Cities are complex webs of interrelated systems. Diverse groups and individuals have different stakes in the development of cities, and even the smallest urban development decisions can have tremendous impacts over both people and places. These impacts are often even felt over long periods of time.

In this lesson, students will learn about some of the perspectives that are included in urban decision making and understand how decisions made in the past can dictate a development trajectory for future decades. Before beginning, students should: understand that cities are home to diverse populations with diverse interests. After completing this lesson students will understand how diverse stakeholders pursue unique interests and how their decisions have lasting impacts.

Vocabulary:
- **infrastructure** - the physical structures and facilities (i.e. buildings, roads, utilities, etc.) needed for the operation of a society.
- **land use** - the management and modification of natural land into a built environment. Uses may be categorized by the purpose for development (i.e. residential, commercial, industrial, agricultural, etc.)
- **urban sprawl** - the uncontrolled expansion of human developments away from urban centers; often characterized by low density and reliance on personal vehicles.

Advanced Preparation:
Students should: understand that cities are home to diverse populations with diverse interests.

You will need at least 6 students to play. Students will have opportunities to work in small groups around a shared desk and also walk around the room to talk informally. Be sure to have space to accommodate both settings.

Materials:
- Print Aerial Photographs and Stakeholder cards from the Changing Landscapes Teaching Material PDF, so each group of 6 has one set of aerial photos and a corresponding set of stakeholder cards
- Changing Landscape slide show

Recommended Procedure:
**Engagement**
1) Share the presentation or have students view the interactive [land use change game](#) on the Ecology Explorers website

Have students list who might be involved in making decisions about changing land use
2) Pass out the stakeholder playing cards and ask students to silently read their card

3) Instruct students to form groups with other students that have the same card

   • In these groups, students discuss and interpret the stakeholder/role that is described on the card
   • Encourage the students to speculate about their characters’ lifestyles, values, perspectives; have the students create a tangible identity for their characters.

4) Organize students into new groups

   • Within their groups, have students count off from 1 to 6
   • Instruct students to sit in groups by number
   • Within these new groupings, students explain their role to their other group members

**Exploration/Explanation**
5) Pass out aerial maps (students still in groups)

6) Starting with the 1970 map, have the groups first describe/discuss what they see.

   • Next students, from the perspective of the role that they are playing discuss how they would change the site
   • The assigned roles are diverse and each student should have differing interests, concerns, perspectives, etc. Encourage students to debate what would truly be the best development from their roles’ perspectives (have students be firm about what would truly be best for their stakeholder)

7) Next students turn to the 1980 map

   • Students describe/discuss what they see and how the site has changed over the past decade. Emphasize: why did these changes occur? How did developments/infrastructure from the past decade influence developments in this decade? Which tracts of land are now most valuable? Who benefited from these changes?
   • From their characters’ perspectives, students debate whether these changes are positive
   • Based on what has happened in this decade, students discuss/debate what could and should happen next. Ask: Considering the new infrastructure that has been introduced, what new developments might happen next?

8) Repeat this process for each remaining decade

**Elaboration**
9) Instruct students to return to their seats

   • Pass out the Blank Base Map worksheet for their area
   • Instruct students to consider what they saw develop over time and the diverse perspective with which they were confronted in the previous exercise
   • Have students draw their own proposal for how they think the site should have developed

**Evaluation**
10) With their neighbors, students share their plans. Students should be able to:

   • Describe what they drew
   • Justify their decisions
   • Identify groups and individuals that might be impacted by their decisions
   • Speculate on how the site might change over the coming decades based on what they have drawn

**Extension**
Students identify one key stakeholder that they identified as being impacted by their proposed development plan. Students write a short narrative from the perspective of that stakeholder, describing what life is like in this envisioned location.

**Standards**

**Arizona Science Standards**
S3-C1-GR7-P01
S3-C1-GHS-P01 & P04
S4-C3-GR7

**Arizona Social Studies Standards**
Civics and Government
S3-C2-GR7-P09
Geography
S4-C1-GR7-P02 & P03
S4-C1-GR8-P02
S4-C1-GHRS-P02 & P03
S4-C2-GR7-P01, PO2, PO4
S4-C4-GR7-P05, PO8
S4-C4-GRH-S-P05
S4-C5-GR7-P01, PO2, PO3, PO4, PO5, PO7
S4-C5-GR8-P01, PO2, PO3, PO5
S4-C6-GR7-P02

Foundations of Economics
S5-C1-GR7-P01, PO2, PO3,
S5-C1-GR8-P01, PO2, PO3

**NGSS Core Ideas**
MS ESS3-3 Human Impacts on Earth Systems
HS ESS3-4 Human Impacts on Earth Systems
ET S1.B Developing Possible Solutions

**NGSS Practices**
Constructing Explanations and Designing Solutions

**NGSS Crosscutting Concepts**
Stability and Change
Cause and effect
Scale, proportion and quantity
Influence of Science, Engineering & Technology on Society and the Natural World

**AZCCRS/ELA Literacy**
RST1: Understand explicit text
RST7: Integration of knowledge and Ideas
SL1: Participate in collaborations and conversations
SL2: Integrate oral information
SL4: Present effectively to listeners
SL5: Strategic use of visual display to express
Name: _______________________________________________________

My stakeholder  __________________________________________________________

1970 Aerial Photograph:
1) With your group, first discuss/describe what you see
2) From your stake holder’s perspective describe how you would change this area

3) Share your description with the group. Did any of the stakeholders have the same vision for the site?

1980 Aerial Photograph:
1) With your group, discuss/describe what has changed at this location over the past decade. Emphasize: why did these changes occur? How did developments/infrastructure from the past decade influence developments in this decade?
Which tracts of land are most valuable?
2) From your stake holder’s perspective describe whether these changes were positive and how you would like to see development in the next decade:

3) Share your perspective with the group.
Which stakeholders felt they benefited from the changes: __________________________

4) Based on new infrastructure, how is this land likely to be developed: __________________________
1990 Aerial Photograph:
1) With your group, discuss/describe what has changed at this location over the past decade. Emphasize: why did these changes occur? How did developments/infrastructure from the past decade influence developments in this decade? Which tracts of land are most valuable?

2) From your stake holder’s perspective describe whether these changes were positive and how you would like to see development in the next decade:

3) Share your perspective with the group.
Which stakeholders felt they benefited from the changes: ______________________________________________________

4) Based on new infrastructure, how is this land likely to be developed: ____________________________________________

2000 Aerial Photograph:
1) With your group, discuss/describe what has changed at this location over the past decade. Emphasize: why did these changes occur? How did developments/infrastructure from the past decade influence developments in this decade? Which tracts of land are most valuable?

2) From your stake holder’s perspective describe whether these changes were positive and how you would like to see development in the next decade:

3) Share your perspective with the group.
Which stakeholders felt they benefited from the changes: ______________________________________________________

4) Based on new infrastructure, how is this land likely to be developed: ____________________________________________
2010 Aerial Photograph:
1) With your group, discuss/describe what has changed at this location over the past decade. Emphasize: why did these changes occur? Had developments/infrastructure from the past decade influence developments in this decade? Which tracts of land are most valuable?

2) From your stake-holder’s perspective describe whether these changes were positive and how you would like to see development in the next decade:

3) Share your perspective with the group.
Which stakeholders felt they benefited from the changes: ________________________________

4) Based on new infrastructure, how is this land likely to be developed: ______________________

Blank Base Map:
1) Taking into account the diverse perspectives of city dwellers, draw your own proposal for how you think this site should have been developed.

2) Justify your decisions. Which stakeholder will benefit the most? Which stakeholder will benefit the least?

3) How will the design and infrastructure you have chosen impact the development of this site over the next 40 years?

Homework:
Identify one key stakeholder that is impacted by your proposed development plan. Write a short narrative from the perspective of that stakeholder describing what life is like in this envisioned location.
Teaching Material

• There are two sets of photographs from two different locations in the Phoenix metro area, both cities are in Maricopa County.
  • The first set at McKellips and Stapley is within the city of Mesa.
  • The second set at Union Hills and 75th Ave is within the city of Phoenix

• There are two sets of “stakeholder cards”, one for Mesa and one for Phoenix

• There is a “blank” photo for students to design their own square mile had they been in charge in 1970.
McKellips Rd. & Stapley Rd. Blank Base Map
## City of Mesa Stakeholder Cards

<table>
<thead>
<tr>
<th>Farmer</th>
<th>Mesa City Councilmember</th>
<th>Resident</th>
</tr>
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<tr>
<td>You are a farmer with a young family. Your family has been working this land for two generations. You enjoy the work and lifestyle, and agriculture is all that you know. You hope to raise your family on the same land on which you grew up. You are also concerned with earning enough money to raise your family, and you feel a strong need to provide for your children.</td>
<td>You hold a seat on the City of Mesa City Council. You are a native of Central Phoenix and are proud of your hometown. You are concerned about a population decline near your city’s center and are afraid that jobs and other amenities will leave the city as well. You hope to attract development close to Mesa’s urban core.</td>
<td>You are a parent of three children, and you currently live near downtown Mesa. Your home is fairly small and you don’t think the yard is big enough for your children to play. You are concerned about the quality of local schools and wonder if the City is an appropriate place to raise your children. At the same time, you don’t want to lose amenities like shopping and restaurants.</td>
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# City of Mesa Stakeholder Cards

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<td>You are a land developer. Your business purchases affordable land at low costs and builds new communities. Your projects include residential, commercial, and industrial uses. You are concerned with running a profitable business. You make the most money by turning low-value land into high-value property and selling it.</td>
<td>You represent an organization that advocates for the protection of natural resources, open space, and Sonoran ecosystems. You are concerned with the pressure that urban expansion is applying to both desert and farmland. You feel strongly that open space is a treasured resource and are afraid of losing the city’s open space and its agricultural heritage.</td>
<td>You serve on the County Commission, and you have lived in this rural community your entire life. You relate to agriculture, but it is becoming financially challenging to provide the services and infrastructure your community needs. You are concerned with raising revenue in rural communities through increased property and sales taxes that are promised with new development.</td>
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Union Hills and 75th Ave.

1970
Union Hills and 75th Ave.  2010
Farmer

You are a farmer with a young family. Your family has been working this land for two generations. You enjoy the work and lifestyle, and agriculture is all that you know. You hope to raise your family on the same land on which you grew up.

You are also concerned with earning enough money to raise your family, and you feel a strong need to provide for your children.

Phoenix City Councilmember

You hold a seat on the City of Phoenix City Council. You are a native of Central Phoenix and are proud of your hometown.

You are concerned about a population decline near your city’s center and are afraid that jobs and other amenities will leave the city as well. You hope to attract development close to Phoenix’s urban core.

Resident

You are a parent of three children, and you currently live near downtown Phoenix. Your home is fairly small and you don’t think the yard is big enough for your children to play.

You are concerned about the quality of local schools and wonder if the City is an appropriate place to raise your children. At the same time, you don’t want to lose amenities like shopping and restaurants.
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### Environmental Advocate
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### County Commissioner
You serve on the County Commission, and you have lived in this rural community your entire life. You relate to agriculture, but it is becoming financially challenging to provide the services and infrastructure your community needs.

You are concerned with raising revenue in rural communities through increased property and sales taxes that are promised with new development.
Union Hills and 75th Ave.  1970
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How Has The Phoenix Metropolitan Area Grown?

And what are some of the impacts?
Central Arizona - Phoenix Historic Land Use

1975

Data courtesy of MAG

MARICOPA COUNTY

PINAL COUNTY

Urban
Agriculture
Recreation

10 km

Wittmann

Surprise

Goodyear

Glendale

Phoenix

Tempe

Mesa

Scottsdale

Cave Creek

Carefree

Fountain Hills

Buckeye

Laveen

Gila River

Chandler

Gilbert

Queen Creek

Sun Lakes

Knowles-Yanez et al. 1999
Central Arizona - Phoenix Historic Land Use

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Gila River

PINAL COUNTY

Courtesy of Chris Boone
History of Metro-Phoenix Neighborhoods

- Who makes decisions about land development?
- How do these decisions continue to influence urban development?
Stakeholders

• Groups of six
• Each individual will receive a stakeholder card
  – Read card silently
  – Think about the characters’ lifestyles, values, perspectives; create a tangible identity for your character.
• Introduce your stakeholder to the other group members
1970

• Describe the area’s current features and land-use
• Each stakeholder shares their ideas about how the site should be developed
  – i.e. what is truly best use of this land for your stakeholder
1980

• How did this location actually develop over the last 10 years
  – Why did these change occur?
  – How did developments/infrastructure from the past decade influence developments in this decade?
  – Which tracts of land are now most valuable?
  – Who benefited from these changes?
• From your characters’ perspectives, were these changes are positive?
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Other Impacts

- Biodiversity?
- Microclimates?
- Food System?
- Economic?