

Groundwater Game

Learn about the challenges and solution strategies of groundwater management through a fun, hands-on simulation

The Groundwater Game provides players with an interactive opportunity to experience the challenges of managing increasingly scarce groundwater when there are competing needs. The game also provides players with a greater understanding of different management tools, including groundwater trading.

The tool was developed through a social science research partnership between Environmental Defense Fund (EDF) and the University of Michigan in response to new groundwater legislation in California. Signed into law in 2014, California's Sustainable Groundwater Management Act (SGMA) requires local agencies to develop and implement groundwater sustainability plans to balance the supply and demand of their groundwater. Although these plans are much more complex than the Groundwater Game simulation, they will address the same problem and may use similar policy rules.

The game may be useful for SGMA implementation by engaging community members – a key requirement of SGMA – and fostering greater awareness of the multiple interests and perspectives surrounding groundwater resources.

Created with a variety of audiences in mind, the Groundwater Game has been played by hundreds of people, including water managers, farmers, environmental justice groups and NGOs.

Game play

The game has six roles assigned to different players: almond grower, alfalfa grower, broccoli grower, rural family, community water system and urban water utility. A facilitator coordinates and tracks results on a pre-designed spreadsheet over five to six rounds of play, with each round representing a new year.

Players start each round pumping water by scooping water beads from the communal aquifer, a clear bowl at the center of a table, and putting them into their own holding tank, a small cup. With instructions from the facilitator, players experiment with different groundwater pumping and management strategies, including unregulated pumping and allocations based on



historical use. The game also adds in a dimension of weather uncertainty, as players' surface water supplies are determined by the roll of a die representing dry, average or wet water years. In later rounds, participants experience how water trading affects the aquifer level and see whether players' needs are met.

Discussion questions

Sample questions for discussion after the simulation include:

- Are stakeholders described in the game present in your own community? Do you think their interests and perspectives are similar or different than those portrayed in the game?
- When managing a common resource, how should the public interest be defined? How can the interests of the powerful and marginalized be balanced?
- What strategies did you use to ensure your water needs were met? That the needs of the group were met?

Ready to play?

EDF is developing a website to enable individuals to facilitate the game on their own. To learn more about the game before then, please contact Christina Babbitt at cbabbitt@edf.org.