

TECHNICAL MEMORANDUM

TO: Mountain Regional Water Special Service District
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FROM: Keith J. Larson, P.E.
DATE: 30 November 2023
SUBJECT: Calculation of Water Impact Fees
JOB NO.: 714-23-01



INTRODUCTION

An impact fee is a one-time fee, not a tax, imposed upon new development activity as a condition of development approval to mitigate the impact of the new development on public infrastructure. Impact fees are often calculated based on the impact a typical residential connection has on the system. Thus, system demand is often expressed in terms of Equivalent Residential Connections (ERCs) and impact fees are calculated in terms of cost per ERC.

While this works well when most residential units are similar in size and water use patterns, it is less useful in areas with a wide variety of water user types. Such is the case of Mountain Regional Water Special Service District (MRWSSD or District). For this reason, the Impact Fee Facility Plan (IFFP) and Impact Fee Analysis (IFA) for the District have calculated impact on the water system in terms of peak day demand in gpm. With the definition of impact on the District defined in terms of gpm of peak day demand, the impact of any type of development can be calculated by accurately projecting the peak demand of the development and then multiplying it by the defined cost per gpm.

Unfortunately, actual water use data for specific developments is not available prior to their construction. To facilitate administration of impact fees, there needs to be a method for projecting peak day demands and corresponding impact fees. The purpose of this memorandum is to define a recommended process for calculating peak demand and impact fees for different types of connections.

CUSTOMER CATEGORIES

Based on the City's current and expected customer types, BC&A would propose the following customer categories:

- Residential – Single-Family
- Residential – Condo/Townhomes
- Residential – Promontory Resort
- Non-Residential
- Special Development

Residential – Single-Family

It is recommended that the “Residential – Single-Family” category be used for all residential dwelling units other than those qualifying as condos/townhomes or Promontory resort units as defined in subsequent sections. In these situations, it is recommended that demands be projected based on historical observed water use for other single-family residential uses in the District. This should be calculated for each unit as follows:

Indoor Use

Based on District records, peak day indoor water use can be projected as summarized in Table 1.

**Table 1
Residential – Single-Family Indoor Demands**

	Peak Day Demand (gpd)	Peak Day Demand (gpm)
Base Residential Indoor Demand (for all single-family residential up to 3,000 SF)	248	0.1722
Additional Demand per 1,000 SF	82.66	0.0574

Outdoor Use

Based on District records, peak day outdoor water use can be projected as summarized in Table 2.

**Table 2
Residential – Single-Family Outdoor Demands**

	Peak Day Demand (gpd)	Peak Day Demand (gpm)
Outdoor Demand per 1,000 SF of Irrigated Area	122.65	0.0852

It is important to note that “irrigated area” refers to all landscaped area on the property. It is expected to include a mixture of turf grasses, planting beds, and paths. Projected demands have been based on expected demand for landscapes complying with the District’s recently adopted landscaping ordinance and include a reduction in historical observed demands for traditional landscapes.

Approximate Total Use Per ERC

As mentioned previously, the District does not have a true “ERC” because of the wide variety of development types it serves. However, the District has historically estimated that the average single-family residential unit has approximately 3,000 SF of indoor living space and 0.2 acres (8,700 SF) of landscaped area. Based on the tables above, the projected demand for this average unit would be 0.914 gpm (0.172 gpm indoors and 0.742 gpm outdoors).

Residential – Condo/Townhomes

The District recognizes that some multiple-family housing options will have lower occupancy and correspondingly lower demands than single-family units. To reflect this reality, the District has defined a Condo/Townhome category that applies to individual owned multi-family units of 1,700 SF or less.

The indoor demand patterns for these units have been observed to be similar to those of single-family residential, but the total volume is reduced. Based on this data, peak day indoor demand for units in

the Condo/Townhome category can be projected at 75 percent of the demand for single-family (Condo/Townhome Demand = 186 gpd).

Outdoor peak day demand can be projected per square foot landscaped using the same projected demand rate identified in Table 2.

Residential – Promontory Resort Units

Units qualifying as Promontory resort unit will be treated similar to the Condo/Townhome category. Peak day indoor demand for units in the Condo/Townhome category will be projected at 60 percent of the demand for single-family (Promontory Resort Unit Demand = 148.8 gpd).

Outdoor peak day demand can be projected per square foot landscaped using the same projected demand rate identified in Table 2.

Non-Residential

Non-residential water use patterns can vary widely depending on the type and nature of the non-residential customer. Correspondingly, it is recommended that non-residential impact fees be assessed based on total peak day water demand for each non-residential customer. If detailed water demand data is available for a non-residential customer (with sufficient detail to satisfy the District engineer), this can be used directly to calculate impact fees per the definition in the IFFP. However, if the projected water demand is unknown or if insufficient data exists to reliably establish expected water use to the satisfaction of the District’s general manager, it is recommended that the impact fee be calculated based on the type of development proposed. Recommended estimates of water use for various types of development are summarized in Table 3. These values are based on information from State of Utah source sizing requirements.

**Table 3
Non-Residential – Projected Demands By Development Type**

Description		Peak Gal/Day Demand per Unit	Peak GPM Demand per Unit
INDOOR NON-RESIDENTIAL USES (Only Accounts for Indoor Demands):			
NR1	Airports:		
	a. per passenger	3	0.002
	b. per employee	15	0.010
NR2	Apartments (does not include any outside watering - add watering below):		
	a. 3 Bedroom	248	0.172
	b. 2 Bedroom	186	0.129
	c. 1 Bedroom	124	0.086
NR3	Bars, Taverns, Cocktail Lounges, per seat:		
	a. Each Employee	20	0.014
	b. Each Seat (no restaurant)	20	0.014
NR4	Boarding Houses:		
	a. for each resident boarder and employee	50	0.035
	b. for each nonresident boarders	10	0.007
NR5	Bowling Alleys, per alley:		
	a. with snack bar	100	0.069
	b. with no snack bar	85	0.059
NR6	Camps / Resorts:		

CALCULATION OF WATER IMPACT FEES

	a. Resort per person	150	0.104
	b. Summer (modern) per person	70	0.049
	c. Semi-Developed per person (with pit privies)	7	0.005
	d. Semi-Developed per person (with flush toilets)	30	0.021
	e. Day (with central bathhouse)	45	0.031
	f. Labor Camp, per unit	45	0.031
	g. Per Travel Trailer Site	200	0.139
NR7	Churches, per person	5	0.003
NR8	Clinics:		
	a. Per Staff	20	0.014
	b. Per Patient	7	0.005
NR9	Country Clubs:		
	a. per resident member	100	0.069
	b. per nonresident member present	25	0.017
	c. per employee	15	0.010
NR10	Dentist's Office:		
	a. per chair	200	0.139
	b. per staff member	35	0.024
NR11	Doctor's Office:		
	a. per patient	10	0.007
	b. per staff member	35	0.024
NR12	Factories:		
	a. Each Employee (no showers)	35	0.024
	b. Each Employee (with shower)	50	0.035
	c. Each Employee (with kitchen)	60	0.042
NR13	Fairgrounds, per person	1	0.001
NR14	Fire Stations, per person:		
	a. with full-time employees and food prep.	70	0.049
	b. with no full-time employees and no food prep.	5	0.003
NR15	Gyms:		
	a. per participant	25	0.017
	b. per spectator	4	0.003
NR16	Hairdresser:		
	a. per chair	50	0.035
	b. per operator	35	0.024
NR17	Hospitals:		
	a. Per Bed Space	250	0.174
	b. Per Resident Staff	150	0.104
NR18	Hotels, per bedroom (no restaurant)	150	0.104
NR19	Institutions, per resident	150	0.104
NR20	Industrial Buildings, per 8 hour shift, per employee		
	(exclusive of industrial waste):		
	a. with showers	35	0.024
	b. with no showers	15	0.010
NR21	Launderette, per washer (self service)	580	0.403
NR22	Mobile Homes (3 person)	450	0.313
NR23	Motels, per unit (no restaurant)	150	0.104
NR24	Movie Theaters:		
	a. auditorium, per seat	5	0.003

	b. drive-in, per car space	10	0.007
NR25	Nursing Homes, per bed space:		
	a. Per bed space, no laundry	150	0.104
	b. Per bed space with laundry	280	0.194
NR26	Office Buildings & Business Establishments, per shift, per employee (sanitary wastes only):		
	a. with cafeteria	25	0.017
	b. with no cafeteria	15	0.010
NR27	Picnic Parks, per person (toilet wastes only)	5	0.003
NR28	Restaurants (includes toilet and kitchen wastes):		
	a. ordinary restaurants (not 24 hour service), per seat	35	0.024
	b. 24 hour service, per seat	50	0.035
	c. single service customer utensils only, per cust.	2	0.001
	d. or, per customer served	10	0.007
NR29	Roadway Rest Stop, per vehicle	6	0.004
NR30	Rooming House, per person	40	0.028
NR31	Schools, per person:		
	a. Boarding	75	0.052
	b. day, without cafeteria, gym or showers	15	0.010
	c. day, with cafeteria, but no gym or showers	20	0.014
	d. day, with cafeteria, gym and showers	25	0.017
NR32	Service Stations, per pump:		
	a. Per Gas Pump (only gas, no service)	250	0.174
	b. Each Car Served	10	0.007
	c. Each Car Washed	90	0.063
	d. First Bay	1,000	0.694
	e. Each Additional Bay	500	0.347
NR33	Shopping Centers, per 1000 sq. ft. space	250	0.174
NR34	Skating Rink, Dance Halls, etc., per person:		
	a. no kitchen wastes	10	0.007
	b. additional for kitchen wastes	3	0.002
NR35	Stores:		
	a. per public toilet room	500	0.347
	b. per employee	11	0.008
NR36	Ski Areas, per person (no kitchen wastes)	10	0.007
NR37	Stadiums, per seat (no restaurant)	3	0.002
NR38	Swimming Pools and Bathhouses, per person, or 20 x { Water Area (sq.ft.) / 30 } + Deck Area (sq.ft.)	10	0.007
NR39	Visitor Centers, per visitor	5	0.003
	OUTDOOR NON-RESIDENTIAL USES:		
O1	Undeveloped Acres	0	0.000
O2	Irrigated Acres Meeting Landscape Ordinance (Non-Residential)	5,343	3.710
O3	Irrigated Acres Not Meeting Ordinance (e.g. Turf Only)	8,905	6.184
O4	Developed Non-Irrigated Acres (Non-Residential - includes buildings, parking lots, other hard space, etc.)	0	0.000

Special Development

The categories above are intended to encompass all of the development types the District will regularly encounter. However, it is possible that certain types of development may be proposed that are not consistent with the categories outlined here. This could include industrial or other non-residential customers whose water use patterns are significantly different than typical. It might also include irrigation of large turf grass areas not meeting typical landscaping ordinance requirements. In these cases, the Impact Fees Act provides an option for adjustment of the fee based on studies and data submitted by the developer. In these cases, peak demands and corresponding impact fees should be determined by specific study by the District engineer.