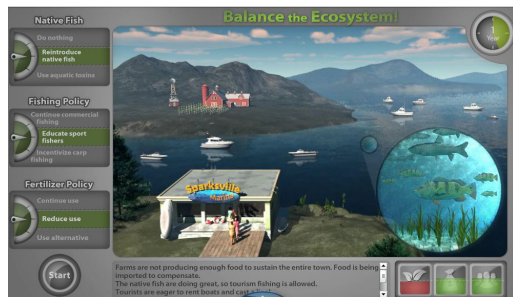


# ENVIRONMENTAL SCIENCE

## GameScape Overview



Episode 1: SimApp Activity

## EPISODE 1: BALANCING ECOSYSTEMS

### Overview

You have just been elected to the Sparksville City Council. Now, you must lead a special task force to examine the balance/imbalance in the Tri-Valley's ecosystem and implement an environmentally friendly plan to minimize the impact of an invasive species on the ecosystem.

### Learning Objectives

- Calculate the impact of an alien species in an existing ecosystem.
- Measure the long-term impact of an invasive species.
- Apply your understanding of how organisms in ecosystems interact.
- Apply the concepts of natural selection and succession.

### SimApp Activity

In this "cause-and-effect" simulation, you will use Input Controls to select ecosystem parameters, implement remedy plans, and experience the powerful impact of your decisions on the ecosystem.



Episode 2: Map of Sparksville - 1995

## EPISODE 2: MANAGING POPULATION GROWTH

### Overview

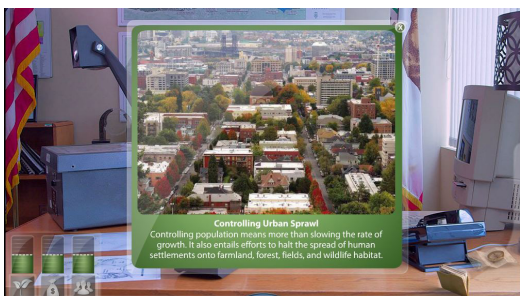
As president of the City Council, you must meet with advisors and experiment with solutions to address environmental problems associated with the growing prairie dog population in the Tri-Valley. The public is very divided on this issue. Prairie dogs are good for tourism and feed Golden Eagles; however, they can carry disease.

### Learning Objectives

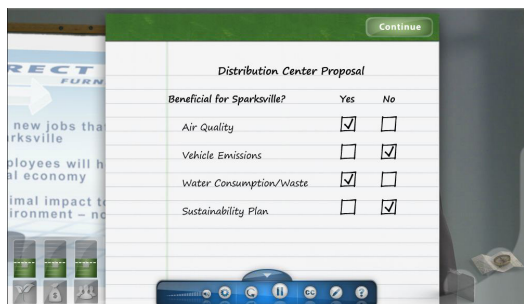
- Define factors that produce changes in population size.
- Identify the environmental benefits and challenges of urbanization.
- Measure the impact of population encroachment on farm land.

### SimApp Activity

In this simulation, you must weigh the costs and benefits of exterminating a growing population of prairie dogs by making decisions based on three Input Controls: 1)Budget 2)Sustainability 3)Opinion Polls.



Episode 2: Digital Learning Object - Urban Sprawl



Episode 3: Embedded Element - Interactive Checklist

## EPISODE 3: MAINTAINING TERRESTRIAL AND ATMOSPHERIC RESOURCES

### Overview

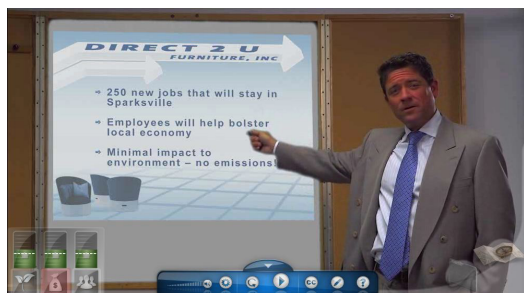
Another five years have passed and you are now running for Mayor. In order to win the election, you must formulate solutions and defend your point-of-view on important local environmental issues such as a proposed oil pipeline and aggressive forestry interests.

### Learning Objectives

- Summarize the causes and effects of human impact on an atmospheric issue.
- Discuss a key challenge to controlling air pollution.
- Identify the impact of human activities on a water resource and formulate a sustainable plan to manage a water resource.
- List challenges associated with managing terrestrial resources.

### SimApp Activity

In this simulation, you must distribute scarce financial and industry resources in a way that will optimize the city budget and local employment while minimizing the impact on water and atmospheric resources.



Episode 3: Meeting with Industry Executives

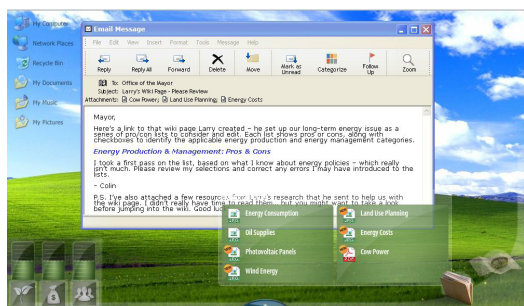
## EPISODE 4: CONTROLLING ENERGY SYSTEMS

### Overview

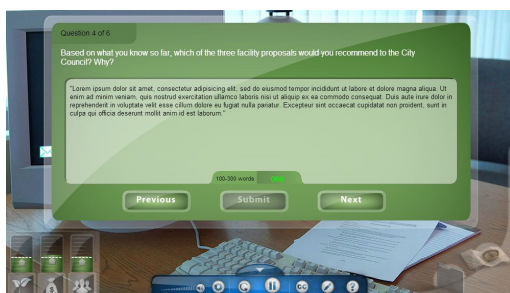
Several years into your successful term as Mayor, you now find yourself in a difficult “Catch-22”. The good news is that many new jobs have been imported from a nearby state to make Sparksville the “back office” for large manufacturing service operations. The bad news is that growth has occurred too quickly and has overwhelmed the the energy infrastructure and adversely impacted the environment.

### Learning Objectives

- Describe challenges associated with energy resource management.
- List the trade-offs for the use of renewable energy.
- Formulate a plan for controlling non-renewable and renewable energy systems.



Episode 4: Email with Digital Learning Object



Sample Reflection Question

### SimApp Activity

This simulation activity involves a transition from non-renewable to renewable energy systems for Sparksville and the Tri-Valley. You must experiment with funding and commitment for alternative options for the area’s new power plant: oil, coal, solar, and/or wind.

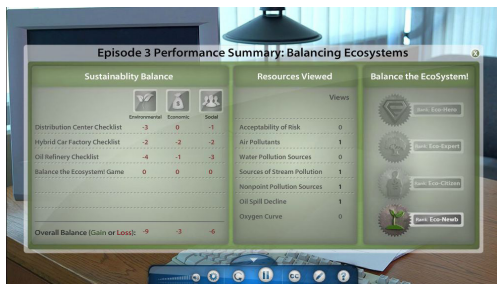
## EPISODE 5: BUILDING A POSITIVE ENVIRONMENTAL LEGACY

### Overview

In this final episode, you must review your environmental decisions over the past 25 years. In order to leave a positive legacy, you aim to build upon your successes and repair past environmental compromises. You will do this by working with your science advisory staff, business and industry leaders, and various stakeholders in the environmental protection community to design and implement an environmental sustainability plan.

### Learning Objectives

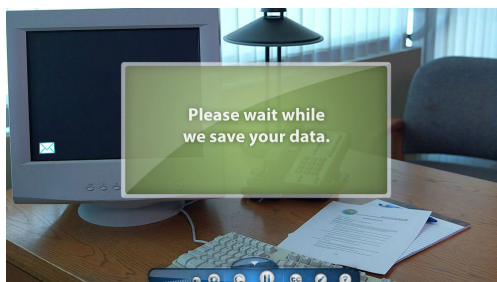
- Define environmental sustainability.
- Compare and contrast environmental conservation and preservation efforts.
- Explain how risk assessment could be applied in a given circumstance.
- Rationalize a sustainable plan for addressing an environmental issue.
- Integrate globalization into a sustainability plan.



Student Performance Dashboard

### SimApp Activity

In this “build a better world” capstone simulation, you must distribute budget and sustainability resources according to four different environmental criteria: ecosystems, population growth, terrestrial resources, and energy.



Save Results as PDF

# ENVIRONMENTAL SCIENCE GAMESCAPE

A personalized learning journey where students LEARN by BEING.