of Agriculture (DOA) and the Environmental Protection Agency (EPA). Other federal agencies will also be approached for green power and tag purchases, while a private green tag market is developed. Phase Two A will extend through 2003

Part B. This part of Phase Two will also include intertribal cooperation and assistance in making sure that every COUP Tribe in the region interested in wind development has the ability to collect data at the 50 meter tower level. Data collected at the prospective turbine hub height is critical for preparing a business plan for a project that can be financed and for micro-siting a cluster of turbine for maximum efficiency. At present only six COUP Tribes have reasonably commercial data. Phase Two B will be completed in 2003.

Part C. This part of Phase Two will promote wind development among all of the Northern Great Plains reservations to assure that every interested Tribe will have commercial data by the year 2004.

Phase Three: This is the Distributed Phase of the Demonstration Project, wherein up to 80 additional MW of new wind will be developed across all eight of the COUP reservations in North and South Dakota. It is suggested by this plan that this distributed wind farm will be the product of Intertribal cooperation, wherein some 80 megawatts will be apportioned among all of the COUP Tribes in smaller clusters on each reservation.

A suggested 10 MW cluster at each reservation accomplishes several significant objectives:

1. It provides for generation to be built on each of the participating reservations roughly in proportion to the actual loads found on each reservation.
2. It provides for a pooling of resources and an economy of scale for the sharing of experience and capacity.
3. It allows for great ease in initial interconnection and integration into the grid by having smaller amounts of wind coming on line at any one place.
4. It allows for greater overall capacity of a project of this size, for if it were all located in the same place, when the wind is down, the entire generation capacity is zero. However, a distributed arrangement would allow for some of the project to be supplying wind power to the grid most of the time.
5. It reduces the opportunity costs for more rapid expansion at any one site.

This part of Phase Three will see the building an intertribal wind farm in the top commercial wind production areas of the Dakotas and the integration of tribal wind energy with federally generated hydropower in an amount of 130.75 MWs new renewable capacity. This represents about 5% of the existing hydropower capacity, so integration of this amount, distributed across the Dakotas should present few problems for the transmission grid and hydropower compatibility.

Along with the cooperation of the existing generation and distribution utilities in the region, this phase will require direct involvement of several federal agencies, including the U.S. Army Corps of Engineers, in the Department of Defense (DOD) and the Western Area Power Administration (WAPA) and the National Renewable Energy Laboratory (NREL), both associated with the Department of Energy (DOE), and the Rural Utilities Service (RUS) in the Department of Agriculture (DOA). Other federal agencies will also be approached for green power and tag purchases, while a private green tag market is developed. This phase will extend through 2004 and possibly 2005.

Phase Four is the Expansion Phase. It builds upon the preceding phases by the expansion of each of the 10 MW clusters up to a 50 MW installation, either through the replication of the single reservation wind farm model, or ideally through the expansion of each of the 10 MW clusters with the additional generation capacity of up to 50 MW. Federal agency power purchases, along with the further development of private marketing strategies for the sale of green power, green tags, and pollution credits, will be necessary to support this development, and this phase is expected to be implemented in 2004 through 2006.

Phase Five is the Replication Phase and is beyond the scope of this Demonstration Project. The goal of Phase Five is for all interested Northern Great Plains Reservations to have commercial utility scale wind farms to meet local load and to export power and tags regionally and nationally. The sponsors would be expected to assist in replicating the multi-megawatt model across the northern Great Plains and throughout Indian Country. Outreach, education, ground work and transfer of the model in the northern Great Plains will occur throughout the project with additional installations of up to 3 giga-watts (3,000 megawatts) of wind capacity to be expected through 2007-2010.

The “Demonstration Project” Phase, in particular, strategically promotes explicit federal policies aimed at addressing: 1) Native American environmental justice concerns (Interagency Working Group), 2) the staged development of significant new renewable energy resources, particularly within the Western Area Power Administration service territory (Department of Energy), and 3) the announced BIA goals of promoting sustainable economic development and employment in Indian Country (Department of the Interior).

<sup>15</sup>However, above all, this is a grassroots initiative primarily intended to successfully realize tribal aspirations for community revitalization, the development of sustainable homeland economies, and long-term tribal capacity building in collaboration with federal departments and agencies. It is designed in accordance with the goals, visions and missions of the Intertribal Council On Utility Policy and its member Tribes through a coherent, collaborative approach for the development of on-reservation wind generation that respects tribal sovereignty and meets the long term cultural, economic and environmental needs and aspirations of the Great Plains Indian reservation communities.

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## Endnotes

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- <sup>1</sup> Jeremy Rifkin “The Hydrogen Economy” Tarcher/Putnam, 2002 at 161.
- <sup>2</sup> Extreme Weather, Extreme Costs, in “The Heat Is On”. URL: < [www.heatisonline.org](http://www.heatisonline.org) >.
- <sup>3</sup> “As the Earth Warms, Will Companies Pay?” Amy Cortese, New York Times, August 18, 2002.
- <sup>4</sup> Action #9. “Precautionary Principle Basis for Policies” of the *Ten Actions for Climate Justice Policy*.
- <sup>5</sup> As the recent (May 20, 2002) Report of the United Nations High Commissioner for Human Rights to the Economic and Social Council (Part V. Article 49 on the Rights of Indigenous People) points out: “Many of the world's more than 300 million indigenous people experience exclusion and marginalization in many of the countries in which they live. They are often poorly served by education, health, housing and other services. WHO has noted significant inequities in the health status of indigenous peoples, that indigenous peoples' life expectancy at birth may be 10 to 20 years less than for the overall population and that infant mortality rates can be up to three times greater than national averages.”
- <sup>6</sup> “Global Challenge, Global Opportunity: Trends in Sustainable Development” United Nations Department of Economic and Social Affairs for the World Summit on Sustainable Development, Johannesburg Summit 2002, at 16, URL: < [www.johannesburgsummit.org](http://www.johannesburgsummit.org) >.
- <sup>7</sup> “Energy Consumption and Renewable Energy Development Potential on Indian Lands”, United States Energy Information Administration, April 2001, reported at URL: < <http://www.eia.doe.gov/cneaf/solar.renewables/page/pubs.html> >.
- <sup>8</sup> Preamble of the “*Ten Action for Climate Change Policies*”.
- <sup>9</sup> URL: < <http://www.usgcrp.gov/usgcrp/Library/nationalassessment/native.pdf> >.
- <sup>10</sup> As cited above in “Global Challenge, Global Opportunity” at 14.
- <sup>11</sup> The increase in global energy production and consumption from fossil fuels increased between 1990 and 1999 on the order of about 12%. “Global Challenge, Global Opportunity,” at 14.
- <sup>12</sup> “Energy Consumption and Renewable Energy Development Potential on Indian Lands”, United States Energy Information Administration, April 2001, see URL above.
- <sup>13</sup> For example, under the section 2603 of the 1992 Act the Secretary of Energy, in consultation with the Secretary of the Interior, shall establish and implement a demonstration program to assist Indian tribes in pursuing energy self-sufficiency and to promote the development of a vertically integrated energy industry on Indian reservations, in order to increase development of the substantial energy resources located on such Indian reservations, including renewable energy resources. A careful review of the program performance, especially with regard to renewable resources, would allow tribal and the federal governments to better plan and shape future development under the currently proposed amendments to this Act. Section 2604 of the 1992 Act has authorized the Secretary of the Interior to promote tribal legal and regulatory development, and for secretarial cooperation for technical assistance and training, materials, and assistance to Tribes in preparing and maintaining energy resource inventories. Section 2605 established the Indian Energy Resource Commission with members to be appointed by the Secretary of the Interior upon recommendations submitted by Tribes with developable resources, state officials, and from the private sector.
- <sup>14</sup> “Restoring A Balance: Wind Power on the Great Plains,” Robert Gough, in *Native Americas*, Summer 2001, 18-24. A good deal of the research underlying this paper and providing background to the environmental justice revitalization demonstration project described in this paper was supported through the 2000 El Paso Energy Research Fellowship at the Natural Resources Law Center, CU-Boulder, CO.