

**Educator's Guide for
Colleges and Universities**

Making Sense of Place
Phoenix: The Urban Desert

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Introduction

Making Sense of Place - Phoenix: The Urban Desert is a one-hour documentary about urban growth and change. Produced by Northern Light Productions in collaboration with the Lincoln Institute of Land Policy, this documentary program focuses on issues resulting from growth and development in metropolitan areas. The program—and the companion website at www.makingsenseofplace.org—explores the role of choices in shaping the urban/suburban environment in the past, present, and the future. Like this Teacher's Guide, this documentary attempts to encourage an exploration of all sides of these sometimes controversial issues and seek to engage viewers in constructive discussion and debate.

About the Film

Phoenix: The Urban Desert explores numerous issues facing citizens and governments in many metropolitan areas. The film explains why growth occurred in this arid desert environment. It not only highlights the magnets that have drawn—and continue to draw—new people to Phoenix; it demonstrates how public and private decisions have shaped the region's early growth and continue to influence growth and development today.

The film also addresses the benefits of suburban growth—in particular, how it helps people meet their need for housing and, in the case of some new development, community. Fully recognizing the beneficial aspects of growth and development, *Phoenix: The Urban Desert* describes some of the problems that have arisen as a consequence of growth and development. The film highlights such issues as the loss of open space and wildlife habitat, traffic congestion, increased commute time, socioeconomic segregation, and the deterioration of urban core neighborhoods. The film reveals a troubling irony facing Greater Phoenix and many similar metropolitan areas: that many of the amenities that draw people to an area result in spectacular growth are soon placed in jeopardy, threatening the very sense of place that attracted many people to such areas.

Finally, this documentary discusses solutions, focusing principally on the ways that citizens, business, developers, and government officials are working individually—and, increasingly, collectively—to influence growth and development in order to create an environment that allows a community to thrive. Viewers will see how shared values, goals, cooperation, and long-term planning can produce a urban/suburban environment that continues to offer the level and quality of amenities that drew people to the area in the first place.

Why is This Film Relevant to Your Students?

Although you and your students may not live in Phoenix or the outlying suburbs, chances are your city or town is being affected by growth and development. The residents in your community may be encountering some of the same issues that have arisen as a consequence of growth and development in and around Phoenix. Even if you and your students live in a rural area, away from the hustle and bustle of a busy metropolitan region, you may be in the path of growth or in fact already be experiencing some of the impacts of expanding metropolitan areas. While this film focuses on Phoenix and surrounding communities, it offers many important lessons to residents of cities, towns, and even rural areas throughout this vast country. It will help you and your students understand how the values of and choices made by various stakeholders in your community—from developers to city planners to home buyers—shape growth and development in your area.

Phoenix: The Urban Desert will help your students understand more fully the positive and negative impacts of growth and development in your community—beyond the most obvious ones. Such an understanding is important—indeed essential—for creating comprehensive and lasting solutions to growth. And, of course, the film could help you and your students envision positive solutions that strike a balance between individual needs and community needs, allowing people to create places that are healthy, enjoyable, and safe to live in.

This documentary could also stimulate constructive debate on growth and development among students, their parents, and members of your community. Debate, in turn, could lead to brainstorming on ways to re-shape your city or town to create a sense of place that satisfies the widest possible number of residents. (Note: If you and your class would like to participate in a community process leading to an action plan that addresses growth and development issues, you may want to obtain a copy of the *Community Action Outreach Guide*, also produced by the Lincoln Institute.)

A Tool for Classroom Learning in High Schools, Colleges, and Universities

Making Sense of Place -- Phoenix: The Urban Desert can be a valuable teaching tool for a variety of subjects in high schools including social studies, history, political science, economics, and environmental science. It is also useful for college and university curricula, including classes in environmental studies, geography, urban planning, political science, and sustainable development. The presentation is detailed and balanced and will help students grasp the complexity of the issues facing many communities.

This film—and the companion website noted above—can be used to stimulate classroom discussion and debate as well as deeper inquiries into urban growth. It may also be used to stimulate research into local issues and solutions. Individual and class projects offer an opportunity for first-hand experiences that could lead to positive change in your community. Working in conjunction with stakeholders, such as community leaders, citizens, business owners, and activists, your students could become a positive force in helping your community shape its future, creating an environment that truly reflects a sense of place citizens find desirable.

Key Concepts Presented in the Film

Phoenix: The Urban Desert presents many important concepts applicable to Phoenix (and other urban areas). These concepts are listed below to assist teachers in preparing for class discussions or in working with students on projects or writing tests.

1. People are drawn to Phoenix and surrounding communities for many reasons, among them the beauty of the place provided by the natural environment, favorable climate, recreational opportunities, perceived quality of life, schools, safety, jobs, economic prospects (for businesses), a receptive business climate, and, of course, the availability and cost of housing.

2. Many people move to the area to fulfill the same dreams and ambitions, but new residents change the places they flock to, altering the values and reshaping the city and its outlying areas, and causing considerable “growing pains.”

3. Although growth is stimulated by personal decisions to locate in desirable areas, other factors also facilitate growth. In the case of Phoenix, large public projects—notably water projects—have enabled growth in the otherwise hostile desert environment. These projects initially provided water to farms and orchards in the earlier days; but now, with growth usurping most of the farmland, this water is used to supply cities, suburbs, and recreational facilities. Even the advent of air conditioning helped spur growth. Without these developments, few people could live in an area with Phoenix’s characteristics of extreme dryness and high temperatures during the summer months.

4. In addition, private investment in new developments (such as Sun City) stimulated interest in the area. Based on extensive market research, Sun City, set out to fill a market niche: providing

reasonably priced housing within a well-designed community. Sun City's developer and others continue to build homes today, creating communities that offer many amenities such as good schools and quality parks, providing a lifestyle of convenience, recreation, and affordability.

5. Development in Phoenix has revealed a fundamental paradox in the American dream of home ownership: we don't necessarily get all that we want as a community when we pursue what we want as individuals. Development has also revealed three principal conflicts that occur in Phoenix and other cities: (1) open space preservation versus development; (2) land use driven by market forces versus land use shaped by planning; and (3) individual interest versus community interest.

6. In metropolitan areas such as Phoenix and its surrounding communities where growth is not constrained by physical boundaries, it tends to spread outward (a phenomenon called *urban sprawl*). It is on the periphery that cheaper land is typically located.

7. To accommodate new growth in Phoenix, thousands of acres of pristine land have been cleared for development. Growth also requires costly extension of services such as roadways, electricity, natural gas, and water, typically subsidized by taxpayer dollars from residents in neighboring communities.

8. Rapid growth in Phoenix has attracted many workers from Mexico who come to build houses and share in the economic success. They provide inexpensive labor that helps fuel the economic engine and ensure more affordable housing and greater profits for developers—feeding what appears to be unstoppable growth. Many workers get by on the bare minimum and send a large portion of their earnings home to support their families.

9. Moving farther and farther out to seek open space on the edge of the metropolitan area is not viewed by all as a sustainable solution.

10. Growth patterns result from free market forces but public policies also promote sprawl development, with lots of taxpayer subsidies.

11. Affordable housing in outlying suburbs, which contributes to sprawl, does satisfy a deep-seated desire for property ownership—a place people can call their own—and promotes economic growth. Unfortunately, meeting this dream often results in some significant social, economic, and environmental problems.

12. Among the problems caused by sprawl are lifestyles highly dependent on automobiles, seemingly ever-increasing amounts of time spent driving to and from work and to run errands, rising traffic congestion, increasing gasoline consumption, and more and more air pollution. Sprawl also results in a threat to open space, wildlife habitat, and wildlife.

13. Sprawl can result in a deterioration in the quality of life and the sense of place that initially attracted people to the Phoenix Metropolitan Area. Faced with undesirable changes in their immediate environment, some citizens move outward again, seeking peace, quiet, views, and wildlife, only to find that in a few years the amenities they sought are again threatened by new development (housing, roadways, shopping centers, etc.)

14. Communities in Phoenix and its environs are struggling with sprawl, especially its most noticeable symptoms, such as traffic congestion and long commute times, which they experience on a daily basis.

15. One of the solutions to traffic congestion resulting from population growth and urban sprawl in Phoenix (and elsewhere) has been to build more highways or to expand existing ones. Unfortunately, this seems to create a vicious cycle of more cars traveling longer distances, consuming more energy and making more pollution. As these highways become congested, more highways are built and more development takes place, bringing with it more people, more cars, and more traffic.

16. Sprawl causes us to be a society dependent on cars—to the point where many of us don't know our neighbors. Furthermore, many people find it difficult to get around within and among cities and suburbs without a car.

17. Cheap water has helped make development possible in Phoenix, but this water comes from the Colorado River as a result of projects subsidized by the state and federal governments. Although some officials believe there is plenty of water to support future growth, not everyone agrees. They believe that limited water supplies could impair future development. Growth and development may need to be stopped or moderated as a result, or water-users may have to find ways to make existing water supplies go further.

18. The quality of life in Phoenix hangs in a delicate balance—a balance of limited resource that must support apparently unlimited growth. Growth in Phoenix is threatening another valuable

resource: the diverse desert ecosystem. The desert oasis is fast becoming a landscape of homes and shopping malls. These and other problems are forcing people to look for ways that they can meet collective goals and shape the way decisions on growth and development are made to create a more desirable future. They are, in essence, seeking to design a process aimed at producing the results they want.

19. Because metropolitan regions such as Greater Phoenix are aggregates of numerous separate municipalities, each with its own government, solving problems will require a regional approach. A regional approach, in turn, will require foresight, cooperation, and coordinated efforts that satisfy the needs of individual communities while contributing to the betterment of the larger community. This is not always an easy goal to achieve. Resources, such as roadways that cut across jurisdictions and water supplies, need to be considered in regional development plans so that decisions by individual municipalities do not adversely affect others.

20. The Maricopa Association of Governments (MAG) was founded to address issues that cut across jurisdictions and is today actively engaged in finding ways to solve growth issues in ways that meet individual as well as collective needs.

21. For the most part, regional planning works only when each municipality considers regional needs along with its own individual needs.

22. In the Phoenix Metropolitan Area, as in other areas, stakeholders are involved in deep conflicts over how they value land. Much of the controversy centers on State-owned lands (given to it by the Federal government). In 1912, this land (known as State Trust Land) was earmarked for sale to raise funds for public education—a good idea at the time. However, this land lies on the fringe of present development and much of it is pristine native desert. Some people would like to develop the State Trust Land. Others would like to change its designation and preserve large tracts of this for open space, parks, and wildlife preservation.

23. Today, less than 2% of the state's education budget is derived from the sale of State Trust Lands. However, most of the future growth is going to occur on this land.

24. In Phoenix, as elsewhere, land has long been viewed as a commodity to be developed. This value is being challenged by those who value land for what it is.

25. Serious land use decisions are also being made by the Native American communities on the

edge of Greater Phoenix's growth. Bordered by expanding suburbs, they are debating the relative merits of developing land for maximum short-term profit versus taking a longer view—developing some land in the short-term, to promote cultural development, and preserving open space for future generations.

26. Native Americans hold values that could help to shape future growth and development on their land. Their value system calls for respect of the Earth and the judicious use of resources, governed by a sense of responsibility to future generations. However, at this point it is not clear how their unique cultural perspective will guide development.

27. Suburban growth on the fringe of the Phoenix metropolitan area has resulted in a deterioration of the urban core because a disproportionate share of money and energy went into developing new areas. Thus, as new neighborhoods, new schools, roads, and shopping centers sprang up in the outlying desert, inner-city neighborhoods fell into disrepair.

28. City-sponsored revitalization programs, spurred by active citizen involvement, have helped to restore neighborhoods—demonstrating the importance of government in helping communities recover their identities and revitalize their sense of place.

29. Inside the urban core, empty lots and deteriorating neighborhoods can be rebuilt to revive communities and create housing for lower-income families. Financers and developers who are interested in infill development are required to make this dream a reality.

30. Solving the problems of sprawl requires a variety of measures, ranging from those that apply to the deteriorating inner core to those that help solve traffic congestion and increasing commute times on the highways that connect centers of economic activity such as downtown Phoenix to the outlying suburbs, the development zone where most of its citizens reside.

31. Stakeholders working in conjunction with governments can also reshape growth through long-term planning. In the Phoenix Metropolitan Area, plans are being made for undeveloped outlying areas that permit development, yet preserve open space and wildlife habitat. The plans call for preservation of flatlands and streambeds—vital desert habitat—in addition to what has been traditionally preserved—the hillsides and mountaintops.

32. Guiding future development to create a high quality of life requires cooperation, compromise, long-term planning, sacrifice, a new way of thinking about development, and a long-term vision that must operate within the economic system, never losing track other vital values, for example, aesthetics and enjoyment that help contribute to a sense of place.

Key Facts about the Phoenix Metropolitan Region

Below are some key facts presented in the film about the Phoenix Metropolitan Region and the surrounding desert. I've also included a few additional facts you and your students might find interesting.

- The Metropolitan Region of Phoenix is home to 3.3 million people.
- Phoenix is the sixth largest metropolitan region in the United States and is growing rapidly.
- Phoenix and associated communities (24 of them, comprising Maricopa County) currently cover 1760 square miles.
- Greater Phoenix has grown by 45% in the past 10 years.
- Metro Phoenix is now so large that it takes about 2 hours to travel from one end to the other.
- On average, 3,300 new homes are built every month in Maricopa County.
- 150 lane-miles of new road are built each year.
- One acre of desert is lost per hour to development in Metropolitan Phoenix.
- Since 1992, Phoenix has built an average of six new golf courses per year and now has over 165 golf courses, according to the Arizona Golf Association.
- The desert around Phoenix is the second most diverse ecosystem in the world. It contains more reptile species than any other ecosystem, including the tropical rainforest.
- All told, more than 2,500 plant, 500 resident and migrant bird species, and many rare animal species live in the Sonoran desert.
- 80% of Arizona's population lives in the Sonoran desert.
- In the next 10 years, more than two million people are will move to the Phoenix area.

Key Statistics on Growth in the United States

This section highlights key statistics about urban/suburban growth in the United States from a variety of sources: how fast our cities and towns are growing; the social, economic, and environmental impacts of growth; and how cities, citizens, and developers are currently addressing growth.

- The ten cities with populations over 1 million experiencing the most significant urban sprawl in the United States with populations (listed in order) are:
 1. Atlanta, GA
 2. St. Louis, MO
 3. Washington, D.C.
 4. Cincinnati, OH
 5. Kansas City, MO
 6. Denver, CO
 7. Seattle, WA
 8. Minneapolis-St. Paul, MN
 9. Ft. Lauderdale, FL
 10. Chicago, IL

(Source: 1998 Sprawl Report, Sierra Club)

- The five most “rapidly sprawling” small cities with populations from 200,000 to 500,000 are:
 1. McAllen, TX
 2. Raleigh, NC
 3. Pensacola, FL
 4. Daytona Beach, FL
 5. Little Rock, AR

(Source: 1998 Sprawl Report, Sierra Club)

- Nearly 87 percent of all Americans who commute to work do so by car. Nine percent use public transportation, and 4.6 percent reach work by bike or by walking. (Source: Worldwatch Institute)

- According to a recent survey conducted by the Pew Center for Civic Journalism, sprawl tied with crime as one of the most pressing local concerns for Americans. (Source: Pew Center for Civic Journalism).
- 80% of American commuters would prefer convenient public transit to driving. (Source: Surface Transportation Policy Project)
- Residents of sprawling communities drive three to four times more than those who live in compact, well-designed communities. (Source: Sierra Club, Sprawl Fact Sheet)
- Americans spend, on average, 443 hours per year (9 hours per week) behind the wheel of their cars stuck in traffic. (Source: US EPA)
- When new roads are built or highways are expanded to address traffic congestion, 10 to 50% of the new road capacity is filled immediately upon opening. Within four years, 50 to 100% of the new road capacity is being used. (Source: Sierra Club)
- Each year, more than one million acres of open space and farmland are lost to development, primarily associated with suburban sprawl. (Source: American Farmland Trust)
- Texas lost more prime and unique farmland than any other state from 1982 to 1992: nearly a half a million acres. (Source: American Farmland Trust)
- Seventy percent of the nation's prime or unique farmland is now in the path of rapid development. (Source: American Farmland Trust)
- Each year, more than 100,000 acres of wetlands are destroyed in the United States, largely as a result of sprawl. (Source: US EPA)
- Although cities are growing rapidly, developed land accounts for less than 5 percent of the total land area in the continental United States. (Source: Steven Hayward, *National Review*)
- The amount of land developed in the United States is 0.0006 percent of the total land area. (Source: U.S. Geological Survey)

- Since World War II, the amount of land set aside for wildlife, wilderness, and national parks has grown twice as fast as urban areas. The land set aside for these purposes is now three times larger than the land devoted to urban areas. (Source: Steven Hayward, *National Review*)
- Although a considerable amount of farmland is lost each year, the rate of farmland conversion is lower today than it was in the 1960s and 1970s. (Source: Steven Hayward, *National Review*)
- A study of 213 urbanized areas by David Rusk between 1960 and 1990 showed that population increased from 95 to 140 million, a 47% increase. During that period, developed land increased from 25,000 square miles to 51,000 square miles, a 107% increase. (Source: *The Regionalist*, Vol. 2 (3), Fall 1997.)
- Urban areas are increasing at about twice the rate of population growth. (Source: U.S. Department of Housing and Urban Development)
- Sprawl increases the risk of flooding as a result of the destruction of flood-absorbing wetlands, increases in area covered by impervious materials (roads, parking lots, and buildings), and growth within flood plains. From 1988 to 1997, floods in the United States killed more than 850 people and caused more than \$89 billion in property damage. (Source: Sierra Club, Sprawl Fact Sheet)
- Tax dollars subsidize new development on the urban fringes, costing cities and counties (and taxpayers) millions of dollars each year for new water and sewer lines, new schools, and increased police and fire protection. These costs are rarely fully offset by new residents, but are subsidized by existing citizens. (Source: Transportation Research Board, National Research Council)
- In Prince William County, Virginia (metropolitan Washington, D.C.), the cost of providing services to new development is so high that the county is experiencing a \$1,688 shortfall for every new house that is built there. (Source: Sierra Club, Sprawl Fact Sheet)
- The city of Fresno, California has doubled in size since 1980. Tax revenues have increased \$56 million per year, but the cost of services has risen to \$123 million per year (not

including the cost for roads and sewers). (Source: Sierra Club, Sprawl Fact Sheet)

- Sprawl creates crowded schools in the suburbs and underutilized, deteriorating schools in the urban core. From 1970 to 1990, Minneapolis-St. Paul, Minnesota closed 162 schools in the urban and central suburban area and opened 78 new schools in the outer suburbs. (Source: Sierra Club, Sprawl Fact Sheet)
- From the mid-1980s to the mid-1990s, Atlanta and Portland grew in population at nearly equal rates—32% for Atlanta and 26% for Portland. As a result of smart growth policies in Portland, which restrict growth within a region delineated by an urban growth boundary, vehicle miles traveled in Portland increased only 2%, while increasing 17% in Atlanta. Ground-level ozone, produced in large part from vehicle emissions, measured in the number of days with unhealthy concentrations in outdoor air, fell by 86% in Portland but rose by 5% in Atlanta. During that period, Portland’s taxes dropped 29% while Atlanta taxes shot up 22%. (Source: *Land Lines*, May 2000)
- Since 1997, 22 states have updated their planning codes and laws to encourage smarter growth. (Fall 2000 Sprawl Report)

Discussion Questions

This section contains questions for classroom discussions designed to help students understand the key concepts, facts, and controversies presented in the film—and to encourage productive discussion and debate. Questions are also devised to encourage students to think about and discuss urban/suburban growth, its impacts (both positive and negative), and solutions in their own communities. The questions will help students understand how decisions they and their parents make are shaping their communities—both positively and negatively. As you will soon see, the questions in this section are also designed to promote critical thinking skills, an understanding of root causes and root-level solutions, and systems thinking.

Because this guide is written for high school and college students, teachers are encouraged to select questions that best suit their students’ abilities or to modify questions to better suit their students.

Part 1: Factors that contribute to growth and development in Phoenix and your community

1. List and describe all of the factors discussed in the film that contributed to the growth that has occurred in Phoenix in the past 100 years. After making your list, describe each factor.
2. Of the factors you've just listed, which ones involved personal decisions? Which ones involved business decisions, for example, by developers or land speculators? Which ones fall within the public domain—that is, were made by governmental bodies?
3. Growth can take several forms in urban/suburban areas. It can grow upward, it can be dense and compact, or it can be disperse or spread out. Of these patterns, which occurred in Phoenix and why?
4. Who pays for growth and development occurring in outlying areas?
5. Are there alternative development patterns to suburban sprawl? What are they?

***Note to teacher:** Alternatives such as neighborhood development are not specifically covered in the film, and may require students to do some research. Students are encouraged to research traditional neighborhood development covered in such books as Suburban Nation by Andres Duany, listed in the resources section of the Teacher's Guide. Useful websites are also listed in the resource section of the Teacher's Guide.*

6. Is your community losing population or growing? If it is growing, what kind of growth is occurring in your community? Where is it occurring? Is growth slow or rapid? What factors are contributing to this growth?

***Note to Teacher:** You may want to refer your students to the U.S. Census Bureau website to determine whether growth is occurring in your area. In areas where growth is occurring, you may want to ask your students to draw a map to show where growth is taking place. You should be able to obtain a map of your community from a local realtor or from a local government office (planning office or the mayor's office). Realtors or city officials could help you and your students identify where growth is occurring.*

Part II: Impacts of Growth and Development

1. Growth in Phoenix has many impacts. Make a comprehensive list of them. Be sure to list both positive and negative impacts.

2. Now, group the positive and negative impacts into three categories: those impacts you would classify as social, those that are economic, and finally, those that would be considered environmental. Now describe each one. Can you see why social and environmental impacts may have economic consequences and vice versa?

3. Examine the list of negative impacts. Which ones do you think are the most serious? Why? Which ones are the least serious? Why? Which ones seem to be receiving the most attention? Why?

4. Examine the list of positive impacts. Which ones are the most important? Why? Do they outweigh the negative impacts?

5. Road-building is often viewed as a solution to traffic congestion caused by urban growth and development in many cities in the United States. Can you explain why road building may not always be a good solution?

Note to teacher: *This may require a little research on the part of your students.*

6. How would Phoenix look if each new suburb or groups of suburbs were actually built more like a town with homes situated within easy walking distance of schools, office buildings, restaurants, stores, and bus stops? (This is the central idea behind traditional neighborhood development.)

7. Personal Connections: How would you define your community? What are the things you like best about your community? Why? What are the things that displease you? Why?

8. If your community is growing, prepare a list of positive and negative impacts you have observed. Which ones do you think are the most important? Why? Which ones are the least important? Why? Which impacts directly affect you and your family? How? Which ones don't? Why?

Note to teacher: *You may want to break students up into groups to answer these questions.*

9. What are the long-term consequences of continued growth in your area? How will they affect your community socially, economically, and environmentally? Do you think you will want to live in your community 20 years from now if growth continues at the same rate as it is occurring

today?

Part III: Solutions

1. In Phoenix, suburban growth is now abutting Native American and State-owned lands. What problems have arisen as a result of this? How would you propose that growth be handled in this instance?

2. Take your list of problems created by sprawl in Phoenix (Part II, question 3) and make a corresponding list of solutions. Now that you have a list, are any of your solutions stop-gap—that is, likely to solve a problem in the short term only? Which ones do you think are likely to result in lasting solutions?

3. After reviewing your solutions, can you identify any that strike at the roots of the problem? Would root-level solutions such as these make sense? Why?

4. Why is it important to focus attention on developing the urban core: that is, empty lots and deteriorating neighborhoods in and around downtown Phoenix?

5. Why is it important to address problems regionally in metropolitan areas such as Phoenix? Give some examples to support your belief. What is required to make a regional approach successful?

6. Are solutions being proposed or implemented to address the problems that you have identified in your community? What are they? How effective are they?

***Note to Teacher:** You may want to suggest that students do some research on traditional neighborhood development, satellite development, corridor development, and dispersed development.*

Student Projects

Projects for High School or College Classes

This section contains suggestions for student projects that will help students gain a deeper understanding of the many issues surrounding growth and development in the United States as well as their own communities. Projects may involve independent or collaborative efforts.

These projects will help hone students' research, communication, and critical thinking skills while encouraging systems thinking. Students will be able to make observations and gather, evaluate, and assimilate information, then draw conclusions from their analysis.

These projects also permit students to determine effective ways of conveying their observations and conclusions to their friends, families, and communities. In addition, student projects could, if made public, increase debate on local growth issues and promote involvement of local communities in creating sustainable solutions.

Students should be encouraged to frame their own questions and develop their own projects, if the suggestions that follow do not interest them.

Note to Teacher: *As you review the list of suggested projects, you will notice that there is some overlap. This intentional overlap results from my attempt to create a variety of approaches to explore concepts, issues, and solutions and to allow students to explore issues and solutions in varying depths. Because this guide is for high school and college students, teachers are encouraged to look through the list, then choose projects they believe are suitable for their students or even modify projects to better suit your students' abilities.*

1. Urban growth in America. Research urban growth and development in the United States. What are the fastest growing cities in America? How is growth measured over time? What problems have arisen as a result of growth? What solutions have been proposed and enacted? What solutions seem to be the most effective in addressing the problems? Are these solutions long-term or short-term?

2. Urban Growth and its Impacts. Working individually, each student researches one of the negative impacts of growth and development in U.S. cities and towns listed below. After researching the topic, each student should critically analyze the information, draw conclusions, and then write up his or her findings. Students should be encouraged to present examples and data to support their conclusions. Here is a list of commonly identified impacts of suburban sprawl:

- a. Increased traffic congestion and commute times
- b. Increased gasoline consumption
- c. Increased vehicle miles traveled
- d. Increased noise pollution
- e. Increased traffic accidents

- f. Air pollution (local, regional, and global)
- g. Global warming
- h. Water pollution
- i. Flooding
- j. Water shortages
- k. Loss of open spaces (farmland, forests, fields, wetlands, wildlife habitat)
- l. Species loss
- m. Higher taxes
- n. Deterioration of urban centers, including urban schools
- o. Loss of historic buildings and places
- p. Crowding in existing schools in the suburbs

3. The Benefits of Suburban Development. In some parts of the country, suburban development is viewed as a positive occurrence and is sometimes vigorously defended. Authors such as Tom Martinson writing in *American Dreamscape*, for example, assert that the suburbs are unfairly maligned for a variety of reasons. Ask students to review the writings of such authors (see Resource for additional examples) , then make a list of their main points. You can then ask students to critically analyze the positions and to determine which ones they think are valid.

4. Solutions to Sprawl. Working individually, each student researches one of the solutions to sprawl listed below, being sure to examine all viewpoints as well as information on the effectiveness of the proposed solution. After researching the topic, each student should critically analyze the information, draw conclusions, and then write up his or her findings. Students should

thoroughly explain how these solutions address the problems created by sprawl—or if they do—and should present two to three examples and relevant statistics to support their assertions.

Note to Teacher: to help your students you may want to refer them to www.sprawlwatch.org. It contains a wealth of information on the impacts of sprawl. Be sure to ask students to review the other side of the issue, too. There are some vocal critics of solutions that have been enacted or are being proposed.

- a. Urban growth boundaries
- b. Farmland preservation (development rights, differential property tax, etc.)
- c. Open space protection

- d. Alternative transportation (notably mass transit and biking)
- e. Pedestrian-friendly neighborhood development
- f. Cluster development
- g. Compact development
- h. Location-efficient mortgages.
- i. Impact fees (development pays its own way)
- j. Revitalization of existing areas within urban centers and infill development
- k. Restricting development in floodplains

5. Exploring Issues and Solutions. Ask students to make a chart (matrix) that lists the problems created by sprawl (question 2) and the solutions (question 3). Check the issue or issues each solution addresses. Ask students to explain their reasoning in each case—for example, explain how urban growth boundaries protect open space and reduce the loss of farmland. After students have completed this task, ask students what conclusions they draw from their analysis of issues and solutions. Here’s a sample matrix:

	Urban Growth Boundaries	Neighborhood Development	Revitalization of Urban Core	Open Space Protection
Air Pollution	X	X	X	
Loss of Farmland	X	X	X	X
Traffic Congestion	X	X	X	

6. Do Planning Efforts Help or Hinder Urban Development? Some critics believe that truly livable cities evolve spontaneously and that planning efforts stifle the process, making things worse. In support of this view, they cite evidence showing that planners have actively sought to eliminate mixed-used development—that is, development that allows for a mix of uses such as commercial and residential within a given area, something many individuals say is badly needed to make the places we live in more convenient and more livable. They also criticize light rail, claiming that it is a failure, and high-density development, a step many advocates of more livable cities promote to reduce sprawl and make mass transit more effective, among other things. Ask your students to review and analyze these views, using their critical thinking skills. Students may want to begin by studying material from Steven Hayward and Tom Martinson, both listed in the resource section.

7. Population Growth vs. Development. Between 1970 and 1990, the population of Greater

Metropolitan Chicago grew by a mere 4%, yet land development grew by 46%. During that same period, in Metropolitan Los Angeles population grew by 46% while the land that was built on and paved over increased by 300%. Ask students to research this issue. Is this common in America, or are these isolated examples? After their research is complete, ask students to present plausible explanations for this phenomenon.

8. Patterns of Development. Research two patterns of development: sprawl vs. traditional neighborhood development. Describe the characteristics of each in detail. How are they similar? How are they different? Which pattern is occurring in your area? Which pattern seems most desirable? Why?

9. Auto Dependency. *“Sprawl dramatically increases our dependency on the automobile, and frequently makes other forms of transportation, such as walking or bicycling, undesirable.”* Do you agree with this statement? Why or why not? You may want to collect some data on the number of trips you and your family make each day. How many daily trips does your household make? How many of them involve the car? How far is each trip? Are any of these trips possible by mass transit, such as subway or bus, or by less resource-intensive means of propulsion, such as walking or bicycling? Why or why not? How can our dependency on automobiles be reduced?

10. What Does Your Community Look Like? Obtain or draw a map of your community identifying housing subdivisions, important civic buildings, such as schools and libraries; places of work; shopping centers and stores; and major roads. Are these sectors inter-mixed or isolated from one another? How easy is it to travel from one to another? Does a trip from your home to a local bank or school require a car trip? How efficiently is your town laid out? (You can probably

obtain a map from a local realtor or from the planning department or mayor’s office. The realtor or a government official may be able to help you identify the components of your community.)

11. Growth and Development in Your Community. Research urban growth and development in your community. How fast has your community been growing over the past 20 years? Is growth projected to continue? For how long? What factors contribute to current patterns of growth? Are there natural constraints on growth in your area, such as limited water supplies, mountain ranges, rivers, valuable farmland, or essential wildlife areas? What issues have arisen as a result of growth? Is your community actively addressing growth? What solutions have been proposed? Which of them have been enacted? What solutions seem to be the most effective in addressing the problems? Are these solutions long-term or short-term? List and describe

additional solutions that might help address local issues.

Projects for College Classes

12. Economics of Sprawl. Studies suggest that American cities and towns are actually subsidizing growth and development that lead to sprawl, creating a treadmill effect. They do so, say observers, by paying the cost of new services such as roads, water and sewer lines, schools, fire protection, ambulance, and police. Communities are also subsidizing new growth by offering incentives such as free land or tax relief to businesses that locate within them. However, what cities and towns are finding is that new growth often fails to pay for itself. In other words, tax revenues from new businesses and new residences do not pay the full cost of new roadways and other services that serve new growth. Cities and towns are left with a budget deficit. To address the deficit they often prescribe new growth or increasing taxes for existing residents.

Students are asked to review this issue, considering it from all sides. Is the failure of growth to pay for itself the norm or an exception? Students should present statistics to support their views. If students find this to be a common occurrence, ask them to research ways communities are addressing the problem, such as impact fees.

13. Smart Growth Plan for Your Community. After studying growth and development in your area (numbers 11 and 12), draft a comprehensive plan for smart growth. Be sure to include specifics of each idea, describing how your ideas can be implemented, what the benefits are, and any obstacles you might expect to encounter. Describe how obstacles or barriers could be overcome.

14. Sonoran Desert Conservation Plan. Phoenix lies in the Sonoran desert, North America's largest desert. Covering approximately 120,000 square miles in the southwestern United States and northern Mexico, the Sonoran desert is being rapidly destroyed by development. About one acre per hour is converted to highways, shopping centers, housing, tennis courts, golf courses, schools, and the like. Most of the loss is occurring around Phoenix. In response to the rapid, ongoing loss of this valuable ecosystems, citizens, government officials, planners, ranchers, developers, and non-profit groups developed the Sonoran Desert Conservation Plan. The plan offers a variety of measures aimed at protecting the heritage and natural resources of the West. The plan integrates ecosystem protection, economic growth, development, and cultural protection.

Unlike conventional metropolitan and regional planning, the Sonoran Desert Conservation Plan

relies on a relatively new concept in regional planning, called bio-planning or natural resource assessment and planning. This process helps to define and determine where urban growth and development occur.

The Sonoran Desert Conservation Plan calls on communities to take into account five elements: (1) ranch conservation to protect ranching and provide open space, (2) restoration of riparian habitat to protect the large number of species that rely on the habitat along rivers, (3) establishment of mountain parks to protect scenic views from encroachment and destruction and to protect open space and wildlife habitat, (4) historical and cultural preservation, and (5) protection of critical habitat and establishment of biological corridors to allow species access to more habitat. Each of these is part of a comprehensive plan that seeks to ensure that natural and urban/suburban environments coexist.

Students should obtain a copy of the plan, listed in the website section of the resources list of this teacher's guide. They should then study and analyze the plan, talk with people who support it and those who don't, and then interview individuals who are in a position to assess the successes and failures of the plan. Is the plan being used in Phoenix? Why or why not?

When they've thoroughly analyzed the plan and completed all of their research and analysis, students should write up their findings, first describing the plan, then outlining how well it is working. If necessary, they can make recommendations for improvements.

15. Green Building and Its Contribution to a Better Community. Growth and development create many problems ranging from traffic congestion to loss of open space to air pollution. New houses, however, also increase demand for natural resources such as timber, water, and energy. New homes also generate waste and pollution during their construction and throughout their life span.

While all of the measures looked at so far help to create more liveable cities, few of them address the impact of new homes themselves, especially their demand for resources and their production of waste and pollution.

Students are asked to consider this issue of creating more environmentally-friendly homes.

Topics to explore include: energy-efficient construction, passive solar heating and cooling, solar electricity, wind power, the use of green building materials, gray water recycling, black water recycling, rain catchment, and building smaller homes. Working independently or in groups,

students should explore these ideas. Describe each one in terms of its potential to create a more livable environment and other benefits they offer to their community, their region, their country, and the world.

Output/Deliverables

After performing research, analyzing data, and drawing conclusions students may want to prepare an oral or written report, a documentary video, or a display for the library or town hall presenting their findings. Students may also want to write newspaper or magazine articles and then submit them to local or regional publications. Or, students may want to lead class discussions, sponsor debates in your class, school or your community. They may want to organize a community meeting among interested stakeholders to disseminate and discuss their results. This process will help students develop communications and organizational skills. If students are asked to examine and present both sides of the issues, they will also develop critical thinking skills.

Quiz

Teachers may find this sample quiz helpful in preparing tests, class discussions or debates, or to help students review and assimilate the material.

Short Answer

1. List five factors that draw people and businesses to Phoenix.

For answer, see Key Concepts 1 and 4.

2. How have large public projects, federal and state highway funds, and private investment in new developments contributed to growth in Phoenix.

For answer see Key Concept 3.

3. Why has growth tended to extend outward in Phoenix?

For answer see Key Concept 6.

4. Affordable housing is made possible in Phoenix in part by relatively inexpensive labor. Who supplies that labor? How do they benefit? What impacts does the drive to create affordable housing have on them and their communities? What other factors contribute to affordable housing in the area?

For answer see Key Concepts 7, 8, and 10.

5. Make a list of ten impacts of growth and development in Phoenix.

For answer see Key Concepts 7, 12, 13, 14, 16, 27.

6. What are the State Trust Lands? What is their purpose? Why are they the center of controversy in Phoenix?

For answer see Key Concepts 22 and 23.

7. Make a list of five ways to address issues created by sprawl and address the impacts of sprawl that were discussed in the film. Then discuss the pros and cons of each idea.

For answer see Key Concepts 19 – 20, 26, 27, 29, 30 – 32.

Essay

1. Write a 200-word essay explaining the importance of regional planning to address growth and development and the many impacts created by them. Give some examples of issues that are best addressed regionally. Discuss the benefits of regional planning. Why are some of the problems that arise with regional planning?

2. Based on research or class discussions, write a 200-word essay explaining the similarities and difference between dispersed growth (sprawl) and “traditional neighborhood development”.

What problems would “traditional neighborhood development” solve? Why? Why isn’t traditional neighborhood development more commonly practiced?

Note to Teacher: This question assumes students have either researched traditional neighborhood development or have learned about it through classroom discussions.

3. Write a 200-word essay explaining the pattern of development in your community. Discuss the impacts you and others have observed. Next, discuss solutions your city or town has enacted or needs to enact. What problems does each of the solutions address? Is your city’s or your town’s plan *comprehensive*: that is, does it address a number of issues in a number of ways?

4. Describe what a comprehensive growth management strategy might look like. Be sure to list as many features of the plan as you can, and note how they would address the causes of sprawl.

Further Explorations: For Research and Discussion

This section provides information on topics not covered in the film or not covered in depth to spur further discussion of issues and solutions.

Exploring the Full Impacts

The film *Phoenix: The Urban Desert* highlights many of the impacts of growth in Phoenix. There are, however, some activities and impacts that were either alluded to or not mentioned due to time limitations. Students may find some of these impacts interesting and relevant to their area.

One issue not highlighted in the film is golf course development. According to the Arizona Golf Association, since 1992 an average of 6 golf courses were added each year to the Phoenix area, bringing the grand total to over 165. Golf courses use incredible amounts of water to feed water-hungry grasses and compete for limited water supplies. They also consume large tracts of land, home to many species. They even change the local desert climate by humidifying and cooling the area.

Like all other forms of development, golf course development destroys and fragments wildlife habitat. This process makes it difficult for some species to survive. New development also brings in non-native species that can alter the ecological balance.

Development not only impacts wildlife populations, it damages air quality. The result is local, regional, even global pollution. Although it may be the last thing on people's minds, increased vehicle miles traveled and increased fossil fuel consumption caused by growth and sprawling development, contribute to global climate change resulting from increased carbon dioxide emissions.

Limited Choices: Helping Students to Think Outside the Box

This film makes the point that it is human choices that shape our communities. Private decisions made by businesses (in this case, real estate developers) have determined how and where Phoenix has grown. But so have the decisions of private individuals, people seeking the good life in the arid desert Southwest. Government decisions have played an equally powerful role. State and Federal highway funds, allocated by government, for instance, make it possible for cities like Phoenix to sprawl outward.

Although choices determine the character of our cities and suburbs, our choices are limited. Given the choice of living in a suburb and having to make 5 to 10 trips a day in the car vs. living in a neighborhood in which schools, work, shopping, music lessons, hair salons, bus stops, copy shops, grocery stores, recreational facilities, and other important amenities are a short walk from home, most people would select the latter. They'd save on gas, wear and tear on the family car, and time, and they might even be healthier, as they would bike or walk to nearby services. Unfortunately, the choice between a traditional pedestrian-friendly neighborhood and a car-dependent suburb is not one many of us can make. Most new development in America is strictly suburban, with its many parts—shopping, work space, and living—isolated from one another and therefore accessible only by car. It relegates us to a lifetime behind the wheels of our cars, commuting long hours each day to earn a living or to shop or run errands.

Fortunately, the menu of choices is beginning to change as more and more developers begin to see the benefits of more compact, pedestrian-friendly, self-contained, and mass-transit accessible development, called new towns or traditional neighborhoods.

When working with students on solutions, it is important to remind them to think outside the box of suburban development—that is, to think of new solutions, not simply ways of making the suburbs work a little better. In this case, traditional neighborhoods are a “new old” solution. They call on us to create communities the way they've been fashioned for most of human history.

Smart Compact Development

Some cities are working to create more compact development patterns. But they're not just jamming more houses or apartment buildings on limited land. They're also working to make compact development more livable, so people don't feel jammed in. Careful placement of amenities such as swimming pools, parking lots, and walkways can dramatically alter the feel of an apartment complex. And some building officials are actively working with developers to show how they can increase the density of new development, especially apartments and condominiums, while increasing the amenities they offer. They're also helping builders create living space that is compact, yet highly functional. Simple design changes can alter a floor plan to give the appearance of more space, and can even increase usable space at no extra cost.

Compact development, if done right, is a win-win-win situation. Builders are much happier because they can sell more apartments, condominiums, and townhouses. Cities are delighted

because they can house more people on less space. And compact development often makes mass transit more feasible. Residents are pleased because they live in more pleasant environments.

Resources

Below is a select list of books, reports, articles, and websites that address the causes and impacts of growth, and wide-ranging solutions.

Books and Reports

Baxandall, Rosalyn, and Elizabeth Ewen (2000). *Picture Windows: How the Suburbs Happened*. Boulder, CO: Basic Books. Very readable account of the forces that lead to suburban development.

Beldon Russonello and Stewart (1998). *Choices Between Asphalt and Nature: Americans Discuss Sprawl*. The Biodiversity in partnership with The Nature Conservancy: Washington, D.C. An analysis of the findings of 20 focus groups across the United States.

Chiras, Daniel D. (2001). *Environmental Science: Creating a Sustainable Future*. Boston: Jones and Bartlett. This book offers a great deal of information on problems created by expanding population and describes many creative and sustainable solutions.

Diamond, Henry and Patrick F. Noonan (1996). *Land Use in America*. Cambridge, MA: Lincoln Institute of Land Policy. Contains a ten-point agenda to help communities accommodate future growth in more environmentally and fiscally sound ways.

Duany, Andres, Elizabeth Plater-Zyberk, and Jeff Speck (2000). *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press. Examines why sprawl occurs and its effects, but focuses on creative ways to alter the course of urban and suburban development primarily through neighborhood development.

Engwicht, David. (1999). *Street Reclaiming: Creating Livable Streets and Vibrant Communities*. Gabriola Island BC, Canada: New Society Publishers. Offers valuable insights on the changes that have occurred in our cities and suburbs with the rise of automobile's popularity, and ways to reverse them, regaining streets and creating more livable communities.

Fodor, Eben (1998). *Better Not Bigger: How to Take Control of Urban Growth and Improve Your Community*. Gabriola Island, B.C., Canada: New Society. An insightful look into ways that growth can be curtailed and communities can be improved.

Foster, Kathryn A. (2001). *Regionalism on Purpose*. Cambridge, MA: Lincoln Institute of Land Policy. Summary of an important conference on regional governance—what works and what doesn't.

Fulton, William (1996). *The New Urbanism: Hope or Hype for American Communities*. Cambridge, MA: Lincoln Institute of Land Policy. An objective look at new towns and traditional neighborhood development.

Gratz, Roberta Brandes (1994). *The Living City: How America's Cities are Being Revitalized by Thinking Small in a Big Way*. New York: Wiley. Describes what can be done and what is being done by government, urban planners, and average citizens to preserve and revitalize cities.

Glickfeld, Madelyn and Ned Levine (1992). *Regional Growth...Local Reaction*. Cambridge, MA: Lincoln Institute of Land Policy. Summarizes hundreds of efforts to address rapid growth by cities and counties in California.

Jackson, Peter. (1985). *Crabgrass Frontier: The Suburbanization of America*. New York: Oxford University Press. A critical look at the development of the suburbs.

Knaap, Gerrit, J. (2001). *Land Market Monitoring for Smart Urban Growth*. Cambridge, MA: Lincoln Institute of Land Policy. Discusses ways to determine which policies to address growth make the most sense for a community.

Kuntzler, James Howard. (1993). *The Geography of Nowhere*. New York: Simon and Schuster. A delightfully interesting view of the character of cities and towns, and ways to preserve their essential nature.

Martinson, Tom. (2000). *American Dreamscape: The Pursuit of Happiness in Postwar Suburbia*. New York: Carroll and Graf. Takes a positive look at the suburbs, countering much of the criticism raised by its detractors.

Moe, Richard and Carter Wilkie. (1997). *Changing Places: Rebuilding Community in the Age of Sprawl*. New York: Henry Holt and Company. A book that speaks directly to the issue of choice—both good and bad—in shaping our cities and suburbs—for both good or bad.

O'Meara, Molly. (1999). *Reinventing Cities for People and the Planet*. Worldwatch Paper 174, Washington, D.C.: Worldwatch Institute. A brief, but detailed look at the problems facing cities and suburbs and ways to improve them.

Szold, Terry S. and Armando Carbonell (2002). *Smart Growth*. Cambridge, MA: Lincoln Institute of Land Policy. A great introduction to smart growth strategies.

Tibbetts, John (1998). *Open Space Conservation: Investing in Your Community's Economic Health*. Cambridge, MA: Lincoln Institute of Land Policy. Discusses one very important strategy for growing communities: open space protection.

Articles

Chen, Donald. (2000). "The Science of Smart Growth," *Scientific American*, Vol. 283 (6), pp 84-91. *A critical look at initiatives to address suburban growth.*

Hayward, Steven (1999). "Suburban Legends," *National Review*, March 22, pp. 35 – 38. Counters some of the criticism of those opposed to urban sprawl.

Krieger, Alex. (1999). "Beyond the Rhetoric of Smart Growth," *Architecture*, Vol. 88 (6), pp. 53-57. A critical analysis of smart growth efforts.

Mitchell, John G. (2001). "Urban Sprawl," *National Geographic*, Vol 200 (1): 48-73. An in-depth look at sprawl and the problems it creates.

Websites

American Farmland Trust at www.farmland.org. Provides information on farmland protection especially on the edge of urban areas.

Census 2000 at www.census.gov. Provides the latest information on urban and suburban growth in all 50 states. Find information on your region here.

Congress for a New Urbanism at www.cnu.org. A group that actively promotes new urbanism, development based on the neighborhood model.

Lincoln Institute of Land Policy at www.lincolninst.edu. The creator of the documentary. Their website offers a wealth of information, including numerous publications, on issues relevant to this film.

Making Sense of Place at www.makingsenseofplace.org. Log on to the companion website to this film for additional information on the film, related activities, Internet resources, and news related to growth and development in the Phoenix Metropolitan Area.

National Building Museum at www.nbm.org. This website offers information on the history of the suburbs, landmark housing and transportation legislation, and case studies on recent smart growth initiatives.

National Geographic virtual exploration of smart growth, a town based on neighborhood development concept at www.nationalgeographic.com/earthpulse/sprawl.

Sierra Club Challenge to Sprawl Campaign at www.sierraclub.org/sprawl. This site contains a wealth of information on the impacts of sprawl and creative solutions to address these impacts, ultimately aimed at creating a more socially, economically, and environmentally sustainable cities and towns.

Sonoran Desert Conservation Plan. For a summary of the plan go to www.asu.edu/caed/proceedings01/HUCKLEB/huckleb.htm . This site contains a downloadable copy of the Sonoran Desert Conservation Plan aimed at promoting development that protects the natural environment around cities such as Phoenix and Tucson.

Sonoran Preserve Master Plan. Log on to this site to learn more about the Sonoran Preserve Master Plan discussed at length in *Phoenix: The Urban Desert*:
www.phoenix.gov/PARKS/sonoran.html

Sprawl Guide at www.plannersweb.com/sprawl/home.html. Another goldmine of information on sprawl, especially its causes, impacts, and solutions.

Sprawl Watch Clearinghouse at www.sprawlwatch.org. A great source of information on all aspects on sprawl, including smart growth, federal policies related to growth, state growth information, land conservation, and measures to curb growth.

The Trust for Public Land at www.tpl.org. Provides a wealth of information on the protection of land for parks, gardens, greenbelts, and riverways, all vital to successful and livable communities.

Urban Land Institute at www.uli.org. Provides information on urban revitalization, smart growth to limit sprawl and its impacts, and sensible transportation.