Two Green Thumbs-Up for Beaver County

To begin, when it comes to getting green, the obvious place to look is towards renewable energy. Sources like solar, geothermal, wind, and hydropower are all quality examples of renewable energy that can be implemented around the world in order to produce cleaner, more efficient energy (Energy Sources). With the addition of these practices, job openings are likely to increase drastically in the respected areas. This can make for better business in areas where renewable energy is practiced. Also, public health can be positively affected, which is more important now than ever during the Covid-19 Pandemic. Looking outside the small lens of the immediate area around energy production, global climate change can be slowed, assuaging the negative effects revolving around such a matter. However, when planning to incorporate renewable energy, it is important to research aspects of the area in which the plan is intended to make the best fit. In this case, we are looking at Beaver County, Pennsylvania.

Continuing, when we look at the sources of renewable energy with respect to Beaver County, we see pros and cons, but we also see a clear cut winner in terms of short term investment and long term benefits. When we look at solar energy, we find that Beaver County actually has forty-three less sunny days per year than the average United States location along with the fact that Beaver County has an average ultraviolet index that is fourteen percent less than the United States average, making solar energy a poor option here (*Beaver County, Pennsylvania Climate*). Beaver County also has average wind speeds of about seven miles per hour (Willy Weather), which is very low in comparison to the rest of the United States. Pennsylvania does not even rank in the top half of states in terms of average wind speeds (U.S. Average Wind). Then, looking at geothermal contributions, Beaver County already has systems in places in areas like Beaver Falls (Boehmer Heating) and Rochester (Maier Heating). This leaves us with hydropower, or water, as a primary source of renewable energy for Beaver County, Pennsylvania. This actually makes perfect sense too as Beaver County has great water access especially with the Ohio River, Beaver River, and many others. This is apparent with its low elevation that is roughly one thousand four hundred forty feet lower than the average location within America. Not only

that, but Beaver County actually has just as much annual rainfall as the average place in the United States. Most areas in Beaver County also receive snowfall which only adds to the precipitation totals as well as the potential for hydropower. This allows the county to have an average of forty more days of precipitation than the standard for the United States, which matches up with the low total of sunny days in Beaver County. Seemingly a perfect fit to the energy puzzle of Beaver County, we see all information pointing towards water as a primary source. This even matches one of the four types of industry opportunities or environmentally-friendly business mentioned in the report titled: *ReImagine Beaver County* as the plan would fall under *Riverfront Development*. Including hydropower into normal practice will allow for Beaver County to ditch the one dimensional form of energy seen in its past, and instead build a diverse, long lasting economy around energy (ReImagine Beaver County).

Next, a need for application is to be put in place. With rainfall, simple contraptions can be placed atop buildings throughout Beaver County to generate energy (Buildings). However, more large-scale practices can be put in place within some of the main waterways located between county lines. A Stanford study found that "... where nature has carved out a large basin to catch rainfall, dams and turbines can be installed to produce significant amounts of electricity," (Rainfall as an Energy Source). These significantly large areas include rivers and large waterways that are copious in Beaver County. This calls for a seemingly simple makeover to take place in the Ohio River of Beaver County as there have been similar cases popping up around the nation. For instance, the example used in the Stanford study was with a similarly-sized river and river basin; the Columbia River (Kiprop, Joseph). The same is seen with many other locations along the same river where dams and turbines have been placed to successfully produce cleaner hydropower energy, such as the Chief Joseph Dam and Bonneville Lock and Dam to go along with the Grand Coulee Dam mentioned in the study. More rivers like the Susquehanna River, Snake River, and Tennessee River are comparable in the previously listed categories. These rivers are covered in dams with just around twenty turbines that produce thousands to millions of gigawatt hours of energy. To put that into perspective, New York City uses eleven gigawatt hours

of energy to power itself each day. Also, one gigawatt hour is enough to power one hundred thousand homes (Leonard)! The difference between these examples and the ones in Beaver County is that the size of those in Beaver County are incomparably smaller with less turbines that only begin to blemish the failure of such an attempt in Beaver County like the crumbled dam in Beaver Falls. This means that it is time to progress Beaver County with long lasting power that will boost the economy as it feeds people jobs.

Proceeding, there are around two thousand three hundred hydroelectric dams in the country where about two hundred fifty thousand people are employed (Environmental and Energy). This means that after a dam is built in Beaver County, there will be over one hundred people working there. That does not include the hundreds to thousands of jobs that can be created during the period of construction and engineering. Piling onto the positives of job creation is the chep expenses of such power at just two cents per kilowatt (Hydropower in the United States) and the prevention of flooding via dams that would be perfect in an area like Aliquippa that has faced the detrimental consequences of floods. Not to mention the great recreational uses that can be made with the dams to ignite the spirit of the outdoors that many members of Beaver County possess. Using this form of hydropower even has a positive effect on debris control, which can benefit the general health (BENEFITS OF DAMS). However, the main health benefits are seen as we decrease the use of fossil fuels like gas, oil, and coal. A Harvard article describes the deleterious effects of fossil fuels as they "releases pollutants that lead to early death, heart attacks, respiratory disorders, stroke, exacerbation of asthma, and absenteeism at school and work. It may even be related to autism spectrum disorder and Alzheimer's disease," (Fossil Fuels & Health). Not only the people, but the earth is suffering from fossil fuels as they produce carbon, a greenhouse gas that is causing the earth to warm (Hydropower & Climate Change). These implications can be avoided with the switch from fossil fuel dependency to the reliance on cleaner hydropower. This gives all the more reason for Beaver County to fix failed dams and create a new large scale dam with turbines for the people, the county, and the world.

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