**LESSON TITLE: Renewable Energy Assertion Jar GRADES: 6-8th**

**Distribute 1 assertion statement (see following pages) to each student or group and complete one or more of the following activities:**

***Activity 1: Perspective taking*** – Ask students to determine who may have this perspective of wind turbines or solar energy. There is no one right answer, but they need to be prepared to explain their choice.

* Acreage owner
* Farmland owner
* Bird watcher
* Citizen concerned about climate change
* Local construction worker
* Rural electrician
* Rural banker
* Café owner
* City council member
* Local investor
* Other – Describe a person who may have this perspective and explain why they feel this way.

***Activity 2: Stand along a continuum*** – Use masking tape to make a line in the classroom with the ends labeled, “Wind and solar energy offer many benefit” and “Wind and solar energy present many challenges.” Ask them to read their assertion jar statement and determine where the author would stand along the line. Then they should stand along the line. Share and discuss the different perspectives.

***Activity 3: Create your own.*** Write your own assertions regarding challenges and benefits of wind and solar energy.

***Activity 4: Journal prompt –*** Write about who may feel this way about renewable energy and why.

**Renewable Energy Assertion Statements**

*Cut along the dotted lines and distribute one statement to each student. Activities can be found below.*

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Wind power farms generate between 17 and 39 times as much as power as they consume.

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Unlike coal, nuclear, or hydropower, solar and wind energy do not use water.

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Solar energy does not require extensive set up, making it more accessible for individual home owners and businesses.

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The construction of 2,020 turbines across 23 Iowa counties has created about 3,800 jobs with $230 million in payroll, according to MidAmerican Energy. Three hundred twenty jobs are permanent with average pay around $69,000 per year.

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Landowners may receive $10,000 annually in lease payments for a wind turbine.

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One wind farm may bring 30 permanent jobs to rural communities.

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Wind energy allowed MidAmerican Energy to decrease carbon dioxide emissions by 28% in 2016.

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In Franklin County, Iowa, wind farms pay $3 million in property tax annually, with $1 going toward the county’s annual budget of $17 million.

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Wind turbines contribute 37% percent of Iowa’s energy production.

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Solar and wind energy need tax credits to help them get established. They are an excellent investment since they will have no ongoing costs, but upfront costs are high. The tax credits are scheduled to end in 2020.

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Each wind turbine takes a half acre of very fertile farmland out of production. *…………………………………………………………………………………………………*

Massive construction equipment required can damage roads and underground drainage tiles as well as compact soil, making it difficult to grow crops.

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Wind turbines and solar panels are ugly. At night red flashing lights on top of wind turbines can be seen from miles away.

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Dozens of wind turbines lining the horizon ruin the view.

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Wind energy is an example of corporate welfare. MidAmerican Energy, a subsidiary of Warren Buffet’s Berkshire Hathaway, received $249 million in tax credits last year.

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The American Bird Conservancy estimates as many as 1.4 million birds will die annual from wind turbines by 2030 as American continues transitioning to wind. This accounts for 0.01 of bird fatalities.

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Solar energy cannot be produced at night and is dependent on location, time of day/year and weather conditions.

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Source: *Des Moines Register*

[*http://www.desmoinesregister.com/story/money/business/2017/04/21/6-common-complaints-against-iowa-wind-turbines/100706178/*](http://www.desmoinesregister.com/story/money/business/2017/04/21/6-common-complaints-against-iowa-wind-turbines/100706178/) [*http://www.desmoinesregister.com/story/tech/science/environment/2017/04/20/wind-power-saving-rural-iowa-wrecking/99789758/*](http://www.desmoinesregister.com/story/tech/science/environment/2017/04/20/wind-power-saving-rural-iowa-wrecking/99789758/)