



MEMORANDUM

SUBJECT: 1-4 Unit Housing Study Phase 2 Supplemental Staff Memo

TO: Saint Paul City Council

FROM: Emma Brown, Josh Williams, Tony Johnson, Victor White, Luis Pereira, Department of Planning and Economic Development

DATE: October 4, 2023

This supplemental staff memo organized in a question-and-answer format addresses key topics on the 1-4 Unit Housing Study anticipated to be asked about by Councilmembers or other interested city residents.

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Q1. Why this study and its recommendations for additional 1-6 unit housing types?

This study merely implements prior, clear, City policy direction calling for more medium-density housing solutions compatible with the scale of Urban Neighborhoods. [City Council Resolution 18-1204](#) and the [2040 Comprehensive Plan](#) call for studying ways to allow more neighborhood-scale housing in all areas of Saint Paul. To accomplish this goal, the City of Saint Paul initiated the 1-4 Unit Housing Study. More specifically:

- City Council resolution 18-1204 calls for "...zoning studies by the Planning Commission to explore ways to increase density in residential districts including: analysis on allowing more

multi-unit buildings (i.e. triplexes and fourplexes) along transit routes and in neighborhood nodes in single-family zoning districts; ...”

- Saint Paul Comprehensive Plan Policy LU-34: “Provide for **medium-density housing that diversifies housing options, such as townhouses, courtyard apartments and smaller multi-family developments**, compatible with the general scale of Urban Neighborhoods.”

In this way, the **1-4 Unit Housing Study** is merely an action taken to implement prior, clear, City policy direction, including Saint Paul’s comprehensive plan approved by the Metropolitan Council and adopted by the City in November 2020. The study has included two phases:

- Phase 1 of the study focused on small housing, accessory dwelling units, and small parcels. These amendments to the zoning code were adopted by the City Council on January 19, 2022, in [City Council Ordinance 22-1](#) and went into effect March 5, 2022.
- Phase 2, the broader and more in-depth part of the work, has focused on evaluating additional zoning flexibility to support greater housing diversity. Following technical analysis and community engagement, staff drafted a proposal, held a public hearing at Planning Commission on April 14, 2023, reviewed public comments and revised the proposal to respond to these comments, and the Planning Commission made its recommendation on August 18, 2023. The City Council will be considering this recommendation on September 27, 2023, and hold a public hearing on October 4, 2023, before considering adoption after that.

Q2. What would the new zoning text amendments mean for existing homes and neighborhoods more generally?

A change in the zoning district does not mandate anything different to happen on lots that are currently developed. Existing homes – including single-family homes – and neighborhoods will remain and still be permitted. Evidence of this is the substantial number of lots zoned for duplexes or multifamily development but remain developed with single family homes.

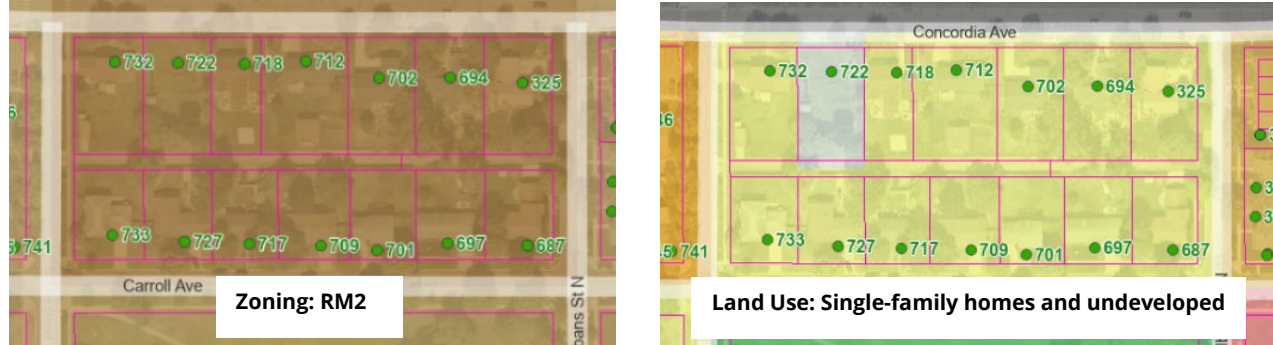
For example, the 800 blockface of Laurel Avenue between Avon Street and Victoria Street and two blocks south of Selby Avenue is zoned RT1 (shown in **Figure 1**), which permits duplexes by right. Apart from a non-conforming seven-plex located mid-block, the rest of the block is developed with single-family homes under the existing RT1 zoning.

Figure 1. The 800 Laurel Avenue block, zoned RT1



Additionally, there are also many areas of the city zoned RM1-RM2 multi-family residential that allow higher-density housing with no specific limit to the number of housing units permitted on a lot, but many single-family homes remain. For example, the block bounded by Grotto Street, Carroll Avenue, Concordia Avenue, and Saint Albans Street (shown in **Figure 2**) is zoned RM2 but is entirely single-family homes.

Figure 2. Block bounded by Grotto St, Carroll Ave, Concordia Ave, and Saint Albans St, zoned RM2



The proposed zoning districts H1 and H2 would not make existing single-family homes illegal or nonconforming under the zoning code or discourage the production of new single-family homes in the areas currently zoned RL-RT2. In fact, H1, H2, and the updated RL are actually “pro-single-family housing” in that the districts encourage infill development behind (in the backyard), and to the side of, existing single-family homes and two- to four-unit homes.

In addition to new infill development, proposed zoning districts H1 and H2 also call for the **“reuse and/or conversion of existing homes...without having to demolish existing viable housing.”** Given the high cost of construction, it is likely to be much easier financially to adapt or convert all or a portion of an existing residential structure to add one or more new dwelling units if permitted by the zoning district; additionally, a conversion approach may be a strategy for providing additional housing options that is **sensitive to the existing neighborhood context**, consistent with Comprehensive Plan policies LU-42, H-47 and H-50.

Given the current state of housing scarcity, conversion and reuse of existing homes and infill new construction will both play an important role in providing more neighborhood-scale housing in existing neighborhoods. Depending on details, such homes might be considered principal dwelling units that are subject to dimensional standards such as minimum lot area per unit, or accessory dwelling units developed in conjunction with a single-family home, either as one single attached unit, or a detached structure with 1-2 accessory dwelling units.¹

Additionally, the impacts of the proposed zoning changes will be mostly long-term, but some short-term impacts may be seen. The draft ordinance aims to **strike the right balance of encouraging more neighborhood-scale housing to be developed over the long term on lots throughout the**

¹ In the proposed zoning amendments, *existing* single-family homes have a special provision that permits up to two attached ADUs by right. This contrasts with the proposed requirement for *new* single family homes, which may have either one attached ADU, and one detached ADU; or, two detached ADUs.

city, while also managing change and displacement pressures on existing neighborhoods and residents today and over time.

Q3: How does this study's recommendations relate more specifically to the City's Comprehensive Plan growth forecasts and the Metropolitan Council's regional policy guidance?

Per the Metropolitan Land Planning Act, cities are required to update their zoning codes in line with their adopted comprehensive plans, or at least ensure there is no conflict. More specifically, Minnesota Statutes [473.858 Comprehensive Plans; Local Governmental Units](#) Subd. § 1. *No conflicting zoning, fiscal device, official control*, states, in part, "If the comprehensive municipal plan is in conflict with the zoning ordinance, the zoning ordinance shall be brought into conformance with the plan by local government units in conjunction with the review and, if necessary, amendment of its comprehensive plan required under section 473.864, subdivision 2." The 1-4 Unit Housing Study Phase 2 conclusions reflect implementation of this statute by recommending amendments to bring the City's zoning ordinance more in line with policies supporting missing middle, family-sized, and affordable housing of the city's 2040 Comprehensive Plan.

According to the Saint Paul 2040 Comprehensive Plan, the general housing unit development estimates based on identified opportunity sites of generally one acre in size or more (**Figure LU-6** below) are a range of 12,410-46,100 housing units in the city by 2040. The Comprehensive Plan's **Figure LU-6** numbers are estimated based on many broad assumptions, and the timing of redevelopment is a best guess based on current market dynamics and planning activities. This total development range more than meets the City's forecasted household growth of 12,700 additional households between 2020 and 2040. However, the Comprehensive Plan guides the vast majority of the city's growth toward a geography that does **not** overlap with sites being proposed for rezoning by this 1-4 Unit Housing study: While the majority of the city's housing growth – 8,510-34,040 units (constituting approximately 69-74% of the growth) – are estimated to be developed in the areas guided **Mixed Use** by 2040, a lower range of 3,780-11,340 units are estimated to be developed in areas guided **Urban Neighborhood** by 2040, where the lion's share of sites recommended to be rezoned to H1 and H2 by this study are located.² Described differently, there are over 42,000 sites recommended to be rezoned to H1 and approximately 22,000 sites recommended to be rezoned to H2 in the 1-4 Unit Housing Study, generally located within Urban Neighborhood-guided areas. Sites guided as Mixed Use, where most of the city's housing growth is guided by the Comprehensive Plan, tend to be zoned B Business or T Traditional Neighborhood district, and these districts are not proposed to change with this study. The few lots recommended to be rezoned to H2 and guided as Mixed Use represent a minority of this land area (less than 3% of the 5,377 total Mixed Use-guided lots that equate to 851 total acres of Mixed Use-guided area). H2 sites can only be developed at a by-right development density of 5 units, generally representing a density of 44 units/acre, a medium-

² According to this plan, larger sites (1 acre or greater) in the City's Urban Neighborhood-guided area would constitute between 25%-31% of citywide housing growth by 2040, with Mixed Use-guided area constituting approximately 69-74% of citywide housing growth. That said, most lots recommended to be rezoned to H1 and H2 are smaller than 1 acre in size, are represent a lower amount of growth not accounted for in Figure LU-6 given their smaller size and density restrictions of 4 and 5 units, at maximum.

density level that falls slightly below the Mixed-Use density range called for in the plan of 50-200 units/acre.

Figure LU-6: General Housing Unit Development Estimates and Timeline Based on Opportunity Sites*

2040 Land Use	Density Range	Percent Housing**	2019-2020		2021-2030		2031-2040		TOTAL	
			Acres	Development Estimates	Acres	Development Estimates	Acres	Development Estimates	Acres	Development Estimates
Downtown	50-300 units/acre	30%	1.9	29-171	6.1	92-549	0.0	0	8.0	120-720
Mixed-Use	50-200 units/acre	40%	37.4	749-2,992	193.6	3,872-15,488	194.5	3,890-15,560	425.5	8,510-34,040
Urban Neighborhood	20-60 units/acre	90%	0.7	13-38	75.1	1,352-4,055	134.2	2,416-7,247	209.9	3,780-11,340
TOTAL			40.1	789-3,201	274.8	5,315-20,092	328.7	6,306-22,807	643.5	12,410-46,100

* The purpose of this table is to satisfy Metropolitan Council's requirements to illustrate development capacity for population growth estimates. The figures in this table are estimated based on many broad assumptions. Timing of redevelopment is a best guess based on current market dynamics and planning activities. Redevelopment sites included in the analysis were generally larger than one acre. Given the location and size of Opportunity Sites, density ranges are assumed to be in the "At Neighborhood Node" range identified in Figure LU-4. This information is likely to be less accurate over time as market conditions and redevelopment sites change. Some sites may have an approved master plan which guides development and will provides a more accurate development estimate. Industrial land use is not included in the table because it is not a location for substantial housing production.

**From Figure LU-3

Note however, that **Figure LU-6** does **not** generally account for growth on lots smaller than one acre, effectively ignoring the housing production possible on all average and smaller-sized lots (in the 4,000-7,500 square foot range) proposed to be rezoned to H1 and H2. Like broad assumptions underlying Figure LU-6, the timing of redevelopment is a best guess based on past production, current market dynamics, zoning, and planning activities. The answer to question 4 below includes some growth estimates about the proposed H1-zoned and H2-zoned properties that are mostly guided as Urban Neighborhoods.

The Metropolitan Council provides minimum density targets for metropolitan communities, including an overall minimum requirement for communities based on their community designation. Additionally, the Metropolitan Council's Regional [Transportation Policy Plan](#) (TPP) and [Local Planning Handbook](#) (LPH) "...requires that areas planned for new development or redevelopment near transit meet average minimum residential densities. Density requirements vary by transit type and community designation. The TPP has residential density requirements for station areas along fixed or dedicated transitways as well as highway bus rapid transit. In addition, there are residential density requirements for areas near Arterial BRT as well as along local bus routes that are part of the High Frequency Network.³ Additionally, per the LPH, "communities must plan for minimum residential densities that are consistent with the type of transit and their community designation." Saint Paul's community designation is "Urban Core/Center", requiring overall development densities of 20 units/acre. Additionally, there are transit-related minimum densities in the TPP and LPH (**Table 1** below) and recommended transit density targets may be exceeded in an individual project (**Table 2** below):

³ Density & Activity Near Transit. Local Planning Handbook, Metropolitan Council, January 2018.
<https://metro council.org/Handbook/Files/Resources/Fact-Sheet/LAND-USE/Density-and-Activity-Near-Transit.aspx>

Table 1. Average Minimum Residential Density Requirements (dwelling units per acre)

Right-of-Way Type	Transit Type	Geography	Urban Center	Urban	Suburban	Suburban Edge / Emerging Suburban Edge
Fixed or Dedicated Transitway	Light Rail Transit Commuter Rail Dedicated BRT	half-mile radius	50	25	20	15
Highway Transitway (MnPass / HOV)	Highway BRT	half-mile radius	25	12	10	8
Shared Rights-of-Way	Arterial BRT	quarter-mile radius	15	15	15	15
	Local Bus Routes on High Frequency Network	quarter-mile along route	10	10	10	10

Table 2. Target Residential Densities (dwelling units per acre)

Right-of-Way Type	Transit Type	Geography	Urban Center	Urban	Suburban	Suburban Edge / Emerging Suburban Edge
Fixed or Dedicated Transitway	Light Rail Transit Commuter Rail Dedicated BRT	half-mile radius	75-150+	50-100+	40-75+	40-75+
Highway Transitway (MnPass / HOV)	Highway BRT	half-mile radius	40-75+	25-50+	20-40+	20-40+
Shared Rights-of-Way	Arterial BRT	quarter-mile radius	20-60+	20-60+	20-60+	20-60+
	Local Bus Routes on High Frequency Network	quarter-mile along route	15-60+	15-60+	15-60+	15-60+

The Saint Paul 2040 Comprehensive Plan, approved by the City Council in November 2020 after being accepted by the Metropolitan Council as consistent with the regional policy plan, includes the minimum densities required by the TPP and LPH, *and* the recommended target residential densities near transit – these are located in **Figure LU-5** of Saint Paul’s Comprehensive Plan:

Figure LU-5: Metropolitan Council's Regional Transit Density Targets*

Distance from transit	Transit type	Min (units/acre)**	Target (units/acre)***
1/2 Mile	Fixed rail transitway	50	75-150
	Bus rapid transitway	25	40-75
1/4 Mile	Arterial bus rapid transit	15	20-60
	High-frequency transit	10	15-60

*Average for new development in areas identified in a station area plan as appropriate for redevelopment.
 **Minimum represents an average goal for new development.
 ***Individual projects may be less than or exceed targets.

The proposed densities of H1 and H2 districts are also consistent with the base densities and target residential densities near transit as called for in the city's Comprehensive Plan and consistent with the Metropolitan Council Thrive MSP 2040. As shown in **Figure 3** below, the by-right development density achievable in H1 and H2 falls well within the ranges called for in the Comprehensive Plan: Lots developed at the maximum by-right under H1 – 4 units at a development density of 29 units/acre – are within the “Base range” for areas guided as Urban Neighborhood (7-30 units/acre), and lots developed at the maximum by-right under H2 – 5 units at a development density of 44 units/acre – are within the ‘At Neighborhood Node’ range for areas guided as Urban Neighborhood (20-60 units/acre). Again, consistent with the city's comprehensive plan, this study only recommends H2 for properties within 1/8 of a mile of Neighborhood Nodes and fixed transit such as LRT and BRT (Green Line, A Line, Gold Line, Purple Line ending at Maryland Avenue, Riverview, G Line, H Line), as well as within 1/8 mile of some high-frequency routes (Randolph/ East 7th routes, routes 63 and 64). This density range (20-60 units/acre) is the same as the Metropolitan Council's recommended target density range in the TPP for areas within ¼ mile of arterial bus rapid transit (20-60+ units/acre). H2 sites will fall within the appropriate density ranges as they are by definition within 1/8 mile of a Neighborhood Node, and/or within 1/8 of fixed or frequent transit service.

In sum, H1 and H2-recommended lots have density caps of 4 and 5 units by-right and are almost entirely located in the city's Urban Neighborhood areas, which is the lowest-density-guided area of the city. The proposed H1 and H2 densities are consistent with base densities and target residential densities called for in the city's Comprehensive Plan and consistent with the Metropolitan Council Thrive MSP 2040, including the Transportation Policy Plan's recommended target densities near transit. **H1- and H2-zoned lots will collectively not be the source of the majority of the city's housing growth by 2040.**

Figure 3. Density analysis of proposed H1 and H2 zoning districts (by-right, & density bonus)

	H1	H2	Comparison to Residential land use density range in 2040 Comprehensive Plan
Minimum lot size per unit (square feet)	1,500	1,000	
Minimum lot size per unit (acres)	0.034	0.023	
By-Right Scenarios:			
Maximum number of units on a lot*, allowed by right	4	5	By-right maximum density for H1 is consistent with Urban Neighborhood "Base Range" of 7-30 units/acre. By-right density for H2 is consistent with Urban Neighborhood "At Neighborhood Node" range of 20-60 units/acre.
Maximum density, allowed by right (units/acre)	29	44	
Density Bonus (+1 unit) Scenarios:			
Maximum number of units on a lot, including bonus of 1 unit*	5	6	Density with bonus for H1 and H2 is consistent with Urban Neighborhood "At Neighborhood Node" range of 20-60 units/acre.
Maximum density, including bonus of 1 unit (units/acre)	36	52	
Density Bonus (+2 units) Scenarios:			
Maximum number of units on a lot, including bonus of 2 units*	6	N/A	Density with bonus for H1 is consistent with Urban Neighborhood "At Neighborhood Node" range of 20-60 units/acre. Density bonus for H2-zoned lots caps out at 6 units (see bonus of one unit for calculation for H2).
Maximum density, including bonus of 2 units (units/acre)	44	N/A	

Notes: *Assumes lots meets the minimum lot area for 4 units for H1 or 5 units for H2.

Q4. How much housing is likely to be constructed as a result of the proposed zoning ordinance changes?

Maximum build-out under the area guided as Urban Neighborhoods is highly unlikely, even by 2040. Recent experience in Saint Paul with ADUs and other development, and in Minneapolis with zoning amendments that expand low density housing options, as well as financial case studies that consider market conditions suggests that actual housing construction as a result of this study's zoning changes will proceed slowly in Saint Paul. Market dynamics such as available real estate, the choices and motivations of individual property owners, their ability to finance construction, achievable market rents and for-sale pricing, and whether individual projects can at least financially pencil and/or receive a more typical market rate of return are also critical factors to determine the amount of housing that might reasonably be expected.

Below are discussions that inform the amount of housing that may be expected to be produced.

Peer community case study. The City of Minneapolis adopted similar zoning amendments to the proposed amendments of this zoning study at the beginning of 2020 that more widely permitted duplexes and triplexes throughout the city, including in the lowest-density residential districts. While Minneapolis has a stronger housing market than Saint Paul, the changes in permit and zoning review activity that Minneapolis experienced following the zoning amendments offer a point of comparison for what to potentially anticipate in Saint Paul following the adoption of this similar ordinance. **Figure 4** below shows the number of building permits issued for duplexes and triplexes by the City of Minneapolis over the three-year period since the zoning amendments, a total of 74 duplexes and 28 triplexes. Forty-six (46) percent of duplexes and 29% of triplexes resulted from alterations to existing buildings. On a **per-year basis**, there were approximately **25 duplexes and 9 triplexes**, which is a total of **50 units in duplexes and 27 units in triplexes** per year. **Figure 5** shows the number of ADU projects that received zoning review in Minneapolis since ADUs were legalized in the city in 2015. Since the 2020 zoning changes, the average number of ADU projects per year dropped from 37 to 15.

City of Saint Paul Department of Safety and Inspections staff finds that historically, volume of development in Saint Paul is approximately 25-35% of the volume of development that Minneapolis experiences and would anticipate 1/3 of the increase in volume that Minneapolis has experienced.

Figure 4: Duplex and Triplex Building Permits Issued 2020-2022, City of Minneapolis

	Duplexes	Triplexes
New Construction	40	20
Alteration to existing buildings	34	8
Total	74	28

Figure 5: Accessory Dwelling Unit (ADU) Projects that Received Zoning Review(s), 2015-2022, City of Minneapolis

	Total	Attached/Internal	Detached
2015	37	25	12
2016	47	15	32
2017	30	14	16
2018	33	20	13
2019	39	21	18
2020	15	6	9
2021	17	7	10
2022	13	3	10
	231	111	120

Note: A slightly smaller number of projects obtained a building permit and were complete

Recent development in Saint Paul. Over the five-year period from August 2018 to August 2023, there were 502 new construction and addition/renovation permits for properties with one to six dwelling units. Shown in **Figure 6**, the majority of these permits, 88%, were for new single-family homes and there were 18 new duplexes, two new triplexes, two new fourplexes, and two new fiveplexes. Many of these are the result of demolishing an existing residential structure, but the exact number is not available because many demolitions are outside the date range for which staff can readily query digitized data. Twenty permits were for the conversion of a single-family home to a duplex and there were eight permits for an addition to or a remodel of a 3-5-unit building that resulted in adding at least one dwelling unit.

The permits for new single-family homes include both detached and attached single-family homes. Forty (40) percent of new homes were built in RL-R4 one-family districts, 24% were built in RT1 two-family or RT2 townhouse districts, 8% were built in RM1-RM2 districts, and 28% were built in a different zoning district, the most prevalent being in a Traditional Neighborhood (T) district or part of the townhouse (single-family attached) development in a Ford (F) district. The RT1 two-family district was where the greatest number of new duplexes (8) were built; four were built in the T2 district, three were built in the RM2 district, two were built in the RT2 district, and one was built in the T3 district. Half of new multi-unit buildings with three to six units were built in the T2 district and there was one built in RT2, RM2, and OS districts.

As illustrated in **Attachment A** of this document, the neighborhoods experiencing the most development of new single-family homes include Highland Park (35% of new single-family permits), mostly attributed to the new single-family attached (townhouse) development at Highland Bridge, Payne-Phalen (17%), North End (8%), Macalester-Groveland (7%), and Dayton's Bluff (5%). The neighborhoods experiencing the most development of new 2-6-unit homes include North End (21% of new 2-6 unit permits), Summit University (17%), Macalester-Groveland (17%), and Payne-Phalen (13%).

A 2019 Land and Zoning Analysis demonstrates a total of 71,460 lots that are zoned residential (RL-RT2, RM1-RM3) and traditional neighborhood (T1-T4). Using the five-year permit data above, 0.62% of residential and traditional neighborhood lots saw development of a new single-family home over a five-

year period. Using the average of 88 new single-family homes per year, 0.123% of residential and traditional neighborhood lots saw development of a new single-family home per year. Based on the 55 permits received for properties with two to six dwelling units, including new construction 2-6plexes and the addition or remodel that added at least one dwelling unit or the addition of an accessory dwelling unit (ADU), 0.08% of these lots over the five-year period or 0.015% of these lots per year saw 2–6-unit development.

Figure 6: 1-6 Unit Building Permits Issued August 2018-August 2023, City of Saint Paul

	Single-family Homes	Duplex	Triplex	Fourplex	Fiveplex	Sixplex
New Construction	440	18	2	2	2	0
Dwelling resulted from an addition or remodel that added at least one unit	N/A*	20	5	1	1	1

*The permit data also includes 17 additional permits for a remodel or addition, three of which included the addition of an accessory dwelling unit (ADU).

Financial pro forma case studies. The consultant team for this study prepared financial pro forma case studies for different housing developments on common 40'- and 50'-wide city lots. Housing development today faces high land and construction costs, and prospective buyers and developers face mortgage rates that are at an all-time high. Additionally, there are few completely vacant or undeveloped lots that are available and development-ready; many of these potential lots require additional costs such as site clean-up or demolition of a dilapidated home. Overall, the case studies demonstrate that in many cases, it **does not make financial sense to tear down an existing home to construct higher-density housing**, especially if it would only increase the number of housing units on the lot by one or two units.

For-sale/ownership housing case studies

While resulting sales prices for new ownership housing generally are high due to the high construction costs and are mostly affordable to middle-income and upper-middle-income households, the case studies indicate that it is possible to serve homebuyers at 60-80% of the area median income (AMI)⁴, especially with sufficient density permitted by zoning, and in some cases, subsidy. The status quo, existing, modestly sized single-family home serves similar affordability, but is in low supply in the market.

In the case of new twin home with three-bedroom, three-bath, 2,560 square foot units, the pro forma indicates a sales price of \$590,000 for each unit, which is affordable to high-income households earning \$184,375. This example, however, assumes demolition of an existing house, a detached garage, and three bathrooms, which is not necessarily a housing type that would be produced in all contexts. The developer fee (sometimes called the “construction management fee”, the fee a developer takes to cover overhead and sometimes contributes to the profit for the project) assumed for this project is 5% of the project cost, about \$25,000, which may be sufficient to motivate a non-profit or small-scale developer, but not necessarily a large-scale, market-rate developer.

⁴ The area median income (AMI) for a family of four was \$118,200 in 2022. For more information:

<https://metro council.org/Housing/Planning/Affordable-Housing-Measures/Ownership-and-Rent-Affordability-Limits.aspx>

In the case of the new construction fourplex and sixplex with three-bedroom units, the sales price affordable to middle-income households (100% of AMI) is \$378,000 for each unit; this results in a negative rate of return for the fourplex and a very low rate of return for the sixplex; however, by achieving a market-rate of return of 15%, it would yield a sales price affordable to slightly higher-income, middle-income households – 118% of AMI for the fourplex and 115% of AMI for the sixplex. Considering a non-profit developer scenario, a family-sized fourplex and sixplex with three-bedroom units, the sales price of \$309,000 that is affordable to four-person households earning \$94,600 (80% of AMI) results in a funding gap per door of \$91,709 for the fourplex and \$82,0079 for sixplex. The density increase from four units to six results in a 11% decrease in the funding (subsidy) gap needed per unit.

Whether for-sale developers would choose to develop **market-rate ownership housing types** (affordable to middle income buyers at 115-118% of the AMI) **within a 4-6 unit building format** in the short- to medium-term is a question Planning staff have. While this study's pro formas show these projects penciling, other factors are important as well, including market risks related to evolving buyer preferences and limited real estate comparables for such projects today. There are almost no small multi-family ownership projects happening in Saint Paul apart from limited townhomes, and there are high interest rates affecting both developers and buyers that discourage such development. The same might be expected of nonprofit affordable housing developers supporting affordable for-sale projects in the 80-115% of AMI range. Given the above, and the applicability of the more complex Minnesota Building Code to 3-or-more unit residential projects compared to the Minnesota Residential Code that applies to **single-family plus ADU/double ADU and twinhome** projects, these **latter 1-2 unit types are more anticipated in the current market** (the latter avoids the costly homeowner association requirement of townhome developments of greater than two units), and possibly cluster developments of similar, 1-2 unit housing types on larger sites.

Rental case studies

Monthly rents for new construction rental units are generally higher than Saint Paul median rents, but in many cases, new construction could still be supportable by rent levels that are affordable to low-income households. That said, many of these case studies analyzed in this study would not be considered viable development projects by large-scale market-rate developers and accredited investors motivated by more significant profit goals and 15-18% financial returns; as such, these players are not likely to be interested in investing in these projects. Rather, local developers or "community builders" with existing equity who are not looking to make a large return but want to improve their neighborhood and address the housing shortage are more likely to be motivated to undertake these projects.

For example, a fourplex with a backyard unit above a garage (five total homes on a lot), projects monthly rents for the 2-bedroom units ranging from \$1,800 to \$1,900, which is greater than the median Saint Paul two-bedroom rent. These are affordable to households at just over 70% of the AMI. The project results in a 6.5% return on project cost, 6.5% cash on cash return, 1.34 debt service coverage ratio, and 1.4% IRR over 10 years. A new construction double duplex with backyard unit above a garage (five homes on a lot), projects monthly rents for the one-bedroom units in the duplex of \$1,350 and \$1,400 for the garage unit, which are both greater than the median Saint Paul one-bedroom rent. These rents are affordable to one-person households earning \$54,000-\$56,000 (i.e., a household between 60-70% of AMI); or a 2-person household earning 50-60% of AMI. The project results in a 6.1% return on project cost, 5.0% cash on cash return, 1.26 debt service coverage ratio, and 6.4% IRR over 10

years. With such low rates of return, these projects are not considered viable development projects by market-rate developers and accredited investors.

A new construction fourplex with two-bedroom units and mixed-unit sixplex with two three-bedroom units and four two-bedroom units with rents affordable at 100% of AMI (\$2,267 for the fourplex units and \$2,616 for the sixplex units) results in an IRR just over 11%. An 11% IRR, which might result in the two-bedroom rents priced at \$2,180 being affordable to households earning \$87,200 (i.e., a three-person household just over 80% of AMI) and the three-bedroom rents priced at \$2,567 being affordable to households earning \$102,680 (i.e., a five-person household just over 80% of AMI).

The above rental case studies, where feasible, lead to market rents on the higher side – i.e. closer to 80% AMI where affordable and above this – and such rents would likely not be deemed “acceptable” by many tenants in Saint Paul’s rental housing market. Along with the low rates of return of these projects, this suggests that **4-6 unit new construction rental may be less likely**. Planning staff anticipates that conversions and additions resulting in 1-3 additional rental units on a lot or within an existing building may be more likely in the market, assuming renovation costs can be managed, and lending is accessible for such projects.

Owner-occupied with rental unit(s) case studies

While the cost to add one or two rental units to an existing property is substantial, the rental income generated from it can off-set enough long-term costs to make it worthwhile for the owner-occupant. According to the consultant’s pro formas, adding backyard ADUs to a property with an existing home is estimated to cost \$175,000 for one ADU and \$265,000 to add a new double ADU. The projected monthly rent for a one-bedroom unit in the ADU (\$1,250) is slightly above the median Saint Paul one-bedroom rent (\$997), and the projected monthly rent for a one-bedroom unit in a double ADU (\$1,000) is close to the median Saint Paul one-bedroom rent, according to HousingLink, October 2022. These rents are affordable to households at 50-60% of AMI. These cases are examples of community wealth-building, in which a local homeowner or community-focused developer may invest in incremental development and support the housing supply.

Anticipated development. **Figure 7** below shows the percentage of proposed RL-H2 lots that would be permitted to have a total of 2-6 units and the minimum lot size required for each number of units based on the proposed lot area per unit standards (9,000 sf/unit for RL, 1,500 sf/unit for H1, 1,000 sf/unit for H2). Less than 2/3 of lots proposed to be rezoned RL are large enough to have the maximum by-right amount of two units. Only about half of the lots proposed to be rezoned H1 are large enough to have the maximum by-right amount of four units on them. Most H1 lots (93%) are large enough to support three units by right. Most H2 lots (93%) are large enough to allow 4 units by right and only about 2/3 of H2 lots are large enough to get the maximum by-right amount of 5 units on them.

Figure 7. Percent of RL-H2 lots that would be permitted 2, 3, 4, 5, or 6 principal units and the minimum lot size required based on the proposed lot area per unit standards

		2 Units	3 Units	4 Units	5 Units	6 Units
RL	Percent of lots:	63%	N/A	N/A	N/A	N/A
	Minimum lot size required:	18,000 sq. ft.	N/A	N/A	N/A	N/A
H1	Percent of lots:	99%	93%	51%	51%*	51%*
	Minimum lot size required:	3,000 sq. ft.	4,500 sq. ft.	6,000 sq. ft.	6,000 sq. ft.*	6,000 sq. ft.*
H2	Percent of lots:	99%	98%	93%	65%	65%*
	Minimum lot size required:	2,000 sq. ft.	3,000 sq. ft.	4,000 sq. ft.	5,000 sq. ft.	5,000 sq. ft.*
<i>Source:</i> Ramsey County Parcel Data <i>Notes:</i> "Percent of lots" refers to the percentage of lots larger than 1,000 sq. ft. that are not split-zoned. Except for the 5 Units and 6 Units columns, "minimum lot size required" refers to the minimum lot size required for projects not utilizing a density bonus*. *Development would need to utilize density bonus to be permitted a maximum of 5 or 6 units in H1 or 6 units in H2.						

Based on the above analysis, Planning staff estimates the following for the proposed H1 and H2 districts:

- There are approximately 63,700 lots proposed to be rezoned to H1 and H2 in the city. Applying the per-year rate of 0.123% of residential and traditional neighborhood lots that experienced development of a new single-family home (based on 2018-2023 permit data discussed on pages 8-9) to the 63,700 H1 and H2 lots, approximately 78 new single-family homes in the H1 and H2 districts could be anticipated each year.
- There are approximately 42,300 lots proposed to be rezoned to H1 in the city. Applying the per-year rate of 0.015% of residential and traditional neighborhood lots that experienced development of 2-6 dwelling units (based on 2018-2023 permit data discussed on pages 9-10), approximately seven 2-6-unit developments in the H1 district could be anticipated each year. To account for the 0.015% rate being based on current zoning districts that heavily restrict 2-6-unit development, quadrupling this rate to 0.06% and applying it to the proposed H1 lots results in approximately 28 2-6-unit developments per year.
- There are approximately 21,400 lots proposed to be rezoned to H2 in the city. Applying the per-year rate of 0.015% of residential and traditional neighborhood lots that experienced development of 2-6 dwelling units, approximately three 2-6-unit developments in the H2 district could be anticipated each year. Quadrupling this rate to 0.06% and applying it to the proposed H2 lots results in approximately 12 2-6-unit developments per year.
- Based on 2018-2023 permit data, approximately 390 new single-family homes and 50 2-6-unit developments (conversion/addition/new construction) would be expected over a five-year period in the H1-H2 districts. Assuming most development would occur on lots with at least one existing dwelling unit, this would be an increase of 50 to 250 units over a five-year period. Under a higher growth scenario assuming four times more growth (an 0.06% rate) for 2-6-unit development would mean the addition of 200 to 1,000 units over a five-year period.

Q5. How were potential changes to stormwater runoff and stormwater and sanitary conveyance infrastructure considered in this study?

Increased precipitation and frequency of more intense precipitation is one hallmark of climate change in Minnesota, and the impact of additional impervious surface on surface water management systems is an important consideration when planning for additional residential buildings. Impervious surface is

any constructed hard surface that prevents the entry of water into the soil. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads ([SPLC Sec. 52.03](#)). As impervious surface increases, less rainfall, snowmelt, and irrigation runoff (collectively called “stormwater”) is able to infiltrate into the soil. This water instead generally flows overground and into the City’s stormwater conveyance system. Drainage onto neighboring properties is prohibited by the zoning code, which requires that new development retain pervious surfaces – e.g., materials that permit infiltration of stormwater into the ground, including planted areas, permeable pavers, or porous asphalt – sufficient to allow most stormwater to bypass the sewer system.

The proposed allowances for impervious surface are similar to what is currently allowed by ordinance for maximum lot coverage. Proposed limits are also based on national and state standards for design of stormwater infrastructure, the same standards generally used by the City of Saint Paul in designing stormwater conveyance. In the current R1-R4 one-family districts, there is a 35% maximum lot coverage for principal structures (currently limited to single-family homes). For accessory buildings such as ADUs and garages, there is an additional 35% maximum lot coverage of the rear yard that only applies to one-family and two-family lots, and the maximum lot coverage of parking pavement (maximum 15% of lot or 1,000 square feet, whichever is less) also only applies to one-family and two-family lots. Significantly, there are currently no maximum building lot coverages for principal buildings in the RT1 two-family and RT2 townhome districts, but both the proposed H1 and H2 districts would limit maximum lot coverage to 45-50%. Similarly, there is also no current maximum lot coverage for principal buildings in RL, but the proposed RL standards would include a proposed building lot coverage maximum of 40%. In the R1-R4 one-family zoning districts in Planning Districts 14 and 15, there is currently a maximum lot coverage of 40% for all buildings, including accessory buildings. A similar standard is proposed to be applied to the RL, H1, and H2 districts, which have a lot coverage maximum of 40%, 45%, and 50% respectively for all buildings, with 5% additional coverage for cluster developments and those developments where a density bonus is awarded. It should be noted that structural stormwater treatment best practices—such as constructed rainwater gardens, vegetated swales, and buried infiltration tanks—all involve cost. Allowance for increased residential density creates the opportunity to more than off-set these costs through increased value of development on a given parcel, creating greater financial feasibility for improved stormwater practices relative to traditional single-family home development.

Figure 8 below analyzes various existing zoning scenarios within one-family districts (RL-R4) in which the lot’s building coverages are maximized per the current regulations. Note that existing zoning regulations permit:

- A 35% maximum lot coverage for principal buildings
- A 35% maximum coverage of the rear yard for accessory buildings
- A 1,200 sq. ft. footprint maximum applicable to ADUs and all other accessory buildings like garages and sheds (*note that ADUs are proposed to be exempt from the 1,200 sf accessory building maximum under the new regulations*)

Figure 8. Analysis of Maximum Lot Coverage of Buildings: Current lot coverage maximums permitted under current RL-R4 zoning regulations on specific lots and how they compare to proposed H1-H2 zoning regulations.

Existing Zoning District	Min. lot area per one unit (sq. ft.)	40' lot width	50' lot width	60' lot width	70' lot width	80' lot width	90' lot width	100' lot width
RL	21,780							
R1	9,600					42%	43%	44%
R2	7,200			42%	44%	45%	46%	47%
R3	6,000		42%	44%	45%	47%	48%	50%
R4	5,000	42%	44%	46%	47%	49%	51%	53%

Key to Figure 8: Is the **proposed maximum lot coverage for all buildings** under H1 (45%) and H2 (50%) on these individual lots **more, about the same, or less restrictive** than the maximum lot coverage under current RL-R4 zoning regulations?

- Scenarios are not allowed under current zoning regulations
- Proposed maximum lot coverage is less restrictive than current
- Proposed maximum lot coverage is about the same as current
- Proposed maximum lot coverage is more restrictive than current

Notes: Existing lot coverage assumes a single-family detached home plus a detached accessory building that each maximize their allowed lot coverage. Proposed lot coverage under the 1-4 Unit Zoning Study Phase 2, principal and accessory buildings: 45% (H1), 50% (H2).

Currently, the maximum lot coverage of parking paving applies only to one-family and two-family dwellings and includes only surface parking spaces and not driveways. The proposed standards (10% maximum for lots on alleys and corner lots and 15% for all other lots) apply the maximum parking paving lot coverage to lots with up to 6 principal dwelling units and also include driveways in the calculation. The inclusion of driveways in the calculation makes the proposed regulation more restrictive than current requirements. When the proposed maximum building lot coverage is added to the proposed surface parking and driveway lot coverage, the resulting total coverage is 50-60% for RL, 55-65% for H1, and 60-70% for H2, which depends on whether the lot is on an alley and if the development is by-right or using a density bonus or cluster development. These numbers correspond to Minnesota Department of Transportation (MnDOT) Drainage Manual guidelines for pipe sizing that assume a maximum impervious surface coverage of 65%; this amount also corresponds with general national standards. Exceptions to this would be H2-zoned developments on non-alley lots internal to blocks, and/or lots utilizing the density bonus or cluster development, which would have a 55% maximum building lot coverage and 15% maximum surface parking and driveway paving lot coverage (up to 70% combined). With the proposed H2 zoning district more likely to be located on alleys and cluster developments requiring a 9,600 sq. ft. lot (which is an uncommon lot size), it is anticipated that this combined lot coverage of 70% (building and parking/driveway paving maximum lot coverage) would be uncommon and challenging on a practical level. Due to the added administrative burden for regulatory review relative to the marginal potential increase in impervious surface on a lot, staff and the Planning Commission did not recommend changes to the regulations that exempt open, uncovered porches, decks, and patios of a certain height above the grade from lot coverage maximums.

Overall, it is not anticipated that that the proposed changes to the zoning code will result in substantial negative impacts to water quality. The proposed standards hew closely to existing standards, and in

some cases, newly-introduce maximum building coverage limits where they didn't exist before.⁵ City and watershed district permitting requirements related to stormwater and sanitary conveyance⁶ will still remain in effect. In addition, new regarding vegetation removal and land disturbance within certain parts of the Mississippi River Corridor Critical Area (MRCCA) are anticipated to be adopted in the near future, in compliance with MN State Rules Sec. 6106. The State Rules and anticipated ordinance also require preservation of shorelines, bluffs and other important natural features through structure setbacks and prohibitions on development.

As described in this document, redevelopment in existing neighborhoods is expected to occur incrementally. City staff will monitor development and track any resulting impacts on stormwater runoff and will develop mitigation plans as needed. Consistent with current best practices, City staff will also continue to promote development techniques, such as the use of permeable paving systems or installation of rain gardens and similar green infrastructure methods that may further mitigate the impacts of any increased impervious surfaces. Preserving trees and replacing turf grass with native vegetation that has deeper roots and is better adapted to Minnesota's climate can also help to offset increases in impervious surfaces on a site. Comprehensive Plan policies WR-3, WR-6, and WR-7 provide direction. Further direction and/or funding from policymakers at the local, regional, state, and federal levels to help actively facilitate green development practices would further support these goals.

Q6. How were potential impacts to transportation emissions considered in this study?

The Climate Action and Resilience Plan sets the goal of carbon neutrality by 2050 and to reduce emissions by 50% by 2030, including transportation emissions which account for 31% of all city emissions. The majority of trips taken in Saint Paul are people driving alone in their vehicles, often for distances less than one mile. No- and low- carbon transportation modes, like biking, public transit, rideshare, using a scooter, and walking, all minimize emissions compared with single passenger vehicles. To reduce emissions from single-occupancy vehicles, Key Initiative TM-8, calls to "increase the number of communities that are mixed-use and higher-density."

Incremental, small-scale density increases permitted in the proposed H1 and H2 districts contributes to this initiative and increases the financial viability of more frequent transit service and other less carbon-intensive forms of transportation given the higher number of potential households within Saint Paul neighborhoods that could live in missing middle housing and result in greater demand for such modes. While it is theoretically possible that more households could lead to greater localized pollution of air in Saint Paul due to potential greater single occupancy auto use, the proposed zoning changes may actually have the opposite effect: both residents of Saint Paul and residents of multifamily housing more broadly have lower than average car-ownership rates. Moreover, increased residential density

⁵The EPA has studied and found that for a same amount of housing development, higher-density development generates less stormwater runoff per house at all scales and at all time-series build-out examples. For the same amount of development, higher-density development also produces less impervious cover than low-density development. Additionally, for a given amount of growth, lower-density development affects more of the watershed. *Protecting Water Resources with Higher-Density Development*, US Environmental Protection Agency, 2006. See <https://www.epa.gov/smartgrowth/protecting-water-resources-higher-density-development..>

⁶ Cluster developments and developments with three or more units would also go through the site plan review process, which includes a review by many departments including water resources and sewer utility staff; additionally, for sites that are larger than ¼ of an acre, meeting the city's stormwater runoff rate control is required.

can make transit more efficient by increasing potential ridership along any given route, which may support increased levels of service over time.

The city has relatively low rates of auto ownership, with many households characterized as one or zero car households: 12.5% of City households have no vehicle, and 38.9% of households have only one vehicle available; together, these are over 54% of households.⁷ The vast remainder (one third or 33%) are two-vehicle households. Additionally, more units on a site or block does not always result in substantially more cars. National data shows that on average, apartment residents own fewer cars than single-family homeowners, with the latter averaging two cars per household compared with only one for the former. In fact, the Institute of Transportation Engineers finds that single-family housing generates more automobile trips per household and therefore more traffic than apartments, or more than any other type of housing.⁸

In sum, as opposed to greater use of single-occupancy vehicles that tend to be correlated with detached, single-family housing, more low- or no-car households could instead lead to greater demand for transit and other environmentally-friendly forms of transportation which could increase transit service and encourage usage of other, multi-modal forms of transportation over time, with a self-reinforcing cycle that is a win for air quality. Finally, the regional implications of less spread-out growth on air quality are also very impactful - as transportation is a big cause of climate change (31% of emissions come from transportation per the City's Climate Action and Resilience Plan), and many regional trips impact Saint Paul's air quality given the city's location on the axis of major interstates and state highways.

Q7. How were potential impacts to wildlife considered in this study?

Impacts to wildlife are assessed on a project-specific basis through mandatory environmental review processes. Generally, the best habitat for wildlife in an urban setting occurs in parklands or through intentional planting of native plants and shrubs and/or pollinator-friendly species on individual lots. The overall amount of "green" on a lot is less important than the quality of the plantings for forage and shelter for wildlife.

For **projects receiving funds from the U.S. Department of Housing and Urban Development (HUD)**, all project activities are required to **comply with the National Environmental Policy Act of 1969 (NEPA)**. There are 5 levels of HUD environmental review; Exempt, Categorically Excluded, Not Subject to NEPA (CENST), Categorically Excluded, Subject to NEPA (CEST), Environmental Assessment (EA), and Environmental Impact Statements (EIS). Impact to wildlife is assessed when a project triggers CEST, EA, or EIS level environmental review. Projects that trigger this type of review include, but are not limited to, the acquisition of property, the rehabilitation of residential units, rehabilitation of commercial facilities, new construction of commercial buildings or residential units, or the expansion of existing commercial space. City planning staff consult the U.S. Fish and Wildlife Service (USFWS) to

⁷ American Community Survey, B25044 TENURE BY VEHICLES AVAILABLE; 2021: ACS 1-Year Estimates Detailed Tables, Universe: Occupied housing units

⁸ "Overcoming Opposition to Multifamily Rental Housing." Mark Obrinsky and Debra Stein, Joint Center for Housing Studies, Harvard University, p. 8. Accessed 2.26.23 at https://www.jchs.harvard.edu/sites/default/files/media/imp/rr07-14_obrinsky_stein.pdf.

assess whether proposed project activity will negatively impact **endangered species**. Any potential impacts to endangered species are mitigated through consultation with the USFWS. Examples of mitigation measures include obtaining proper permits to ensure there is no ecological taking of endangered species or delaying certain phases of a project when an at-risk species may be present. The proposed project may be canceled if there is no way to feasibly mitigate impacts to wildlife.

Additionally, the **Minnesota Environmental Policy Act (MEPA)** similarly requires **environmental reviews** to assess impacts to **fish, wildlife, plant communities, and sensitive ecological resources** (rare features). Per Minnesota Administrative Rules 44.10, the Environmental Quality Board provides the format for an Environmental Assessment Worksheet (EAW) and Environmental Impact Statement (EIS). All the following content must be included in an EAW:

- a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.*
- b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Include... the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.*
- c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.*
- d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.*

According to the Minnesota Rules, for cities within the seven-county Twin Cities metropolitan area that has adopted a comprehensive plan under Minnesota Statutes, section 473.859, the threshold for an EAW is 250 unattached units or 375 attached units. As described above, measures must be outlined to avoid or mitigate adverse effects to these species.

When conducting environmental review, city staff often find important but limited habitat for Rusty Patched Bumble Bee, Northern Long-eared Bat, Blanding's turtle and a few other federally- or state-listed threatened or endangered species within the city limits. However, all these species are most likely to occur in larger areas of natural habitat, as opposed to smaller, previously developed and highly disturbed urban lots like the lots proposed to be rezoned to the H1 and H2, which are generally not ideal habitat for such species due to the extent of impervious surface and lot coverage of natural vegetation. However, impacts to certain species may be avoided or minimized in development project based on timing:

- **Rusty Patched Bumble Bees** can exist in certain urban settings but require an abundance of flowering plants/shrubs and overwintering habitat, both generally almost as sparse in maintained turf grass as they are in paved areas. From April through October, the Rusty Patched Bumble Bee uses underground nests in upland grasslands, shrublands, and forest edges, and forages where nectar and pollen are available. If applicable to larger sites, the Minnesota Department of Natural Resources (MN DNR) recommends reseeding disturbed soils

with native species of grasses and forbs where possible using Board of Water and Soil Resources (BWSR) or Minnesota Department of Transportation (MnDOT) seed mixes.

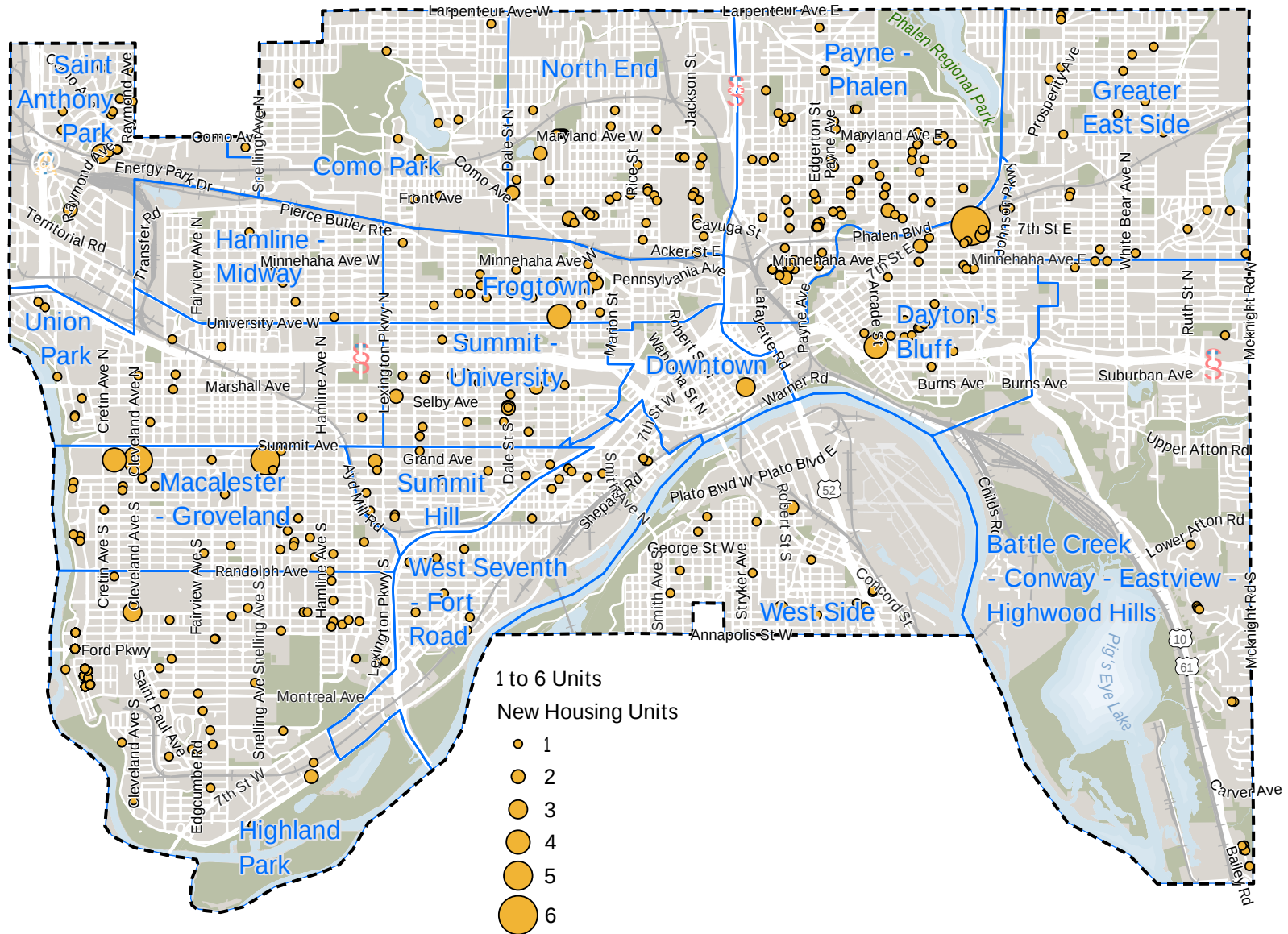
- To minimize impacts to **Northern Long-eared Bat species**, the MN DNR recommends that tree removal be avoided from June 1 through August 15, during the active bat season.

To ensure compliance with federal law, the MN DNR often recommends that development project conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

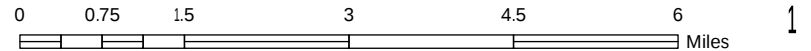
Potential impacts to wildlife can be further mitigated by supporting local, incremental, and minor densification of existing developed urban lots that are largely not significant sites of wildlife habitat. The alternative to accommodating more housing in already-developed urban areas is the construction of housing growth in previously undeveloped areas in the region, which will generally lead to more destruction of suitable habitat for these important species.

New Housing, 1-6 Units from 2018 - 2023

Thursday, September 28, 2023



SAINT PAUL
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DATA CREDITS: St. Paul Enterprise GIS; Parcel Polygons: current Ramsey County data via Minnesota Geospatial Commons; Road and Building Polygons: 2017 impervious surface dataset, Ramsey County; Water bodies via Minnesota DNR. • LIMITATIONS ON USE: This document was prepared by the Saint Paul Planning and Economic Development Department and is intended to be used for reference and illustrative purposes only. This drawing is not a legally recorded plan, survey, official tax map or engineering schematic and is not intended to be used as such. • DATE: 9/29/2023 9:25 AM • DOCUMENT PATH: C:\Users\le37655\City of Saint Paul\PED-Research & Mapping - Documents\Projects\Zoning\Studies\2022 - 1-4 Unit Housing Study\2023-09-22 1-6 Units Data Request for Emma Brown and Luis Pereira\4 - GIS\2023-09-22 1-6 Units Data.aprx