

Mayoral Madness!

Congrats! You have been elected the Mayor of a small bayside town! One day an oyster farmer came to talk to you about the negative effects Harmful Algal Blooms (HABs) are having on his oyster farm and the overall health of the bay. Too many nutrient inputs into the bay area creates an excess of nutrients, resulting in Harmful Algal Blooms (HABs). You have decided that it is necessary to take action to prevent these HABs from continuing to damage local ecosystems and the businesses that depend on them. Below are a set of 7 scenarios. Your decisions will impact the nutrients that are making their way into the watershed.

Directions:

Each problem will have multiple solutions, each with its own monetary and environmental costs. Try your best to manage the town funds and public opinion while reducing nutrient output in the bay. Keep track of the changes in funds, public opinion, and nutrients on the provided scoreboard and tally up all the changes at the end to see how you did!

- The budget for the year is \$10,000, you cannot exceed this cost without bankrupting the town.
- The current nutrient output of the town is 25 'points'. If the nutrient output is reduced to 10 or lower, the HAB occurrences cease. If the nutrient output exceeds 20, then the HABs make the local water bodies un-swimmable, unfishable, and undrinkable.
- Some options will increase or decrease public opinion. High public opinion is desirable, while low public opinion risks losing the next mayoral election. It is up to you to decide how important public opinion is to you! You can choose to risk losing reelection by making radical changes or be more conservative in your approach to ensure public support.

Scoreboard!

| | Funds | Public Opinion | Nutrient Points |
|--------|----------|----------------|-----------------|
| Start: | \$10,000 | 15 | 25 |
| 1. | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ |
| 4. | _____ | _____ | _____ |
| 5. | _____ | _____ | _____ |
| 6. | _____ | _____ | _____ |
| 7. | _____ | _____ | _____ |
| 8. | _____ | _____ | _____ |
| 9. | _____ | _____ | _____ |
| 10. | _____ | _____ | _____ |
| Final: | _____ | _____ | _____ |

Scenarios:

1. There is a vacant plot of land in the center of town. There is a proposal for building a public park with a garden. There will be 100 trees and shrubs planted, which will reduce runoff because the roots will hold soil in place. Alternatively, a development company wants to put in a shopping center and will pay the town for the opportunity. Do you:
 - a. Approve the building of the park (-3 nutrient points, +1 public opinion points, -\$3,000)
 - b. Approve the building of the shopping center (+3 nutrient points, +3 public opinion points, +\$4,000)
 - c. Approve the land to be undeveloped and remain a green area, but no trees will be planted (+0 nutrient points, -1 public opinion point)

2. There is a proposed ordinance for adding 3 miles of a sidewalk on a main road. The sidewalk will make walking safer for pedestrians. In order to build this sidewalk, portions of the residents' front lawns must be removed. Building this sidewalk and taking away grass will increase runoff. Do you:
 - a. Approve the building of sidewalk (+2 nutrient points, +5 public opinion points, -\$2,000)
 - b. Do not approve the building of the sidewalk (+0 nutrient points, -3 public opinion points, -\$0)
 - c. Do not approve the building of the sidewalk and instead plant trees along the side of the road (-2 nutrient points, -2 public opinion, -\$1,000)

3. There is proposed legislation that will regulate the use of fertilizer on farms surrounding your town. Farms are a large source of runoff and also use large amounts of strong fertilizer to help their crops grow. The crops are used to feed people in your town but the large amounts of the fertilizer (mostly nitrogen and phosphorus) run off into the water and cause nutrient pollution. Do you:
 - a. Implement rule that fertilizer cannot be used (-7 nutrient points, -9 public opinion points, -\$0)
 - b. Implement rule that excess fertilizer cannot be used (+2 nutrient points, -5 public opinion points, -\$0)
 - c. Do not implement any regulations regarding fertilizer usage (+5 nutrient points, +3 public opinion points, -\$0)
 - d. Implement a rule that farmers can use limited amounts of fertilizer if they plant a riparian buffer first. (-2 nutrient points, -2 public opinion, -\$0)

4. There are a series of factories on the edge of town. These factories manufacture clothes and cars for the residents of the town as well as for sale on the larger market. The factory releases pollutants into the atmosphere and into the watershed. These pollutants contribute to global warming and increasing water temperatures, as well as to nutrient pollution. Do you:
 - a. Shut down the factories (-10 nutrient points, -10 public opinion points, -\$8,000)

- b. Pass regulations that require the factories to process the chemicals they release into a safer form (-6 nutrient points, -4 public opinion points, -\$4,000)
 - c. Do not alter the factories in any way (+3 nutrient points, +4 public opinion points, -\$0)

- 5. There is a proposed ordinance that will ban the use of pesticides and fertilizers on private lawns in order to prevent nutrient-laden runoff from entering the water system. The local homeowner's association has heard about this ordinance and has sent a letter indicating they greatly disapprove and believe it will decrease property values. Do you:
 - a. Pass the ordinance and ban damaging lawn products. (-3 nutrient points, -3 public opinion points, -\$0)
 - b. Do not pass the ordinance and continue allowing the use of lawn products (+2 nutrient points, +2 public opinion points, -\$0)
 - c. Pass a modified ordinance that bans excess fertilizer use (-1 nutrient point, +0 public opinion points, -\$0)

- 6. Cars significantly contribute to air pollution. There are some eco-friendly options available such as, riding bikes, walking, or taking public transportation. A local environmentalist group has asked you to incentivize people to decrease driving and take more responsibility for air pollution. Reduce car ownership by adding public transport options
 - a. Incentivize people to drive less by increasing gas prices (+3 nutrient points, -3 public opinion points, -\$0)
 - b. Reduce the cost of public transportation (+2 nutrient points, +1 public opinion point, -\$0)
 - c. Encourage people to switch to electric vehicles (+1 nutrient points, +0 public opinion points, -\$0)

- 7. Storm drains catch all types of runoff. When it rains debris, trash, litter, rainwater, and nutrient pollutants all run into the storm drains. From there, they are eventually deposited into the water system. Do you:
 - a. Put nets on the pipes that deposit into the waterway. This will prevent debris from entering the waterway, but the nets need to be replaced regularly. (-4 nutrient points, +0 public opinion points, -\$3,000)
 - b. Do nothing, implement no forms of regulation (+0 nutrient points, +0 public opinion points, -\$0)
 - c. Put smaller grates over the storm drains to prevent the amount of trash and debris that enters the water system (-2 nutrient points, +0 public opinion points, -\$2,000)