The purpose of this report is to explain the preliminary recommended growth scenario that is currently available for public review. The scenario includes 2050 growth areas for Lincoln and a countywide Future Land Use plan.

It is expected that this preliminary recommended scenario will continue to evolve based on feedback received as part of the planning process, culminating in an updated recommended scenario in Summer of 2021 when the draft Lincoln-Lancaster County Comprehensive Plan (Plan Forward 2050) will be published for public review.

48,000
New households in Lincoln by 2050

4.0 units per acre
Expected residential density of new edge development in Lincoln

25 percent
Expected new residential units to be built as infill within the existing city

6.9 square miles
Additional buildable land area beyond the existing 2040 Future Service Limit needed to accommodate 48,000 households by 2050 with the density and infill assumptions

Visit planforward2050.com to view interactive versions of the draft 2050 Future Land Use and Growth Tier maps.
Future Land Use Designations

- Orange: Urban Residential
- Yellow: Low Density Residential
- Blue: Industrial
- Purple: Light Industrial
- Red: Commercial*
- Green: Agricultural
- Brown: Environmental Resources
- Green: Green Space
- Light Green: Agricultural Stream Corridor
- Light Blue: Public

*Note: Although not shown on the map, the 2050 growth areas include space for commercial uses; specific locations will be determined in future years as development plans are approved. A small amount of commercial is shown near the 70th Street south beltway interchange since it is an obvious location for commercial uses. The remaining land area reserved for commercial is currently shown as Urban Residential. It’s possible that some Light Industrial land could also be utilized for commercial uses.
Tier I, Priority A: Priority A is comprised of undeveloped land within the City limits, as well as areas that are not yet annexed but which have approved preliminary plans such as preliminary plats, use permits, community unit plans, or planned unit developments.

Tier I, Priority B: Areas designated for development in the first half of the planning period (to 2036) are generally contiguous to existing development and should be provided with basic infrastructure as they develop.

Tier I, Priority C: The next areas for development, after 2036, are those which currently lack almost all infrastructure required to support urban development.

Tier II: Tier II defines the geographic area the city is assumed to grow into immediately beyond Tier I. It shows areas where long term utility planning is occurring today and acts as a secondary reserve should Tier I develop faster than anticipated. The Tier II area would be typically expected to develop between 2050 and 2070. The Tier I areas being added for 2050 help to set-up infrastructure for the Tier II phase of development after 2050.

Tier III: Tier III provides an area for Lincoln’s longer term growth potential — beyond 50 years. This area is based upon the drainage basins located within the 3-mile extraterritorial jurisdiction, excluding the area identified as Salt Creek Tiger Beetle habitat.
The recommended growth scenario uses existing trends as a starting point, but includes an increased focus on promoting and achieving a higher percentage of appropriately-placed and well-designed infill development. What are the benefits of this scenario?

- A higher proportion of infill development allows the city to focus more funds on enhancing and maintaining current infrastructure and services, while still providing the necessary investments to serve new growth areas.

- In general, with more infill there would be less distance between housing and jobs/services. This would benefit all residents by reducing system-wide lane miles traveled: fewer drivers would need to make an “across town” commute, and people taking short trips would be more likely to use other modes of transportation, which would decrease added strain on the street network.

- A higher proportion of infill supports multiple modes of transportation. Transit becomes more effective at higher densities, and increased infill development would create increased demand for more riders along existing routes. In addition, trail and on-street bicycle facility investments become more practical with more users. This is good not only for users of non-auto travel, but also for motorists as vehicular traffic growth and related congestion can be slowed.

- Shorter automobile trips and more users of alternative transit will help to reduce the community’s carbon footprint over the next 30 years.

- Continued investment within the city ensures that our existing neighborhoods and commercial areas remain vibrant and desirable locations.

- Increased infill in Lincoln will help preserve the rural character of Lancaster County, including the preservation of productive farmland and sensitive natural environments.

What does this growth scenario mean for the future of Lincoln and Lancaster County?

Successful implementation of a scenario with more appropriately-placed and well-designed infill could mean...

- A focus on maintaining existing infrastructure
- Less construction of costly new infrastructure and the associated savings for taxpayers and ratepayers
- Shorter automobile trips
- Increased viability for alternate modes of travel
- Reduced carbon emissions
- Preservation of surrounding rural areas
- Balanced growth throughout the community, across both existing areas and new growth areas
How does this fit into the overall Comprehensive Plan update process?

The Comprehensive Plan addresses a variety of topics, and growth and land use are critical elements. The schedule below shows how the growth/land use element fits into the overall process. The recommended Future Land Use and Growth Tier maps will be available for public comment through Spring 2021. The “final” recommended Future Land Use and Growth Tier maps will be released with the draft Comprehensive Plan in Summer 2021, and then formally adopted by the end of 2021.

How many households will Lincoln and Lancaster County add by 2050?

The Planning Department contracted with the UNO Center for Public Affairs Research (CPAR) to develop demographic projections for Lancaster County through the year 2050. CPAR was also utilized during the last Comprehensive Plan update in 2010 (LPlan 2040), and CPAR's methodology has proven to be a reliable source for planning future growth in the county. In addition, over the past several decades, Lancaster County has shown remarkably consistent growth that is expected to continue for the foreseeable future. This reliability helps add confidence to projection models.

A few highlights from CPAR’s projections:

- **Lincoln Population**: 397,529 by 2050, an increase of 107,323 between 2020 and 2050. For Lancaster County, a total population of 439,258, an increase of 118,588.
- **Lincoln Households**: 165,475 by 2050, an increase of 48,082 between 2020 and 2050. For Lancaster County, 182,845 total households, an increase of 53,129.
- **Household Size**: 2.36 persons per household in 2020, decreasing to 2.30 by 2050. This reflects the national trend of both a growing aging population and a young population that waits longer to start families (thus having smaller families).
- **Age**: The population age 65 and above increasing from 45,600 (14.2 percent of total) in 2020 to 74,900 (17 percent of total) in 2050.
- **Diversity**: Minority population increasing from 20.5 percent of the county’s total today to 35.3 percent in 2050.

These numbers show that Lincoln will need to accommodate approximately 48,000 new housing units, or 1,600 units per year over 30 years. The trend towards smaller household sizes suggests that over the next 30 years there may be a desire for more small housing types, which in turn could mean a higher density of development.

### 1990 to 2010 Lancaster County Statistics with 2020 to 2050 Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Households</th>
<th>Total Population</th>
<th>Persons of Color</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Growth Rate</td>
<td>Number</td>
</tr>
<tr>
<td>1990</td>
<td>82,759</td>
<td>n/a</td>
<td>213,641</td>
</tr>
<tr>
<td>2000</td>
<td>99,187</td>
<td>19.9%</td>
<td>250,291</td>
</tr>
<tr>
<td>2010</td>
<td>113,373</td>
<td>14.3%</td>
<td>285,407</td>
</tr>
<tr>
<td>2020</td>
<td>129,716</td>
<td>14.4%</td>
<td>320,670</td>
</tr>
<tr>
<td>2030</td>
<td>147,809</td>
<td>13.9%</td>
<td>360,558</td>
</tr>
<tr>
<td>2040</td>
<td>165,615</td>
<td>12.0%</td>
<td>399,519</td>
</tr>
<tr>
<td>2050</td>
<td>182,845</td>
<td>10.4%</td>
<td>439,258</td>
</tr>
</tbody>
</table>

Note: Lincoln's population is expected to remain roughly 90.5 percent of county population. Lincoln households are expected to remain 91.2 percent of county households.

View the full Population Projections Report at planforward2050.com
How did we determine the amount of land area needed for new growth?

The factors most critical to determining land area for growth are the density of edge development and the percentage of infill development. Several factors lead to the recommended edge density and infill assumptions:

- New approvals for edge developments in Lincoln over the past ten years have an average residential density of 4.0 units per acre. The existing Comprehensive Plan (LPlan 2040) assumes 3.0 units per acre for edge development.
- Infill has accounted for 20 percent of new housing units over the past ten years, although that number increased to 22 percent over the past five years as we continued to move further from the last recession.
- The infill assumption with the recommended scenario (25 percent) is a 30-year average. It is expected that the infill rate will begin close to the trend (22 percent) and increase to a higher number (around 28 percent) by 2050.
- Our demographic projections indicate that average household size in Lincoln will generally decrease over the next 30 years. The trend towards smaller household sizes suggests that there may be a desire for more small housing types, which in turn could mean a higher density of development.
- Additional incentives could also help to increase density and infill. Several incentives are discussed in the FAQ “What are the transportation impacts of our growth scenarios?”.
- In July we released our Growth Scenarios Summary Report, which included three possible growth scenarios. The three scenarios were intended to guide public discussion during Virtual Meeting #2, which was available from July through early September. Results of several growth-related questions asked during the virtual event are summarized on this page.

Learn more about recent building trends with the 2020 Residential Land Inventory Report at planforward2050.com
The calculation for total area needed includes several assumptions. Those assumptions are listed below:

- **Urban Residential**: The residential density figures are for residential and associated uses only. Items included within the residential category include non-residential neighborhood uses such as neighborhood parks, trails, schools, and churches. The density number also includes streets and rights-of-way. Commercial and industrial uses are calculated separately.

- **Commercial**: Existing developed areas on the edges of Lincoln were analyzed in order to determine the amount of commercial needed for a typical square mile of suburban development. For purposes of these scenarios, 100 acres (0.15 sq mi) of commercial were assumed for every square mile of residential development, which generally aligns with how development has occurred in Lincoln over recent decades.

- **Industrial**: The existing ratio of industrial land per county resident was extended out to 2050. Using existing ratios, Lincoln is expected to add approximately 1.9 square miles of industrial land over the next 30 years. The existing Future Land Use map shows nearly eight miles of vacant land identified for future Industrial uses already within the 2040 Future Service Limit. It is expected that most new industrial growth will occur in these already-identified areas; however, there are several good Industrial opportunities in the 2050 growth areas, and so the land area for those uses has been factored in to the calculations. Also included is a new designation for Light Industrial, which is discussed later in the FAQ.

- **Development Cushion**: A cushion of 10 years is added within the developable land calculations, meaning that enough land is provided to satisfy demand through 2060 based on our population projections. This “extra” land is included in order to provide flexibility for development options within the Future Service Limit. It is categorized as Urban Residential in our land use calculations.

- The existing 2040 Future Service Limit will be developed prior to the new 2050 areas. There is approximately 13 square miles of developable land within the existing 2040 Future Service Limit. The total area needed for 2050 is in addition to existing available land within the Future Service Limit.

- A focus was put on identifying “developable” land within the growth areas - land that can reasonably be expected to develop with urban uses. This is typically land that is currently agriculture or vacant. Land that is not considered to be developable, and is not included in our growth area calculations, includes areas with floodplains, wetlands, critical habitat, easements, existing acreages, and/or publicly-owned land.

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### Total “developable” land to add beyond 2040 Future Service Limit:

- Residential + Cushion: 5.1 sq mi
- Commercial: 0.8 sq mi
- Industrial: 1.0 sq mi
- Total: 6.9 sq mi

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How did we select the recommended growth area locations?

Lincoln's growth is primarily guided by urban infrastructure availability, most importantly, the availability of gravity sewer. Lincoln utilizes gravity sewer, which is dependent on topography, as sewer trunk lines are provided to basins that naturally drain into the existing system. Given the inherent stability of gravity as a force of nature, gravity sewer provides for an efficient and reliable wastewater system, provides predictability for the development community, and is a responsible use of rate payer dollars.

We started by working with the Lincoln Transportation and Utilities Department (LTU) to determine the next basins in Lincoln's vicinity that could be served by gravity sewer. We then identified the major infrastructure costs (sewer, water, streets) to serve each basin. The eleven basins, along with infrastructure costs, are shown below.
Primary factors leading to selection of the recommended growth areas:
- The areas selected all have low or moderate infrastructure construction costs.
- The existing Comprehensive Plan (LPlan 2040) supports multi-directional growth, and that policy is expected to continue. Each quadrant includes at least one 2050 growth area.
- The largest growth areas are in south and east Lincoln, which reflects ease of sewerability and market demand in these locations.

See below for a brief discussion of each area with an explanation of why each was/was not selected.

Area 1 (not recommended):
- 0.8 square miles of developable area.
- Moderate infrastructure costs.
- Limited potential uses due to proximity to airport landing zone.
- Extensive urban development in this area could present a conflict with the Nine Mile Prairie.
- There is nearby development capacity within the existing 2040 Future Service Limit and in growth Area 2.

Area 2 (recommended):
- 0.5 square miles of developable area.
- Low infrastructure costs.
- Directly adjacent to the Highland View and Fallbrook neighborhoods, which have seen significant growth in recent years.

Area 3 (recommended):
- 1.2 square miles of developable area.
- Moderate infrastructure costs. Sewer is already available east of Stevens Creek but water and urban streets needed.
- Growth opportunity for northeast area.
- Possible future location of east beltway interchange.

Area 4 (not recommended):
- 0.8 square miles of developable area.
- Significant infrastructure costs. Sewer, water, and urban streets would all need to cross Stevens Creek.
- Includes a potential east beltway interchange.
- Could be a 2060 growth area.

Area 5 (recommended):
- 2.5 square miles of developable area.
- Moderate infrastructure costs.
- East/southeast Lincoln has historically been an area of high demand. That trend is expected to continue.
- Includes several possible east beltway interchange.
- Sewer would be provided by an extension of the Stevens Creek Trunk line, which flows north. Development of Area 5 in 2050 would open up Area 6 for the next tier of development in 2060.

Area 6 (not recommended):
- 3.6 square miles of developable area.
- Moderate infrastructure costs.
- Includes the future connection of the south and east beltways along with several possible east beltway interchanges.
- Would require extension of the Stevens Creek Trunk Sewer, which would first need to be constructed in Area 5. The combination of Areas 5 and 6, along with growth areas in other quadrants, exceeds the amount of land needed for 2050. Area 6 is a good candidate as a 2060 growth area.

Area 7 (partially recommended):
- 1.8 square miles of developable area. 1.0 square miles of developable land in the selected segment
- Moderate infrastructure costs.
- South Lincoln has historically been an area of high demand. That is expected to continue with construction of the south beltway.
- Includes one south beltway interchange.
- Adjacent to the new southeast high school.
- The sewer for this area drains to the west, so Area 8 would be developed first.
- Including the entire basin would result in more land that needed being opened for development. The recommended scenario includes a portion of this area. The undeveloped portion to the south would be a prime 2060 development opportunity.

Area 8 (recommended):
- 1.5 square miles of developable area.
- Moderate infrastructure costs.
- South Lincoln has historically been an area of high demand. That is expected to continue with construction of the south beltway.
- Includes one south beltway interchange.
- Given the sewer layout, Area 8 must be developed prior to Area 7.
- A “Large Employer Opportunity Area” was identified in this location in LPlan 2040. That general area is shown as Industrial on the 2050 FLU map.

Area 9 (not recommended):
- 0.2 square miles of developable area.
- Highest infrastructure construction costs per square mile.
- Not a high demand growth area.
- Disconnected from other development areas.

Area 10 (recommended):
- 0.5 square miles of developable area.
- Lowest infrastructure construction costs per square mile, by a wide margin.
- The area directly to the east is beginning to develop and infrastructure is being constructed to support additional growth through at least 2040.

Area 11 (not recommended):
- 0.3 square miles of developable area.
- Moderate infrastructure costs.
- Adjacent to the new northwest high school.
- Limited developable area.
- There is nearby development capacity within the existing 2040 Future Service Limit.
How did we determine land uses for the growth areas?

The following method was used to construct the Future Land Use map for each growth area:

- A majority of land within each area is identified as Urban Residential. This reflects the overall citywide land use, where Urban Residential is a majority of the city’s land area.

- It is important to protect potential industrial sites as an economic resource. In the case of our recommended growth areas, the beltway interchanges provide a great opportunity for some level of industrial development given their direct connection to several highways and I-80. On the proposed Future Land Use map, industrial is shown clustered around beltway interchanges. In total approximately one square mile of Industrial and Light Industrial uses were identified in growth areas.

- The south beltway interchange near S 27th Street is shown as a Large Employer Opportunity Area in the current Comprehensive Plan and is shown as Industrial on the proposed 2050 map.

- Light Industrial is a new use being added to the Future Land Use map for the 2050 Comprehensive Plan. It includes less intensive industrial uses that don’t involve loud noise or dangerous chemicals. It also includes “heavier” commercial uses such as truck strops.

- Land area is provided for commercial uses, but specific locations for commercial uses will not be determined until there are approved development plans for the area. The Comprehensive Plan includes policies about placement for different types of commercial centers, and it is expected that those policies will remain for the 2050 plan update. Neighborhood commercial centers will likely be located in land currently identified as Urban Residential, and there is the opportunity for some commercial uses in the Light Industrial areas as well.

- The existing Future Land Use map already identifies environmentally sensitive land in the 2050 growth areas, primarily along stream corridors. Those areas have been maintained. New urban land uses (Residential, Industrial) are primarily shown on land currently identified as Agricultural.
GIS mapping was utilized to help aid the discussion on potential land uses. Positive (+) and negative (-) ranking factors were added into a spatial analysis algorithm to help identify “hotspots” for residential and industrial uses. The factors and results for each are shown below.

**Residential Factors:**
- Floodplain (-)
- Prime Farmland (-)
- FLU Residential Buffer (+)
- Infrastructure Costs
- Wetlands (-)
- Salt Valley Greenway Overlap (-)
- Salt Valley Greenway Adjacent (+)
- Railroads (+)
- Interstate/Highway (-)
- Pipeline (-)
- Tiger Beetle Habitat (-)
- Easements (-)
- Airport Noise District (-)

**Industrial Factors:**
- Topography
- Floodplain (-)
- Prime Farmland (-)
- FLU Residential Buffer (-)
- FLU Industrial Buffer (+)
- Infrastructure Costs
- Wetlands (-)
- Salt Valley Greenway Overlap (-)
- Railroad Access (+)
- Interstate/Highway Access (+)
- Tiger Beetle Habitat (-)
- Easements (-)
How did we determine the updated growth tier boundaries?

Growth tiers were determined based on expected infrastructure availability, which is shown in more detail in the water and wastewater master plans completed by the Lincoln Transportation and Utilities Department (LTU).

As also shown earlier in this document, the description of each tier is below. More discussion of growth tiers can be found beginning on page 12.5 of LPlan 2040.

**Tier I, Priority A**: Priority A is comprised of undeveloped land within the City limits, as well as areas that are not yet annexed but which have approved preliminary plans such as preliminary plats, use permits, community unit plans, or planned unit developments.

**Tier I, Priority B**: Areas designated for development in the first half of the planning period (to 2036) are generally contiguous to existing development and should be provided with basic infrastructure as they develop.

**Tier I, Priority C**: The next areas for development, after 2036, are those which currently lack almost all infrastructure required to support urban development.

**Tier II**: Tier II defines the geographic area the city is assumed to grow into immediately beyond Tier I. It shows areas where long term utility planning is occurring today and acts as a secondary reserve should Tier I develop faster than anticipated. The Tier II area would be typically expected to develop between 2050 and 2070.

**Tier III**: Tier III provides an area for Lincoln’s longer term growth potential — beyond 50 years. This area is based upon the drainage basins located within the 3-mile extraterritorial jurisdiction, excluding the area identified as Salt Creek Tiger Beetle habitat.
What are the transportation impacts of our growth scenarios?
FHU is a consulting firm working on the update of our Long Range Transportation Plan (LRTP), which is occurring on the same timeline as the Comprehensive Plan. They assembled a memo that summarizes the connection between land use and transportation, shown on the next several pages.

Land Use & Transportation

September 23, 2020

Transportation and land use are inexorably linked – the types of development in an area often drive who travels there and how, and the existing transportation network is a major factor in what new types of development may come. As such, consideration of both is critical for all transportation and land use planning efforts. The Lincoln-Lancaster Planning Department is currently working to update its comprehensive plan (the Lincoln-Lancaster County 2050 Comprehensive Plan), of which both transportation and land use are major components. Three possible scenarios for additional residential development through 2050 are under consideration – continuation of current trends (Scenario A), continuation of assumptions from the previous plan update (Scenario B), and increased infill/density (Scenario C). The relative benefits and challenges will be assessed for each related to infrastructure needs, transportation, character, sustainability, development, and housing affordability. This type of land use/transportation scenario evaluation helps communities better understand the implications and tradeoffs associated with different growth patterns.

This paper has been prepared to document the results of a similar modeling exercise in Madison, Wisconsin, as well as to highlight potential incentive/disincentive programs and investment/mitigation strategies to support the scenarios under consideration for Lincoln.

Madison, Wisconsin Scenario Modeling

The City of Madison, another Midwest state capital with a large public university, last updated its Imagine Madison comprehensive plan in 2018. As part of the update process, the City conducted a growth scenario exercise very similar to what Lincoln is doing. Madison’s population – similar in size to Lincoln – was projected to increase by 70,000 between 2015 and 2040; employment growth was considered as well. Using a modeling tool called UrbanFootprint, the City identified three potential scenarios with varying assumptions for where this new growth would occur – 70% Edge/30% Infill, 50% Edge/50% Infill, and 30% Edge/70% Infill. Several transportation-related metrics of interest were identified to compare between the model scenarios, including:

- Transportation-related Greenhouse Gas Emissions
- Average Annual Fuel Costs per Household
- Total Annual Vehicle Miles Traveled (VMT)
- Average Annual VMT per New Household
- Transit Ridership

Assumptions were also made within each scenario as to what improvements would be made to the City’s transportation system by 2040. The edge-focused scenario included all planned and programmed highway, arterial, and collector roadway improvements with only minor transit service enhancements. The balanced scenario and infill-focused scenario both included all planned and programmed arterial and collector improvements, some planned and programmed highway improvements, and implementation of the City’s planned Bus Rapid Transit system with supplemental local and express transit service enhancements.
An appendix of Imagine Madison summarizes some of the key findings after modeling each scenario in UrbanFootprint and comparing the noted metrics.

- The infill-focused scenario would result in households spending an average of $400 less per year on passenger vehicle costs compared to the edge-focused scenario, including $106 less on fuel
- The infill-focused scenario would result in approximately 170 million fewer annual VMT than the edge-focused scenario
- Average annual VMT per new household would be 16,600 for the edge-focused scenario, 14,000 for the balanced scenario, and 11,100 for the infill-focused scenario
- Transit ridership would increase over current levels in all three scenarios – 50% with edge-focused, 108% with balanced, and 114% with infill-focused
- Transportation-related greenhouse gas (GHG) emissions show a nominal decrease from the Edge Development scenario to the Infill Development scenario. However, the EPA estimates that the typical passenger vehicle emits 4.6 metric tons of carbon dioxide per year, which equates to a significant decrease in carbon emissions attributable to the land use pattern alone.

Many of the metrics were shared on a project website and accompanied with a survey question asking community members to identify which scenario would be preferable for future growth. Two-thirds chose the infill-focused scenario while only 13% chose the edge-focused scenario.

**Transportation Incentives & Disincentives**

Development trends are driven largely by forces outside the control of local government – zoning helps to dictate what can be done with a particular parcel but not when or even if those approved uses will come to fruition. One option for cities and counties to further influence development patterns is through implementation of incentives and disincentives that support desired land use changes; these are particularly relevant when the goal is to emphasize infill over fringe development. Access and mobility are key considerations for any land use decision so incentives and disincentives related to transportation can be particularly effective at guiding development.

**Transit**

High-quality transit service itself can be a significant incentive for infill development since those routes operating in a city's urban core tend to have higher frequencies, more convenient transfers, and longer service spans than those in outlying areas. Developers will be more inclined to invest in infill projects – which are generally more costly to incorporate parking into – if they are confident that the transit system will provide convenient and reliable access for the intended users. Several cities throughout the country have sought to further boost the attractiveness of transit by offering fare-free service, either within their downtown area or throughout their service area. The City of Longmont, Colorado, which lies within the jurisdiction of the Regional Transportation District (metro Denver’s transit agency), has fully subsidized four local RTD routes since 2014; annual ridership across the four in 2018 was nearly 300% higher than in 2013, the year before the program started. It began as a pilot partnership between the City and RTD but is now solely funded by municipal sales tax. The Utah Transit Authority (UTA) has maintained a Free Fare Zone across an approximately 35-block portion of downtown Salt Lake City for several decades. Both of these programs have proven popular with residents and have helped spur continued growth, development, and investment within their respective communities.
Parking Requirements

Minimum parking requirements are often a concern when it comes to infill development. Land is more expensive in the urban core, so providing the required amount of parking for a project’s intended use – whether it is through surface lots or garages – can quickly become exorbitantly costly, making the ample, cheaper fringe land more enticing. Many cities have sought to alleviate this concern by drastically reducing or even eliminating minimum parking requirements in their downtowns (such as Lincoln) or other areas where redevelopment is sought. The City of Madison introduced several changes to its parking requirements in a 2012 municipal code update, including elimination of minimums in most areas zoned for non-residential uses and allowance for still-applicable parking minimums to be reduced if sufficient access to transit, shared vehicles, bike parking, and/or other alternatives can be demonstrated. Similarly, the City of Colorado Springs has established two urban districts that are exempt from the City’s general parking requirements. Parking restrictions, such as time limitations and parking fees (parking meters) can be used to disincentivize driving and encourage bicycling, walking, and transit.

The City of Lincoln already exempts parking requirements in the B-4 District (downtown). Consideration could be given to whether parking requirements for other districts in the urban core (such as R-5 and R-6) should be reduced further. Currently, these districts have a requirement of 1.75 spaces per dwelling unit. Since R-5 and R-6 zoning is generally found in the urban core or older areas of the City, reducing the parking requirement could help encourage infill development as opposed to edge development.

Parking Restrictions

Parking policy can also be used to encourage or discourage certain travel behaviors – and thusly support desired land use patterns – through implementation of restrictions (e.g., 2-hour parking) and fees (e.g., metered parking). By limiting the amount of time someone can leave a car parked in a certain spot and/or imposing a tangible cost to each available spot, a city can effectively discourage the use of personal vehicles and encourage the use of active modes and transit for traveling to dense areas where parking is not the best use of the available land. The City of Rapid City, South Dakota, recently implemented a comprehensive overhaul of its downtown parking system as part of a series of actions to support increased density. With the new system, meters were added to core downtown blocks and two-hour parking limits added to exterior downtown blocks; the metered spaces do not have a time limit, and two-hour spaces do not have a fee. Downtown employees and residents have the ability to apply for on-street parking permits. In Cedar Rapids, Iowa, which has seen substantial investment in downtown livability and economic development since a major flood in 2008, almost all downtown blocks now have both meters and time limits managed by a private firm contracted by the City – previously, the downtown parking program lacked structure and consistency. Both of these cities conducted strategic downtown parking studies prior to implementation of any major changes.

Tiered Impact Fees

Another strategy cities have pursued to support infill development is the implementation of tiered impact fees. These fees are assessed to developers to help pay for the cost of new capital facilities and services (e.g., utilities). Charging a uniform impact fee for developments regardless of their location within a community ignores the difference in cost between providing public services to an infill location – where much of the needed infrastructure is likely already in place.
and only upgrades are needed – and providing public services to a fringe area where entirely new utility lines may be needed. For housing in particular, impact fees can also be tiered based on proposed density to incentivize denser urban development, with lower per-unit fees assessed to high-density developments. The City of Kennewick in south-central Washington state has four districts with varying transportation fee impact schedules; those assessed in the downtown area are significantly lower than those for the rest of the City. The City of Santa Rosa, California, assesses differential impact fees to residential developments based on the proposed number of units per acre, with the per-unit fee for a medium-high density development 40% less than that for a low density development.

**Transportation Mitigation & Investments**

The transportation needs of a community are largely dictated by land use decisions and the resulting impacts to travel behavior. With varying future land use assumptions across the scenarios, appropriate transportation mitigation and investment strategies will vary as well – the transportation systems of densely concentrated cities look very different than those of sprawled cities. Understanding the transportation-related ramifications of the different scenarios will help inform evaluation and shape future investments.

**Scenarios A & B**

Two of the scenarios being evaluated – continuation of current development trends (Scenario A) and continuation of development assumptions from the previous comprehensive plan update (Scenario B) – would likely result in similar impacts to travel behavior in Lincoln. Both assume the same proportion of infill development, with Scenario A assuming a greater edge density than Scenario B. Since the City’s core will remain where the bulk of employment is located, the significant edge growth assumed in these scenarios could strain regional connections without investments and programs to mitigate congestion. Lincoln’s extensive regional trail network provides connections to downtown and other key activity centers from throughout the City; ensuring new residential developments provide safe and comfortable bike/ped connections to these trails will be important. Capacity and operational improvements to major thoroughfares and edge roadways may be necessary as well, given the high proportion of Lincoln commuters who choose to drive. Park-and-ride facilities that improve access to transit from outlying developments could also be a consideration in these scenarios.

To help mitigate the increased demand for travel between the urban core and the urban edge that significant edge development will likely lead to, a robust Travel Demand Management (TDM) program could be pursued in conjunction with developers and employers to encourage work-from-home options, flexible work hours, and commuting via other modes. The City of San Francisco, California, mandates that most new developments prepare and submit a TDM Plan that outlines what measures will be taken to support sustainable transportation options and behaviors. For those commuters for whom transit, bicycling, and/or working from home are not viable options for getting to work, the Denver Regional Council of Governments helps coordinate carpools and vanpools.
**Scenario C**

With Scenario C, which assumes a greater proportion of future development occurring via infill, future investments should be focused on multimodal connections that support the movement of people—not just vehicles. For the *Imagine Madison* scenario modeling exercise, an expansion of transit service was assumed for the infill scenario; coordination with StarTran staff, particularly through the Transit Development Plan update in 2021, could help identify future plans and aspirations for transit in Lincoln that would support a denser core. Similarly, recommendations from the *Lincoln Bike Plan* that would provide enhanced bicycle connections to key employment centers would be worthwhile investments to pursue in the infill scenario. Enhancements to the regional trail network within the developed area of Lincoln that could further increase its utility for commuters and recreational users—including at-grade crossing improvements and wayfinding—would be appropriate to incorporate into an infill investment strategy as well.
What are the characteristics of infill and edge growth?

**Characteristics of Infill**

Infill is any development or redevelopment within the existing developed city. Infill occurs on underdeveloped parcels, which in most cases are former commercial sites that are no longer viable. There are many potential infill redevelopment sites in Lincoln today, and given the continued evolution of retail and office space, it is expected that more commercial sites will be available for redevelopment opportunities over the next 30 years. Other types of sites that could be candidates for redevelopment include oddly-shaped parcels, LPS-owned property that was not selected as a school location, golf courses, public or quasi-public excess land, blighted property, and other miscellaneous parcels throughout Lincoln that are vacant for a variety of reasons.

In almost all cases infill has a higher residential density than edge growth. This is due to the inherent space limitations of redeveloping a site surrounded by existing urban development. In terms of residential unit types, most recent infill projects in Lincoln have been multi-family, often including limited commercial elements. There have also been examples of infill projects that include attached and detached single-family housing on smaller lots, at a much higher density than typical edge development.

Infill development can accommodate various types of commercial uses. Projects with mixed-use buildings typically incorporate a commercial element on the first floor. Large-scale commercial centers are also possible on certain infill sites, a recent example being Costco and the associated commercial pads at 14th and Pine Lake.

**Characteristics of Edge Growth**

Edge growth is any new development on the outskirts of the city. It is typically annexed upon approval of development plans so that urban infrastructure can be provided to the site. Most of Lincoln’s new housing construction occurs in edge growth areas.

Many new edge growth developments incorporate a mix of housing types. A common development plan includes detached single-family units, attached single-family/duplex units, and an area reserved for multi-family. Over the past ten years, approximately 44 percent of new homes in edge growth areas have been detached single-family, 38 percent multi-family, and 17 percent attached single-family/duplex.

Edge growth allows for significant flexibility on commercial and industrial site design. It also allows for a mix of uses over a large area to be planned for at once, rather than piece-by-piece.
What are the challenges and benefits of different growth scenario options?

A mix of edge growth and infill is expected to continue. This report and the Comprehensive Plan process will consider what the expected balance of both growth types should be.

The following discussion summarizes big picture challenges and benefits to both infill and edge growth. These factors were determined based on staff input, members of the Comprehensive Plan Community Committee, and survey/open house responses from the general public.

The manner of Lincoln's growth has significant financial and quality of life implications for the community. These factors are to be considered when determining the ratio of infill to edge growth for the recommended growth scenario.

City Infrastructure and Services

Infill

- **Utilization of existing infrastructure is the primary benefit of infill development.** With edge growth new infrastructure must be extended, which can be a significant cost shared by both the city (taxpayers and ratepayers) and developer, and then must be maintained in perpetuity, which is a cost to taxpayers and ratepayers. With infill projects, new development can occur while utilizing the existing investment in surrounding infrastructure, although in some cases infrastructure upgrades are necessary. **More infill is ultimately a cost savings for taxpayers and ratepayers in Lincoln.**

  In our first visioning survey for Plan Forward 2050, survey respondents identified street maintenance as one of the top items that needed improvement. One challenge with street maintenance is that new streets are continuously being added to the system. Increased infill would allow the community to grow our population and tax base while focusing city funds on maintaining what we already have, rather than spending money constructing and maintaining new streets.

  This same logic applies to other city services and facilities as well. The city can grow without adding to the service area of Fire, EMS, and Police, and mitigate the need to build new emergency services stations (however, new personnel and equipment would still be needed). Existing facilities such as parks, trails, and libraries can be utilized, and additional users could lead to enhancements for these facilities.

- **Some infrastructure enhancements would still be needed with large infill projects.** In some cases, water or sewer lines in existing urban areas would need to be replaced. Power lines may need to be reconfigured, and in some cases transformer station upgrades would be needed. New traffic lanes and turn lanes may be needed as well. These upgrades for infill would typically be less expensive than for new construction in edge developments.

Edge Growth

- **Edge growth projects require investments in new infrastructure, which can be a significant cost shared by both the City (taxpayers and ratepayers) and developer, and infrastructure must be maintained in perpetuity, which is a cost to taxpayers and ratepayers.**

- Funding for road and bridge projects can be complicated when there are rural roads and bridges that will soon be within city jurisdiction.

- Emergency services would need to expand their service areas, which could impact response times. Over time, new service stations would need to be added in order to serve the additional land.

The expansive parking lots at Gateway Mall provide a redevelopment opportunity near existing infrastructure, jobs, and services.
**Transportation**

**Infill**
- Infill supports multiple modes of transportation. Transit becomes more effective at higher densities, and increased infill development would create increased demand for more riders along existing routes. In addition, trail and on-street bicycle facility investments become more practical with more users.
- In general, there would be less distance between housing and jobs/services. This would benefit all residents by reducing system-wide lane miles traveled: fewer drivers would need to make an “across town” commute, and people taking short trips would be more likely to use other modes of transportation, which would decrease added strain on the street network.

**Edge Growth**
- Edge growth could contribute to the further separation of housing and jobs/services, creating longer commutes, more traffic, and all but requiring that more people use an automobile to navigate the city. Autonomous vehicles and other emerging technologies could have an impact on commuting over the next 30 years, but it’s difficult to speculate about what that impact will be.
- A dispersed population makes it difficult to maintain an efficient and cost-effective transit system as buses need to travel longer distances to serve comparatively fewer people in each given area.

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**Community Character**

**Infill**
- Over time, policies that incentivize infill would lead to redevelopment of underutilized properties (vacant lots, aging/poor quality buildings, etc) as these areas would become more desirable to the development community. This is especially relevant given the changing nature of retail and the expectation that commercial centers will experience increased vacancy as time goes on. There would also be more incentive to redevelop and re-use historic or otherwise significant buildings in the community that are underutilized today.
- There could be more pressure to redevelop existing green space within city.
- Redevelopment can have a significant impact on the character of an existing area, and these types of projects create the potential for conflict with neighbors. Although most redevelopment projects result in a net-positive impact for the surrounding area, care would need to be taken to ensure that these projects are appropriately-placed to reduce any perceived negative impact on neighbors.
- Infill projects can add to the diversity of architecture in established areas.
- Higher density projects in general, which often come in the form of infill, can help build on our existing sense of community, fostering the type of human connections that become possible with daily casual interaction.

**Edge Growth**
- Edge growth can remove investment dollars from the existing city, contributing to the deterioration of existing areas.
- Lincoln has many great neighborhoods, and each reflects the era in which it was developed. Edge development allows for the creation of new neighborhoods which reflect the current times and add to the diversity of our community’s built environment.
- Additional edge development can contribute to an increase in urban/rural tension. Many county residents are concerned that the continuing physical growth of Lincoln could ruin the character of rural Lancaster County.
- New parks, trails, libraries, LPD/LFR facilities, etc would need to be built in order to maintain the same level of community services for new growth areas.

*New homes with a modern interpretation of traditional style.*
Environment/Sustainability

**Infill**

- Increased infill would help Lincoln become a more sustainable community due to variety of factors, some of which have already been discussed: less vehicle miles traveled would reduce our reliance on fossil fuels and improve local air quality, existing underutilized buildings or sites could be reused rather than using resources to construct new buildings, environmentally sensitive areas at the city fringe would be under less development pressure, and more infill would typically mean more multi-family housing, which in general has a smaller impact on the environment than detached single family housing.

- Increased infill would help preserve productive farmland in the county. Nationwide, population is growing while farmland is shrinking. Nebraska's role as a major agricultural producer is more important than ever, and Lancaster County is full of prime farmland. Farmland is an important resource, and once it's developed for urban uses, it is very unlikely to ever be returned to agriculture.

**Edge Growth**

- Prime farmland is lost as it is converted to urban uses. To help preserve farmland, the policy of directing new rural growth into existing incorporated areas and where AGR zoning is already present is expected to continue.

- Increased reliance on single-occupant automobiles would increase the city's impact on the environment and could contribute to lower air quality.

Development Considerations

**Infill**

- If a high infill scenario is achieved by limiting available land on the fringes of the city, land prices for the smaller amount of developable fringe land would likely increase, and those costs would ultimately be passed down to homeowners and other property owners in those areas. In the same fashion, higher demand for potential infill properties could increase land prices citywide. This could constrain supply of new housing, raising prices for all.

- Costs per square foot for redeveloping a property can be high if existing buildings on the site need to be demolished or other significant site preparation is necessary. In addition, the site constraints inherent to many infill projects require expensive vertical construction. The City currently uses TIF to help mitigate some of those costs, and if more infill were to occur, TIF along with possibly other incentives may be needed in order to help facilitate projects. State Statute changes to TIF over the next 30 years could have significant impacts on the City's primary redevelopment tool.

**Edge Growth**

- Development of new land provides significantly more flexibility for layout and design of projects. Developers are more easily able to tailor their projects to meet market demand.

- In many cases land assembly and site preparation is easier when compared to infill projects. Ease of development helps support Lincoln's continued growth.
Housing

Infill

- While some infill projects could incorporate detached single family housing, it would be unlikely that significant amounts of new single family housing would be built as infill. In a high infill, high density scenario, constrained supply of new detached single family housing would ultimately raise the costs of all single family housing, assuming consumer housing choice preferences remain similar to today. The impact could be mitigated somewhat if housing choice continues to gravitate towards more multi-family options.

- Redevelopment in existing lower income neighborhoods, if not done in an appropriate fashion, could lead to gentrification and increase affordable housing challenges. A successful redevelopment project in a lower income area would improve the character of the neighborhood without displacing residents.

Edge Growth

- With a high edge growth scenario, an increased supply of land could lower land prices, and ultimately, those savings could result in lower prices for newly-constructed homes.

- It’s important to note that there is currently a significant amount of housing units already approved in growth areas that have not yet been built. As of January 2020, there were approximately 16,000 approved unbuilt units in edge growth areas, which is roughly a 12-year supply. It’s unclear whether increasing the approved supply to 15 or even 20 years would have a significant impact on housing production or cost.

- Market demand and demographic changes are pointing toward an increasingly diverse housing mix beyond what is thought of as typical edge development.