

Energy Grid Card Game (Resource Exchange)

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Dr. Jin Ho Jo is a Professor of Technology at Illinois State University, teaching in the Sustainable and Renewable Energy program. Dr. Jo also leads the Sustainable Energy Consortium at the university. Dr. Jo is an honors graduate of Purdue University, where he earned a B.S. in Building Construction Management. He earned his M.S. in Urban Planning from Columbia University, where he investigated critical environmental justice issues in New York City. His 2010 Ph.D. from Arizona State University was the nation's first in sustainability. His research, which has been widely published, focuses on renewable energy systems and sustainable building strategies to reduce the negative impacts of urbanization.

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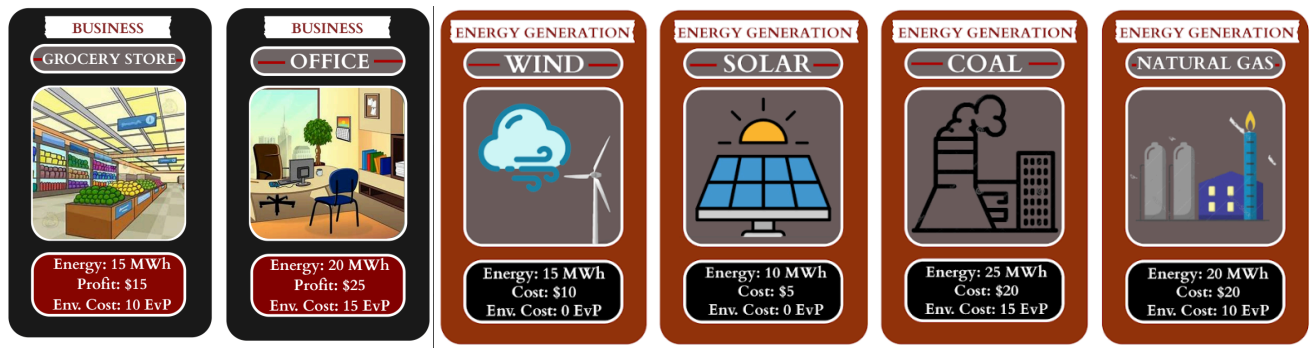
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Energy Grid Card Game

The **Energy Grid Card Game** was designed for pre-college students (grades 6-12) to be played in an informal learning environment. The game explores the technical, environmental, and economic choices and challenges of using energy resources throughout our daily lives. Undergraduates at Illinois State University designed the activity as part of the NSF-funded SUPERCHARGE project, which seeks to improve access to STEM college and career pathways while making connections to engineering and sustainability-related problems that can be addressed in their communities. Designed for 2-5 players, each player first draws an *Environment* card:



Then, players build their cities with *Business* and *Energy Generation* cards.



The goal of the **Energy Grid Card Game** is to have the highest total number of Credits and Environmental Points (EvP) at the end of 5 rounds...

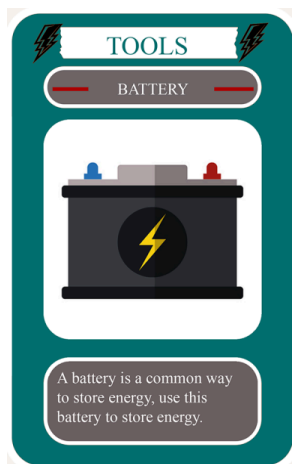
Playing the game:

Players start with 0 MWh of energy, \$50, and 100 EvP, and they earn Credits and EvP (and use energy) by laying down *Energy Generation* and *Business* cards. *Energy Generation* cards produce energy, which is consumed by *Business* cards. *Business*

cards produce Credits. At the end of the game, leftover EvP are converted to Credits at a rate of \$3 per EvP. The player with the highest total Credits wins!



The **Energy Grid Card Game** is intended to be simple. But you can revise the game's rules to make it more realistic. Make sure all players agree to the revised rules before you start! Here are some ideas:



- The *Energy Generators* and/or *Businesses* cost Environmental Points in each turn, not just when they are first played.
- Create a *Battery* card, which costs Credits but boosts the output of the renewable energy sources (wind and solar) by 5 MWh each turn.
- Create a *new Energy Generation* card, like a *Hydrogen Fuel Cell* or *Nuclear Fusion*. Explore these technologies on your own to learn more about their **Energy Production Capabilities**, **Economic Costs**, and **Environmental Impacts**.

Full instructions and resources needed to produce a free, expandable version of the game (along with many other activities) can be found at:

about.illinoisstate.edu/supercharge



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