

# Renewable Energy

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Energy is essential to every aspect of our lives, but also an excessive source of wasteful spending. **Wind and Solar Energy are now the cheapest options for generating electricity.**<sup>1,9</sup> The United States has the potential to save \$78 billion merely by closing fossil fuel plants in line with the Paris Climate Accord.<sup>2</sup> Additionally, renewable energy generates fewer costs through externalities than fossil fuels. Without factoring climate costs, coal plants were found to cause \$62 billion in damages in 2005, with natural gas contributing \$740 million.<sup>3</sup> The United States spends more on fossil fuel subsidies than it does on the military, and ten times more than education.<sup>4</sup>

The costs of climate change are often ignored when comparing the economic impacts of different energy sources. The pace of climate change is alarming and bears vast and significant consequences for nearly every sector across the globe. Landscapes are experiencing more frequent wildfires such as those seen in the California, Australia, and the Arctic. Species extinctions are accelerating. Farmers are facing new challenges in producing the crops we all need. The U.S military warns of increased conflicts due to global warming. And the culprit is primarily carbon released from the burning of fossil fuels. Omitting these factors from cost benefit analysis is grossly irresponsible and potentially treasonous, making understanding the consequences of climate change essential to any discussion on energy policy.

<b>Economy</b>	<ul style="list-style-type: none"><li>◆ Temperature change due to unmitigated global warming will leave global GDP per capita 23% lower in 2100 than it would be without any warming.<sup>5</sup></li><li>◆ Major companies have already made commitments to run operations without carbon emissions, including General Motors pledge to run on 100% renewable energy by 2050<sup>10</sup>, and JetBlue airlines commitment to be carbon neutral on all domestic flights by July 2020.<sup>11</sup></li><li>◆ Wind turbines generate tax revenue for local roads, schools, and libraries<sup>12</sup>; however funding for schools would be higher if the state didn't subtract per pupil funding based on increased local revenue.<sup>13</sup></li></ul>
<b>Public Health</b>	<ul style="list-style-type: none"><li>◆ Air pollution from fossil fuels is directly responsible for 52,000 deaths per year<sup>15</sup></li><li>◆ Employees in the extraction of fossil fuels are almost 4 times as likely to receive fatal injuries than the average US worker.<sup>14</sup></li><li>◆ Fossil fuel plants and toxic waste sites are disproportionately positioned near communities of color.<sup>17</sup></li><li>◆ Fracking (the extraction of Natural Gas) has the potential to contaminate surface and groundwater.<sup>16</sup> Residents are largely responsible for financing their own alternative water sources in the event of contamination.</li><li>◆ "Global warming could lead to an increase in allergies and asthma, deaths by extreme heat and proliferation of insect-borne diseases such as West Nile virus according to a scientific report released by the White House." according to an article published by the New York Times.<sup>6</sup></li></ul>
<b>Energy</b>	<ul style="list-style-type: none"><li>◆ The costs of energy produced by renewable sources are going down as efficiency increases. As energy producers are becoming more familiar with renewable sources, reliability is increasing. In fact, the CEO of Consumers Energy, Patti Poppe believes her company can meet 90% of the energy demands of its customers with renewable sources.<sup>18</sup></li></ul>
<b>Natural Resources</b>	<ul style="list-style-type: none"><li>◆ Renewable energy produces extremely little or no carbon emissions. It also does not produce any toxic chemicals <u>as the result of energy production</u> thus better protecting our natural resources.</li><li>◆ Solar installations on farmland can be constructed alongside native plants which benefit pollinators, birds, and boost the capacity to store excessive rainwater.</li></ul>

## Energy Comparisons

Renewable energy is not free of externalities, although care should be taken as these costs can be misleadingly cited in comparisons to other forms of energy. For instance, although wind turbines kill birds, turbines kill about 0.27 birds per gigawatt hour, whereas Fossil-Fuel power stations kill 9.4 birds per gigawatt-hour.<sup>6</sup> Additionally, two thirds of North American bird species are at increasing risk of extinction due to climate change.<sup>7</sup>

## Distributed Generation

Home owners that generate their own renewable energy may connect their system to the electric grid. If the home system generates more energy than it uses, that excess energy “flows out” where it is readily useable by other homes in the neighborhood. Under the former net metering program, residents could “sell” their output energy to electric companies at the standard rate. However, under the new distributed generation policy, outputs are sold at a lower price than the standard rate. This decision effectively lowered the incentives for home solar installations.

The Michigan Public Service Commission determines these rates and provides two justifications for this change. First, output energy does not include transmission costs. This is because energy generated locally is more efficient as it doesn’t lose charge via traveling great distances. Standard rates therefore, include costs for more electrical generation than seen at the meter. Second, the resident does not provide infrastructure to maintain and transfer energy across the grid and those costs are negated from output as well.

## Solutions

There are several policies the legislature can implement to assist the propagation of clean energy, many of which are financial. For instance, there are many businesses and homeowners who are interested in having solar installed on their homes, but despite overall savings, the costs up front are prohibitive. Likewise, there are many energy conservation measures such as insulation and new windows that can be costly up front but assist in lowering energy costs.

### Property Assessed Clean Energy (PACE)

In this proposed legislation, a person would receive "up front money" to improve their home for energy efficiency. The money could be used for such things as solar panels, energy efficient heating, insulation and other items where the energy savings from the improvements would offset the payments. The key to this proposal is that the assessment pertains to the property rather than the individual, so payments stay with the house if it is sold. Payments are made with property taxes.

### On-Bill Financing

The concept of on-bill financing is similar to the PACE concept except the loan comes through the local utility company and is paid back on the utility bill. Holland Board of Public Works is running such a program. So far, they have loaned out \$1.4 million dollars and improved over 100 homes.<sup>19</sup> The loan also transfers with the house if it is sold. However, On-Bill Financing is offered voluntarily by the utilities and, at this time, only one utility in Michigan has opted to utilize the program. Legislation could help expand this program to more utilities.

## Other ideas being discussed in legislature:

- ◆ Expand the State's 15% renewable energy standard
- ◆ Pass legislation that enable cooperative style solar energy for homes. H.B. 4955 introduced would allow residents to subscribe to community solar projects.
- ◆ An Electric Vehicle (EV) tax credit provided by the State.
- ◆ Establish EV charging stations at State Parks and "Park and Ride" lots.
- ◆ Establish small business tax breaks for apartment complexes that build EV charging stations in their complexes.

## Successes in Other States

- ◆ Colorado has become the first State to control methane emissions. See the following article for details. <https://www.scientificamerican.com/article/colorado-first-state-to-limit-methane-pollution-from-oil-and-gas-wells/>
- ◆ California has been one of the most successful States in passing air quality legislation. Here are a couple articles describing their success <https://ww3.arb.ca.gov/cc/ab32/ab32.htm> Another article <https://ww2.arb.ca.gov/resources/documents/laws-and-regulations>
- ◆ Texas has had great success in developing wind power. <https://www.scientificamerican.com/article/the-rise-of-wind-power-in-texas/>

## Key Resources

[Yale Climate Connections](#)

[Union of Concerned Scientists](#)

[Energy Services Coalition](#)

[www.yaleclimateconnections.org/author/psinclair](http://www.yaleclimateconnections.org/author/psinclair)

[www.ucsusa.org/resources/hidden-costs-fossil-fuels](http://www.ucsusa.org/resources/hidden-costs-fossil-fuels)

[www.energyservicescoalition.org/](http://www.energyservicescoalition.org/)

### *About the Top Contributor*

*Michael Buza was awarded a BS from Michigan State University and a MSW from the University of Michigan. He enjoys wilderness camping where he will not see people for days at a time. He has 100% of his electricity needs from his solar panels, most years. He has reduced his natural gas usage by 69% in the last 15 years. He is a strong advocate for sustainable energy at the local level. He has received the Sierra Club's Michigan Chapter Service Award in 2019. He is the current Executive Committee Chair for the Sierra Club: Michigan Chapter – Nepessing Group.*

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