



## COASTAL DECISION-MAKING TOOLS LESSON PLAN

### Get Smart

#### Theme

Smart Growth

#### Links to Overview Essays and Resources Needed for Student Research

<http://www.oceanservice.noaa.gov/topics/coasts/dmtools>

<http://www.csc.noaa.gov/themes/communities/>

#### Subject Area

Earth Science/Life Science

#### Grade Level

9-12

#### Focus Question

What is Smart Growth, and what advantages does it have compared to other approaches to community development?

#### Learning Objectives

- Students will be able to describe the concepts of sustainability and Smart Growth
- Students will be able to identify at least three benefits that may be expected from Smart Growth
- Students will be able to discuss at least three different perspectives on Smart Growth that might be found among stakeholders in a coastal community

#### Materials Needed

- (optional) Computers with internet access; if students do not have access to the internet, download copies of materials cited under “Learning Procedure” and provide copies of these materials to each student or student group.

#### Audio/Visual Materials Needed

None

### Teaching Time

Two or three 45-minute class periods, plus time for student research and preparation

### Seating Arrangement

Groups of 3 – 6 students

### Maximum Number of Students

30

### Key Words

Sustainability

Stakeholder

Smart growth

Role-playing

### Background Information

In 1987, the U.N. World Commission on Environment and Development issued a report titled “Our Common Future.” In the preceding three years, the Commission had focussed on the question of whether it is possible to meet the needs of the Earth’s present human population without compromising the ability of future generations to meet their own needs. The answer contained in the report “Our Common Future” was “yes,” but not without major changes to the way in which human societies pursue social and economic development. The underlying concept of these changes was called “sustainable development.” The idea is that economic prosperity, social well-being, and environmental quality are linked to each other and cannot be separated; so a high level of economic prosperity requires similarly high levels of social well-being and environmental quality.

Our Common Future catalyzed global attention to the concept of sustainable development. Since 1987, many tools and technologies have been created to make this concept a reality. Smart Growth is one of these tools that is intended to help communities identify ways that they can enjoy economic growth without jeopardizing environmental quality. The central concept underlying Smart Growth is that development patterns that create urban “sprawl” are no longer in the long-term interest of our cities, suburbs, small towns, rural communities,

or wilderness areas. The overall strategy of Smart Growth is to make communities more livable, more economically efficient, and more effective at meeting the needs of people who live there. This strategy is guided by ten principles:

- Create a Range of Housing Opportunities and Choices;
- Create Walkable Neighborhoods;
- Encourage Community and Stakeholder Collaboration (a “stakeholder” is any person who values, uses, wants to use, or may benefit a certain activity or resource)
- Foster Distinctive, Attractive Communities with a Strong Sense of Place;
- Make Development Decisions Predictable, Fair and Cost Effective;
- Mix Land Uses;
- Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas;
- Provide a Variety of Transportation Choices;
- Strengthen and Direct Development Towards Existing Communities; and
- Take Advantage of Compact Building Design.

The National Ocean Service’s (NOS) Coastal Services Center has created a Web site that illustrates how these principles can be applied to a real community. The site describes three different development scenarios:

- A Conventional Design designed to maximize developable land and premium waterfront lots featuring relatively large lots and low-traffic cul-de-sacs, with less emphasis on protecting natural resources or creating civic spaces;
- A Conservation Design whose first priority is preserving sensitive and valuable natural resources by protecting contiguous open space, clustering homes on smaller lots, and including conservation measures that exceed those required by law; and
- A New Urbanist Design that focuses on compact development in civic-oriented centers around a large central open space, with three distinct villages connected by road and trails, public civic spaces, and a mix of commercial and residential uses.

The site also explains how these alternatives can be compared to decide which one best meets the objectives of Smart Growth.

In this activity, students will use role-playing to learn about Smart Growth in the context of identifying and comparing the three scenarios. In most role-playing exercises, each student assumes the role of a person affected by a particular issue, and studies the impacts of this issue from the perspective of that person. In some cases, students may personify another living organism or process to demonstrate certain principles in an unusual and interesting way (for example, they might personify water drops who appear in various forms that describe the water cycle). Role-playing is a way to directly involve students in the “real-world” side of academic subjects, and challenges students to deal with complex problems that do not have a single predetermined correct answer. Particularly important, role-playing provides an opportunity to learn course content and also explore different human perspectives on this content.

Role-playing exercises may be done on an individual or interactive basis. Individual role-playing may take the form of stories, letters, problem analyses, political position papers, speeches, or reports on findings (e.g., from research activities or explorations). Often, these products will include factual material presented in a fictitious context. Information about prehistoric life, for example, might be presented in the context of a report from an expedition to explore a prehistoric ocean or dinosaur habitat. Or, information about Abraham Lincoln might be included in a letter from one of Lincoln’s neighbors. Interactive role-playing involves multiple participants whose actions depend upon each other. Electronic video games and debates are familiar examples. Visit <http://serc.carleton.edu/introgeo/roleplaying/index.html> for more discussion and examples.

### Learning Procedure

1.

Visit <http://www.csc.noaa.gov/alternatives/> and review information on the case study from coastal Georgia. If you want to explore other examples of Smart Growth, visit <http://smartgrowth.org>. If students will not be accessing this site themselves, make copies of pages they will need to complete their research assignments and prepare for the role-playing activity.

2.

Lead a brief introductory discussion about the concepts of sustainable development and Smart Growth. Ask students to describe environmental, economic, and social benefits that could result from using the ten Smart Growth principles.

3.

Tell students that they are going to use role-playing to learn about Smart Growth. Review the seven steps in role-playing exercises (see <http://serc.carleton.edu/introgeo/roleplaying/howto.html> for additional discussion and examples):

**(1) Define Objectives** – In this case, the primary objective is for students to investigate Smart Growth and how the concept can be applied in examining alternative development options for a coastal community.

**(2) Choose Context and Roles** – Define the topic, setting, and characters that will be involved. The topic should be real, but the setting can be hypothetical. Fictional settings have the advantage of giving students more opportunity for creativity, but are obviously inappropriate if the topic is an actual event. A town meeting is suggested as a possible context for the coastal Georgia case study. The three design scenarios could be assigned to three groups of students. Within these groups, environmental, economic, and social indicators might each be dealt with by a different student, while a fourth student would present the overall design to the town meeting. In addition to these twelve students, other students should assume roles of various stakeholders (developers, home owners, environmentalists, business people, etc.). Have students brainstorm what stakeholder groups might be involved, and what the motivations and perspectives of these stakeholders might be. Assign one of these stakeholder roles to each of the remaining students. If students have problems with their assigned role, this is the time for them to say so. Many students have difficulty with roles whose perspectives are very different from their own, unless they have acting or debating skills.

**(3) Discuss Expectations** – Identify what each student is expected to do and how much time will be available for preparation and presentation.

**(4) Student Preparation and Research** – Provide students with background materials (see Step 1) or direct them to

research these individually. Discovering the individual perspective, including views and motives, of assigned roles is an important part of this research. Web sites may be useful sources of this information for some roles, but other roles may require students to read newspaper or magazine interviews, reports of public meetings, etc.

- (5) **The Role-Play** – If you are using the town meeting context, groups representing the three alternative design scenarios would make their presentations first, followed by discussion among the stakeholders. You may want to allow a specific amount of time for questions from stakeholders following each presentation, or save questions until after all three designs have been presented. Following questions and discussions, stakeholders should vote on which of the three alternatives they wish to have implemented.
- (6) **Concluding Discussion** – Students discuss what they have learned, either orally, in written essays, or in a paragraph in individual written assignments. This discussion should include comments on how the outcome of the role-playing activity compared with the outcome of the case study.
- (7) **Assessment** – Explain the grading rubric, which may include quality of written assignments, consistency in presenting a particular role (“staying in character”), and ability to recognize and consider other viewpoints.

#### 4.

Complete the process described in Step 3. Discuss why it is important to achieve maximum public support (“buy-in”) for a development plan. If there was not a consensus on which scenario to pursue, discuss how the proposed scenarios might be modified to obtain better buy-in, and what problems might arise from stakeholders who do not buy in.

#### The Bridge Connection

<http://www.vims.edu/bridge/> – In the “Site Navigation” menu on the left, click “Ocean Science Topics,” then “Human Activities,” then “Policy” for links to resources about coastal decision-making.

#### The Me Connection

Have students write a brief essay on growth in their own community, analyzing whether this is Smart Growth, and the ben-

efits that are (or could be) achieved by using Smart Growth principles.

### Extensions

1. Visit <http://smartgrowth.org> for links to other Smart Growth resources.
2. Visit <http://serc.carleton.edu/introgeo/roleplaying/index.html> for more about role-playing, including many suggested scenarios dealing with earth science topics.

### Resources

<http://www.csc.noaa.gov/alternatives/> – NOS Coastal Services Center Web site on “Alternatives for Coastal Development: One Site, Three Scenarios”

<http://serc.carleton.edu/introgeo/roleplaying/index.html> – Web site from the Science Education Resource Center at Carleton College (Northfield, Minnesota) on using role-playing to teach entry level geoscience

<http://www.sustainable.org/casestudies/studiesindex.html> – Case studies from the Sustainable Communities Network

<http://www.smartgrowth.org/pdf/gettosg.pdf> – Report from the International City/County Management Association and the Smart Growth Network, “Getting to Smart Growth: 100 Policies for Implementation”; , 2001. Provides policy options, practice tips, and case studies

<http://www.sierraclub.org/sprawl/reports/> – Sierra Club report with examples of smart growth and sprawl in the 50 states and the District of Columbia

<http://www.smartgrowth.org/library/> – Smart Growth Resource Library from the Smart Growth Network

### National Science Education Standards

#### Content Standard A: Science as Inquiry

- Understandings about scientific inquiry



**Content Standard E: Science and Technology**

- Understandings about science and technology

**Content Standard F: Science in Personal and Social Perspectives**

- Personal and community health
- Population growth
- Natural resources
- Environmental quality
- Science and technology in local, national, and global challenges

**Links to AAAS “Oceans Map” (aka benchmarks)**

5D/H3 – Human beings are part of the earth’s ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems.

