Infrastructure Funding for Community Water Systems in New Mexico, Including Tribal Community Systems

Prepared by

The Southwest Environmental Finance Center

Center for Water and the Environment

at The University of New Mexico

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Acknowledgements

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I. Executive Summary

Despite the availability of many loan and grant programs to help communities with drinking water infrastructure in NM, many communities—especially small, rural communities—lack the internal and external resources and expertise needed to address basic science, planning, design, and construction to solve their water challenges. Unmet needs exacerbate the challenges associated with aging/decaying infrastructure, lack of internal technical, managerial, and financial capacity, noncompliance with drinking water and wastewater regulatory requirements, and shifting water availability and demand. State, Tribal, and local officials need information regarding specific challenges related to funding infrastructure to facilitate informed actions to help improve the situation.

One of the most important aspects of sustainably managing a drinking water system is the ability to fund asset rehabilitation or replacement as needed. There are many state and federal funding sources available, but these programs may not adequately meet water systems' needs. This study was conducted to better understand communities' needs and concerns related to drinking water funding sources—including what is working and more importantly, what is not.

Two water system types—state regulated Community Drinking Water Systems (CDWS) and EPA regulated Tribal Drinking Water Systems (TDWS)—were included in this study.

This study shows that many small, resource-challenged systems feel overwhelmed with the complexities of funding and often do not even know how to begin the process. Rather than taking any action, they may choose to do nothing while the problems they face worsen. Water systems need more comprehensive and easily accessible resources and assistance to find, apply for, manage, and implement funding to upgrade and maintain their assets, and provide the operational means to be sustainable and resilient providers of drinking water. Furthermore, water systems have a strong desire to have more open communication with systems similar in size and governance structure to share information and strategies. Strategies for funding water system needs vary across water system types, but for most small systems, funding decisions are made in a rather *ad hoc* manner. Systems need to improve their overall funding strategies to better plan for short-, medium-, and long-term infrastructure improvements. Many systems work on a day-to-day and year-to-year basis, with little to no capacity to think realistically about the future of their water system. The challenges systems face are wide ranging—e.g., volunteer board administration concerns, recruiting and retaining water operators, knowledge transfer from retiring workers, options related to partnerships/consolidation—and often shared across all types of systems in the state. To prepare for the future, especially given the additional challenges related to a changing climate, small and very small systems will need help developing decision-making processes to navigate changing water supply and demands of the future.

Southwest Environmental Finance Center (SW EFC) researchers have developed ten recommendations to improve access and ease of applying for and receiving funds for drinking water systems in New Mexico as well as addressing some managerial challenges. These recommendations are:

1. Ensure that awarded funds are sufficient for completing the entire proposed project
2. Provide assistance via a "Funding Navigator"
3. Improve the application process, keeping in mind that end users have a wide range of knowledge, expertise, available time, and access to and comfort with technologies
4. Increase the usage of existing funding programs rather than increasing the number of funding programs
5. Create opportunities for systems to communicate with one another
6. Create venues that allow state and federal regulatory and funding agencies to be in communication with water systems

7. Develop information and trainings so that water systems, particularly small and very small systems, better understand the various strategies for fully funding their water system, including infrastructure as well as day to day operations and maintenance
8. Reexamine and consider modification of the MDWCA organizational structure
9. Develop a state-wide, multi-agency and water organizations messaging approach to collaboration and regionalization
10. Develop scenario planning tools and trainings for utilities so that they can envision sustainable and resilient futures

These recommendations apply to both CDWS and TDWS. Additional sub-recommendations and details are provided in the full report. Two additional recommendations are specific to TDWS, which stem from their unique governance structure, cultural relationship to water and planning, and significant development on Tribal lands. These recommendations are:

1. Plan in-person forums to expand communication opportunities amongst Tribal water systems and with their respective Tribal governments
2. Develop scenario planning tools and trainings that are specific to TDWS concerns and needs

This report will be especially useful to the New Mexico Environment Department (NMED), the New Mexico Finance Authority, and the New Mexico Indian Affairs Department. This report may also help inform the New Mexico State Legislature as it makes decisions on future legislation, funding, and assistance for water systems.

This report contains the assessments, strategic thinking, and recommendations of the SW EFC project team.

II. Introduction

Context

Despite the availability of many loan and grant programs to help communities with drinking water infrastructure in NM, many communities—especially small, rural communities—lack the internal and external resources and expertise needed to address basic science, planning, design, construction, and operation and maintenance needs to solve their water challenges. Unmet needs exacerbate challenges associated with aging/decaying infrastructure, lack of internal technical, managerial, and financial capacity, noncompliance with drinking water and wastewater regulatory requirements, and shifting water availability and demand. State, Tribal, and local officials need information regarding the specific challenges related to funding infrastructure to facilitate informed actions.

One of the most important aspects of sustainably managing a drinking water system is the ability to fund asset rehabilitation or replacement as needed. There are many state and federal funding sources available, but these programs may or may not adequately meet water systems' needs. This study was conducted to better understand communities' needs and concerns related to drinking water funding sources—including what is working and more importantly, what is not.

According to the NM Legislative Finance Committee, limited state grant money can only fund a portion of submitted applications, while there are remaining unused federal dollars.[1] They also found that New Mexico is the only state that funds a majority (67%) of drinking water projects using state money instead of federally backed Revolving Funds. They caution that unless New Mexico increases its utilization of federally backed Revolving Funds, it could jeopardize continued federal grants to the program, which could have an impact on the state's ability to secure funds from the recently enacted Infrastructure Investment & Jobs Act. This study was undertaken in order to gain a better understanding of state regulated Community Drinking Water Systems (CDWS) and EPA regulated Tribal Drinking Water Systems (TDWS) needs and concerns. Results from CDWS and TDWS are separated due to the different regulatory environments, principal source of funds, and cultural views and uses of water. The study began with a voluntary online survey to collect data about management, funding, and system consolidation/partnership in CDWS and TDWS. The survey was followed by in-depth interviews regarding funding, administration, and management of the systems. The systems were selected randomly for interviews.

Purpose

The primary audience for this report is the agencies in New Mexico who fund, assist, and regulate drinking water in New Mexico. The report will be especially useful to the New Mexico Environment Department (NMED), the New Mexico Finance Authority, and the New Mexico Indian Affairs Department. This report may also help inform the New Mexico State Legislature as it makes decisions on future legislation, funding, and assistance for water systems.

<u>The following questions were addressed:</u>
Funding:

- Which sources are being used?
- Are systems seeking grants over loans?
- How easy/hard is it to apply for the funds?

[1] New Mexico Legislative Finance Committee. "Program Evaluation: State-Funded Water Projects," 2021. https://www.nmlegis.gov/handouts/ALFC%20062221%20Item%206%20State-Funded%20Water%20Projects.pdf.

- How easy/hard is the process to administer the funds after receipt?
- Who helps systems through the process?
- Why do systems choose one funder over another?

Management:

- How many systems have difficulty keeping or recruiting board members?
- Do board members have adequate skills and knowledge?
- Do systems have challenges finding operators or bookkeepers?
- Is there a relationship between receiving funding and water rates?

Needs Assessment:

- What are the top needs and concerns faced by managers?
- Do managers believe climate change is a significant issue for them?
- Are managers doing anything to mitigate the impacts of climate change?

This project supports multiple objectives:

- To engage CDWS and TDWS in a conversation about funding drinking water infrastructure improvements in New Mexico
- To provide water systems with an opportunity to voice their concerns regarding challenges they face and discuss what is working for them and what is not
- To increase the understanding of how well the state (and federal) funding process is working for New Mexico's drinking water systems

Background Information

Community Drinking Water Systems in New Mexico

There are approximately 570 CDWS in New Mexico – defined as a system that serves at least 15 service connections or 25 people who are year-round residents. These CDWS are organized as one of eight principle organizational structures, which are officially listed in the articles of incorporation and with the New Mexico Secretary of State. These organizational structures include: Mutual Domestic Water Consumers Associations (MDWCAs), Water and Sanitation Districts (WSDs), Cooperatives, Non-profits, Investor Owned, Municipally Owned, Mobile Home Parks (MHPs), or Authorities. These organizational structures can affect the systems' eligibility for funding.

All CDWS in New Mexico are subject to the federal Safe Drinking Water Act (SDWA) as administered by the New Mexico Environment Department, who has regulatory primacy and ensures that drinking water systems in the state meet SDWA regulations. Regulations and reporting requirements can vary based on system size. The size categories designated by the EPA are shown in the table below. In New Mexico, 88 percent of CDWS are designated as either small or very small, with 67 percent being in the very small category.[2]

[2] New Mexico Environment Department. Drinking Water Watch. https://dww.water.net.env.nm.gov/NMDWW/

Table 1: EPA water system size designations and number of systems in each category

System Designation	Population Served	Number of CDWS in NM	Percentage of CDWS in NM
Very Small	500 or less	380	67.0%
Small	501-3,300	121	21.3%
Medium	3,301- 10,000	35	6.2%
Large	10,001 – 100,000	29	5.1%
Very Large	>100,000	2	0.4%

CDWS in New Mexico have access to up to 35 different sources of funding from 17 different entities that may consist of a grant, a loan, or a combination of the two.[3] System eligibility for these different sources is based on a number of factors, including their organizational structure, population served, and, in a few cases, their geography. This research seeks to increase understanding of fund utilization and challenges in accessing the available funds.

Tribal Drinking Water Systems in New Mexico

All TDWS in New Mexico are subject to federal SDWA requirements that are implemented directly by EPA or by the Navajo Nation. Regulatory and reporting requirements are different for systems that serve different numbers and types of populations.

There are a total of 58 EPA regulated TDWS in New Mexico. These water systems are owned and operated by the 19 Pueblos and two Apache Tribes and serve populations within these Tribal communities. The Navajo Nation also owns and operates public water systems in New Mexico and is the only Tribal Nation that has been granted primacy by EPA to implement and enforce the SDWA at the Nation's water systems. Survey responses were requested from the Nation's utility staff, but no responses were received. Of the 58 EPA regulated systems in New Mexico, 37 of them serve community populations while 21 of them serve non-community populations. 31 percent of EPA regulated TDWS in New Mexico are designated as very small, while 48 percent are designated as small.

Tribal systems can access most or all of the funding sources accessible to CDWS and have access to additional funding sources that are specifically set-aside for Tribes.

[3] Environmental Finance Center Network. New Mexico Water and Wastewater Funding Sources. 2020. https://efcnetwork.org/wp-content/uploads/2020/07/NM-Water-Wastewater-Funds-2020_draft.pdf

III. Research Design

Overall Description

This study used a mixed method approach of surveys and interviews with CDWS and TDWS. A diverse group of SW EFC staff were involved in the development of both the survey and interview protocol. The SW EFC first implemented the survey, which consisted primarily of quantitative results. The surveys were launched in early May 2021 and closed in late June 2021. The survey was completed by board members as well as permanent and contract staff working either full-time or part-time for the water systems. If someone did not have online access, they were sent a hard copy survey. Efforts to increase survey participation were continued until approximately 100 results were received (99 responses ultimately were received), which was deemed to be a sufficient sample size to accurately describe various perspectives of water system personnel. The survey results were then used to design interview questions and a protocol that allowed researchers to dig deeper into the survey findings and better understand the nuances and background behind the findings. Interviews were held until saturation was reached—a point at which researchers had reached as full an understanding of New Mexico community water system perspectives as possible and it was assumed that further interviews were unlikely to yield additional information. This mixed method research design allows researchers to understand both the apparent and everyday situations or challenges for water managers in New Mexico and the underlying systems or institutions that are contributing to them.

To protect the identity of survey and interview participants, all data is presented anonymously. The Survey Tool and the Interview Protocol can be accessed on the SW EFC website at swefc.unm.edu/home/survey.

Data Collection

Survey

The survey consisted of 38 questions and was broken down into three sections – Management, Funding, and Management Alternatives for NM Systems. Topics covered included general operations and challenges for systems, how they have interacted with grant and loan funding and the purpose of the funding, drought concerns, and attitudes towards regionalization. Question formats included select all that apply, ranked choice, agree/disagree, and a fill in the blank/other option. Questions were designed and organized in a way to minimize leading questions in order to get as accurate and honest results as possible.

While results are presented anonymously, the survey did have a question asking the respondent for the name of their affiliated system(s). This allowed researchers to compare survey results to external CDWS data and to ensure a representative geographic and demographic distribution of survey responses. Like all questions in the survey, respondents could choose not to answer this question and fill out the survey completely anonymously.

Community Drinking Water System Survey

The CDWS survey was emailed to 730 people associated with CDWS in NM who had their emails listed on NM Drinking Water Bureau's Drinking Water Watch database. Out of the 264 people in the database who did not have emails listed, 142 were called and encouraged to fill out the survey online or to request a paper copy that was mailed along with a prepaid return envelope. Additionally, in order to boost survey participation, SW EFC staff called 233 randomly selected people who were sent the initial

email invite to encourage them to fill out the survey. Follow-up reminder emails were sent out and the survey was shared with various other water related organizations and agencies who shared it and encouraged people to participate. This work was done during the Covid-19 pandemic, which added the challenge that all work had to be done remotely and in-person events were not happening (e.g., conferences and in-person trainings), which would have been ideal venues to drive enthusiasm and participation for this project. An additional challenge that was encountered was survey fatigue, which was expressed during the survey reminder phone calls. This was due to the heightened level of surveying during the Covid-19 pandemic and the limited forms of interaction between agencies and system personnel during this time. Using the reminder phone calls, as well as the other activities increased the number of returned surveys.

The request yielded 99 responses to the survey, which represent roughly 17 percent of the 570 CDWS. All respondents were from different CDWS. Four responses were anonymous. Additionally, many respondents were associated with multiple systems, so the number of CDWS represented in the responses is somewhat greater than the 99 survey responses. Respondents were able to skip any questions or respond anonymously, so the number of responses for each question varies and the number of responses that we can compare with external system data is reduced. Because many people who filled out the survey were not directly involved with funding for their drinking water system, only 48 of the total respondents addressed questions specific to funding.

Tribal Drinking Water System Survey

The TDWS survey was emailed to 147 people associated with TDWS in New Mexico. The survey was sent to both Community and Non-Community TDWS because most Tribal utilities cover all water systems located within their Tribal boundaries. Reminder emails were sent out to maximize the number or responses. The request yielded 40 responses to the survey, 38 from Community systems, one from a Non-Community system, and one anonymous response. Eight TDWS had multiple people fill out the survey. All responses were included in the analysis in order to include the perspectives from various professional positions. The TDWS survey was the same as the CDWS survey with the exception of the list of available funding sources which was slightly longer because TDWS are eligible for more sources of funding than CDWS. Like the CDWS survey, respondents could skip any question and they were able to answer anonymously, if desired.

Interviews

After analyzing the survey results, the SW EFC began by interviewing CDWS in early July 2021, completing 29 interviews by mid-August 2021. Interview participants were randomly selected while ensuring a representative sample of NM water systems. TDWS were interviewed starting in mid-August, ending with a total of 9 interviews by mid-September 2021. While they all were involved with funding, interview participants held a variety of positions within their water system, and some worked for multiple systems. The CDWS and TDWS interview protocols were identical, but results are separated due to the different regulatory and funding environments. To show appreciation for the participant's time, all interviewees were offered a $20 gift card [to Walmart, Home Depot, or Amazon]. Some chose to accept while others did not.

The goal of these interviews was to gain a more in-depth understanding of drinking water finance and management in New Mexico and to dig a little deeper into how water system staff and board members choose funding sources for their drinking water system. These interviews provided key qualitative data that filled in the gaps and introduced nuances the survey did not supply. Since the specific person filling out the survey was anonymous, it is unknown whether interviewees (or another staff member from the

water system) completed the survey. A semi-structured interview was created to explore participants' thoughts, feelings, beliefs and values about water system funding and management. Additionally, the SW EFC wanted the opportunity to delve a bit more deeply into the nuances of choices and challenges people faced.

Data Analysis

The surveys were administered using the online survey platform Opinio. Survey data was analyzed by the SW EFC research team using Microsoft Excel. Visual representations and a description of the survey findings are in the next section, with supplemental graphs presented in Appendix B.

Interviewers took notes during the phone conversation—and if consent was given, audio recorded the conversation to refer to later for clarification purposes—then input the data into Microsoft Forms. Microsoft Forms served as a means by which the interview data could be compiled in a consistent format. To make sense of the raw data collected during the interviews, the data was coded to uncover key words, patterns, and trends in the data. By analyzing and identifying themes in the coded data, the SW EFC able to clearly address the questions that drove this research. Working from these conclusions, the SW EFC developed recommendations for NMED to pursue in the short-, medium-, and long-term.

IV. Community Drinking Water System Survey and Interview Results

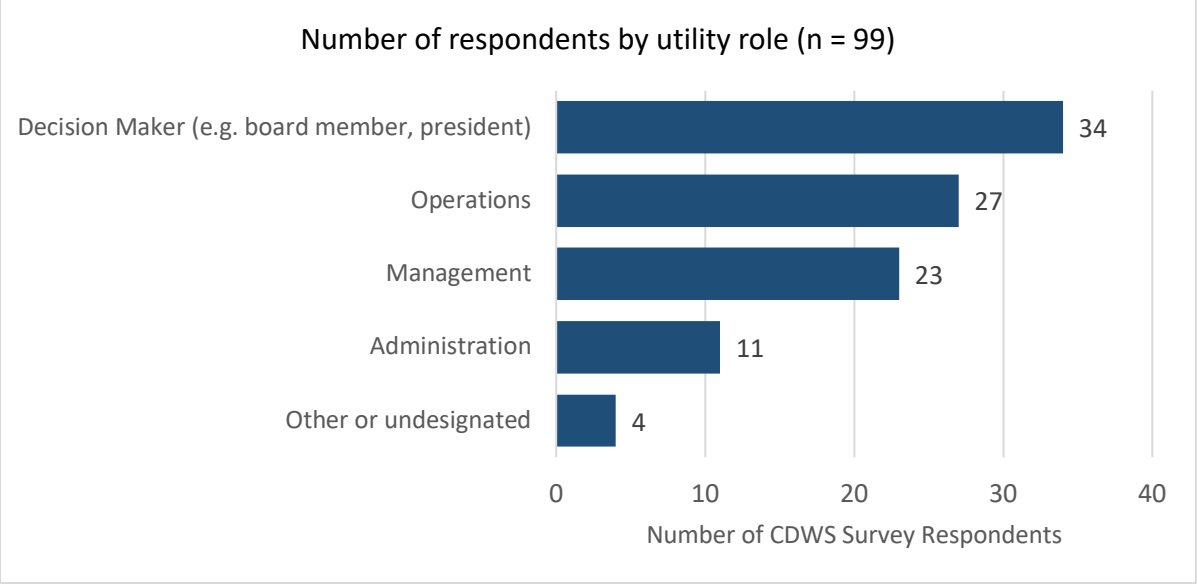
Results of the CDWS survey are broken down into sections consisting of Survey Participation, Funding Related Results, and Managerial Related Results. This section of the report ends with a brief discussion of the survey results and key takeaways, followed by findings from the interviews with managers of CDWS.

CDWS Survey Results

Survey Participation

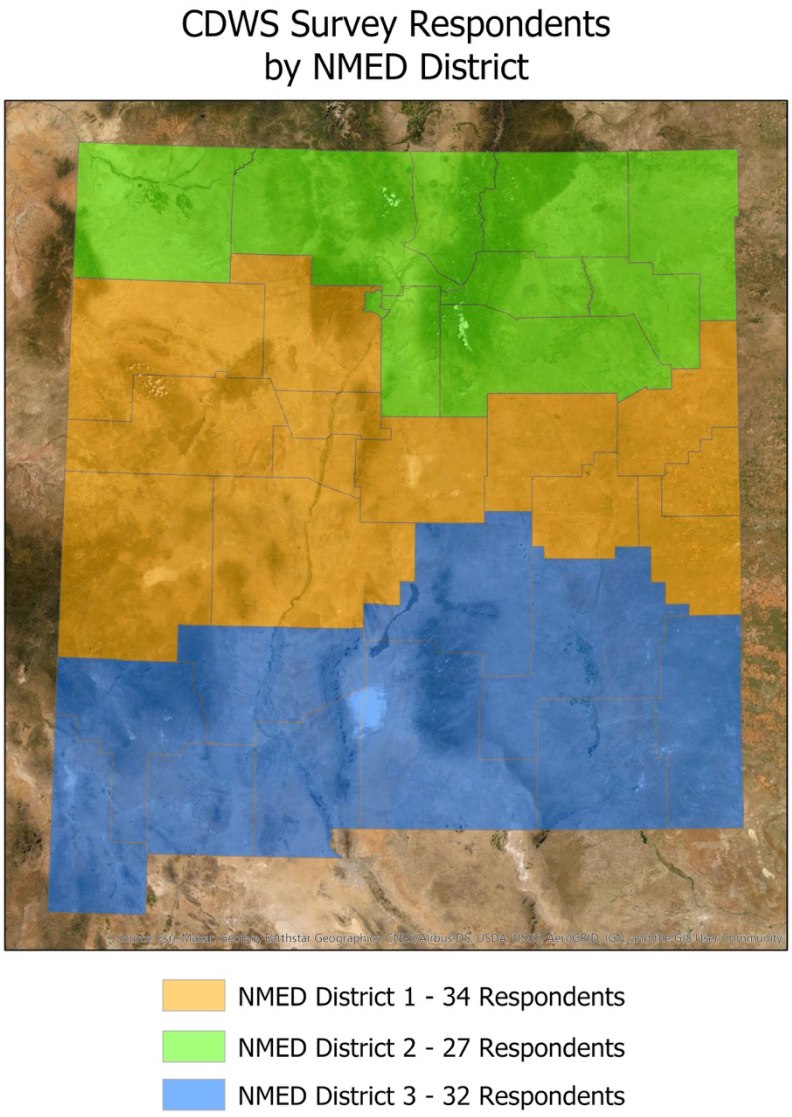
CDWS survey respondents held a variety of positions. Out of the 99 responses, there were 49 unique titles entered. Because of the wide variety of titles, the SW EFC categorized them as either Decision Maker, Operations, Management, or Administration. Decision Maker was the largest category (34 percent of respondents), but because of the fluidity of roles and tasks, the limited number of people involved with systems, and the nature of working or volunteering for a water system, people perform a variety of tasks that may not be adequately covered by their title. On average, Management worked the most hours per week at 34.2, followed by Administration at 20.4, Operations at 19.1, and Decision Makers at 10.3 hours.

Figure 1: Professional roles of CDWS survey respondents



Based on the information provided by respondents willing to include system information, responses were received from 27 of New Mexico's 33 counties. There was a relatively even spread across the state with 34 responses from NMED District I (13 counties in Central NM), 27 from District II (10 counties in Northern NM), and 32 from District III (10 counties in Southern NM).

Figure 2: Map of CDWS survey results from each New Mexico Environment District



Respondents were associated with water systems with a variety of organizational structures, with the most common being Mutual Domestic Water Consumers Associations (MDWCAs). Some respondents were associated with multiple systems, particularly hired operators, but they only selected one organizational structure in the survey. The spread of organizational structures roughly matched the percentage of systems in the state with that type of organizational structure, with MDWCAs most closely aligned - 38 percent of respondents were associated with MDWCAs, while MDWCA's account for 37 percent of CDWS in NM. MDWCAs are political subdivisions of the state, designated under the

Sanitary Projects Act.[4] MDWCAs are generally smaller systems and are more likely to have lower income and a higher percent Hispanic population than other institutional structures.[5] Municipal systems, the second most common response are generally much larger systems than the other more common institutional structures. Investor-owned systems, cooperatives, and mobile home parks are generally privately owned systems, whereas the rest are publicly owned. Private systems are eligible for fewer sources of funding than publicly owned water systems and eligibility may be based on whether they are for-profit or not-for-profit.

Table 2 compares the number and percentage of responses from each organizational structure to the number and percentage in the state as a whole. The rows highlighted in blue represent organizational structures that are overrepresented in the survey, while the orange highlight represents organizational structures that are underrepresented. The most significant underrepresentation is with Mobile Home Parks (MHP). However, MHPs are small private systems that are not eligible for most public funding options. There were six anonymous survey responses with an unknown organizational structure.

Table 2: CDWS survey respondent organizational structures and organizational structures of all CDWS

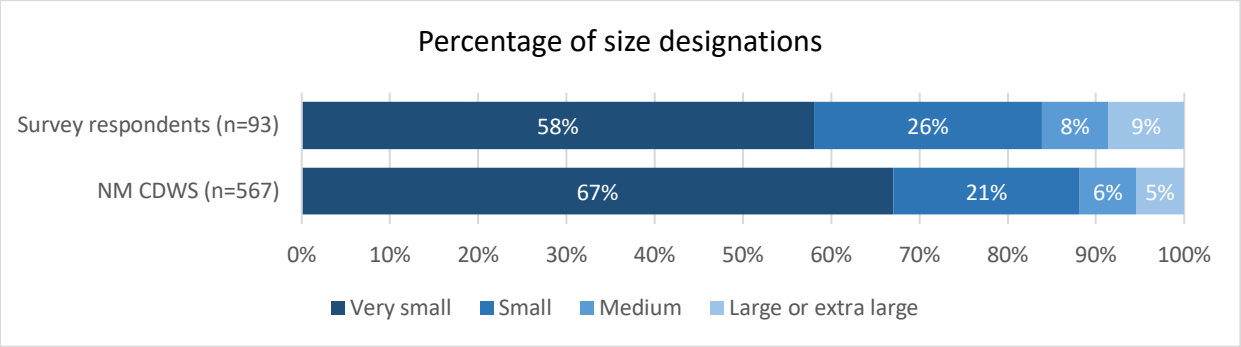
Organizational Structure	Number of Systems in Survey (n = 99)	% of Systems in Survey	Number of Systems in State (n = 567)	% of Systems in State
MDWCA	38	38%	209	37%
Municipal	21	21%	93	16%
Cooperative	12	12%	56	10%
Investor Owned	7	7%	58	10%
WSD	6	6%	20	4%
Non-Profit	4	4%	46	8%
MHP	2	2%	56	10%
Other	3	3%	29	5%
Anonymous	6	6%		

[4] Sanitary Projects Act of 1978. NMSA, §3-29-1 through §3-29-20. 1978.

[5] Warner, Benjamin P., Tucker Colvin, and Ria Mukerji. "Recentralizing state power in decentralized small drinking water system governance in New Mexico, USA." International Journal of Water Resources Development. 2021.

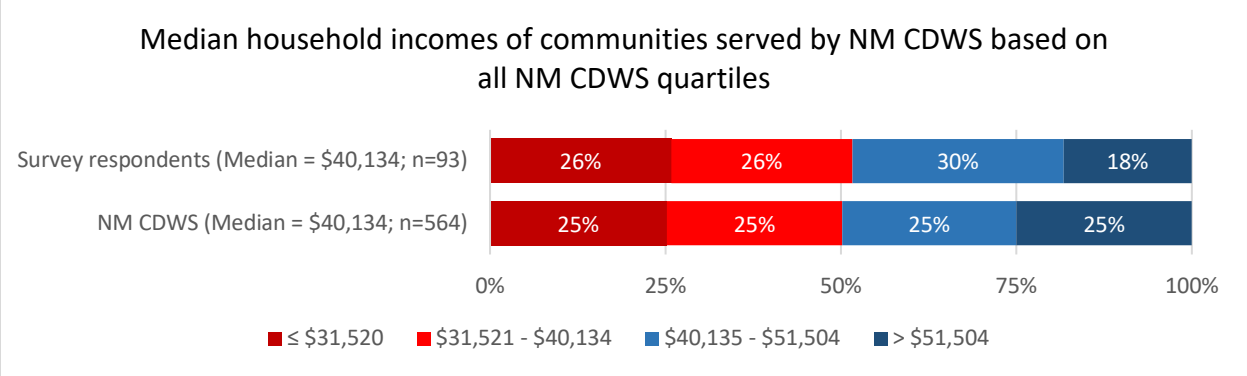
The majority of CDWS survey respondents (58%) were associated with systems designated as very small. However, this is lower than the statewide percentage, where two-thirds of systems are designated very small. The survey responses skew slightly towards larger systems, which may be because larger systems are more likely to have paid staff or people who have time to take a survey.

Figure 3: CDWS survey respondent system sizes and NM CDWS sizes



For both NM CDWS and CDWS survey respondents' affiliated systems, the median of median household incomes was $40,134, based on US Census data. The survey had slight overrepresentation in the third income quartile and underrepresentation of the fourth quartile based on median household incomes of all NM CDWS.[6]

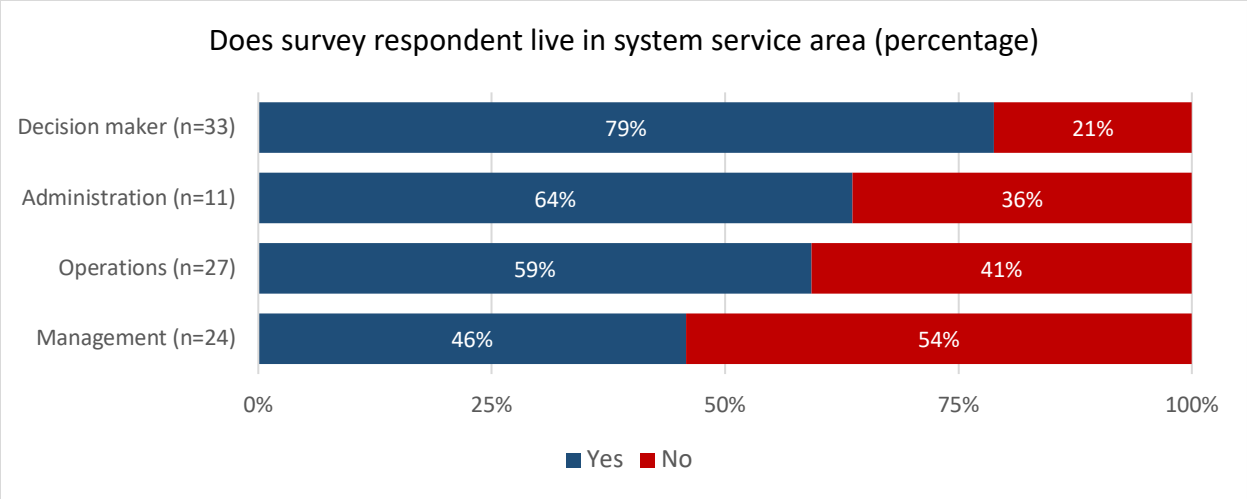
Figure 4: Quartiles of median household income of CDWS survey respondents and all NM CDWS



[6] Median household income of US Census American Community Survey 5-year average 2012-2017. Value assigned to systems based on Census Tract value of point of the median geographic center of all system infrastructure coordinates.

Survey respondents were asked whether or not they live within the service area of their water system. Overall, 63 percent of respondents live within their service area. The data was broken down according to respondent's job titles. Decision makers, such as board members, were the most likely to live within their service area. Most management respondents (54%) live outside of the service area, meaning it is more likely that they are paid to come work for the facility.

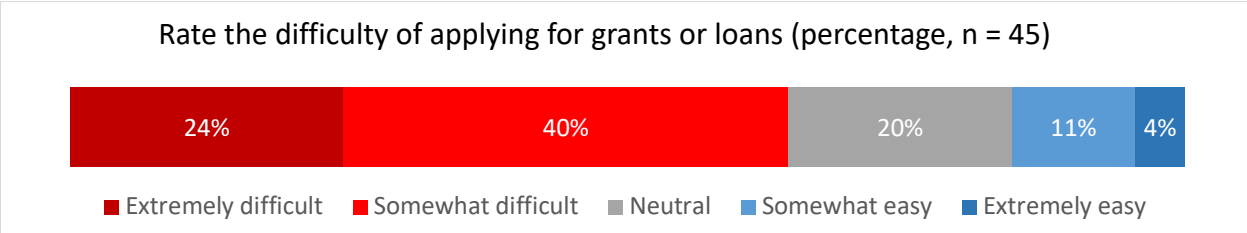
Figure 5: Whether CDWS survey respondent lives in service area separated by title



Funding Related Results

When asked to rate the difficulty of applying for grants and loans, 64 percent of respondents selected either extremely difficult or somewhat difficult. Only 15 percent said the process with extremely easy or somewhat easy.

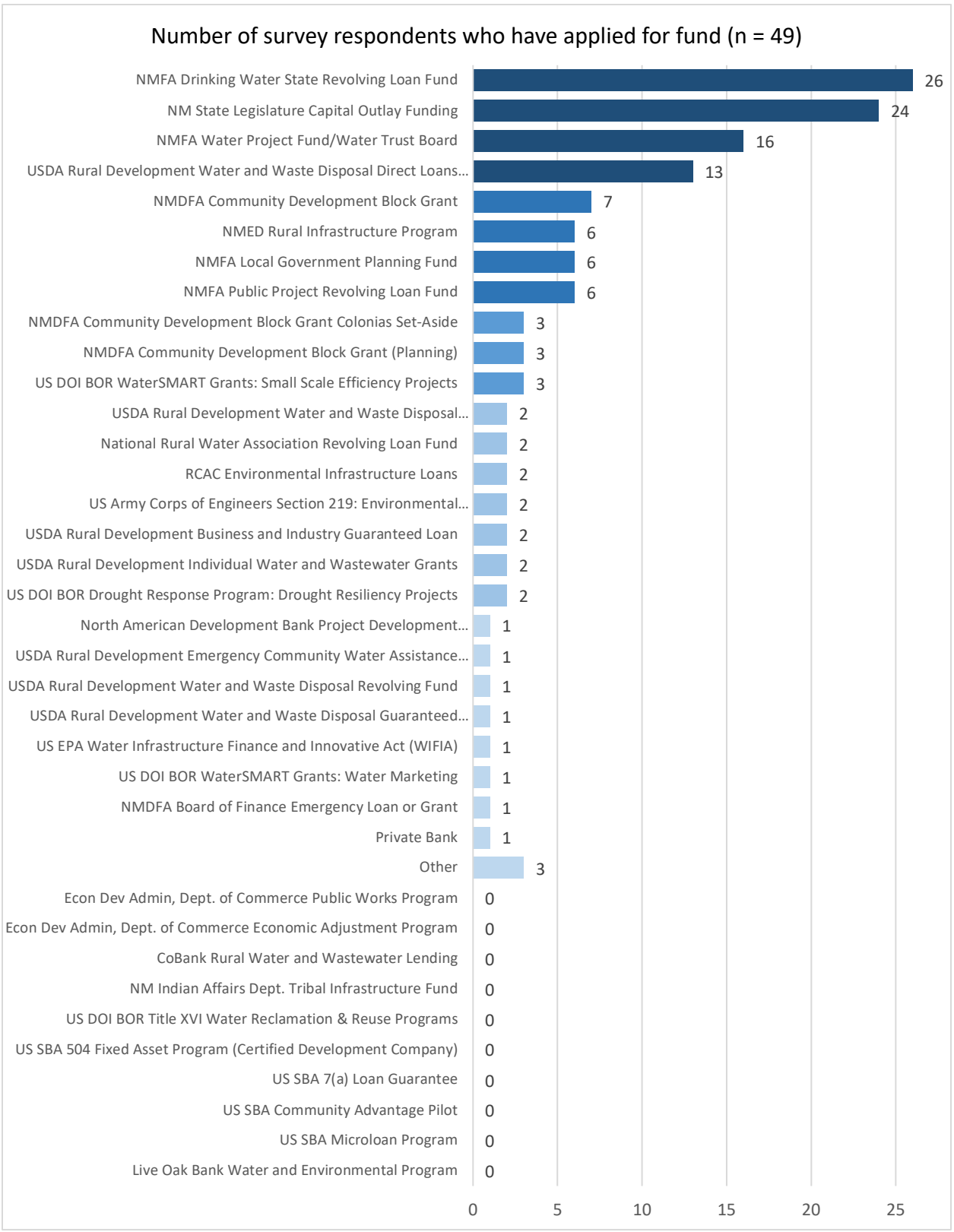
Figure 6: Level of difficulty of applying for funding



The survey asked respondents to state out of the 35 available funding sources within New Mexico how many they applied for, which they have received, if they received the full amount requested, if it was in the last five years, and to rate the difficulty of the application process. The four most utilized sources were NMFA Drinking Water State Revolving Loan Fund, State Legislature Capital Outlay Funds, NMFA Water Project Fund/Water Trust Board, and US Department of Agriculture Rural Development Water and Wastewater Disposal Direct Loans and Grants. Ten sources were not applied to and 14 were not received by any respondents. The three "Other" answers given were NMFA Colonias Infrastructure Fund, a loan from a system's county, and not specified.

The graph below represents the number of respondents who have applied to each funding source. However, it is possible that some respondents selected the incorrect funding source. This could be because many of the funds and funding agencies have very similar names or because the respondent did not have a major role in the application process, and it was mainly carried out by an engineering firm or some other person or entity.

Figure 7: Funding sources applied to by respondents of CDWS survey



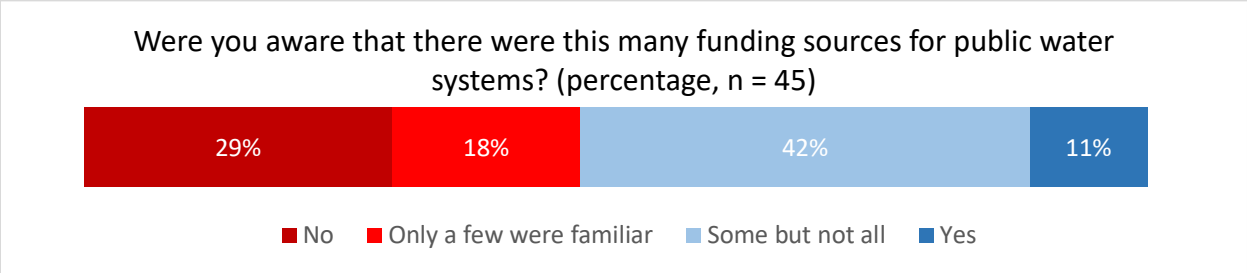
The table below shows the full responses for the eight funding sources that were most utilized by respondents. The fifth column represents the difficulty of the application process. Respondents were asked to rate the difficulty as either easy, medium, or hard. The responses were given a numeric rating of 1 – easy, 2 – medium, and 3 – hard to be able to calculate an average difficulty rating across all respondents on a scale of 1 to 3. The final average rating is provided in the column on the far right.

Table 3: Detailed responses to top funding sources utilized by CDWS survey respondents

Funding source	Number of respondents who have applied	Number of respondents who have received	Number of respondents who received full amount requested	Applied or received funds in last 5 years	Average level of difficulty in applying for fund (1=easy, 2=medium, 3=hard)
NMFA Drinking Water State Revolving Loan Fund	26	17	14	14	1.8
NM State Legislature Capital Outlay Funding	24	22	12	14	1.6
NMFA Water Project Fund/Water Trust Board	16	13	12	10	2.3
USDA Rural Development Water and Waste Disposal Direct Loans and Grants	13	11	8	1	2.4
NM DFA Community Development Block Grant	7	5	5	4	2.7
NMED Rural Infrastructure Program	6	6	4	2	1.7
NMFA Local Government Planning Fund	6	5	5	6	1.4
NMFA Public Project Revolving Loan Fund	6	4	3	2	1.8

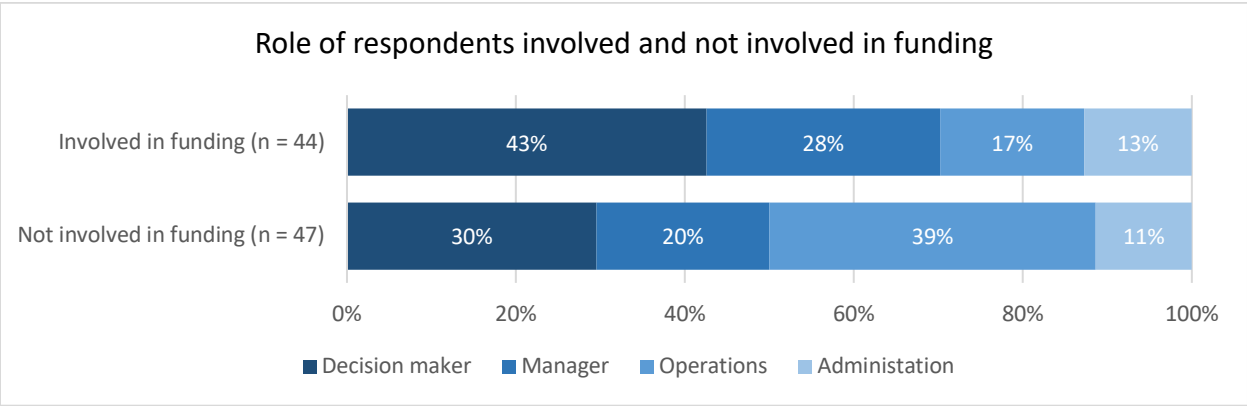
Only 11 percent of respondents to the CDWS survey claimed to be aware that there are this many funding sources available to them, while 47 percent of respondents claimed not to be aware of the number of funding sources or were only familiar with a few of them.

Figure 8: Level of awareness of number of funding sources available to CDWS



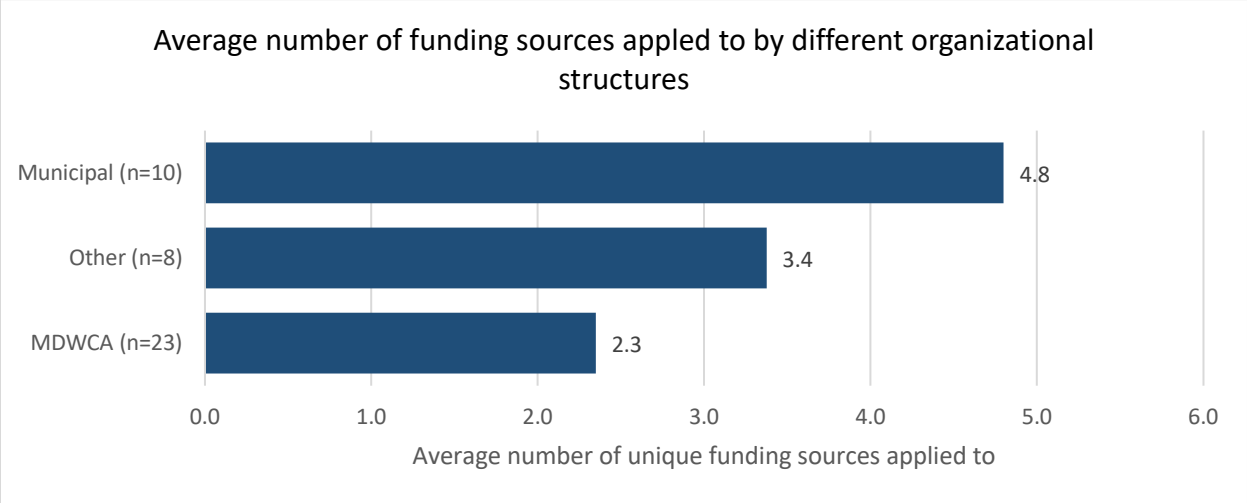
Of the 99 responses, slightly less than half, or 44 respondents selected that they are involved in funding. Decision makers and managers were more likely to be involved in funding and those with titles in operations and administration were less likely to be involved in funding.

Figure 9: Role of CDWS survey respondents who are and are not involved in funding



On average, municipal systems applied to a wider variety of funding sources than MDWCAs. Municipal systems are generally larger than MDWCAs and are more likely to have paid staff to work on funding applications.[7] However, the majority of survey respondents who have applied for funding were affiliated with MDWCAs.

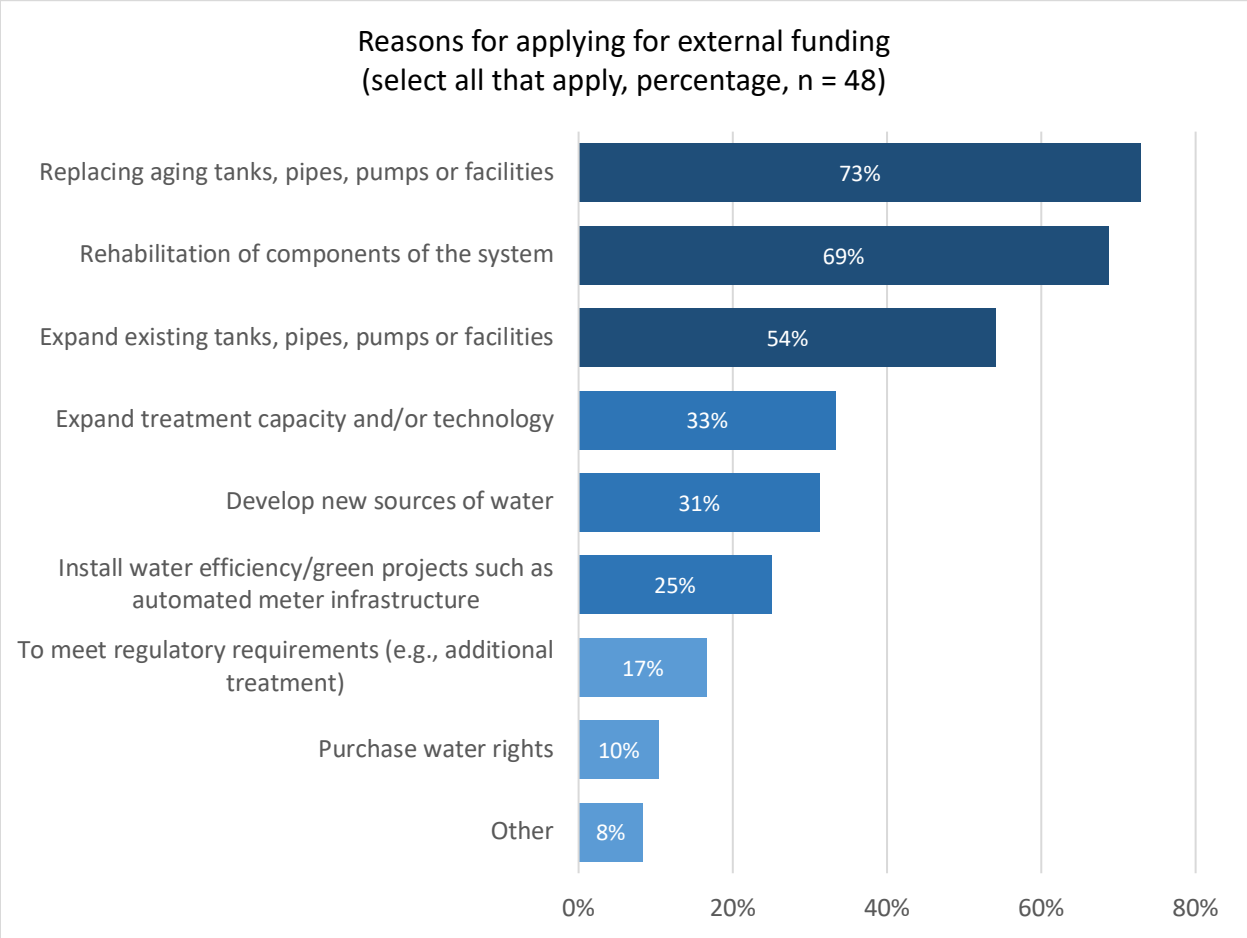
Figure 10: Average number of unique funding sources applied to by CDWS survey respondents from different organizational structures



[7] Colvin, Tucker. "Drinking Water Governance For Whom? An Institutional Analysis Of Rural Drinking Water Systems In New Mexico," 2020. https://digitalrepository.unm.edu/geog_etds/50

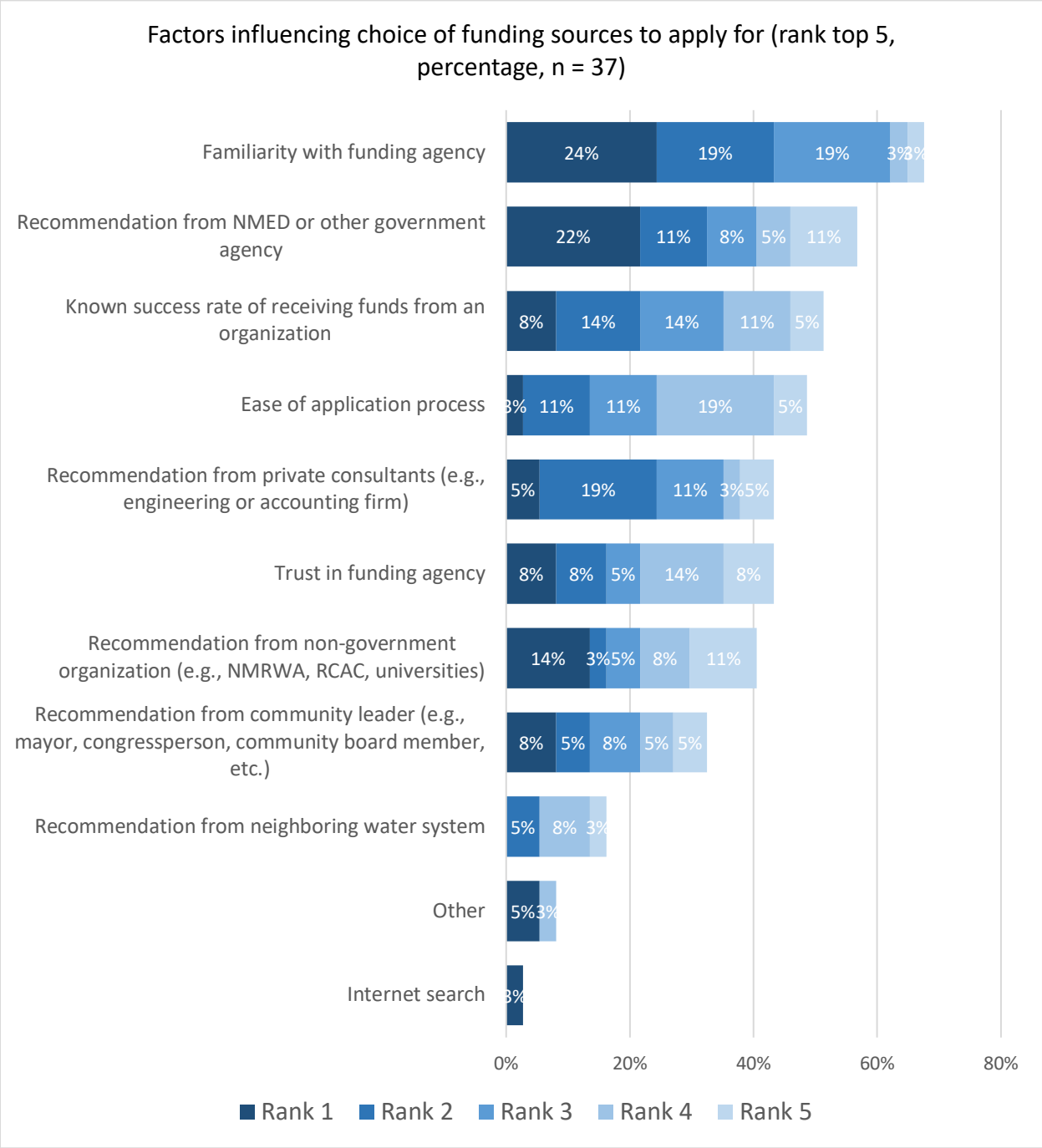
When asked for the reason they had applied for funding, the most common responses were replacing aging infrastructure, rehabilitating infrastructure, or expanding existing infrastructure. Figure 11 indicates the reasons respondents were seeking funding, but it should be noted that respondents were able to select more than one response.

Figure 11: CDWS survey respondents' reasons for applying for funding



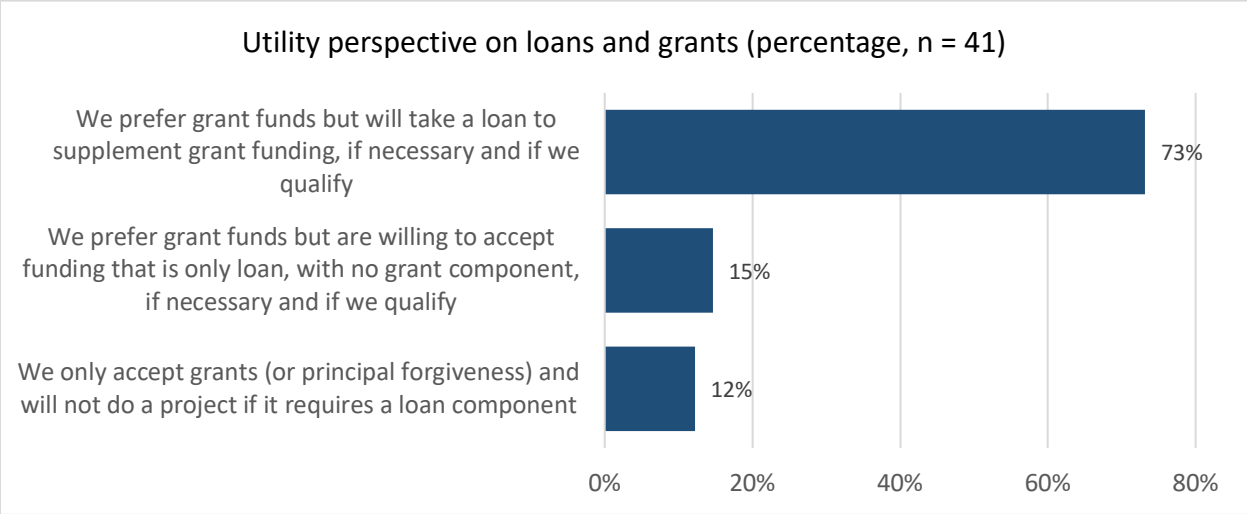
Most respondents selected funding sources based on the following factors, in this order: 1) familiarity with the funding agency, 2) recommendations from NMED or other governmental agency, 3) known success rate of receiving funds from an agency, and 4) ease of application process.

Figure 12: CDWS survey respondents' influences for choosing funding source



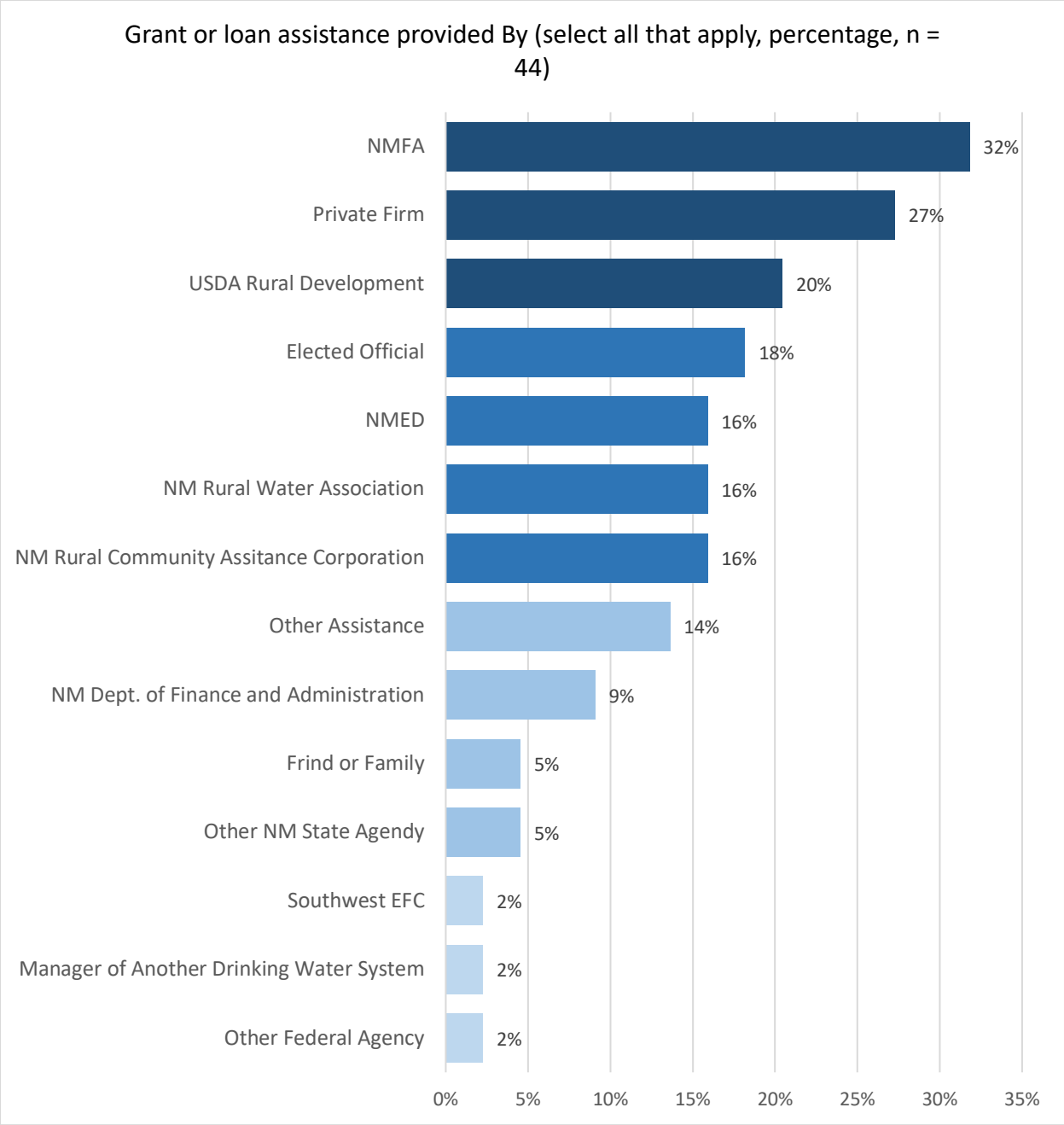
Approximately three-quarters of respondents said they prefer grants but will take a loan to supplement a grant if necessary.

Figure 13: CDWS survey respondents' perspective on loans versus grants



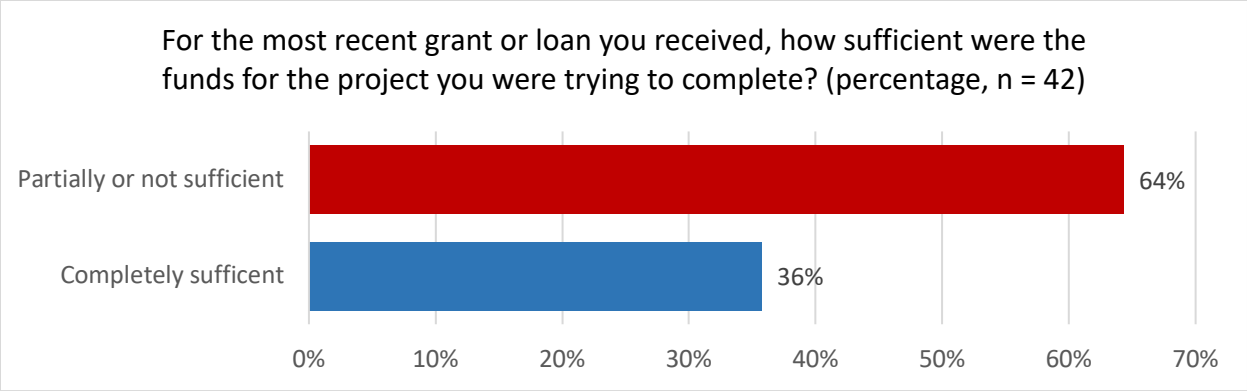
Eighty percent of respondents said that they had assistance from an outside organization when they applied for funding. Assistance most commonly came from the New Mexico Finance Authority (NMFA), a private engineering or accounting firm, or United States Department of Agriculture Rural Development. NMFA and USDA are both government agencies that provide funding. For the write in option, three people said they received funding from a council of governments.

Figure 14: Who gave CDWS survey respondents assistance in applying for funding



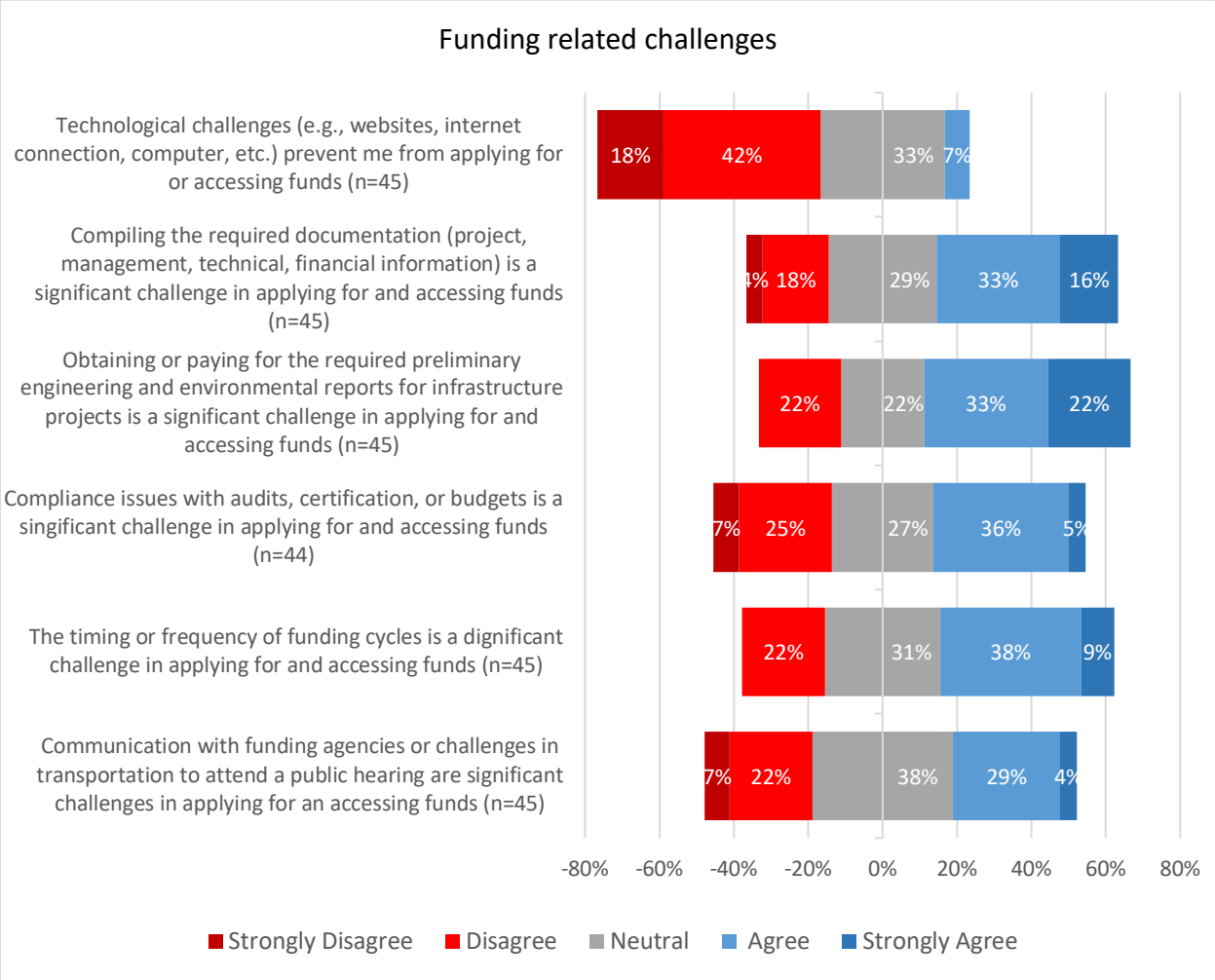
The majority of respondents (64%) claimed that the funds received for their most recent project were only partially or not sufficient to complete the project for which they were intended. When an applicant does not receive sufficient funds, their project likely cannot be constructed or may be only partially completed and therefore the benefits to the community may be reduced or prevented, even though a significant amount of funds may have been put into the project.

Figure 15: Whether funds received were sufficient for completing designated projects for CDWS survey respondents



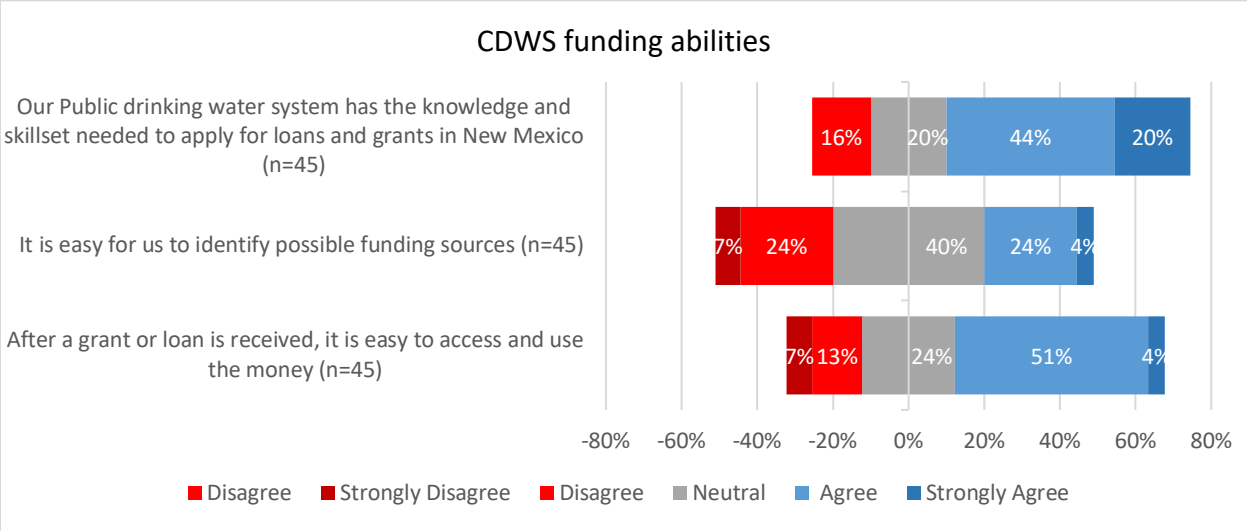
Survey respondents were asked for their level of agreement that specific challenges made funding difficult to access. The challenges that were most often cited as agreed or strongly agreed included: obtaining or paying for the preliminary professional engineering report (55%), compiling the required documentation (49%), and the timing or frequency of the funding cycles (47%). People largely disagreed or strongly disagreed that technology was a significant challenge (60%). People were somewhat split on compliance and communication with funding agencies being challenges.

Figure 16: Funding related challenges cited by CDWS survey respondents



The majority of respondents did agree or strongly agree that they had the knowledge and skillset to apply for funding (64%) and that it is easy to access and use the money after it is awarded (55%). However, respondents were roughly split on their ability to identify possible sources of funding.

Figure 17: CDWS survey respondents' abilities to identify, apply for, and access funding

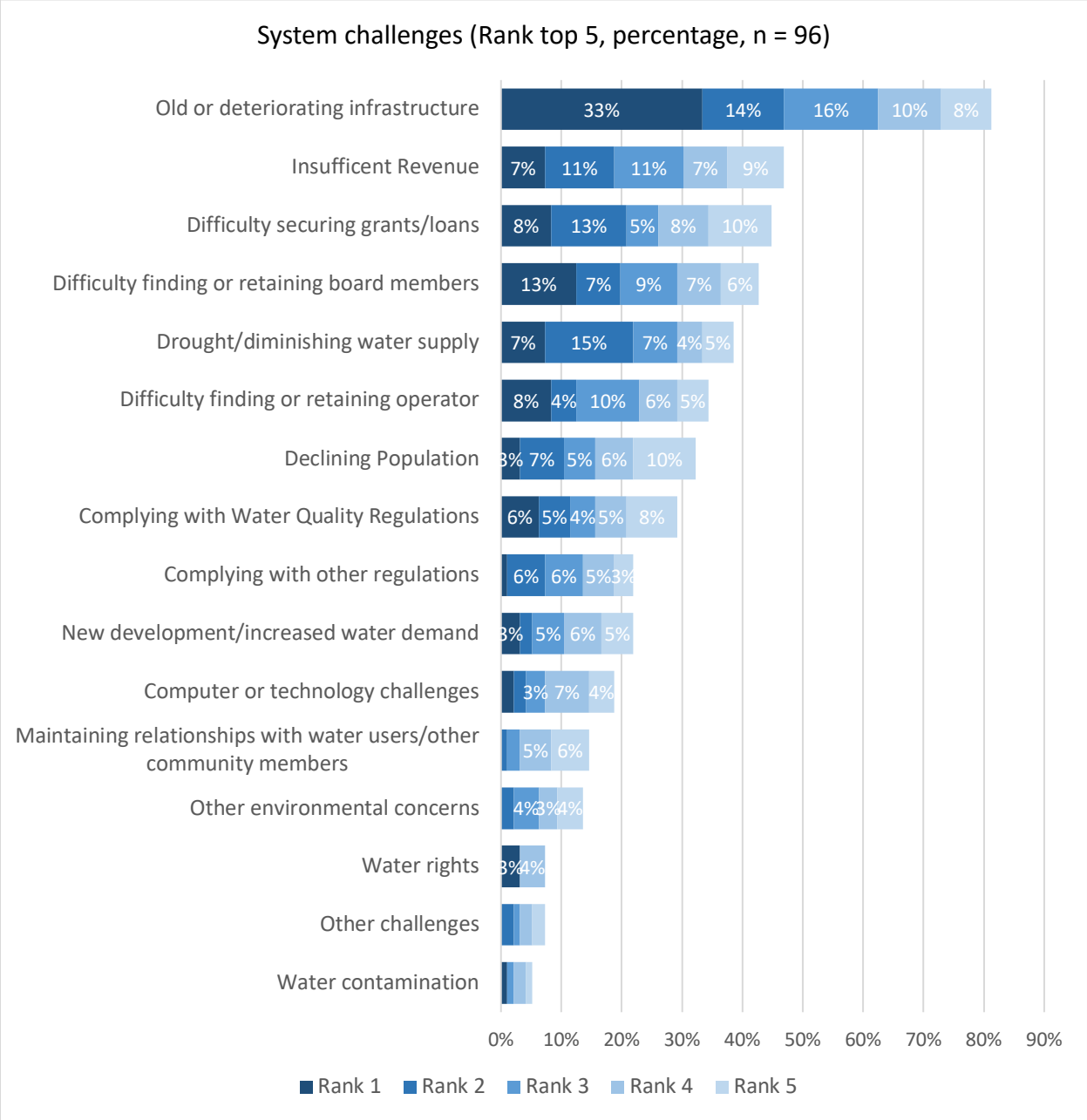


Managerial Related Results

In addition to survey questions about funding, respondents were asked a number of questions related to the management of their water system. Questions range from system challenges to views on consolidation, violations, and drought.

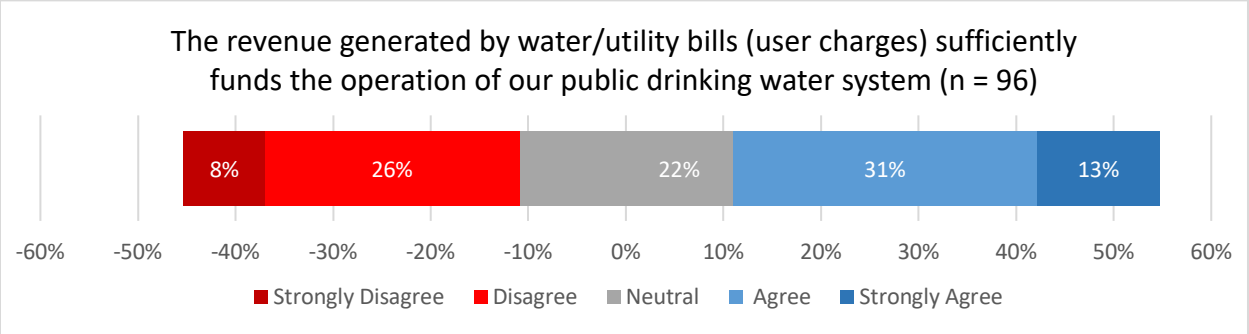
Survey respondents were asked to rank the five top challenges for their water system. The top responses were 1) old or deteriorating infrastructure, 2) insufficient revenue, 3) difficulty securing grants/loans, 4) difficulty finding or retaining board members, and 5) drought.

Figure 18: Top system challenges given by CDWS survey respondents



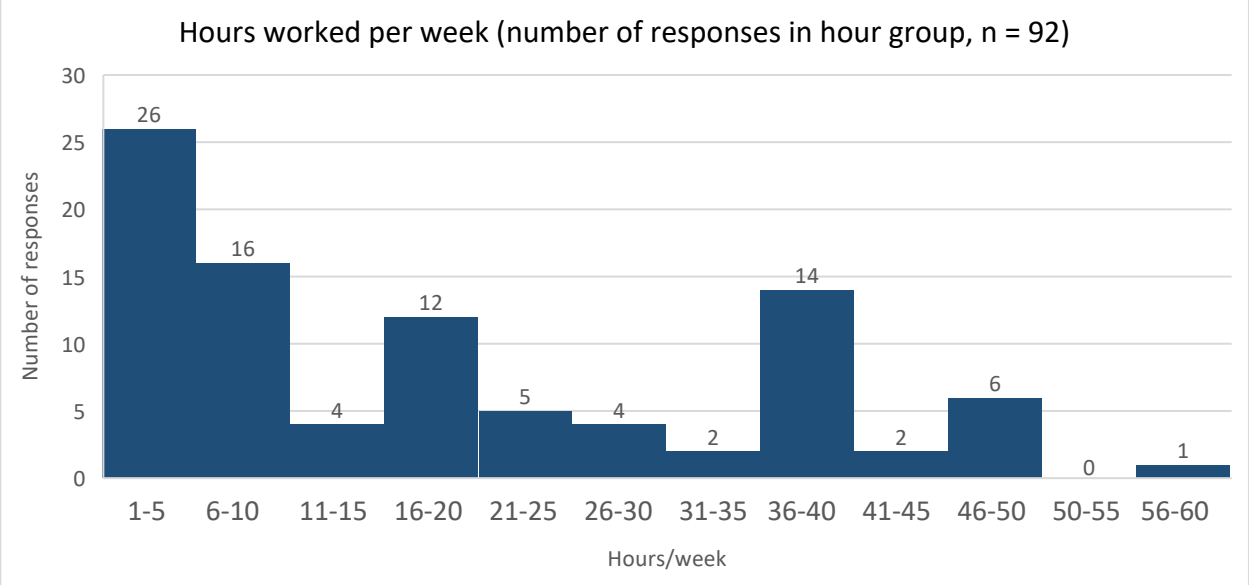
Even though survey respondents rated insufficient revenue as the second biggest challenge, there was slightly more agreement than disagreement that the revenue generated sufficiently funds their operation.

Figure 19: If revenue generated by CDWS sufficiently funds operation



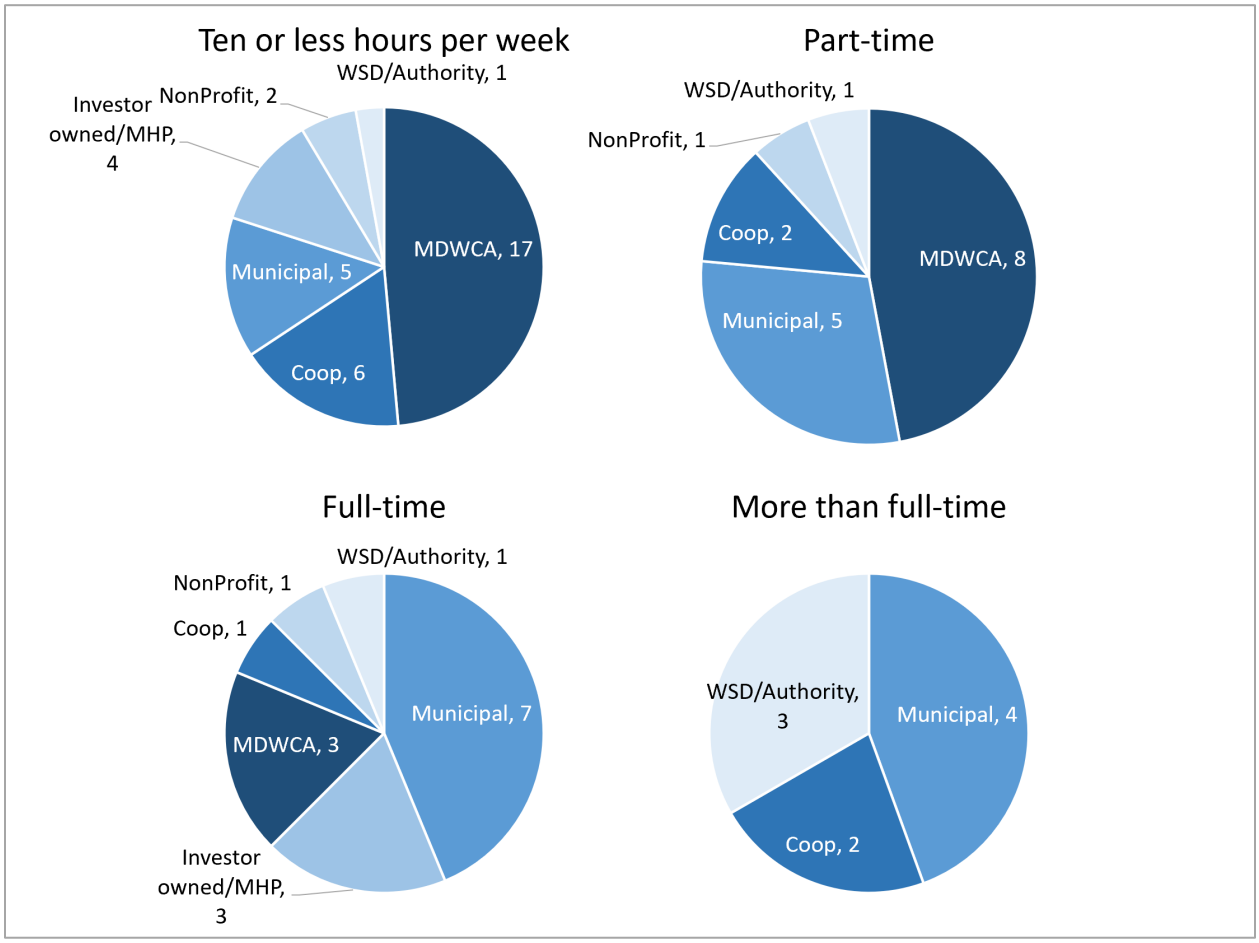
Respondents worked a wide variety of hours for their water system, with 46 percent working ten or less hours per week while 10 percent worked more than full-time. The remainder worked part- or full-time.

Figure 20: Hours worked per week by CDWS survey respondents



Hours worked per week for respondents can be broken down into four main groups, those who work ten hours or less, part-time, full-time, and more than full-time. There was a high percentage of MDWCAs in the ten or less hours and part-time groups. Municipal was the largest organizational structure for full-time and more than full-time workers.

Figure 21: CDWS survey respondents' affiliated organizational structure make-up per hours worked per week group



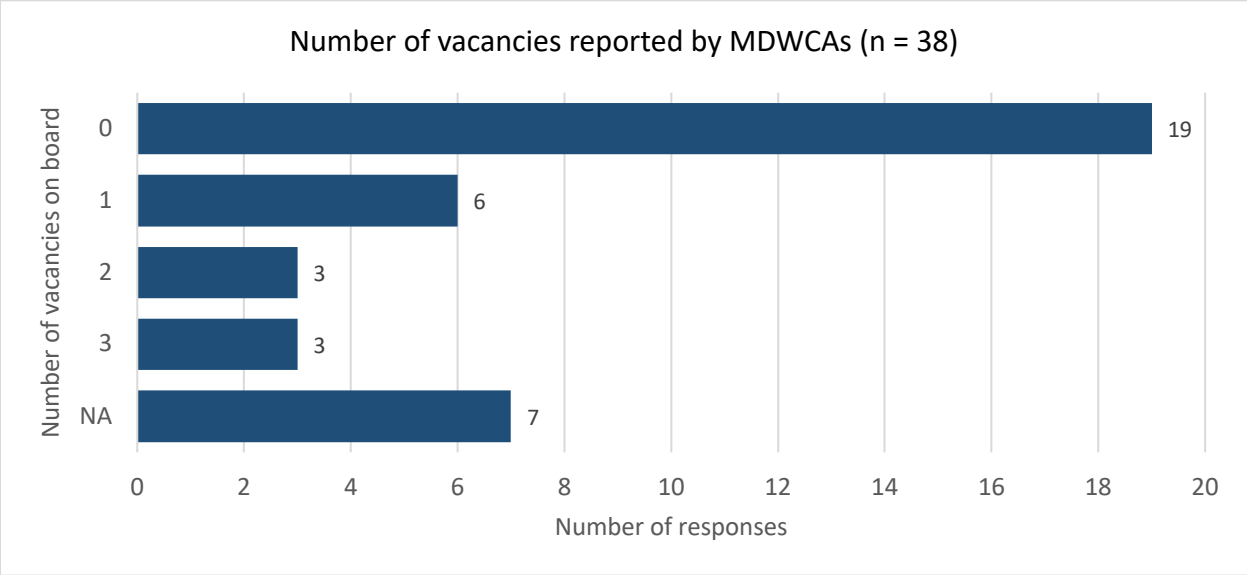
When asked if they had vacancies on their board of directors, most respondents associated with MDWCAs either claimed to have no vacancies or that the question was not applicable (NA) to them. SW EFC researchers question the validity of a not applicable response because this question should be applicable for all MDWCAs (all MDWCAs have boards of directors). It is also surprising that there were so many stating no vacancies on their board while at the same time all survey respondents ranked the difficulty of finding or retaining board members as the fourth biggest challenge.

For survey respondents of all organizational structures, only 22, or 37 percent of the 60 respondents (those who did not select NA), claimed to have any vacancies on their board. However, 31 respondents selected at least one reason for having vacancies on their board.

The discrepancy in these numbers can possibly be attributed to systems having had vacancies in the past or having people in these positions who would like to step down but have not been able to. It was learned in the interview and in other conversations that for many communities, sitting on the board is somewhat of a lifetime commitment, because there is no one that wants to fill the opening.

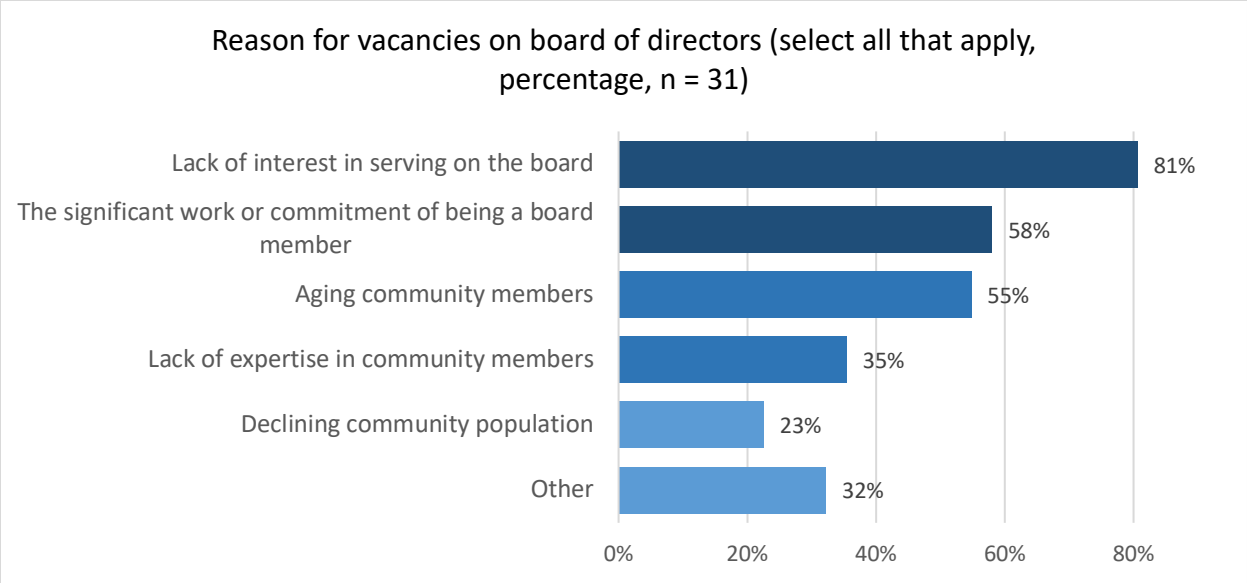
In addition to disparities in those who claim to have challenges with vacancies while not indicating there are vacancies, there were many responses from respondents claiming vacancies from organizational structures that should not have a board. Some respondents may have been referring to open positions on city councils or other overseeing bodies. The figure below only presents data for MDWCAs because although there appears to be issues or confusion with NA responses, it is the most relevant board vacancy information.

Figure 22: Number of vacancies on board of directors for MDWCAs.



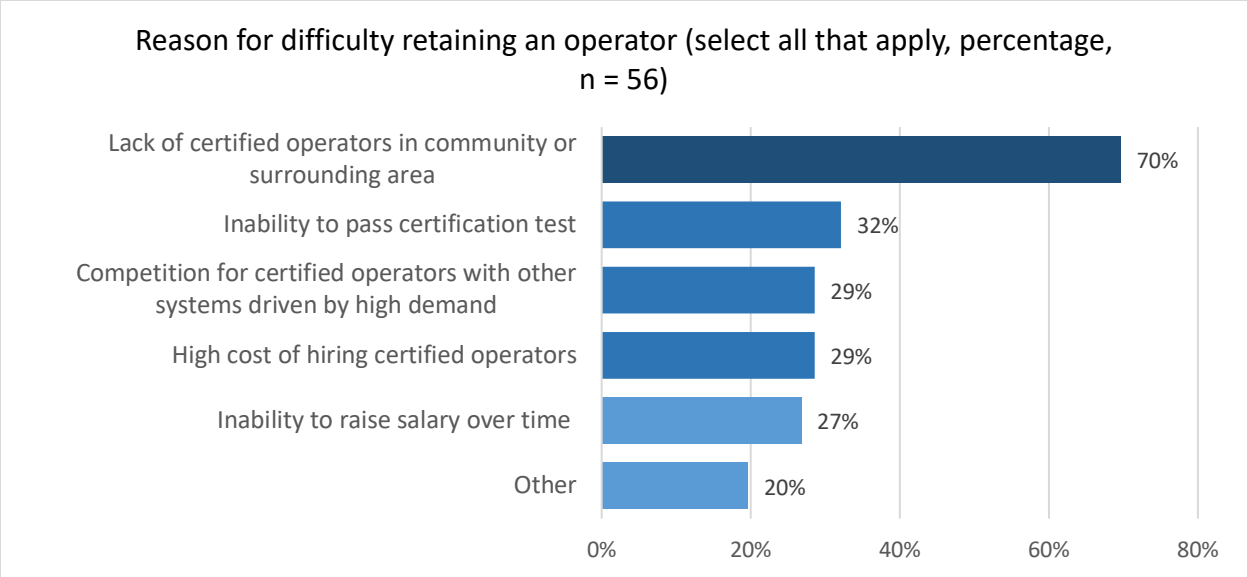
For the 31 respondents who gave a reason for vacancies on their board, the top reasons include a lack of interest, the significant workload or commitment, and aging community members. Notable responses to the “other” option include the position being volunteer and that it is seen as a lifetime commitment. A majority of respondents said that their board members were either involved (23%) or highly involved (45%) with system management and operation.

Figure 23: Reasons given by CDWS survey respondents' of why they have vacancies on their board



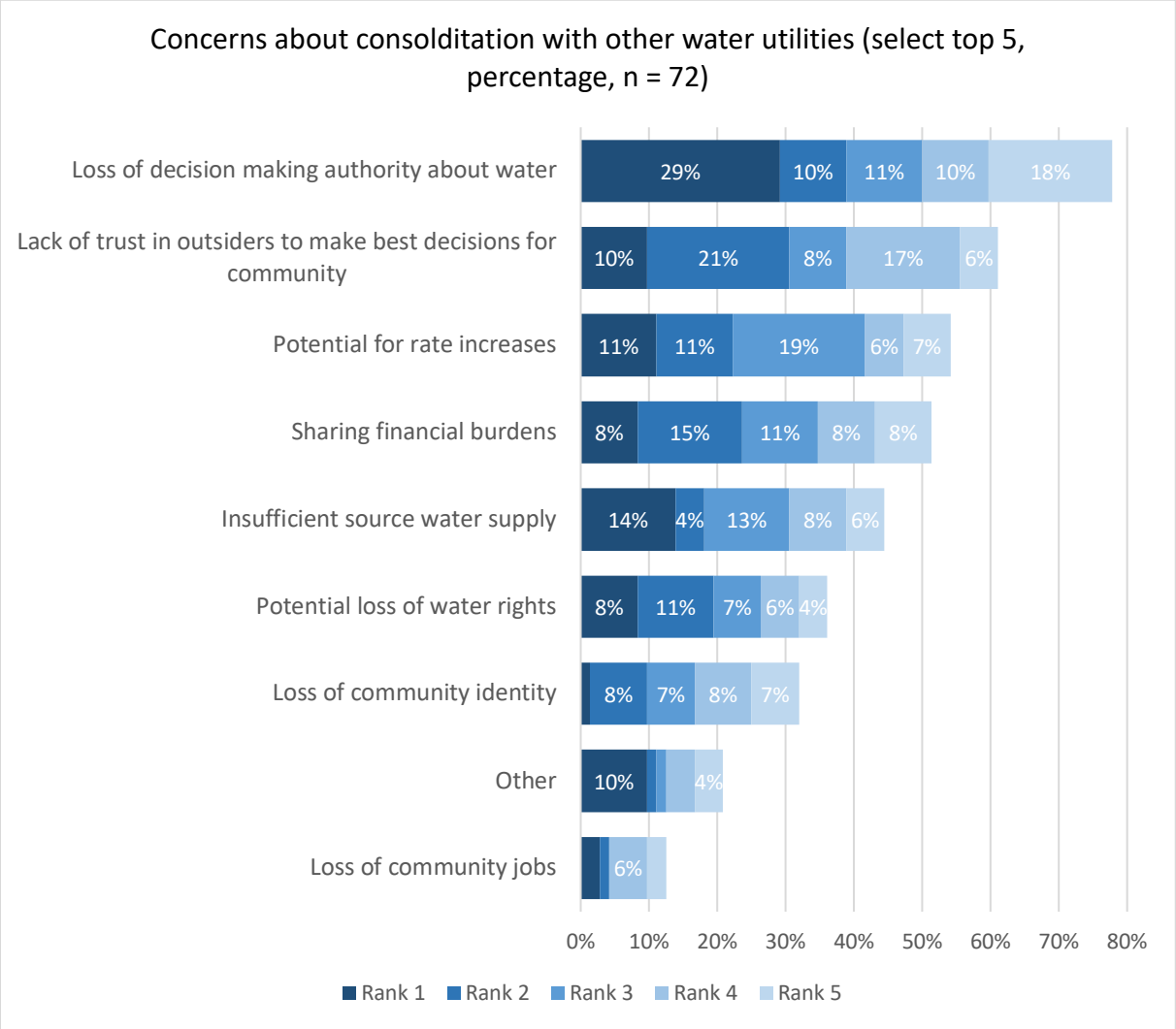
Respondents were roughly split on whether they agreed that finding or retaining a certified operator was a challenge for them (42% agreeing or strongly agreeing and 36% disagreeing or strongly disagreeing). For those that did say it was a challenge, the main reason was a lack of certified operators in the area. A notable "other" response is that people do not want a part-time job. One quarter of respondents said that they had no difficulty finding a certified operator.

Figure 24: Reasons given by CDWS survey respondents for having difficulty finding or retaining a certified operator



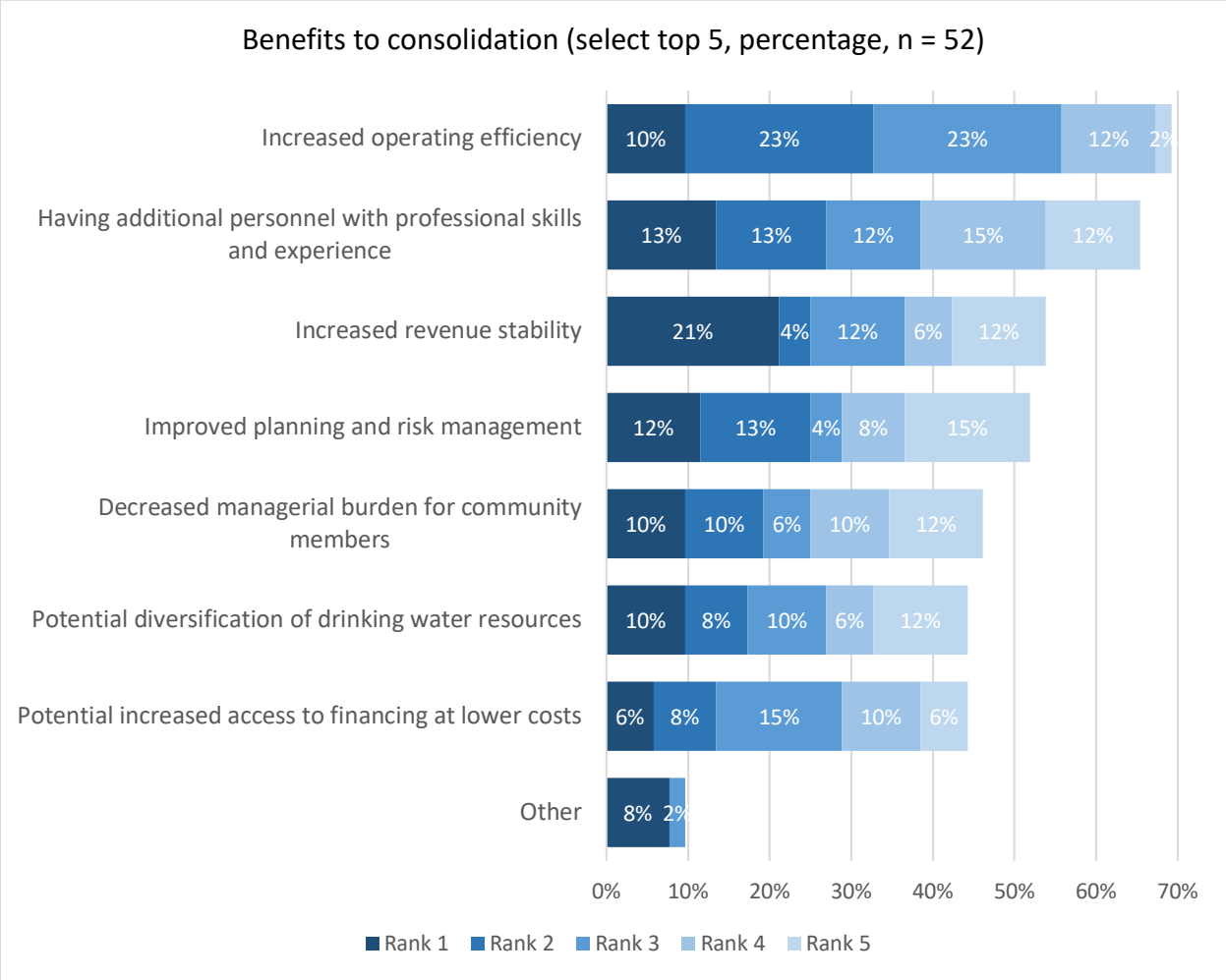
Respondents were asked to share concerns related to water system consolidation. Of the 84 percent of respondents that stated that they had a concern, the top concerns were: loss of decision-making authority about water, lack of trust in outsiders to make best decisions for the community, potential for rate increases, sharing financial burdens, and insufficient source of water supply. Notable "other" responses include a neighboring system having lower water quality and that it would not be feasible to connect with other systems due to large distances between neighboring systems.

Figure 25: Concerns about consolidation with other water systems given by respondents of CDWS survey



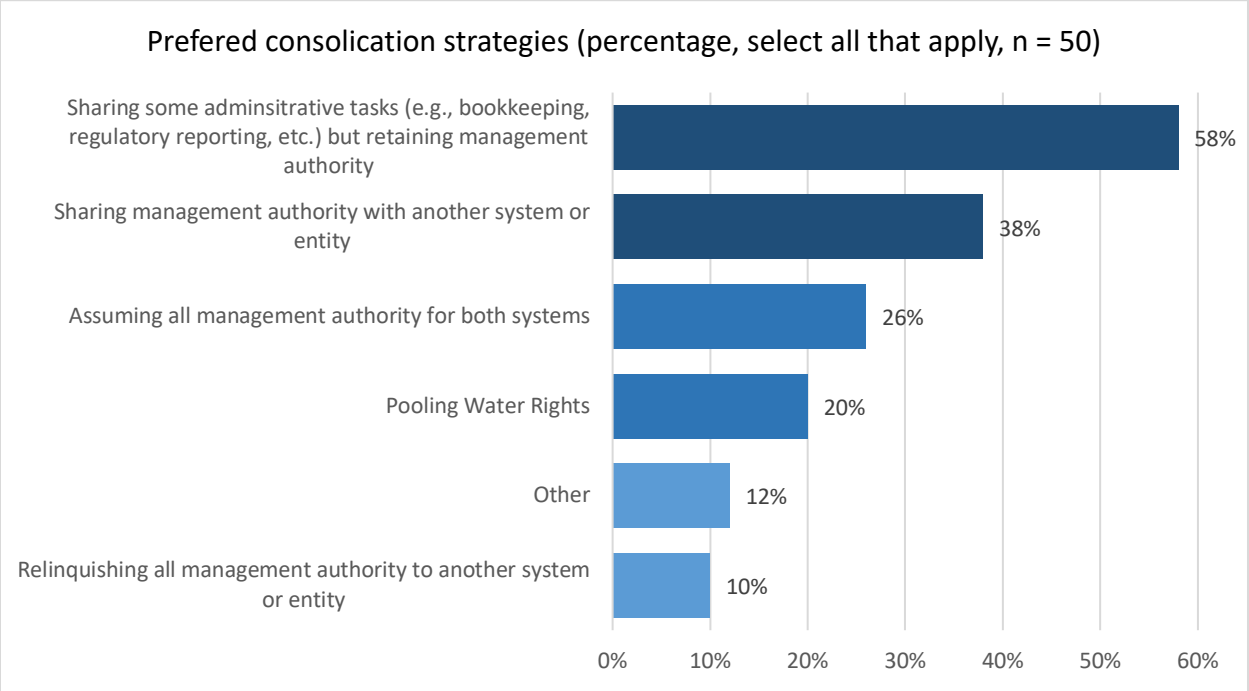
When asked if combining their water system with another in the area would be good for their community, half of respondents disagreed or strongly disagreed with only 23% agreeing or strongly agreeing. Slightly more respondents disagree than agreed that an increased number of connections would make their system more sustainable. Of the 63 percent of respondents that stated there is a benefit to consolidation, the top benefits selected were increased operating efficiency, having additional personnel, increased revenue stability, and improved planning and risk management.

Figure 26: CDWS survey respondents' stated benefits to consolidation



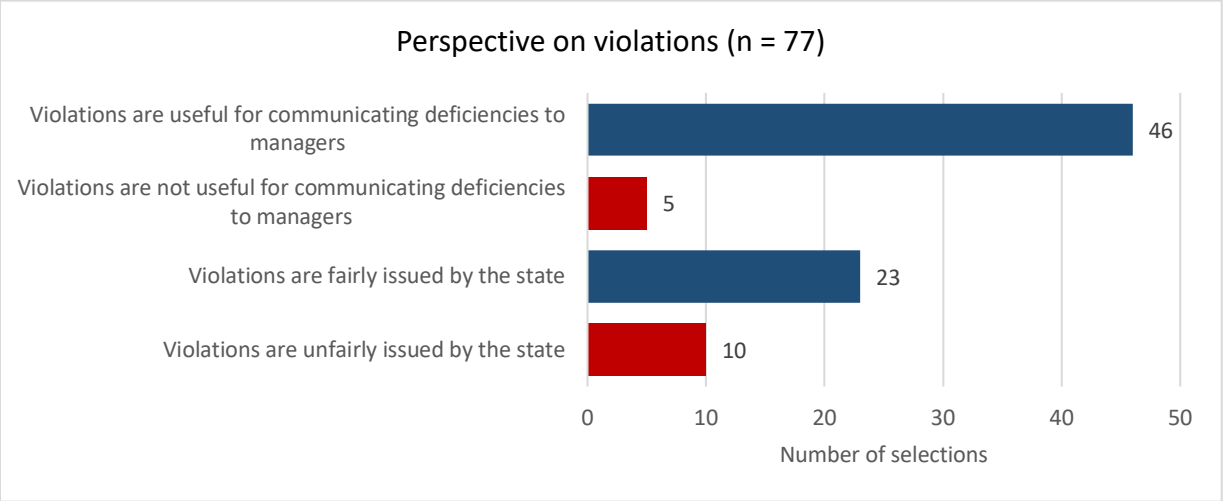
Of the 60 percent of respondents who said they would consider some sort of consolidation strategy: the top options were sharing some administrative tasks but retaining management authority and sharing management authority with another system or entity. Only ten percent of people open to said they were willing to relinquish all management authority to another system of entity.

Figure 27: Preferred consolidation strategies of CDWS survey respondents



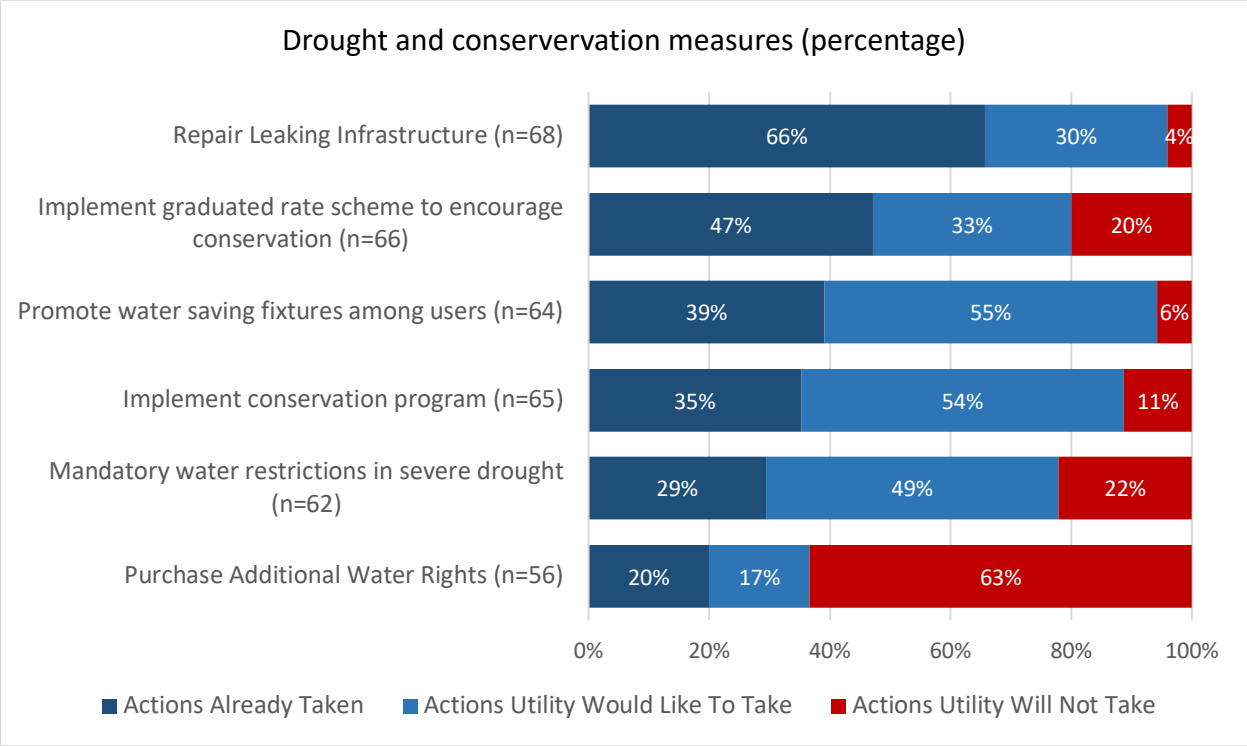
When respondents were asked about their perspective on violations, they overwhelmingly agreed that violations were useful for communicating deficiencies and most agreed that they were fairly issued by the state.

Figure 28: CDWS survey respondents' perspective on violations



Survey respondents were asked about what they have already done, plan to do, and do not plan to do about drought and conservation measures. A majority of respondents had repaired leaking infrastructure and a vast majority have or would like to implement a graduated rate scheme, promote water saving fixtures, implement a conservation program, and implement mandatory restrictions during drought. Systems largely do not plan to purchase additional water rights, although 20 percent of respondents have already done so. Five respondents claimed not to be concerned about drought.

Figure 29: Drought and conservation measures that CDWS survey respondents have taken, would like to take, and will not take



CDWS survey results discussion

The results of the utilization of different funding sources (Figure 7, Table 3) shows that systems are largely relying on only a handful of sources to meet their needs, with the most common being the NM State Legislature Capital Outlay fund and NMFA Drinking Water State Revolving Loan fund. Capital Outlay funds are grants that do not require matching and do not go through a vetting or priority system that other funds are subject to. Because of these reasons Capital Outlay funds are highly sought after and according to the New Mexico Legislative Finance Committee (LFC), in 2020 only 20 percent of projects were funded.[8] In contrast, the Drinking Water State Revolving Loan fund is federal money that is given out as low- or no-interest loans and in June 2021, had $30 million in uncommitted funds. SW EFC researchers found it surprising that such a large number of respondents selected this as a fund they have utilized when actual data shows this fund is underutilized. However, in the survey it was the first source listed, so people may have selected that fund when they could have meant a different fund. They also may have confused the State Revolving Fund with the Water Trust Board Funding.

Respondents reported numerous challenges in applying for funds, including obtaining preliminary engineering reports, compiling the required documentation, and the timing or frequency of the funding cycles, but many sources are underutilized because people are not aware that they exist. Familiarity with the funding source was the top criteria respondents gave for choosing which source to apply for. A significant number of respondents (31 percent) strongly disagreed or disagreed that it was easy for them to identify possible sources of funding, with 40 percent feeling neutral and only 28 percent agreeing or strongly agreeing with the statement.

The survey revealed other issues with the drinking water system funding mechanisms. In the survey, 64 percent of respondents rated the process of applying for funding as either extremely difficult or somewhat difficult. However, an equal percentage also agreed or strongly agreed that their water system had the knowledge and skillset to apply for loans and grants. While this does seem contradictory, it shows that some respondents believe they have the knowledge and skill to potentially overcome the difficulties of applying for funding.

Additionally, 64 percent of respondents claimed that for the most recent funding they received, the funds were either not sufficient or only partially sufficient for completing their project. According to the LFC State Funded Water Projects report, Capital Outlay funded projects are especially prone to not being carried out to completion because there is no local match requirement, no evaluation of project planning, and it is not designed to fully fund projects or functional phases.[8] Although expenditures are tracked, there is not a way for the state to know if functional phases are complete and projects are officially closed when funds are exhausted, even if the project is not complete. Of awarded Capital Outlay projects in FY2020 only 34 percent were fully funded.

The managerial related results give a glimpse into why CDWS are having issues with funding. The top three challenges selected were old or deteriorating infrastructure, a lack of revenue, and challenges securing grants and loans. Systems need money for infrastructure upgrades, they do not have the revenue to pay for it themselves, and they are having difficulties securing grants and loans for the infrastructure. Other main challenges are difficulties finding or retaining board members and operators, which means that ideally many of these systems would like to have more personnel who could perform tasks that could be related to funding or allow others to shift time from other operations into focusing on securing funding for infrastructure projects. (According to the LFC State Funded Water Projects report, 71 NM drinking water systems received violations for having no operator from 2015 to 2021.) Of

[8] New Mexico Legislative Finance Committee. "Program Evaluation: State-Funded Water Project," 2021. https://www.nmlegis.gov/handouts/ALFC%20062221%20Item%206%20State-Funded%20Water%20Projects.pdf

systems with a board of directors, 37 percent had a vacancy on their board, with 10 percent having three or more vacancies. Additionally, 46 percent of respondents stated that they work ten or fewer hours per week, which means they have extremely limited time to devote to securing funding. Respondents who worked ten or less hours per week or worked part-time were most associated with MDWCAs. Many water managers, particularly for MDWCAs, are volunteers. On average, out of the survey respondents who have applied for funding, MDWCAs have applied for and received fewer funds than municipalities.

For water systems, the problems discussed above can be summed up as a lack of financial and managerial capacity of water systems. A solution to this lack of capacity that is often promoted for smaller sized systems is consolidation. Consolidation can take many forms and has been successful in areas of New Mexico. However, 83 percent of respondents stated a concern with consolidation with the top concerns being a loss of decision-making authority about water and a lack of trust in outsiders to make best decisions for the community. A smaller number, 63 percent, said there could be benefits to consolidation, including increased operating efficiency and having additional personnel with professional skills and experience. Sixty percent of respondents were open to some sort of consolidation strategy, with sharing administrative tasks and sharing management being the more popular options. The survey results, therefore, show a willingness to consider consolidation/regionalization of some type, but a need to alleviate fears around consolidation.

Lastly, the survey asked about violations and drought and conservation measures. Respondents largely thought that violations were fairly issued by the state and that they are useful for communicating deficiencies. Systems were doing a number of activities related to water conservation or to address drought, including repairing leaking infrastructure and implementing a graduated rate scheme.

Key funding related results from the CDWS survey

- CDWS personnel in New Mexico largely believe the process of applying for funding is either somewhat difficult or extremely difficult, although many claimed to have the knowledge and skillset to overcome the difficulty.
- Systems are relying on only a handful of the available sources of funding that are available to them.
- When a system does receive funding, it is often not sufficient to complete the intended project.
- The major challenges when applying for funds are accumulating the required documentation, obtaining or paying for the preliminary engineering report, and the frequency of the funding cycles.
- On average, municipal systems are applying for a more diverse set of funding sources compared to MDWCAs.

Key managerial related results from the CDWS survey

- The biggest challenge facing water system managers is old or deteriorating infrastructure.
- Water systems are having difficulties finding and retaining operators due to a lack of operators in the area. While the magnitude of the problem with vacant board positions is unclear, based on the conflicting responses, it is evident that the respondents indicated a lack of interest in the community effects the ability to attract and retain board members.
- System managers and operators can be broken down into four main groups based on how many hours they work per week: ten or less (the largest group at 46%), part-time, full-time, and more than full-time. Survey respondents who worked ten or less hours per week or were part-time were most likely to be affiliated with MDWCAs and full-time or more than full-time workers were most likely to be associated with municipal systems. Because MDWCAs have less

personnel hours for their operations, they may have less time to devote to securing funding and may have less experience navigating funding agency bureaucracy.

CDWS Interview Results: Digging Deeper

Interviews with CDWS managers allowed researchers to better understand some of the reasoning—and nuances and complexities—behind their funding and managerial-related survey responses.

The SW EFC learned that many people found the application process cumbersome and opaque. Paperwork and finding funding were some of the top challenges and deterred some communities from further pursing state and federal funds. Cycles of when applications are due was an issue, but most people "just dealt with it." Furthermore, based on the survey and the interviews, it appears that many small and very small water systems are not aware of the variety of funding that might be available to them.

We found that there are a variety of funding strategies employed by water systems. Unfortunately, many systems are making decisions in an ad-hoc manner, which does not always benefit them in the long run. The range of strategies includes paying for water system improvements via water rates only; applying for grants with assistance from engineers, legislators, or a paid grant writer; combining state/federal loans and grants to meet costs. Many systems are applying but struggling (not receiving monies) because they do not have the expertise or the time to go through a process that to them is lengthy and confusing. Regrettably, some systems do not even apply for state or federal funding.

Many systems work on a day-to-day and year-to-year basis, with little capacity to plan for the long-term future of their water system. Often, these constraints lead to poor decisions regarding infrastructure funding, drought preparedness, potential consolidation, or other long-term challenges. Systems also face a variety of concerns related to staffing at the management and operations level, including volunteer board members or staff, aging personnel, and difficulty finding and retaining water operators (because of retirements, lack of operators in rural areas, or training/exam challenges).

There is a certain amount of "just do it" attitude; that is, if you need the money, you jump through the hoops as required. Some systems have connections with lobbyists, state representatives, engineers, or other qualified/connected individuals who help them find appropriate funding options and assist them with the application and the loan/grant management processes. For others—particularly small, resource-challenged communities—it appears they do not even know where to start.

CDWS volunteer board members feel overworked by having to take on other duties such as operation and maintenance tasks and applying for funding; overwhelmed by responsibilities including finding, hiring, and retaining water operators; and some members are ageing out of their roles. An indicator of some of the challenges these board members are facing is represented by the answers received when people were asked how they became president of the board (or as one person said, "President and Chief Shepherd of Cats"). A few select answers to demonstrate the situation included: "I got lassoed into being on the board." "I was asked to attend a board meeting and ended up becoming the president. My advice is, don't go to meetings if you don't want to serve on the board." Often one person takes on multiple roles (e.g., secretary and treasurer) because there are not enough people willing or able to serve on the board. Hours spent per week vary, and work hours tend to depend on funding cycles and emergencies. Most CDWS volunteers said that there is far more work than they (as individuals and as boards) can tackle, which means they are often pressed for time. If they do not have grant writing

expertise on the board (or access to seasoned grant writers, lobbyists, or other similar expertise) the process can be overwhelming, and for some it is so overwhelming that they just do not apply for state and federal monies and keep their system running by applying "infrastructure bandages."

Unfortunately for many volunteer boards, recruiting board members is difficult, and with turnover, institutional memory is lost. This institutional memory is important: knowing the history of the infrastructure, funding application practices and results of past funding cycles, and resolution of various crises that have been faced makes it difficult to even consider strategic planning. Advice that board members offered to peer systems focused on three things: 1) "get your ducks in a row," 2) "get to know the right people," and 3) communication. A key part of writing successful grants, as one board president stated, is to be very methodical about collecting required documents in a timely manner. The next most common piece of advice was to work with knowledgeable people: lobbyists (e.g., getting to the source/legislature), engineers (e.g., for technical expertise), grant writers (e.g., to help you understand the language and requirements of grant/loan applications), and state and federal staff (e.g., to ask questions about the grant/loan process). Finally, communicating and working with neighboring systems and peer systems is something that needs to happen more. Learning from each other (e.g., successes and challenges) and sharing resources (e.g., water operators) is critical to small system survival.

The people who manage and run CDWS in New Mexico have a wide range of experience, education, skills, and knowledge. So, it is difficult to characterize CDWS managers, particularly those who run small and very small systems. Municipal systems, which are fewer than MDWCAs in New Mexico, are highly structured, have paid full-time employees, and have resources that are not available to the smaller systems (e.g., staff grant writers, administrative staff). Two-thirds of New Mexico's CDWS are small and very small and are primarily run by volunteer boards. Many of these boards are struggling to meet managerial and operational demands.

Although the problem of having limited personnel hours is not specific to MDWCAs (for example: MDWCAs have limited personnel hours to navigate funding opportunities on top of day-to-day operations), the problem is most acute for MDWCAs due to their challenges retaining volunteer board members and their limited ability to pay personnel. The apparent tradeoff of these drawbacks of being a MDWCA is that they are eligible for more sources of public funding due to their status as a subdivision of the state government. However, the survey and interview results show that these benefits are largely not realized, as they still have significant challenges in securing funding. Despite having access to more funding options, MDWCAs have higher water rates than other organizational structures.[9]

Communication was a common discussion point amongst CDWS. Funding water system operations and management is a complex and time intensive endeavor for system administrators; water systems felt that it would be helpful to establish means by which peers can talk about challenges and share lessons learned.

A number of interviewees voiced concerns about lack of transparency and lack of opportunities to talk with state and federal entities. Water systems across the state expressed interest in having more opportunities for conversations with state and federal agencies in order to describe their challenges, ask questions, receive tips, and learn more about the funding process at both state and federal levels.

[9] Colvin, Tucker. "Drinking Water Governance For Whom? An Institutional Analysis Of Rural Drinking Water Systems In New Mexico," 2020. https://digitalrepository.unm.edu/geog_etds/50

Therefore, not only is peer-to-peer communication necessary but better communication with the funding agencies is also necessary (including providing funding program information to systems in an easier manner). As one Board President stated, “We need a central location to go to find out what funding is available, how to apply for funding, and what we need to do to apply.” This person was frustrated by how “every agency has different requirements. It’s hard to keep on top of it all.” He continued, “… [It would help to be] able to talk with someone who can walk you through the process, especially for those of us who have never done it.”

Another concern raised by small systems was that they felt there was an urban bias when it came to funding programs. As one President noted, “It’s difficult to deal with people who do not understand small systems; … they are used to working with big systems,” who have hundreds or thousands of users and have money and other resources.

Despite the efforts of many organizations and people within New Mexico to encourage collaboration and regionalization, there is still a significant amount of hesitation to undertake these approaches, including a fear of losing control of a community asset and a mistrust in outside entities. However, consolidation can take many forms and some CDWS are currently collaborating with neighboring systems in applying for infrastructure funds and sharing knowledge and resources. Additionally, they often help neighboring systems when there is an emergency, such as repairing a main break. Many managers have the impression that consolidation mainly consists of physical connection of systems, whereas there are many other options available.

And finally, drought was something that people seemed to think about only in moments of crisis (e.g., when a well runs dry). CDWS managers were interviewed during the monsoon season, which was particularly productive during the time of the interviews (summer/fall 2021). Therefore, managers were focused, as they are in most small system operations, on day-to-day realities. It was raining, so many peoples’ concerns about drought were, for the time being, much diminished. Thinking about drought appears to be a year-to-year consideration for many small systems because they do not have the workforce to attend to things beyond the immediate horizon. Conservation is key to many CDWS survival, and people acknowledge this in a variety of ways. Large systems can incorporate conservation measures into their practices and educational efforts; however, small systems rely on individuals to be conservative in their water use. Monitoring use—and tracking use over time—as well leakages, is something that CDWS are focusing on, which means they are seeking funding for upgrades so that they can attend to over-use and leaks in a timely manner.

V. Tribal Drinking Water System Survey and Interview Results

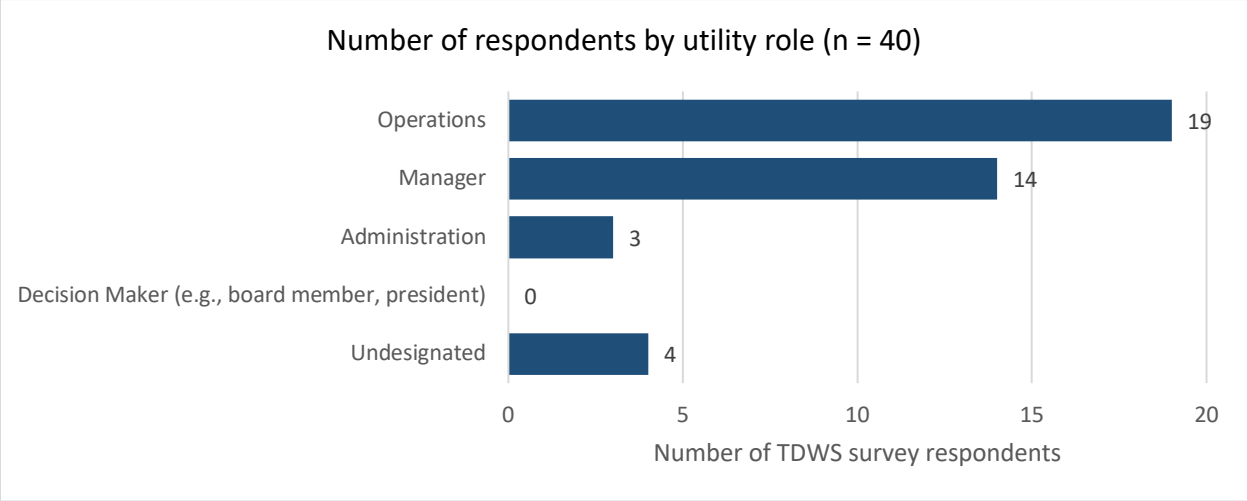
TDWS Survey Results

The results of the TDWS survey yielded similar results compared to the CDWS survey results. However, there are notable differences in the results, which are presented below followed by a brief discussion and key takeaways. Additional figures are located in Appendix B.

Survey Participation

Unlike the state regulated CDWS survey responses, most TDWS survey respondents were involved in operations and management instead of higher up decision-making positions, such as board members. The reason for the difference is most likely because TDWS are owned by Tribal governments, and many employ a staff dedicated to water utility and other Tribal infrastructure. In contrast, many state regulated CDWS, particularly MDWCAs, are managed and operated by volunteers who may have a title such as board member and are involved in decision making but are also significantly involved in operations of the system.

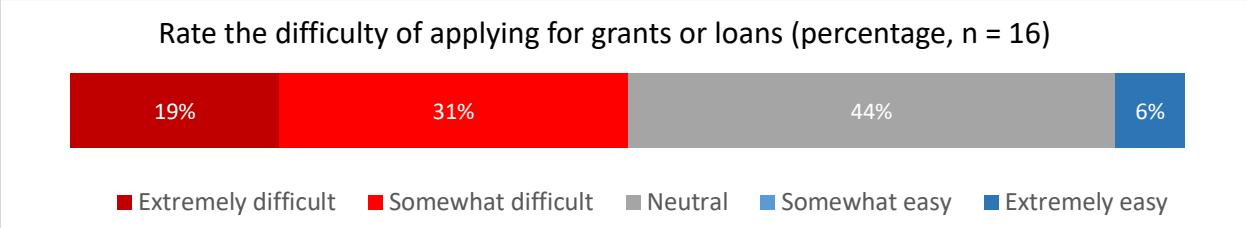
Figure 30: Professional roles of TDWS survey respondents



Funding Related Results

Half of TDWS survey respondents rated the difficulty of applying for grants or loans as extremely difficult or somewhat difficult. Although this is less than the 64 percent of CDWS survey respondents, it is still a large percentage of TDWS survey respondents.

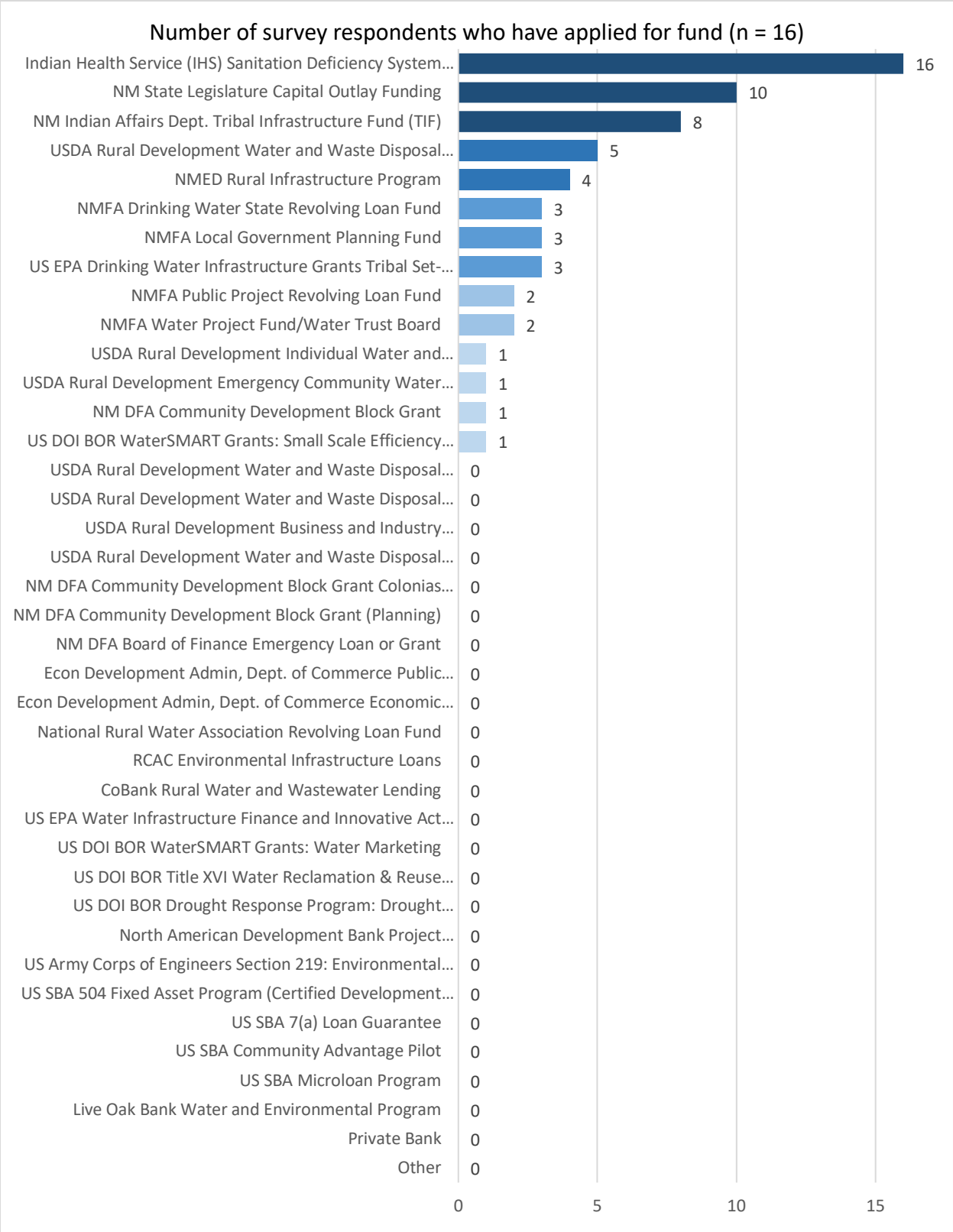
Figure 31: TDWS survey respondents' rating of difficulty of applying for funding



The TDWS survey asked respondents to state out of the 37 available funding sources available to New Mexico TDWS, how many they applied for, how many they have received, if they received the full amount requested, if it was in the last five years, and to rate the difficulty of the application process.

The graph below (Figure 32) represents the number of respondents who have applied to each funding source. The most utilized source was Indian Health Service (IHS) Sanitation Deficiency System (SDS) funds. Other more utilized funds include the New Mexico Indian Affairs Department Tribal Infrastructure Fund (TIF) and New Mexico State Legislature Capital Outlay funds (though only half of respondents who applied were awarded Capital Outlay funds). Six funds were awarded three or fewer times and 23 funding sources were not applied for by TDWS survey respondents.

Figure 32: Funding sources applied to by respondents of TDWS survey



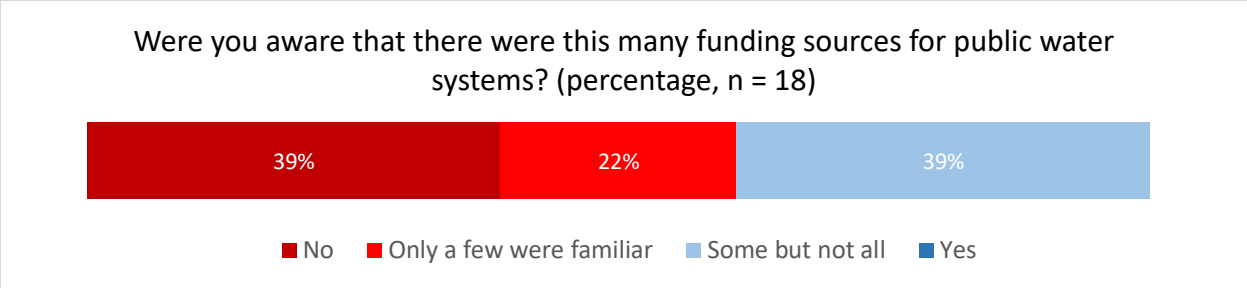
The table below shows the full responses for the five funding sources that were most utilized by respondents. The fifth column represents the difficulty of the application process. Respondents were asked to rate the difficulty as either easy, medium, or hard. The responses were given a numeric rating of 1 – easy, 2 – medium, and 3 – hard to be able to calculate an average difficulty rating across all respondents on a scale of 1 to 3. The final average rating is provided in the column on the far right.

Table 4: Detailed responses to top funding sources utilized by TDWS survey respondents

Funding source	Number of respondents who have applied	Number of respondents who have received	Number of respondents who received full amount requested	Applied or received funds in last 5 years	Average level of difficulty in applying for fund (1=easy, 2=medium, 3=hard)
Indian Health Service (IHS) Sanitation Deficiency System (SDS)	16	10	4	7	2.2
NM State Legislature Capital Outlay Funding	10	5	3	3	1.7
NM Indian Affairs Dept. Tribal Infrastructure Fund (TIF)	8	7	3	4	2.0
USDA Rural Development Water and Waste Disposal Direct Loans and Grants	5	3	3	3	2.7
NMED Rural Infrastructure Program	4	1	0	1	2.0

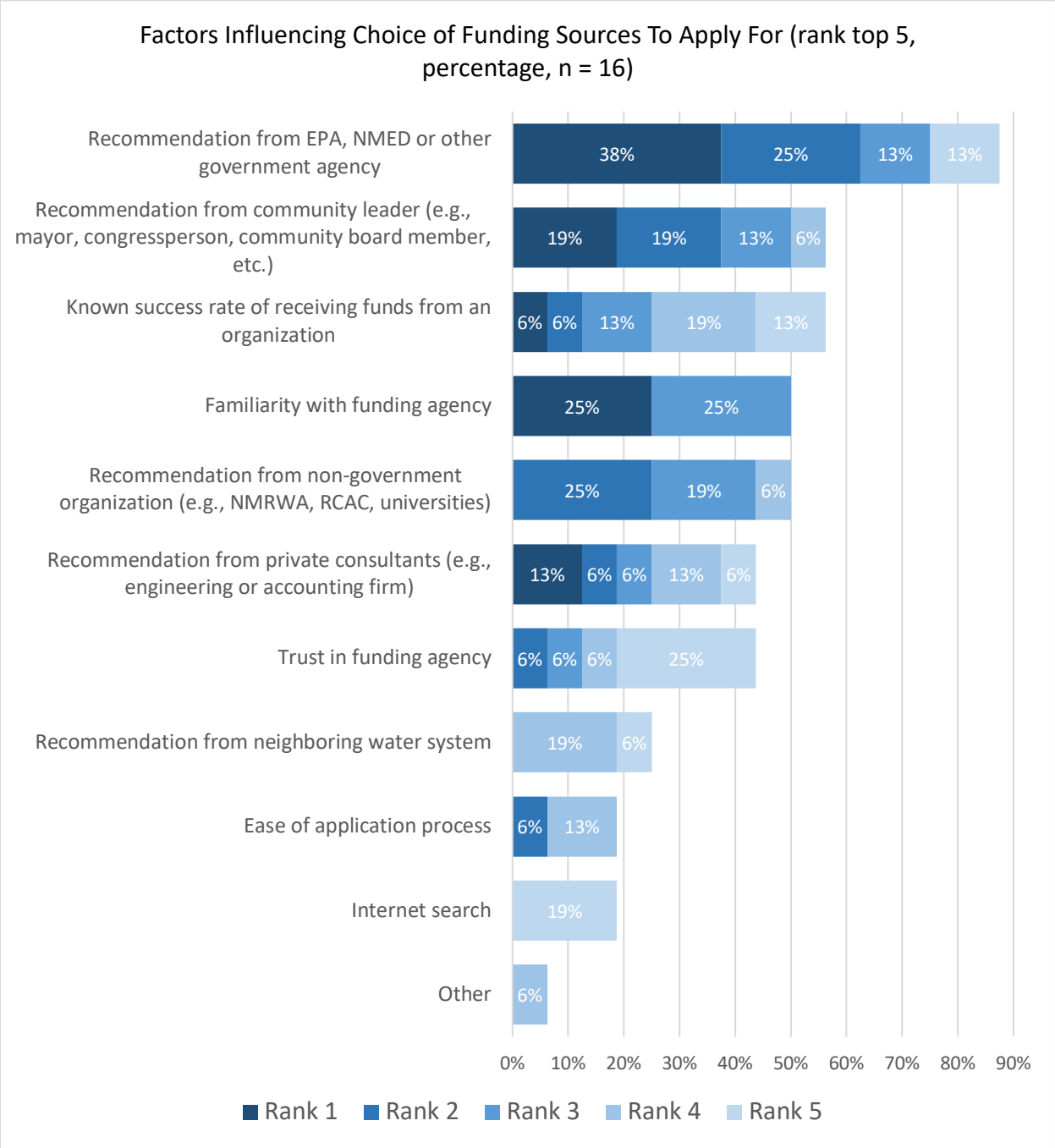
Out of the 18 respondents who said they were involved in funding, 61 percent of TDWS survey respondents were not aware of or only familiar with a few funding sources that are available to them, compared to 47 percent of CDWS survey respondents.

Figure 33: Level of awareness of number of funding sources available to TDWS



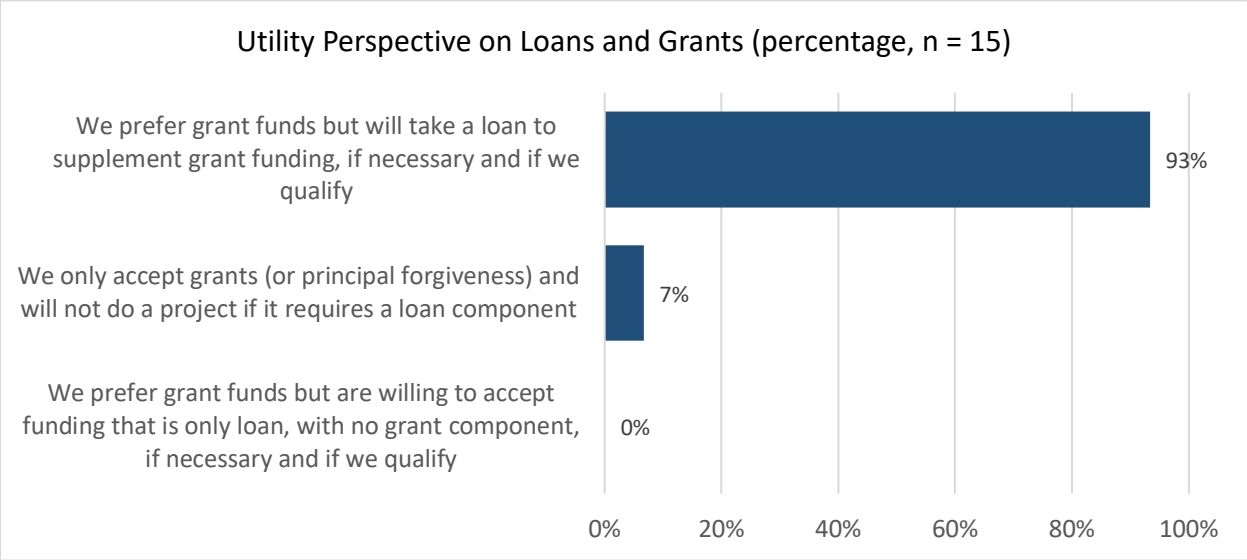
Compared to the CDWS survey results, TDWS survey respondents were less likely to apply for funding based on their familiarity with the funding agency. They were more likely to rely on recommendations from government agencies or community agencies.

Figure 34: TDWS survey respondents' influences for choosing funding source



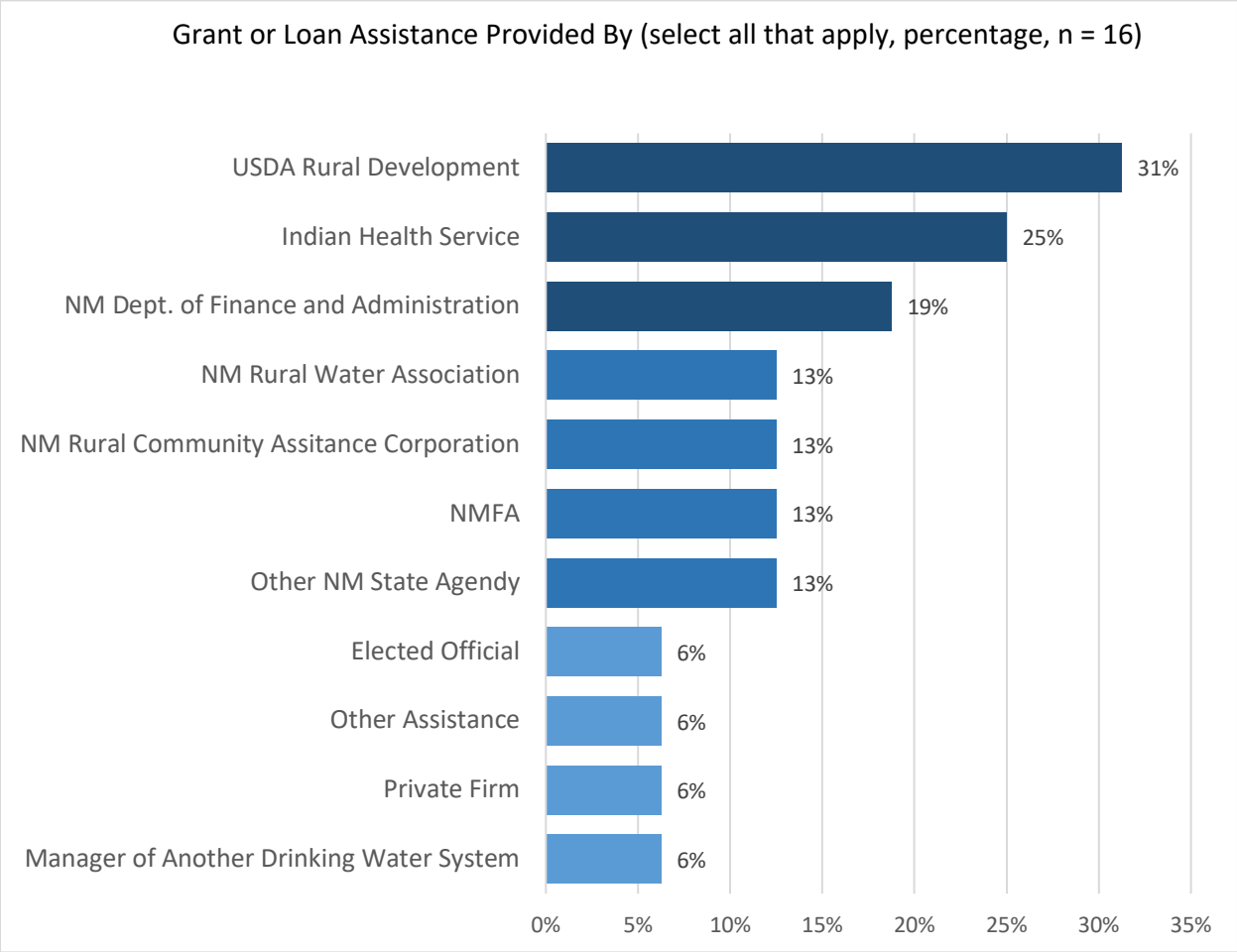
For both the TDWS and CDWS surveys, a vast majority of respondents were willing to accept a grant and supplement with a loan, however, unlike the CDWS survey, no TDWS survey respondents were willing to accept funding that is only a loan.

Figure 35: TDWS survey respondents' perspective on loans versus grants



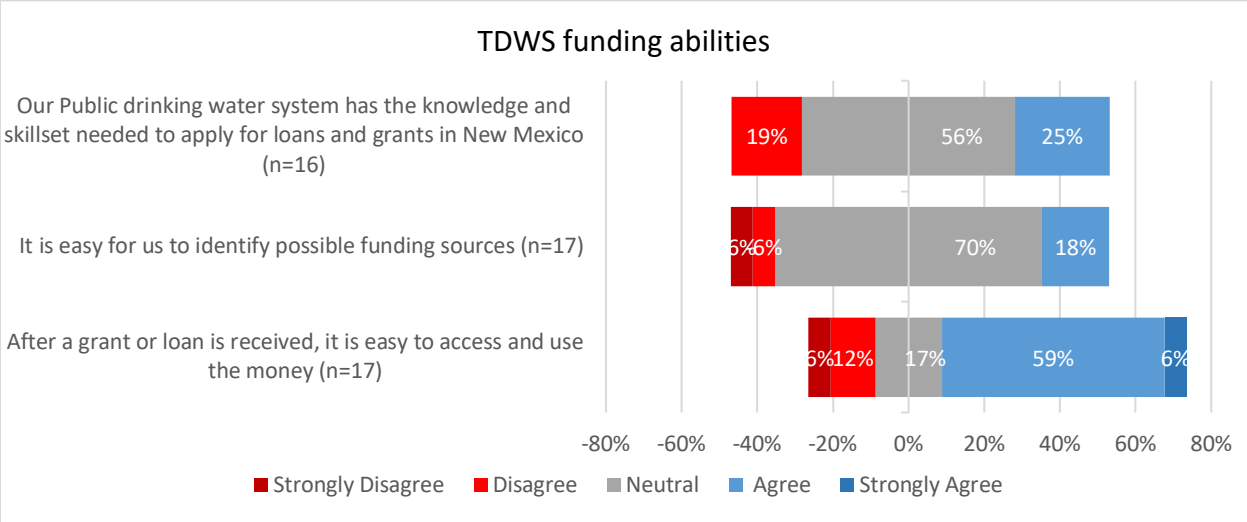
Eighty-four percent of TDWS survey respondents said they received assistance from an outside organization, but unlike CDWS survey respondents, their assistance most often came from federal funding agencies.

Figure 36: Who TDWS survey respondents received assistance from in applying for funding



Compared to respondents of the CDWS survey, TDWS survey respondents were more likely to feel neutral about their ability to identify and apply for funding, but similar to CDWS respondents, felt it was easy to access and use money after it was awarded.

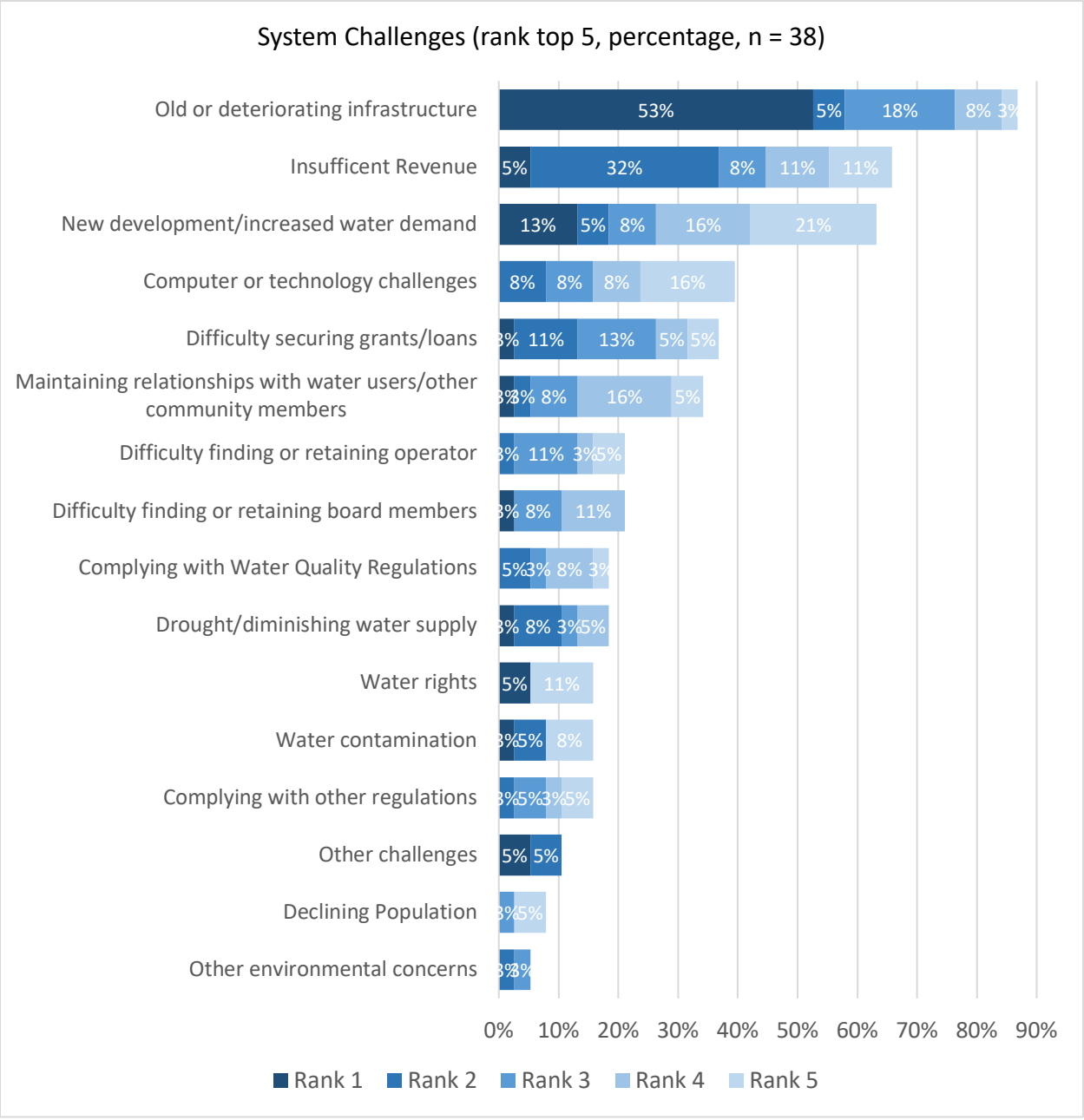
Figure 37: TDWS survey respondents' abilities to identify, apply for, and access funding



Managerial Related Results

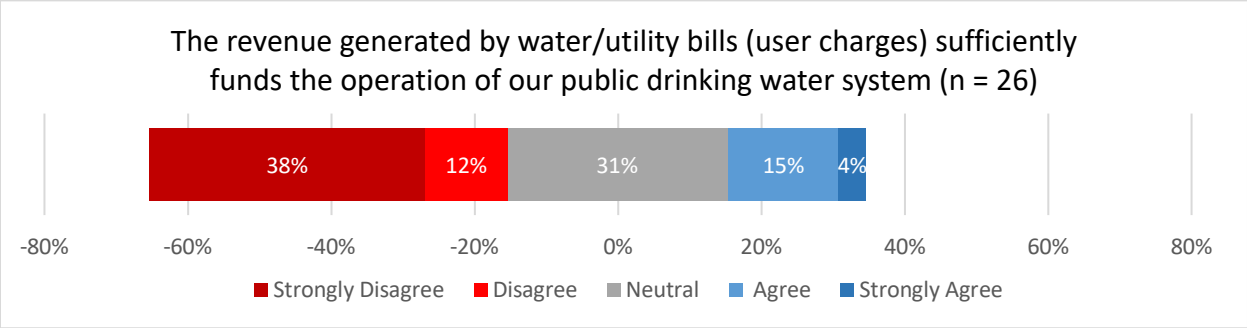
While old or deteriorating infrastructure was the top challenge for both CDWS and TDWS survey respondents, TDWS respondents were more likely to say that it is their number one challenge (53 percent of TDWS compared to 33 percent of CDWS). New development or increased water demand was a much larger issue for TDWS respondents, whereas the problem of declining population was cited as less of a challenge for TDWS than for CDWS respondents. Entries in the “other” option include issues with water treatment, interactions with the EPA, and the inability to order new equipment.

Figure 38: Top system challenges given by TDWS survey respondents



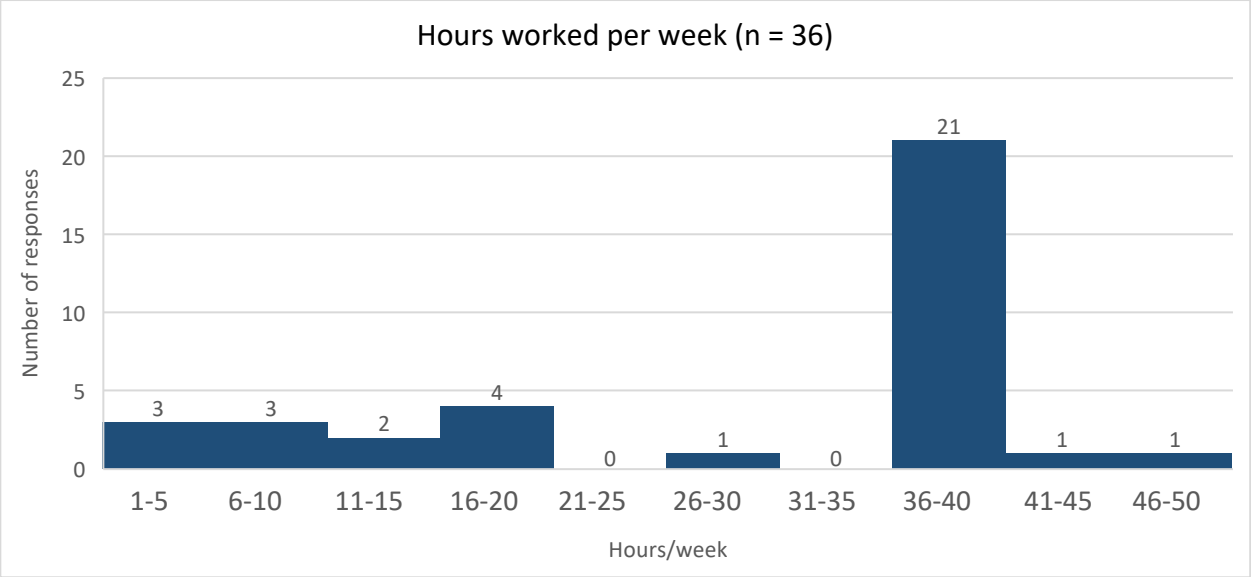
Because many TDWS do not charge users for water, a much higher percentage of TDWS respondents strongly disagreed that the revenue generated by utility bills sufficiently funds the operations of their water system.

Figure 39: If revenue generated by TDWS sufficiently funds operation



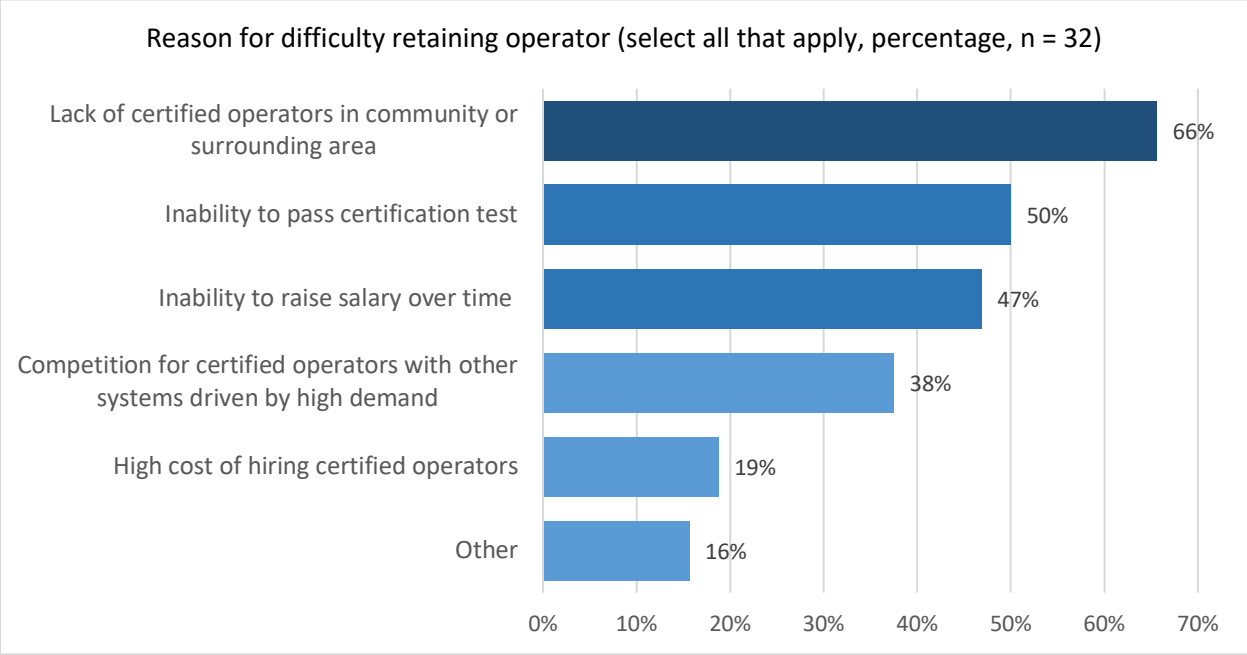
For the TDWS survey, most respondents worked full-time for the water system, as opposed to CDWS where people worked a wide variety of hours per week. This difference is likely because most people working with TDWS are employees whereas CDWS are sometimes run by volunteers.

Figure 40: Hours worked per week by TDWS survey respondents



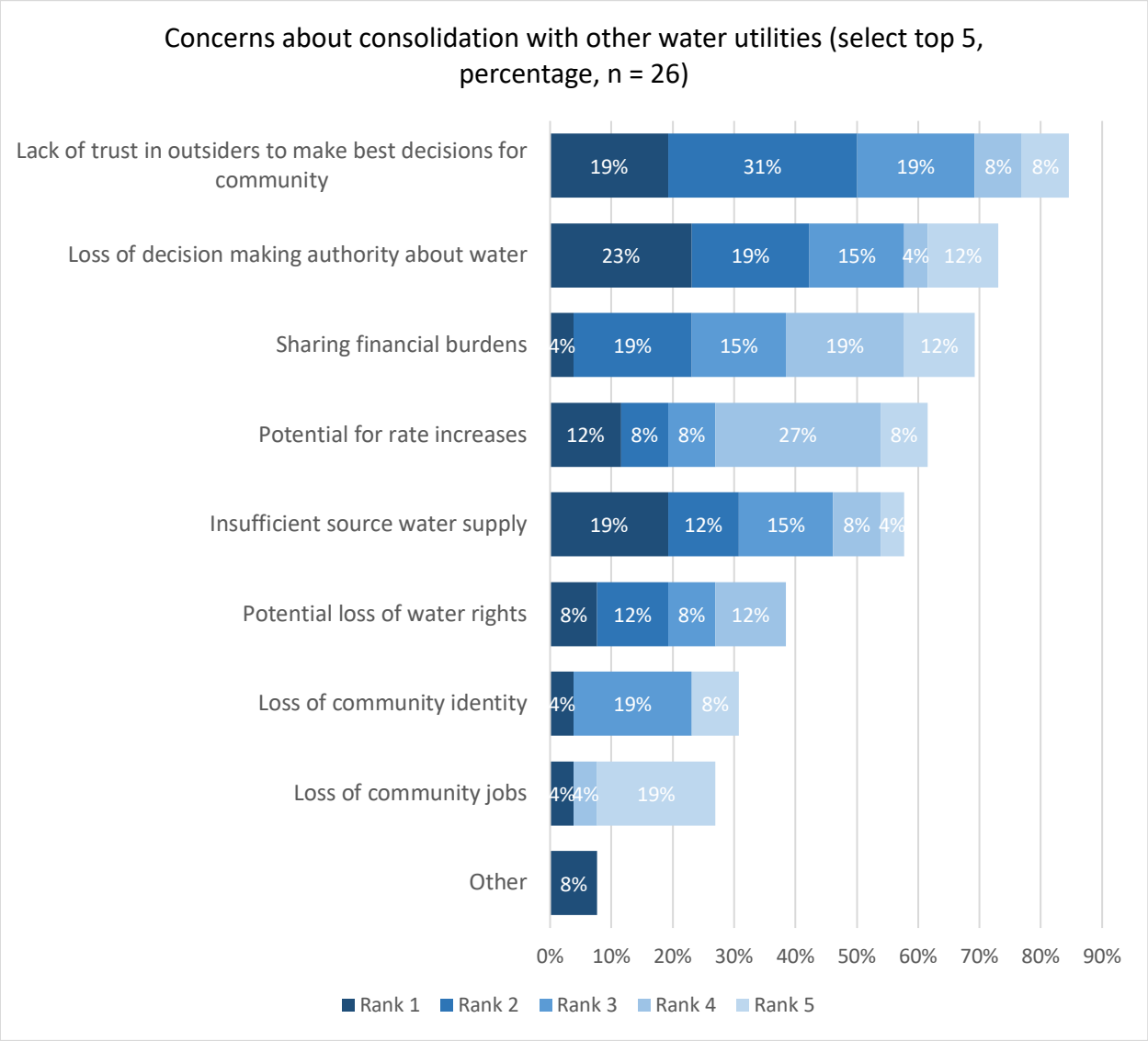
Although respondents to both the CDWS survey and TDWS survey cited a lack of certified operators in the area as the top challenge for retaining an operator, a higher percentage of TDWS respondents cited an inability to pass the certification test, an inability to raise salary over time, and competition for certified operators with other systems as a significant challenge for them.

Figure 41: Reasons given by TDWS survey respondents for having difficulty finding or retaining a certified operator



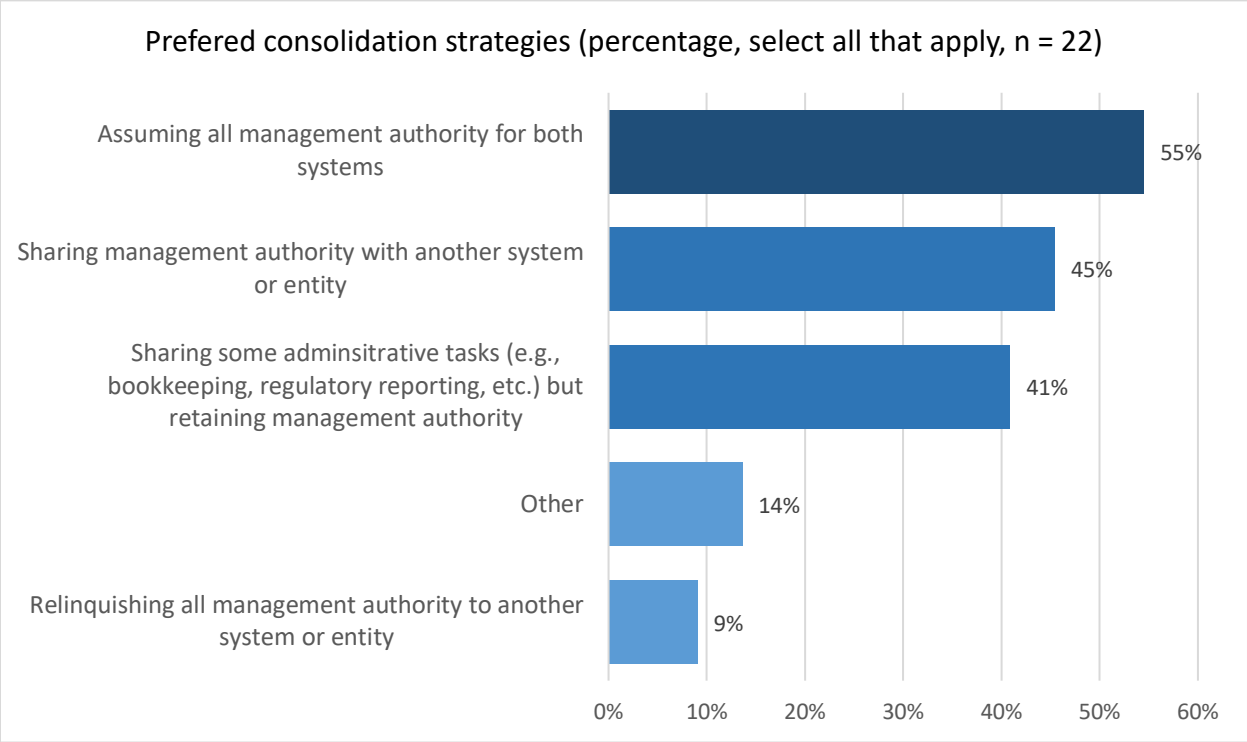
For the TDWS survey, 72 percent of respondents indicated a concern with consolidation with another utility. The most common concern was a lack of trust in outsiders to make best decisions for the community with 85 percent of respondents selecting it as a top five concern, compared to 62 percent of CDWS survey respondents.

Figure 42: Concerns about consolidation with other water systems given by respondents of TDWS survey



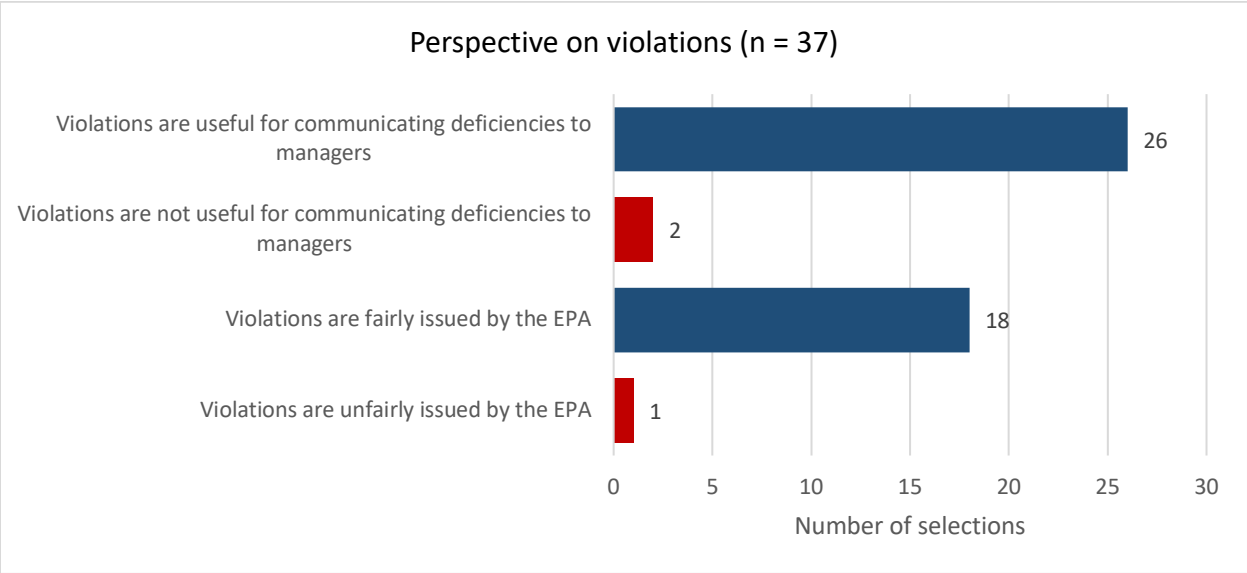
When asked about their preferred consolidation strategy, those who selected an option (61 percent of respondents) were most willing to assume all management authority of both consolidated systems, which was the third most popular option among CDWS responses.

Figure 43: Preferred consolidation strategies of TDWS survey respondents



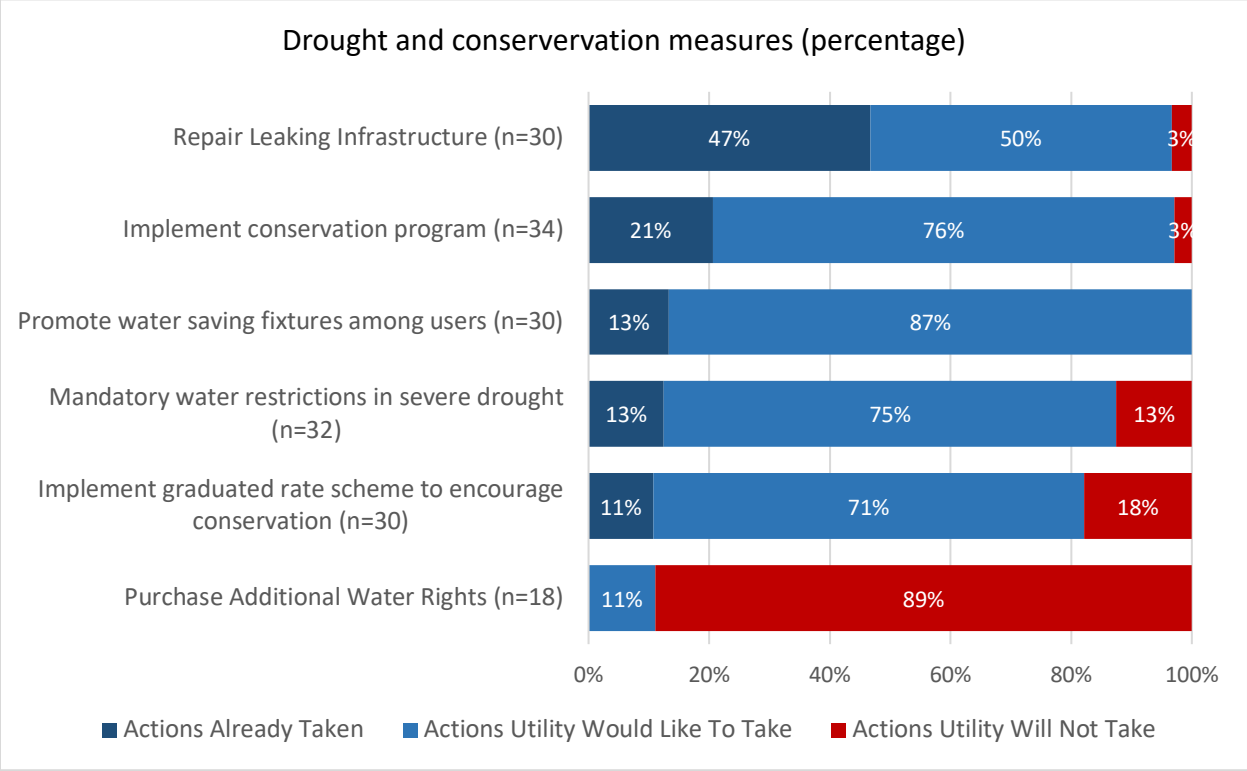
TDWS survey respondents overwhelmingly selected that they thought violations are fairly issued by the EPA and that they are useful for communicating deficiencies to managers. CDWS survey respondents largely also voiced this, but to a lesser extent.

Figure 44: TDWS survey respondents' perspective on violations



While the figure below makes it appear that TDWS survey respondents have overall taken fewer actions related to drought and conservation compared to CDWS respondents, it does not consider the cultural importance of water as a shared resource in these Tribal communities, which often means their water usage rate is quite low. TDWS respondents would like to take many drought and conservation actions, like CDWS respondents, but they overwhelmingly do not plan to purchase additional water rights, even more so than CDWS respondents. This is likely due to Tribes in New Mexico having the earliest water rights in the state, with Pueblo water rights on grant lands having first priority. Three respondents claimed to not be concerned about drought.

Figure 45: Drought and conservation measures that TDWS survey respondents have taken, would like to take, and will not take



TDWS Survey Results Discussion

Overall, TDWS survey responses were similar to CDWS survey responses, with a few notable exceptions. These differences can generally be attributed to differences in their governance structure. TDWS are owned by the Tribal government, have paid staff, and often do not charge users for water or charge a very low flat rate.

The largest difference between TDWS' and CDWS' funding choices is that they have access to tribal specific sources of funding that are generally all or mostly grant funds. While TDWS are generally eligible for the same sources as CDWS, they choose to utilize sources of funding that are specific to them. The largest concern that TDWS had about consolidation is a lack of trust in outsiders to make the best decision for their community (85 percent selected as a top five concern as opposed to 62 percent of respondents in the CDWS).

Key TDWS Survey Takeaways

TDWS survey takeaways are similar those for the CDWS survey with a few exceptions.

- TDWS largely get their funding from Indian Health Service (IHS) Sanitation Deficiency System (SDS), New Mexico Indian Affairs Department Tribal Infrastructure Fund (TIF) and New Mexico State Legislature Capital Outlay, with the top two sources only being available to TDWS.
- Compared to CDWS, TDWS are less able to fund their operations solely through user rates and must rely on Tribal government funds, or other monies, to supplement their budget.
- Survey respondents were more likely to work full-time at their system than CDWS respondents.

TDWS Interview Results: Digging Deeper

Interviews with TDWS managers allowed researchers to better understand some of the reasoning—and nuances and complexities—behind their funding and managerial-related survey responses.

Something common to all the interviewed water system administrators was a deep commitment to providing safe, high-quality water to their communities. TDWS staff also expressed that the work they do is for the health and welfare of the Tribal communities they serve and, in many cases, live in. Furthermore, managers not only talked about taking their job of providing water to people seriously, but they also shared concerns for their employees. One manager stated, "…caring for your community and providing water to people can only be done when employees are treated well." This manager added, "During the pandemic, doctors and nurses were heroes, what about utility workers? They are heroes too!" For both TDWS and CDWS, there are concerns about who is going to be the next generation of water operators. One Tribal manager expressed that the job is not hard once you go through school, but that the certification process is a challenge due to tight scheduling and limited access to training. This manager also noted that many people need help studying for the certification exam. Another Tribal manager said, "People don't really want this work, one reason is low pay, when the pay grade is not great, people look elsewhere." Another manager discussed how they need to tell people how important this work is for the future of their community. "We need water to live," one manager emphasized. Recruiting, training, and retaining water operators is a big issue at TDWS, as well as for CDWS.

TDWS managers felt that in such a competitive funding system, much of the decision-making was out of their hands and the Tribal administrative structure was not efficient. In addition, TDWS need more internal capacity (e.g., managers often work more than 40 hours per week because there is a lot of work to be done but not enough staff) and technical expertise (e.g., funding applications). Furthermore, sharing knowledge was difficult during covid. Although there were virtual trainings and conversations,

managers noted that “Sit down meetings are important!” (i.e., referring to in-person meetings). They expressed the need to get the right people in the room to help each other to get things done (e.g., properly completing applications).

When asked what advice a water system would give to other water systems, TDWS managers shared similar advice. There is considerable need for technical skills and expertise, which might be offered by state or federal agencies, including how to help people sort through the specifics of each funding source, but also by lobbyists, engineers, and grant writers. However, “grant writers can help, but some Tribes don’t even know where to start.”

Another piece of advice that was offered, and which also applies to CDWS, was that each community is unique. TDWS managers noted that one needs to be aware of the particular needs of the community, know their water source, and stay abreast of immediate-term and long-term challenges such as drought. Many TDWS have not yet seen the effects of the drought, but managers said that they need to be thinking about it because of population growth and development occurring on Tribal lands.

While much of the conversations with CDWS and TDWS focused on the application process, it is not the only challenge for public water systems in New Mexico. One TDWS manager shared, when asked about looking for additional funding opportunities, “Managing the funding is time consuming! There’s lots of paperwork, lots of approvals to be obtained, you have to send out to bid, do the contracting, go through council review, … So, once you get the money then you have to do project management and oversee construction. And, disorganized bureaucracy slows things down.”

VI. Recommendations

Opportunities for Future Work

There are opportunities to expand this study and continue this research about drinking water systems in New Mexico and elsewhere. SW EFC researchers recommend that future research:

- Include wastewater systems in the survey, as small communities often have to balance the needs of both water and wastewater and determine where to spend limited time and financial resources. The need to access funding for both services is important and the process can be slightly different between the two. The budget for this project did not allow for wastewater to be included during this research process.
- Do a study of this type in other states, because the funding and regulatory environments vary by state. The results would also be useful as a means of comparing and contrasting results.
- Conduct a survey focused more deeply on one specific issue, rather than a range of issues. This survey was meant to gather a wide array of data and given its length, it was not possible to dig as deeply into each of the areas. A future survey could gather more in-depth data regarding single issues such as climate change, consolidation, regulations, cyber security, or technology access.
- Repeat the survey over time to see if changes made by state agencies or systems improved the situation.

Recommendations

The combination of a survey and interviews resulted in an understanding of some of the challenges and concerns NM drinking water systems face in obtaining infrastructure funding. At the core of these challenges are a lack of information or resources, misconceptions, and mistrust in the process. Recommendations to improve challenges for water systems are presented below. Each of these recommendations is presented as a stand-alone recommendation but it may be beneficial to phase some of them before others. Also, some may require fewer resources or time to implement. Implementing these recommendations will help water systems deal with the current challenges and prepare for the uncertainties of climate change.

1. Ensure that awarded funds are sufficient for completing the entire proposed project

Our study as well as prior work completed in the state, showed that there are many projects that are not fully funded. Without sufficient funds to complete an entire project, all of the benefits cannot accrue to the customers. Furthermore, it may be difficult to properly phase some projects to allow for partial completion when projects are not fully funded. For example, if the project is the construction of a storage tank, it is not possible to build part of a tank so nothing can happen without additional funding.

- Require systems receiving Capital Outlay funds to seek the remainder of the project funds from other state and/or federal sources within a specified period of time as a condition of keeping the funds. For example, anyone receiving Capital Outlay for a project could have 1 to 2 years to seek the remainder of the funding from other sources (i.e., Water Trust Board, State Revolving Funds, Rural Development, or any other of the many sources available.) This requirement would drive business to other funding sources and reduce or eliminate the number of systems who receive only partial funding for their projects when using capital outlay. It would also expand the value of the Capital Outlay funding by ensuring the communities received the full benefits of the proposed projects.

- Expand seed grants (i.e., grants for planning, asset management, preliminary engineering) and ensure that water systems are aware that these grants are available to develop, plan, and obtain engineering reports for a project to the point where additional [larger] grants/loans can be obtained. Ensure that the documents prepared under these grant sources fulfill the requirements of all (or the most commonly used) funding sources.
- Develop a funding coordination committee that meets regularly to discuss projects that need additional funding from other sources. Some projects may need other funding due to eligibility requirements or lack of sufficient funding in the program. If agencies met regularly, they could share projects that were in need of additional funds to complete the entire project. Systems could also come to the committee to seek full funding for proposed projects. At various times, New Mexico has had versions of this process but it has never been completely formalized. Other states have processes of this type, including Texas, Oklahoma, and Arkansas that could serve as models for how to organize this group.

2. Provide assistance via a "Funding Navigator"

Based on past work as well as the results of this project, the SW EFC has promoted the use of the concept of a "funding navigator." The Funding Navigator is built on the model of a real estate agent who helps a potential buyer navigate the complex world of purchasing a house and gaining a mortgage. This realtor does not do everything themselves but connects the buyer to the needed resources. The funding navigator is built on that same concept. The navigator would connect the system to needed resources and would have a role in all phases of the process: getting started, accessing funds, and managing the funds received. This approach is further described at the following website: https://swefcsrfswitchboard.unm.edu/srf/. (Click on the link and there are three resources related to explaining the funding navigator concept.) The SW EFC has partnered with several organizations across the country to pilot this approach in other states and is working with Water Finance Exchange on a small version of the navigator in New Mexico. This NM pilot was a direct result of this study.

- Consider funding a larger version of the funding navigator concept in New Mexico.
- Examine the data from the other pilots of the navigator to see how to use the concept more broadly in New Mexico.

3. Improve the application process, keeping in mind that end users have a wide range of knowledge, expertise, available time, and access to and comfort with technologies

While there have been improvements to application materials and processes over time, there remains challenges related to the overall process.

- Ensure application materials are accessible and readily understandable to all. Review and/or remove jargon that may be difficult to understand by those less familiar with water and include a glossary of terms.
- Develop materials, such as infographics, videos, and/or animations, to explain the process in a step-by-step manner in an easy to understand and access format. Include information regarding exactly what information is required to fill out the forms so that water systems can plan ahead by collecting the required documents and information.
- Develop materials, such as a table or a chart that could be online and interactive, that makes clear what the various grants and loans will pay for and who is eligible. This material should include all types of projects from planning to infrastructure and all eligibilities.

- Develop readily available templates, such as a budget template, and examples of completed templates and applications, so that water systems have access to materials that will meet the needs of funding agencies. The agencies that will accept each kind of template should be specified. Templates can be interactive fillable forms or customizable.
- Consider application standardization. While there are some standardized components, such as the Preliminary Report that is accepted by most, if not all, agencies, more standardization may ease the process of applying to multiple funding sources.

4. Increase the usage of existing funding programs rather than increasing the number of funding programs

When programs are not functioning as desired or when challenges are presented, there may be a tendency to want to add a new source of funding rather than working within the existing structures. There is already a large number of programs, so adding another would only increase complexity. Furthermore, the additional infrastructure funds coming through the federal government should make it unnecessary to add another funding source.

- Examine current funding sources and make whatever changes necessary to improve access and ease of use.
- If additional state money becomes available for infrastructure funding add it to existing sources rather than creating new ones.
- Use state funds to supplement federal or other funding to improve the use of all available funding sources.
- Use additional state funds to increase funding for up-front costs, some types of O&M, and capacity building rather than new construction costs.

5. Create opportunities for systems to communicate with one another

Sharing information between systems is one of the best ways to improve overall knowledge and is a first step in more formal partnering. Systems expressed a strong desire for more opportunities of this type and welcomed a role for a state agency or outside entity to provide the platform or set up the events.

- Expand outreach to inform all water systems of the benefits of sharing information so that they may work in coordination with and learn from one another.
- Create periodic meetups for water systems to talk with one another in an informal setting. A combination of in-person and virtual meetings will provide ample opportunity for people to attend sessions. Regional meetings might benefit those in rural areas so that they do not have to travel as far, while virtual meetings could be state-wide, with breakout rooms for individual regions or systems.
- Create an email forum or listserv (and possibly utilize other social media platforms) so that systems can pose questions, participate in conversations, and share announcements and opportunities (e.g., funding, water operator availability). A model for this might be UNC Environmental Finance Center's "Listservs for North Carolina."
- Create opportunities for systems of similar size, ownership type, treatment processes, or other similar characteristics, to be paired up – either virtually or in person – to be able to share common concerns.

6. Create venues that allow state and federal regulatory and funding agencies to be in communication with water systems

Similar to the need for water systems to communicate with each other, systems welcomed an opportunity to communicate more regularly with state and federal regulatory and funding agencies.

- Create regularly scheduled stakeholder meetings, that are widely advertised using a variety of methods, so that state and federal agencies can have listening sessions with water systems. Similar to the previous recommendation, these meetings could be in-person as well as virtual. Stakeholder meetings would benefit all parties.

7. Develop information and trainings so that water systems, particularly small and very small systems, better understand the various strategies for fully funding their water system, including infrastructure as well as day to day operations and maintenance

- Provide assistance to water systems to develop funding project timelines and detailed plans.
- Help systems understand and employ an appropriate loan to grant ratio approach to funding necessary improvements.
- Provide more informational sessions for managers and board members on what funds are available, who qualifies for different funds, and the pros and cons of each fund.
- Include topics of funding strategies and how to apply for and navigate funding mechanisms to MDWCA board member required training (while not increasing the time requirement for trainings).
- Detail how systems can fully fund their day-to-day operations as well as the financial metrics that can be used to assess overall financial health.

8. Reexamine and consider modification of the MDWCA organizational structure

MDWCAs have been the preferred method of organizing a water system for a significant period of time. While this organization structure solved significant issues at the time it was first adopted, it may be time to consider whether MDWCAs—in their current form—continue to meet the needs of water systems, especially those in rural areas.

- Consider ways in which the state can best assist MDWCAs to achieve their mission, whether through additional training, technical assistance, or regulatory assistance.
- Simplify reporting requirements to ease the burden on volunteer managers and board members.
- Consider modifying rules on paying personnel in order to help alleviate the challenges many MDWCAs have retaining board members. Also, many board members are acting as operators and managers, rather than board members, and doing so in a volunteer capacity. This voluntary operation masks the true cost of water and unduly burdens a few members of the community.

9. Develop a state-wide, multi-agency and water organizations messaging approach to collaboration and regionalization

One way to address many of the problems experienced by small systems is through greater collaboration. However, systems still lack the necessary information to fully understand and evaluate these options.

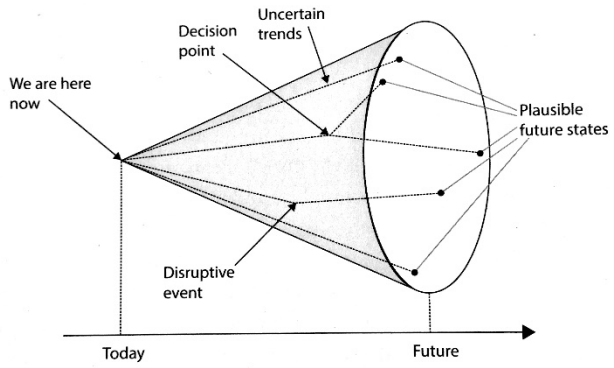
- Collaborate in developing a messaging campaign to raise awareness of the types of collaboration and regionalization available and the benefits that can be accrued. The campaign could also address some of the fears and apprehension that exists. Various methods of communication should be used to reach as many people as possible. Speaking with one voice across the state may enable more systems to consider collaborative options.
- Consider funding incentives for a wide array of collaborative strategies, including strategies that do not include formal consolidation with a neighboring system.

10. Develop scenario planning tools and trainings for utilities so that they can envision sustainable and resilient futures

- Develop a scenario planning process for water systems. Scenario planning is not a replacement for an Emergency Response Plan; rather, it is a robust, long-term strategic planning process that allows water systems to: plan for uncertain external forces like climate change and new technologies; coordinate decisions amongst multiple actors; and consider various possible actions under different future conditions.

Scenario planning does not explore only one future; instead, this process allows one to explore and reflect upon uncertain trends, events, and decisions that might occur between now and the future (typically 5, 10, 25 years and beyond). The figure below outlines this concept by showing the potential disruptions, difficult decisions, and intervening trends that might occur over time, such that water systems can envision and prepare for possible futures.[10]

Figure 46: The Scenario Planning Funnel, based on Timpe and Scheepers (2003) in Scenario Planning for Cities and Regions, R. Goodspeed (2020).



Recommendations for Tribal Drinking Water Systems

Tribal systems face many of the same issues and challenges faced by state regulated CDWS, therefore, many of the above apply to Tribal communities. However, Tribal communities are unique entities, and as such the following additional recommendations are provided.

[10] Goodspeed, Robert. "Scenario Planning for Cities and Regions. Managing and Envisioning Uncertain Futures," Lincoln Institute of Land Policy, 2020.

1. Plan in-person forums to expand communication opportunities amongst Tribal water systems and with their respective Tribal governments

Because Tribes are sovereign nations, their governance structure is very different than non-tribal communities. Depending on the Tribe, leadership can change frequently along with governmental priorities. The presence of the Tribal Council creates some continuity, but their role is very different from the role of a utility board. Interviewees expressed concerns about managerial inefficiencies and challenges within the Tribal governance structure, along with challenges related to understaffing and recruiting Tribal members to apply for jobs at TDWS.

- Create a forum to share information and learn from other Tribal water systems, including ways to engage Tribal government, to provide water system staff with the chance to discuss their common concerns and to develop strategies to address inefficiencies, decision making challenges, and staff recruitment.

2. Develop scenario planning tools and trainings that are specific to TDWS concerns and needs

In general, communities on Tribal lands in New Mexico are currently experiencing more growth and development than other rural communities, thus putting increased stress on their water systems. Needs planning for TDWS needs to take this into account, in addition to the different cultural and governmental environments.

- Address the culturally specific and unique development conditions on Tribal lands due to the considerable growth and development (e.g., commercial and residential, as well as new construction for government offices and community spaces) and an increasing demand on water.

VII. Conclusion

The passage of the Bipartisan Infrastructure Law as well as the increase in other funding sources is a unique and exceptional moment in time for water systems and water system infrastructure. While New Mexico will be receiving a significantly higher quantity of funding, it will be necessary to take pro-active action to ensure that New Mexico's systems (including Tribal) are in the best position to take advantage of this funding. There is a strong desire on the part of the federal government to focus particular attention on those communities who have not traditionally received funding. This goal, while valuable to disadvantaged communities, means that even greater efforts will be needed to position systems who have not been a part of the prior funding efforts to receive the funding and be able to manage the grants and loans after receipt. It is important that the systems are helped without compromising the integrity of the funding programs. This can be done but will require a unified effort from many entities.

The SW EFC team welcomes questions and comments about the research and results and looks forward to continuing to work with agencies and organizations to make drinking water systems in New Mexico more sustainable and resilient.

Appendix A: References

Colvin, Tucker. "Drinking Water Governance For Whom? An Institutional Analysis Of Rural Drinking Water Systems In New Mexico," 2020. https://digitalrepository.unm.edu/geog_etds/50

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Appendix B. Supplemental Data

Graphs omitted from main CDWS survey results

Figure 47: CDWS survey respondents' rating of involvement of board members

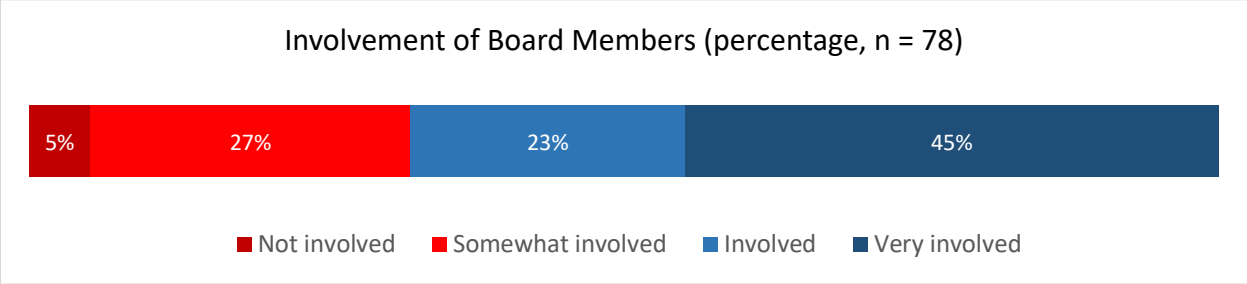


Figure 48: CDWS survey respondents' level of agreement on difficulty of finding an operator

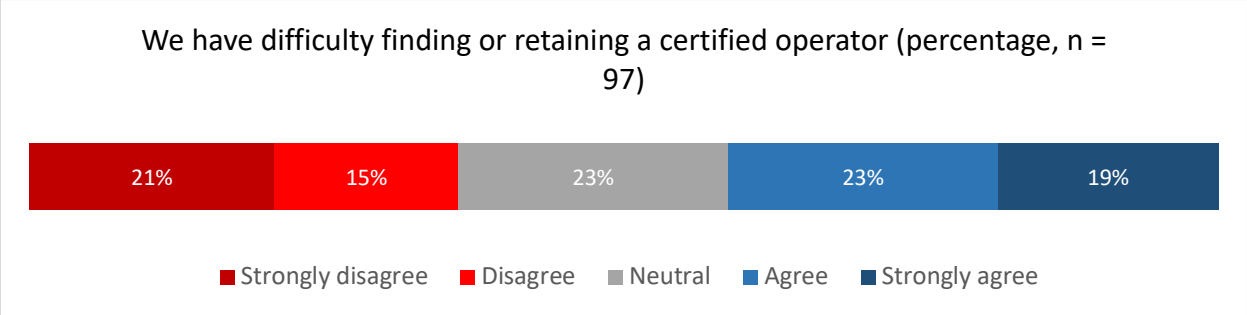


Figure 49: CDWS survey respondents' option on consolidation benefits

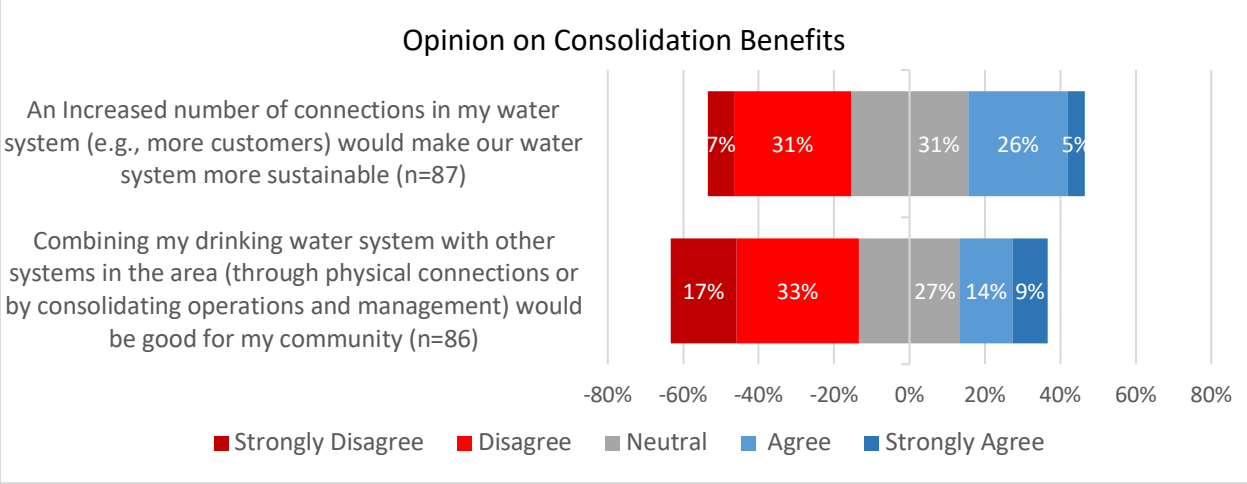


Figure 50: Number of violations compared to median household income of census tract served by CDWS

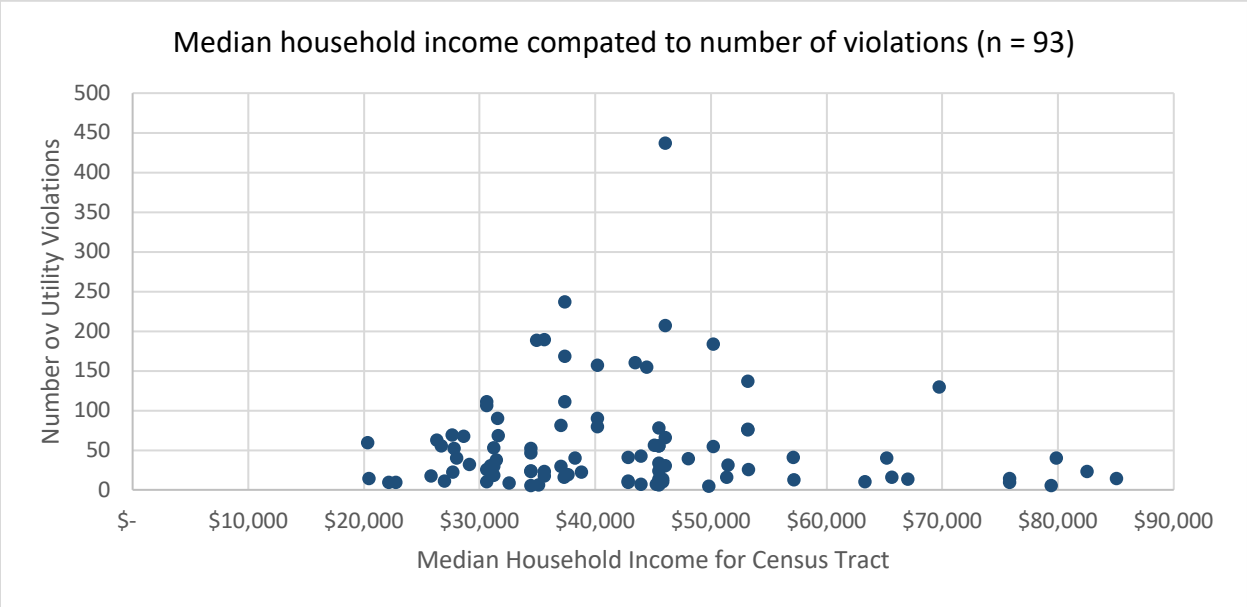


Figure 51: CDWS' number of unique funding sources applied to compared to residential user rate

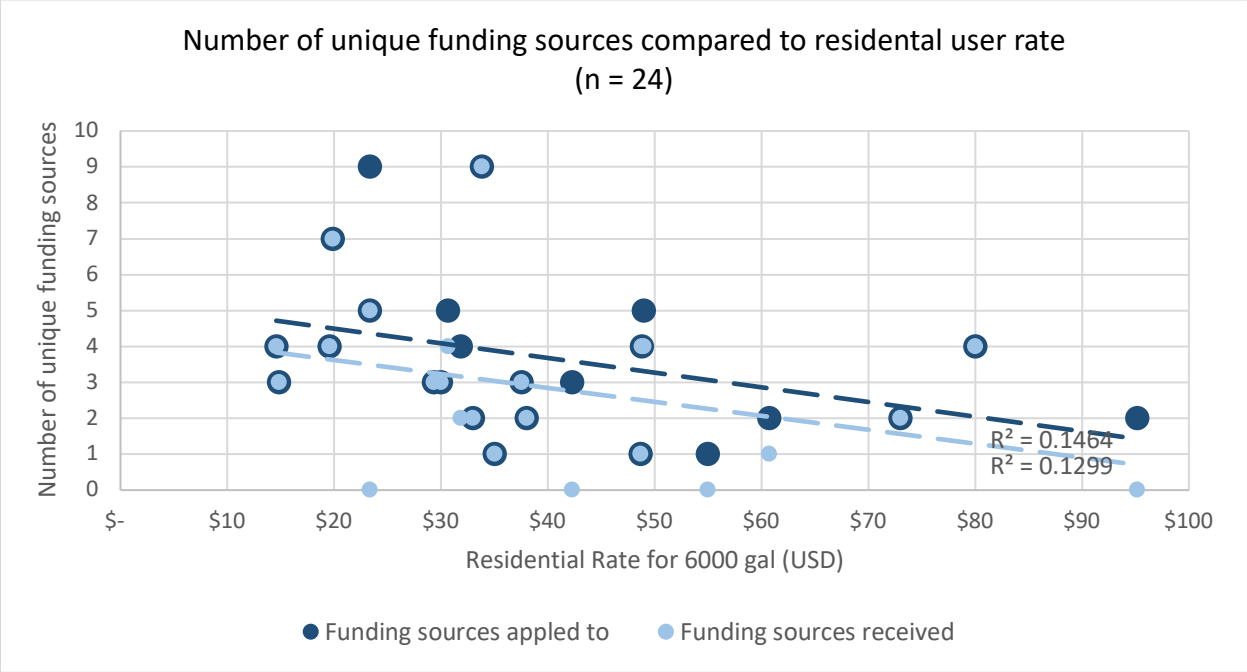


Figure 52: CDWS' number of unique funding sources compared to median household income of census tract served

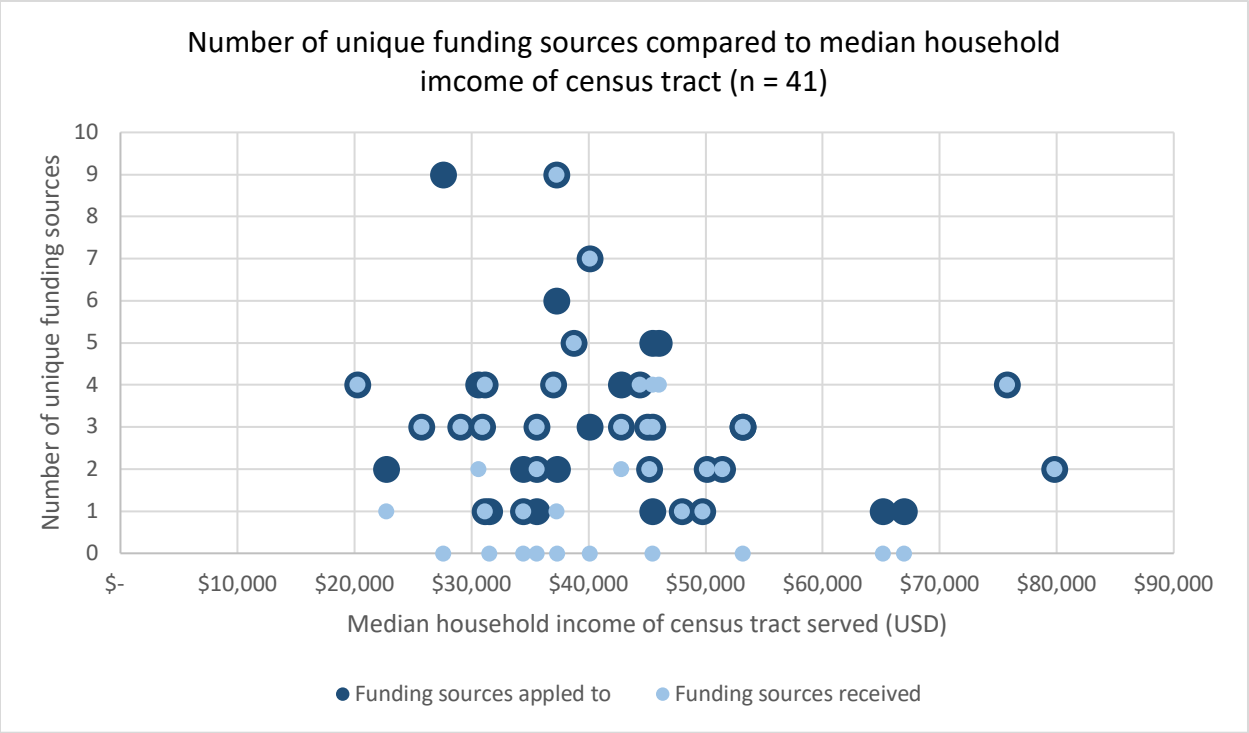
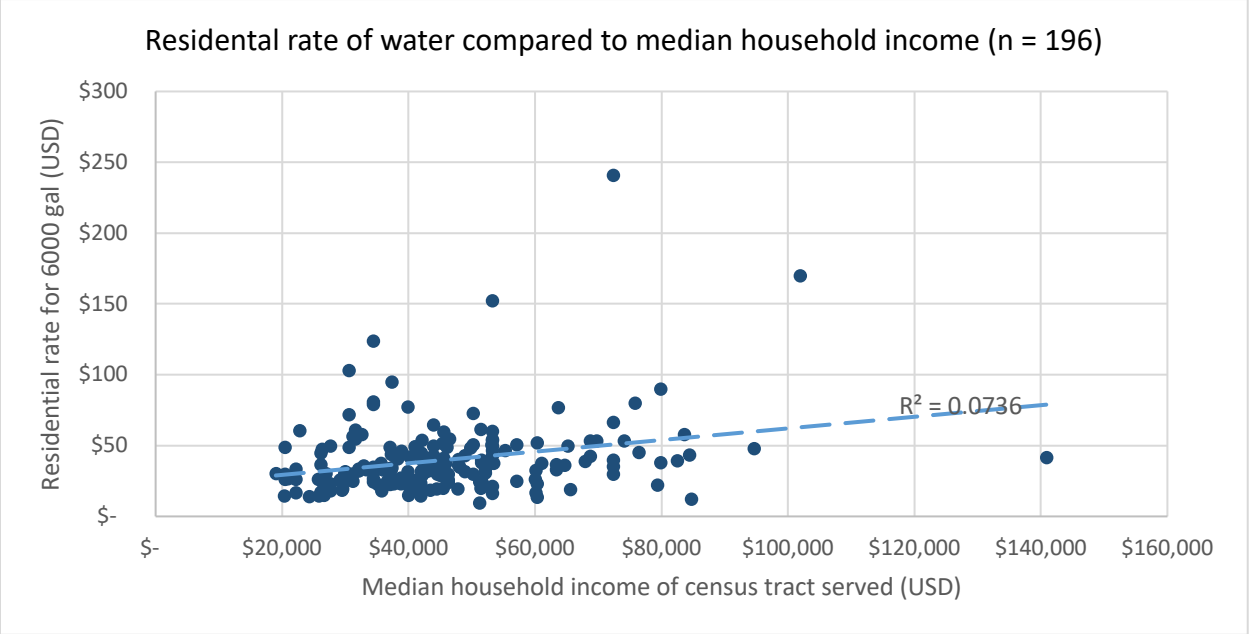


Figure 53: CDWS residential user rate compared to census tract served by system



Graphs omitted from main TDWS survey results

Figure 54: TDWS survey respondents' reason for applying for funding

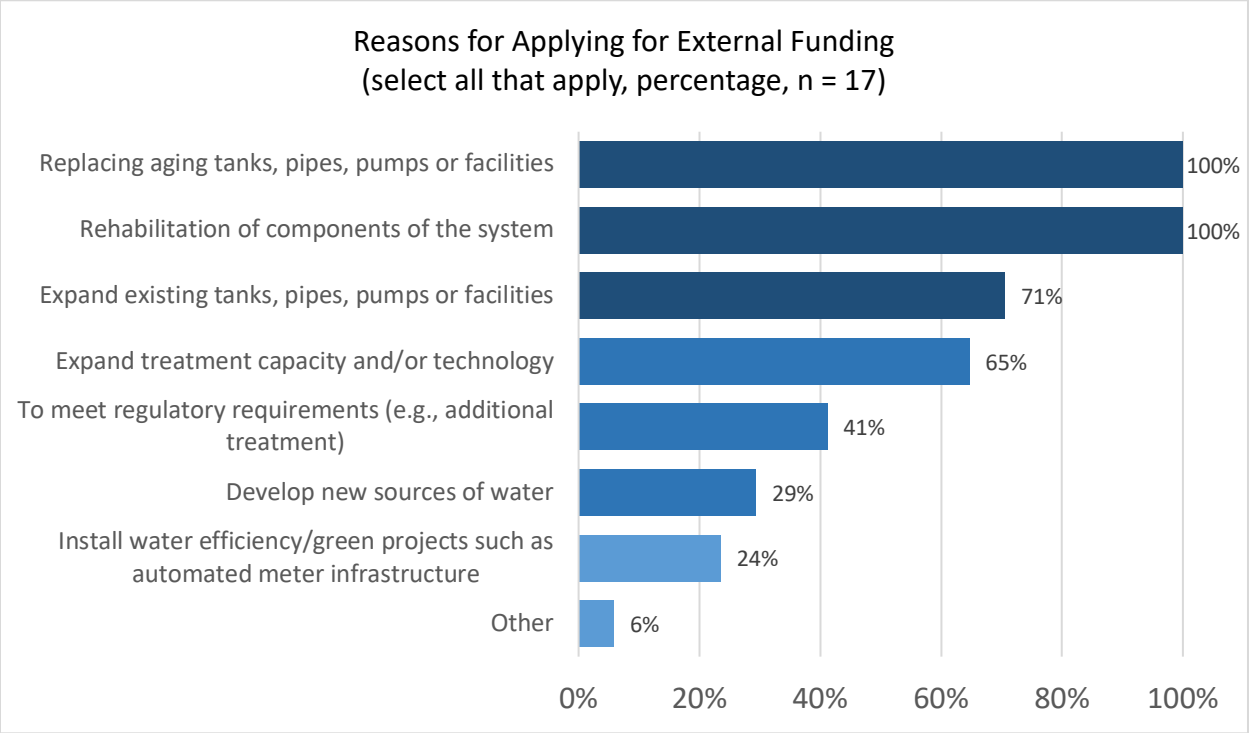


Figure 55: TDWS survey respondents' rating of sufficiency of funding received

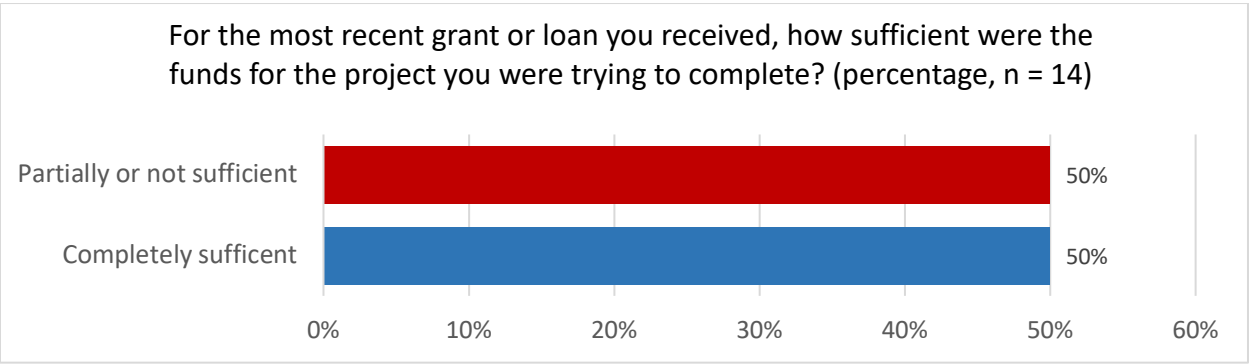


Figure 56: TDWS survey respondents' level of agreement of funding related challenges

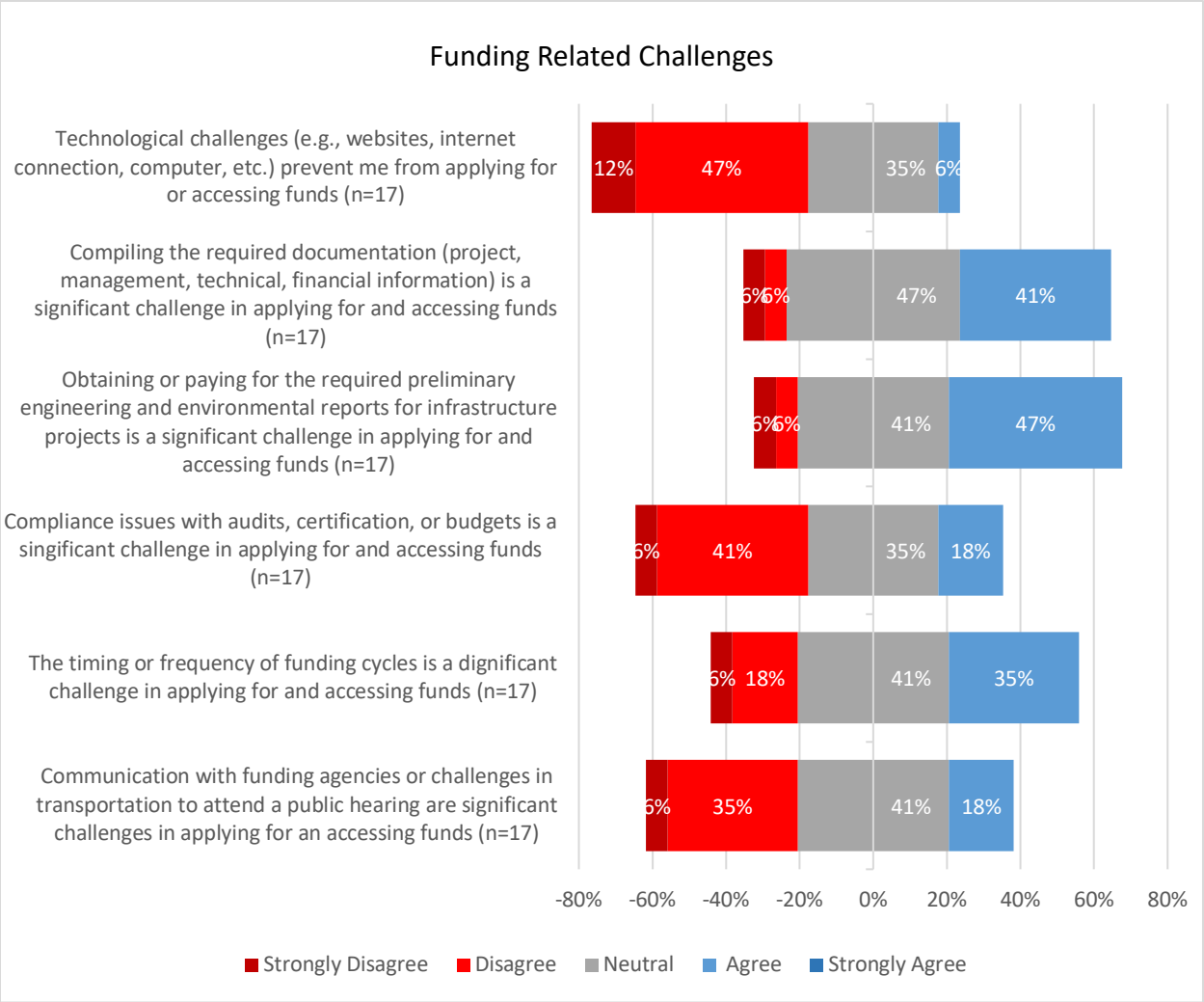


Figure 57: Number of vacancies on board of directors from TDWS survey respondents

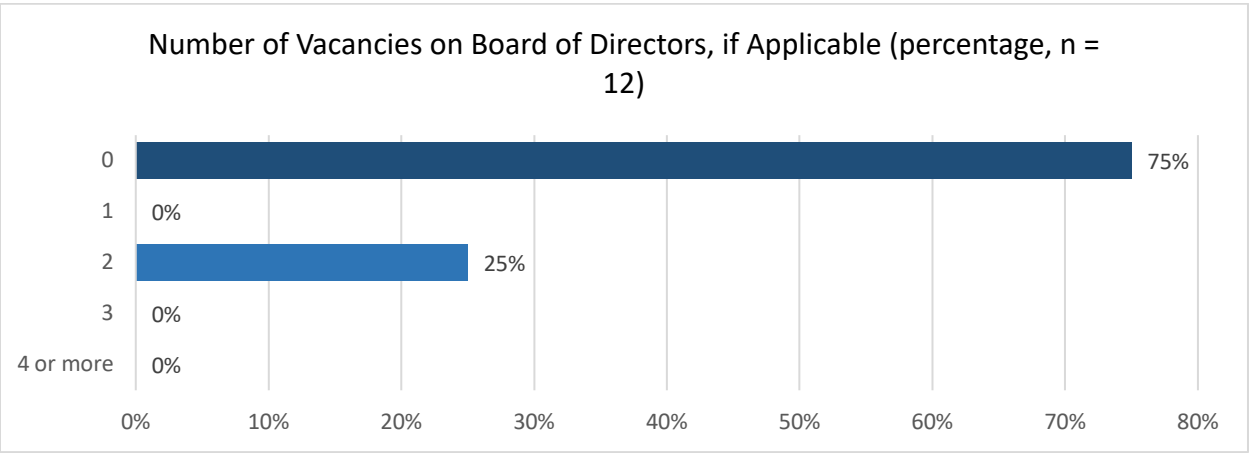


Figure 58: TDWS survey respondents' stated reason for vacancies of board of directors

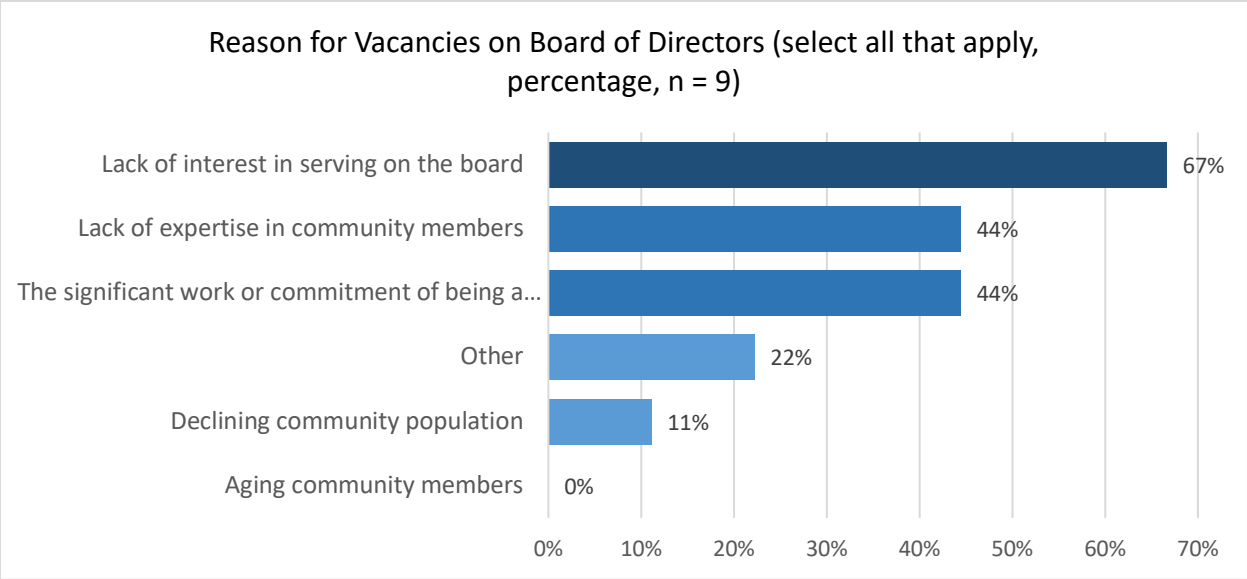


Figure 59: Level of involvement of board members from TDWS survey respondents

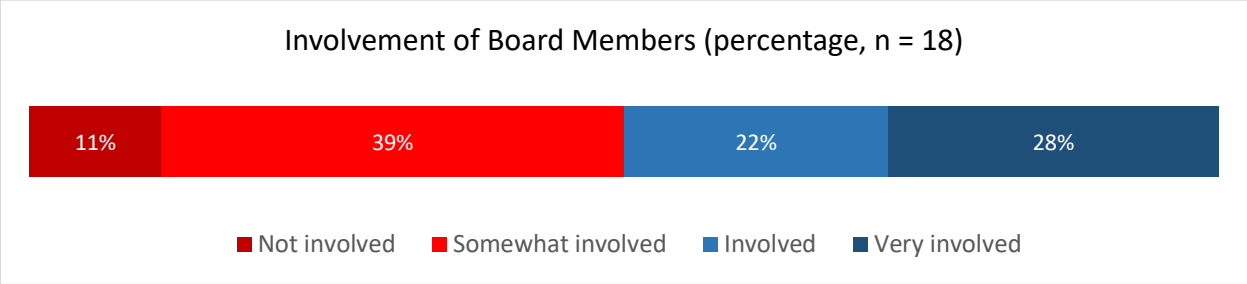


Figure 60: Level of agreement of difficulty of finding an operator by TDWS survey respondents

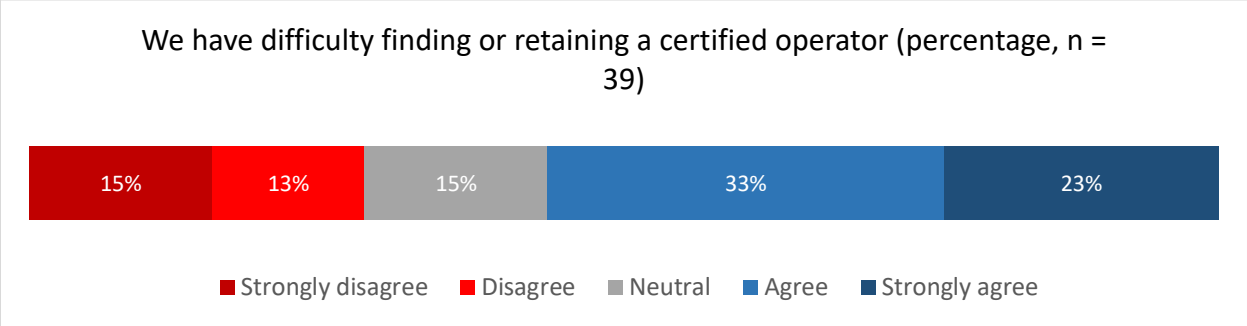


Figure 61: TDWS survey respondents' opinion on consolidation benefits

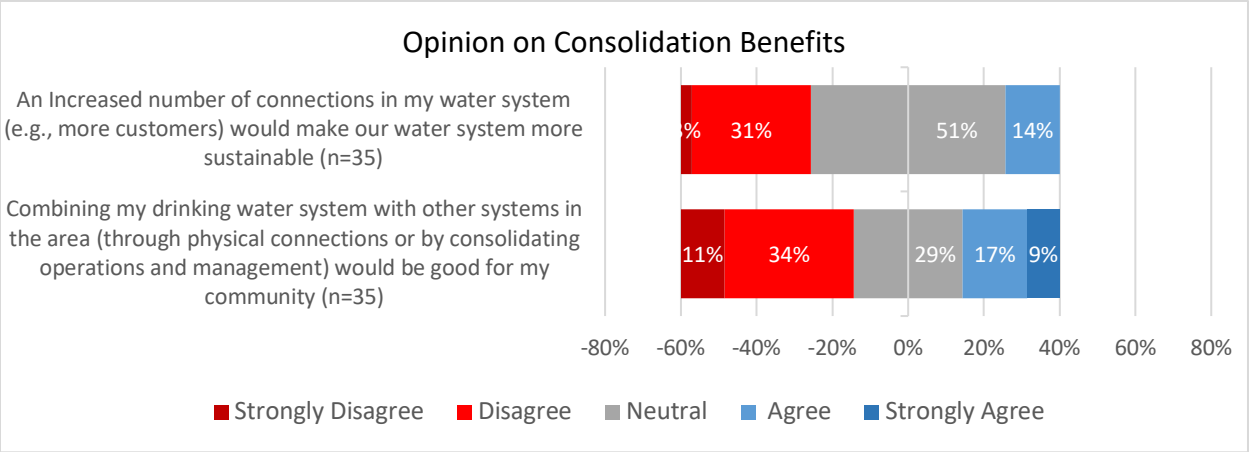


Figure 62: Whether TDWS survey respondents indicated a benefit to consolidation

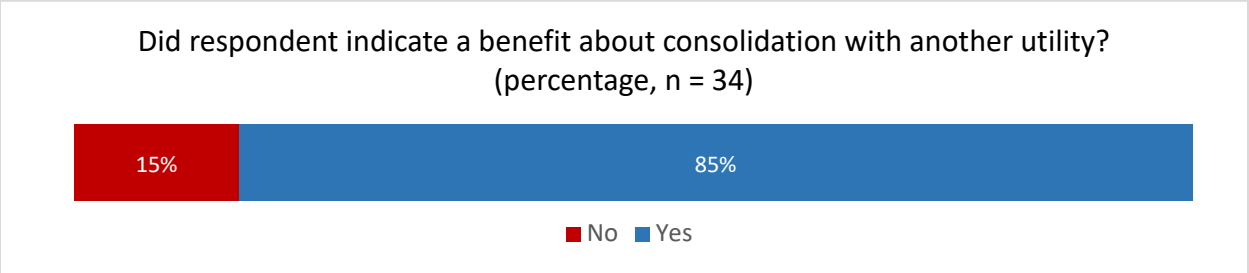


Figure 63: TDWS survey respondents' stated benefits to consolidation