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Native Americans and the Environment: From Stereotypes to Renewable Energy

Submitted by: Jonathan Hoose

“Native people clearly possessed vast knowledge of their environment. They understood relationships among living things in the environment, and to this extent their knowledge was ‘ecological.’ But knowledge is cultural, and each group in its own way made the environment and its relationships cultural.”^{cxxvi} The concept of Native Americans being one with nature has been used for years. Not only can this concept be demeaning, the complexities associated with it are vast. By referring to all Native people as part of nature, the diversity of the hundreds of separate tribes within North America and how they interact and have interacted with their environment is lost. There is also a problem that occurs by not taking into account the numerous environmental problems that many Native Nations face today. Often, there is a desire to relegate Native Americans to history books and museums, instead of acknowledging the presence that Native Americans have today. Defining Native people as part of nature also does not acknowledge the contributions that Native people are making in the field of energy development and resource management. Numerous tribes are working with the United States Department of Energy as well as colleges and universities, specifically The University of California at Berkeley, to develop and manage renewable energy sources on Native lands. The energy resources on Native lands have been used for years, most specifically the resources of coal, oil and uranium. However, renewable

energy production is being viewed as a more viable alternative than these traditional methods of energy production, and Native lands are some of the best for wind, solar, hydroelectric and biomass energy production in North America. The complexity of environmental problems throughout Native American Nations today is extensive, and I will focus primarily on what a few Nations are doing in relation to renewable energy production. While renewable energy production presents great opportunities for Native people, there have been those opposed to renewable energy projects for various reasons. Historically, many Native people did live within their natural environment and were able to live off the land with only moderate amounts of waste. However, it is harmful to Native Americans when the only way they are thought of is through a historical lens, instead of acknowledging their contributions and interactions with the environment today. It is important for people to understand what Native communities are dealing with in relation to energy production and the extraction of natural resources on Native lands.

Complex is the best word to describe the relationship between Native people and the natural environment around them. The works of many authors attest to the varying views and complexities that exist in the concept of Native Americans who are often portrayed as more in tune with nature than any other group of people. Wilbur Jacobs writes that, “Indians were...

America's first ecologists. Through their burning practices, their pattern of subsistence...by creating various hunting preserves for beaver and other animals, and by developing special religious attitudes, Indians preserved a wilderness ecological balance wheel."^{cxxvii} This quote from Jacobs shows how many people have viewed Native Americans and continue to view Native Americans. While these practices did occur for various groups of Native Americans, Jacobs does nothing to acknowledge the complexities that many Native American communities have had to deal with in their relationships with the environment. His reference to Native Americans as "ecologists" is also problematic, because the connotations associated with the word today are not applicable to how Native Americans lived in the past. In his book *The Ecological Indian*, Shepard Krech III writes, "images of noble and ignoble indigenism, including the Ecological Indian, are ultimately dehumanizing. They deny both variation within human groups and commonalities between them."^{cxxviii} These images are also damaging to Native people because it romanticizes and creates this idea of the "noble savage" which has been used since the writings of Rousseau, and relegates Native people as only being acceptable if they fit this historic archetype. Additionally, by placing Native people as part of nature, many people then view them as separate from the rest of the human race, and since nature is something that many people view as conquerable, Native people fall into this category. Any creation of a monoculture, such as placing all Native Americans together, is not useful in conducting real and meaningful discussion and research. The manner in which a member of the Lakota tribe interacts with the environment could be drastically different than the manner in which a member of the Osage interacts with the environment. In relation to this, David R. Lewis

writes in his essay "Native Americans and the Environment: A Survey of Twentieth Century Issues" that,

early environmentalists found inspiration in Native American cultures. Some was richly deserved while much was based on a cultural misinterpretation of a more complex and dynamic whole. The grossest stereotypes depicted Indians as being without action or agency, who left no mark on the land, who lived within the strictest of natural constraints. These ideas unintentionally denied Native Americans their humanity, culture, history, and most importantly, their modernity.^{cxxix}

With that being said, there are many Native people who have written extensively about their relation to nature and the earth on which we all live, and do feel a connection to nature. However, this connection to nature is also fraught with differences in opinions of what constitutes a real environmental relationship.

There are many Native American scholars and writers who have written about their relationship with the environment as an intrinsic part of their life. Winona LaDuke, an environmental activist, writes on her website: "The Great Wind is a constant in our lives as Anishinaabeg people. Indeed, Ningaabii'anong Noodin, the West Wind, is a part of our oldest history."^{cxxx} Clearly, Ms. LaDuke feels a connection to the land and the weather that is part of nature. On this website, Ms. LaDuke also advocates for the use of renewable energy, specifically wind turbines on the Great Plains, as she and many people feel that the extraction process and pollution generated from coal and oil extraction around these Native communities is not healthy for the people or the environment.

The importance of people voicing their concerns, especially those who live in the communities that are directly affected by the extraction of fossil fuels and pollution of local resources, is important. Jeanette Wolfley writes that, “The wisdom and knowledge that indigenous people possess of the ecosystems and their homelands is based upon millennia of observation, habitation and experience, all using a balance of human interaction and intervention with the environment.”^{cxxxix} This is a true statement for many Native tribes in North America. As many Native people are from the areas in which they live, they do have valuable knowledge regarding the natural environment around them. Today, Native people are interacting with their environment in ways similar to many non-Indian run municipalities, such as the Eastern Band of Cherokee who, “closed their existing landfill, which would have been prohibitively expensive to upgrade, and created a waste transfer station. This enterprise handles solid waste not only from the reservation but also from surrounding non-Indian communities.”^{cxxxix} As can be seen by this, Native communities do interact with their environment, and in ways that are similar and work with their surrounding non-Indian neighbors. Through their waste treatment facility, the Eastern Band of Cherokee are containing waste, handling recyclables, and creating a viable economic model for other Native communities. This is just one of the many ways in which Native Nations today are interacting with their environment.

Historically, one of the most discussed actions of Native Americans involvement with the environment around them concerns their use of fire. Fire was used for a number of reasons, the most important being the knowledge that fire would improve food production. Shepard Krech writes about this with, “Indians used fire to improve subsistence more than for any other

end. Across the continent, they deployed fire to improve their access to animals, to improve or eliminate forage for the animals they depended on for food, and to drive and encircle animals.”^{cxxxiii} This use of fire, to improve their ability to find and gather sources of food, most often animals, shows how Native American groups would use fire to manipulate and change the environment around them. It was necessary for many Native people to use fire because it was a useful tool that increased food yields and often helped to increase the fertility of the soil. In her essay *We Live By Them*, Catherine Fowler writes about the initiatives that many Native American communities are making today in asserting their knowledge regarding management of their lands. One such tribe is the Timbisha Shoshone Tribe in Death Valley, who co-manage their land with the National Park Service, and who believe they know how to best manage the environment around them. She writes: “Members would like to trim and manage the mesquite, whip the pinyon trees, burn the marshes now choked with cattail, and conduct limited small and large game hunts.”^{cxxxiv} There are still many tribes that wish to use their historic knowledge of the land that they occupy to maintain and manage it. One such manner that is mentioned in regards to the Timbisha Shoshone Tribe concerns the use of fire, and how the tribe believes it should be used to clear marshes of too many cattails, but the Park Service won’t allow them. Fire was used to clear undergrowth and brush so that crops could be planted for the people to consume. Shepard Krech writes that: “Where they farmed maize, beans, squash, melons, pumpkins and other crops, Indians used fire extensively to clear land, destroy plants competing with crops, and deposit ash onto the soil.”^{cxxxv} As can be seen, fire was used not only to increase yields of animals, but also to help with crop production for those tribes that participated in such

agricultural methods. The increase of ash in the soil would aid with larger crop yields in the following year, and the fire that produced the ash was necessary to make larger areas for agricultural endeavors to take place.

Many anthropologists, historians, and scientists have found that the evidence of fire being used to clear large areas of land is evident within the oak trees that exist across America. I first learned about this when I was helping with the research and assembly of a pamphlet highlighting the famous Genesee Valley Oaks for which this region is known. Through my work with Professor David Robertson in the Geography Department at SUNY Geneseo I was able to learn about the use of fire within the region of Western New York where Geneseo is located. Concerning these oak trees, I learned that, “The Seneca Indians cleared land for hunting and growing crops. They then used periodic burning to maintain hunting clearings. These burnings left the scattered ‘oak openings’ seen today with their broad and heavy trunked trees, most of which are more than 200 years old.”^{xxxvi} While setting fires was a tool used by many Native American tribes, there exist some difficulties in determining exactly where they did light fires and if the fires were intentionally set, or the result of a natural occurrence, such as lightning. What is known is that many tribes did take part in setting fires to clear land for hunting and crop cultivation, such as the Seneca and their use of fire within the Genesee Valley. However, fire was not always used in a controlled manner. In fact, Krech writes, “not all grassland fires are benign and restorative. When they are too frequent or hot, when moisture is low, or when heavy rains follow fires and cause erosion, plants may not easily recover.”^{xxxvii} It can be seen that while many Native people did use fire, it was not always kept under control or beneficial to those who set them. Fire is just one of the ways Native Americans interacted with

their environment, and their interaction with the American Buffalo is another.

The American Buffalo, also known as the Bison, often conjures up images of a “wild” America, where land was wide open and Native Americans hunted them on horseback across open plains. Shepard Krech tells the reader that “Unquestionably, the buffalo was the mainstay of Plains Indians, who killed them in large numbers both for domestic use and for trade with other Indians who supplied corn in exchange.”^{xxxviii} The importance of the American Buffalo to Plains Indians was significant, and many tribes were dependant on this animal for their food and for trade. During the eighteenth century, it became even more imperative for many Indian groups to consider Bison hunting as their main form of subsistence and revenue. Andrew Isenberg writes in his book *The Destruction of the Bison: an Environmental History* that: “In the eighteenth century, some of the Indians who eventually became nomads had faced a social and ecological dilemma: to remain as agrarian villagers and face the threat of European diseases, or to become nomadic bison hunters and abandon their reliance on a diverse array of resources.”^{xxxix} For many tribes this was a dilemma that had only one outcome, which was to become more nomadic and hunt the bison. The extensive hunting of the American Buffalo herds was not relegated to one group of people, although the Native Americans who had lived off these animals for years often had more of a reverence for these creature. However, the narrative that is often told places all the reasoning for the almost extinction of the Bison on the shoulders of European Americans, which is not the entire truth. Isenberg writes that: “Both Indian and Euroamerican hunters were, in this ecological sense, predators on the bison, and their exploitation of the animal was an ecological phenomenon. The market in bison

robes and their hides was not an exclusively anthropogenic cause of the bison's destruction, but the leading cause among several eco-social factors."^{cxl} The hunting of the Bison in North America was a combination of many factors and many parties.

It should be noted that the expanding consumer interest in bison products, including skins and fertilizer made from the bones, spurred both Indians and European Americans to exploit this animal to the brink of extinction. Krech adds further knowledge for the reader in discovering the real reasons why the buffalo faced extinction: "the rapidly expanding population of European Americans whose appetite for meat was boundless; expansive new commodity markets for tongues, skins, and robes; and finally railroads that pushed into the heart of buffalo territory in the Plains, with the means to transport buffalo meat and hides to populations elsewhere."^{cxli} European Americans desire for the buffalo was too much for the population of the animals that existed in America, especially because the buffalo were already widely consumed by different Native American groups. However, Indians did participate in the Bison hunting and trading, and this fact cannot be overlooked, although it should be kept in mind that the reasons for this were often to survive and make some sort of living.

It is important that people look at the history of environmental issues in relation to Native Americans and how different groups of Native Americans and European Americans interacted with the environment. However, it should not become the only lens through which we look at Native American involvement with the environment. It is necessary that all people, Native and non-Native, take a serious look at what is happening to the environment and the human effect on the environment today.

Many Native American Nations face serious environmental challenges today, challenges that have and do affect the health and well being of both Indians and non-Indians, and these issues need to be addressed. One of the most discussed and looked at environmental issues facing tribes today is water rights and water quality issues. In one case, "the Isleta Pueblo in New Mexico, located on the Rio Grande, set water quality standards that are more stringent than those set by the state of New Mexico."^{cxlii} However, the strict standards that the Isleta Pueblo developed were not acceptable to the city of Albuquerque, which is located 13 miles upstream and who wanted to build a wastewater treatment facility that did not meet the Isleta standards, and so the city of Albuquerque sued the EPA. However, the court of appeals rejected the city's suit and held the Pueblo's standards. This was a precedent setting case because it showed that the Isleta are concerned about their environment, and in this case they developed stricter standards for environmental quality than local non-Indian municipalities. They are also asserting their rights for what they believe are environmental standards that they want upheld, even if it puts them at odds with local municipalities. Another example in which tribes are taking initiatives to clean up toxic sites around them caused by a large corporation is the St. Regis Mohawk Tribe. David R. Lewis writes that, "Industrial waste sites surround the St. Regis Indian Reservation and foul the St. Lawrence River. Elevated levels of PCBs are showing up in the breast milk of nursing Mohawks mothers who consume fish or use river water near the General Motors, Alco, and Reynolds plants."^{cxliii} This contamination of the environment is nothing new for many large corporations, and neither is doing it on or near tribal lands. In this case however, the St. Regis are developing methods to take care of these toxic sites, "the St. Regis

Mohawk Tribe has taken steps to address the environmental problems associated with the Superfund sites upstream on the St. Lawrence River. St. Regis proactively built the institutional capacity to develop and implement an aggressive program to press for cleanup of the contaminated sites.^{»cxliv} The workings of the Isleta Pueblo and the St. Regis Mohawk show tribes that are developing and implementing their own standards for the environment of their tribal land as well as how the land and the rivers surrounding them influence their environment. By doing this, these tribes are making it necessary for governmental organization, such as the Environmental Protection Agency to take notice and respond on a government-to-government basis.

Energy development has been a serious topic within the Native community for many years. Native communities and the natural resources they contain within their lands have been used and exploited by many companies. While many tribes have entered into contracts and agreements with large energy companies, there are often negative consequences associated with this type of energy production, such as those that involve the Navajo. David R. Lewis describes in his essay that, “In the 1950s, as part of the call to national defense, the Navajo Tribal Council approved mineral agreements with Kerr McGee Corporation to mine uranium. Non-Union Navajo miners were exposed to high levels of radioactivity in mines and mills.”^{»cxlv} As a result of the high level of exposure to uranium, many Navajo miners developed cancer and other diseases associated with the radioactive substance. In her essay *Uranium Is in My Body*, Rachel L. Spieldoch writes about uranium mining with: “Navajo people were sacrificed for economic growth. Many early uranium miners died without compensation as a direct result of radiation exposure. The government viewed these people

as expendable.”^{»cxlvi} Uranium mining is not the only energy resource that is being mined on Native lands, coal and oil are as well. All three types of mining have proven to be detrimental to the well being of Native communities where such practices are located, as well as the surrounding environment.

Recently, the use of tar sands as a source of oil has negatively impacted some Native communities, specifically tribes located in Canada. On February 19, 2009 a group of activists from the Dene, Cree, and Metis tribes went to Washington, DC to make their voices heard while the Canadian Environment Minister, Jim Prentice was in the city for discussions. The activists brought a letter to Senator John Kerry of Massachusetts, part of which said, “Animals are dying, disappearing, and being mutated by the poisons dumped into our river systems. Our traditional lands and water houses, our culture. They are one and the same. Once we have destroyed these fragile ecosystems we will have also destroyed our peoples.”^{»cxlvii} What the activists wanted from Kerry and Prentice were serious discussions regarding the use of renewable energy instead of any fossil fuel based energy sources, such as tar sands oil. Winona LaDuke wrote an opinion article with Nellis Kennedy that was printed in the *Bemidji Pioneer* in April 2009 speaking out against a proposed pipeline that would cut across Native lands, from Alberta, Canada, through Minnesota and branching out to other states. The authors write that, “A set of corporations has offered \$10 million to the Leech Lake tribe in exchange for a 20-year lease of tribal lands. The proposed...pipeline is one of the most controversial in history, with immense environmental and economic impacts.”^{»cxlviii} These two women are influential members of their community and are concerned about the health of the environment around them. They are also aware of the negative consequences of

developing tar sands oil and what such processes will do to the water, the air and the land.

Unlike fossil fuel energy sources, renewable energy sources provide powerful means by which Native tribes can take control of energy production and be in charge of distribution. In fact, historically, there has been use of passive solar energy building practices by Native Americans, including the Acoma Pueblo. Some of the first recorded use of passive solar energy use was found in the housing of the Acoma Pueblo; “American solar architecture began with its indigenous heritage. Acoma, built by the Pueblo Indians in the 12th century AD and continuously inhabited since then serves as an excellent example of their sensitivity to building with the climate in mind.”^{cxlix} There have been major improvements in regards to solar energy production as well as other renewable energy sources over time and these advances can assist Native communities in developing more diverse and stable economies. Daniel M. Kammen, director of the Renewable and Appropriate Energy Laboratory at the University of California Berkeley, is just one person who is working with Native American communities to develop and integrate renewable energy resources into tribal economies and lives. Kammen writes in testimony he presented to the United States Senate Committee on Indian Affairs that: “I have worked with the U.S. Department of Energy to develop curriculums and to provide outreach support to the tribal colleges and tribal energy officers for the Native American Renewable Energy Education Project.”^{cl} Not only is his laboratory working with the governments of Native Nations to develop renewable energy resources, but they are also working to educate people attending Tribal Colleges about renewable energy productions.

The work he and his team are doing will continue what U.C. Berkeley began back in the ‘90’s regarding renewable energy production. In the U.S. Department of Energy’s piece *Using Renewable Energy on Native American Lands*, it is written that, “Established in 1995, The Native American Renewable Energy Education Project (NAREEP), managed by the University of California at Berkeley, is an education, technical assistance, and research program whose mission is to enhance the ability of Native Americans to assess and carry out renewable energy and energy efficiency projects on tribal lands.”^{cli} Not only is Kammen and his team working to integrate renewable energy production into tribal economies, they are also working to educate tribal members who will then be capable of working these jobs.

One word that Kammen stresses repeatedly throughout his piece is that of “partnership” and how important that is to making advances in renewable energy creation and distribution on Native lands. It is important that this project be used as a way to create partnerships between Native governments and the surrounding non-Native governments. One of the main reasons for this is because, “grid extension and direction to harvest clean energy resources is perhaps the most critical and capital intensive issue facing the Tribes.”^{clii} One of the main difficulties that tribes will experience in building and extending energy grids is the checker boarding that makes up many reservations, and which causes problems between many Indians and non-Indians who live on that land. This difficulty can only be resolved by Indian and non-Indian people working together collaboratively to assist each other. However, because of relationship problems that exist between Indians and non-Indians, especially on reservations and close surrounding areas, it may become necessary for laws to be passed by the Indian government to make

renewable energy production and accessibility open to all members of their tribe, no matter where they are located on their reservation, or whose parcel of land a wire may cross.

While there are some serious hurdles in the creation of renewable energy production and distribution sites on Native lands, there is growing support within Native communities in regards to this issue. One such example of support is the Navajo Green Economy Coalition. The Navajo Green Economy Coalition was formed to, “help transition and diversify the Navajo economy to one that is long-lasting, sustainable and healthy through a green jobs initiative that includes generally low-polluting and recycling interactions with the environment.”^{cliii} Such a coalition being formed is heartening to see, especially considering the history of Uranium extraction on the Navajo Nation. It is also encouraging to see that they are developing relationships with the U.S. government to receive funds to develop renewable energy resources. There are also inter tribal relationships that are being created and fostered through renewable energy projects. Various groups of the Navajo Nation are coming together, and Navajo members who own companies that work in renewable energy production are being brought in to work on these projects.

One such man is Gordon Isaac president of KEYA Earth Co. who is, “pursuing legislation through the Navajo Nation to establish the green energy fund. His company offers services that assist in planning for sustainable development.”^{cliv} The work that can be done between the Navajo Nation and businesses that are owned by Navajo people represents an opportunity to develop businesses that are more sustainable, as long as there is no conflict of interest. It also encourages Navajo people to open and run businesses that are

focused on renewable energy production and distribution. Another Navajo owned and run energy company is the, “Native American Photovoltaics Incorporated (NAPV), a not-for-profit joint venture between the Dilkon and Teesto Chapters of the Navajo Nation and Energy Photovoltaics Incorporated (PV), (who) plan to install stand-alone PV power systems for 20 residences on the Navajo Reservation in Arizona.”^{clv} This group wants to help and assist Navajo residents to attain access to renewable energy resources and services. Another important aspect of Native American Photovoltaics work with the Navajo community are the issues of accessibility to photovoltaic devices and service for those devices if they are damaged or stop working. “By providing local service and maintenance, NAPV hopes to eliminate a major shortcoming of existing remote PV systems- many of which do not function after a year or two.”^{clvi} While there is a local push for service and help for Navajo people to be able to use photovoltaic devices, there is also a focus to make these jobs open and accessible to Navajo members. These jobs can help many Native people, not just Navajo, to gain more economic independence as well as knowledge regarding renewable energy development. There is currently a pan-Indian group known as the Council of Energy Resource Tribes that is encouraging such development.

The Council of Energy Resource Tribes was developed in 1999 by over sixty tribal leaders who gathered to encourage energy and economic independence for Native Nations throughout the United States. Their mission is to: “support the member Tribes as they develop their management capabilities and use their energy resources as the foundation for building stable, diversified self-governing economies; according to each Tribe’s own values and priorities.”^{clvii} Such a council is integral in helping Native communities in the United States

work towards greater control of their resources and lands, as well as develop “green collar” jobs that will be available to members of each tribe. With such job creation and growth as is represented by “green collar” jobs, an educated workforce is needed, and this is another way in which Native communities can develop and implement control over educational practices through their tribal colleges. These colleges can and do act as training places for Native students to learn about renewable energy creation. These jobs will be safer and more stable in the short term and long term for Native people that are employed in them, as opposed to the coal and uranium mining that has and still does occur on many Native lands. There are currently grants being made available to Native American communities by the United States Department of Labor. A press release from the Department of Labor states: “These grants will help organizations implement training programs to prepare workers for good jobs that pay family-supporting wages,” said Secretary of Labor Hilda L. Solis. “Funding awarded through this competition will directly support American Indian, Alaska Native and Native Hawaiian communities in both developing their local economies and preparing workers to better meet the needs of promising regional industries.”^{clviii} These grants are just another way in which Native communities can create and implement renewable energy services into their economies.

Daniel Kammen also discussed the positive job growth associated with renewable energy jobs in his report with: “Across a broad range of scenarios, the renewable energy sector generates more jobs than the fossil fuel-based energy sector per unit of energy delivered.”^{clix} Not only will renewable energy production and distribution create more jobs, but the jobs will be safer for the people employed in them. After all, I can’t think of anyone who has gotten cancer from building and maintaining a

windmill or a solar panel. While there is much debate about the “aesthetic” issues associated with windmills, it comes down to what people want; a coal plant that is belching black smoke into the air or a windmill. Both do obscure the landscape in some manner, but the windmill is definitely better for the health of the species in the area, not only human beings.

While it does make sense that people would want a windmill instead of a coal plant in their near vicinity, there has been opposition to the building of windmills in many areas of the country, and that includes Native areas. One such case involves the Mashpee Wampanoag and the Wampanoag Tribe of Gay Head, located on Cape Cod. The two groups joined the opposition to the Cape Cod wind farm because, “their worship requires unrestricted views, they claim. And the project would also disturb their ancestral burial grounds. The National Park Service has heeded their plea, and the entire area of ocean has been listed for inclusion in the National Register of Historic Places.”^{clx} However, not every member of the Wampanoag Tribe of Gay Head supports this position, including two members who wrote to the *Martha’s Vineyard Times* on February 25, 2010. “Tribe member Jeffrey Madison, in a February 9 letter sent to Ken Salazar, Secretary of the U.S. Department of Interior, supported by a statement signed by eight members of the tribe including Beverly Wright, a tribal council member and former five-term chairman of the tribe, disputed the tribe’s claim about the cultural value of the Cape Wind site.”^{clxi} This dispute in terms of the Cape Cod Wind farm being built shows that not even members of one tribe have the same views. It is not just a debate between Indians and non-Indians, but also disputes between members of similar cultural groups. Another Wampanoag group on Cape Cod, which is not federally recognized, supports the building of the Cape Cod Wind Farm. “A

Wampanoag Indian tribe from Massachusetts is supporting a proposed Nantucket Sound wind farm opposed by two tribes closer to the project. The Pocasset Wampanoag chairman George Spring Buffalo wrote to Interior Secretary Ken Salazar, who is considering the 130-turbine Cape Wind project...He said Cape Wind fits a vision for energy "produced in harmony with nature."^{clxiii} There is much debate among these tribes and their members, not just between Indian and non-Indian communities on Cape Cod. It will become necessary for people to do their historical research in regards to the claims that these specific areas where the windmills are going to be built affects Native Americans religious practices and their culture.

There will be opposition to the creation of renewable energy facilities, as well as the physical representations of those renewable energy pieces, such as windmills and solar panels. Some of this opposition will come from people within Native communities for a variety of reasons, one of which may be religious beliefs and the cultural beliefs of the tribe. Other opposition will take the form of non-Indians who live on and around Native communities, and still more opposition will come from the fossil-fuel energy companies that mine many of their resources on Native lands, including gas, oil and uranium. However, the positive results of creating tribal economies that are focused on renewable energy production and distribution outweighs the opposition that could be leveled against them. Most importantly, renewable energy focused economies provide healthy and stable employment, two adjectives that are not always associated with energy production, especially within Native American communities. Unemployment is a large concern for many Native communities and even though many people believe that all Native American communities are now flush with cash because of

casinos, this is simply not the case. Native Americans face higher rates of unemployment and poverty than any other group in the United States. These statistics can be helped through the use of renewable energy focused economies. The educational opportunities are another aspect of renewable energy that will need to be further developed on tribal lands. More students will need to be taught how to assemble, work, and maintain renewable energy production machines. They will need to learn business skills to help start and run these companies. All of these provide great opportunities for Native American communities to diversify their economies and their educational systems.

There is a long and varied history in regards to Native American involvement with the environment. The use of fire to clear widespread areas of land to promote habitats that were beneficial to the Native Americans and the animals and plants they subsisted on is well documented, and can be viewed within the Genesee Valley by the oak trees that still exist. There is also the interaction that many Indian tribes had with the American Buffalo throughout history, an interaction that took a turn towards extinction with the large movement of many Europeans and European Americans to the Western United States in the late 1800's and early 1900's and the growth of markets for Bison derived products, as well as other socio-ecological reasons. In many history books and dialogues focused on Native Americans and their interaction with the environment, this is often where the discussion ends. However, there is a great deal to take into account with respect to Native American interaction with the environment, especially in recent years. The interest in renewable energy development has affected many Native American communities, some of which embrace it and others who oppose it. However, from my research it has

become clear that renewable energy development on Native American lands is more beneficial than not for Native communities that are interested in pursuing such development. The jobs that are produced from renewable energy development are various. There will be a need for people to install and maintain the facilities, whether they be solar panels or wind turbines. There will be a need for people to operate these facilities on a daily basis, to check on the machines and make sure they are running properly. There will be a need for people to run the business side of this energy creation, especially with distribution to both Indian and non-Indian municipalities. The jobs that will be created by renewable energy development will be safe, healthy and well paying, and people will need to have education to perform these jobs. Tribal colleges and other local colleges will need to assist in educating the workforce properly, and this is being done through collaborations such as Dan Kammen and his team at UC Berkeley. There is also the opportunity for governments to work on more equal footing, where one does not hold all the power over the other. The history of Native American involvement with the environment of North America is vast and complex, but it is important to remember that the history is in the past, and that there are new challenges that must be discussed and acknowledged today. This does not mean that one should dismiss all of the past cultural practices that many Native Americans had in regards to the natural environment. It means that it is necessary to view Native Americans today as developers and contributors to many different areas of life, including energy development, and that they are living just as dynamically with the environment as they ever did. No culture is static, and the Indians of North America are proof of this.

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