Appendix D:
Small Community Approach

BOWEN COLLINS & ASSOCIATES

TECHNICAL MEMORANDUM

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INTRODUCTION

In 2024, the Utah Legislature passed HB 280 to create the Water Infrastructure Fund, a new approach to funding water infrastructure projects in the state of Utah. Going forward, the Water Development Coordinating Council (WDDC) will regularly develop and administer a Unified Water Infrastructure Plan (UWIP) to provide financial assistance for a large portion of water infrastructure projects in Utah. This process will modify existing processes for applying for state funding through the Board of Water Resources, Drinking Water Board, and Water Quality Board.

The Division of Water Resources (WRe) contracted with Bowen, Collins & Associates (BC&A) and Brown and Caldwell (BC) to assist with the development of the first UWIP (Contract #256300). In the process of collecting information for projects that anticipate needing state funding over the next 20 years, some concern was expressed that small/rural communities would be underrepresented in the collected data for several reasons:

- The data collection window was very narrow (approximately 1 month) in order to meet legislative deadlines. While efforts were made to reach out to small communities, these communities have much smaller staffs who may not have been available to watch for or understand the significance of this type of request. This results in a greater likelihood that these communities missed project submission deadlines.
- Small entities serving rural populations are less likely to have a capital facilities plan and may lack good information that fully characterizes the anticipated need for projects within their service areas.
- Smaller communities have less population contributing funds for capital projects than larger communities and may require more assistance from state funding sources for critical water infrastructure projects. Because of lower development densities, smaller communities also typically require more pipeline infrastructure per capita than larger communities which increases project costs.

To mitigate some of these concerns, a small community allowance in the UWIP budget was proposed. The purpose of this allowance is to reserve funding for needs in small communities that may not have been captured though the data collection process. It is anticipated that, as the new funding process

matures over time and small communities become more aware of how to submit their project information, the need for this allowance will diminish or cease altogether.

This memorandum documents the approach taken to estimate this allowance in the first UWIP budget. This memorandum first describes the calculation methodology, including key data sources and intermediate numbers, before concluding with recommendations on the funding allowance for small communities.

CALCULATION OF SMALL COMMUNITY ALLOWANCE

BC&A has developed a recommendation for a small community allowance using the following approach:

- **Estimate Total Investment Need.** Calculate the statewide total investment need for each infrastructure type considered in the UWIP. Source data for these numbers included data provided by Prep60, the Clean Water Needs Survey (CWNS), and work performed by the consultant team on various other projects.
- **Identify Small Communities.** Estimate the share of systems (by population) that are classified as small communities from water system reporting data hosted by the Division of Water Rights (DWRi).
- **Estimate Small Community Investment Need.** Calculate the total small community system investment needed using the total statewide need and the expected portion of this total need based on small system characteristics such as population, ERCs, etc.
- **Account for Projects Already Submitted Via UWIP.** Identify submissions to the UWIP from systems that fall under the small community umbrella. Subtract the costs associated with these submitted projects from the estimated small community investment need in the previous step.
- **Estimate State Assistance Needed**. Estimate what portion of the remaining small community system investment could be self-funded (or non-state funded) and what portion will require state assistance.
- **Recommend Small Community Allowance.** The remaining small community funding need is the recommended small community budget for inclusion in the UWIP to account for unknown or miscellaneous projects.

The following subsections describe the key elements of this analysis.

STATEWIDE TOTAL INVESTMENT NEED

BC&A utilized existing estimates from other efforts to characterize the total need for water related infrastructure investment. To be consistent with other statewide planning efforts, investment needs were taken from planning prepared previously by Prep60, the Clean Water Needs Survey, and reports from the Ag Water Optimization Task Force.

Table 1 summarizes the total projected water infrastructure investment needed. The source data accounts for new infrastructure, rehabilitation and replacement, and water conservation projects.

Table 1
Projected Statewide Water Infrastructure Investment Needed

Period	Statewide	Projected Total Water Infrastructure Investment Need (Billion $, 2025 Costs)[1]				
	Population	Ag off-farm[2]	Water[3]	Stormwater[4]	Wastewater[4]	Total
2025-2030	3,848,265	$0.67	$9.12	$0.48	$2.84	$13.12
2030-2040	4,411,838	$1.35	$9.26	$0.49	$2.88	$13.98
2040-2050	4,933,443	$1.35	$11.42	$0.60	$3.56	$16.93
2050-2060	5,407,140	$1.35	$13.61	$0.65	$3.81	$19.42
2060-2070	5,850,160	$1.35	$12.48	$0.70	$4.12	$18.64
Total		**$6.06**	**$55.88**	**$2.92**	**$17.21**	**$82.08**

[1] The Consumer Price Index was used to scale costs from dollars in the the year of original estimation to 2025 dollars.
[2] Off-farm Agricultural needs estimated at $5B minimum in 2021 dollars by the Ag Water Optimization Task Force and scaled to over $6B in 2025 dollars. Total need was spread evenly across each year of the time periods shown in the table.
[3] Water needs taken from Prep60 estimates compiled by Tage Flint and produced by major water districts in the state.
[4] Wastewater and Stormwater needs were estimated in the Clean Water Needs Survey (CWNS). The CWNS estimated total 20 year need but did not have it broken out by decade as in Prep60 data. It was assumed that 20-yr stormwater and wastewater needs would last through 2050 and would be broken out with the same proportions as the Water needs in the same period, which are based on population growth. Wastewater and Stormwater needs beyond 2050 were estimated based on per-capita need in the previous 3 decades, then multiplied by the statewide population.

SMALL COMMUNITY PROPORTION

BC&A analyzed 2023 water use data reported to the DWRi to develop a definition for a "small community" and identify the number of water systems servicing these types of communities. After reviewing available data and discussing options with the project team, a population threshold of 10,000 people was selected. This threshold is consistent with the USDA definition of a small/rural community and is slightly higher than thresholds used by other state programs.

The UWIP project submission process requested information regarding entity size in terms of connections, households, equivalent residential units (ERUs or ERCs), or shareholders (for irrigation applications). An equivalent ERC threshold was obtained by: computing the number of ERCs for each water system based on reported usage, calculating the ratio of statewide population to statewide ERCs, and then dividing the population threshold by this ratio. The total small community population and number of ERCs was computed by adding all systems below these computed thresholds. Table 2 summarizes the key results from these calculations.

Table 2
Small Community Thresholds

Parameter	Value
Total Reported Population (2023)	3,535,323
Total Calculated ERCs (2023)	1,360,674
Population / ERC	2.60
Selected Population Threshold	10,000
Equivalent ERC Threshold	3,850
Small Community Population (2023)	510,500 *(85.6%)*
Small Community ERCs (2023)	232,000 *(83.0%)*

BC&A also analyzed the proportion of systems expected to serve the small community population. Figure 1 visualizes the percentiles of population and ERCs against the percentage of water systems in the analyzed data, with systems ordered from largest to smallest. This illustrates that roughly 85.6 percent of the statewide population and 83 percent of the statewide ERCs are serviced by roughly 12-13 percent of public water suppliers. This figure highlights that a majority of Utah's individual water systems fall into the small community category, which supports the need to include an allowance for systems who may not have been able to submit project information to the UWIP.

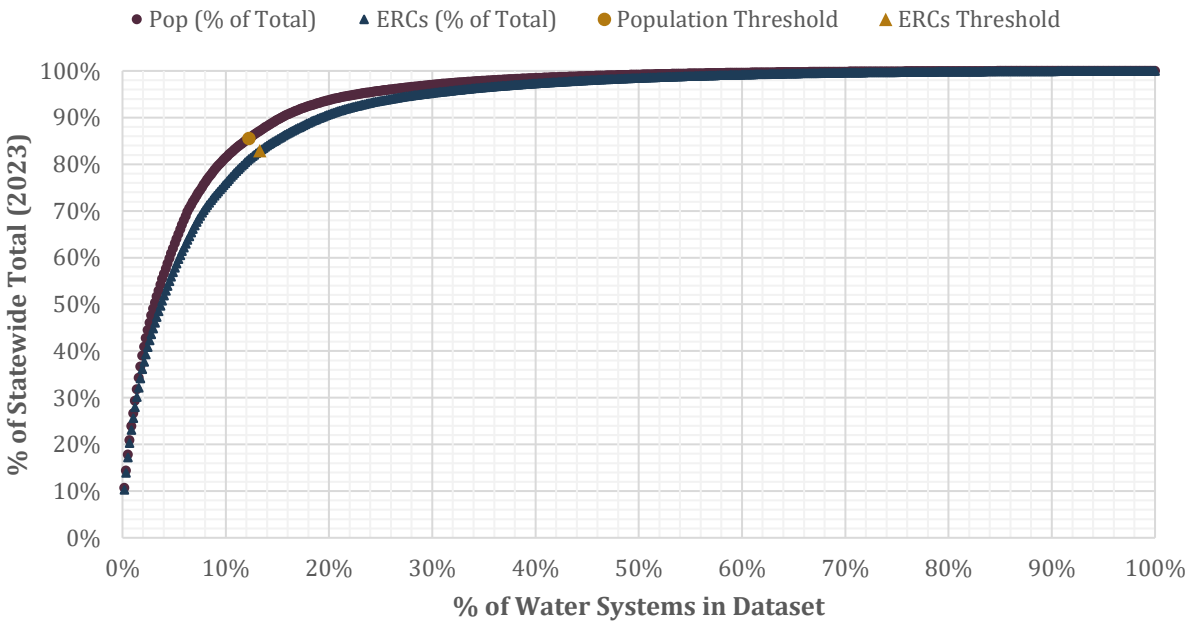

Figure 1: Small Community Threshold Analysis

SMALL COMMUNITY INVESTMENT NEED

The total investment need as identified above can be converted into an investment need per person. Table 3 summarizes per capita annual investment needs derived from data contained in Table 1. This information can then be used to estimate small community investment needs based on the population associated with small communities.

Table 3
Per Capita Annual Investment Needs

Period	Per Capita Investment Need (2025 dollars/person/year)				
	Ag off-farm	Water	Stormwater	Wastewater	Total
2025-2030	$35	$474	$25	$148	$682
2030-2040	$31	$210	$11	$65	$317
2040-2050	$27	$231	$12	$72	$343
2050-2060	$25	$252	$12	$70	$359
2060-2070	$23	$213	$12	$70	$319
Average	**$28**	**$276**	**$14**	**$85**	**$404**

It is difficult to predict how the small community population will change as communities transition in size over the next 40 years. For simplicity, we examined two scenarios to define lower and upper bounds for the small community needs over time:

1. **Static small community population.** This scenario defines the lower bound of expected small community population. It is unlikely that all growth occurs solely in larger communities and that small communities are unaffected.
2. **Small community population grows proportionally with statewide growth.** This scenario defines the likely upper bound of expected small community population. Most of future growth will likely be concentrated rather than proportionally distributed across the state, which will naturally cause some smaller communities as defined here to transition to larger communities.

These scenarios result in the range of total small community investment needs through 2070 shown in Table 4. The average of these scenarios ($10.2 billion in 2025 dollars) will be used for the purposes of estimating a recommended allowance over this same timeframe.

SMALL COMMUNITY UWIP PROJECT SUBMISSIONS

BC&A applied the small community thresholds to the UWIP project database to identify small community projects already accounted for in the UWIP data. A total of 1,197 projects met the criteria and had a total estimated cost of about $3.3 billion through 2070 in 2025 dollars. If the $3.3 billion in projects submitted to the UWIP is subtracted from the total need of $10.2 billion, this leaves $6.9 billion of remaining estimated need not represented by the UWIP project submissions.

Projects identified in the UWIP were categorized by infrastructure type and assigned to a lead agency as summarized in Table 5. The UWIP submission process utilized more disaggregated categories to describe the infrastructure type of project needs than the Prep60 and CWNS summary data used to estimate total need. Additionally, the Prep60 data aggregates multiple types of water needs that would be spread between the relevant agencies under the UWIP submission process. This table characterizes the total infrastructure need and remaining need subtotaled at the agency level only to compensate for the uncertainty with mapping the Prep60 data to the categories used in the UWIP submission process.

Table 4
Estimated Small Community Total Investment Needs

Period	Small Community Population		Estimated Small Community Total Investment Need ($ Million, 2025 dollars)									
			Ag off-farm		Water		Stormwater		Wastewater		Total	
	Low	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*
2025-2030	510,500	555,684	$89	$97	$1,210	$1,317	$64	$70	$377	$410	$1,740	$1,894
2030-2040	510,500	637,064	$156	$194	$1,071	$1,337	$57	$71	$334	$417	$1,618	$2,019
2040-2050	510,500	712,383	$139	$194	$1,181	$1,649	$63	$87	$368	$514	$1,751	$2,444
2050-2060	510,500	780,784	$127	$194	$1,285	$1,966	$61	$93	$360	$550	$1,833	$2,804
2060-2070	510,500	844,755	$118	$194	$1,089	$1,801	$61	$101	$360	$595	$1,627	$2,692
Total			**$ 629**	**$ 873**	**$5,836**	**$8,070**	**$ 306**	**$ 422**	**$1,799**	**$2,486**	**$8,569**	**$11,853**

Table 5
Small Community UWIP Project Submissions and Estimated Need

Lead Agency	Infrastructure type	Total Cost ($ Million, 2025)	Remaining Need ($ Million, 2025)[1]	Total Need ($ Million, 2025)[1]
Water Resources	Agriculture Off-Farm	$628	$124	$752
	Secondary Water	$427		
	Water Supply - Raw Water Source Development	$0		
	Subtotal	**$1,055**	**$2,554**	**$3,609**
Drinking Water	Drinking Water	$1,543		
	Subtotal	**$1,543**	**$2,553**	**$4,096**
Water Quality	Reuse	$21		
	Stormwater/Flood Control	$140		
	Wastewater	$520		
	Water Supply - Watershed Protection	$4		
	Subtotal	**$685**	**$1,821**	**$2,506**
	Total	**$3,283**	**$6,928**	**$10,211**

1 With the exception of Agricultural Off-Farm needs, the total need and remaining needs were calculated based on the infrastructure categories in Table 4 and split between the relevant agencies. This approach did not subdivide the agency subtotals between infrastructure types.

SMALL COMMUNITY NON-STATE FUNDING PROPORTION

A key planning challenge for the small community allowance is to estimate how much of the unrepresented need will seek funding by the state. BC&A utilized the following data points to make a reasonable estimate of what the state should budget for its share of small community projects:

- **Historic Funding Percentage**. Members of the project team from WRe indicated historical state funding from WRe has been near 20 percent of the project total, leaving 80 percent of the project costs to non-state sources (including self-funding).
- **Small Community Projects from UWIP Database**. Figure 2 shows the distribution of the number of systems and their average percentage of project costs requested from the state in the UWIP project database. The average among the filtered projects is 43 percent.
- **Clean Water Needs Survey**. The methodology used for this survey accounts for how smaller communities typically have higher conveyance costs split among fewer connections with a pipe length factor (feet of pipe per capita). Depending on community size, the pipe length factor for small communities as defined here (10,000 people or less) could be anywhere from 39 to 108 percent higher than for populations of 50,000 or greater. Assuming the state covers the difference in costs to assist smaller communities and applying these increases to a historic funding percentage of 20 percent gives a range of 27 – 42 percent state funding.
- **HB 280 Infrastructure Fee Study** – Parallel to the efforts associated with the UWIP study (under which this memo is being prepared), House Bill 280 also authorized the completion of an infrastructure fee study. This study is being prepared by Zions Public Finance and was still in process as of the writing of this memorandum. However, preliminary results from that study identified an expected need for State funding of water infrastructure statewide of approximately 25 percent.

Based on these data points, it is recommended that the UWIP include an assumed level of state funding for small communities of 30 percent.

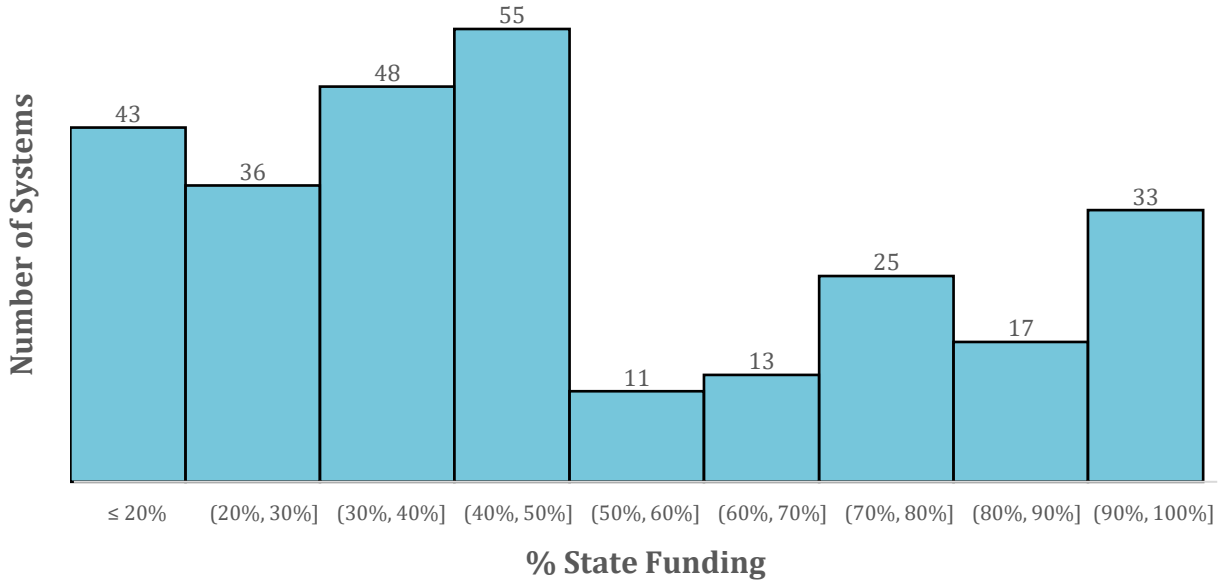

Figure 2: Histogram of Funding Percentage Requested from State Funds from Small Community Projects

RECOMMENDED SMALL COMMUNITY ALLOWANCE

The previous sections establish the key inputs needed to estimate the small community allowance. If the anticipated remaining need is divided uniformly over the next 45 years and the portion of state funding is estimated at 30 percent, a small community allowance for each agency can be calculated as summarized in Table 6. The recommended total UWIP allowance is $46.2 million per year.

Table 6
Recommended Small Community Allowance

Lead Agency	Total Small Community Need Exclusive of Current UWIP Projects	Small Community Additional UWIP Allowance (30% State Funding)
Water Resources	$57M/year	$17.1M/year
Drinking Water	$57M/year	$17.1M/year
Water Quality	$40M/year	$12.0M/year
Total	**$154M/year**	**$46.2M/year**

The purpose of initially including the allowance is to allow funding for small communities who were initially missed in outreach efforts or do not have enough planning information or expertise to define projects at this time. As the UWIP funding application processes mature, we assume that small communities will learn these new procedures and this allowance will no longer be required as a supplement to the UWIP prioritized project list each year.