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To: **Kimberley Rigdon, Program Manager**
Western Regional Water Commission

From: Catherine Hansford **Date:** March 15, 2022

Subject: **Regional Water Management Plan New Housing Cost Burden Analysis**

This memorandum provides an update to the original memorandum dated August 25, 2021; however, all of the data used in the calculations are from the original month of source gathering, April 2021. All the findings are relevant as of mid-2021; changes in market conditions since then are not included.

Purpose

This memorandum examines the cumulative effect of development fees for residential development product types in different parts of the Truckee Meadows Service Area (TMSA) to understand the differences in total development costs caused by water-related infrastructure costs in the region. The purpose of this analysis is to summarize what key factors affect financial feasibility of new housing development in different geographic areas and in particular what role water-related fees have on the financial feasibility of new development as each geographic area has unique water-related costs. The analysis also examines the potential role for water-related fees and other fees to incentivize development in the TMSA infill areas (transit-oriented corridors and regional centers).

The analysis contained herein is a high-level analysis and as such it does not provide details as to how each of the fees were determined by their respective agencies, nor does it provide any recommendations for change. The analysis is intended to fulfill Section 42.7 of the WRWC Act, specifically, that "the estimate of cost (of each major facility, source of water or other requirement of the Comprehensive Plan) must state the financial impact on persons within the planning area, including, without limitation, all *direct and indirect costs of connecting* to a system for supplying water".

Methodology

A cost burden analysis and financial feasibility test were developed for Reno, Sparks, and unincorporated Washoe County (the County). The analysis was conducted for five residential land use types: low density residential, medium density residential, compact residential, condominiums / townhomes, and apartments. These land use categories were selected by examining current development activity in the Truckee Meadows. Assumptions for the characteristics of these land

use types are summarized in **Table 1** on the following page. The sizes of lots and building square feet of new units are based on April 2021 residential developments with inventory, or pipeline inventory yet to be released. The analysis describes the housing market in Reno, Sparks, and the unincorporated County areas ***as of early 2021*** using published articles from reputable sources and conversations with local developers.

Table 1
Residential Land Use Characteristics Assumptions

Category		Lot Size Range	Units / Acre Density	Typical Lot Size [1]	Typical Unit Size	Sales Price per Sq. Ft.
		square feet		*square feet*	*square feet*	[2]
LDR	Low Density SF Residential	7,001 - 15,000	5.2	8,370	2,760	$261
MDR	Medium Density SF Residential	4,001 - 7,000	7.4	5,910	2,030	$255
HDR	Compact SF Residential	1,400 - 4,000	18.1	2,410	1,400	$280
LDMF	Condominium / Townhome	n.a.	20.0 +	n.a.	1,309	$311
HDMF	High Density Multi-Family (Rental)	n.a.	40.0 +	n.a.	1,060	$213

Source: HEC.

[1] Used for calculation of TMWA fees.

[2] Imputed price per square foot for apartments.

The 2019 TMRPA Regional Plan presented four scenarios of future development:

1. Classic Scenario under which future development would mimic the past 20 years (including housing types) and units would predominantly be absorbed on vacant parcels.

2. McCarran Scenario under which 25% of projected growth would be located within the McCarran ring, reflecting a modest shift toward residential mix with greater density.

3. Smart Greenfield Scenario under which growth would occur on large vacant tracts with access to existing infrastructure and deliberately preserve open space; there would be greater housing density, and some infill would occur.

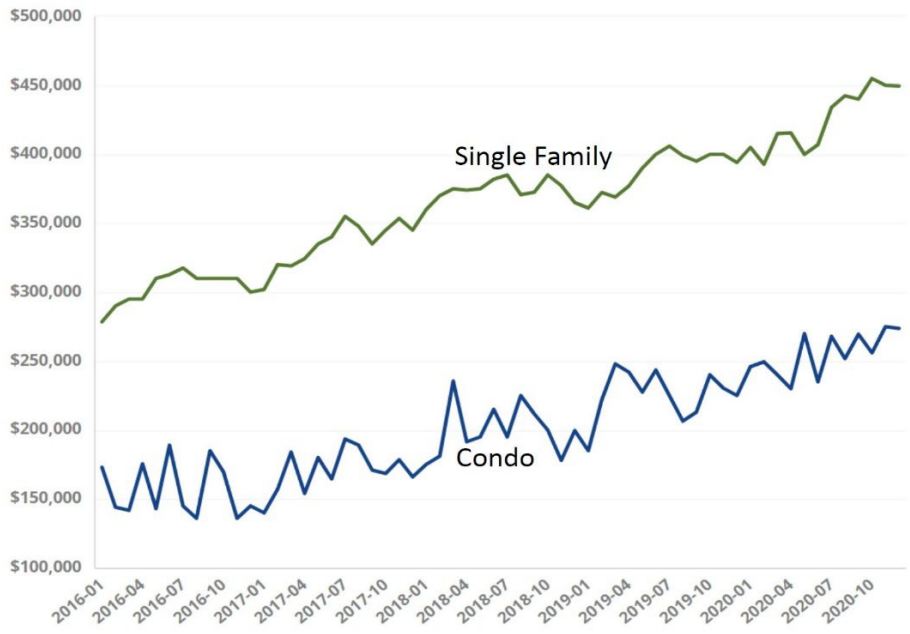
4. Infill Scenario under which growth would occur in already developed areas, mixed use and small lot development would be embraced, and redevelopment in the urban cores with denser housing types would be prioritized.

Although survey results showed the Infill Scenario ranked highest, actual development is proving to be most rapid in the greenfield areas, with the exception of the downtown core in Sparks. Over the last few years, the new housing market has shifted to control by a handful of master developers. The supply of housing has been squeezed by the COVID-19 pandemic; with shortage of lumber delivery, other materials and labor, inventory has been released at a slower pace, causing the price

of new units to increase dramatically, and pushing the 'missing middle' homebuyers[1] to rent apartments and existing single-family housing. As presented in the Building Association of Northern Nevada (BANN) 'Forecast 2021', it is anticipated that the greatest market share of demand in the next 12 months will be for homes ranging in price from $350,000 to $500,000. These homes could be small lot detached residential product or attached townhome or condominium product. Both are included in this feasibility memo.

The TMSA is suffering a classic demand and supply problem for home ownership. The effect of more work-from-home employees (resulting from the COVID-19 pandemic) was to fuel an exodus from the larger cities; in particular, there has been rapid increase in households from California looking to buy in Northern Nevada (BANN reports an additional 50,000 persons relocate from California each year). In addition, interest rates tumbled in 2020, enabling households to afford higher sales prices. Supply has dwindled; according to a Zonda Quarterly Housing Update (Winter 2021) for Reno, there was less than one month's supply of finished vacant homes available coming into spring. The sales price assumptions used in this memorandum reflect ***end of 2020 prices and planned release prices for 2021;*** however, local experts anticipate prices to continue to bump up in 2021 (about 10%) before leveling off. **Figure 1** shows how the median price of single-family homes and condominiums, unadjusted for inflation, in Reno/Sparks have increased over the past five years since the last Regional Water Management Plan update.

Figure 1
Historical Median Price of Homes in Reno/Sparks



[1] Missing middle housing, as defined on missingmiddlehousing.com, is "a range of multi-unit or clustered housing types, compatible in scale with detached single-family homes." Examples include duplexes, fourplexes, cottages, townhomes and bungalow courts.

Average rent for apartments increased rapidly over the past two-year period (December 2018 to December 2020) with rents increasing overall (all unit sizes) from $1,292 per unit to $1,424 per unit. Over the same time period, the overall vacancy rate decreased from 3.64% to 2.82%. This data corroborates what is being seen in the home ownership market; there is an influx of households with income to purchase homes but a lack of supply to meet that demand.

An imputed sales price per unit was calculated for new apartment units as none are currently on the market. **Table 2** estimates a sales price for each new unit of $226,000 using assumptions taken from local apartment data compiled by Johnson, Perkins Griffin Real Estate, as well as National Apartment Association 2020 statistics. The same price is used in this analysis for all three jurisdictions.

Table 2
Imputed Sales Price for New Apartment Units

Item	Reno	Sparks	Unincorporated County
		1,060 sq. ft. / unit	
Monthly Rental Revenue per Unit [1]	$1,569	$1,569	$1,569
Annual Rental Revenue per Unit	**$18,800**	**$18,800**	**$18,800**
Vacancy Rate [2]	2.87%	2.87%	2.87%
Estimated Annual Revenue	**$18,260**	**$18,260**	**$18,260**
Annual Expenses per Unit [3]	$6,956	$6,956	$6,956
Net Operating Income per Unit	**$11,304**	**$11,304**	**$11,304**
Cap Rate	5.00%	5.00%	5.00%
Calculated Property Value per Unit	**$226,000**	**$226,000**	**$226,000**

mf price

Source: Moody's Analytics Multifamily performance metrics May 2020 (cap rate trends), Johnson Perkins Griffin real estate appraisers and consultants, 4th quarter 2020 data for the Reno/Sparks Metro Area, and the 2020 Survey of Operating Income and Expenses in Rental Apartment Communities, published by the National Apartment Association.

[1] Calculated using $1.48 per square foot from Johnson Perkins Griffin apartment survey 4th quarter 2020 for the Reno/Sparks Metro area.

[2] Average vacancy rate was 2.87% in the 4th quarter 2020 for 2 bed, 2 ba. apartments.

[3] Estimated at 37% of gross potential rent.

The following analysis compares the cost of development with current sales prices for each unit to determine financial feasibility of each residential land use type. The analysis only includes market-rate housing; 'affordable' units[2] are not part of the analysis. Residual Land Value is the standard

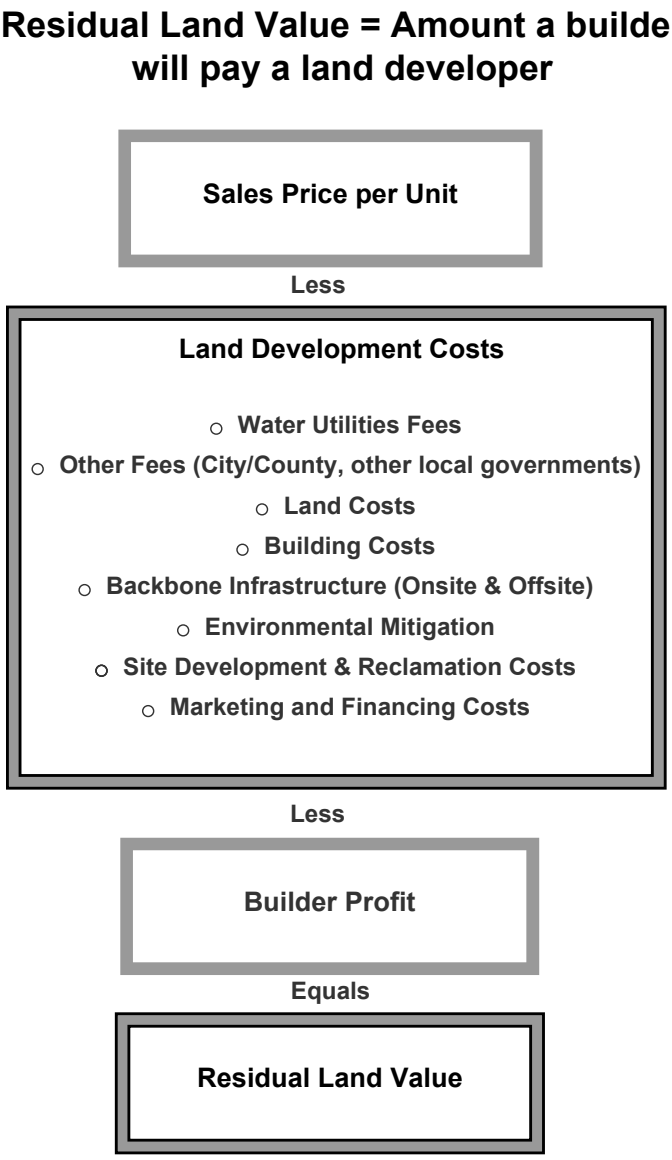
[2] Affordable housing refers to units that can be purchased or rented by households at no more than 30% of their income (plus utilities). Traditionally, new affordable housing units are those units made available to households with annual income below 80% of area median income.

financial feasibility test used by developers, and the Infrastructure Cost Burden analysis provides a metric to evaluate the impact of water-related fees and costs on project profitability.

Residual Land Value Test

The Residual Land Value test is the tool used by real estate developers and investors to evaluate the financial feasibility of different housing unit types and densities on a piece of property. The project must generate a profit (a positive residual land value) to incent land development. **Figure 2** shows the relationship between residual land value and land development cost. The final sales price of a developed property less the development costs and builder profit results in the residual land value, or the price that a builder is able to pay for property and still have a financially feasible project.

Figure 2
Residual Land Value Calculation Illustration



For greenfield projects (developed outside of the urban core or inside the urban core on previously undisturbed land), the sales price of the land must fund the land development costs, which includes purchase of the land, entitlement costs, planning documents, overhead and other soft costs, and a reasonable profit given the costs and risks of entitling the project and paying for necessary infrastructure and environmental mitigation to incent land development. The analysis presented is for greenfield projects and infill pockets that require the same level of planning and preparation to develop.

For infill projects, a builder is buying land that already has public infrastructure in place, although many times the infrastructure requires upgrading or replacement. Land costs are typically higher in infill areas than greenfield areas to reflect the value of the installed infrastructure. Due to the highly variable difference in costs for infill projects, including potential demolition costs of existing structures, the financial feasibility of infill is not presented in this memorandum.

For both greenfield and infill projects, the land value is highly influenced by a combination of current market conditions which affects the level of risk, construction costs, and the level of development fees. Land values can experience dramatic swings between recessionary downturns and economic booms. During the Great Recession finished lots were selling at less than the cost to create a finished lot. In average market conditions, connection/impact fees can greatly influence land prices in some regions. If home prices and other development costs are constant, then an increase in development fees causes a reduction in land price. In hot markets, development fee increases may have no impact on home sales prices or land prices as the sales prices of units increase faster than costs do, and faster than local governments can react to. In recessionary markets, development fee increases may cause a greater than 1 to 1 land price reduction because of their impact on project feasibility. Ultimately, the prospect of financial success for a new development project is dependent on many factors at both the macro and micro level. On a macro level, interest rates, access to capital, and supply of materials are key influencers. At the micro level, availability of jobs, the state of critical infrastructure, household income, geography, and the demand-supply relationship of housing all factor into new development decision making.

Infrastructure Cost Burden Analysis

As shown in **Figure 2** on the previous page, the total infrastructure cost burden consists of all backbone infrastructure and public facilities costs allocated to the development plus applicable fees, including building permit processing fees, County or City and regional fees, utility connection fees, and school district fees (if any – there are none in Washoe County).

The infrastructure cost burden analysis doesn't necessarily indicate financial feasibility but it can help developers determine strategy for product type and pricing. For example, there are ways in which a development project can mitigate against a high-cost burden, such as reallocating some of the cost burden to other land uses (for example in a mixed-use project). Also, future development projects could be required to contribute to funding off-site costs currently assigned to a project, thus reducing that project's obligation.

Cost Assumptions

Many cost assumptions were made to conduct the financial feasibility analysis. Assumptions were developed for each land use type using ***early calendar year 2021*** market data. In particular the following assumptions were developed:

- Land cost per lot (single family) and per unit (multi-family)
- Construction cost per unit
- Land improvements cost per unit
- Development fee costs
- Water resources/rights cost per unit
- Soft costs and carrying costs per unit
- Builder profit per unit

Truckee Meadows Water Authority Charges
Of all the development costs, the most variable cost, which is dependent on location and charged based on estimated gallons per minute of water demand, is the Truckee Meadows Water Authority (TMWA) Water System Facility Charges. **Map 1** shows the water system facility charge areas for TMWA's WSF rate schedule. Because these fees vary widely within Reno, Sparks, and the County, the feasibility analysis shows total cost burden in two of TMWA's fee areas for each jurisdiction. WSF charges for the six areas in the analysis are summarized in **Table 3.** Areas were selected based on active tentative maps and planned unit developments identified by the Truckee Meadows Regional Planning Agency (TMRPA) shown in **Map 2**, and conversations with local developers.

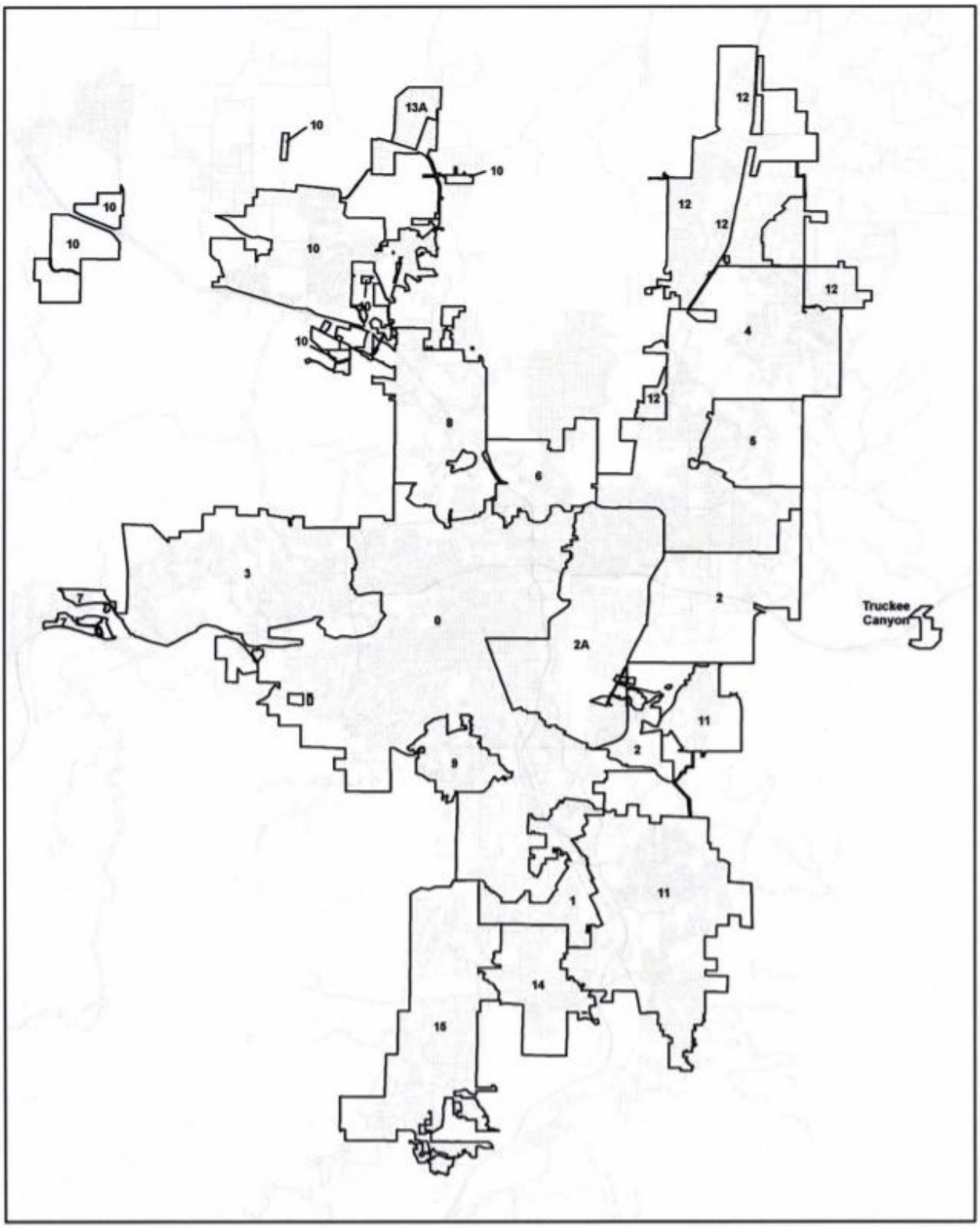
Table 3
TMWA WSF Area Fees

Area	Name	Area Facility Cost	Supply and Treatment Cost	Storage Facilities Cost	Total
		$ per GPM	*$ per GPM*	*$ per GPM*	*$ per GPM*
0	Reno	$0	$6,328	$1,658	$7,986
10	Reno (Lemmon Valley) [1]	$6,279	$0	$0	$6,279
2	Sparks (East Sparks)	$2,627	$6,328	$1,658	$10,613
4	Sparks (Pyramid/Spanish Springs)	$4,483	$6,328	$1,658	$12,469
8	Washoe (Sierra/N. Virginia)	$9,260	$6,328	$1,658	$17,246
12	Washoe (Spanish Springs)	$9,384	$6,328	$0	$15,712

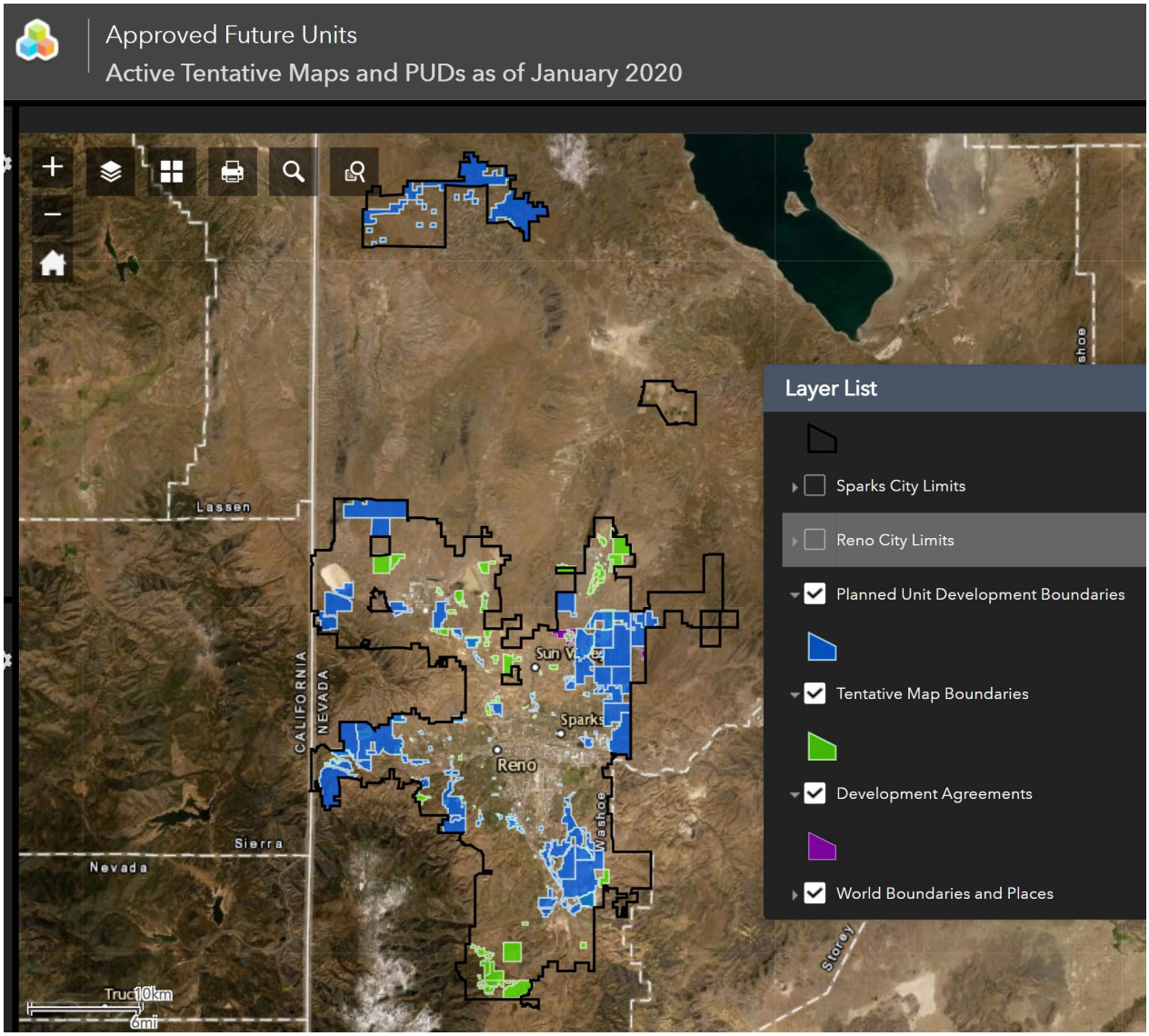
Source: Truckee Meadows Water Authority WSF Rate Schedule October 1, 2019 through January 30, 2022. tmwa

[1] Assumes Fish Springs groundwater resources (FSR) are utilitized. The FSR cost includes a facilities cost component.

Map 1
TMWA Water System Facility Fee Areas Map



Map 2
TMRPA Map of Approved Future Units



Source: www.tmrpa.org (screenshot).

- In Reno, the analysis uses TMWA fee areas 0 and 10. Area 0 includes most of the central Truckee Meadows. Area 10 encompasses the Stead – Silver Lake – Lemmon Valley area in the North Valleys area.

- In Sparks, the analysis uses TMWA fee areas 2 and 4. Area 2 includes older and newly developing portion of eastern Sparks, and Area 4 includes The Vistas (northeastern Sparks).

- For the unincorporated portion of the County, the analysis examines TMWA fee Area 8 (Sierra/N. Virginia area to the west of Sun Valley) and Area 12 (Spanish Springs).

Water Resources Requirements and Estimated Costs

All new applicants for water service are required to dedicate water resources for their development, per TMWA Rule 7. Almost all new water services will use Truckee River water rights with the exception of Lemmon Valley, which will use Fish Springs groundwater resources. The calculation of water rights dedication, and associated estimated cost by development type, is shown in **Table 4**. All of the areas included in the analysis pay the resource fee with return to the Truckee River except for Lemmon Valley. The cost for water resources in Lemmon Valley is dependent on the price of Fish Springs groundwater.

The table also shows the resource costs for projects using Truckee River water that is not returned to the river, but this cost is not applicable in the calculations provided in this memorandum. It is shown for comparison purposes only.

Table 4
Water Rights Dedication and Resource Costs

			LDR	MDR	COMPACT SF	CONDO	APARTMENT
Lot Size (sq. ft.)			8,370	5,910	2,410	n.a.	n.a.
					Figures in Acre-Feet		
Base Water Rights			**0.35**	**0.27**	**0.14**	**0.11**	**0.11**
0.11 Factor per TROA [1]			0.04	0.03	0.02	0.01	0.01
Total (return to the Truckee River)			**0.38**	**0.31**	**0.15**	**0.12**	**0.12**
Return Flow [2]			0.21	0.17	0.08	0.07	0.07
Total (no return to the Truckee River)			**0.60**	**0.48**	**0.24**	**0.19**	**0.19**
TMWA Sustainability Fee	*$1,600*	*per A.F.*	$553	$440	$218	$176	$176
TMWA Rule 7 Water Right Price	*$7,700*	*per A.F.*	$2,955	$2,349	$1,167	$940	$940
Total Resource Fee (return to the Truckee River)			**$3,569**	**$2,837**	**$1,409**	**$1,136**	**$1,136**
Total Resource Fee (no return to the Truckee River)			**$5,159**	**$4,101**	**$2,037**	**$1,641**	**$1,641**
Fish Springs Groundwater Resources [3]	*$36,000*	*per A.F.*	**$12,448**	**$9,895**	**$4,915**	**$3,960**	**$3,960**

Source: Truckee Meadows Water Authority Rule 7 and the Truckee River Operating Agreement. rights

[1] Drought storage requirement, per the Truckee River Operating Agreement.

[2] Required to make up for the return flows that would have accrued to the Truckee River from wastewater treatment facilities returning water to the Truckee River or to its tributaries.

[3] Base water rights required multiplied by the Fish Springs grounwater resource price per acre foot.

Land Use Jurisdiction Agency Fees

In addition to TMWA's fees for water service, each jurisdiction charges development fees for impacts generated by new growth. Fees to address impacts include sewer fees, flood and storm drain fees, parks fees, fire fees, and road fees (the latter are collected on behalf of the Regional Transportation Commission). Building permit fees to address costs (primarily staffing costs) generated by reviewing new development applications, are also charged by each jurisdiction. These

fees include plan check, mechanical, plumbing and electrical checks. Total fees differ by jurisdiction (Reno, Sparks, and the County).

Development Costs

Table 5 shows the assumptions used to calculate total land development costs per unit for each residential land use type. The per unit development costs are used for all areas in the analysis (Reno, Sparks, and unincorporated Washoe County) because the purpose of this analysis is specifically to examine the cost impact of water-related development fees and costs. Construction costs, land improvement costs and soft costs assumptions were developed based on conversations with local developers ***in early 2021*** and the data that they provided.

Table 5
Land Development Costs per Unit

Development Cost	LDR	MDR	COMPACT SF	CONDO	APARTMENT
Sales Price	$720,360	$517,650	$392,000	$404,000	$226,000
Lot Size (Acres)	0.19	0.14	0.06		
Unit Size (Building Square Feet)	2,760	2,030	1,400	1,300	1,060
Land Cost per Lot / Unit [1]	**$21,000**	**$15,000**	**$6,000**	**$4,000**	**$2,000**
Construction Cost per Sq Ft	$92	$94	$100	$100	$100
Estimated Total Construction Cost	**$253,920**	**$190,820**	**$140,000**	**$130,000**	**$106,000**
Land Improvements Cost per Sq Ft	$20	$22	$25	$25	$25
Infrastructure Cost (estimate)	**$55,200**	**$44,660**	**$35,000**	**$32,500**	**$26,500**
Soft Costs (10% of construction)	$25,392	$19,082	$14,000	$13,000	$10,600
Financing Cost (10% of construction)	$25,392	$19,082	$14,000	$13,000	$10,600
Overhead / Indirect Costs (4% of sales price)	$28,814	$20,706	$15,680	$16,160	$9,040
Builder Profit (10% of sales price)	$72,036	$51,765	$39,200	$40,400	$22,600
Est. Development Costs per Unit	**$481,754**	**$361,115**	**$263,880**	**$249,060**	**$187,340**

Source: HEC. dev cost

[1] Based on vacant land listings for residential use, listed on loopnet.com, April 25, 2021.

Residual Land Value Test Results

The financial feasibility test results are presented for Reno, Sparks, and unincorporated Washoe County.

Reno

Table 6 presents the residual land value test for Reno. The residual land value test demonstrates that development of all types of market-rate housing is financially feasible in Central Reno and Lemmon Valley.

Table 6
Reno Residual Land Value

		LDR	MDR	COMPACT SF	CONDO	APARTMENT
	Units per Acre	5.2	7.4	18.1	20.0 +	40.0 +
	Unit Building Size (sq. ft.)	2,760	2,030	1,400	1,300	1,060
Sales Price per Unit	**A**	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Costs - Central Reno						
Water Utilities Fees	Table 7	$12,979	$11,924	$9,919	$6,643	$6,643
Water Resources	Table 4	$3,569	$2,837	$1,409	$1,136	$1,136
Other Fees	Table 7	$9,771	$8,961	$8,262	$8,151	$6,227
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$544,092**	**$410,720**	**$303,071**	**$285,190**	**$212,645**
Residual Land Value in Central Reno	**C = A-B**	**$176,268**	**$106,930**	**$88,929**	**$118,810**	**$13,355**
Residual Land Value as % of Price	**D = C/A**	**24%**	**21%**	**23%**	**29%**	**6%**
Costs - Lemmon Valley						
Water Utilities Fees	Table 7	$11,567	$10,738	$9,162	$6,387	$6,387
Water Resources	Table 4	$12,448	$9,895	$4,915	$3,960	$3,960
Other Fees	Table 7	$9,771	$8,961	$8,262	$8,151	$6,227
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$551,559**	**$416,592**	**$305,819**	**$287,758**	**$215,214**
Residual Land Value in Lemmon Valley	**C = A-B**	**$168,801**	**$101,058**	**$86,181**	**$116,242**	**$10,786**
Residual Land Value as % of Price	**D = C/A**	**23%**	**20%**	**22%**	**29%**	**5%**

Source: HEC. resid value

Development fees for Reno are shown in **Table 7** on the next page. Total fees range from $12,870 per apartment unit to $22,750 per low density residential unit for development in Central Reno. In the high-growth Lemmon Valley area, fees range from $12,614 per apartment unit to $21,339 per low density residential unit. Cost burden as a percentage of sales price is 3% to 5% for detached single family units, about 4% for single family attached units, and about 6% for multi-family.

Table 7
Estimated Reno Fees Burden per Unit

	LDR	MDR	COMPACT SF	CONDO	APARTMENT
Units per acre	5.2	7.4	18.1	20.0 +	40.0 +
					2 bd, 2 ba unit
Lot Size (sq. ft.)	*8,370*	*5,910*	*2,410*		
Unit Building Size (sq. ft.)	*2,760*	*2,030*	*1,400*	*1,300*	*1,060*
Garage (sq. ft.)	*575*	*400*	*240*	*240*	*carport*
Price per Sq. Ft.	$261	$255	$280	$311	$213
Sales Price per Unit [1]	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Water Utilities Fees					
Water Connection Fee - Central Reno	$6,603	$5,548	$3,543	$1,198	$1,198
Sewer Connection Fee	$6,376	$6,376	$6,376	$5,445	$5,445
Subtotal Water Utilities Fees	**$12,979**	**$11,924**	**$9,919**	**$6,643**	**$6,643**
Other Fees					
Building Permit [2]	$1,744	$1,376	$1,058	$1,007	$849
Mechanical Permit	$262	$206	$159	$151	$127
Plumbing	$349	$275	$212	$201	$170
Electrical	$349	$275	$212	$201	$170
Plan Review Fee [2]	$1,133	$894	$688	$655	$552
Park Fees [3]	$1,000	$1,000	$1,000	$1,000	$1,000
Regional Road Impact Fee [4]	$4,935	$4,935	$4,935	$4,935	$3,359
Subtotal Other Fees	**$9,771**	**$8,961**	**$8,262**	**$8,151**	**$6,227**
Total Estimated Fees in Central Reno	**$22,750**	**$20,885**	**$18,181**	**$14,794**	**$12,870**
Cost Burden as % of Price	**3%**	**4%**	**5%**	**4%**	**6%**
Water Connection Fee - Lemmon Valley	$5,191	$4,362	$2,786	$942	$942
Total Estimated Fees in Lemmon Valley	**$21,339**	**$19,699**	**$17,424**	**$14,538**	**$12,614**
Cost Burden as % of Price	**3%**	**4%**	**4%**	**4%**	**6%**

Source: City of Reno. hd costs

[1] Sales price for multi-family is imputed.

[2] City of Reno Valuation Plan Check and Building Permit Fees effective July 1, 2020.
Plan Review Fee equals 65% of Building Permit Fee.
Mechanical Permit fee equals 15% of Building Permit Fee.
Plumbing Permit and electrical permit fees equals 20% of Building Permit Fee.
VB construction type for building valuation calculation.

[3] Park Fees (residential construction tax): 1% of the valuation of the construction per unit, not to exceed $1,000.

[4] Fee schedule for the north service area as of December 2020.

Sparks

Table 8 presents the residual land value test for Sparks. The residual land value test demonstrates that development of all types of market-rate housing is also financially feasible in Sparks.

Single family unit residual land value as a percentage of price is about the same as in Reno, as are the absolute residual land values, despite a difference in infrastructure cost burdens. New multi-family housing is also feasible. Profitability is greater in East Sparks because the City charges additional impact fees in the Pyramid/Spanish Springs area; however, this result may not hold true for all vacant properties because the price of land may be greater in East Sparks.

Table 8
Sparks Residual Land Value

		LDR	MDR	COMPACT SF	CONDO	APARTMENT
	Units per Acre	5.2	7.4	18.1	20.0 +	40.0 +
	Unit Building Size (sq. ft.)	2,760	2,030	1,400	1,300	1,060
Sales Price per Unit	**A**	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Costs - East Sparks						
Water Utilities Fees	Table 9	$16,653	$15,252	$12,587	$9,471	$9,471
Water Resources	Table 4	$3,569	$2,837	$1,409	$1,136	$1,136
Impact Fees	Table 9	$0	$0	$0	$0	$0
City Fees	Table 9	$9,577	$7,708	$6,095	$5,846	$5,024
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$547,572**	**$412,795**	**$303,572**	**$285,712**	**$214,270**
Residual Land Value in East Sparks	**C = A-B**	**$172,788**	**$104,855**	**$88,428**	**$118,288**	**$11,730**
Residual Land Value as % of Price	**D = C/A**	**24%**	**20%**	**23%**	**29%**	**5%**
Costs - Pyramid/Spanish Springs						
Water Utilities Fees	Table 9	$18,188	$16,541	$13,411	$9,749	$9,749
Water Resources	Table 4	$3,569	$2,837	$1,409	$1,136	$1,136
Impact Fees	Table 9	$6,053	$6,053	$6,053	$6,053	$4,477
City Fees	Table 9	$9,577	$7,708	$6,095	$5,846	$5,024
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$555,159**	**$420,137**	**$310,448**	**$292,044**	**$219,026**
Residual Land Value in Pyramid/Spanish Springs	**C = A-B**	**$165,201**	**$97,513**	**$81,552**	**$111,956**	**$6,974**
Residual Land Value as % of Price	**D = C/A**	**23%**	**19%**	**21%**	**28%**	**3%**

Source: HEC. sp resid value

Table 9 on the next page shows total fees per unit in East Sparks and the Pyramid/Spanish Springs areas of Sparks. In East Sparks, cost burden as a percentage of price is less than 8% for all residential land use types. In Pyramid/Spanish Springs the cost burden percentage is higher because the City charges additional impact fees; however, the fee burden is comparable with Reno and the unincorporated County for all unit types.

Table 9
Estimated Sparks Fees Burden per Unit

	LDR	MDR	COMPACT SF	CONDO	APARTMENT
Units per acre	5.2	7.4	18.1	20.0 +	40.0 +
					2 bd, 2 ba unit
Lot Size (sq. ft.)	*8,370*	*5,910*	*2,410*		
Unit Building Size (sq. ft.)	*2,760*	*2,030*	*1,400*	*1,300*	*1,060*
Garage (sq. ft.)	*575*	*400*	*240*	*240*	*carport*
Price per Sq. Ft.	$261	$255	$280	$311	$213
Sales Price per Unit [1]	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Water Utilities Fees					
Water Connection Fee - East Sparks	$8,775	$7,373	$4,708	$1,592	$1,592
Sewer Connection Fee [2]	$6,331	$6,331	$6,331	$6,331	$6,331
Storm Drain Connection	$1,348	$1,348	$1,348	$1,348	$1,348
Truckee River Flood Mgmt [3]	$200	$200	$200	$200	$200
Subtotal Water Utilities Fees	**$16,653**	**$15,252**	**$12,587**	**$9,471**	**$9,471**
Impact Fees [4]					
Sanitary Sewer	$297	$297	$297	$297	$297
Flood Control	$593	$593	$593	$593	$348
Regional Parks & Rec Fee	$778	$778	$778	$778	$778
Fire Station Projects Fee	$340	$340	$340	$340	$340
Regional Road Impact Fee [5]	$4,935	$4,935	$4,935	$4,935	$3,359
Subtotal Impact Fees (Service Area 1)	**$6,053**	**$6,053**	**$6,053**	**$6,053**	**$4,477**
City Fees					
Building Permit [6]	$2,344	$1,834	$1,393	$1,323	$1,098
Plan Review Fee	$1,839	$1,439	$1,093	$1,038	$862
Planning Plan Review Fee	$1,258	$984	$748	$710	$589
Fire Prevention Plan Review Fee	$539	$422	$321	$305	$253
Parks Fee [7]	$1,000	$1,000	$1,000	$1,000	$1,000
Mechanical Permit Fees [8]	$2,452	$1,918	$1,457	$1,384	$1,149
Electrical Permit Fees	$124	$91	$63	$65	$53
Plumbing Permit Fees	$20	$20	$20	$20	$20
Subtotal City Fees	**$9,577**	**$7,708**	**$6,095**	**$5,846**	**$5,024**
Total Estimated Fees in East Sparks [3]	**$30,965**	**$27,695**	**$23,418**	**$20,052**	**$17,654**
Cost Burden as % of Price	**4%**	**5%**	**6%**	**5%**	**8%**
Water Connection Fee - Pyramid/Span. Springs	$10,309	$8,663	$5,532	$1,870	$1,870
Total Estimated Fees in Pyramid/Span. Sprgs.	**$33,818**	**$30,302**	**$25,559**	**$21,648**	**$19,250**
Cost Burden as % of Price	**5%**	**6%**	**7%**	**5%**	**9%**

Source: City of Sparks. sp hd costs

[1] Sales price for multi-family is imputed.

[2] 2016 fee schedule.

[3] Not applicable in East Sparks.

[4] Impact fees only apply to service area #1 (Spanish Springs). Impact fees excluded from total fees in East Sparks.

[5] Fee schedule for the north service area as of December 2020.

[6] Permit fees calculated using ICC Building Valuation Data to determine the principal amount, which is used to calculate permit fees. Type of Construction is VB for building valuation calculation.

[7] Park Fees (residential construction tax): 1% of the valuation of the construction per unit, not to exceed $1,000.

[8] Mechanical permit fees are 100% of the principal amount calculated by inserting the mechanical valuation into the valuation table.

Unincorporated Washoe County

The residual land value test also returns positive values in unincorporated Washoe County, demonstrating that development of all types of market-rate housing are feasible. **Table 10** presents the residual land value test for unincorporated Washoe County. The residual land values are very similar to the same housing unit types modeled in Reno and Sparks.

Table 10
Unincorporated County Residual Land Value

		LDR	MDR	COMPACT SF	CONDO	APARTMENT
	Units per Acre	5.2	7.4	18.1	20.0 +	40.0 +
	Unit Building Size (sq. ft.)	2,760	2,030	1,400	1,300	1,060
Sales Price per Unit	**A**	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Costs - Spanish Springs						
Water Utilities Fees	Table 11	$18,740	$16,666	$12,721	$8,107	$8,107
Water Resources	Table 4	$3,569	$2,837	$1,409	$1,136	$1,136
Other Fees	Table 11	$9,024	$8,407	$7,875	$7,790	$5,853
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$549,106**	**$414,908**	**$305,485**	**$286,293**	**$213,735**
Residual Land Value in Spanish Springs	**C = A-B**	**$171,254**	**$102,742**	**$86,515**	**$117,707**	**$12,265**
Residual Land Value as % of Price	**D = C/A**	**24%**	**20%**	**22%**	**29%**	**5%**
Costs- N. Sierra/Virginia St.						
Water Utilities Fees	Table 11	$20,009	$17,731	$13,401	$8,337	$8,337
Water Resources	Table 4	$3,569	$2,837	$1,409	$1,136	$1,136
Other Fees	Table 11	$9,024	$8,407	$7,875	$7,790	$5,853
Land and Building Development Costs	Table 5	$481,754	$361,115	$263,880	$249,060	$187,340
Costs of Selling	5% of sales price	$36,018	$25,883	$19,600	$20,200	$11,300
Total Costs	**B**	**$550,374**	**$415,974**	**$306,165**	**$286,523**	**$213,965**
Residual Land Value in N. Sierra/Virginia St.	**C = A-B**	**$169,986**	**$101,676**	**$85,835**	**$117,477**	**$12,035**
Residual Land Value as % of Price	**D = C/A**	**24%**	**20%**	**22%**	**29%**	**5%**

Source: HEC. wc resid value

Table 11 shows total fees per unit in unincorporated Washoe County in Spanish Springs and the N. Sierra/Virginia St. areas. Total fees range from $13,960 per apartment unit to $27,764 per low density residential unit for development in Spanish Springs. In the N. Sierra/Virginia St. area, fees range from $14,190 per apartment unit to $29,033 per low density residential unit. Cost burden as a percentage of sales price is 4% to 5% for detached single family units, 4% for attached single family units, and 6% for multi-family.

Table 11
Estimated Unincorporated County Fees Burden per Unit

	LDR	MDR	COMPACT SF	CONDO	APARTMENT
Units per acre	5.2	7.4	18.1	20.0 +	40.0 +
					2 bd, 2 ba unit
Lot Size (sq. ft.)	*8,370*	*5,910*	*2,410*		
Unit Building Size (sq. ft.)	*2,760*	*2,030*	*1,400*	*1,300*	*1,060*
Garage (sq. ft.)	*575*	*400*	*240*	*240*	*carport*
Price per Sq. Ft.	$261	$255	$280	$311	$213
Sales Price per Unit [1]	**$720,360**	**$517,650**	**$392,000**	**$404,000**	**$226,000**
Water Utilities Fees					
Water Connection Fee - Spanish Springs	$12,990	$10,916	$6,971	$2,357	$2,357
Sewer Connection Fee	$5,750	$5,750	$5,750	$5,750	$5,750
Subtotal Water Utilities Fees	**$18,740**	**$16,666**	**$12,721**	**$8,107**	**$8,107**
Other Fees					
Building Permit [2]	$2,059	$1,648	$1,293	$1,237	$1,050
Plan Review Fee [3]	$1,030	$824	$647	$618	$525
Regional Road Impact Fee [4]	$4,935	$4,935	$4,935	$4,935	$3,359
Park Fees [5]	$1,000	$1,000	$1,000	$1,000	$919
Subtotal Other Fees	**$9,024**	**$8,407**	**$7,875**	**$7,790**	**$5,853**
Total Estimated Fees in Spanish Springs	**$27,764**	**$25,073**	**$20,595**	**$15,897**	**$13,960**
Cost Burden as % of Price	**4%**	**5%**	**5%**	**4%**	**6%**
Water Connectino Fee - N. Sierra/Virginia St.	$14,259	$11,981	$7,651	$2,587	$2,587
Total Estimate Fees N. Sierra/Virginia St.	**$29,033**	**$26,139**	**$21,276**	**$16,127**	**$14,190**
Cost Burden as % of Price	**4%**	**5%**	**5%**	**4%**	**6%**

Source: Washoe County. wc hd costs

[1] Sales price for multi-family is imputed.
[2] Assume Type of Construction is VB for building valuation calculation. Includes mechanical, plumbing, and electrical fees.
[3] Plan Review fee equals 50% of Building Fee for single family dwellings.
[4] Fee schedule for the north service area as of December 2020.
[5] Park Fees (residential construction tax): 1% of the valuation of the construction per unit, not to exceed $1,000.

Findings

Residual Land Value Test

The residual land value feasibility test results should not be taken as representative of all areas in the TMSA. The analysis assumes that sales prices and land use development costs per unit are constant across the TMSA. In reality, pockets of development will vary greatly from this average approach; however, by keeping sales prices and land use development costs the same the analysis can better determine the relative importance of water-related fees and resource costs on the feasibility of residential land development in different parts of the TMSA.

The analysis shows that single family detached and attached development is financially feasible for all greenfield and likely most infill development in the TMSA. Apartment development is also feasible in the TMSA. Market indicators suggest that the 'hot' housing commodity in the next one to two years will be small lots detached and attached single family housing (townhomes and condominiums) to meet demand from the 'missing middle' income group of home buyers and that these product types are financially feasible. In infill areas, developer costs that are higher due to demolition and/remediation costs may be lowered by assistance from redevelopment agency funding, federal and state grants and tax credit financing.

Table 12 summarizes residual land value and fee burden by land use type by jurisdiction.

Table 12
Feasibility Test Results Comparisons

Area	LDR	MDR	COMPACT SF	CONDO	APARTMENT
RENO					
Residual Land Value					
Central Reno	$176,268	$106,930	$88,929	$118,810	$13,355
Lemmon Valley	$168,801	$101,058	$86,181	$116,242	$10,786
Fee Burden					
Central Reno	3%	4%	5%	4%	6%
Lemmon Valley	3%	4%	4%	4%	6%
SPARKS					
Residual Land Value					
East Sparks	$172,788	$104,855	$88,428	$118,288	$11,730
Pyramid/Span. Springs	$165,201	$97,513	$81,552	$111,956	$6,974
Fee Burden					
East Sparks	4%	5%	6%	5%	8%
Pyramid/Span. Springs	5%	6%	7%	5%	9%
WASHOE COUNTY					
Residual Land Value					
Spanish Springs	$171,254	$102,742	$86,515	$117,707	$12,265
N. Sierra/Virginia St.	$169,986	$101,676	$85,835	$117,477	$12,035
Fee Burden					
Spanish Springs	4%	5%	5%	4%	6%
N. Sierra/Virginia St.	4%	5%	5%	4%	6%

Source: HEC. sum test

Impact of Water and Sewer Fees on Development

Although water utility fees represent a large portion of total development fees, they are not a large portion of total development costs. Development fees only comprise 3% to 9% of total development costs. Despite this finding, water utility fees (water and sewer combined) can be a factor in determining feasibility of development in any area of the TMSA (for example, if land costs are higher than average or if construction costs are higher than average due to topography). Developers run pro-forma analyses to compare total development costs among competing sites. If land costs, construction costs, and soft costs are similar and cannot be changed for each site then development fees have a larger impact on site selection. As presented earlier in this memorandum, the impact of development fees on site selection by developers is largely dependent on the general state of the economy, which affects land values.

Table 13 on the next page shows total development fees per unit for each residential land use type in each area. The table highlights the percentage of development fees that are for water, sewer, regional roads (RTC), and the local jurisdiction. Note that the City of Sparks flood and storm drain connection fees are included under City fees.

Illustrations of the percentage shares of development fees are shown in **Figure 3 (Reno), Figure 4 (Sparks)** and **Figure 5 (unincorporated County).** Each figure shows a low-density residential unit and a condominium unit new development.

Figure 3
Composition of Fees in Reno

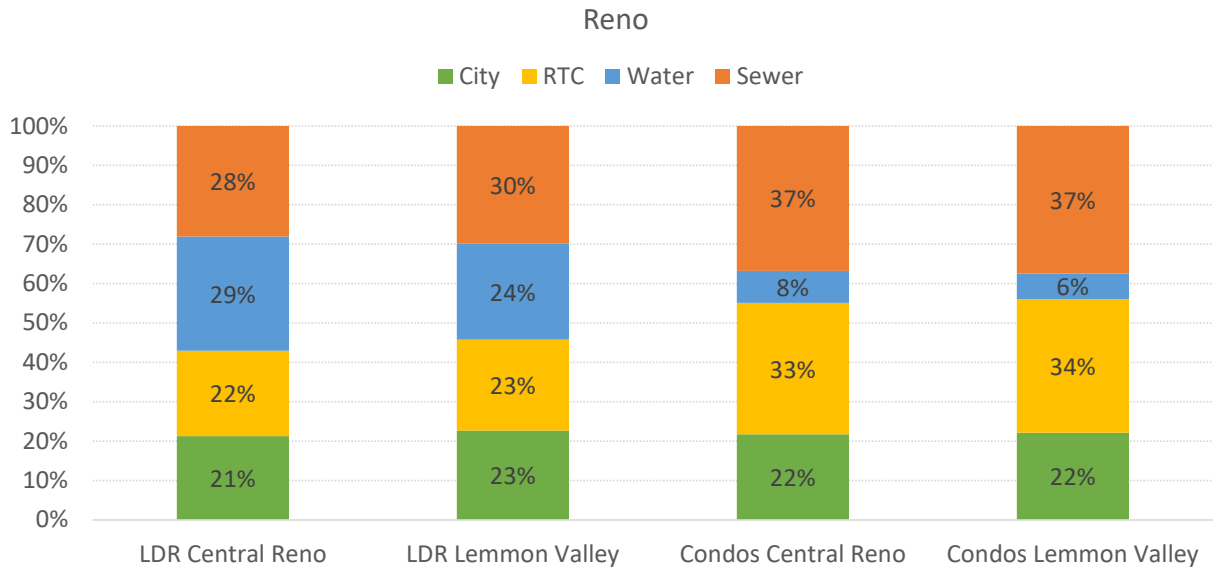


Table 13
Fees by Jurisdiction and TMWA WSF Fee Area

Area	LDR	MDR	COMPACT SF	CONDO	APARTMENT
CENTRAL RENO					
Total Fees	$22,750	$20,885	$18,181	$14,794	$12,870
City Fees	21%	19%	18%	22%	22%
RTC Fees	22%	24%	27%	33%	26%
Water Fees	29%	27%	19%	8%	9%
Sewer Fees	28%	31%	35%	37%	42%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
RENO (LEMMON VALLEY)					
Total Fees	$21,339	$19,699	$17,424	$14,538	$12,614
City Fees	23%	20%	19%	22%	23%
RTC Fees	23%	25%	28%	34%	27%
Water Fees	24%	22%	16%	6%	7%
Sewer Fees	30%	32%	37%	37%	43%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
EAST SPARKS					
Total Fees	$30,965	$27,695	$23,418	$20,052	$17,654
City Fees	35%	33%	32%	36%	36%
RTC Fees	16%	18%	21%	25%	19%
Water Fees	28%	27%	20%	8%	9%
Sewer Fees	20%	23%	27%	32%	36%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
SPARKS (PYRAMID/SPANISH SPRINGS)					
Total Fees	$33,818	$30,302	$25,559	$21,648	$19,250
City Fees	36%	34%	34%	39%	40%
RTC Fees	15%	16%	19%	23%	17%
Water Fees	30%	29%	22%	9%	10%
Sewer Fees	19%	21%	25%	29%	33%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
WASHOE COUNTY (SPANISH SPRINGS)					
Total Fees	$27,764	$25,073	$20,595	$15,897	$13,960
County Fees	15%	14%	14%	18%	18%
RTC Fees	18%	20%	24%	31%	24%
Water Fees	47%	44%	34%	15%	17%
Sewer Fees	21%	23%	28%	36%	41%
Total	**100%**	**100%**	**100%**	**100%**	**100%**
WASHOE COUNTY (N. SIERRA/VIRGINIA ST.)					
Total Fees	$29,033	$26,139	$21,276	$16,127	$14,190
County Fees	14%	13%	14%	18%	18%
RTC Fees	17%	19%	23%	31%	24%
Water Fees	49%	46%	36%	16%	18%
Sewer Fees	20%	22%	27%	36%	41%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Source: City of Reno, City of Sparks, Washoe County, and HEC. sum fee

Figure 4
Composition of Fees in Sparks

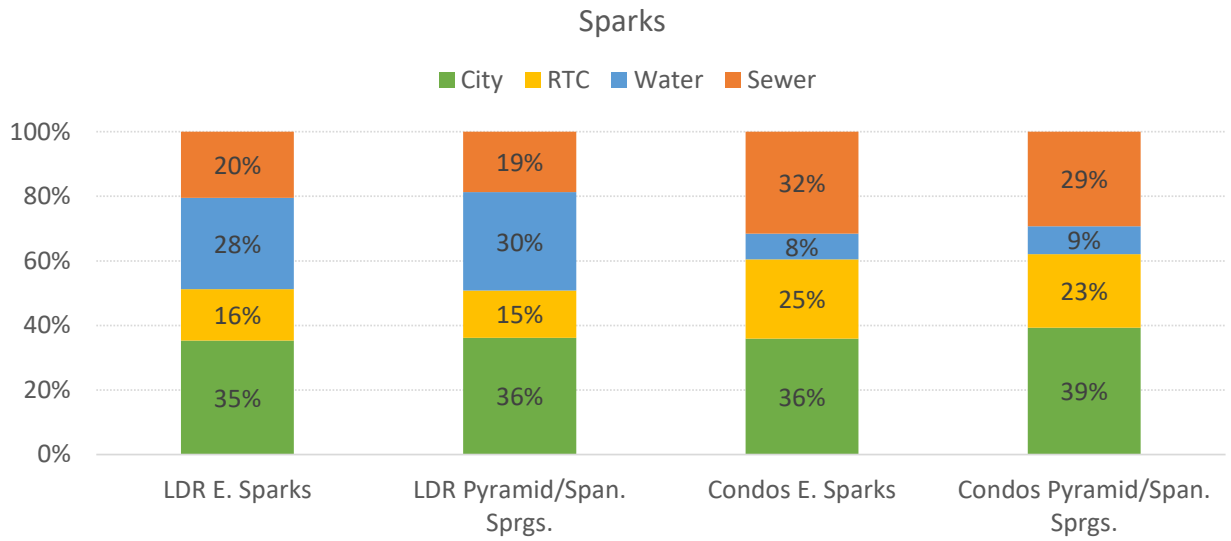
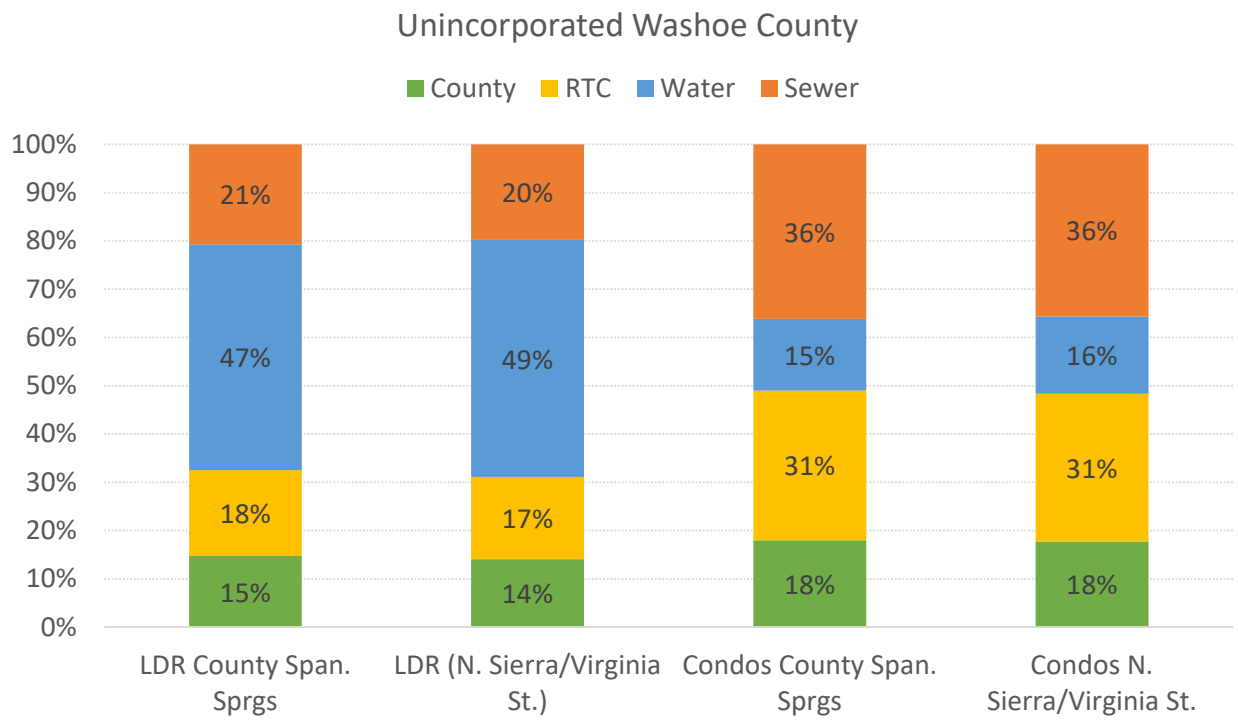


Figure 5
Composition of Fees in Unincorporated Washoe County



Generally, water fees are a larger component of total fees for larger homes (24% to 49% of total agency fees) and a smaller component of fees for smaller units (6% to 16% of total agency fees). This result occurs because TMWA fees are based on demand estimates for each land use type. The smaller a unit is the less water it uses (typically). TMWA continuously monitors water demand by unit size and updates its water resources requirements for new housing units accordingly. Water fees for units in the urban cores will tend to represent a smaller share of development costs because of a) increased housing density and therefore smaller home size in these areas, and b) lower infrastructure costs to serve the new development.

Conversely, sewer fees are a larger component of total fees for smaller units than for larger units. Sewer fees range 29%-37% of total development fees for multi-family units and 19%-30% of total development fees for single family units. This occurs because sewer fees are flat charges for new residential units, regardless of unit size or density of development. One exception to this is the City of Reno's sewer connection fee which is lower for multi-family development than single family development (this is currently under review). Sewer fees do not vary by area within a jurisdiction like the water fees do.

TMWA water fees encourage infill development. *TMWA's fees reflect the cost of infrastructure by service area which is lower in the urban cores (closer to the water treatment plants and large distribution reservoirs) and higher further away from the urban cores (higher distribution costs). Smaller units which are found in urban cores use less water than larger units that are typically found outside of the urban cores therefore their impact, and resulting fee generation, is lower.*

Due to the structure of sewer connection fees, sewer costs are a much larger proportion of total fees per unit for multi-family units than single family units. Sewer connection fees do not vary by sub-area within Reno, Sparks, or the unincorporated County. As currently structured, sewer connection fees do not encourage infill development. Charging the same connection fee per unit assumes that all residential unit types use the sewer infrastructure in equal proportion; in other words, all residential unit types discharge the same annual flow of similar strength to the wastewater systems. While indoor water use does not vary in the same manner as outdoor water use by residential unit type it is nevertheless influenced by a number of functions, predominantly the number of persons living in the unit, and correlating number of plumbing fixtures. Because it has been documented that more people live in single-family units than multi-family units, many sewer providers set connection fees (and rates) proportionately lower for multi-family units. There are several methodologies that can be used to establish nexus between land uses and the structure of sewer connection fees.