

# 2021 AES Energy Innovation Challenge



## The Problem

The rapidly changing climate of our world has brought about a major shift in the way the global energy industry operates. Fossil fuels, once the reliable backbone for the generation of our country's power, have become necessary targets of decarbonization as developed nations look to begin the transition to energy from cleaner sources. This shift has caused a significant increase in renewable energy generation forcing conventional coal and gas generators to become cleaner or retire altogether.

With the rise and fall of any industry, there are human impacts from the transition that are often not considered. For example, conventional power generation entities are more robust, long-term employers, as fossil fuels require more labor to bring to market due to a process that includes extraction, processing, and generation<sup>1</sup>. In addition, these facilities are important to the communities they operate in as sources of tax revenue, large-scale employment, and community identity. Without this key tax revenue and communal identity, people may be left with no choice but to leave in search of employment elsewhere. This creates a negative feedback cycle for these local economies. As a result, the renewable energy transition is at risk of leaving behind a wave of communities, echoing the steel industry's departure from the American Midwest.

Renewable energy companies are not powerless to combat this phenomenon, but the solution must be more comprehensive than its predecessors. There are clear advantages for a community with renewable facilities moving in. First, the cost of energy often decreases as renewable electricity is now likely to be cheaper than fossil fuel-based electricity<sup>2</sup>. There are positive public health benefits from removing fossil fuel operations that pollute local air and water systems, especially considering the disproportionate impact and adverse health effects experienced by marginalized communities<sup>3</sup>. However, companies constructing renewable energy facilities in fossil fuel-oriented communities will need to go above and beyond to help fill the hole they create by replacing facilities once owned by robust employers and taxpayers. The key tool in the arsenal of renewable energy companies is the footprint of their facilities, as they have a much larger geographic footprint with which to get creative. For example, A typical solar facility requires 6 acres on average to generate 1MW of energy<sup>4</sup>. So, although renewable energy companies employ some people permanently and pay significant property taxes, the key impact they can have in the communities they enter is how they strategically use their land to support the local economy, social structure, and environment.

## Your Task

### First Round

Responsible Renewable Energy (RRE) is a theoretical integrated energy company that specializes in supporting the world's responsible transition to renewable energy generation. Your manager at RRE has asked your team to create a new product offering aimed at communities with departing conventional fuel facilities. The product should be designed to maximize RRE's positive community

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<sup>1</sup> [https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report\\_0.pdf](https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf)

<sup>2</sup> <https://www.iea.org/reports/projected-costs-of-generating-electricity-2020>

<sup>3</sup> <https://www.law.nyu.edu/centers/state-impact/projects-reports/projects/climate-and-health/health-effects-of-burning-fossil-fuels>

<sup>4</sup> <https://www.nrel.gov/docs/fy13osti/56290.pdf>

impact while replacing any lost generation renewably. For your initial product design, please pick a coal plant retiring in the US before 2030 and develop your comprehensive product offering for that community (Town and County). The product proposal should include your plan to replace generation, as well as your **novel technical solution** on how to maximize community impact using the incoming footprint.

As a company focused on the responsible renewable energy transition, it is important to ensure your solution does not disproportionately benefit stakeholders with higher access to capital. RRE is also looking to avoid short-term solutions, as the company is pursuing a lasting environmental and economic impact. Solutions that increase greenhouse gas emissions on prior installations should not be recommended. Lastly, it is important to mention how land use varies by electricity type, for example solar uses between 5-10 acres of land per MW and wind requires even more while only utilizing a fraction of the area for actual infrastructure<sup>5</sup>. Think creatively about how the ample land can be used together with renewables to be a part of your solution.

#### First Round Deliverable:

Prepare a PowerPoint presentation (or preferred virtual presentation-building tool) detailing your solution to the proposed task at hand. As a team you will have 15 minutes to present to a panel of AES judges followed by a 10-minute question and answer period. Five teams will be selected to move on to the final round which will take place on November 12th.

The presentation must be submitted via email to [innovationchallenge@aes.com](mailto:innovationchallenge@aes.com) no later than **October 27 at 11:59 pm EST**. Please submit the presentation in PDF format.

#### Final Round

Your manager selected your product to enter development and begin scaling. This process includes two main components: defining the market for your solution and creating an implementation plan for that growth. Choosing a target market is key to defining where your solution's effectiveness, scalability, and competition. As such, your implementation plan should include the logistics for scaled rollout, barriers to entry, and risks to the success of your product.

#### Final Round Deliverable:

Prepare a PowerPoint presentation (or preferred virtual presentation-building tool) detailing your solution to the proposed task at hand. As a team you will have 25 minutes to present to a panel of AES judges followed by a 10-minute question and answer period. A winner and runner-up will be selected.

The presentation must be submitted via email to [innovationchallenge@aes.com](mailto:innovationchallenge@aes.com) no later than **November 11th at 11:59 pm EST**. Please submit the presentation in PDF format.

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<sup>5</sup> <https://www.seia.org/initiatives/siting-permitting-land-use-utility-scale-solar>