



Community Engagement in Long-term Hydroelectric Planning

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Executive Summary

In 2022, Consumers Energy began a detailed review of its 13 river hydroelectric plants (river hydros) as part of its obligations to its 1.8 million gas and electric customers. The company, as the owner and licensee, must file with the Federal Energy Regulatory Commission (FERC) a notice of intent to apply for a new license at least five years before the existing license expires. The current 13 licenses expire within the next 12 to 22 years; 11 of them expire in 2034. Consumers Energy engaged Public Sector Consultants (PSC) to provide the company with community questions and feedback to make informed, sustainable decisions on how to plan for the future of its hydroelectric portfolio.

Community members provided feedback through different engagement modes (community meetings, surveys, and web-based comments) during summer and fall 2022. The key findings are summarized below.

- Finding one: Communities had not considered an alternative future for the river hydro plants.
- Finding two: Community members are making assumptions and drawing conclusions due to uncertainty about the river hydros' futures and a lack of information about hydro operations and relicensing processes.
- Finding three: Trust in the company's safety record is high.
- Finding four: Community members do not trust the company to prioritize what communities want when making decisions about the river hydro plants.
- Finding five: Preferences for the river hydros' futures reflect the extent of the respondents' personal connection to the river hydro plants and their amenities.
- Finding six: Preferences for the river hydro plants also varied based on the means of engagement.
- Finding seven: Engagement opportunities should be expanded to hear more voices.
- Finding eight: Reaching people in the communities where the river hydros are located is difficult.
- Finding nine: Discussions about the river hydro plants need to include the watersheds for context.
- Finding ten: The company needs to explain how hydroelectric power fits into its renewable energy portfolio.

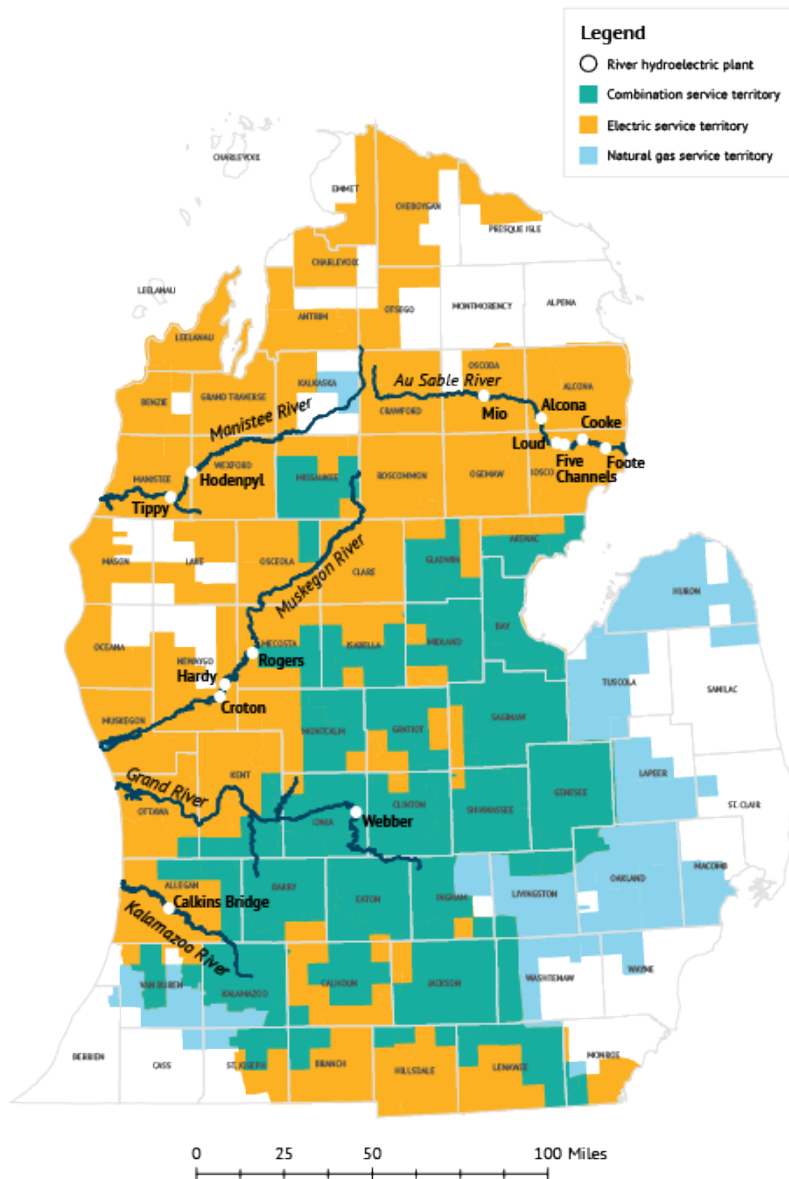
There are several ways in which Consumers Energy could address the findings outlined in this report. Some recommendations address information gaps, provide opportunities to expand community engagement, and build trust within the communities for the manner in which the company will make decisions about the plants' future.

Introduction

Background

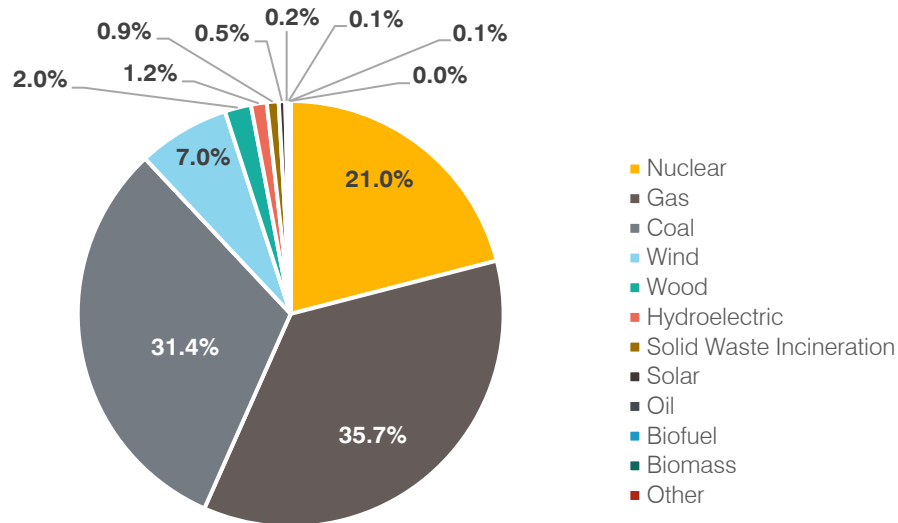
Consumers Energy, the largest subsidiary of CMS Energy, is Michigan’s second largest utility, supplying natural gas and electricity to more than 6.7 million residents and serving all Lower Peninsula counties. Hydroelectric power generation has been part of the company’s portfolio for more than a century. For a time, it owned more than 90 such plants. Between 1940 and 1970, more than 70 river hydro plants were sold or retired due to costs exceeding value to customers. Today, Consumers Energy owns and operates 13 hydroelectric plants on five rivers (Exhibit 1).

EXHIBIT 1. Map of River Hydro Plants with Rivers, Key Place Names, and Consumers Energy Service Areas



Hydroelectric power generation makes up slightly more than 1 percent of Consumers Energy’s total electricity (Exhibit 2). In 2022, coal and gas fuel types composed 67 percent of the company’s electricity production. Renewable sources of energy, notably solar and wind, will increase in the next few years as the company works to end coal use by 2025 as described in the [2021 Clean Energy Plan](#).

EXHIBIT 2. Fuel Type Pie Chart



Electricity produced by Consumers Energy is connected to a regional transmission organization, or electrical grid, known as the Midcontinent Independent System Operator (MISO). MISO serves 45 million people over a service territory of 900,000 square miles by operating the bulk transmission system and wholesale electricity markets across all or part of 15 U.S. states and the Canadian province of Manitoba. MISO, an independent nonprofit member-based organization, operates the electric grid with the main goal of “keeping power flowing across the region reliably and cost effectively” (MISO 2023).

In Michigan, the Consumers Energy’s dams represent a fraction of the 92 dams that produce hydroelectric power. All are regulated by FERC, whose primary hydropower role is in relicensing existing hydroelectric dam projects. However, in the case of a revoked or surrendered license, regulatory oversight for safety of the dams falls to the State of Michigan (Dam Safety Task Force Report 2021).

Purpose

In 2022, the company began a detailed review of all 13 plants as part of its obligations to its 1.8 million electric customers. Consumers Energy, as the owner and licensee, must file with FERC a notice of intent to apply for a new license at least five years before the existing license expires. The 13 licenses expire within the next 12 to 22 years; 11 of them expire in 2034 (Exhibit 3). The [FERC relicensing process](#) is the impetus for these efforts. Consumers Energy is considering each river hydro plant individually as well as in relation to other plants upstream and downstream.

EXHIBIT 3. Details of Consumers Energy’s River Hydro Fleet hydro fleet details table

Dam	Capacity (MWs)	Average MW/day	Plant Commissioned	FERC License Expiration Date
Rogers	6.75	2.66	1906	6/30/2034
Hardy	31.5	11.87	1931	6/30/2034
Croton	8.85	3.79	1907	6/30/2034
Hodenpyl	17	5.57	1925	6/30/2034
Tippy	20.1	7.13	1918	6/30/2034
Calkins Bridge	2.55	1.52	1935	3/31/2040
Webber	3.25	1.3	1907	5/31/2041
Mio	5	1.74	1916	6/30/2034
Alcona	8	3.29	1924	6/30/2034
Loud	4	2.08	1913	6/30/2034
Five Channels	6	2.79	1912	6/30/2034
Cooke	9	3.15	1911	6/30/2034
Foote	9	3.51	1918	6/30/2034
Total:	131	50	About 1% of CE Total Generation	

As shown in Exhibit 3, the 13 river hydro plants produce a design maximum combined output of 131 megawatts (one megawatt is 1,000 kilowatts, which is one million watts), which makes up approximately 1 percent of the total generation. The average age of the 13 river hydro plants is 106 years. The design life of a plant is 50 years; design life can be extended between 75 and 100 years under proper maintenance and investment, as Consumers Energy has done.

The multifaceted review process considers six factors for a holistic assessment of each plant, listed below in no particular order.

1. **Regulatory Compliance.** When evaluating the state and federal regulatory compliance, understand the costs required to maintain safe and operational facilities that meet the regulatory requirements.
2. **Safety.** Review the condition of the plant and the population that could potentially be impacted downstream by a dam failure.
3. **Community.** Assess how the plant has influenced the surrounding communities as well as how potential changes to the plant may impact the communities.
4. **Operating Costs.** Review the expected long-term spending for operations and the expected energy generation.
5. **Environment.** Assess invasive species, sediments, contaminations in the sediments, fish and other plant and animal species, and the impact of the plant on the natural environment.
6. **Recreation.** Review how people recreate on and around the plant and the impact of the operations on recreational opportunities in the area.

The review follows the company’s triple bottom line approach that ensures benefits for the people, the planet, and Michigan’s prosperity (Consumers Energy 2021).

Consumers Energy recognized that it has extensive information about most of the factors in the review process, but not the community and recreation factors. To help fill in those information and information gaps, the company selected Public Sector Consultants to develop and implement a community engagement strategy in 2022 for collecting unbiased feedback regarding the facilities. PSC was selected for its nonpartisan approach to research and public policy and deep expertise in public engagement, local and state dam projects, and decision-making processes.

Guiding Principles and Goals of the Community Engagement Process

In summer and fall 2022, PSC led an engagement strategy to facilitate community conversations, survey property owners adjacent to the river hydros, and support Consumers Energy with developing a web-based source of information and place for public comment. PSC was to provide the company with community-based information it can use to make informed, sustainable decisions on how to plan for the future of its hydroelectric portfolio.

The following guiding principles were established for the engagement process:

- The process of developing a long-term strategy for each river hydro plant needs to be transparent.
 - Community members encouraged Consumers Energy to share information about owning and operating the facilities including costs, conditions, identified risks, and potential scenarios. Presentations were updated and revised to share new information based on requests from PSC and community members; and all available information was posted on the website.
- All scenarios are on the table—each river hydro’s future state could be relicensing, decommissioning and removal, or transferring ownership.
 - As no decisions have been made on the future of the river hydros, opinions were sought through the survey and community engagement on preferences for potential future scenarios. Each presentation provided a description of the considerations and processes for relicensing the river hydros and for decommissioning the river hydros.
- Community members will be heard and involved, and their meaningful input will be encouraged.
 - The river hydros, unlike Consumers Energy’s other power generation assets, have houses, businesses, and recreation built around them. In most cases, more than a century has passed since the river hydros’ construction, and people have come to view the river hydros and their impoundments (the artificial bodies of water created by damming the river) as unchanging parts of the landscape. It was essential to have face-to-face conversations with people in communities surrounding the 13 river hydro facilities well in advance of any actions related to the river hydros.
- Provide clarity on how the decisions about the river hydro plants will be made, by whom, and when.
 - Engagement sessions in the communities and content on the website provided the best available timeline for the engagement process, report development, completion of the long-term hydro strategy, and subsequent steps to be taken by the company. In addition, the roles and responsibilities of federal and state regulatory agencies as they pertain to the operations of the river hydros were shared in these public venues.

Community Engagement Methodology

The community engagement methodology focused on interested parties near the facilities, including property owners adjacent to the company’s hydro properties, business and community leaders, and other parties.

Scope and Timeline

The engagement strategy rolled out over several months in 2022 with the following elements:

- Announce community engagement on the future of the 13 river hydro plants
- Develop communications and materials to help inform property owners, government entities, license holders, and the public
- Host a series of community meetings with the public, and local officials and decision makers
- Survey property owners located within 100 feet of Consumers Energy property lines
- Provide comment cards, a dedicated email address, and comment space on Consumers’ web page

EXHIBIT 4. Community Engagement: Major Activities

Activity	June 2022	July 2022	August 2022	September 2022	October 2022
Website about long-term hydro strategy created with space to comment, dedicated email address provided	✱	✱	✱		
Adjacent property owner survey mailed	✱	✱	✱		
Engagement sessions in communities announced			✱		
Engagement sessions held			✱	✱	✱
Comment period ends					✱

Means of Engagement

PSC engaged the communities and other interested parties in three major ways. PSC facilitated community conversations in each community with a river hydro and conducted outreach to property owners along and adjacent to the hydroelectric facilities to assist Consumers Energy with developing a strategy for how to approach future river hydro ownership across Michigan. A website dedicated to the long-term hydro strategy was developed and offered a place for Consumers Energy to share information about the process, offer opportunity to comment, and answer questions.

Adjacent Property Owners Survey

PSC administered a survey of people owning adjacent property in the zone of impact—located above or below the hydroelectric plants—or other property owned by Consumers as part of the facilities’ operations. The company provided mailing addresses of property owners located within 100 feet of Consumers Energy’s property lines at the 13 facilities. PSC mailed letters with paper surveys to 2,312 addresses and offered an online survey for property owners, as well.

To facilitate survey administration and completion, each property owner was given a unique identifier that corresponded to the paper survey. Property owners had the option of completing the survey online by entering their unique code. The return rate was nearly 60 percent, with 1,381 surveys received through online and paper responses.

The survey was designed to gauge property owner sentiments and perceptions on how the river hydro and its impoundment impacts their livelihood, choice of recreation, and housing decisions, as well as their long-term understanding of the facility's operations. The brief survey sought to allow Consumers to quantify property owner sentiment on the perceived value of the river hydro and their impoundments, identifying the degree to which property owners agree with the different scenarios of river hydro operations and decommissioning. The survey elements included questions about awareness, use of the river system, options for future scenarios and concerns/benefits, current river hydro operation concerns, and demographics.

The [survey form](#) can be viewed in appendix O.

Community Engagement Sessions

A series of public meetings were held in communities where Consumers Energy owns and operates its 13 river hydros. The meetings were the first community engagements where a two-way information exchange occurred as part of a broader effort to ensure the company's review includes community impact. The objectives of the sessions were to:

1. Share information about the development of Consumers Energy's long-term hydro strategy
2. Gain community-wide understanding about the decision-making process and future scenarios
3. Gather input on community factors that should be accounted for in the strategy

To achieve the objectives, the engagement sessions were designed to accomplish the following:

- Listen to and record the concerns of community members
- Provide communities information about Consumers Energy's hydro operations and the FERC licensing process
- Provide the community with a baseline of understanding of the costs and risks associated with operating the river hydro plants
- Hear community expectations and perceptions about the river hydro plant operations and Consumers' responsibility to the community
- Help the community start to reimagine the river without the plants
- Establish community expectations for this process: the sessions are the start of a longer engagement between the communities and Consumers Energy

PSC cohosted and facilitated 22 sessions within the communities, 13 for the public and nine for local leaders. Meeting attendance totaled 1,700, with a range of 50 to nearly 250 per meeting. Announcements of the sessions were made via the website, mailed postcards, media releases to established channels, and direct communications at the local level. Each session was between one-and-a-half to two hours long and included time for one-on-one Q&A with PSC and Consumers Energy personnel. Meeting materials — agendas, presentation slides, meeting schedules, and river hydro plant information sheets — are on the [Consumers Energy website](#).

Three meetings with interested parties were held to review issue-specific topics. PSC and Consumers Energy met with the Michigan Hydro Relicensing Coalition to discuss their concerns and questions related to the long-term plans for the river hydros. PSC and Consumers Energy also met with the Manistee Muskegon Au Sable Advisory Council (MMAC), a group composed of representatives from federal and state natural resource agencies and Trout Unlimited. In addition, a meeting with the Great Lakes Fishery Commission was held to discuss their Sea Lamprey Control program and the role of structures such as river hydros in preventing the animal's spread. See appendix P for letters from stakeholder groups.

Website and Comments

PSC supported Consumers Energy in creating [web-based digital content](#) dedicated to the long-term hydro strategy beginning in summer 2022. The website provides information about the strategy to a wider audience than the survey and engagement sessions. All meeting materials are available to view and download. Also, a dedicated email address and comment space were provided during the three-month comment window. Individuals contributed 567 unique comments during that period.

Engagement Findings

Finding one: Communities had not considered an alternative future for the river hydro plants.

Consumers Energy wanted to know what the river hydros mean to the communities to help broaden the company's understanding for a long-term hydro strategy. Since communities had not considered an alternative to relicensing, the community members were not ready to engage in productive conversations about the future of the river hydro plants. Rather, people who attended the community meetings and provided input through the various channels were sometimes surprised and fearful of potential changes to the status quo despite hearing that no decisions had been made. In fact, half of all survey takers had never considered their waterfront property could be altered by a change in hydro operations. See appendix A for survey results for all communities.

Finding two: Community members are making assumptions and drawing conclusions due to uncertainty about the river hydros' futures and a lack of information about hydro operations and relicensing processes.

Comments and questions directed to Consumers Energy and PSC revealed several assumptions and information gaps concerning the operations and impacts of the river hydros. For future engagement to result in reciprocal information sharing and partnering for solutions, the company will need to provide clear, factual, and compelling information to address the information gaps and assumptions such as the following:

- The energy produced by the river hydros stays in the communities for their use.
 - The company can afford to invest in the river hydros with its profits.
 - Removing a river hydro will significantly decrease property values.
 - Recreational usage will cease if a river hydro is removed.
 - Former impoundments will be muddy, unattractive areas if the river hydros are removed.
 - River hydros provide flood control and are good for the natural environment.
-

Finding three: Trust in the company's safety record is high.

PSC heard during the engagement process that Consumers Energy is well-regarded for its presence in the communities where it has operations. People also appreciated the company showing up in the communities for uncomfortable conversations about potential changes to the river hydro fleet. Overall, the company is viewed as a responsible and safe operator of the river hydros and generally responsive to community concerns and needs. Consequently, most people do not like the idea of transferring the hydro licenses to new owners for fear that the same standards of safety and responsiveness will not continue.

Finding four: Community members do not trust the company to prioritize what communities want when making decisions about the river hydro plants.

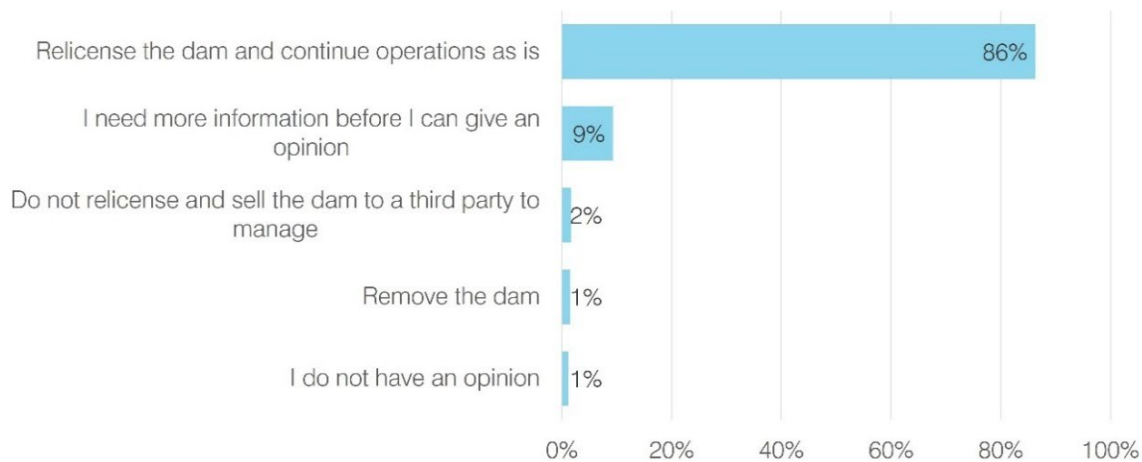
While people expressed their trust in the company to safely operate the river hydros, many survey takers and meeting attendees were dubious about the company's intentions. For example, only 46 percent of survey takers agreed their input will matter in the company's final decision on whether a river hydro is relicensed or decommissioned and removed. During the first few community meetings, members of the public told Consumers Energy representatives that information about costs and revenue for each river hydro plant needed to be shared. In response, the company retooled its presentation and shared those details. The company will need to continue earning the trust of its customers and the communities during the development of the long-term river hydro strategy.

Finding five: Preferences for the river hydros' futures reflect the extent of the respondent's personal connection to the river hydro plants and their amenities.

The main objective of engagement efforts was for Consumers Energy to hear from the communities and interested parties what the river hydros mean to them and gather additional information and data on community impacts. That objective was fulfilled to varying extents across the communities. A consistently popular topic was the future of the structures and whether they should be maintained status quo or removed.

The preferred outcomes people shared mostly align with the level of personal investment they had in the existing infrastructure. The vast majority of people who own or rent property close to the river hydro plants prefer the option for the company to continue regular plant operations. For example, 86 percent of waterfront property owners who completed the survey favored this option (Exhibit 5). Survey respondents had all modes of engagement available to them and shared their preferences through community conversations, direct mail surveys, and on the website.

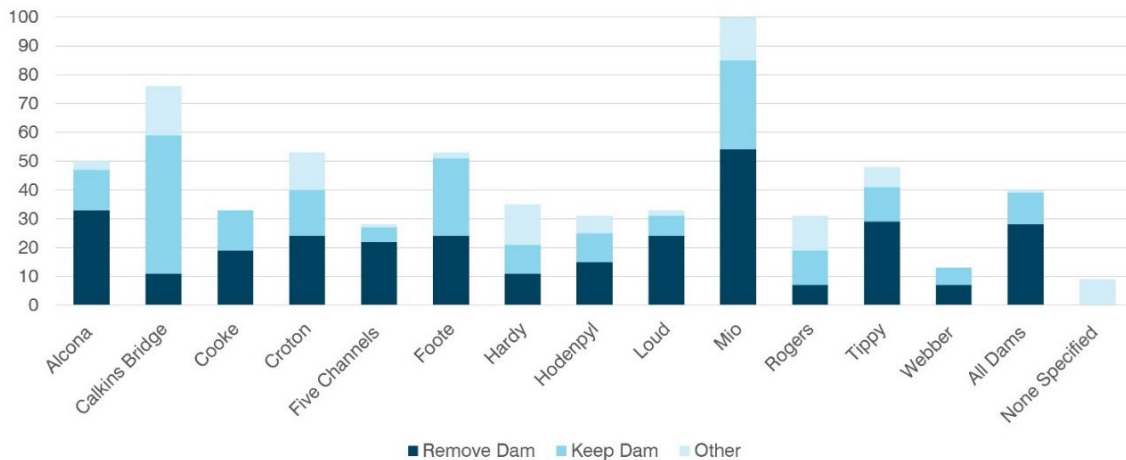
EXHIBIT 5. Preferences for the Future of River Hydros (Survey Respondents)



N = 1,340

People living farther from the river hydro plants—who likely do not own or rent property near the facilities—mostly preferred the decommissioning and removal option. They shared their preferences through the website (Exhibit 6). Calkins Bridge Dam and Foote Dam were the only facilities where a majority of respondents preferred to retain the dam.

EXHIBIT 6. Preferences for the Future of River Hydros (Website Comments)



N = 567

Finding six: Preferences for the river hydro plants also varied based on the means of engagement.

In reviewing the feedback provided by different engagement modes (community meetings, surveys, and web-based comments) those individuals who came to community meetings were overwhelmingly focused on keeping the river hydros. There were few dissenting voices that spoke up during the meeting, although at each meeting at least one person approached the team after to share their support for river hydro plant removals. In addition, public officials expressed more willingness to discuss alternative futures in the smaller-sized local officials' meetings.

The web-based comments were much more evenly split in opinions on the future of the river hydros. In the future, Consumers Energy will need to explore how to provide additional opportunities for those with differing views to have space to express their opinions. It would also be beneficial to solicit a broader understanding of the support, perhaps through township-wide polling.

Finding seven: Engagement opportunities should be expanded to hear more voices.

To date, the ways PSC has gathered feedback that captures important perspectives. However, the engagement process focused primarily on property owners and people living closest to the river hydros. Approximately 3,700 number of people participated in at least one mode of engagement, which is less than 0.01 percent of all Consumers Energy customers. Broader engagement that includes customers across the company's service territory would yield more varied perspectives, input, and information. Furthermore, federally recognized tribes were not meaningfully engaged in this phase of the community input process. Tribal sovereignty requires that Consumers Energy seeks their feedback as part of their decision-making process.

Finding eight: Reaching people in the communities where the river hydros are located is difficult.

Even with the multilayered approach notifying the communities of the multiple modes of engagement, only a portion of community members participated. The dispersed populations around most of the river hydros makes it challenging to identify and reach all the media markets. Moreover, people no longer get their news from the same few sources as digital media has grown in popularity. Additional outreach methods will need to be explored. Furthermore, a larger media market ought to be delineated for future community engagement.

Finding nine: Discussions about the river hydro plants need to include the watersheds for context.

To date, the discussions about the river hydro plants have largely centered on the river hydros and their impoundments. This is completely understandable, but that framing creates an unintended consequence: there hasn't been meaningful discussions about how the river hydros affect the rivers and watersheds on which they depend. Viewing the river hydro plants within a watershed context will benefit the discussion and outcomes for the communities and the company. The river hydros and impoundments are part of and dependent on river systems with their own characteristics and variables that impact, and are impacted by, the river hydros. A broader frame that considers the river hydros and impoundments within their watersheds will result in a more complete assessment of current and future conditions and possible future states.

Finding ten: The company needs to explain how hydroelectric power fits into its renewable energy portfolio.

Community members often expressed confusion as to why the company would consider divesting from a potential renewable energy source when its Clean Energy Plan has a carbon-reduction goal. People had a better understanding of the costs and benefits of the river hydro portfolio after hearing Consumers Energy present information, but clear and consistent explanations still are needed.



Recommendations

There are several ways Consumers Energy could address these findings. The recommendations include suggestions to address gaps in data, provide opportunities to expand community engagement, and build community trust in Consumers and its decision making about the river hydro plants.

- Continue to embrace and show transparency about the company's challenges and decisions related to the river hydro plants. Providing regular and timely updates to communities and interested parties will continue to be critical activities.
- Hold community engagement sessions during the second half of 2023 and plan regular visits for the next several years as the company and communities collect more information and the future for each hydro plant becomes clearer.
- Company community affairs personnel, who serve as liaisons, need to be more engaged in community discussions going forward.
- Develop content about energy production and distribution for a general audience and make the content readily available on the company website and via communication channels such as bills.
- Quantify the economic contributions of each river hydro to the community and the anticipated impacts of one or more of them being removed. All communities near the 13 river hydros expressed a strong interest in these analyses being conducted and shared with the residents and local decision makers.
- Share key data needs with the communities and the public to increase understanding of the company's situation and that these plants are not forever assets:
 - Costs to ratepayers to invest in the river hydro plants
 - Energy costs by generation source
 - Costs of continued operations
- Describe in plain language the federal relicensing process and the challenges Consumers Energy anticipates in meeting the new FERC requirements. The company should be transparent and thorough in its discussion of trade-offs with relicensing and decommissioning and removal.
- Explain the [three hazard potential classifications defined by FERC](#) and their implications for the communities in and around the 13 river hydros.
- Describe the steps of a planned river hydro removal and river restoration process as well as present case studies of similar projects elsewhere and how local economies and communities transitioned.
- Consider using the narrative of free-flowing rivers and benefits of river hydro removal and river restoration.
- Support a visioning process with the communities that includes graphical illustrations of what the river landscape will look like after the river hydro is removed. These illustrations can provide comparisons with existing conditions with the river hydro in place. They can also aid in identifying new recreation, cultural, and business opportunities.
- Share content about how rivers function both with and without hydroelectric plants.

- Support the creation of community-based groups for each river hydro where Consumers Energy is a member among other key parties such as tribes, nonprofit organizations, local entities, and state and federal agencies. These groups would regularly meet in meetings hosted by a third party trusted in the communities. These groups would do the following activities:
 - Invite topic experts to educate the group
 - Share information on new data and developments relevant to the river and the river hydros
 - Develop a vision of what the area could be without the river hydros and impoundments
 - Identify information gaps and conduct research
 - Provide updates to local officials and serve as liaisons to community members
 - Host one-day conferences for the public with sessions on key topics
 - Identify state and federal funding sources for implementing

Across the five watersheds where Consumers Energy operates river hydros existing organizations could take the role of conveners:

- Huron Pines for the Au Sable River
- Lower Grand River Organization of Watersheds for the Grand River
- Kalamazoo River Watershed Council for the Kalamazoo River
- Conservation Resource Alliance for the Manistee River
- Muskegon River Watershed Assembly for the Muskegon River

Dam-specific Findings

The findings are organized first by river alphabetically, and then river hydro plants are presented by their location upstream to downstream. Because community members referred to the river hydros as “dams” during community conversations, “dam” is used the sections that report comments made by members of the public.

Au Sable River

The Au Sable River is a 138-mile coldwater system that drains a watershed of 1,932 square miles of the northeastern Lower Peninsula into Lake Huron (Zorn and Sendek 2001). The watershed contains portions of eight counties: Otsego, Crawford, Montmorency, Roscommon, Ogemaw, Oscoda, Alcona, and Iosco. Major Au Sable River tributaries are the North, South, and East Branches of the Au Sable River, Big Creek-South, and the Pine River. This high-gradient river has many naturally occurring coldwater rapids, which are important spawning conditions for prized coldwater fishes like trout and salmon. However, most of those big rapids are impounded by dams (Zorn and Sendek). Consumers Energy owns and operates the six dams on the main river that impound 38 percent of the river.

The Au Sable, one of Michigan’s premier recreational assets for recreational fishing and paddling, is sometimes referred to as the “holy waters” for its excellent and large trout population. The Au Sable has a trout stream designation for more than 80 percent of the river system, which requires cold and well-oxygenated waters. The Au Sable National Scenic River is a 23-mile free-flowing segment of the Au Sable River that stretches from Mio to Alcona Pond. By receiving this designation, this stretch of the river from below Mio Pond to the upper end of Alcona Pond received national recognition since 1984 for its outstanding and remarkable scenic, recreational, biological, and historical values and a national commitment to its protection (U.S. Forest Service n.d.). Moreover, the Au Sable received designation in 1987 as a Michigan Natural River.

Mio Dam

Background

Mio Dam is the most upstream of the six river hydros owned by Consumers Energy. It was built between 1914 and 1916, making it 107 years old and 57 years past its 50-year design life. The river hydro is located north of Mio and within the Huron-Manistee National Forest. Most of the land around the 661-acre impoundment is owned by Consumers Energy and the federal government. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 307 comments were received.¹

Meeting Attendee Comments

One hundred fifty people attended the community session. Their comments focused on impacts to the fisheries and potential changes to brown trout and brook trout populations, impacts on tourism, property

¹ Since an individual could provide input via more than one channel, the number of comments does not necessarily represent the number of people providing input.

values, and the local economy if the dam is removed. At the local officials meeting, attendees expressed their desire to be proactive and plan for the future.

Web Comments

Ninety-seven people provided comments through the email address on the project website. The main reasons people expressed for retaining the dam are to maintain the current tax base and property values, continue access to flatwater recreation, and keep a clean energy source. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and the resulting fish and wildlife habitat, and to remove an inefficient energy source. Of those who provided comments, 54 percent preferred to remove the dam. Mio Dam received the highest number of comments of the 13 dams.

Property Owner Survey Findings

Of 153 surveys sent to property owners, 60 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation and the broad impact on fisheries and the community if the dam is removed. They have concerns about the impact of the dam on water quality, impacts to the fisheries, and potential for dam breach or failure under current operations. Most owners preferred to retain the dam. Approximately 40 percent of survey respondents own secondary residences. A summary of the survey results is shown in appendix K.

Alcona Dam

Background

Alcona Dam is downstream of Mio Dam. It was built between 1917 and 1924, making it 99 years old and 49 years past its 50-year design life. The river hydro is in Alcona County, approximately three miles west of the small town of Glennie. Most of the land around the 975-acre impoundment is under private ownership with a large parcel owned by the county. The county maintains a campground on both the east and west side of the pond. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 207 comments were received.

Meeting Attendee Comments

One hundred forty-five people attended the community session. Their comments focused on the impact on the local tax base if the dam were removed, as well as how possible contaminated sediments upstream of the dam would be handled. Some attendees noted the tourism at Alcona Park, located on the shores of Alcona Pond, which covers 1,110 acres and features 450 campsites. They requested Consumers Energy complete an economic contribution or impact study to understand what value the dam and impoundment bring to the area and what the financial trade-offs may be if the company pursues dam decommissioning and removal.

Web Comments

Forty-eight people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation, the existing wildlife and fish habitat, and the aesthetics of the pond. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures, to remove an inefficient energy source, and to benefit fish and wildlife. Two-thirds of people providing comments, or 66 percent, preferred to remove Alcona Dam.

Property Owner Survey Findings

Of the 7 surveys sent to property owners, 14 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation and impacts on the fisheries if the dam is removed. A dam breach or failure is a top concern, as well. Most owners prefer the dam remains. A summary of the survey results is shown in appendix B.

Loud Dam

Background

Loud Dam, located in Oscoda Township, Iosco County, is downstream of Alcona Dam. The river hydro is approximately seven miles east of the town of South Branch. The structure was completed in 1913, making it 110 years old and 60 years past its 50-year design life. Most of the land around the 790-acre impoundment is owned by Consumers Energy and the U.S. Forest Service. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 85 comments were received.

Meeting Attendee Comments

Thirty-eight people attended the community, and their comments focused on impacts to the local economy and the tax base. Community members also expressed concerns about their ability to offer feedback or know meeting details because of unreliable internet and minimal news coverage of their rural location. The local officials meeting was combined for Foote, Cooke, Five Channels, and Loud Dams. Local officials were concerned about the impact to the tax base. Develop Iosco and Iosco County request that Consumers Energy perform an economic study to understand the current contributions the dam and impoundment provide to the surrounding communities.

Web Comments

Thirty-three people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation and the aesthetics of the pond. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to remove an inefficient energy source that is too expensive to maintain. Nearly three-fourths of people providing comments, or 73 percent, preferred to remove Loud Dam.

Property Owner Survey Findings

Of the 1 survey sent to property owners, 14 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation and the impact on fisheries and the community if the dam is removed. They have concerns about the impact of the dam on water quality, impacts to the fisheries, and potential for dam breach or failure under current operations. Most owners prefer the dam remains. Half of survey respondents own secondary residences. A summary of the survey results is shown in appendix J.

Five Channels Dam

Background

Five Channels Dam, located in Glennie in Oscoda Township, was built in 1912. It is 111 years old and is 61 years past its 50-year design life. The river hydro is downstream of Loud Dam. The land around the 237-

acre impoundment is owned by Consumers Energy and the U.S. Forest Service as part of the Huron-Manistee National Forest. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 106 comments were received.

Meeting Attendee Comments

Fifty people attended the community session. Their comments expressed curiosity about a dam removal scenario including what the area would look like and whether wells would be affected. Some attendees called for removal of the dams on the Au Sable River. Also, some attendees want Consumers Energy to come back to the community with updates and view the company as a good community partner. The local officials meeting was combined for Foote, Cooke, Five Channels, and Loud Dams. Local officials were concerned about the impact to the tax base. Develop Iosco and Iosco County request that Consumers Energy perform an economic study to understand the current contributions the dam and impoundment provide to the surrounding communities.

Web Comments

Twenty-eight people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation, the aesthetics of the pond, and maintain the current economic value to the community. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to remove an inefficient energy source that is too expensive to maintain. More than three-fourths of people providing comments, or 78 percent, preferred to remove Five Channels Dam.

Property Owner Survey Findings

Of the 28 surveys sent to property owners, 28 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation if the dam is removed. Fisheries management, water quality impacts, and dam breach or failure are top concerns for current dam operations. Most owners prefer the dam remains. Of all property owners, this group demonstrated the most understanding about the benefits of dam removal. Half of survey respondents report owning secondary residences. A summary of the survey results is shown in appendix F.

Cooke Dam

Background

Cooke Dam is in Oscoda Township, Iosco County, downstream of Five Channels Dam. The river hydro was built in 1911, making it 112 years old and 62 years past its 50-year design life. Cooke Dam is named within the National Register of Historic Places. Most of the land around the 1,700-acre impoundment is owned by Consumers Energy and the federal government. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 128 comments were received.

Meeting Attendee Comments

Seventy-five people attended the community session. Their comments focused on the impact on the local tax base, tourism, and property values if the dam was removed. The pond behind Cooke Dam is popular for flatwater recreation and camping, drawing 103,000 visitors annually. The local officials meeting was

combined for Foote, Cooke, Five Channels, and Loud Dams. Local officials were concerned about the impact to the tax base and particularly interested in the role of the Michigan Public Service Commission and better understanding the details of rate structures. Develop Iosco and Iosco County request that Consumers Energy perform an economic study to understand the current contributions the dam and impoundment provide to the surrounding communities.

Web Comments

Thirty-three people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation, the aesthetics of the pond, and a barrier for aquatic invasive species. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to remove an inefficient energy source that is too expensive to keep. Of the 33 people who provided comments, 58 percent preferred to remove Cooke Dam.

Property Owner Survey Findings

Of the 19 surveys sent to property owners, 20 were completed and returned. They are mainly concerned about their access to flatwater recreation and impacts on tourism (including campground usage) if the dam is removed. Erosion management and water quality are top concerns for current dam operations. Most owners prefer the dam remains. Most of the survey respondents report they own secondary residences. A summary of the survey results is shown in appendix D.

Foote Dam

Background

Foote Dam in the unincorporated community of Oscoda is situated approximately nine miles upstream from Lake Huron, making it the most downstream barrier on the Au Sable River. The river hydro was completed in 1918, making it 105 years old and 55 years past its 50-year design life. Most of the land around the 1,800-acre impoundment is owned by Consumers Energy and the federal government. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 211 comments were received.

Meeting Attendee Comments

One hundred and fifteen people attended the community session. Their comments focused on the economic impacts of dam removal. They also voiced whether the PFAS groundwater contamination at the former Wurtsmith Air Force Base may be a factor for dam operations or removal. They want Consumers Energy to come back to the community with updates and view the company as a good community partner. The local officials meeting was combined for Foote, Cooke, Five Channels, and Loud Dams. Local officials were concerned about the impact to the tax base. Develop Iosco and Iosco County request that Consumers Energy perform an economic study to understand the current contributions the dam and impoundment provide to the surrounding communities.

Web Comments

Fifty-three people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation, keep a barrier against aquatic invasive species, and having a clean energy source. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to remove an

inefficient energy source that is too expensive to maintain. Preferences to retain or remove the dam were mixed— 51 percent preferred to retain Foote Dam.

Property Owner Survey Findings

Of the 73 surveys sent to property owners, 43 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation, impact on property values, and impacts on tourism including campground usage, if the dam is removed. The Au Sable River Queen Ferry boat and Old Orchard Park with its 500 campsites are dependent on the dam impoundment. Most owners prefer the dam remains. Approximately 40 percent of survey respondents own secondary residences. A summary of the survey results is shown in appendix G.

Grand River

The Grand River mainstem is the longest river in Michigan measuring 248 miles (Hanshue and Harrington 2017). Its watershed drains 5,575 square miles over almost 20 counties in the southwestern Lower Peninsula, making it the second largest watershed in the state. Major tributaries include the Thornapple River, Looking Glass River, Flat River, and Rogue River. Webber Dam, Consumers Energy's only river hydro on the Grand River, is on the middle river segment where the gradient is considered fair (Hanshue and Harrington). It is one of the two remaining operating hydroelectric dams in this segment and one of six total dams. The river in this segment is wide and considered warm water.

Webber Dam

Background

Webber Dam is located southeast of the town of Lyons in Ionia County. The river hydro was completed in 1907, making it one of the oldest facilities and surpassing the 50-year design life by 66 years. At 30 feet high, it is also the tallest dam on the Grand River. A 660-acre impoundment is surrounded mostly by privately owned land used for residential and agricultural purposes. The FERC license will expire in 2041.

Summary of Input Received

Across the multiple channels for input provided, 128 comments were received.

Meeting Attendee Comments

Sixty people attended the community session. Their comments focused on impacts to wildlife, fisheries, and outdoor recreation, as well as impacts on tourism, property values, and the local economy if the dam is removed.

Web Comments

Fourteen people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation and have a clean energy source. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to improve fish and wildlife habitat. Preferences to retain or remove the dam were mixed—50 percent preferred to remove Webber Dam.

Property Owner Survey Findings

Of the 139 surveys sent, 54 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation, impacts on fisheries, and impacts to their property if the dam is removed. Most owners prefer the dam remains. A summary of the survey results is shown in appendix N.

Kalamazoo River

The Kalamazoo River, located in the southwestern Lower Peninsula, flows 175 miles and drains the seventh largest watershed in the state (Wesley 2005). The 2,020-square-mile watershed connects the counties of Hillsdale, Jackson, Eaton, Calhoun, Barry, Kalamazoo, Kent, Ottawa, Van Buren, and Allegan. Major tributaries are the North Branch of the Kalamazoo River as well as the Battle Creek, Gun, and Rabbit Rivers plus many creeks that total nearly 900 miles of waterways. Calkins Bridge Dam, Consumers Energy's only river hydro on the Kalamazoo River, is on the lower warm-water segment where the gradient is excellent.

The Kalamazoo River was designated a Natural River in 1981 under the authority of the Natural Rivers Act. The Natural River district extends for 22 miles with Calkins Bridge (Allegan) Dam as the upstream terminus and the Hacklander Landing in Saugatuck Township as the downstream boundary. More industrialized reaches of the river have been contaminated by PCBs including the impounded area behind Calkins Bridge Dam, which is part of the Superfund site that extends past Calkins Bridge to Lake Michigan.

Calkins Bridge (Allegan) Dam

Background

Calkins Bridge Dam, known also as Allegan Dam, is the only river hydro plant owned by Consumers Energy on the Kalamazoo River and is located on the main river near the City of Allegan in Allegan County. It is the only river hydro of the 13 that the company did not design and build. The City of Allegan constructed the plant in 1935 and operated it until Consumers Energy purchased it in 1969, making the plant 88 years old and 38 years past its 50-year design life. This river hydro is the lowest barrier on the Kalamazoo River and the largest dam in the watershed. It is also one of few dams to be classified as low hazard given the undeveloped landscape below the facility. The land around the 1,600-acre impoundment is a mix of privately owned residential, municipal (at the upper end in the city of Allegan), and state recreation as part of the Allegan State Forest and Game Area. The FERC license expires in 2040.

Summary of Input Received

Across the multiple channels for input provided, 811 comments were received.

Meeting Attendee Comments

Two hundred and thirty-two people attended the community session. The property owners spoke about their concerns related to impacts to local businesses, fisheries, and property values if the dam is removed. Attendees were also concerned about the river's PCB contamination and how dam decommissioning and removal would deal with the contaminated sediments.

Web Comments

Seventy-three people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to maintain the current tax base and property values. The main reasons expressed for removing the dam are to remove an inefficient energy source that is too expensive to maintain. Of the 73 people who provided comments, 63 percent of people preferred to retain Calkins Bridge Dam.

Property Owner Survey Findings

Of the 474 surveys sent to property owners, 506 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation, impacts on water quality and aquatic resources, and the change in aesthetics if the dam is removed. They also are concerned about how their property values and tourism would be impacted. Most owners prefer the dam remains. A summary of the survey results is shown in appendix C.

Manistee River

The Manistee River watershed spans 1,780 square miles in the northwestern Lower Peninsula. The main river is fed by at least 109 tributaries along its 232-mile flow to Lake Michigan. The major tributaries are the North Branch of the Manistee River, Pine River, and Bear Creek. The watershed encompasses parts of 11 counties: Antrim, Otsego, Crawford, Kalkaska, Missaukee, Grand Traverse, Wexford, Osceola, Lake, Mason, and Manistee (Rozich 1998). Much of the Manistee River is high gradient with the main river dropping 671 feet over its run. Consumers Energy owns and operates the only two river hydros on the Manistee River, both of which have high hazard classification due to the potential loss of human life if they fail.

The Manistee mainstem, like the Au Sable, has the most stable flows of any waterway in the nation. This condition provides ideal conditions for the diverse trout populations, which draws tourists from around the country (Rozich). In 2003, the Upper Manistee River watershed became a designated Natural River system in recognition of its statewide and national significance (State of Michigan n.d.).

Hodenpyl Dam

Background

Hodenpyl Dam is located southwest of the village of Mesick in Wexford County. This river hydro was completed in 1925, making it 98 years old and 48 years past its 50-year design life. Consumers Energy owns the land surrounding the 1,798-acre impoundment that inundates some of the highest gradient sections of the Manistee where high-quality fish spawning used to be. Hodenpyl Dam Pond hosts more than 110,000 visitors annually who take advantage of the many boat docks, boat launches, and campsites. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 261 comments were received.

Meeting Attendee Comments

One hundred fifty-seven people attended the community session. Their comments focused on possible impacts to their wells and to the water table. Meeting attendees were also focused on if their electric power would be impacted and how the removal of the dam would negatively impact their trust in Consumers. They also said Consumers should continue the operating the dams. They were also concerned about the impact to the fisheries. Local officials expressed the most optimism about a post-dam economy and asked for time to partner with Consumers to develop a plan. They also asked for additional information on the sediment control and what testing would be done before the dam was removed.

Web Comments

Thirty-one people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep flatwater recreation and the economic impact from pond-related activities and businesses. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures, to remove an inefficient energy source that is too expensive to maintain, and to improve fish and wildlife habitat. Preferences to retain or remove the dam were mixed—49 percent preferred to remove Hodenpyl Dam.

Property Owner Survey Findings

Of the 192 surveys sent to property owners, 73 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation, impact on property values, impact for fisheries, and impacts on tourism (including campground usage) if the dam is removed. Most owners prefer the dam remains. Approximately one-third of survey respondents own secondary residences. A summary of the survey results is shown in appendix I.

Tippy Dam

Background

Tippy Dam is located 25 miles east of the city of Manistee in Dickson Township, Manistee County. The 105-year-old facility is the second largest of Consumer Energy's river hydro fleet. Tippy's 1,330-acre impoundment inundated a high-gradient riffle area and excellent gravel and cobble substrate spawning habitat. In fact, the impoundments created by Tippy and Hodenpyl are in the two highest gradient areas of the Manistee system (Rozich 1998). The river and pond are popular destinations for camping, paddling, and fishing at the federal, state, local, and private camping facilities and public access points. The Michigan Department of Natural Resources operates the Tippy Dam Recreation Area, providing camping and fishing access to the Manistee River and Tippy Pond. The river hydro houses the largest bat hibernaculum in the Lower Peninsula. To protect the bats, restrictions are in place regarding dam operations. For example, Consumers Energy is only allowed to do the maintenance work that requires using the spillway between June 1 and September 1. The FERC license will expire in 2034.

Summary of Input Received

Across the multiple channels for input provided, 232 comments were received.

Meeting Attendee Comments

One hundred fifty people attended the community session. Their concerns mostly focused on the impact to the fishery and the commingling of fish species should the dam be removed and the impact to the local economy if the dam were removed and the fishery changed. Local officials discussed the dam's environmental impact, the recreation and tourism impacts of the fishery the dam has created, and their perspectives on the natural, intentional ecosystem which currently exists near the dam that affects the wildlife species.

Web Comments

Seventy-nine people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to continue access to flatwater recreation and maintaining the current tax base and economic impact from pond-related activities and businesses. The main reasons expressed for removing the dam are to improve fish and wildlife habitat as well as

environmental quality and water temperatures, and to remove an inefficient energy source. Two-thirds of people providing comments, or 67 percent, preferred to remove Tippy Dam.

Property Owner Survey Findings

Of the 13 surveys sent to property owners, 3 were completed and returned. The property owners are mainly concerned about their access to flatwater recreation and the impact on the community and to fisheries if the dam is removed. The three owners who completed the survey prefer retaining the dam. A summary of the survey results is shown in appendix M.

Muskegon River

The Muskegon River mainstem is 212 miles long and drops 575 feet in elevation between its source and the river mouth at Lake Michigan (O’Neal 1997). The Muskegon River’s 2,350 square-mile watershed contains approximately 94 tributaries that drain parts of eight counties in the central and western Lower Peninsula: Roscommon, Missaukee, Clare, Osceola, Mecosta, Montcalm, Newaygo, and Muskegon. The river’s primary tributaries are the West Branch of the Muskegon River, Clam River, Middle Branch River, and Little Muskegon River. Consumers Energy’s three river hydro plants on the Muskegon River are the Rogers, Hardy, and Croton, which are midway in the river. Their impoundments cover most of the high-gradient river sections. The river is fed by groundwater, lakes, and tributaries and, consequently, receives both warm and cold waters, making it a cool-water system. The sections of the mainstem from Muskegon Lake to Croton Dam and Paris to Hersey are state-designated trout streams in recognition of the significant population of trout or salmon species.

Rogers Dam

Background

Rogers Dam is located approximately six miles south of the city of Big Rapids in Mecosta Township. It is the oldest river hydro still operated by Consumers Energy. The dam was built in 1906, making it 117 years old and 67 years past its 50-year design life. Land around the 449-acre impoundment is owned by Consumers Energy and private property owners. A popular park provides an all-access fishing pier and picnic areas. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 359 comments were received.

Meeting Attendee Comments

One hundred forty-four people attended the community session. The topic on the minds of most meeting attendees was the removal of the dam in Big Rapids and the perceived lack of sedimentation control during and after the dam’s removal.

Web Comments

Sixty-one people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to keep hydro as a source of clean energy, maintain access to flatwater recreation, and the economic impact to the community. The main reasons expressed for removing the dam are to improve environmental quality and water temperatures and to

remove an inefficient energy source that is too expensive to maintain. Preferences to retain or remove the dam were mixed—51 percent preferred to remove Rogers Dam.

Property Owner Survey Findings

Of the 338 surveys sent to property owners, 154 were completed and returned. The property owners are mainly concerned about impacts to their property, their access to flatwater recreation, and impacts to the fisheries, if the dam is removed. Most owners do not see any benefits to dam removal. Nearly all owners prefer the dam remain. One-third of respondents own secondary residences. A summary of the survey results is shown in appendix L.

Hardy Dam

Background

Hardy Dam is located downstream of Rogers Dam approximately 30 miles southwest of the city of Big Rapids in Newaygo County. Construction was completed in 1931, making it the last river hydro built by Consumers Energy and 92 years old, 42 years past its 50-year design life. It is the largest earthen dam in North America east of the Mississippi River, and the third largest earthen dam in the world. Hardy Dam is named within the National Register of Historic Places. The river hydro plant requires investment by the company in the near term to maintain safe operations. Most of the land surrounding the 3,900-acre impoundment is owned by Consumers Energy as well as publicly accessible parkland owned by the state and local municipalities. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 345 comments were received.

Meeting Attendee Comments

Two hundred people attended the community session. Their comments focused on the impact on the local tax base, tourism, property values, and outdoor recreation (e.g., the Dragon Trail) if the dam were removed. Local officials want to be proactive and mentioned water resources Tax Increment Finance Authority (TIFA) planning is underway. Newaygo County Parks staff offered to provide data about users.

Web Comments

Thirty-five people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to continue access to flatwater recreation, the aesthetics of the pond, and economic impact to the community. The main reasons expressed for removing the dam are to remove an inefficient energy source that is too expensive to maintain, and to improve environmental quality and water temperatures. Sentiment about retaining or removing Hardy Dam was mixed among the people who provided comments—31 percent preferred to retain Hardy Dam and 29 percent preferred to remove it.

Property Owner Survey Findings

Of the 295 surveys sent to property owners, 110 were completed and returned. The property owners are mainly concerned about impacts to their property, their access to flatwater recreation, and impacts to the fisheries if the dam is removed. Most owners do not see any benefits to dam removal. Nearly all owners prefer the dam remain. Half of respondents own secondary residences. A summary of the survey results is shown in appendix H.

Croton Dam

Background

Croton Dam is downstream of the Rogers and Hardy Dams just below where the Little Muskegon River enters the mainstem and approximately eight miles east of the city of Newaygo in Croton Township, Newaygo County. The river hydro, now named within the National Register of Historic Places, began operations in 1907, making it 116 years old—66 years past its 50-year design life. Land ownership around the 1,208-acre impoundment includes Consumers Energy, private owners, and state and local public lands. The FERC license expires in 2034.

Summary of Input Received

Across the multiple channels for input provided, 394 comments were received.

Meeting Attendee Comments

One hundred and ninety-seven people attended the community session. Their comments focused on the impact on the local tax base, tourism, property values, and outdoor recreation (e.g., the Dragon Trail) if the dam was removed. Local officials want to be proactive and mentioned water resources TIFA planning is underway. Newaygo County Parks staff offered to provide data about users.

Web Comments

Fifty-one people provided comments through the dedicated email address on the project website. The main reasons people expressed for retaining the dam are to continue access to flatwater recreation, the aesthetics of the pond, and hydro as a source of clean energy. The main reasons expressed for removing the dam are to remove an inefficient energy source that is too expensive to maintain, improve environmental quality and water temperatures, and improve fish and wildlife habitat. Of the 51 people who provided comments, 45 percent people preferred to remove Croton Dam, while 30 percent preferred to retain it.

Property Owner Survey Findings

Of the 579 surveys sent to property owners, 146 were completed and returned. The property owners are mainly concerned about impacts to their property, their access to flatwater recreation, and diminished campground use if the dam is removed. They do not see any benefits to dam removal. They also are concerned about a dam breach or failure under current operations. Nearly all owners prefer the dam remains. A summary of the survey results is shown in appendix E.

Conclusion

Conversations about the future of Consumers Energy's portfolio of river hydro plants are inevitable, given the structures' limited lifespan and the changing landscape of energy markets and regulatory mandates. The conversations will be difficult no matter which futures are selected, but involving the communities that will be most affected early in the process has been a strategic and important step. This unique opportunity to determine the best outcomes for multiple river hydro plants not only has implications for the company and the communities but also for all Michigan residents and other parts of the country facing similar vexing questions about the future of hydroelectric power generation on rivers.

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Appendix A: Overall Adjacent Property Owner Survey Results

PSC administered a survey of people owning adjacent property in the zone of impact—located above or below the river hydro plants—or other property owned by Consumers as part of the facilities’ operations. Consumers provided mailing addresses of property owners located within 100 feet of Consumers Energy’s property lines at the 13 facilities. PSC mailed letters with paper surveys to 2,312 addresses and offered an online survey for property owners, as well. Property owners had the option of completing the survey online by entering their unique code. The return rate was nearly 60 percent, with 1,381 surveys received through online and paper responses. Of those 1,381 property owners, 44 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 25 percent strongly disagreed or disagreed that their input would matter.

Response rates varied significantly by dam, from 23 percent for property owners nearest the Tippy Dam to 1400 percent for property owners nearest the Loud Dam (Exhibit A1). Four dams had response rates over 100 percent. This likely occurred because the web link to the survey form was shared with people beyond the original recipients.

EXHIBIT A1. Response Rate by Dam

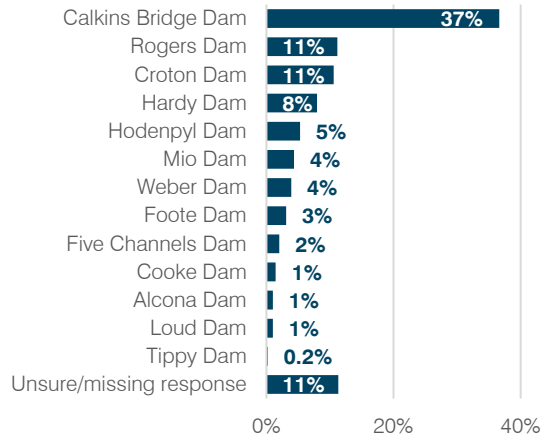
Dam	Surveys Mailed	Surveys Received	Response Rate
Alcona Dam	7	14	200%
Calkins Bridge Dam	474	506	107%
Cooke Dam	19	20	105%
Croton	579	146	25%
Five Channels Dam	28	28	100%
Foote Dam	73	43	59%
Hardy Dam	295	110	37%
Hodenpyl Dam	192	73	38%
Loud Dam	1	14	1400%
Mio Dam	153	60	39%
Rogers Dam	338	154	46%
Tippy Dam	13	3	23%
Webber Dam	139	54	39%
Dam unknown	1	156	
Total	2,312	1,381	60%

Note: Several property owners responding to the paper survey said they lived near both the Croton and Hardy Dams, making it impossible to determine which dam they were actually closest to; therefore, response rates for these two dams are likely underrepresenting those property owners.

Property Characteristics

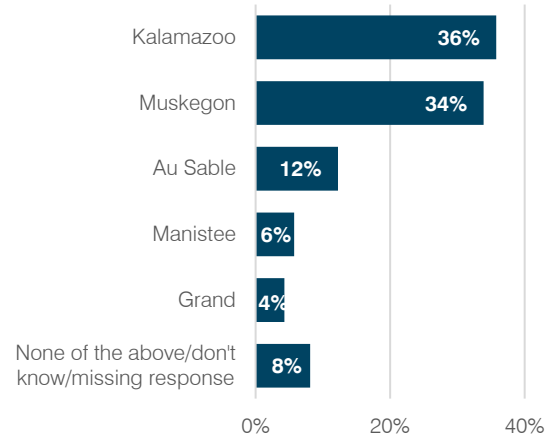
The highest percentage of responses (37 percent) were received from property owners near the Calkins Bridge Dam, followed by 11 percent each living near the Rogers Dam or the Croton Dam (Exhibit A2). These three dams had the highest number of surveys mailed. Over one-third each had property located on the Kalamazoo River system or the Muskegon River system (Exhibit A3).

EXHIBIT A2. Respondents by Dam



N = 1,381

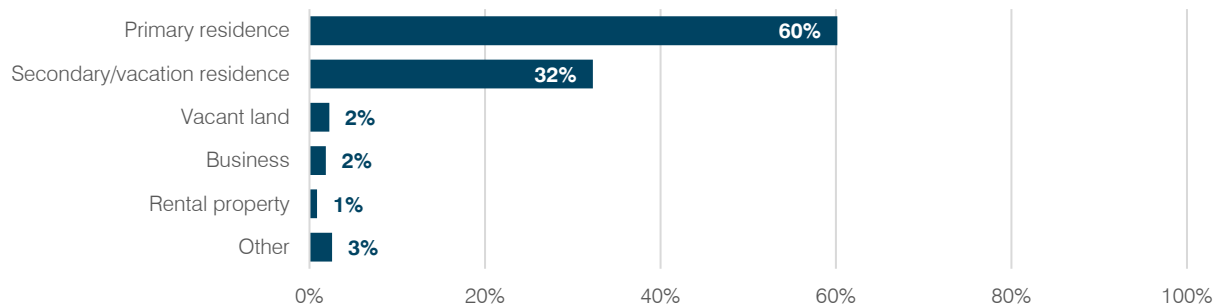
EXHIBIT A3. Respondents by River System



N = 1,381

Of the responding property owners, 60 percent use the property as their primary residence, and 32 percent use it as a secondary or vacation residence (Exhibit A4).

EXHIBIT A4. Primary Use of Property

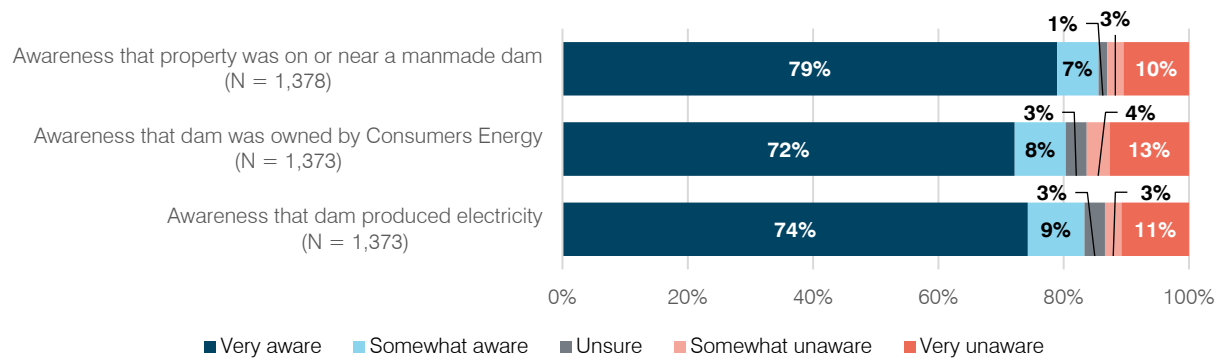


N = 1,285

Dam Awareness

As indicated in Exhibit A5, nearly 80 percent of respondents were very aware that their property was on or near a manmade dam, 72 percent were very aware that the dam was owned by Consumers Energy, and 74 percent were very aware that the dam produced electricity.

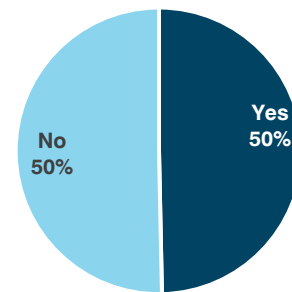
EXHIBIT A5. Respondents' Level of Awareness Regarding Dam On or Near Property



N varies by response.

Although many property owners had a high level of awareness about the dam, half had not considered that their property could be altered by changes to the dam's management (Exhibit A6).

EXHIBIT A6. Percentage Who Considered That Property Could Be Altered

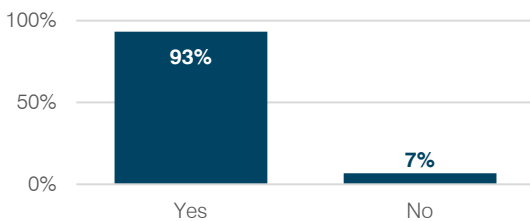


N = 1,367

Reliance on the Dam and Impoundment

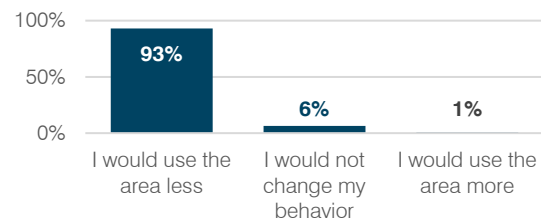
Nearly all property owners (93 percent) reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits A7 and A8).

EXHIBIT A7. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 1,358

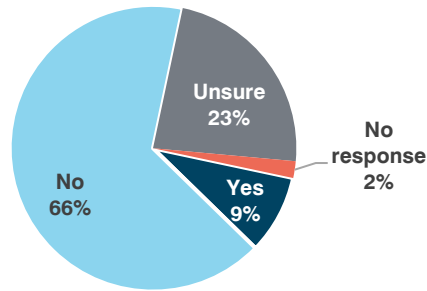
EXHIBIT A8. Impact of Removing the Dam on Recreation Habits



N = 1,253

Of 1,272 respondents, 17 percent (212) said their business had some reliance on the dam and/or the impoundment. Of those, 66 percent said they did not believe their business could continue without the dam and its impoundment, and 23 percent were unsure if their business could continue (Exhibit A9).

EXHIBIT A9. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

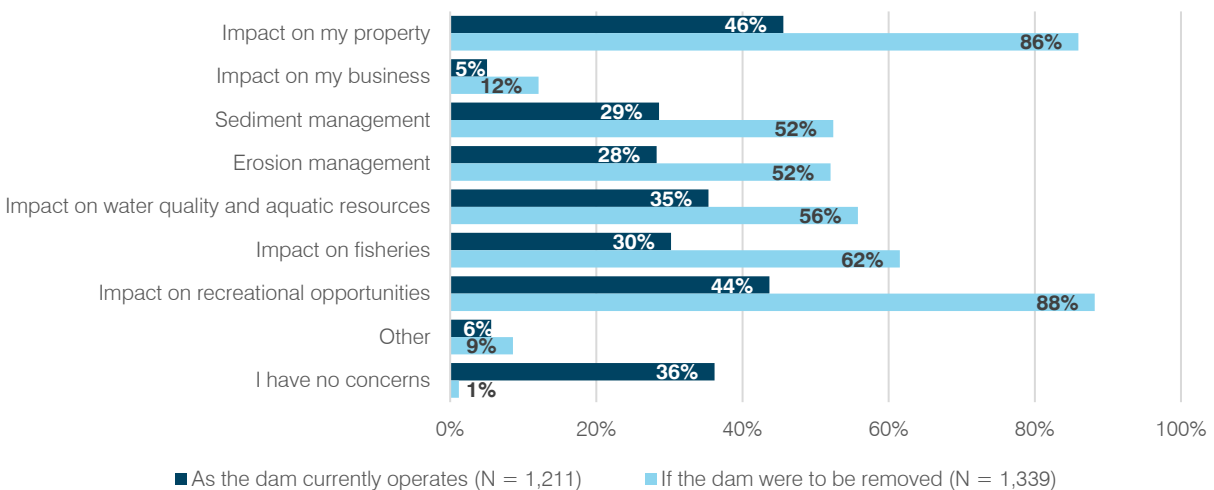


N = 212

Concerns and Benefits

Nearly half (46 percent) of property owners reported having concerns about the dam’s impact on their property, and 44 percent reported having concerns about its impact on recreational opportunities as it operated at the time of the survey. Those percentages increased to 86 percent and 88 percent, respectively, if the dam were removed. Similarly, 30 percent reported having concerns about the dam’s impact on fisheries as the dam operated at the time of the survey, and 62 percent said they would have concerns about fisheries if the dam were removed. More than half also said they would have concerns about sediment management, erosion management, and the impact on water quality and aquatic resources if the dam were removed (Exhibit A10).

EXHIBIT A10. Concerns About Dam Operation at Time of Survey and If It Were Removed

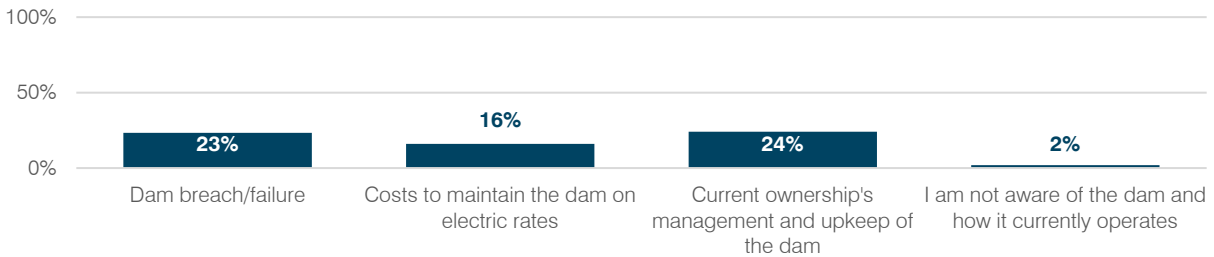


N varies by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. For example, 24 percent of property owners said they were concerned about current ownership’s management and upkeep of the dam at the time of the survey, and 23 were concerned about a dam breach or failure (Exhibit A11).

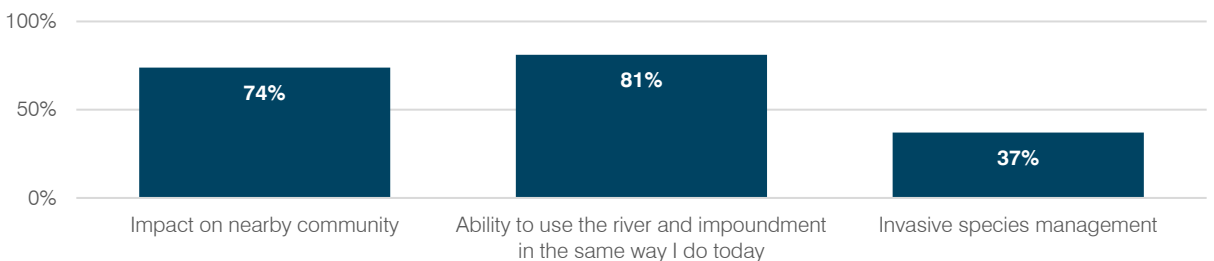
EXHIBIT A11. Concerns About Dam Operation at Time of Survey



N = 1,211

Property owners also had concerns specific only to dam removal. More than 80 percent were concerned about their ability to use the river and impoundment in the same way they did at the time of the survey and nearly three-quarters were concerned about the impact on nearby communities if the dam were removed. Nearly 40 percent would be concerned about invasive species management (Exhibit A12).

EXHIBIT A12. Concerns If the Dam Were Removed

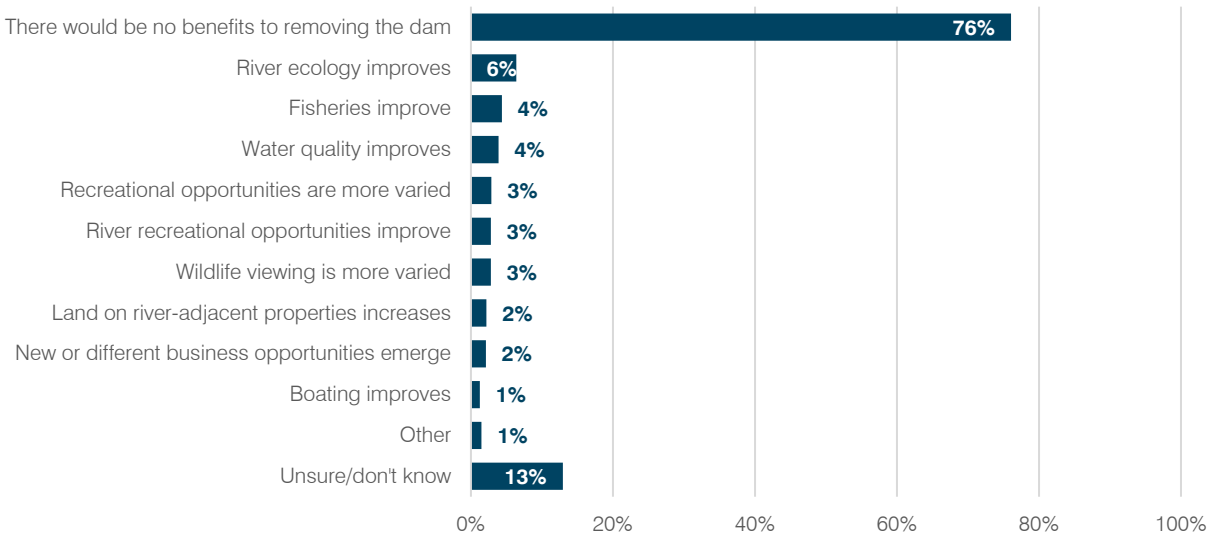


N = 1,339

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While most property owners (76 percent) said there would be no benefits to removing the dam, a small percentage said that river ecology, fisheries, water quality, river recreational opportunities, and boating would improve and that land on river-adjacent properties would increase. A few also said that recreational opportunities and wildlife viewing would be more varied and new business opportunities would emerge (Exhibit A13).

EXHIBIT A13. Benefits to Removing the Dam



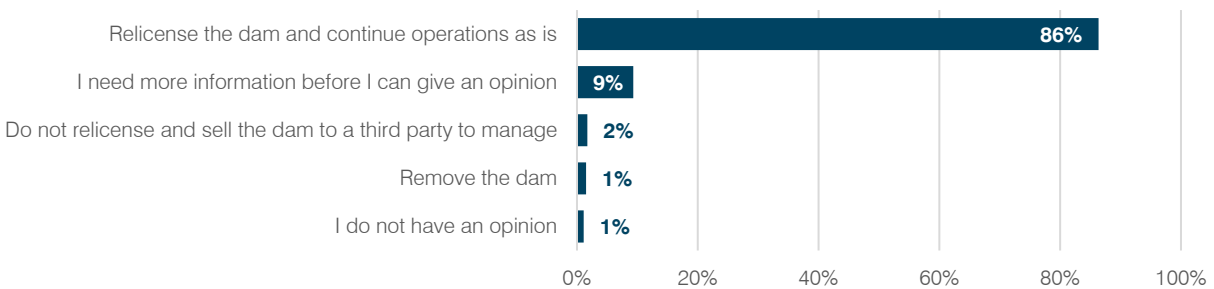
N = 1,283

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners (86 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey, while 2 percent said the dam should be sold to a third party, and 1 percent said to remove the dam (Exhibit A14).

EXHIBIT A14. What Respondents Felt Consumers Should Do With the Dam

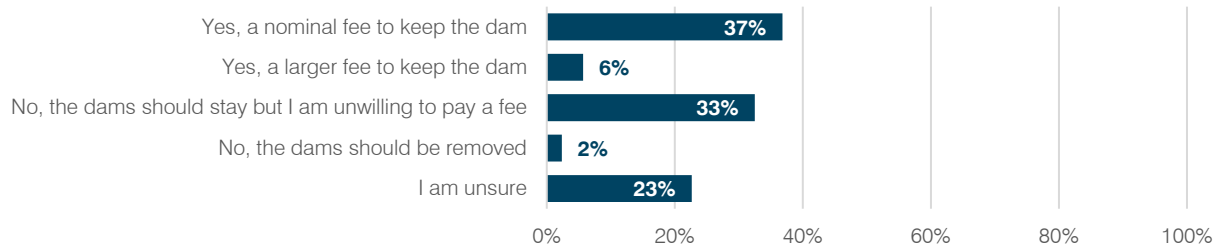


N = 1,340

Note: Percentages may not total 100 percent due to rounding.

If the dam were sold to a third party, more than one-third (37 percent) of property owners said they would be willing to pay a nominal fee to keep the dam. One-third said that the dam should stay but that they would be unwilling to pay a fee (Exhibit A15).

EXHIBIT A15. Respondents' Willingness to Pay an Additional Annual Fee

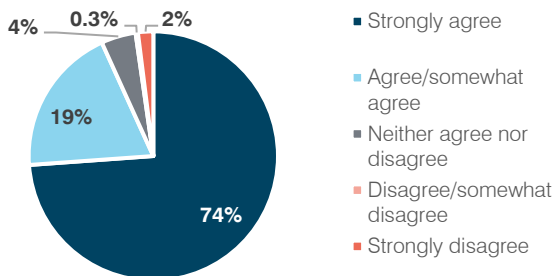


N = 1,320

Note: Percentages may not total 100 percent due to rounding.

In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit A16). If the dam were removed, 64 percent of property owners strongly agreed or agreed/somewhat agreed that they would consider selling their property (Exhibit A17).

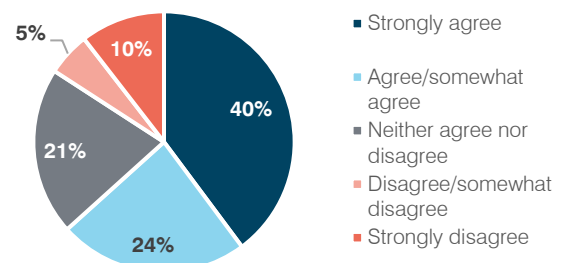
EXHIBIT A16. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 1,312

Note: Percentages may not total 100 percent due to rounding.

EXHIBIT A17. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

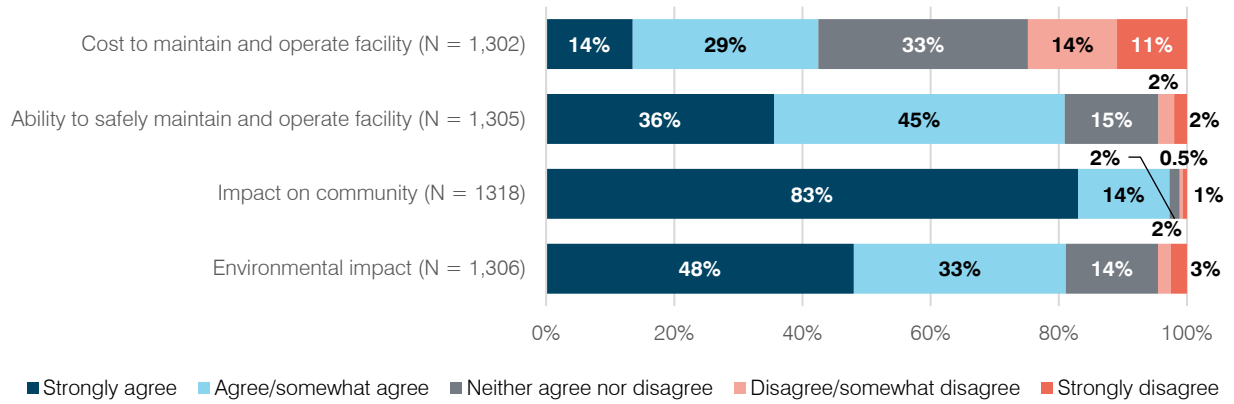


N = 1,306

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (97 percent) strongly agreed or agreed/somewhat agreed that the impact to the community would be an important factor to consider, and 81 percent expressed some level of agreement the environmental impact and the ability to safely maintain and operate the facility would be important considerations. Fewer—43 percent—agreed that the cost to maintain and operate the facility would be important to think about (Exhibit A18).

EXHIBIT A18. Important Factors When Deciding Between Dam Relicensing and Removal



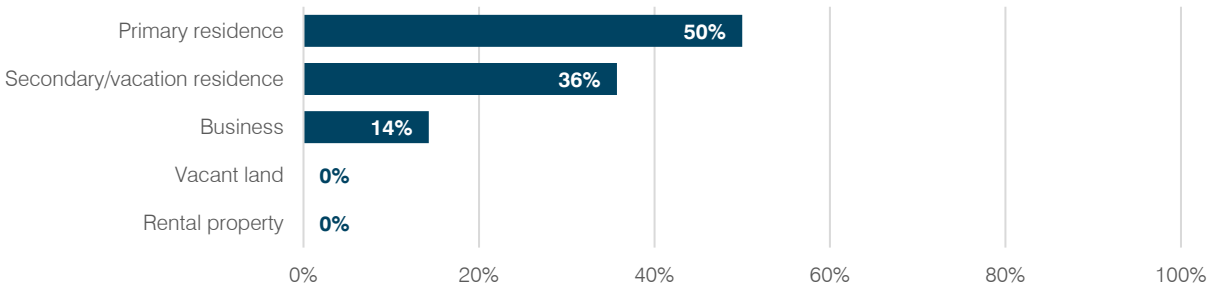
N varies by response.
 Note: Percentages may not total 100 percent due to rounding.

Appendix B: Alcona Dam, Property Owner Survey Results

Consumers Energy surveyed seven property owners nearest to the Alcona Dam; however, 14 survey respondents said their property was located closest to this dam for a response rate of 200 percent.² Of those 14 property owners, less than half (43 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 29 percent strongly disagreed or disagreed that their input would matter. A response rate over 100 percent likely occurred because the web link to the survey form was shared with people beyond the original recipients.

Half of the responding property owners reported mainly using the property as their primary residence, and more than one-third reported mainly using the property as a secondary or vacation residence (Exhibit B1).

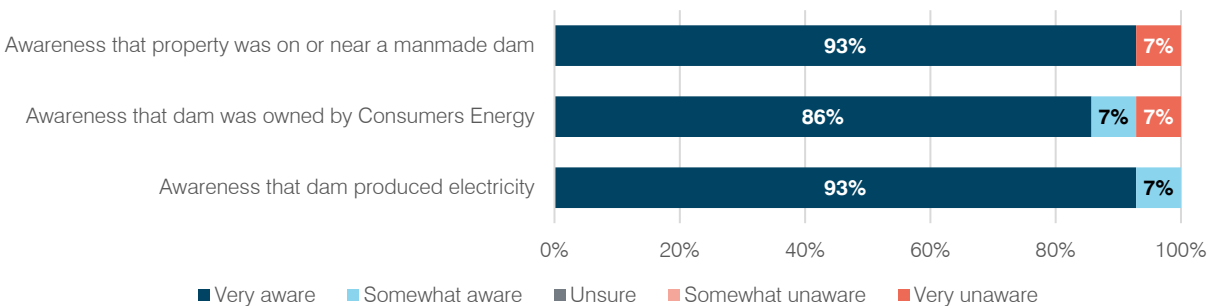
EXHIBIT B1. Primary Use of Property



N = 14

As indicated in Exhibit B2, nearly all respondents with property closest to the Alcona Dam were very aware that their property was on or near a manmade dam (93 percent), that the dam was owned by Consumers Energy (86 percent), and that the dam produced electricity (93 percent).

EXHIBIT B2. Respondents' Level of Awareness Regarding Dam On or Near Property

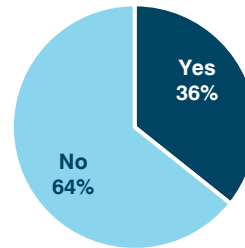


N = 14

² Response rates greater than 100 percent can occur if the web link to the survey form was shared with multiple people beyond the original recipients.

Although many property owners had a high level of awareness about the dam, nearly two-thirds had not considered that their property could be altered by changes to the dam’s management (Exhibit B3).

EXHIBIT B3. Percentage Who Considered That Property Could Be Altered

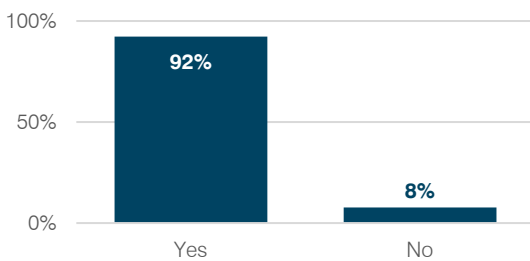


N = 14

Reliance on the Dam and Impoundment

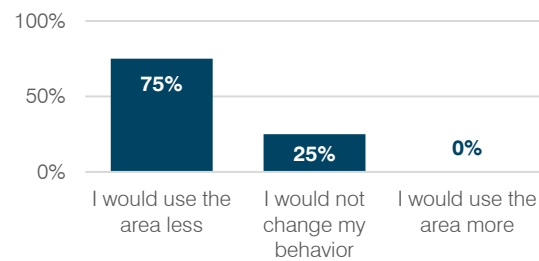
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities, and three-quarters said they would use the area less if the dam were removed (Exhibits B4 and B5).

EXHIBIT B4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 13

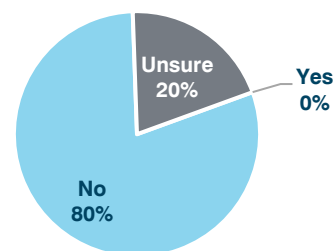
EXHIBIT B5. Impact of Removing the Dam on Recreation Habits



N = 12

Of the 14 respondents who had property closest to the Alcona Dam, 36 percent (five) said their business had some reliance on the dam and/or the impoundment. Of those, 80 percent said they did not believe their business could continue without the dam and its impoundment (Exhibit B6). The other 20 percent were unsure if their business could continue.

EXHIBIT B6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

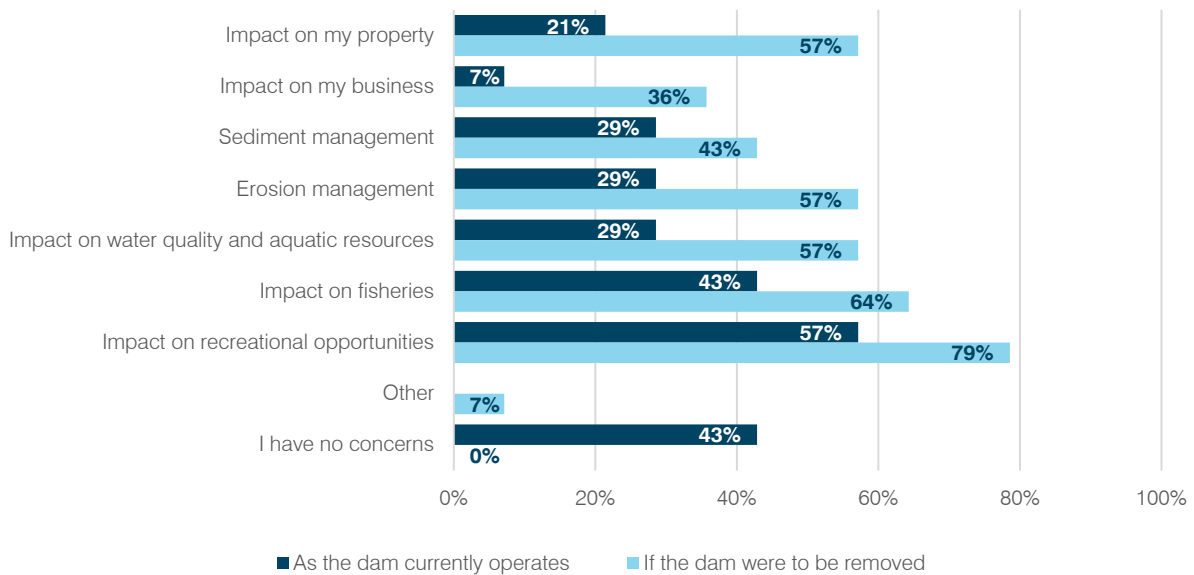


N = 5

Concerns and Benefits

More than half (57 percent) of property owners reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, and nearly 80 percent said they would have those concerns if the dam were removed. Similarly, 43 percent reported having concerns about the dam’s impact on fisheries as it operated at the time of the survey, and 64 percent said they would have concerns about fisheries if the dam were removed. More than half also said they would have concerns about the impact on water quality and aquatic resources, erosion management, and the impact on their property if the dam were removed (Exhibit B7).

EXHIBIT B7. Concerns About Dam Operation at Time of Survey and If It Were Removed

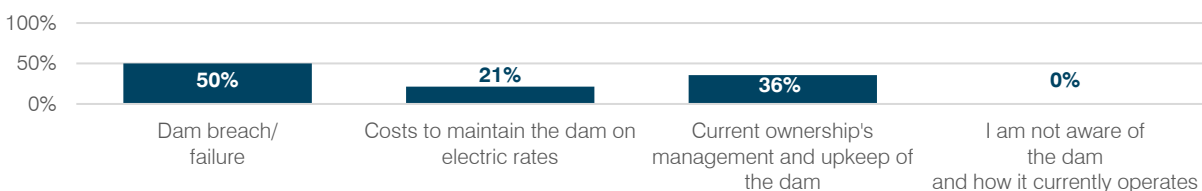


N = 14

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. Half of property owners said they were concerned about a dam breach or failure at the time of the survey, and more than one-third said they were concerned about current ownership’s management and upkeep of the dam (Exhibit B8).

EXHIBIT B8. Concerns About Dam Operation at Time of Survey



N = 14

Property owners also had concerns specific only to dam removal. Nearly 80 percent would be concerned about the impact on nearby communities and the ability to use the river and impoundment in the same way they did at the time of the survey if the dam were removed (Exhibit B9).

EXHIBIT B9. Concerns If the Dam Were Removed

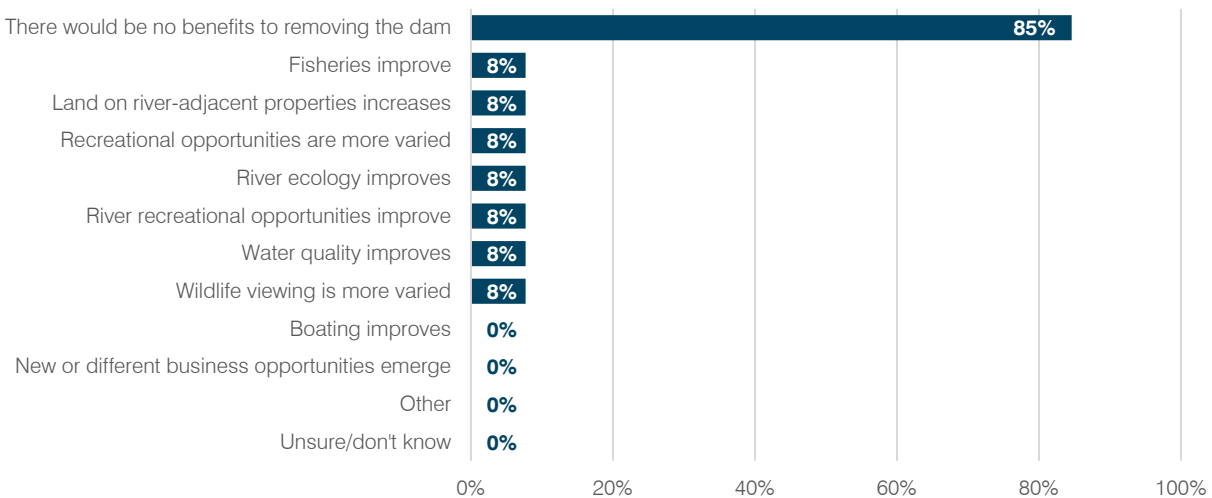


N = 14

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While most property owners (85 percent) said there would be no benefits to removing the dam, a small percentage said that water quality, river recreational opportunities, fisheries, and river ecology would improve; that land on river-adjacent properties would increase; and that recreational and wildlife viewing opportunities would be more varied (Exhibit B10).

EXHIBIT B10. Benefits to Removing the Dam



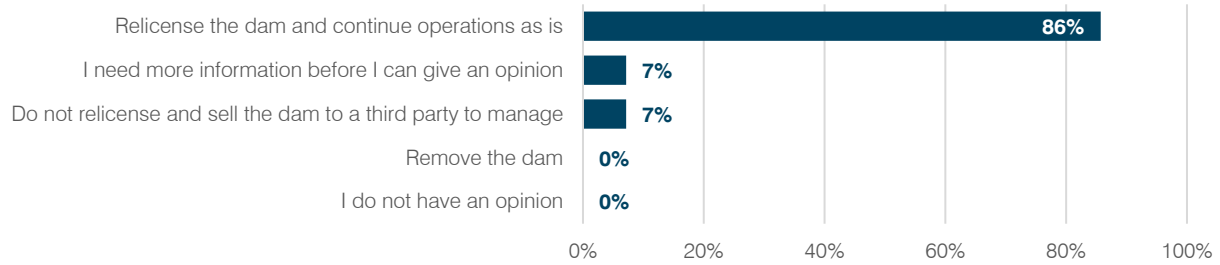
N = 13

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Alcona Dam (86 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey, with only 7 percent saying the dam should be sold to a third party (Exhibit B11).

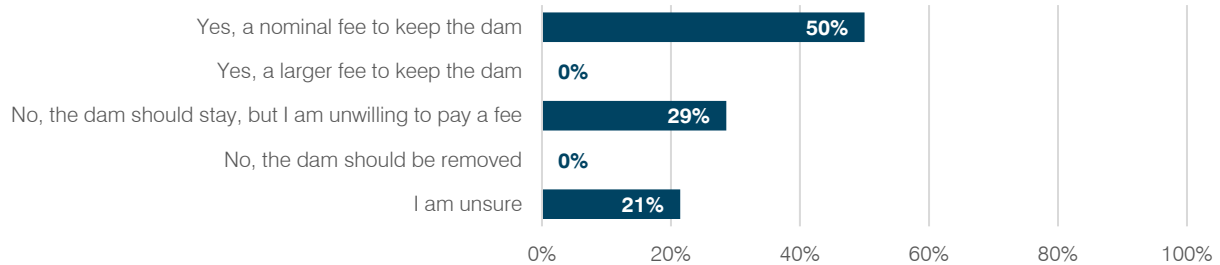
EXHIBIT B11. What Respondents Felt Consumers Should Do With the Dam



N = 14

If the dam were sold to a third party, half of those property owners said they would be willing to pay a nominal fee to keep the dam. Nearly 30 percent said that the dam should stay, but that they would be unwilling to pay a fee (Exhibit B12).

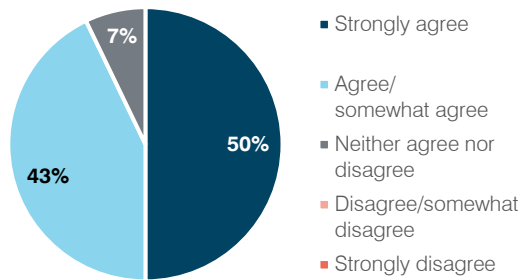
EXHIBIT B12. Respondents' Willingness to Pay an Additional Annual Fee



N = 14

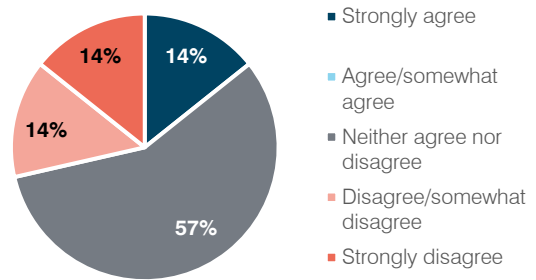
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit B13). While none said they support removal of the dam, only 14 percent strongly agreed that they would consider selling their property if the dam were removed (Exhibit B14).

EXHIBIT B13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 14

EXHIBIT B14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed



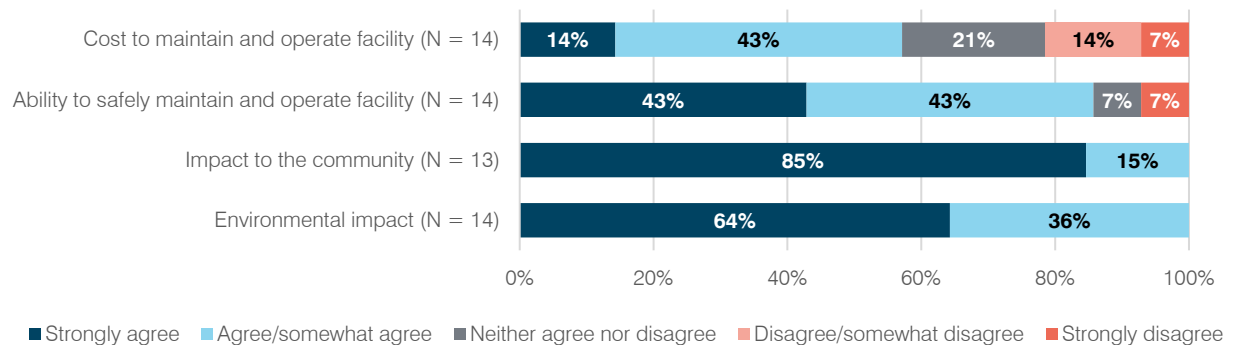
N = 14

Note: Percentages may not total 100 percent due to rounding.

Factors for Consideration

When deciding on dam relicensing or removal, all respondents agreed or strongly agreed that the impact to the community and the environment would be important factors to consider. Most (86 percent) also agreed or strongly agreed that the ability to safely maintain and operate the facility would be an important consideration. More than half agreed that the cost to maintain and operate the facility would also be important to consider (Exhibit B15).

EXHIBIT B15. Important Factors When Deciding Between Dam Relicensing and Removal



N = 14

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

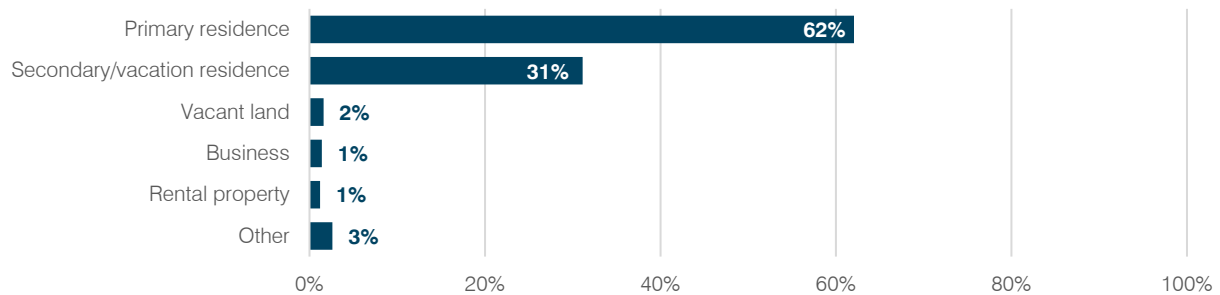
Consumers Energy received a total of five open-ended survey responses. While most responses reiterated feedback captured in other sections of the survey, some additional information was provided. One respondent mentioned the Au Sable River Canoe Marathon and inquired about how the removal of the Alcona Dam would impact the event.

Appendix C: Calkins Bridge Dam, Property Owner Survey Results

Consumers Energy surveyed 474 property owners nearest to Calkins Bridge Dam and received responses from 506 property owners for a response rate of 107 percent. A response rate over 100 percent likely occurred because the web link to the survey form was shared with people beyond the original recipients. Of those 506 property owners, less than half (46 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 25 percent strongly disagreed or disagreed that their input would matter.

Nearly two-thirds (62 percent) of the responding property owners reported mainly using the property as their primary residence, and 31 percent reported mainly using the property as their secondary or vacation residence (Exhibit C1).

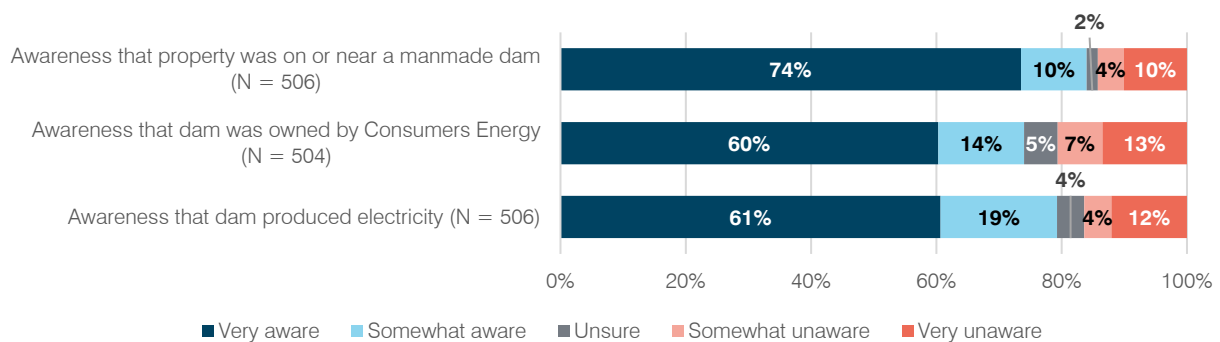
EXHIBIT C1. Primary Use of Property



N = 498

As indicated in Exhibit C2, nearly three-quarters of respondents with property closest to the Calkins Bridge Dam were very aware that their property was on or near a manmade dam, 60 percent were very aware that the dam was owned by Consumers Energy, and 61 percent were very aware that the dam produced electricity.

EXHIBIT C2. Respondents' Level of Awareness Regarding Dam On or Near Property

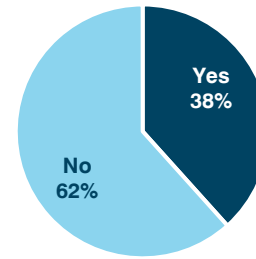


N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Although many property owners had a high level of awareness about the dam, 62 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit C3).

EXHIBIT C3. Percentage Who Considered That Property Could Be Altered

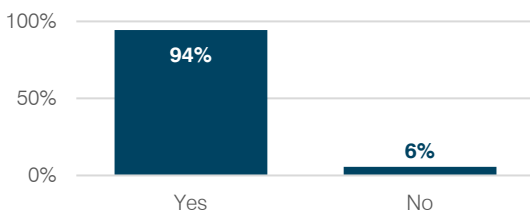


N = 506

Reliance on the Dam and Impoundment

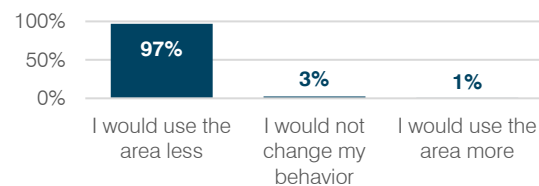
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits C4 and C5).

EXHIBIT C4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 503

EXHIBIT C5. Impact of Removing the Dam on Recreation Habits

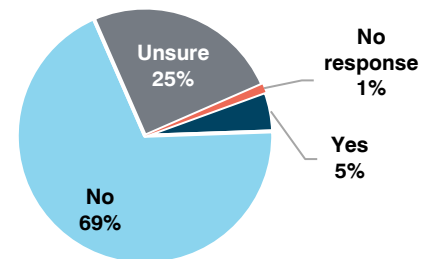


N = 472

Note: Percentages may not total 100 percent due to rounding.

Of the 506 respondents who had property closest to the Calkins Bridge Dam, 16 percent (81) said their business had some reliance on the dam and/or the impoundment. Of those, 69 percent said they did not believe their business could continue without the dam and its impoundment, and 25 percent were unsure if their business could continue (Exhibit C6).

EXHIBIT C6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

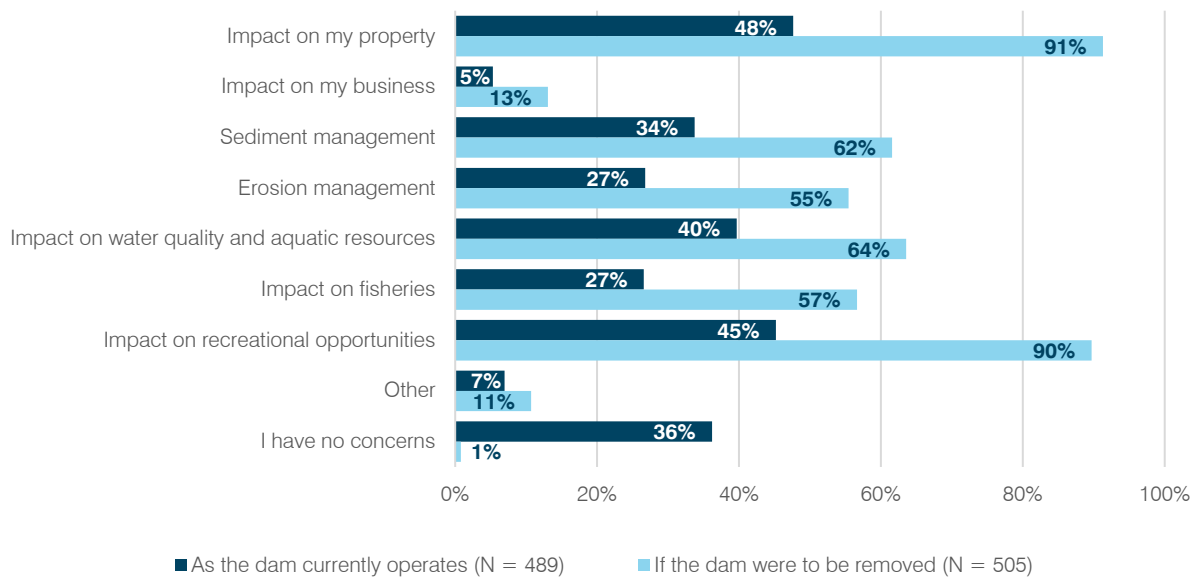


N = 81

Concerns and Benefits

Nearly half (48 percent) of property owners reported having concerns about the dam’s impact on their property, and 45 percent reported having concerns about its impact on recreational opportunities as it operated at the time of the survey. Those percentages increased to 91 percent and 90 percent, respectively, if the dam were removed. Similarly, 34 percent reported having concerns about sediment management as the dam operated at the time of the survey, and 62 percent said they would have concerns about sediment management if the dam were removed. More than half also said they would have concerns about the impact on water quality and aquatic resources, erosion management, and the impact on fisheries if the dam were removed (Exhibit C7).

EXHIBIT C7. Concerns About Dam Operation at Time of Survey and If It Were Removed

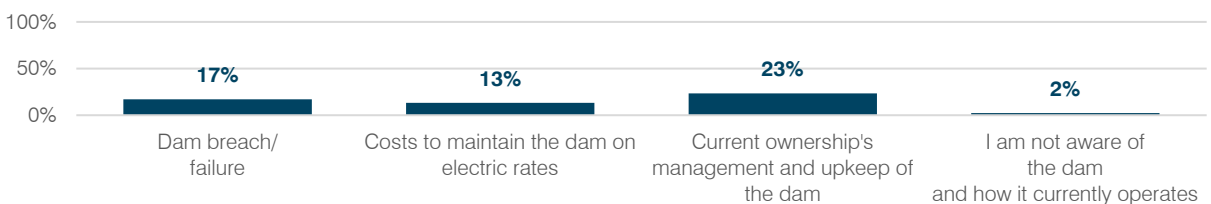


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. For example, nearly one-quarter of property owners said they were concerned about current ownership’s management and upkeep of the dam at the time of the survey (Exhibit C8).

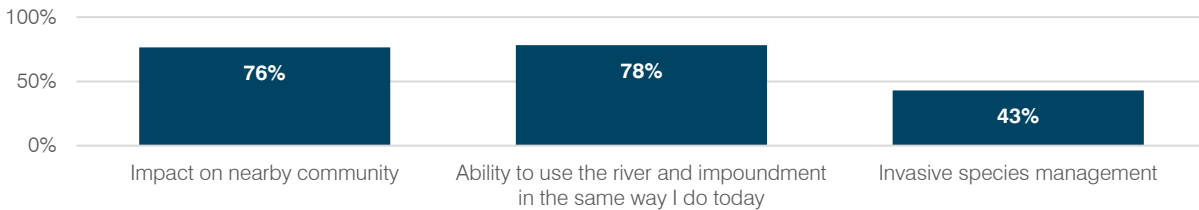
EXHIBIT C8. Concerns About Dam Operation at Time of Survey



N = 489

Property owners also had concerns specific only to dam removal. More than three-quarters were concerned about the impact on nearby communities and the ability to use the river and impoundment in the same way they did at the time of the survey if the dam were removed. More than 40 percent would be concerned about invasive species management (Exhibit C9).

EXHIBIT C9. Concerns If the Dam Were Removed

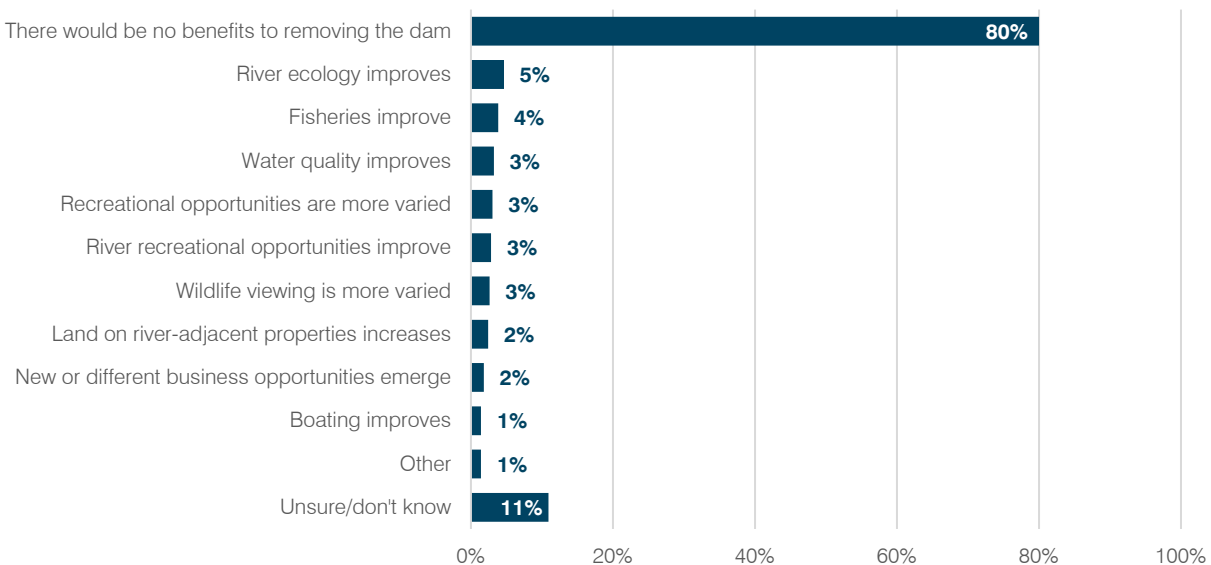


N = 505

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While most property owners (80 percent) said there would be no benefits to removing the dam, a small percentage said that river ecology, fisheries, water quality, river recreational opportunities, and boating would improve and that land on river-adjacent properties would increase. A few also said that recreational opportunities and wildlife viewing would be more varied and new business opportunities would emerge (Exhibit C10).

EXHIBIT C10. Benefits to Removing the Dam



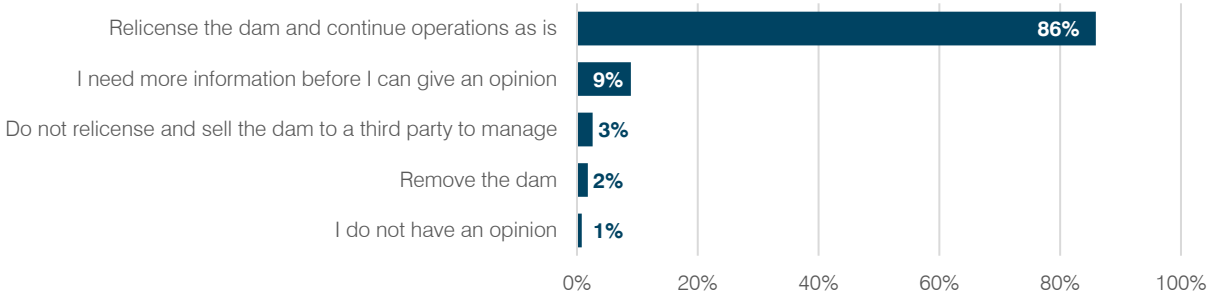
N = 495

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Calkins Bridge Dam (86 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey, while 3 percent said the dam should be sold to a third party (Exhibit C11).

EXHIBIT C11. What Respondents Felt Consumers Should Do With the Dam

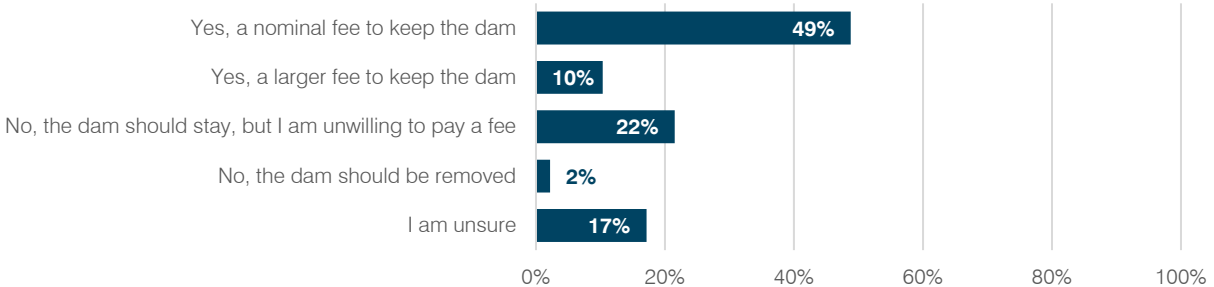


N = 504

Note: Percentages may not total 100 percent due to rounding.

If the dam were sold to a third party, nearly half of property owners said they would be willing to pay a nominal fee to keep the dam. More than 20 percent said that the dam should stay but that they would be unwilling to pay a fee (Exhibit C12).

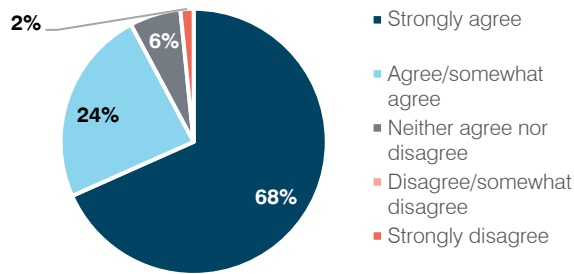
EXHIBIT C12. Respondents' Willingness to Pay an Additional Annual Fee



N = 502

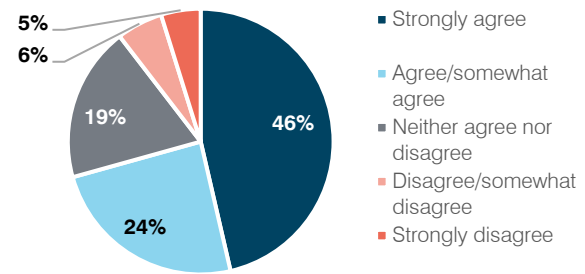
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit C13). If the dam were removed, 70 percent of property owners strongly agreed or agreed that they would consider selling their property (Exhibit C14).

EXHIBIT C13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 499

EXHIBIT C14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

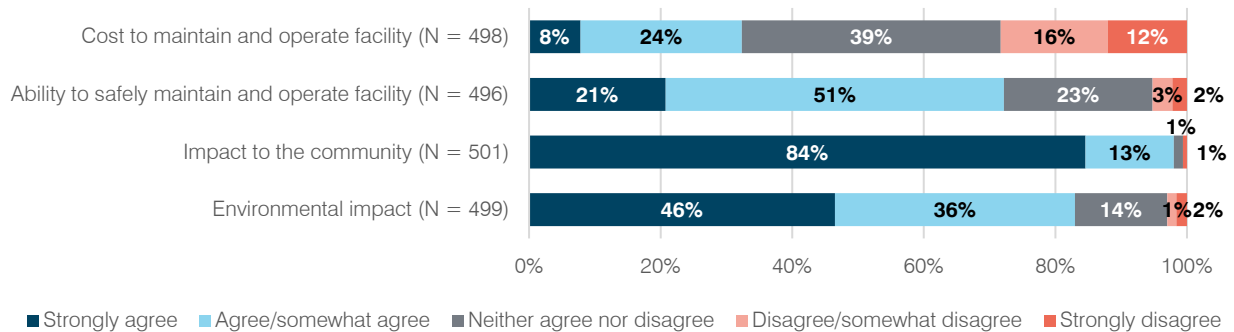


N = 498

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (97 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider, and 82 percent expressed some level of agreement that it would be important to consider the environmental impact. Most (72 percent) also agreed or strongly agreed that the ability to safely maintain and operate the facility would be an important consideration. Fewer—32 percent—agreed that the cost to maintain and operate the facility would be important to think about (Exhibit C15).

EXHIBIT C15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

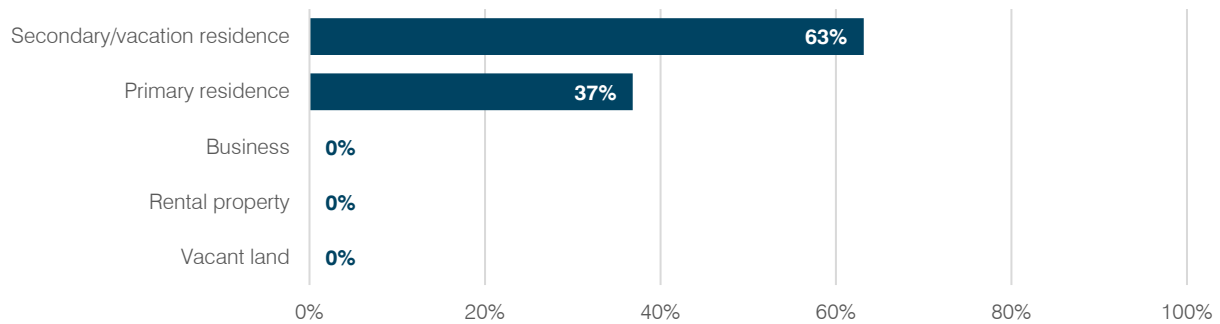
Consumers Energy received a total of 348 open-ended survey responses. While most responses reiterated feedback captured in other sections of the survey, some additional information was provided. Numerous respondents called attention to the polychlorinated biphenyl (PCBs) that may be present in the sediment at the bottom of Lake Allegan and expressed concerns about how contaminated sediments may be managed if the dam were removed. Specifically, respondents voiced concerns about contaminated sediments traveling downstream and/or becoming exposed and impacting public and environmental health.

Appendix D: Cooke Dam, Property Owner Survey Results

Consumers Energy surveyed 19 property owners nearest to the Cooke Dam and received responses from 20 property owners for a response rate of 105 percent. A response rate over 100 percent likely occurred because the web link to the survey form was shared with people beyond the original recipients. Of those 20 property owners, half strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 20 percent strongly disagreed or disagreed that their input would matter.

Nearly two-thirds of the responding property owners reported mainly using the property as their secondary or vacation residence, and more than one-third reported mainly using the property as their primary residence (Exhibit D1).

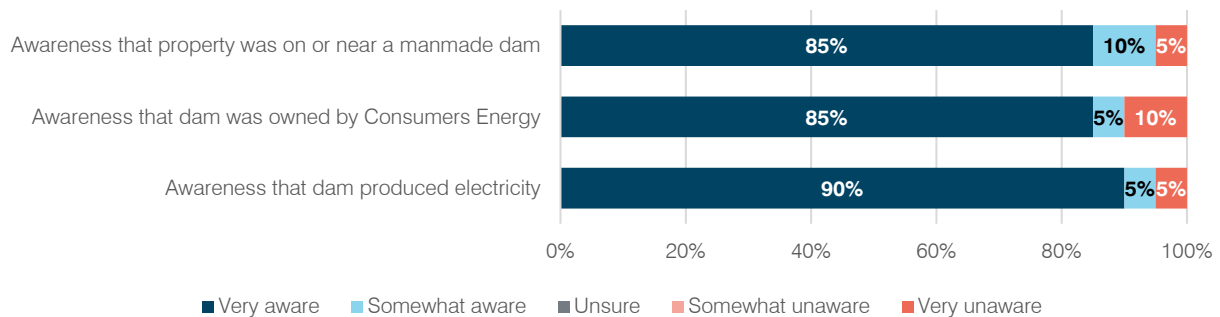
EXHIBIT D1. Primary Use of Property



N = 19

As indicated in Exhibit D2, most respondents with property closest to the Cooke Dam were very aware that their property was on or near a manmade dam (85 percent), that the dam was owned by Consumers Energy (85 percent), and that the dam produced electricity (90 percent).

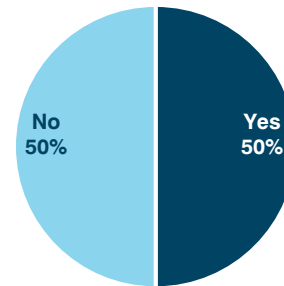
EXHIBIT D2. Respondents' Level of Awareness Regarding Dam On or Near Property



N = 20

Although many property owners had a high level of awareness about the dam, half had not considered that their property could be altered by changes to the dam's management (Exhibit D3).

EXHIBIT D3. Percentage Who Considered That Property Could Be Altered

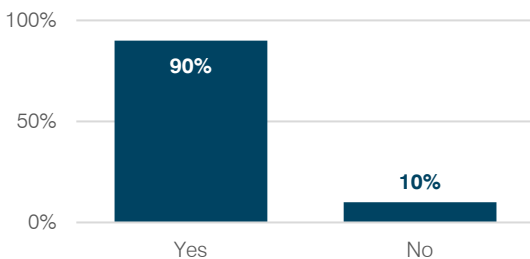


N = 20

Reliance on the Dam and Impoundment

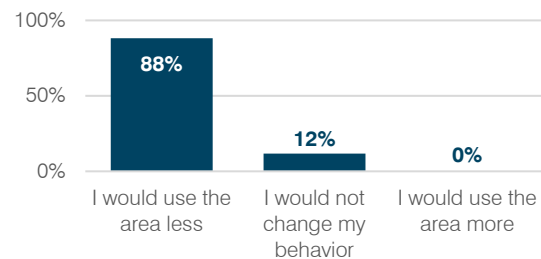
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits D4 and D5).

EXHIBIT D4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 20

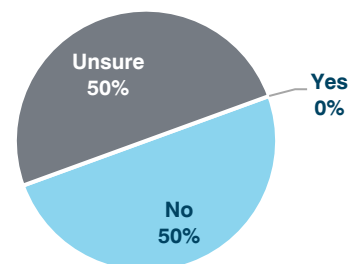
EXHIBIT D5. Impact of Removing the Dam on Recreation Habits



N = 17

Of the 20 respondents who had property closest to the Cooke Dam, 10 percent (two) said their business had some reliance on the dam and/or the impoundment. Of those, 50 percent said they did not believe their business could continue without the dam and its impoundment. The other 50 percent were unsure if their business could continue (Exhibit D6).

EXHIBIT D6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

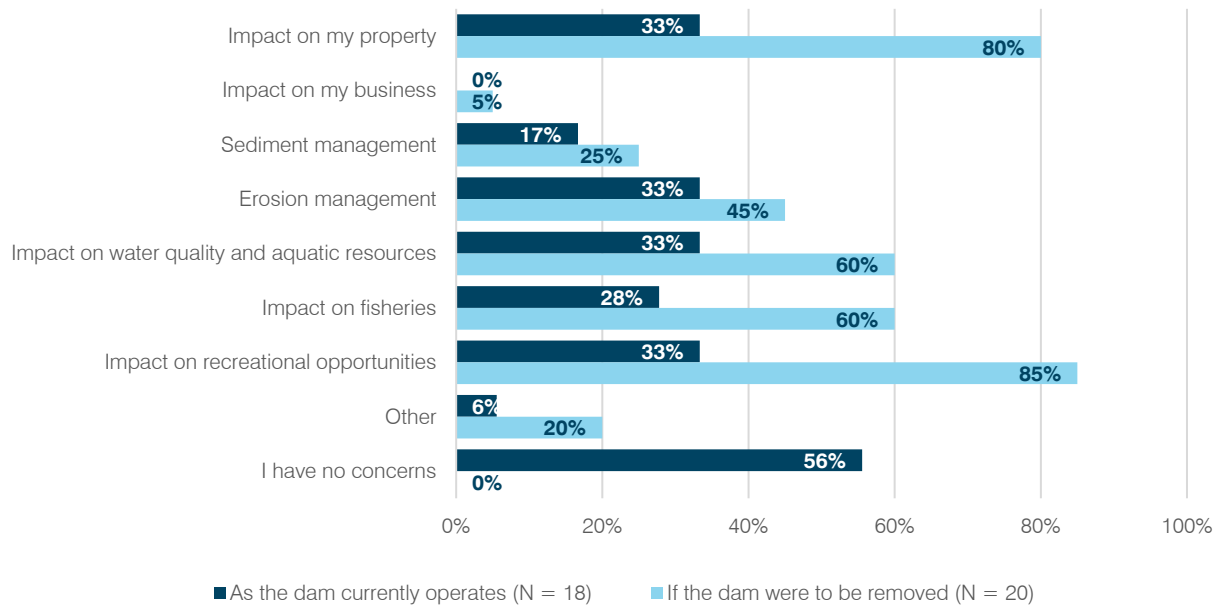


N = 2

Concerns and Benefits

One-third of property owners reported having concerns about the dam’s impact on recreational opportunities, their property, water quality and aquatic resources, and erosion management as the dam operated at the time of the survey. Those concerns increased substantially if the dam were to be removed. For example, 85 percent reported they would have concerns about the impact on recreational opportunities if the dam were removed, and 80 percent reported having concerns about how the dam’s removal would impact their property. Additionally, 60 percent said they would have concerns about the impact on water quality and aquatic resources and fisheries if the dam were removed (Exhibit D7).

EXHIBIT D7. Concerns About Dam Operation at Time of Survey and If It Were Removed

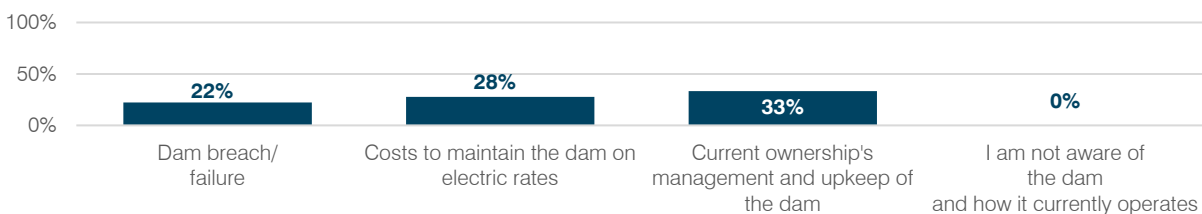


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey. One-third of property owners said they were concerned about current ownership’s management and upkeep of the dam at the time of the survey, and 28 percent said they had concerns about the costs to maintain the dam on electric rates (Exhibit D8).

EXHIBIT D8. Concerns About Dam Operation at Time of Survey



N = 18

Property owners also had concerns specific only to dam removal. Most were concerned about their ability to use the river and impoundment in the same way they did at the time of the survey and the impact on the nearby community if the dam were removed—85 percent and 80 percent, respectively (Exhibit D9).

EXHIBIT D9. Concerns If the Dam Were Removed

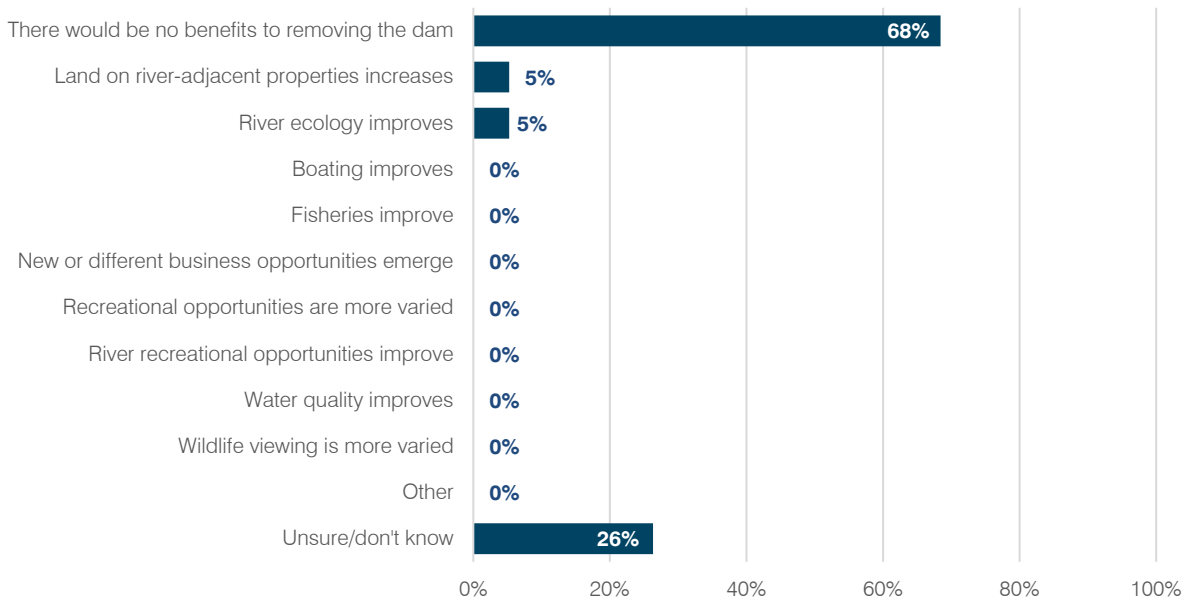


N = 20

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While over two-thirds said there would be no benefits to removing the dam, a small percentage said that river ecology would improve and land on river-adjacent properties would increase with dam removal (Exhibit D10).

EXHIBIT D10. Benefits to Removing the Dam



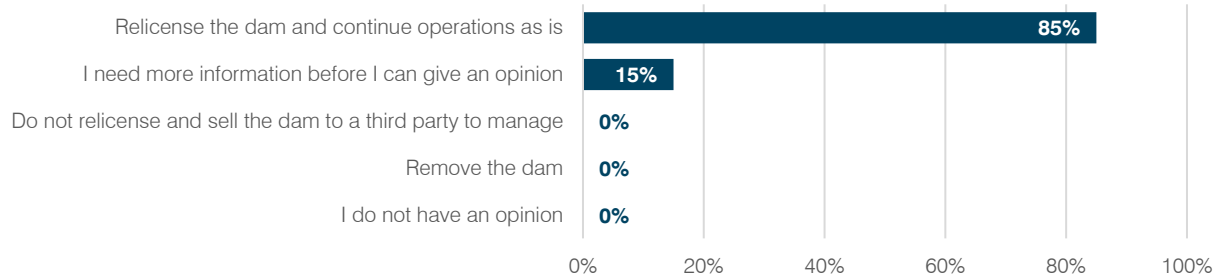
N = 19

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Cooke Dam (85 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit D11).

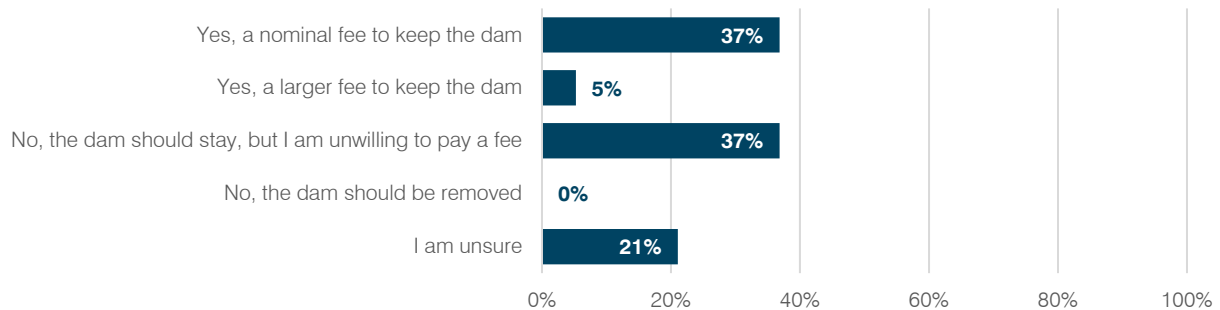
EXHIBIT D11. What Respondents Felt Consumers Should Do With the Dam



N = 20

While no property owners thought the dam should be sold to a third party, 37 percent said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, the same percentage said that the dam should stay but that they would be unwilling to pay a fee (Exhibit D12).

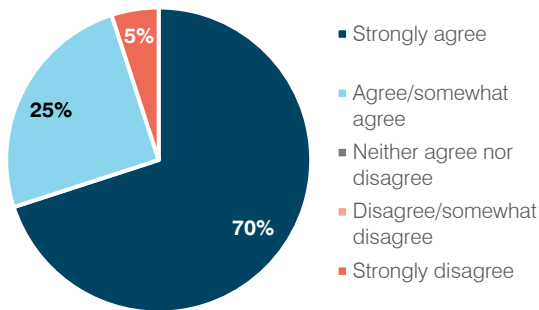
EXHIBIT D12. Respondents' Willingness to Pay an Additional Annual Fee



N = 19

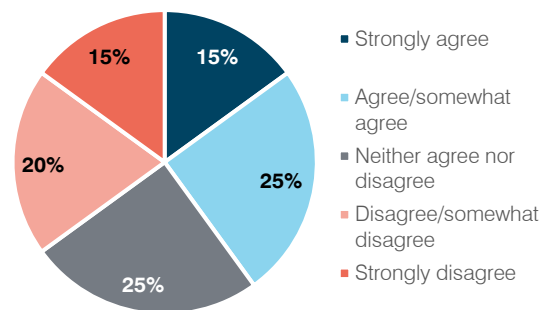
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit D13). While none said they support removal of the dam, 40 percent strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit D14).

EXHIBIT D13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 20

EXHIBIT D14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

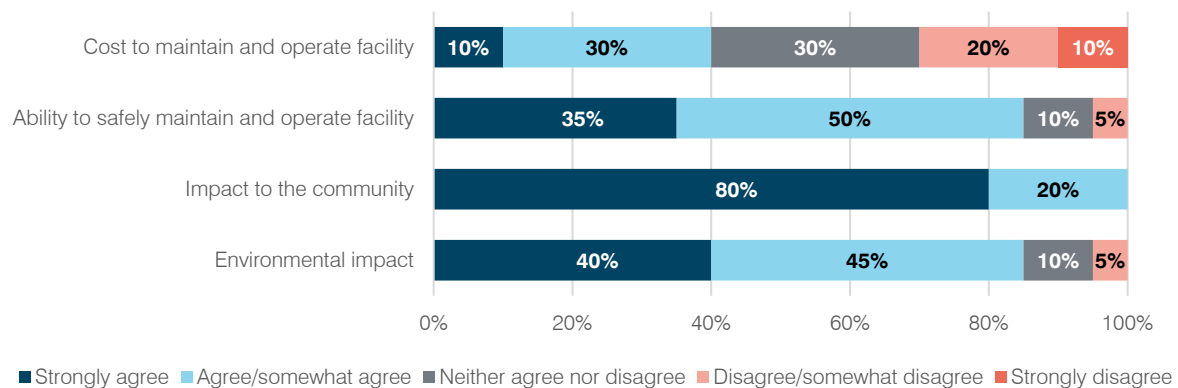


N = 20

Factors for Consideration

When deciding on dam relicensing or removal, all respondents strongly agreed or agreed that the impact to the community would be an important factor to consider. Most (85 percent) also strongly agreed or agreed that the ability to safely maintain and operate the facility and the environmental impact would be important considerations. Fewer (40 percent) agreed that the cost to maintain and operate the facility would be an important factor to think about (Exhibit D15).

EXHIBIT D15. Important Factors When Deciding Between Dam Relicensing and Removal



N = 20

Summary of Open-ended Comments

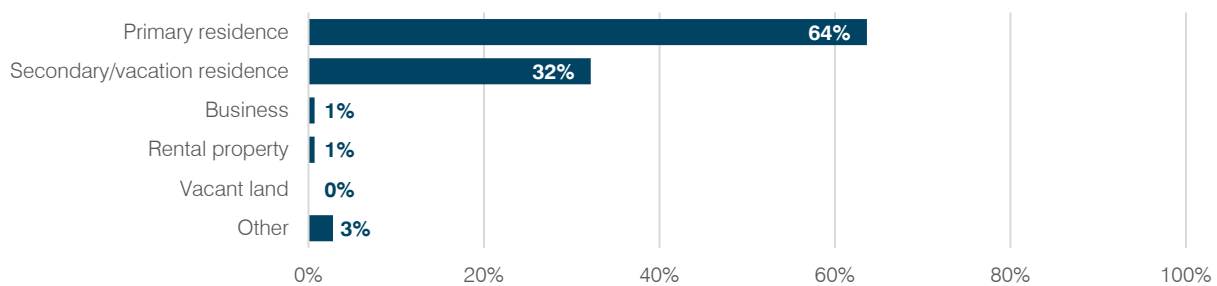
Consumers Energy received a total of 15 open-ended survey responses. While most responses reiterated feedback captured in other sections of the survey, some additional information was provided. One respondent mentioned the Au Sable River Canoe Marathon and inquired about how the removal of the Cooke Dam would impact the event.

Appendix E: Croton Dam, Property Owner Survey Results

Consumers Energy surveyed 579 property owners nearest to the Croton Dam and received responses from 146 property owners for a response rate of 25 percent.³ Of those 146 property owners, less than half (45 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 25 percent strongly disagreed or disagreed that their input would matter.

Nearly two-thirds (64 percent) of the responding property owners reported mainly using the property as their primary residence, and 32 percent reported mainly using the property as their secondary or vacation residence (Exhibit E1).

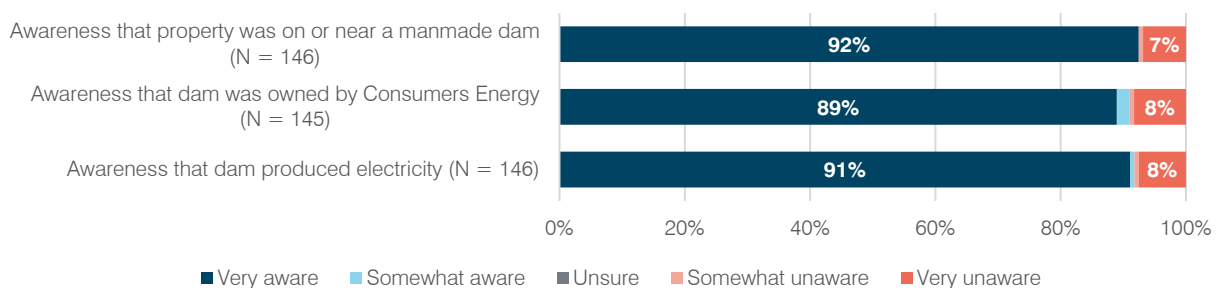
EXHIBIT E1. Primary Use of Property



N = 143

As indicated in Exhibit E2, nearly all respondents with property closest to the Croton Dam were very aware that their property was on or near a manmade dam (92 percent), that the dam was owned by Consumers Energy (89 percent), and that the dam produced electricity (91 percent).

EXHIBIT E2. Respondents' Level of Awareness Regarding Dam On or Near Property



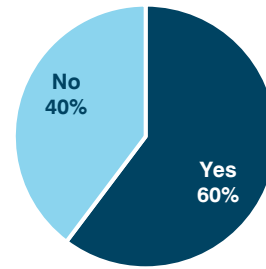
N varied by response.

Note: Percentages may not total 100 percent due to rounding.

³ Several property owners responding to the paper survey said they lived near both the Croton and Hardy Dams, making it impossible to determine which dam they were actually closest to. Therefore, this response rate is likely underrepresenting Croton Dam property owners.

Although many property owners had a high level of awareness about the dam, 40 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit E3).

EXHIBIT E3. Percentage Who Considered That Property Could Be Altered

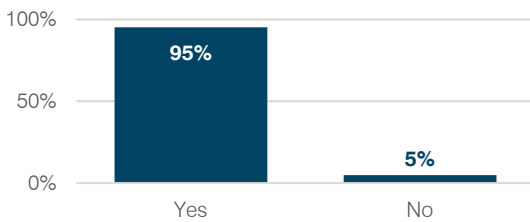


N = 146

Reliance on the Dam and Impoundment

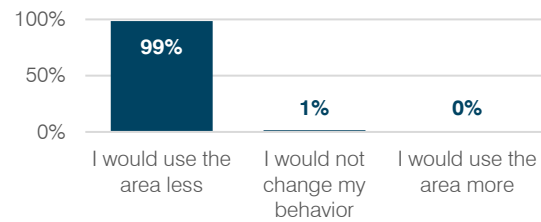
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits E4 and E5).

EXHIBIT E4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 145

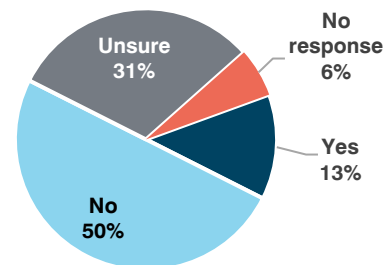
EXHIBIT E5. Impact of Removing the Dam on Recreation Habits



N = 136

Of the 146 respondents who had property closest to the Croton Dam, 11 percent (16) said their business had some reliance on the dam and/or the impoundment. Of those, 50 percent said they did not believe their business could continue without the dam and its impoundment. Another 31 percent were unsure if their business could continue, while 13 percent thought their business could continue (Exhibit E6).

EXHIBIT E6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

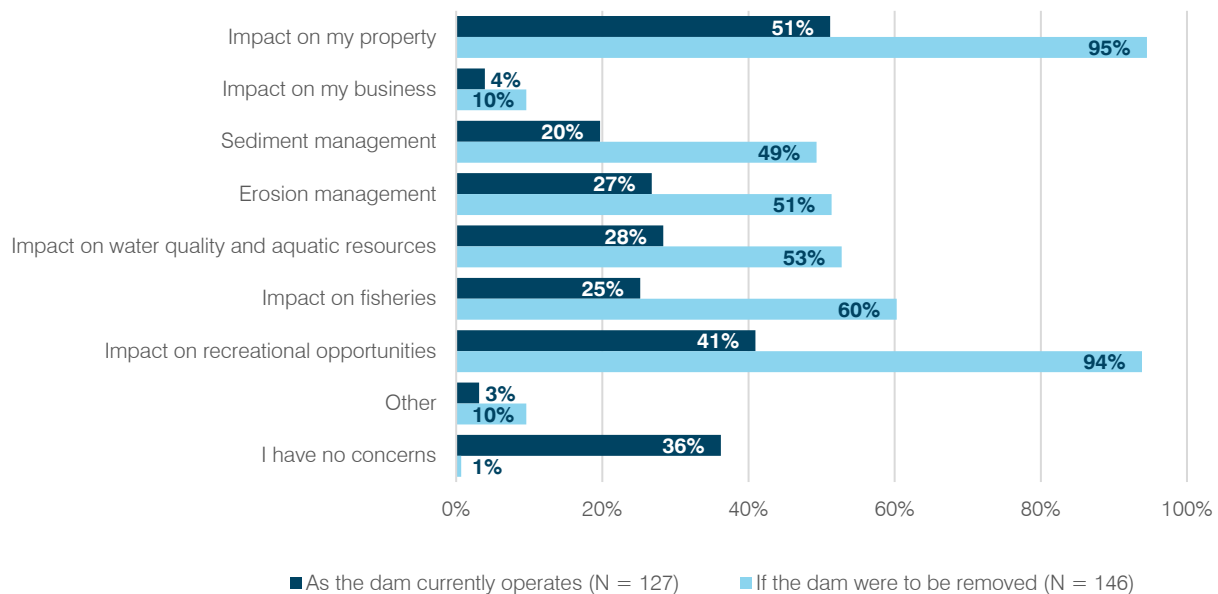


N = 16

Concerns and Benefits

More than half of property owners reported having concerns about the dam’s impact on their property as it operated at the time of the survey, and nearly all (95 percent) said they would have those concerns if the dam were removed. Similarly, 41 percent reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, and 94 percent said they would have concerns about recreational opportunities if the dam were removed. More than half also said they would have concerns about the impact on fisheries and water quality and aquatic resources, and erosion management if the dam were removed (Exhibit E7).

EXHIBIT E7. Concerns About Dam Operation at Time of Survey and If It Were Removed

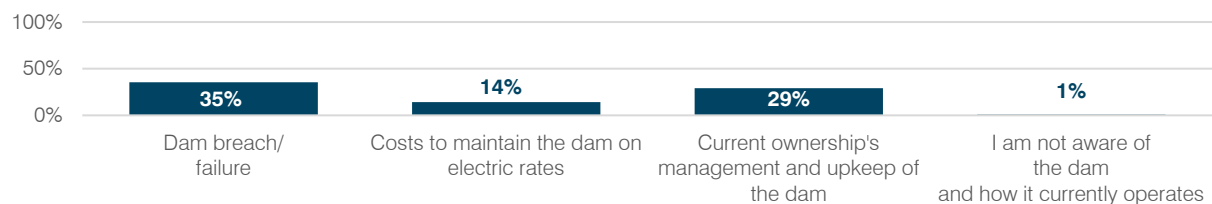


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concern about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. More than one-third of property owners said they were concerned about a dam breach or failure, and nearly 30 percent were concerned with current ownership’s management and upkeep of the dam (Exhibit E8).

EXHIBIT E8. Concerns About Dam Operation at Time of Survey



N = 127

Property owners also had concerns specific only to dam removal. Most were concerned about their ability to use the river and impoundment in the same way they did at the time of the survey and the impact on the nearby community if the dam were removed—84 percent and 79 percent respectively (Exhibit E9).

EXHIBIT E9. Concerns If the Dam Were Removed

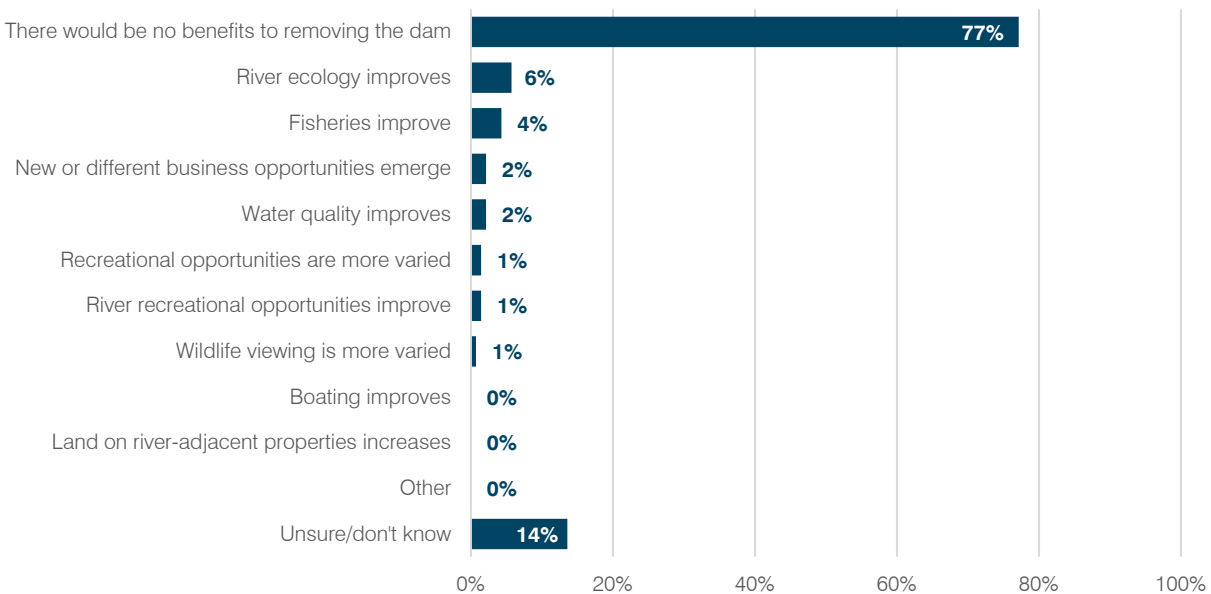


N = 146

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While over three-quarters of property owners said there would be no benefits to removing the dam, a small percentage said that river ecology, fisheries, water quality, and river recreational opportunities would improve; that new business opportunities would emerge; and that recreational and wildlife viewing opportunities would be more varied (Exhibit E10).

EXHIBIT E10. Benefits to Removing the Dam



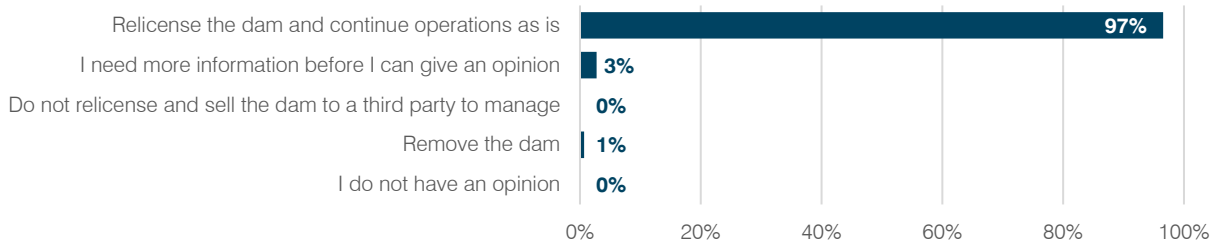
N = 140

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Croton Dam (97 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit E11).

EXHIBIT E11. What Respondents Felt Consumers Should Do With the Dam

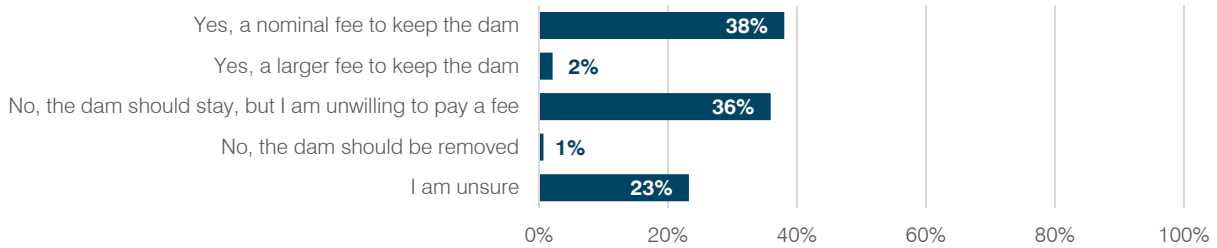


N = 145

Note: Percentages may not total 100 percent due to rounding.

While no property owners said the dam should be sold to a third party, 38 percent said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, 36 percent said that the dam should stay, but that they would be unwilling to pay a fee (Exhibit E12).

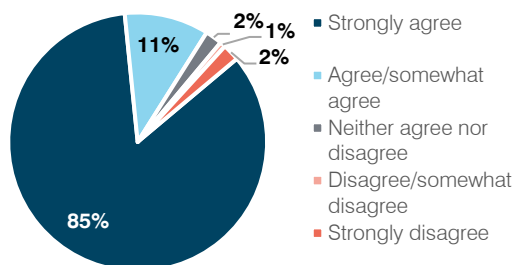
EXHIBIT E12. Respondents' Willingness to Pay an Additional Annual Fee



N = 142

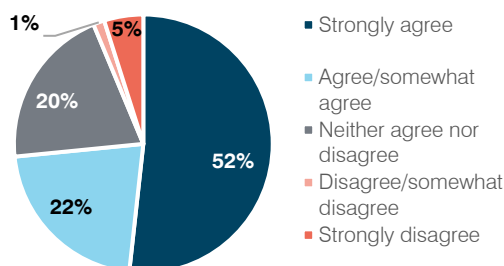
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit E13). While only 1 percent said they support removal of the dam, nearly three-quarters said they strongly agreed or agree that they would consider selling their property if the dam were removed (Exhibit E14).

EXHIBIT E13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 142
Note: Percentages may not total 100 percent due to rounding.

EXHIBIT E14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

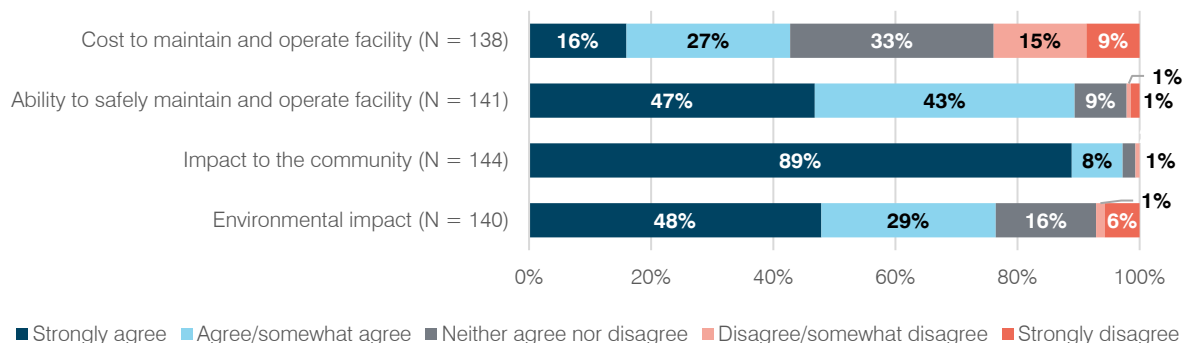


N = 143

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (97 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider. Most also strongly agreed or agreed that the ability to safely maintain and operate the facility and the environmental impact would be important considerations. Fewer (43 percent) agreed that the cost to maintain and operate the facility would be an important point to think about (Exhibit E15).

EXHIBIT E15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.
Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

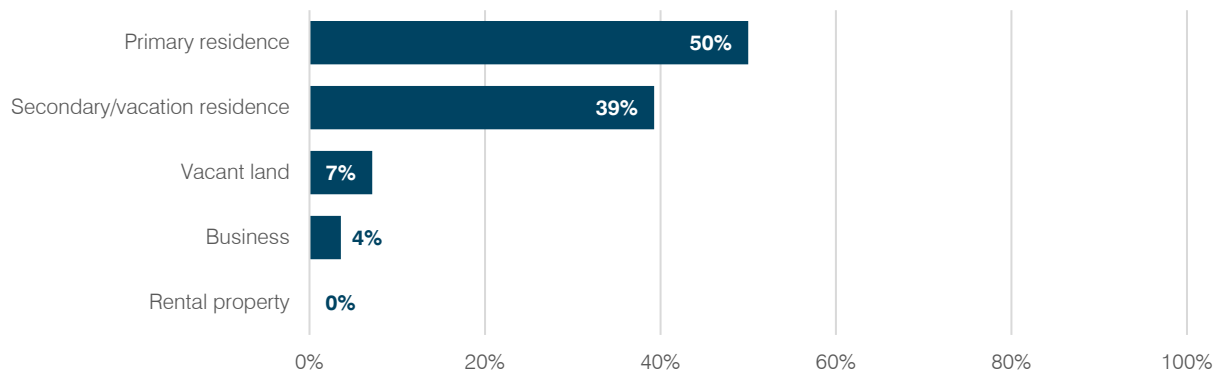
Consumers Energy received a total of 99 open-ended survey responses. While most responses reiterated feedback captured in other sections of the survey, some additional information was provided. One respondent noted that the Croton Dam was a “marvel of construction and output in 1907” and suggested that the structure should be preserved due to its historical significance. Another respondent mentioned the presence of some buildings and a church under the water level above the Croton Dam and inquired about how the buildings would be managed should the dam be removed.

Appendix F: Five Channels Dam, Property Owner Survey Results

Consumers Energy surveyed 28 property owners nearest to the Five Channels Dam and received responses from 28 property owners for a response rate of 100 percent. Of those 28 property owners, only 18 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 36 percent strongly disagreed or disagreed that their input would matter.

Half of the responding property owners reported mainly using the property as their primary residence, and 39 percent reported mainly using the property as their secondary or vacation residence (Exhibit F1).

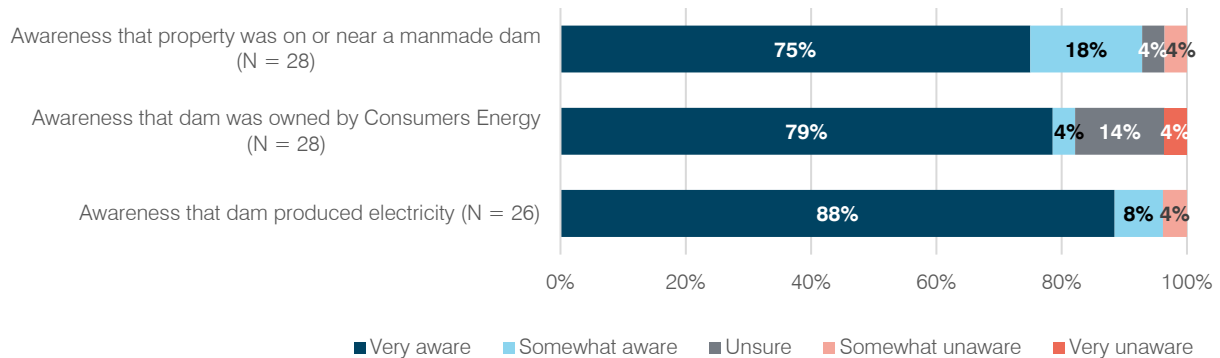
EXHIBIT F1. Primary Use of Property



N = 28

As indicated in Exhibit F2, most respondents with property closest to the Five Channels Dam were very aware that their property was on or near a manmade dam (75 percent), that the dam was owned by Consumers Energy (79 percent), and that the dam produced electricity (88 percent).

EXHIBIT F2. Respondents' Level of Awareness Regarding Dam On or Near Property

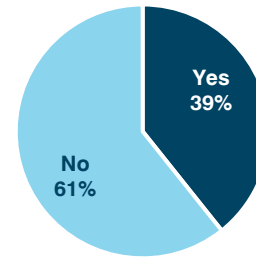


N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Although many property owners had a high level of awareness about the dam, 61 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit F3).

EXHIBIT F3. Percentage Who Considered That Property Could Be Altered

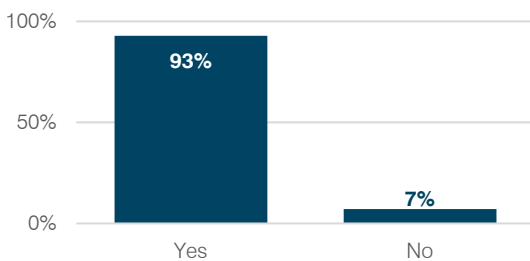


N = 28

Reliance on the Dam and Impoundment

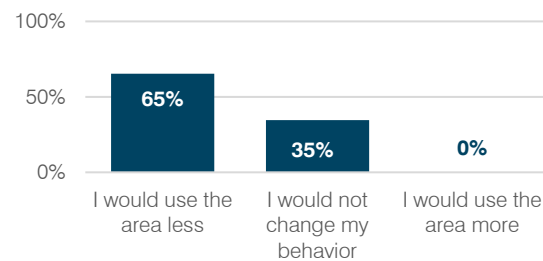
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities, and 65 percent said they would use the area less if the dam were removed (Exhibits F4 and F5).

EXHIBIT F4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 28

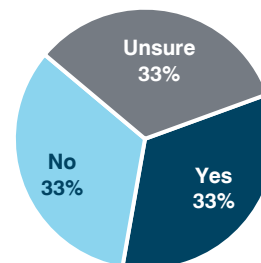
EXHIBIT F5. Impact of Removing the Dam on Recreation Habits



N = 26

Of the 28 respondents who had property closest to the Five Channels Dam, 11 percent (three) said their business had some reliance on the dam and/or impoundment. Of those, one said they did not believe their business could continue without the dam and its impoundment, another was unsure, and one believed their business could continue (Exhibit F6).

EXHIBIT F6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment



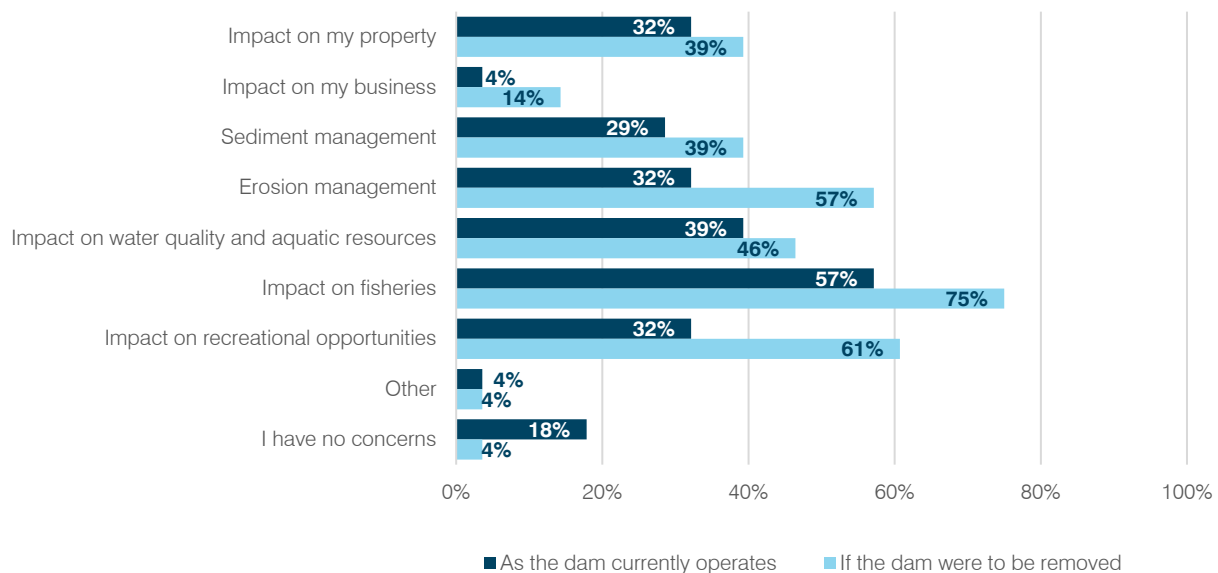
N = 3

Note: Percentages may not total 100 percent due to rounding.

Concerns and Benefits

Nearly 60 percent of property owners reported having concerns about the dam’s impact on fisheries as it operated at the time of the survey, and 75 percent said they would have those concerns if the dam were removed. Additionally, nearly 40 percent reported having concerns about the dam’s impact on water quality and aquatic resources as it operated at the time of the survey, and 46 percent said they would have these concerns if the dam were removed. More than 60 percent said they would have concerns about the impact on recreational opportunities if the dam were removed, and nearly 60 percent would have concerns about erosion management (Exhibit F7).

EXHIBIT F7. Concerns About Dam Operation at Time of Survey and If It Were Removed

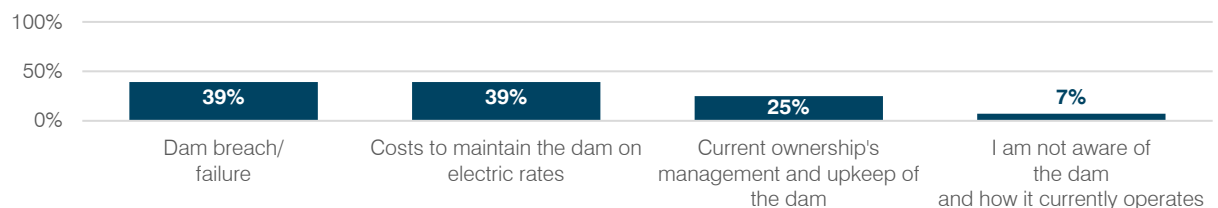


N = 28

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. Nearly 40 percent of property owners said they were concerned about a dam breach or failure and the cost to maintain the dam on electric rates at the time of the survey and one-quarter were concerned about current ownership’s management and upkeep of the dam (Exhibit F8).

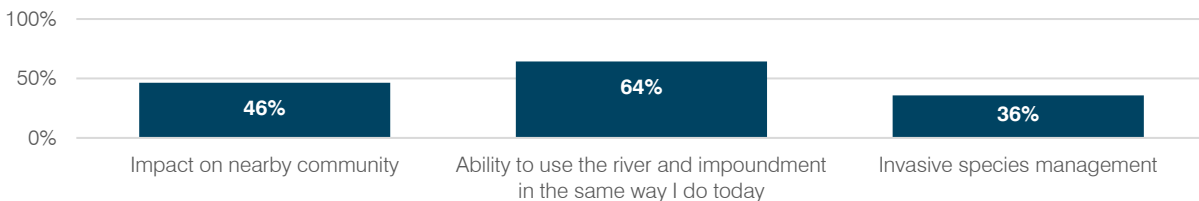
EXHIBIT F8. Concerns About Dam Operation at Time of Survey



N = 28

Property owners also had concerns specific only to dam removal. Nearly two-thirds said they would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey if the dam were removed, and 46 percent would be concerned about the impact the dam’s removal would have on the nearby community. Additionally, more than one-third would be concerned about invasive species management if the dam were removed (Exhibit F9).

EXHIBIT F9. Concerns If the Dam Were Removed

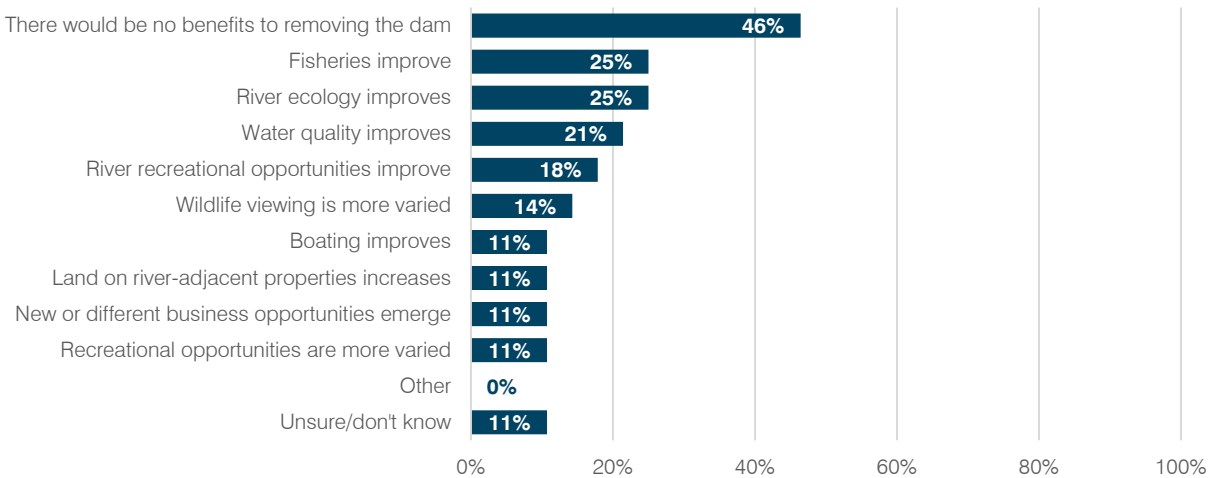


N = 28

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While 46 percent of property owners said there would be no benefits to removing the dam, one-quarter said that fisheries and river ecology would improve, 21 percent said that water quality would improve, and 18 percent said that river recreational opportunities would improve if the dam were removed (Exhibit F10).

EXHIBIT F10. Benefits to Removing the Dam



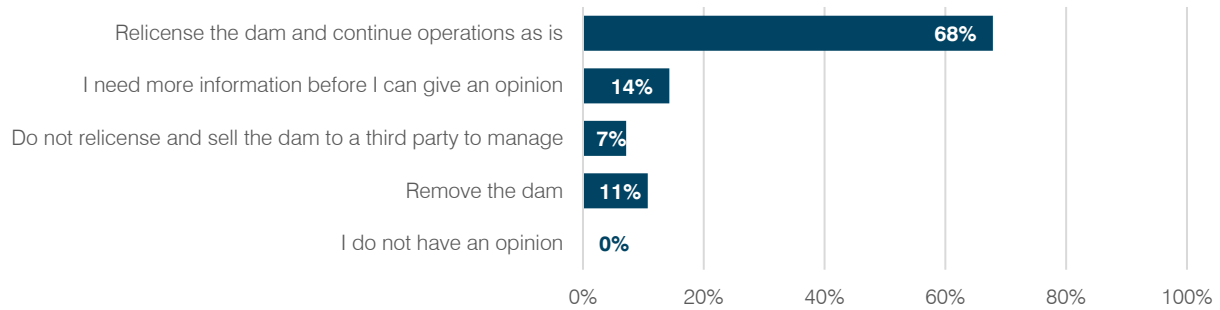
N = 28

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

More than two-thirds of property owners near the Five Channels Dam reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit F11).

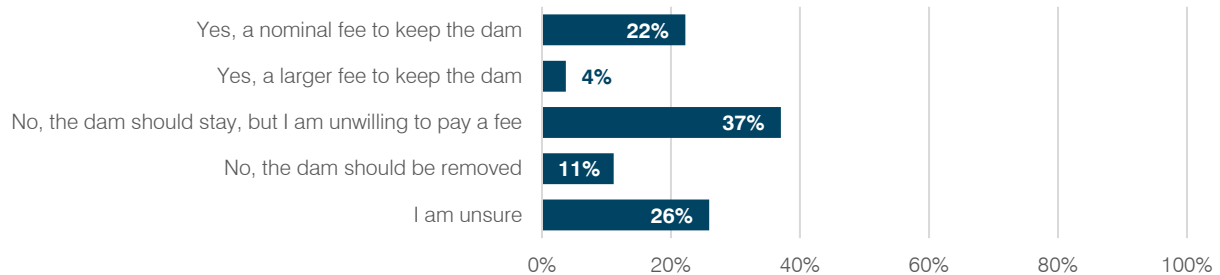
EXHIBIT F11. What Respondents Felt Consumers Should Do With the Dam



N = 28

If the dam were sold to a third party, 26 percent of those property owners said they would be willing to pay some sort of fee to keep the dam, while 37 percent said that the dam should stay but that they would be unwilling to pay a fee (Exhibit F12).

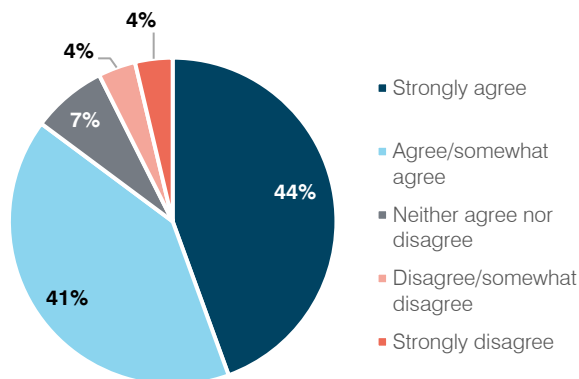
EXHIBIT F12. Respondents' Willingness to Pay an Additional Annual Fee



N = 27

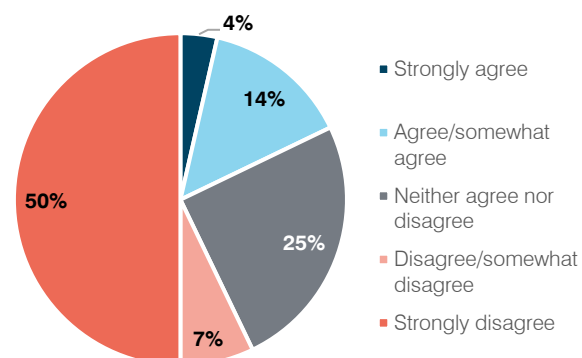
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit F13). Only 18 percent strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit F14).

EXHIBIT F13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 27

EXHIBIT F14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

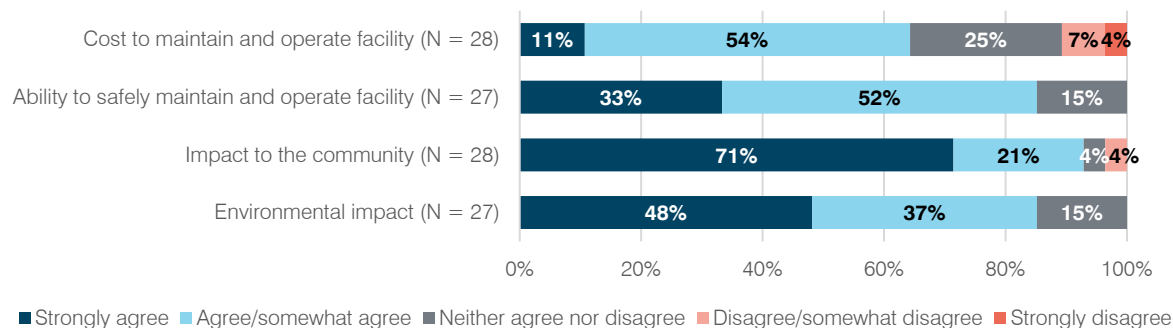


N = 28

Factors for Consideration

When deciding on dam relicensing or removal, 92 percent strongly agreed or agreed that the impact to the community would be an important factor to consider. Most (85 percent) also strongly agreed or agreed that the ability to safely maintain and operate the facility and the environmental impact would be important considerations. About two-thirds agreed that the cost to maintain and operate the facility would be an important point to think about (Exhibit F15).

EXHIBIT F15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

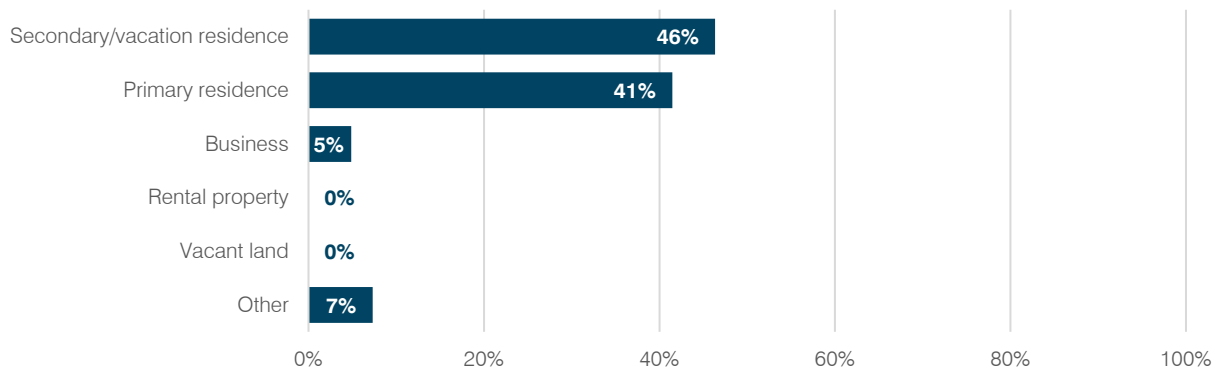
Consumers Energy received a total of nine open-ended survey responses. While most responses reiterated feedback captured in other sections of the survey, some additional information was provided. One respondent noted that they believe the Five Channels Dam serves a purpose for flood control, and that without the dam, flooding may become a problem.

Appendix G: Foote Dam, Property Owner Survey Results

Consumers Energy surveyed 73 property owners nearest to the Foote Dam and received responses from 43 property owners for a response rate of 59 percent. Of those 43 property owners, 60 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 26 percent strongly disagreed or disagreed that their input would matter.

Nearly half (46 percent) of the responding property owners reported mainly using the property as their secondary or vacation residence, and 41 percent reported mainly using the property as their primary residence (Exhibit G1).

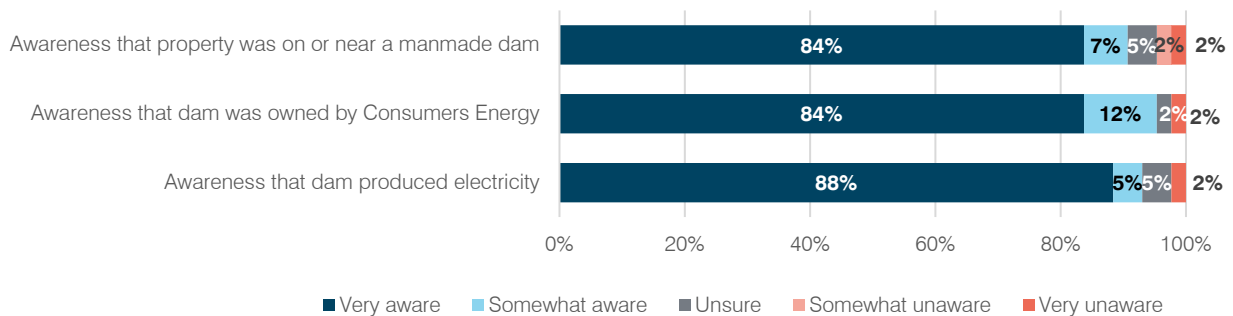
EXHIBIT G1. Primary Use of Property



N = 41
 Note: Percentages may not total 100 percent due to rounding.

As indicated in Exhibit G2, nearly all respondents with property closest to the Foote Dam were very aware that their property was on or near a manmade dam (84 percent), that the dam was owned by Consumers Energy (84 percent), and that the dam produced electricity (88 percent).

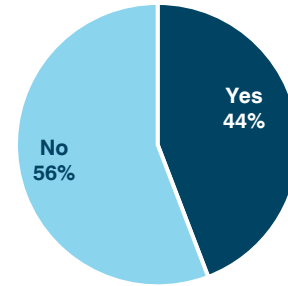
EXHIBIT G2. Respondents' Level of Awareness Regarding Dam On or Near Property



N = 43

Although many property owners had a high level of awareness about the dam, more than half had not considered that their property could be altered by changes to the dam’s management (Exhibit G3).

EXHIBIT G3. Percentage Who Considered That Property Could Be Altered

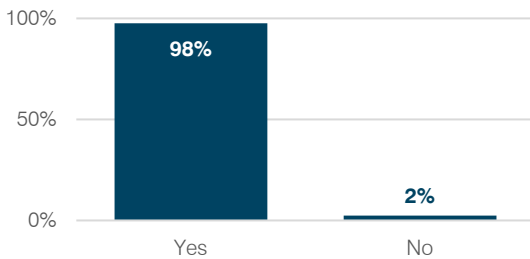


N = 43

Reliance on the Dam and Impoundment

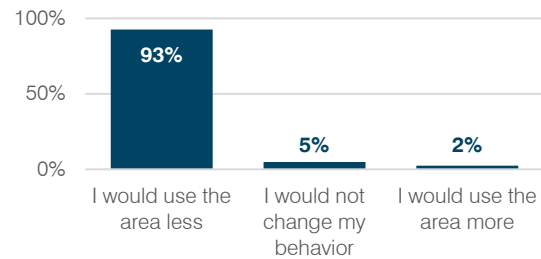
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits G4 and G5).

EXHIBIT G4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 42

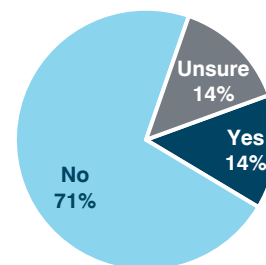
EXHIBIT G5. Impact of Removing the Dam on Recreation Habits



N = 41

Of the 43 respondents who had property closest to the Foote Dam, 16 percent (seven) said their business had some reliance on the dam and/or the impoundment. Of those, 71 percent said they did not believe their business could continue without the dam and its impoundment. Additionally, 14 percent were unsure if their business could continue, and 14 percent thought that their business could continue without the dam (Exhibit G6).

EXHIBIT G6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment



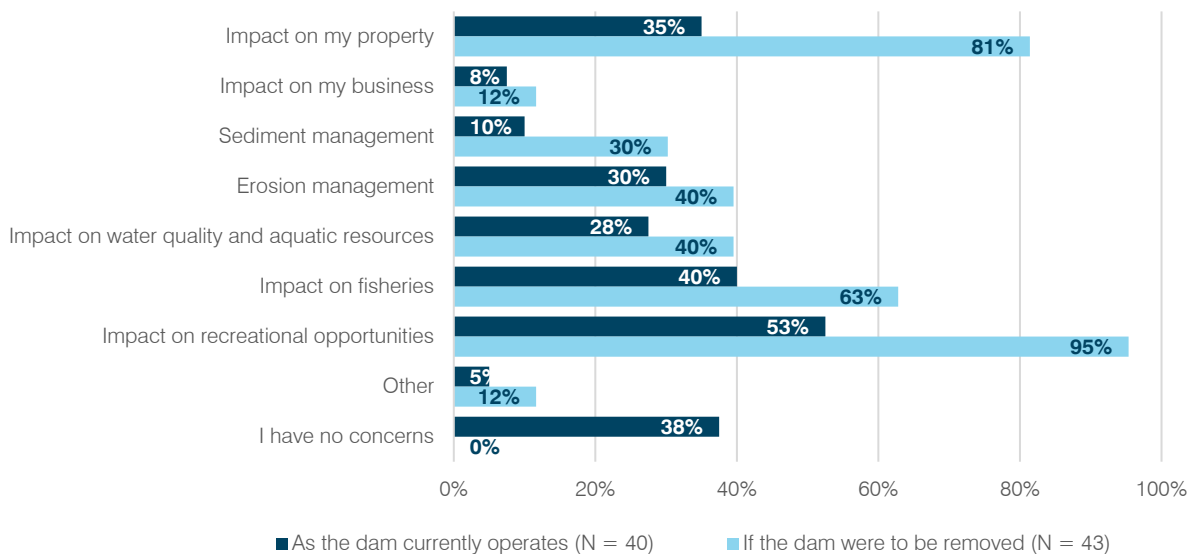
N = 7

Note: Percentages may not total 100 percent due to rounding.

Concerns and Benefits

More than half (53 percent) of property owners reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey. That percentage increased to 95 percent if the dam were removed. Similarly, 40 percent reported having concerns about the dam’s impact on fisheries as it operated at the time of the survey, and 63 percent said they would have concerns about fisheries if the dam were removed. More than one-third reported having concerns about the dam’s impact on their property as it operated at the time of the survey, and that percentage increased to 81 percent who would have concerns if the dam were removed. Additionally, 40 percent would have concerns about erosion management and the impact on water quality and aquatic resources if the dam were removed (Exhibit G7).

EXHIBIT G7. Concerns About Dam Operation at Time of Survey and If It Were Removed

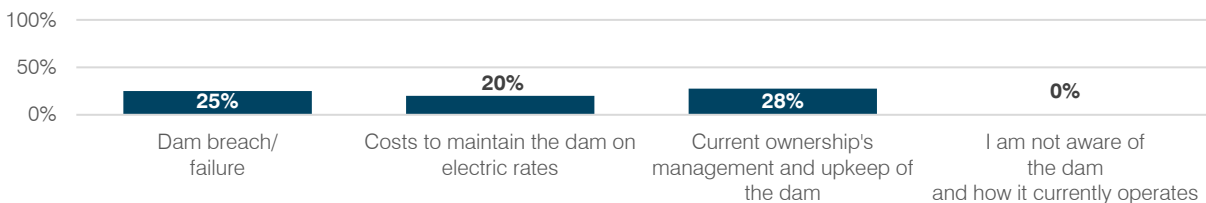


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. More than one-quarter of property owners said they were concerned about current ownership’s management and upkeep of the dam, and one-quarter were concerned about a dam breach or failure as the dam operated at the time of the survey (Exhibit G8).

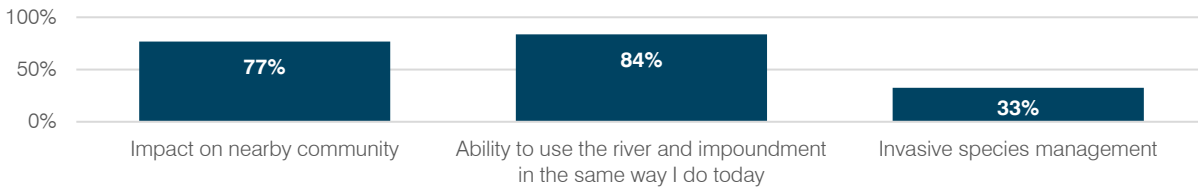
EXHIBIT G8. Concerns About Dam Operation at Time of Survey



N = 40

Property owners also had concerns specific only to dam removal. If the dam were to be removed, 84 percent are concerned about their ability to use the river and impoundment in the same way they do currently, and 77 percent are concerned about impact on the nearby community (Exhibit G9).

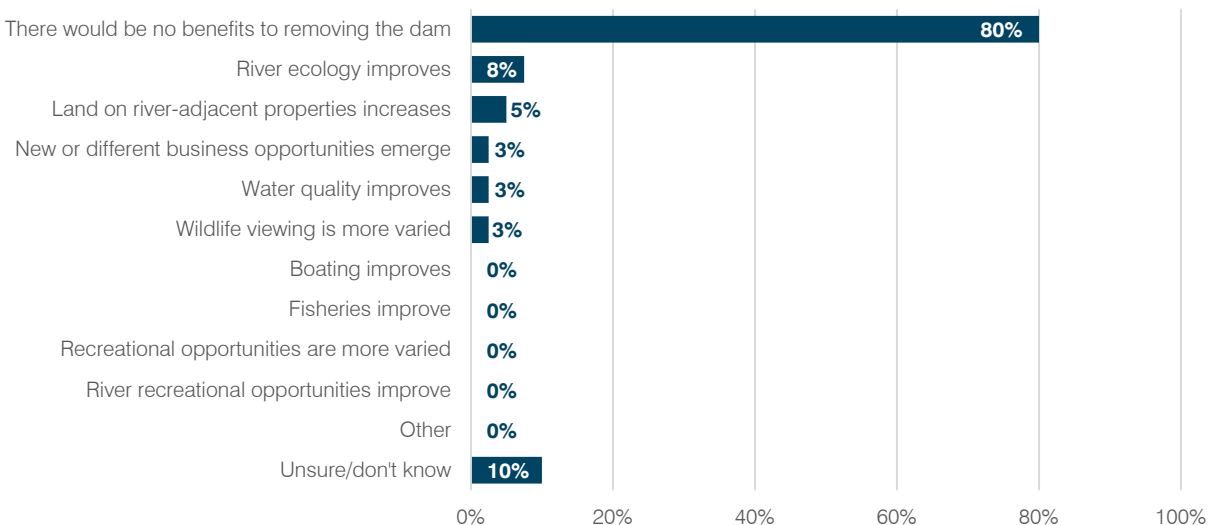
EXHIBIT G9. Concerns If the Dam Were Removed



N = 43

While most property owners (80 percent) said there would be no benefits to removing the dam, a small percentage said river ecology and water quality would improve, land on river-adjacent properties would increase, new or different business opportunities would emerge, and wildlife viewing would be more varied (Exhibit G10).

EXHIBIT G10. Benefits to Removing the Dam



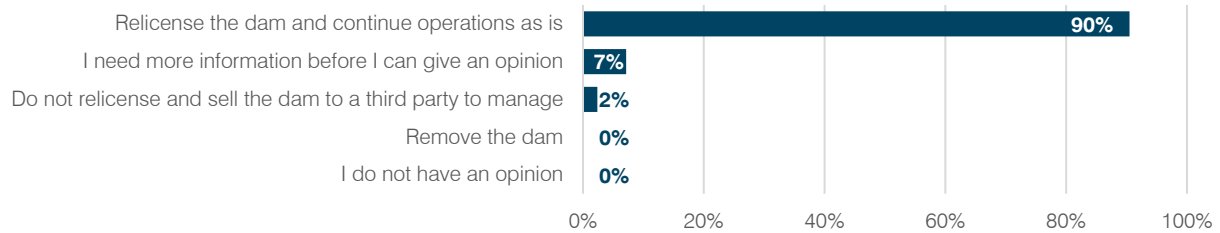
N = 40

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Foote Dam (90 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit G11).

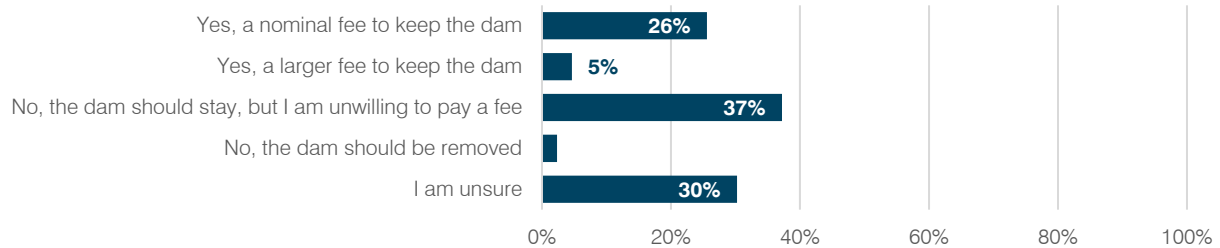
EXHIBIT G11. What Respondents Felt Consumers Should Do With the Dam



N = 42
 Note: Percentages may not total 100 percent due to rounding.

While only 2 percent of property owners said the dam should be sold to a third party, 26 percent said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, 37 percent said that the dam should stay but that they would be unwilling to pay a fee (Exhibit G12).

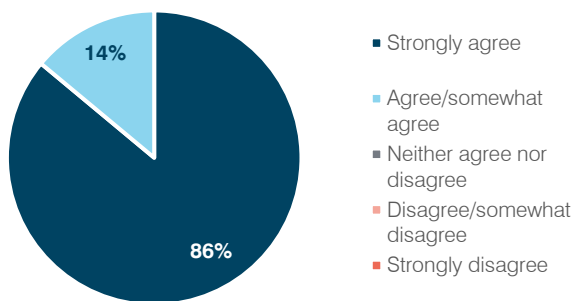
EXHIBIT G12. Respondents' Willingness to Pay an Additional Annual Fee



N = 43

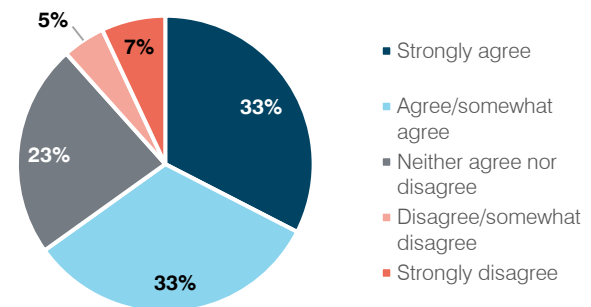
In addition to most respondents saying Consumers Energy should relicense the dam, all supported the use of hydroelectric dams on rivers to produce energy (Exhibit G13). Two-thirds of property owners strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit G14).

EXHIBIT G13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 43

EXHIBIT G14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

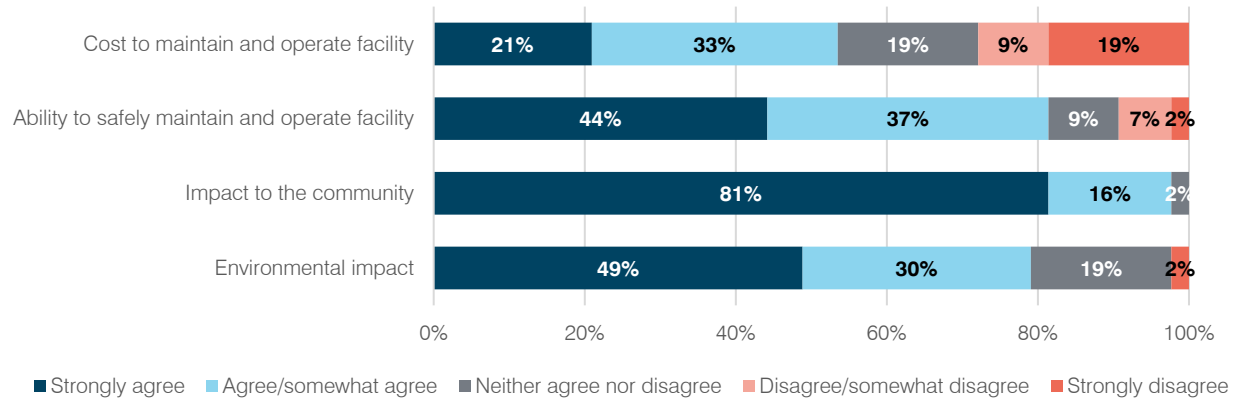


N = 43
 Note: Percentages may not total 100 percent due to rounding.

Factors for Consideration

When deciding on dam relicensing or removal, nearly all property owners (97 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider. Around 80 percent strongly agreed or agreed that the ability to safely maintain and operate the facility and the environmental impact would be important considerations. More than half agreed that the cost to maintain and operate the facility would be an important point to think about (Exhibit G15).

EXHIBIT G15. Important Factors When Deciding Between Dam Relicensing and Removal



N = 43

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

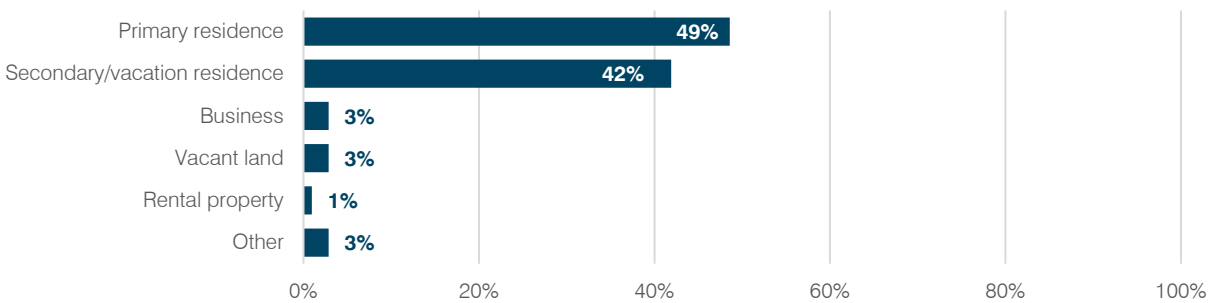
Consumers Energy received a total of 30 open-ended survey responses. While most responses reiterated information captured in other sections of the survey, some additional information was provided. Numerous respondents expressed concern about how dam removal may impact surrounding businesses, particularly the Old Orchard Campground.

Appendix H: Hardy Dam, Property Owner Survey Results

Consumers Energy surveyed 295 property owners nearest to the Hardy Dam and received responses from 110 property owners for a response rate of 37 percent.⁴ Of those 110 property owners, 39 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, and 35 percent strongly disagreed or disagreed that their input would matter.

Nearly half (49 percent) of the responding property owners reported mainly using the property as their primary residence, and 42 percent reported mainly using the property as their secondary or vacation residence (Exhibit H1).

EXHIBIT H1. Primary Use of Property

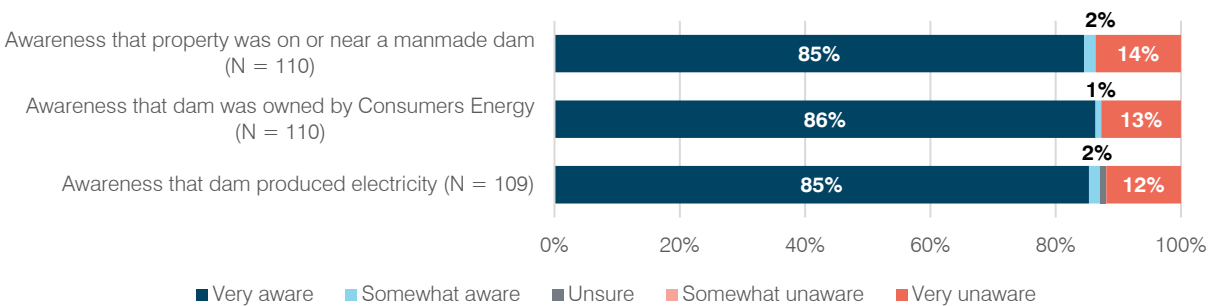


N = 105

Note: Percentages may not total 100 percent due to rounding.

As indicated in Exhibit H2, nearly all respondents with property closest to the Hardy Dam were very aware that their property was on or near a manmade dam (85 percent), that the dam was owned by Consumers Energy (86 percent), and that the dam produced electricity (85 percent).

EXHIBIT H2. Respondents' Level of Awareness Regarding Dam On or Near Property



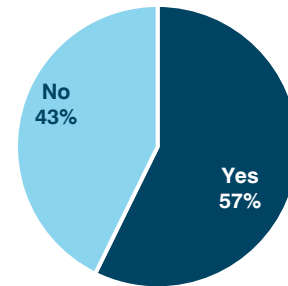
N varied by response.

Note: Percentages may not total 100 percent due to rounding.

⁴ Several property owners responding to the paper survey said they lived nearest both Croton and Hardy Dams, making it impossible to determine which dam they are actually closest to. Therefore, this response rate is likely underrepresenting Hardy Dam property owners.

Although many property owners had a high level of awareness about the dam, 43 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit H3).

EXHIBIT H3. Percentage Who Considered That Property Could Be Altered

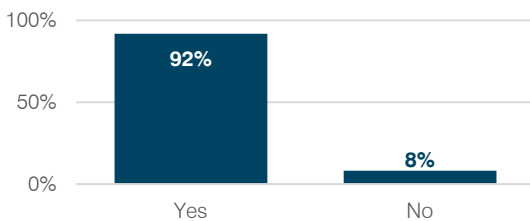


N = 110

Reliance on the Dam and Impoundment

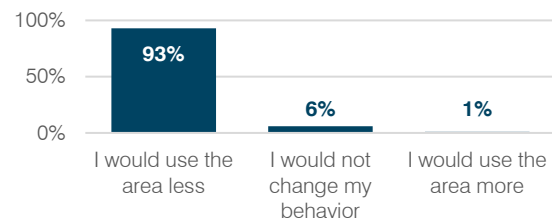
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits H4 and H5).

EXHIBIT H4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 110

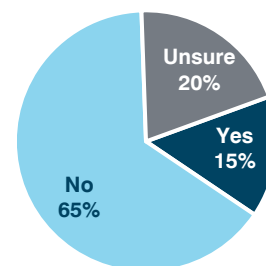
EXHIBIT H5. Impact of Removing the Dam on Recreation Habits



N = 100

Of the 110 respondents who had property closest to the Hardy Dam, 18 percent (20) said their business had some reliance on the dam and/or the impoundment. Of those, 65 percent said they did not believe their business could continue without the dam and its impoundment. Additionally, 20 percent were unsure if their business could continue, and 15 percent thought their business could continue (Exhibit H6).

EXHIBIT H6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

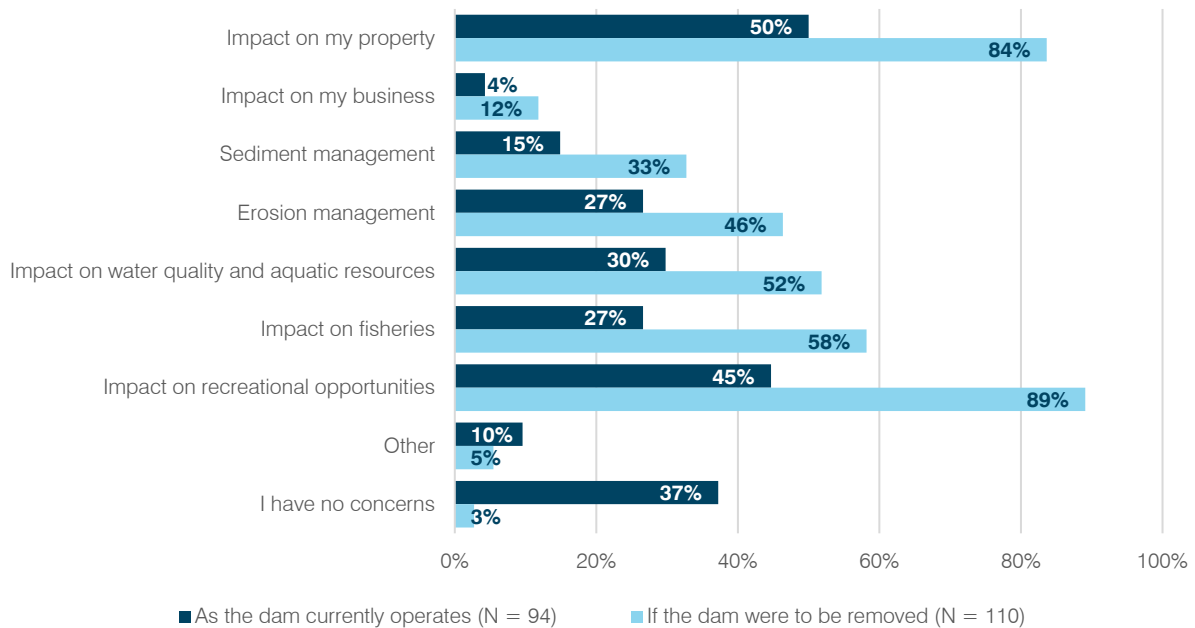


N = 20

Concerns and Benefits

Half of property owners reported having concerns about the dam’s impact on their property as it operated at the time of the survey, and 84 percent said they would have those concerns if the dam were removed. Similarly, 45 percent reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, and that percentage increased to 89 percent if the dam were removed. Around 30 percent said they would have concerns about the impact on water quality and aquatic resources, erosion management, and the impact on fisheries if the dam were removed (Exhibit H7).

EXHIBIT H7. Concerns About Dam Operation at Time of Survey and If It Were Removed

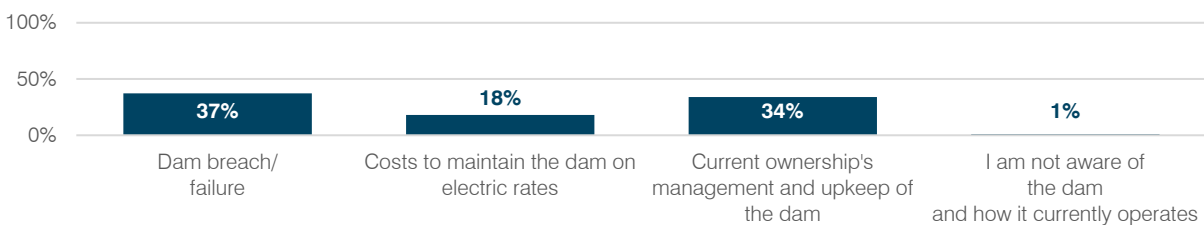


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. Nearly 40 percent of property owners said they were concerned about a dam breach or failure, and more than one-third were concerned about current ownership’s management and upkeep of the dam at the time of the survey (Exhibit H8).

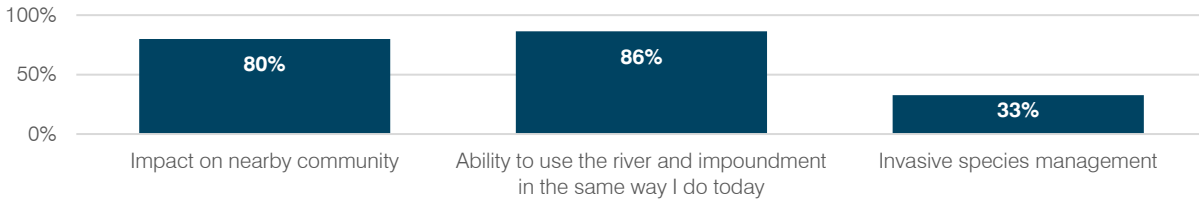
EXHIBIT H8. Concerns About Dam Operation at Time of Survey



N = 94

Property owners also had concerns specific only to dam removal. If the dam were removed, 86 percent said they would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 80 percent said they would be concerned about the impact of the dam's removal on the nearby community (Exhibit H9).

EXHIBIT H9. Concerns If the Dam Were Removed

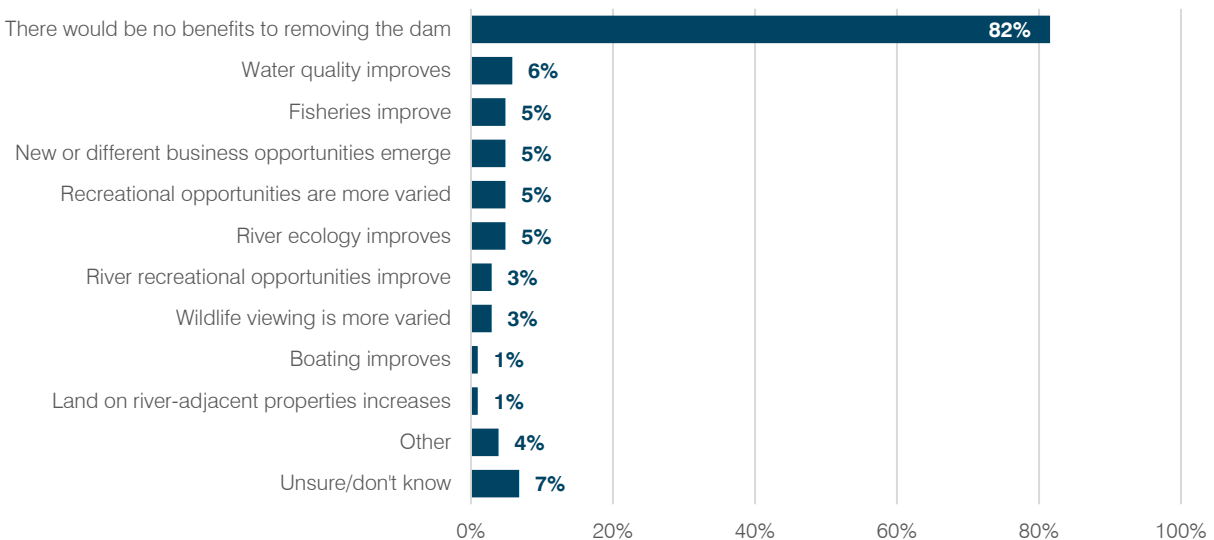


N = 110

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While most property owners (82 percent) said there would be no benefits to removing the dam, a small percentage identified a variety of potential benefits to fisheries, recreation, water quality, business, and more (Exhibit H10).

EXHIBIT H10. Benefits to Removing the Dam



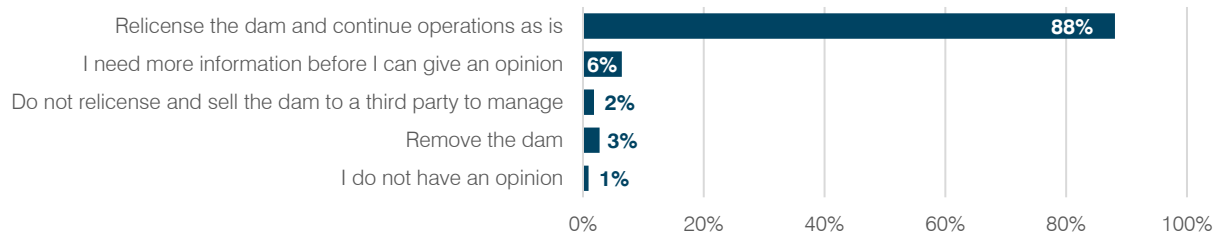
N = 103

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Hardy Dam (88 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit H11).

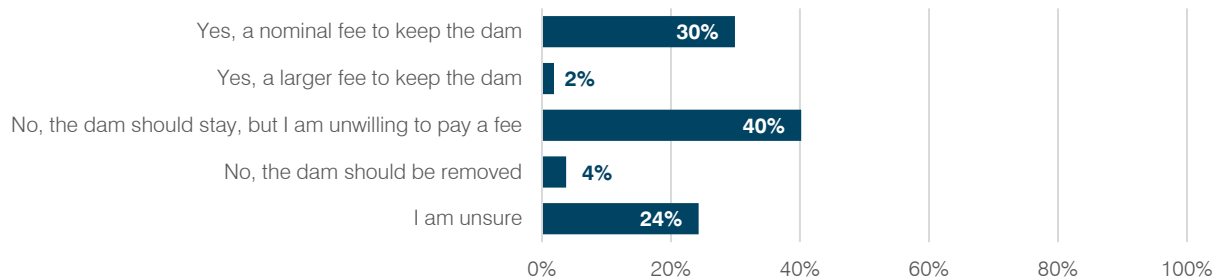
EXHIBIT H11. What Respondents Felt Consumers Should Do With the Dam



N = 109

While only 2 percent of property owners said the dam should be sold to a third party, 30 percent said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, 40 percent said that the dam should stay but that they would be unwilling to pay a fee (Exhibit H12).

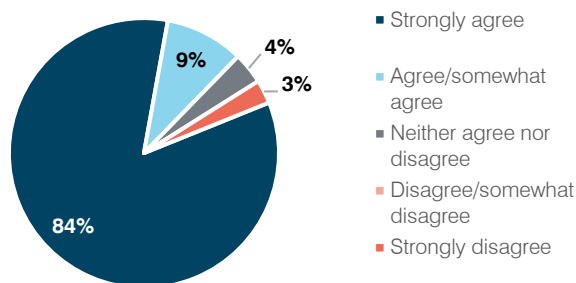
EXHIBIT H12. Respondents' Willingness to Pay an Additional Annual Fee



N = 107

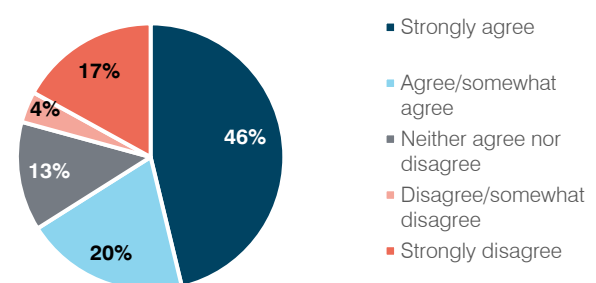
In addition to most respondents saying Consumers Energy should relicense the dam, nearly all supported the use of hydroelectric dams on rivers to produce energy (Exhibit H13). Two-thirds of property owners strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit H14).

EXHIBIT H13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 106

EXHIBIT H14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

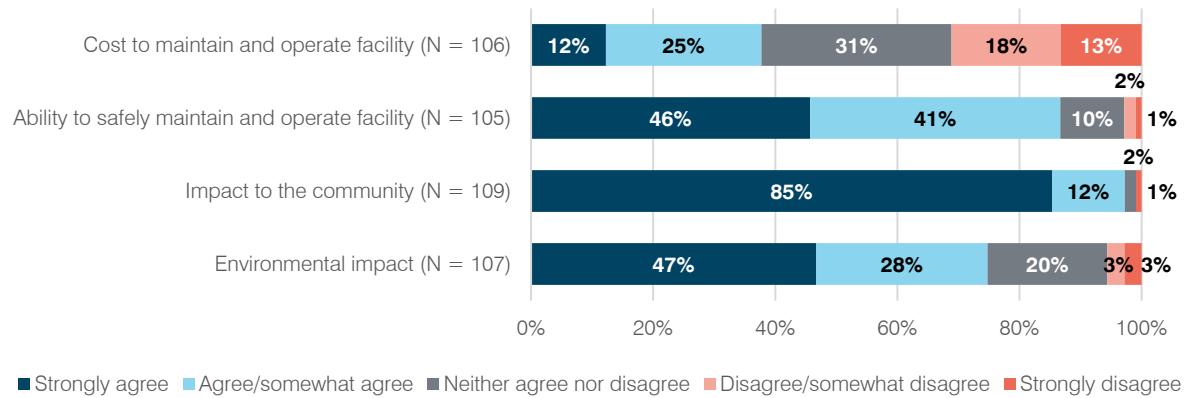


N = 106

Factors for Consideration

When deciding on dam relicensing or removal, nearly all property owners (97 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider (Exhibit H15). Additionally, 87 percent strongly agreed or agreed that the ability to safely maintain and operate the facility would be an important consideration, and three-quarters expressed agreement that environmental impact would be important to consider. Fewer (37 percent) strongly agreed or agreed that the cost to maintain and operate the facility would be an important point of consideration.

EXHIBIT H15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.
 Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

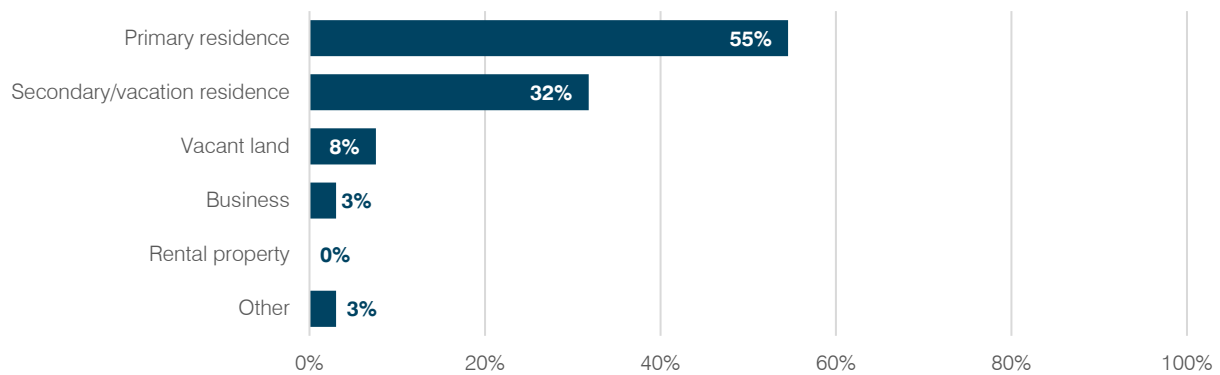
Consumers Energy received a total of 80 open-ended survey responses. While most responses reiterated information captured in other sections of the survey, some additional information was provided. Numerous respondents mentioned the Dragon Trail project and expressed concerns related to how the trail and its associated economic impacts might be affected if the Hardy Dam were removed. Respondents also talked about the important role that Hardy Dam Road serves in the community, both as a bridge and well-traveled roadway.

Appendix I: Hodenpyl Dam, Property Owner Survey Results

Consumers Energy surveyed 192 property owners nearest to the Hodenpyl Dam and received responses from 73 property owners for a response rate of 38 percent. Of those 73 property owners, nearly half (48 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, while only 15 percent strongly disagreed or disagreed that their input would matter.

More than half (55 percent) of the responding property owners reported mainly using the property as their primary residence, and 32 percent reported mainly using the property as their secondary or vacation residence (Exhibit I1).

EXHIBIT I1. Primary Use of Property

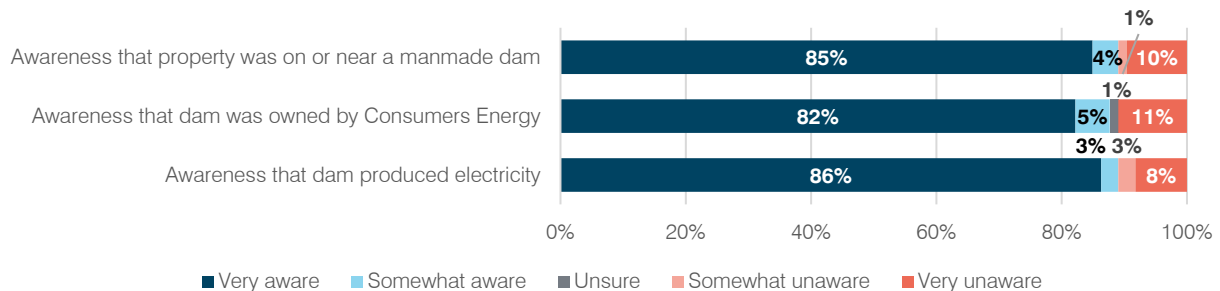


N = 66

Note: Percentages may not total 100 percent due to rounding.

As indicated in Exhibit I2, most respondents with property closest to the Hodenpyl Dam were very aware that their property was on or near a manmade dam (85 percent), that the dam was owned by Consumers Energy (82 percent), and that the dam produced electricity (86 percent).

EXHIBIT I2. Respondents' Level of Awareness Regarding Dam On or Near Property

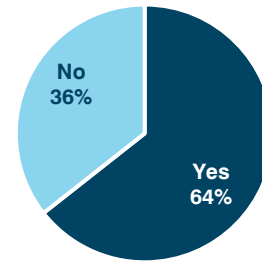


N = 73

Note: Percentages may not total 100 percent due to rounding.

Although many property owners had a high level of awareness about the dam, 36 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit I3).

EXHIBIT I3. Percentage Who Considered That Property Could Be Altered

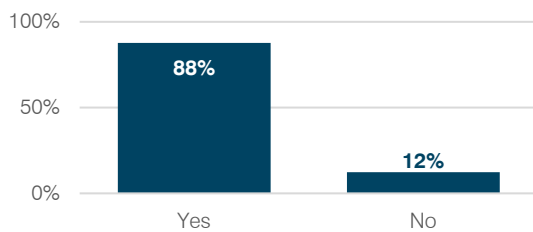


N = 73

Reliance on the Dam and Impoundment

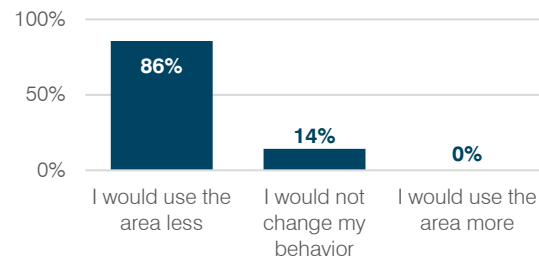
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits I4 and I5).

EXHIBIT I4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 73

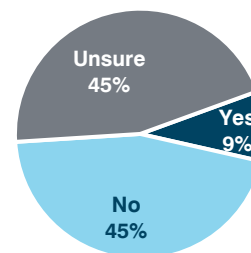
EXHIBIT I5. Impact of Removing the Dam on Recreation Habits



N = 63

Of the 73 respondents who had property closest to the Hodenpyl Dam, 15 percent (11) said their business had some reliance on the dam and/or the impoundment. Of those, 45 percent said they did not believe their business could continue without the dam and its impoundment, and 45 percent were unsure if their business could continue. Only 9 percent thought their business could continue without the dam (Exhibit I6).

EXHIBIT I6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment



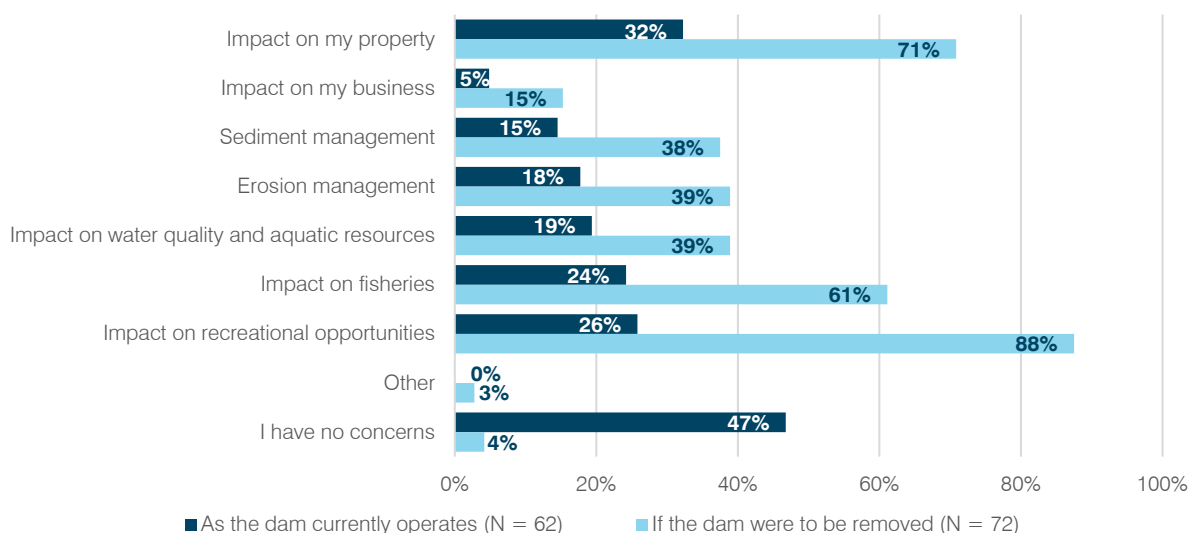
N = 11

Note: Percentages may not total 100 percent due to rounding.

Concerns and Benefits

More than a quarter (26 percent) of property owners reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey. That percentage increased to 88 percent if the dam were removed. Similarly, 32 percent said they had concerns about the dam’s impact on their property as it operated at the time of the survey, and 71 percent said they would have those concerns if the dam were removed. Additionally, nearly one-quarter were concerned about the dam’s impact on fisheries at the time of the survey, whereas 61 percent reported they would be concerned about fisheries if the dam were removed. Nearly 40 percent also said they would have concerns about the impact on water quality and aquatic resources and erosion and sediment management if the dam were removed (Exhibit I7).

EXHIBIT I7. Concerns About Dam Operation at Time of Survey and If It Were Removed

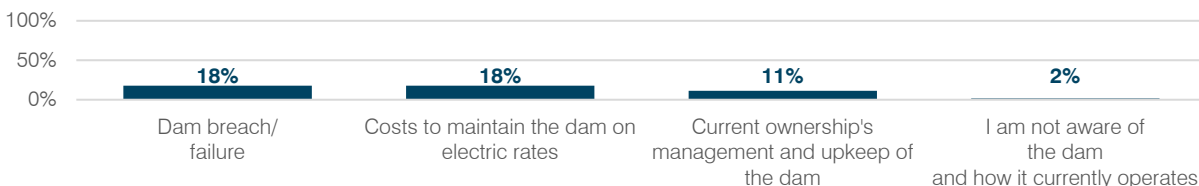


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. For example, 18 percent of property owners said they were concerned about a dam breach or failure and costs to maintain the dam on electric rates at the time of the survey (Exhibit I8).

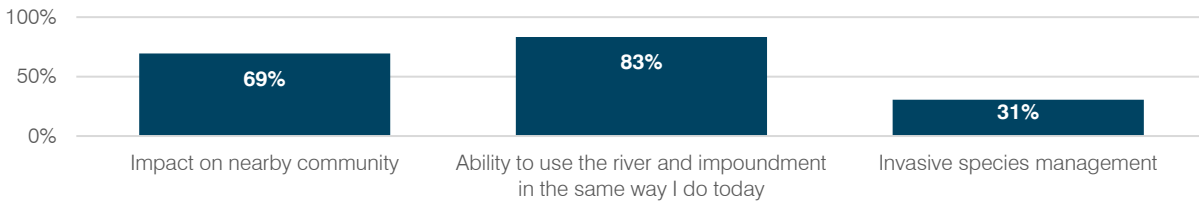
EXHIBIT I8. Concerns About Dam Operation at Time of Survey



N = 62

Property owners also had concerns specific only to dam removal. If the dam were removed, 83 percent reported they would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 69 percent reported they would be concerned about the dam removal’s impact on the nearby community (Exhibit I9).

EXHIBIT I9. Concerns If the Dam Were Removed

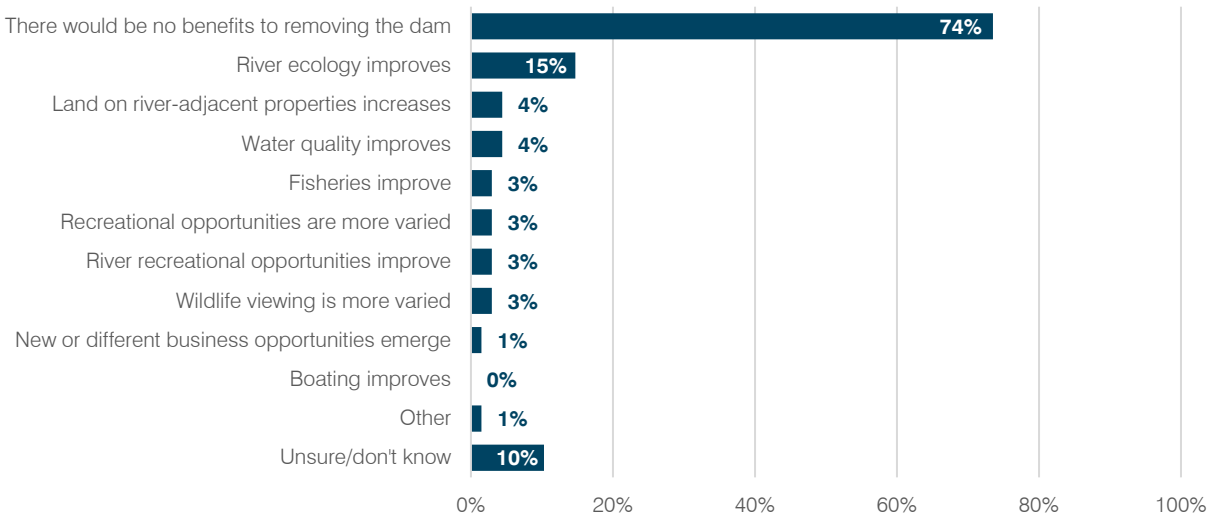


N = 72

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Nearly three-quarters of property owners said there would be no benefits to removing the dam. However, 15 percent said that river ecology would improve if the dam were removed. Additionally, a small percentage identified benefits to fisheries, recreation, water quality, business, and more with dam removal (Exhibit I10).

EXHIBIT I10. Benefits to Removing the Dam



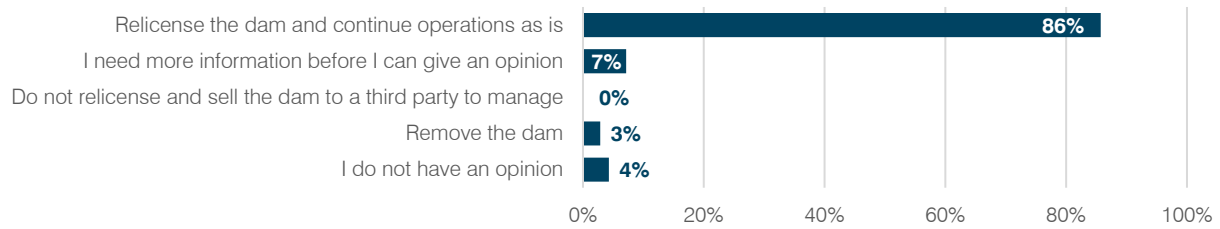
N = 68

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Hodenpyl Dam (86 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit I11).

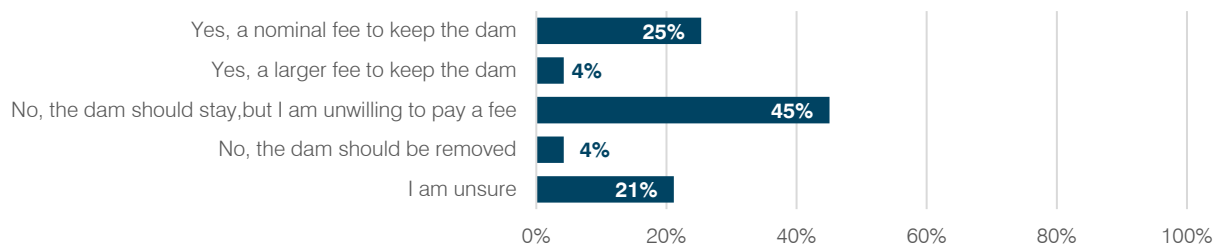
EXHIBIT I11. What Respondents Felt Consumers Should Do With the Dam



N = 70

While no property owners said the dam should be sold to a third party, one-quarter said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, 45 percent said the dam should stay but that they would be unwilling to pay a fee (Exhibit I12).

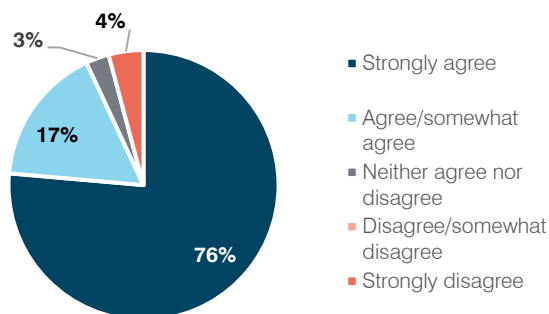
EXHIBIT I12. Respondents' Willingness to Pay an Additional Annual Fee



N = 71

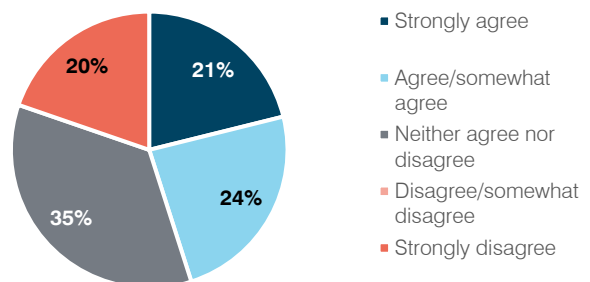
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit I13). Less than half (45 percent) strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit I14).

EXHIBIT I13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 72

EXHIBIT I14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

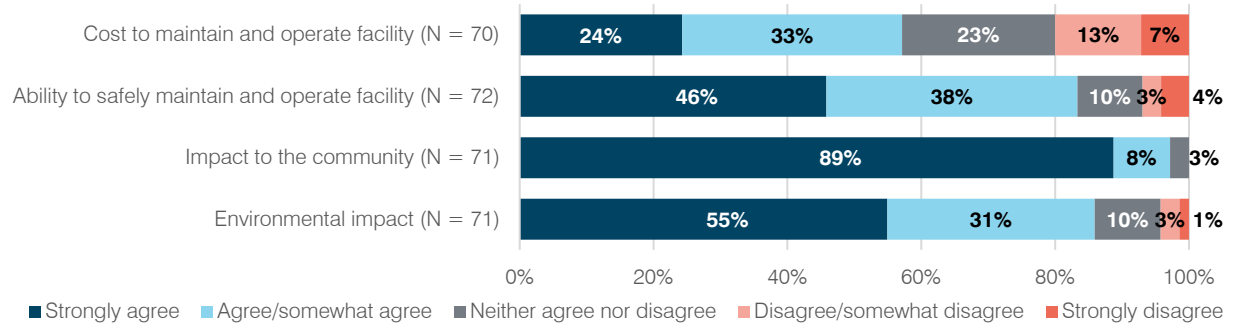


N = 71

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (97 percent) strongly agreed or agreed the impact to the community would be an important factor to consider, while around 85 percent strongly agreed or agreed that environmental impact and the ability to safely maintain and operate the facility would be important to consider. More than half also agreed that the cost to maintain and operate the facility would be an important consideration (Exhibit I15).

EXHIBIT I15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

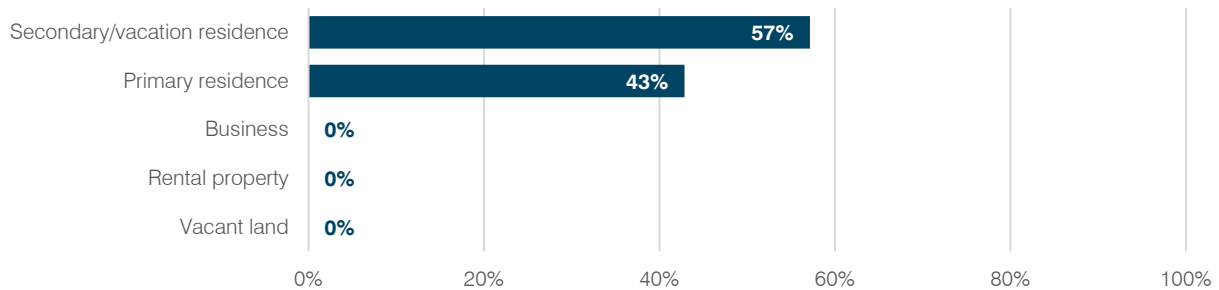
Consumers Energy received a total of 42 open-ended survey responses. Responses primarily reiterated information captured in other sections of the survey.

Appendix J: Loud Dam, Property Owner Survey Results

Surveys were mailed to one property owner nearest to the Loud Dam; however, 14 survey respondents said their property was located closest to this dam for a response rate of 1,400 percent. A response rate over 100 percent likely occurred because the web link to the survey form was shared with people beyond the original recipients. Of those 14 property owners, 21 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, while 21 percent strongly disagreed or disagreed that their input would matter.

More than half (57 percent) of the responding property owners reported primarily using the property as their secondary or vacation residence, and 43 percent reported mainly using the property as their primary residence (Exhibit J1).

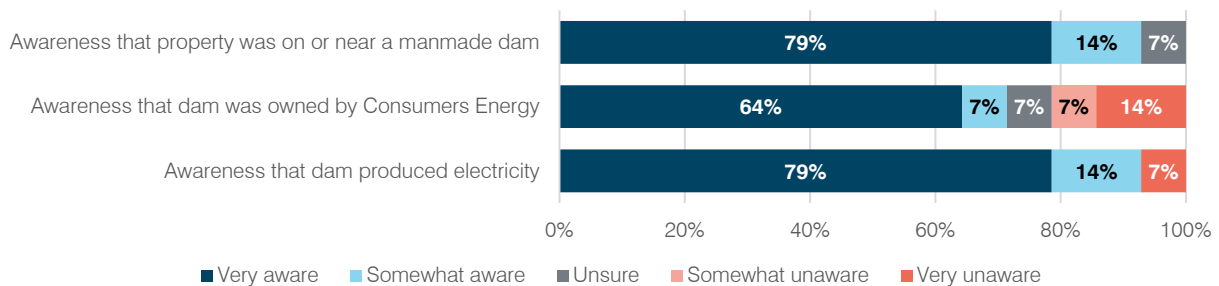
EXHIBIT J1. Primary Use of Property



N = 14

Shown in Exhibit J2, nearly 80 percent of respondents with property closest to the Loud Dam were very aware that their property was on or near a manmade dam and that the dam produced electricity. Nearly two-thirds were very aware that the dam was owned by Consumers Energy.

EXHIBIT J2. Respondents' Level of Awareness Regarding Dam On or Near Property

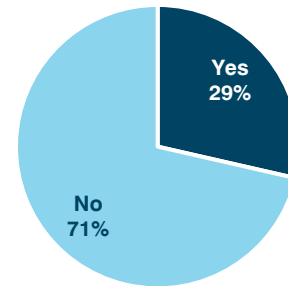


N = 14

Note: Percentages may not total 100 percent due to rounding.

Although many property owners had a high level of awareness about the dam, 71 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit J3).

EXHIBIT J3. Percentage Who Considered That Property Could Be Altered

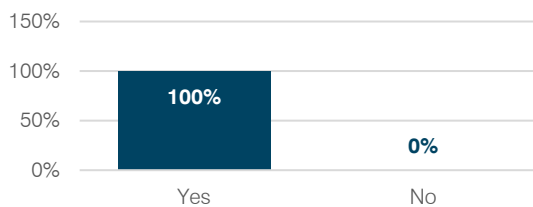


N = 14

Reliance on the Dam and Impoundment

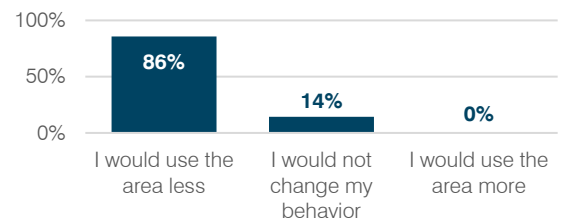
All property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities, and 86 percent said they would use the area less if the dam were removed (Exhibits J4 and J5).

EXHIBIT J4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 14

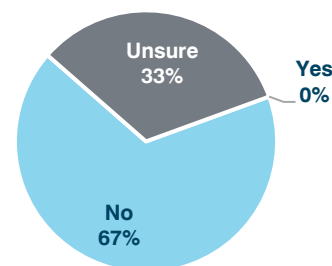
EXHIBIT J5. Impact of Removing the Dam on Recreation Habits



N = 14

Of the 14 respondents who had property closest to the Loud Dam, 21 percent (three) said their business had some reliance on the dam and/or the impoundment. Of those, 67 percent said they did not believe their business could continue without the dam and its impoundment, and 33 percent were unsure if their business could continue (Exhibit J6).

EXHIBIT J6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

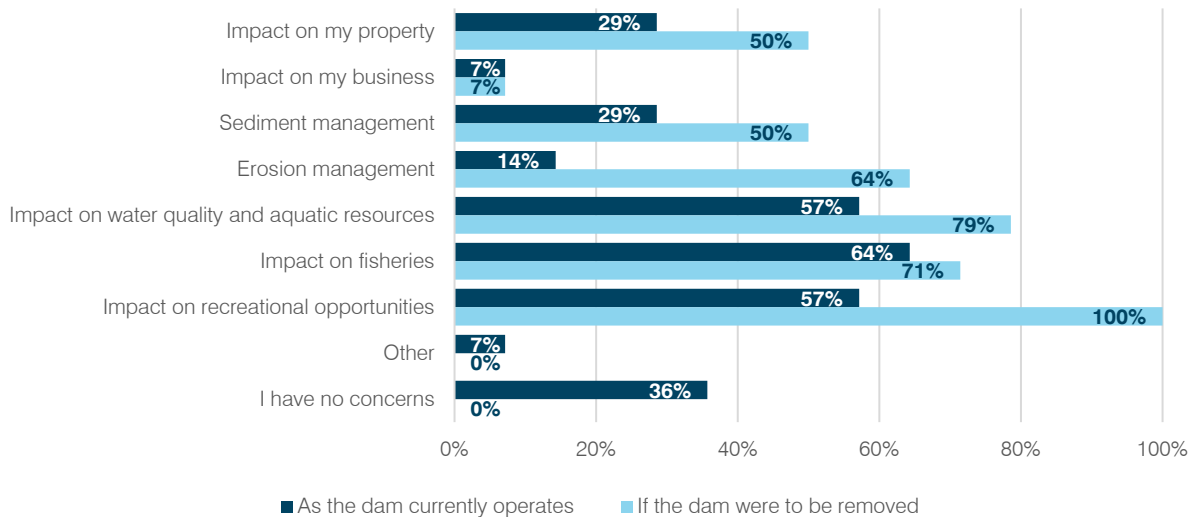


N = 3

Concerns and Benefits

More than half (57 percent) of property owners reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, and all said they would have those concerns if the dam were removed. Nearly two-thirds said they had concerns about the dam’s impact on fisheries as it operated at the time of the survey, and 71 percent said they would have concerns about fisheries if the dam were removed. Furthermore, 57 percent reported having concerns about the dam’s impact on water quality and aquatic resources. That percentage increased to 79 percent who would have these concerns if the dam were removed. Nearly 30 percent also said that they had concerns about the dam’s impact on their property and sediment management as it operated at the time of the survey. This percentage increased to 50 percent if the dam were removed. (Exhibit J7).

EXHIBIT J7. Concerns About Dam Operation at Time of Survey and If It Were Removed

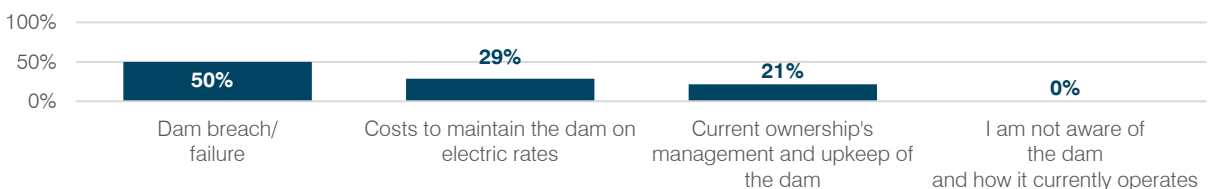


N = 14

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. Half of property owners said they were concerned about a dam breach or failure at the time of the survey and nearly 30 percent were concerned about the costs to maintain the dam on electric rates (Exhibit J8).

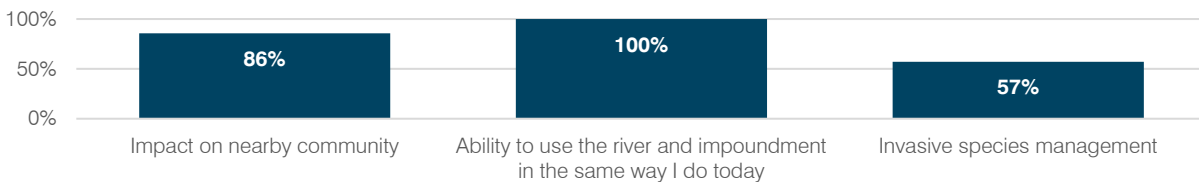
EXHIBIT J8. Concerns About Dam Operation at Time of Survey



N = 14

Property owners also had concerns specific only to dam removal. If the dam were removed, all property owners reported they would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 86 percent reported they would be concerned about the impact on the nearby community. Nearly 60 percent said they would be concerned about invasive species management (Exhibit J9).

EXHIBIT J9. Concerns If the Dam Were Removed

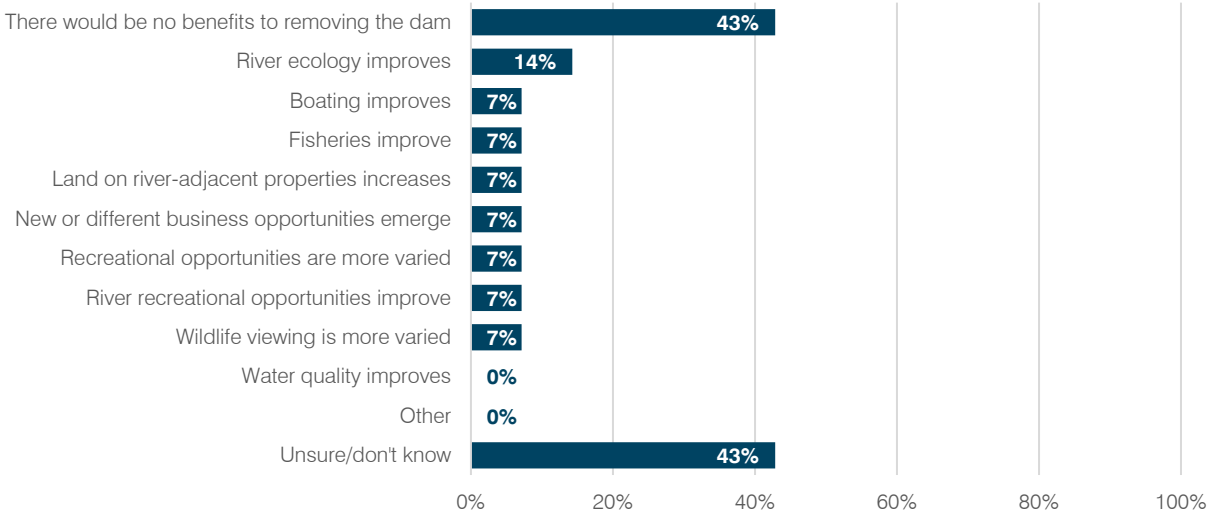


N = 14

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While 43 percent of property owners said there would be no benefits to removing the dam, a small percentage identified benefits to fisheries, recreational opportunities, river ecology, business, and more (Exhibit J10).

EXHIBIT J10. Benefits to Removing the Dam



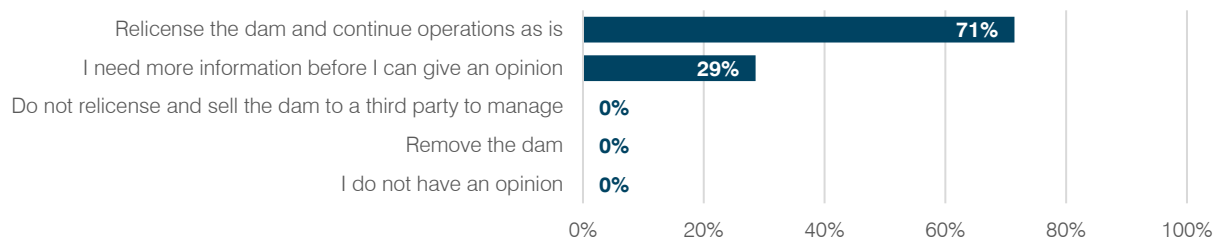
N = 14

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

More than 70 percent of property owners near the Loud Dam reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit J11).

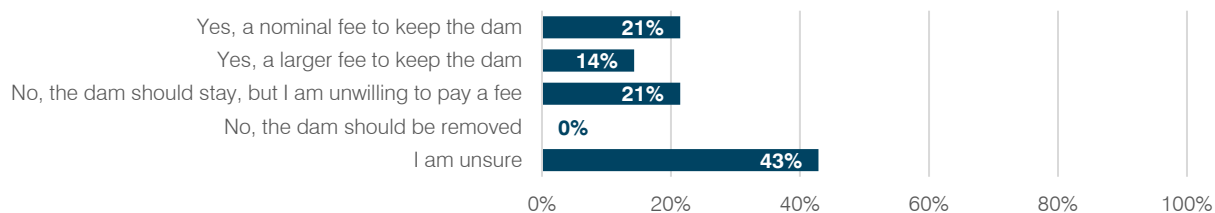
EXHIBIT J11. What Respondents Felt Consumers Should Do With the Dam?



N = 14

While none said the dam should be sold to a third party, more than one-third said they would be willing to pay some sort of fee to keep the dam if that were to happen. However, 21 percent said the dam should stay but that they would be unwilling to pay a fee (Exhibit J12).

EXHIBIT J12. Respondents' Willingness to Pay an Additional Annual Fee

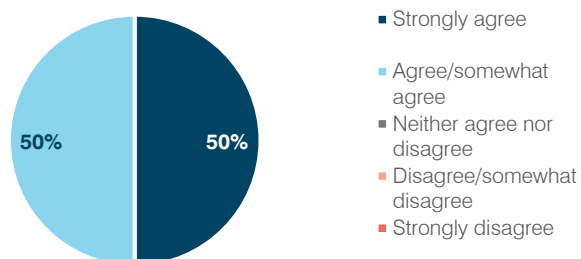


N = 14

Note: Percentages may not total 100 percent due to rounding.

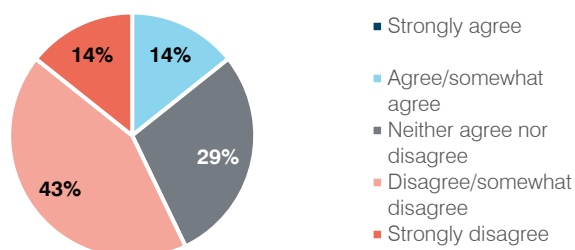
In addition to most respondents saying Consumers Energy should relicense the dam, all supported the use of hydroelectric dams on rivers to produce energy (Exhibit J13). While none said they support removal of the dam, only 14 percent agreed that they would consider selling their property if the dam were removed (Exhibit J14).

EXHIBIT J13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 14

EXHIBIT J14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

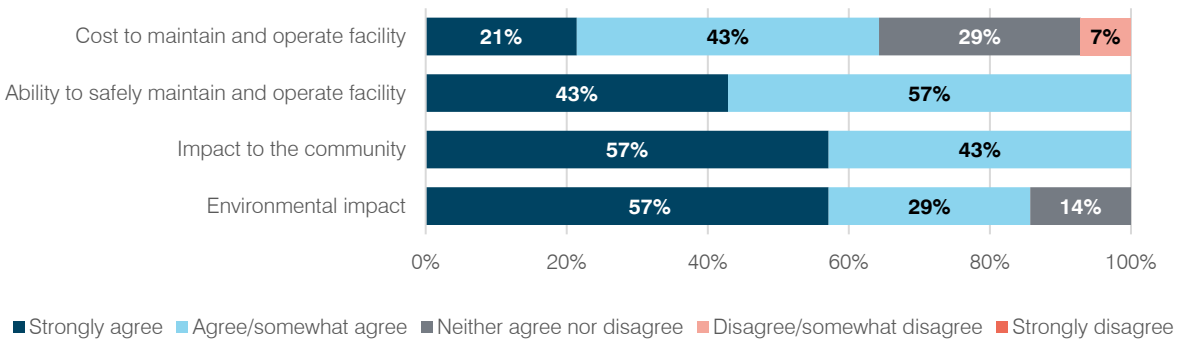


N = 14

Factors for Consideration

When deciding on dam relicensing or removal, all respondents strongly agreed or agreed that the impact to the community and the ability to safely maintain and operate the facility would be important factors to consider. Additionally, 86 percent strongly agreed or agreed that the impact to the environment would be an important factor for consideration (Exhibit J15). Nearly two-thirds also strongly agreed or agreed that the cost to safely maintain and operate the facility would be an important consideration.

EXHIBIT J15. Important Factors When Deciding Between Dam Relicensing and Removal



N = 14

Summary of Open-ended Comments

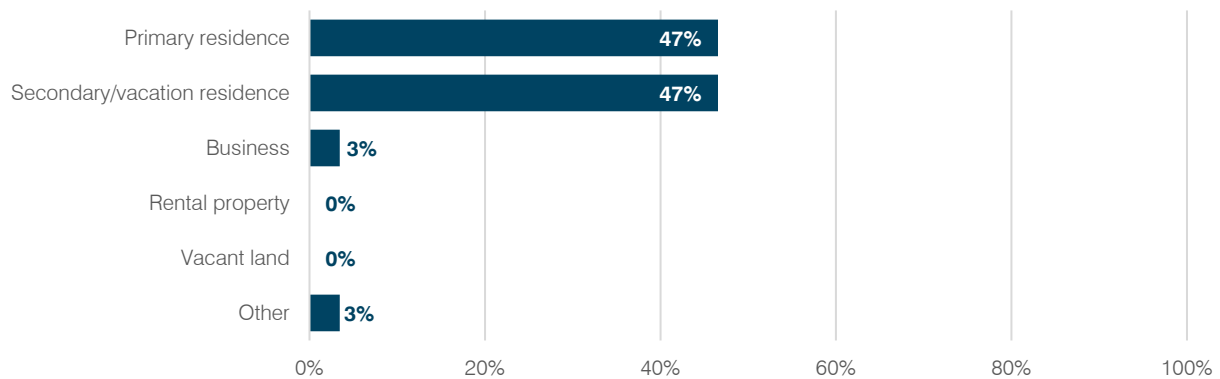
Consumers Energy received a total of nine open-ended survey responses. Responses primarily reiterated information captured in other sections of the survey.

Appendix K: Mio Dam, Property Owner Survey Results

Consumers Energy surveyed 153 property owners nearest to the Mio Dam and received responses from 60 property owners for a response rate of 39 percent. Of those 60 property owners, 58 percent strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, while 22 percent strongly disagreed or disagreed that their input would matter.

Nearly half (47 percent) of the responding property owners reported mainly using the property as their secondary or vacation residence, and 47 percent mainly use the property as their primary residence (Exhibit K1).

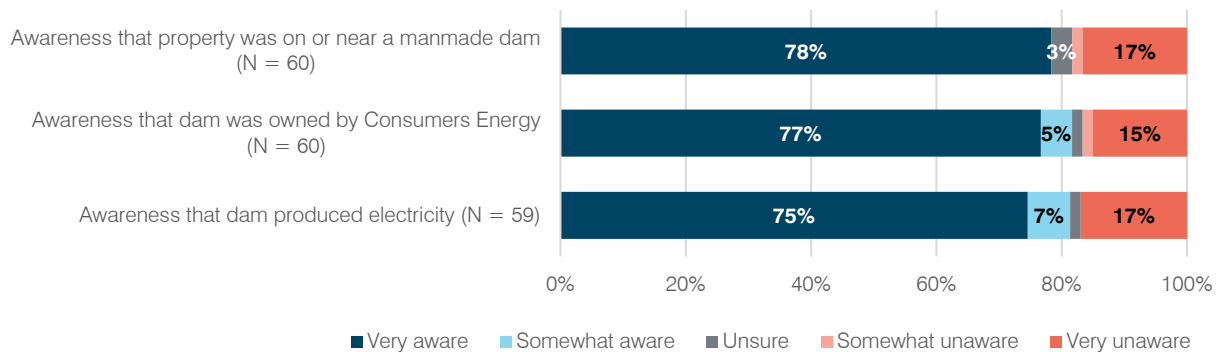
EXHIBIT K1. Primary Use of Property



N = 58

As indicated in Exhibit K2, around three-quarters of respondents with property closest to the Mio Dam were very aware that their property was on or near a manmade dam, that the dam was owned by Consumers Energy, and that the dam produced electricity.

EXHIBIT K2. Respondents' Level of Awareness Regarding Dam On or Near Property

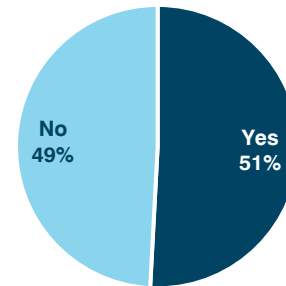


N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Although many property owners had a high level of awareness about the dam, 49 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit K3).

EXHIBIT K3. Percentage Who Considered That Property Could Be Altered

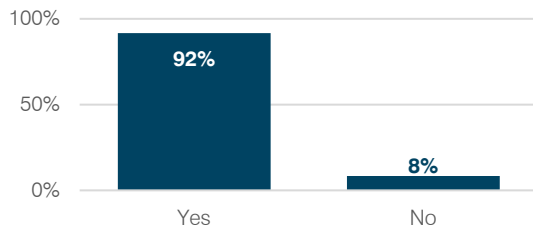


N = 59

Reliance on the Dam and Impoundment

Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits K4 and K5).

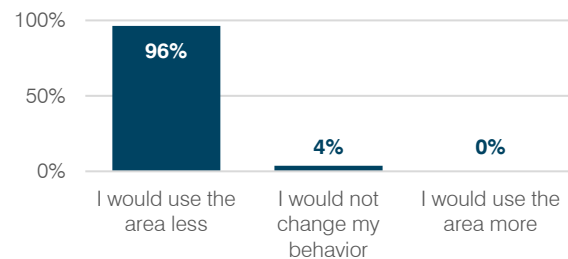
EXHIBIT K4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 60

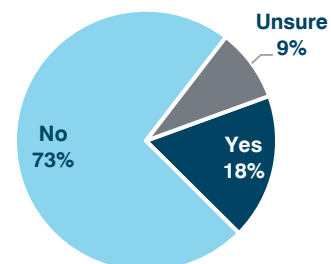
Of the 60 respondents who had property closest to the Mio Dam, 18 percent (11) said their business had some reliance on the dam and/or the impoundment. Of those, 73 percent said they did not believe their business could continue without the dam and its impoundment, while 18 percent thought their businesses could continue without the dam (Exhibit K6).

EXHIBIT K5. Impact of Removing the Dam on Recreation Habits



N = 54

EXHIBIT K6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

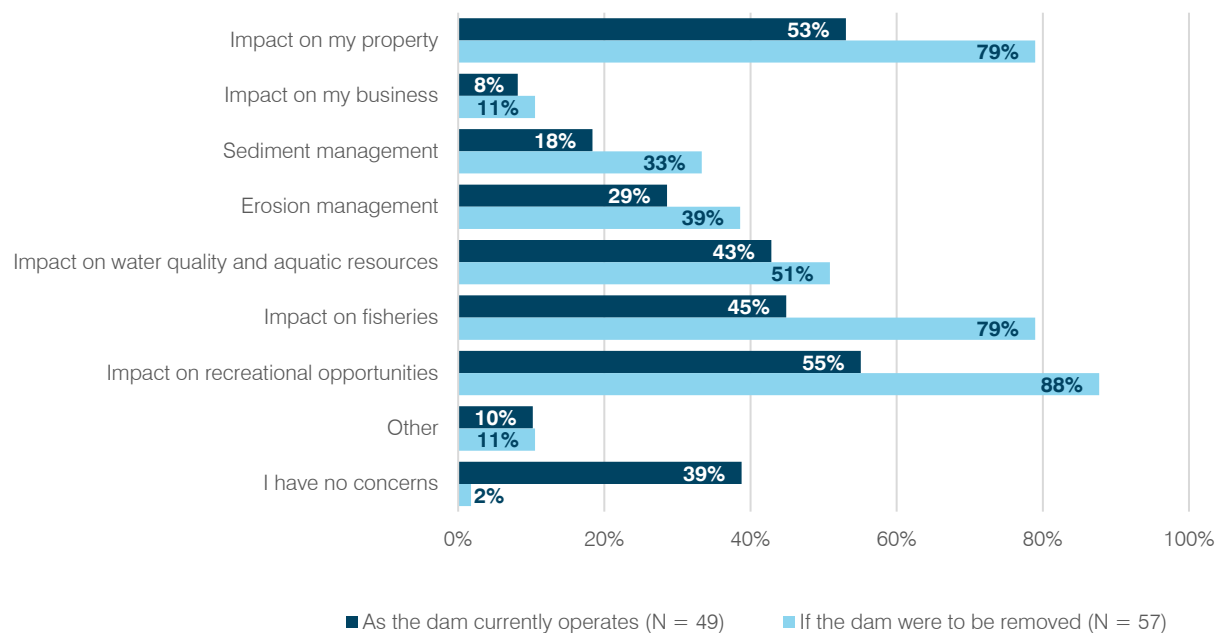


N = 11

Concerns and Benefits

More than half (55 percent) of property owners reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey. That percentage increased to 88 percent if the dam were removed. Similarly, 53 percent reported having concerns about the dam’s impact on their property as it operated at the time of the survey, and 79 percent would have those concerns if the dam were removed. More than three-quarters of respondents also said they would have concerns about the impact on fisheries if the dam were removed, compared to 45 percent who had those concerns as the dam operated at the time of the survey. More than half also would have concerns regarding water quality and aquatic resources if the dam were removed (Exhibit K7).

EXHIBIT K7. Concerns About Dam Operation at Time of Survey and If It Were Removed

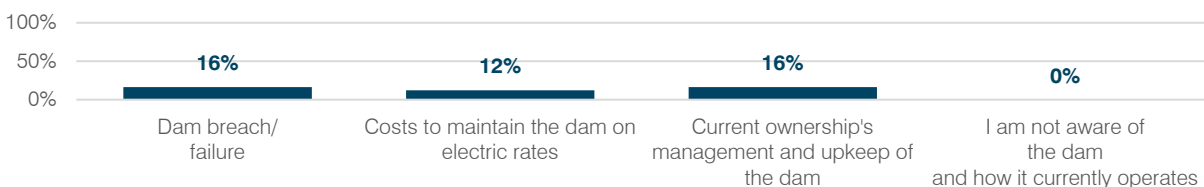


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, a small percentage of property owners had a few concerns specific to the dam at the time of the survey only (Exhibit K8).

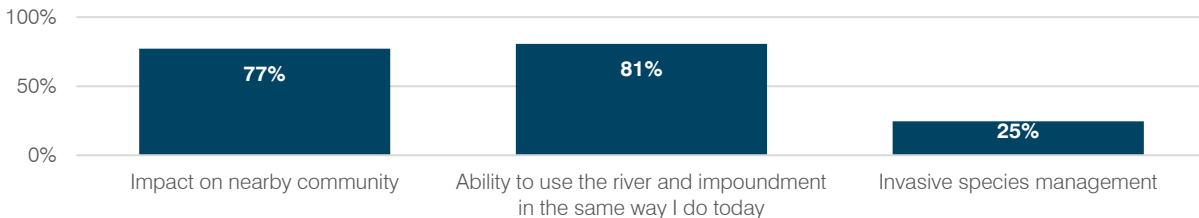
EXHIBIT K8. Concerns About Dam Operation at Time of Survey



N = 49

Property owners also had concerns specific only to dam removal. If the dam were removed, 81 percent of property owners would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 77 percent would have concerns about the dam removal’s impact on the nearby community (Exhibit K9).

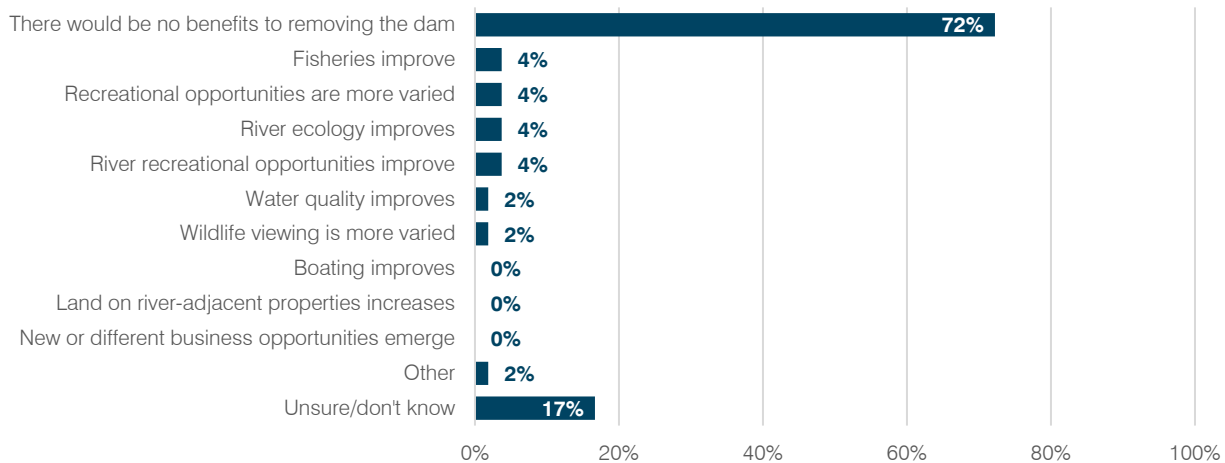
EXHIBIT K9. Concerns If the Dam Were Removed



N = 57

While nearly three-quarters of property owners said there would be no benefits to removing the dam, a small percentage said that water quality, river recreational opportunities, fisheries, and river ecology would improve and that recreational and wildlife viewing opportunities would be more varied (Exhibit K10).

EXHIBIT K10. Benefits to Removing the Dam



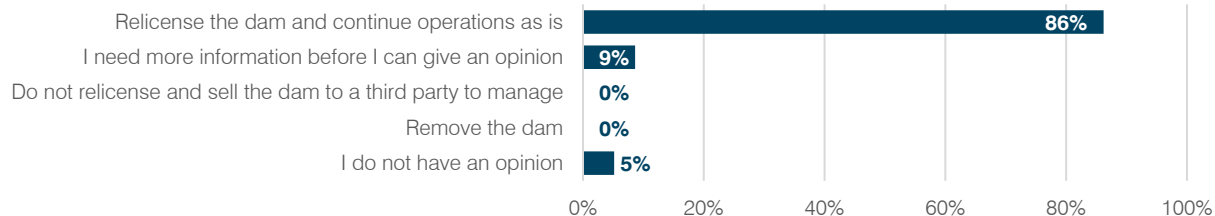
N = 54

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Mio Dam (86 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit K11).

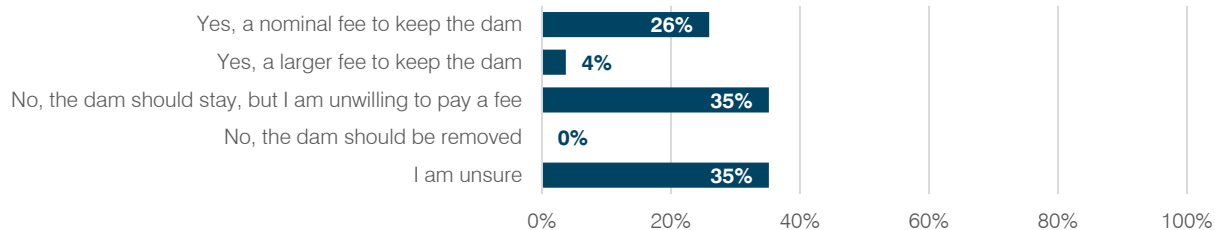
EXHIBIT K11. What Respondents Felt Consumers Should Do With the Dam



N = 58

While none said the dam should be sold to a third party, over one-quarter said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, more than one-third said that the dam should stay but that they would be unwilling to pay a fee (Exhibit K12).

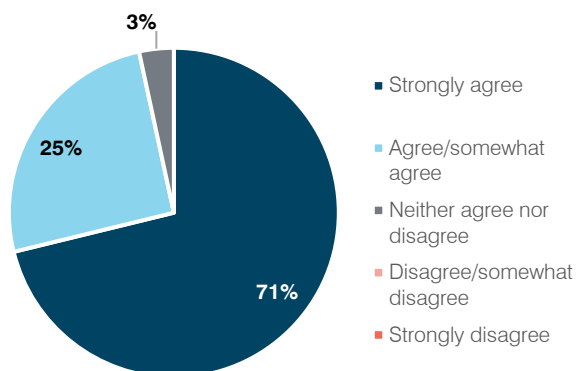
EXHIBIT K12. Respondents' Willingness to Pay an Additional Annual Fee



N = 54

In addition to most respondents saying Consumers Energy should relicense the dam, the majority (96 percent) supported the use of hydroelectric dams on rivers to produce energy (Exhibit K13). More than half (56 percent) said they would consider selling their property if the dam were removed (Exhibit K14).

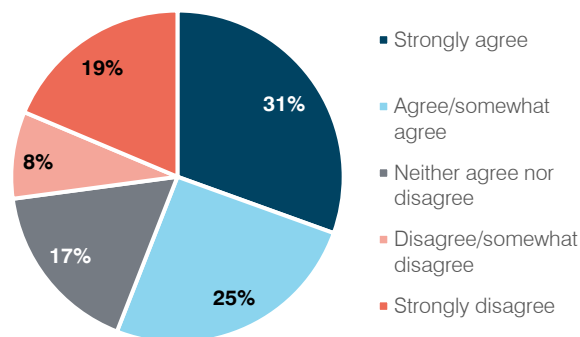
EXHIBIT K13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 59

Note: Percentages may not total 100 percent due to rounding.

EXHIBIT K14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

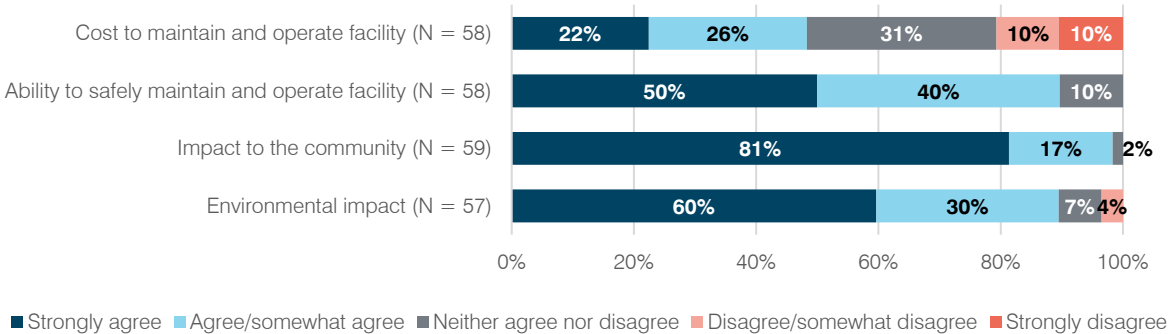


N = 59

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (98 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider. Additionally, 90 percent strongly agreed or agreed that environmental impact and ability to safely maintain and operate the facility would be important considerations. Fewer (48 percent) strongly agreed or agreed that the cost to maintain and operate the facility would be an important factor to think about (Exhibit K15).

EXHIBIT K15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.
 Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

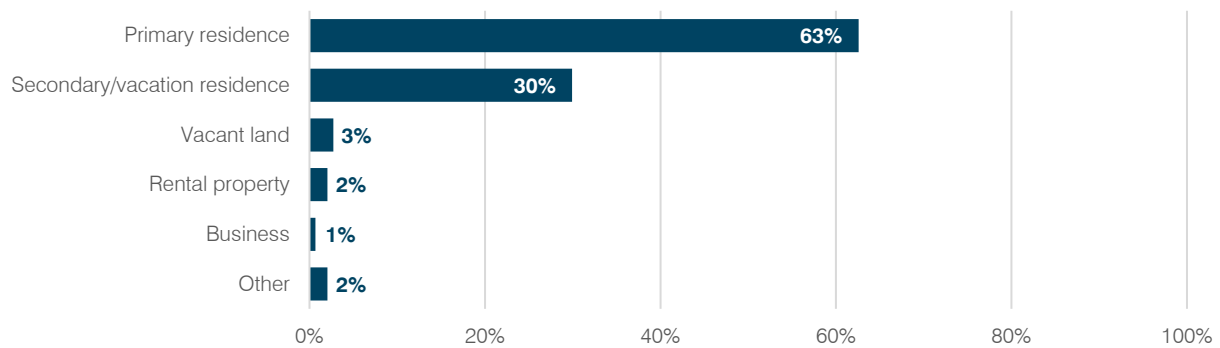
Consumers Energy received a total of 39 open-ended survey responses. While most responses reiterated information captured in other sections of the survey, some additional information was provided. A few respondents mentioned the Au Sable River Canoe Marathon and inquired about how the removal of the Mio Dam would impact the event.

Appendix L: Rogers Dam, Property Owner Survey Results

Consumers Energy surveyed 338 property owners nearest to the Rogers Dam, and 154 responded, for a response rate of 46 percent. Of those 154 property owners, less than half (48 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, while 25 percent strongly disagreed or disagreed that their input would matter.

Nearly two-thirds (63 percent) of the responding property owners reported mainly using the property as their primary residence, and 30 percent reported mainly using the property as their secondary or vacation residence (Exhibit L1).

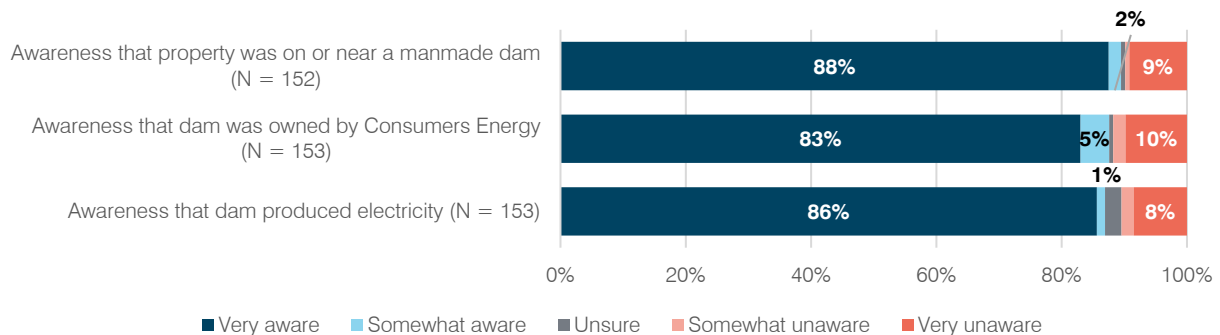
EXHIBIT L1. Primary Use of Property



N = 147
 Note: Percentages may not total 100 percent due to rounding.

As indicated in Exhibit L2, most respondents with property closest to the Rogers Dam were very aware that their property was on or near a manmade dam (88 percent), that the dam was owned by Consumers Energy (83 percent), and that the dam produced electricity (86 percent).

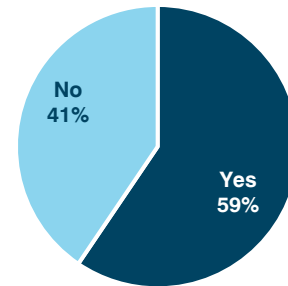
EXHIBIT L2. Respondents' Level of Awareness Regarding Dam On or Near Property



N varied by response.

Although many property owners had a high level of awareness about the dam, 41 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit L3).

EXHIBIT L3. Percentage Who Considered That Property Could Be Altered

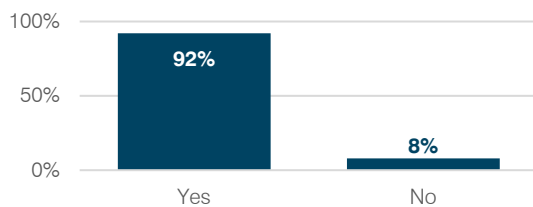


N = 153

Reliance on the Dam and Impoundment

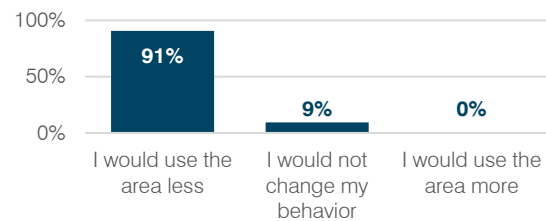
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits L4 and L5).

EXHIBIT L4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 152

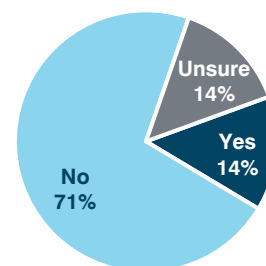
EXHIBIT L5. Impact of Removing the Dam on Recreation Habits



N = 139

Of the 154 respondents who had property closest to the Rogers Dam, 14 percent (21) said their business had some reliance on the dam and/or the impoundment. Of those, 71 percent said they did not believe their business could continue without the dam, while only 14 percent thought their business could continue without the dam (Exhibit L6).

EXHIBIT L6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment

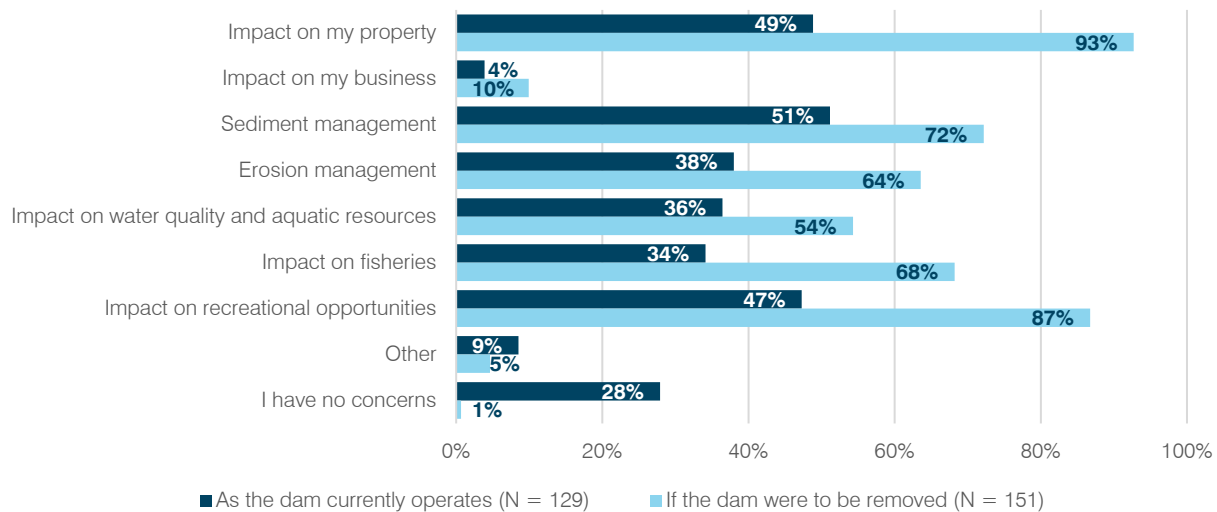


N = 21

Concerns and Benefits

Nearly half (49 percent) of property owners reported having concerns about the dam’s impact on their property as it operated at the time of the survey. That percentage increased to 93 percent if the dam were removed. Similarly, 47 percent said they had concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, which increased to 87 percent if the dam were removed. Additionally, 51 percent of respondents reported having concerns about sediment management at the time of the survey, compared to 72 percent if the dam were removed. More than two-thirds said they would have concerns about fisheries if the dam were removed, and just under two-thirds would have concerns about erosion management. More than half also said they would have concerns about the impact on water quality and aquatic resources if the dam were removed (Exhibit L7).

EXHIBIT L7. Concerns About Dam Operation at Time of Survey and If It Were Removed

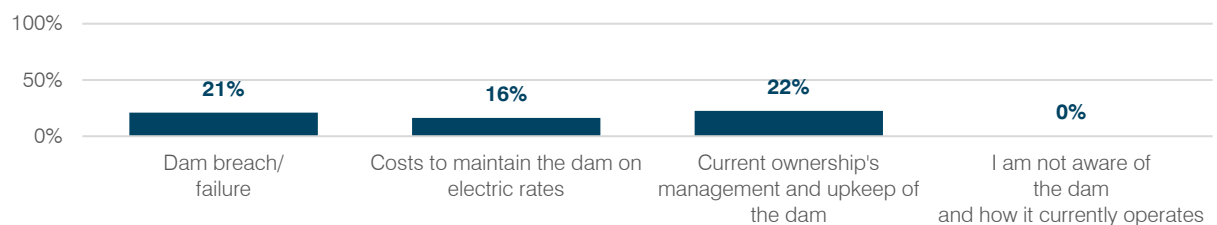


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. Nearly one-quarter reported having concerns about the current ownership’s management and upkeep of the dam (Exhibit L8).

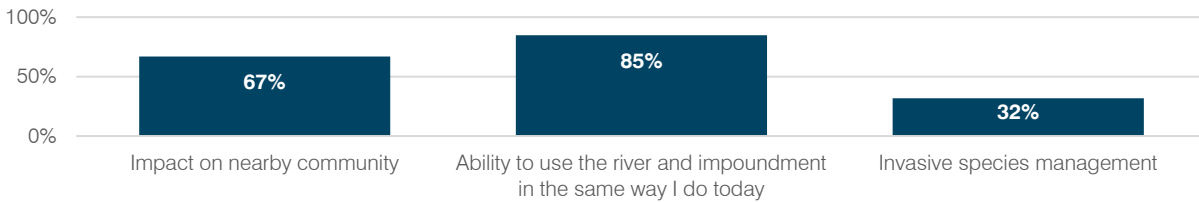
EXHIBIT L8. Concerns About Dam Operation at Time of Survey



N = 129

Property owners also had concerns specific only to dam removal. If the dam were removed, 85 percent of respondents reported they would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 67 percent reported they would be concerned about the impact on the nearby community (Exhibit L9).

EXHIBIT L9. Concerns If the Dam Were Removed

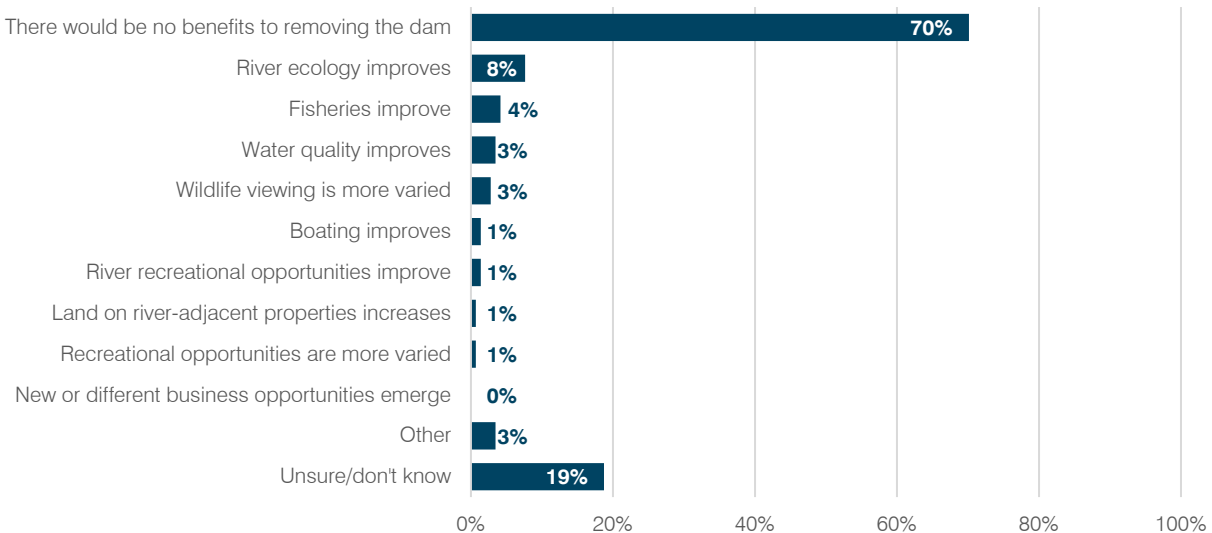


N = 151

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Most property owners (70 percent) said there would be no benefits to removing the dam. However, a small percentage said that river ecology, fisheries, water quality, boating, and river recreational opportunities would improve; that land on river-adjacent properties would increase; and that recreational and wildlife viewing opportunities would be more varied if the dam were removed (Exhibit L10).

EXHIBIT L10. Benefits to Removing the Dam



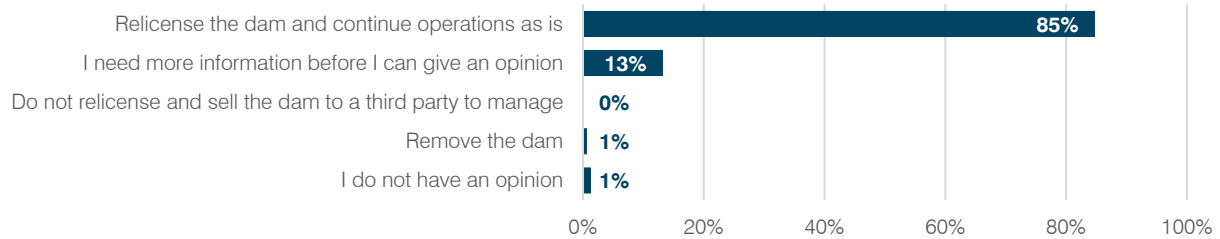
N = 144

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Rogers Dam (85 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit L11).

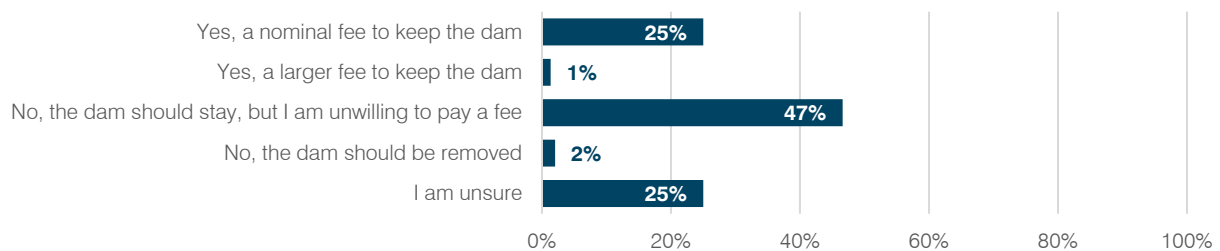
EXHIBIT L11. What Respondents Felt Consumers Should Do With the Dam



N = 151

While only a few said the dam should be sold to a third party, one-quarter said they would be willing to pay a nominal fee to keep the dam if that were to happen. However, nearly half said that the dam should stay but that they would be unwilling to pay a fee (Exhibit L12).

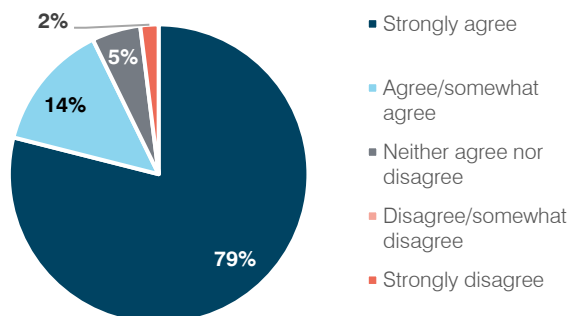
EXHIBIT L12. Respondents' Willingness to Pay an Additional Annual Fee



N = 148

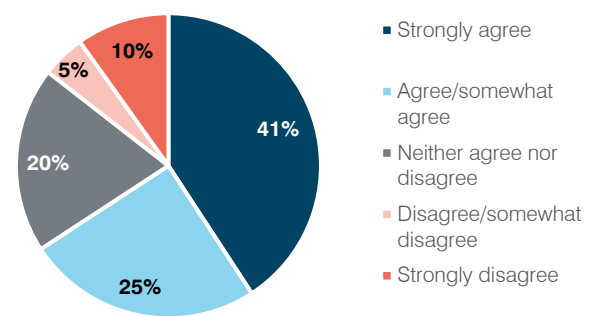
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit L13). Two-thirds strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit L14).

EXHIBIT L13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 152

EXHIBIT L14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed



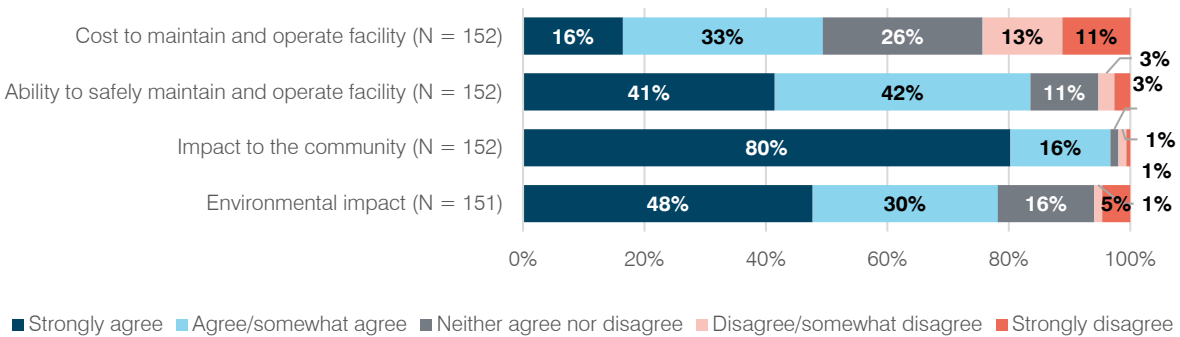
N = 152

Note: Items may not total 100 percent due to rounding.

Factors for Consideration

When deciding on dam relicensing or removal, nearly all (96 percent) of respondents strongly agreed or agreed that the impact to the community would be an important factor to consider. Additionally, 83 percent said the ability to safely maintain and operate the facility would be an important consideration, and 78 percent strongly agreed or agreed that it would be important to consider the environmental impact. Fewer (49 percent) strongly agreed or agreed that considering the cost to maintain and operate the facility would be important (Exhibit L15).

EXHIBIT L15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.
 Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

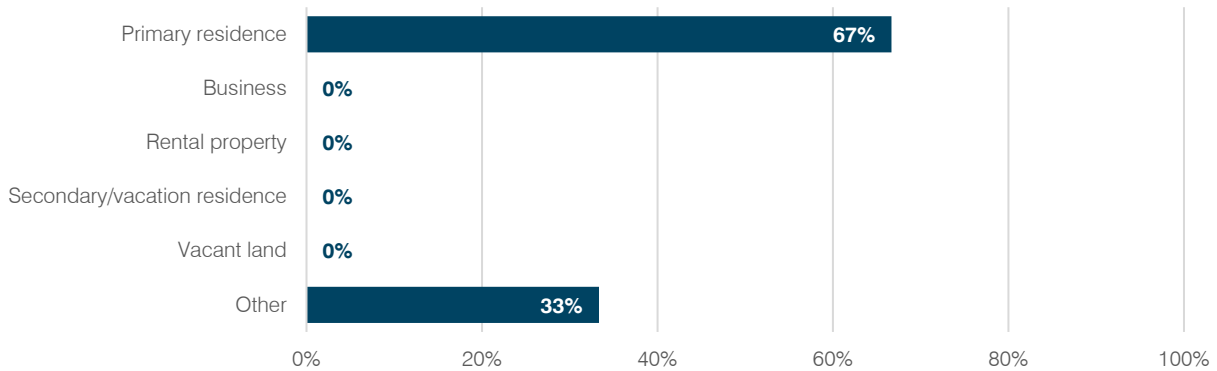
Consumers Energy received a total of 111 open-ended survey responses. While most responses reiterated information that was captured in other sections of the survey, some additional information was provided. Numerous respondents mentioned the previous removal of a nearby dam in Big Rapids that was not a Consumers Energy project. Because of the way that dam removal was handled and the resulting sediment-related problems, it appears there is ill will among property owners in the area toward the idea of removing dams in general.

Appendix M: Tippy Dam, Property Owner Survey Results

Consumers Energy surveyed 13 property owners nearest to the Tippy Dam and received responses from three property owners for a response rate of 23 percent. Of those three property owners, one agreed that they felt their input would matter in the final decision on dam relicensing, and two neither agreed nor disagreed that their input would matter.

Two-thirds of the responding property owners reported mainly using the property as their primary residence (Exhibit M1).

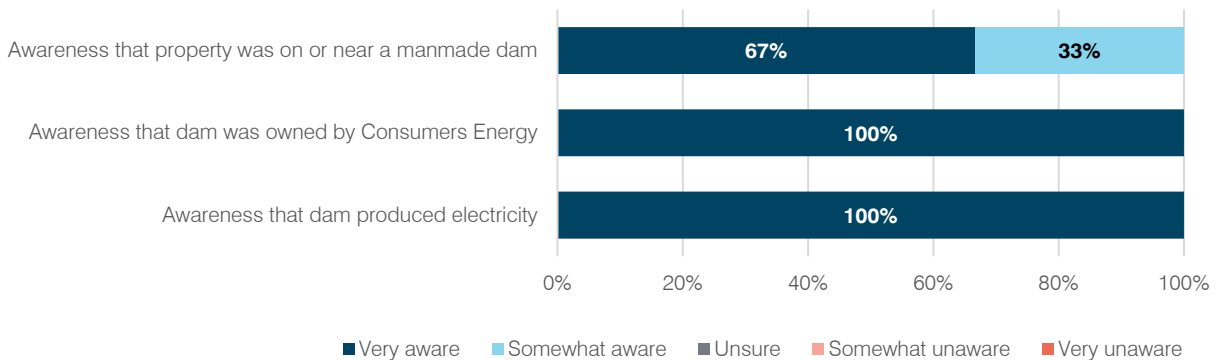
EXHIBIT M1. Primary Use of Property



N = 3

As indicated in Exhibit M2, all respondents with property closest to the Tippy Dam were very aware that the dam was owned by Consumers Energy and that the dam produced electricity.

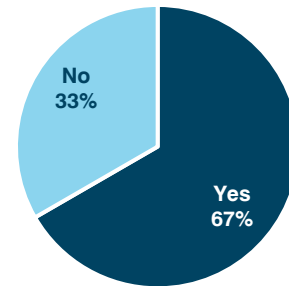
EXHIBIT M2. Respondents' Level of Awareness Regarding Dam On or Near Property



N = 3

Although most property owners had a high level of awareness about the dam, 33 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit M3).

EXHIBIT M3. Percentage Who Considered That Property Could Be Altered

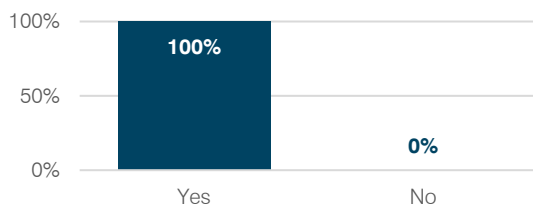


N = 3

Reliance on the Dam and Impoundment

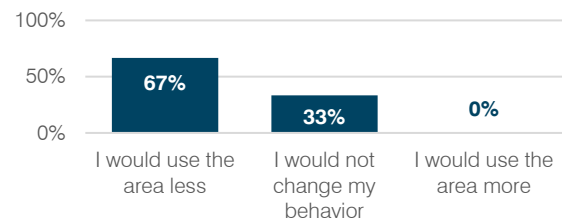
All property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities, and two of the three said they would use the area less if the dam were removed (Exhibits M4 and M5).

EXHIBIT M4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 3

EXHIBIT M5. Impact of Removing the Dam on Recreation Habits



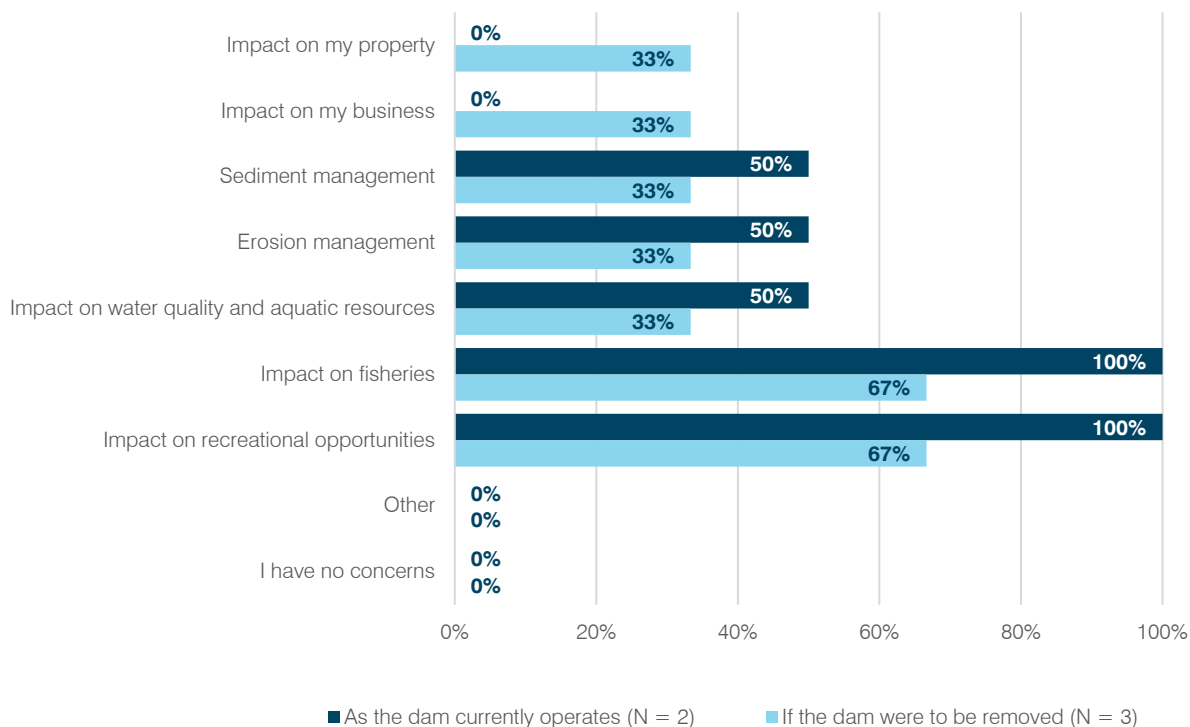
N = 3

Of the three respondents who had property closest to the Tippy Dam, none said their business had some reliance on the dam and/or the impoundment.

Concerns and Benefits

Property owners near the Tippy Dam reported the most concern about the dam’s impact on fisheries and water quality and aquatic resources at the time of the survey. They also reported they would be most concerned about those two aspects should the dam be removed (Exhibit M6).

EXHIBIT M6. Concerns About Dam Operation at Time of Survey and If It Were Removed

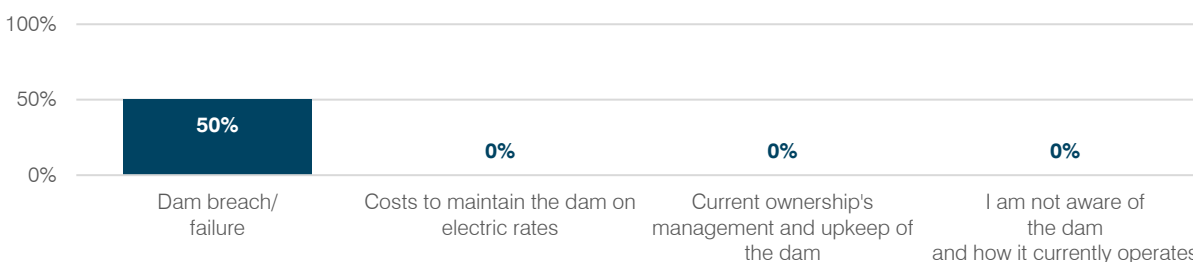


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, one of two property owners had a concern specific to the dam at the time of the survey only. This property owner said they were concerned about a dam breach or failure as it operated at the time of the survey (Exhibit M7).

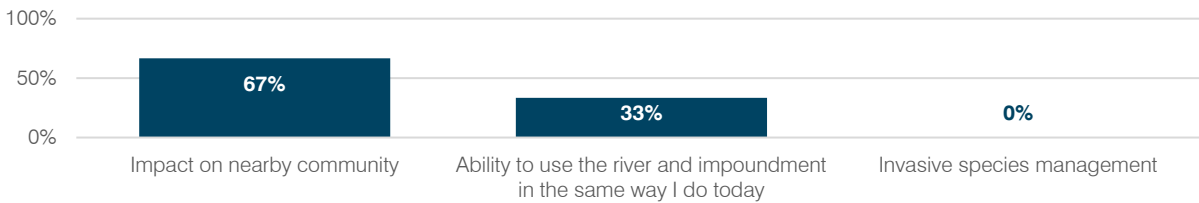
EXHIBIT M7. Concerns About Dam Operation at Time of Survey



N = 2

Property owners also had concerns specific only to dam removal. Two out of three said they would be concerned about the impact on nearby communities if the dam were removed, and one said they would be concerned about their ability to use the river and impoundment in the same way they do with the dam in place (Exhibit M8).

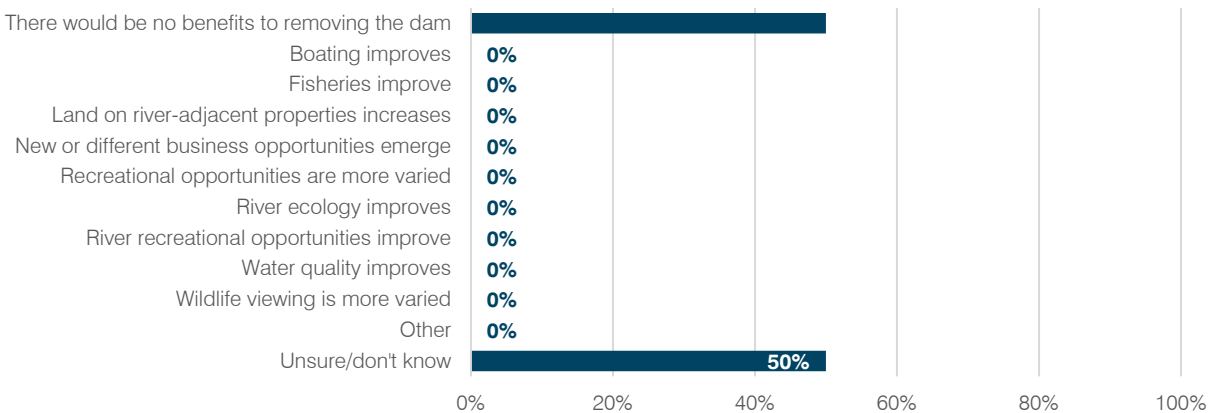
EXHIBIT M8. Concerns If the Dam Were Removed



N = 3

One property owner said there would be no benefits to removing the dam, while another was unsure or didn't know if there would be benefits (Exhibit M9).

EXHIBIT M9. Benefits to Removing the Dam

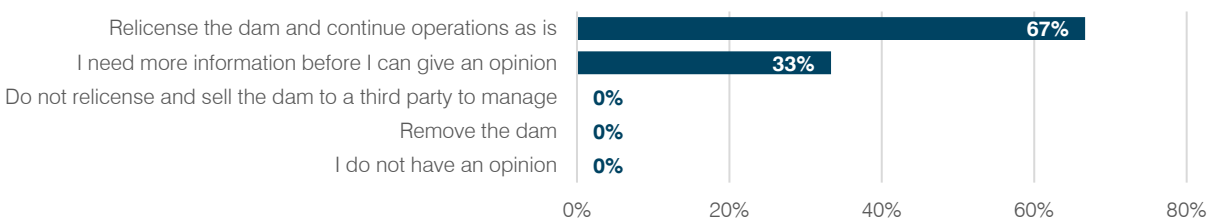


N = 2

Future of the Dam

Two of the three property owners near the Tippy Dam reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit M10).

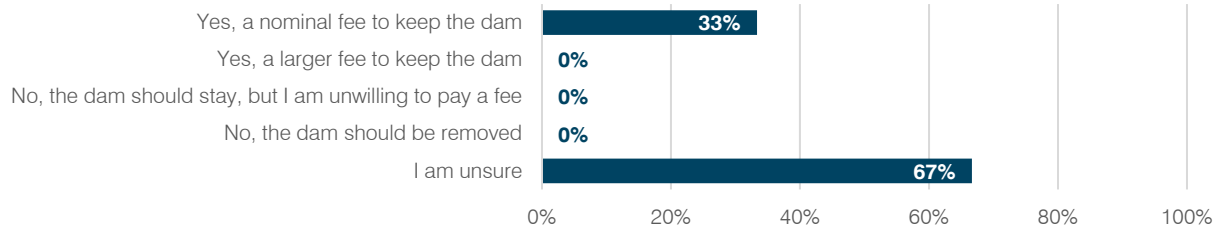
EXHIBIT M10. What Respondents Felt Consumers Should Do With the Dam



N = 3

None said the dam should be sold to a third party, and one said they would be willing to pay a nominal fee to keep the dam if that were to happen (Exhibit M11).

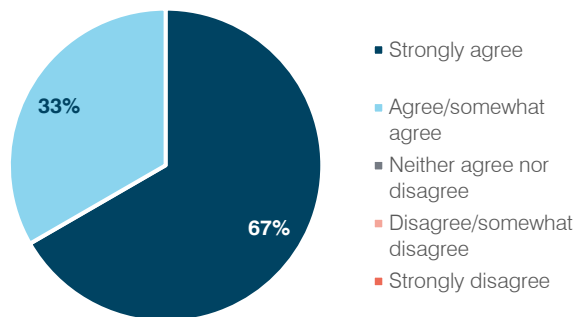
EXHIBIT M11. Respondents' Willingness to Pay an Additional Annual Fee



N = 3

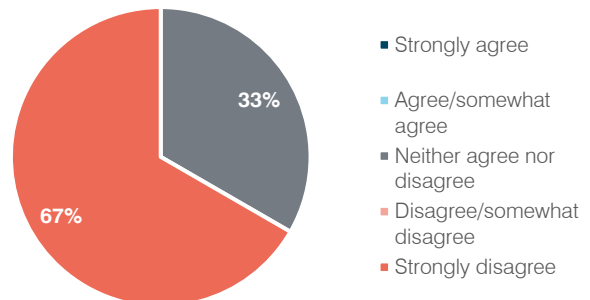
In addition to most respondents saying Consumers Energy should relicense the dam, all supported the use of hydroelectric dams on rivers to produce energy (Exhibit M12). While none said they support removal of the dam, none strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit M13).

EXHIBIT M12. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 3

EXHIBIT M13. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed

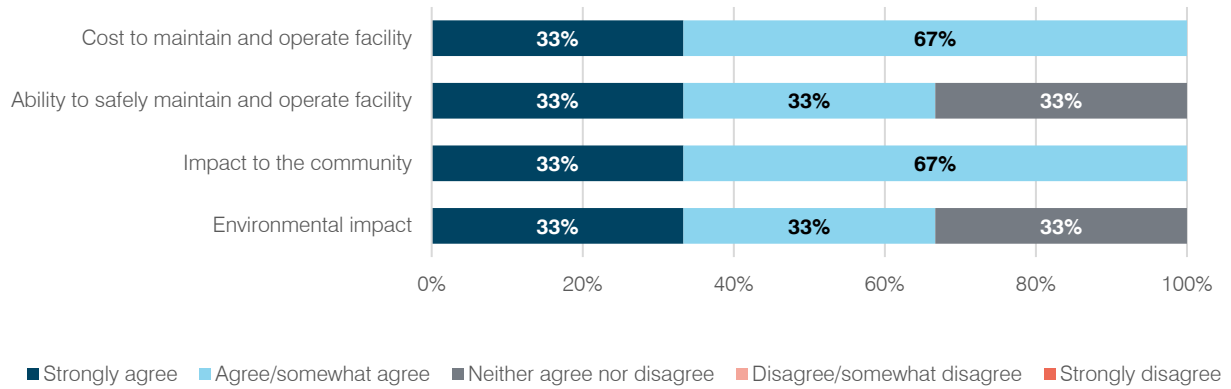


N = 3

Factors for Consideration

When deciding on dam relicensing or removal, all three of the respondents strongly agreed or agreed that the impact to the community and the cost to maintain and operate the facility would be important factors to consider (Exhibit M14). Two of three respondents also strongly agreed or agreed that the ability to maintain and operate the facility as well as the environmental impact would be important considerations.

EXHIBIT M14. Important Factors When Deciding Between Dam Relicensing and Removal



N = 3

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

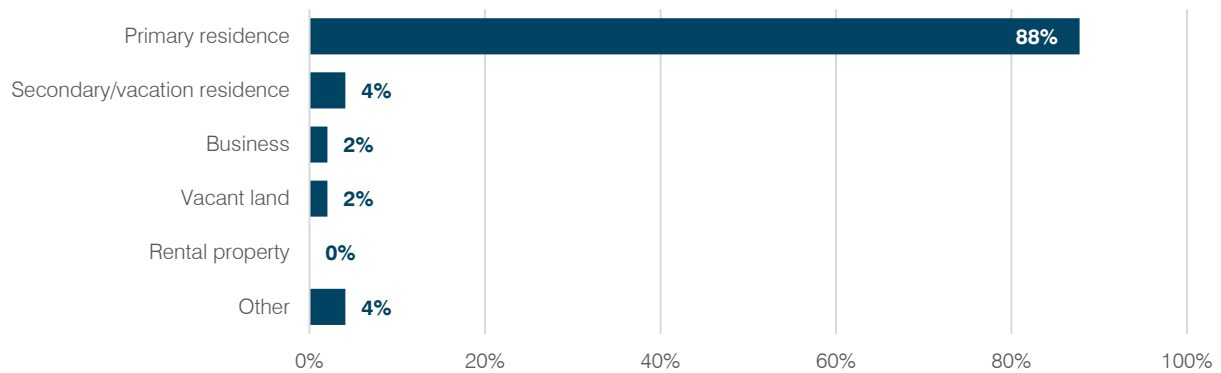
Consumers Energy received a total of two open-ended survey responses. Responses primarily reiterated information captured in other sections of the survey.

Appendix N: Webber Dam, Property Owner Survey Results

Consumers Energy surveyed 139 property owners nearest to the Webber Dam and received responses from 54 property owners for a response rate of 39 percent. Of those 54 property owners, less than one-third (31 percent) strongly agreed or agreed that they felt their input would matter in the final decision on dam relicensing, while 28 percent strongly disagreed or disagreed that their input would matter.

Most (88 percent) of the responding property owners reported mainly using the property as their primary residence (Exhibit N1).

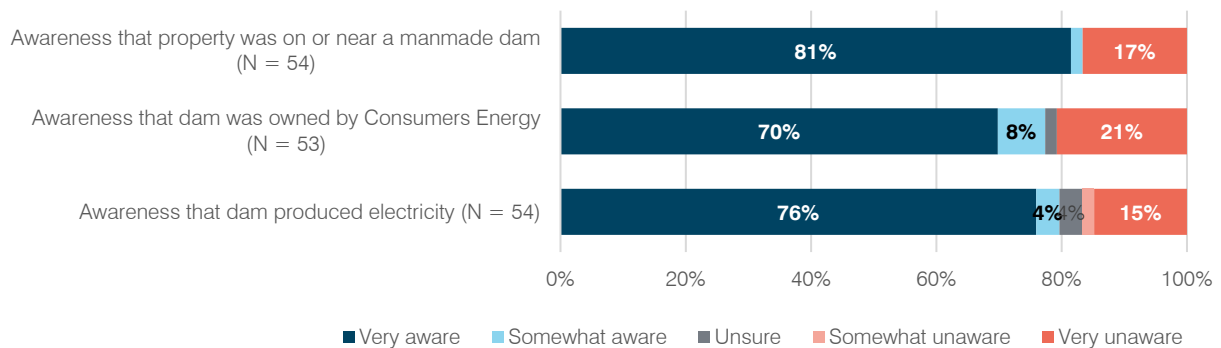
EXHIBIT N1. Primary Use of Property



N = 49

As indicated in Exhibit N2, most respondents with property closest to the Webber Dam were very aware that their property was on or near a manmade dam (81 percent), that the dam was owned by Consumers Energy (70 percent), and that the dam produced electricity (76 percent).

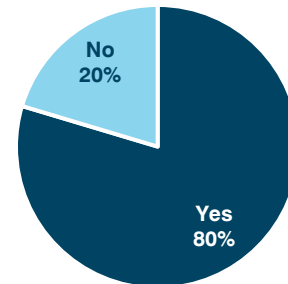
EXHIBIT N2. Respondents' Level of Awareness Regarding Dam On or Near Property



N varied by response.

Although many property owners had a high level of awareness about the dam, 20 percent had not considered that their property could be altered by changes to the dam’s management (Exhibit N3).

EXHIBIT N3. Percentage Who Considered That Property Could Be Altered

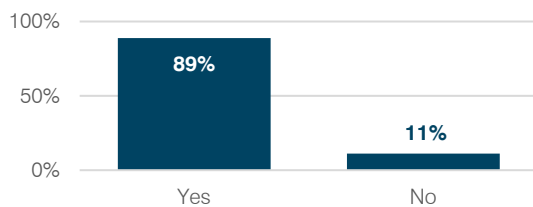


N = 54

Reliance on the Dam and Impoundment

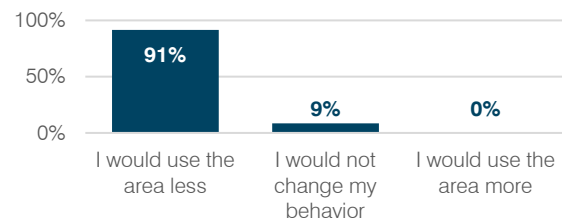
Nearly all property owners reported relying on the dam and the impoundment created by the dam for recreational opportunities and said they would use the area less if the dam were removed (Exhibits N4 and N5).

EXHIBIT N4. Percentage Who Reported Relying on the Dam and Impoundment for Recreation



N = 54

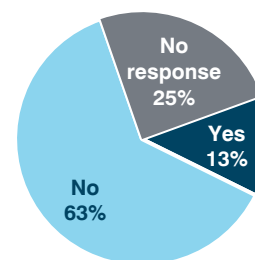
EXHIBIT N5. Impact of Removing the Dam on Recreation Habits



N = 47

Of the 54 respondents who had property closest to the Webber Dam, 15 percent (eight) said their business had some reliance on the dam and/or the impoundment. Of those, 63 percent said they did not believe their business could continue without the dam and its impoundment, while 13 percent thought their business could continue (Exhibit N6).

EXHIBIT N6. Percentage Who Reported Believing Business Could Continue Without the Dam and Its Impoundment



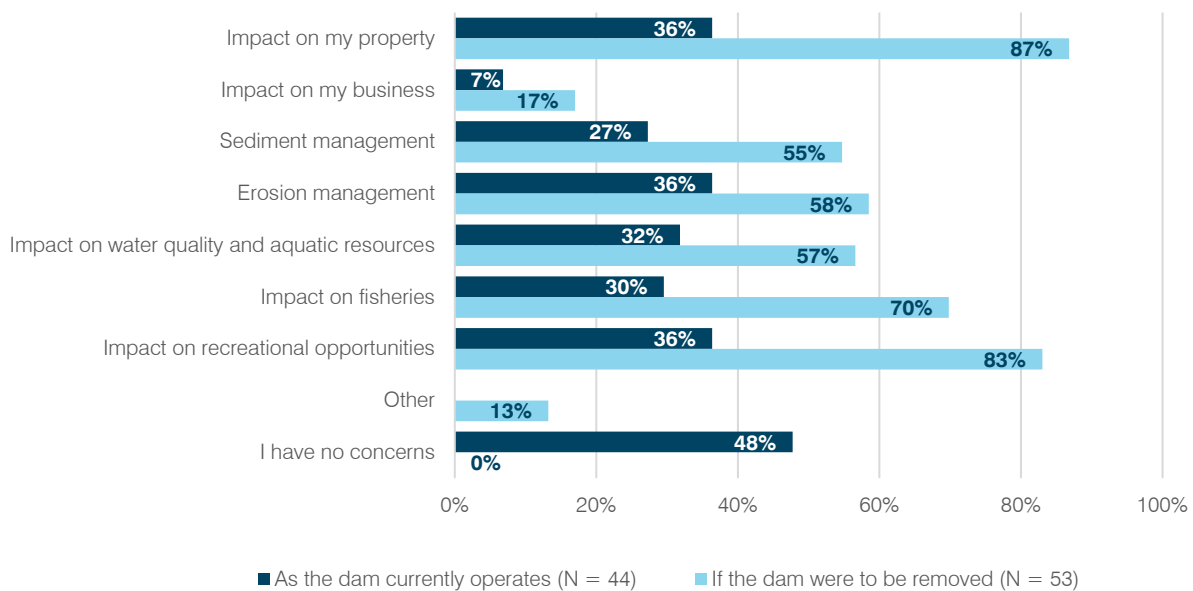
N = 8

Note: Percentages may not total 100 percent due to rounding.

Concerns and Benefits

More than one-third of property owners reported having concerns about the dam’s impact on their property as it operated at the time of the survey, with that percentage increasing to 87 percent if the dam were removed. Similarly, 36 percent reported having concerns about the dam’s impact on recreational opportunities as it operated at the time of the survey, with that percentage increasing to 83 percent if the dam were removed. While 30 percent reported having concerns about the dam’s impact on fisheries at the time of the survey, 70 percent would have those concerns if the dam were removed. More than half also said they would have concerns about the impact on water quality and aquatic resources and erosion and sediment management if the dam were removed (Exhibit N7).

EXHIBIT N7. Concerns About Dam Operation at Time of Survey and If It Were Removed

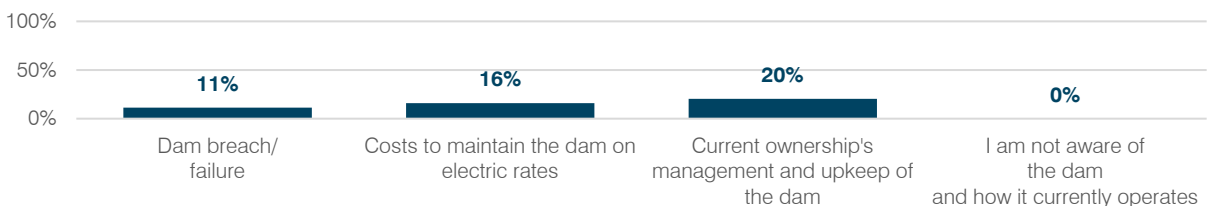


N varied by response.

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

In addition to concerns about the dam at the time of the survey and if it were removed, property owners had a few concerns specific to the dam at the time of the survey only. For example, 20 percent of property owners said they were concerned about current ownership’s management and upkeep of the dam at the time of the survey (Exhibit N8).

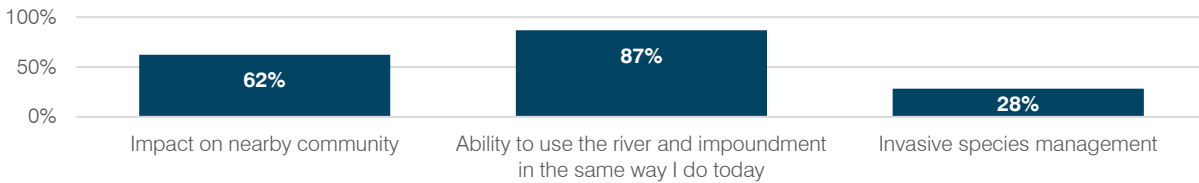
EXHIBIT N8. Concerns About Dam Operation at Time of Survey



N = 44

Property owners also had concerns specific only to dam removal. If the dam were removed, 87 percent would be concerned about their ability to use the river and impoundment in the same way they did at the time of the survey, and 62 percent would have concerns about the impact of dam removal on the nearby community (Exhibit N9).

EXHIBIT N9. Concerns If the Dam Were Removed

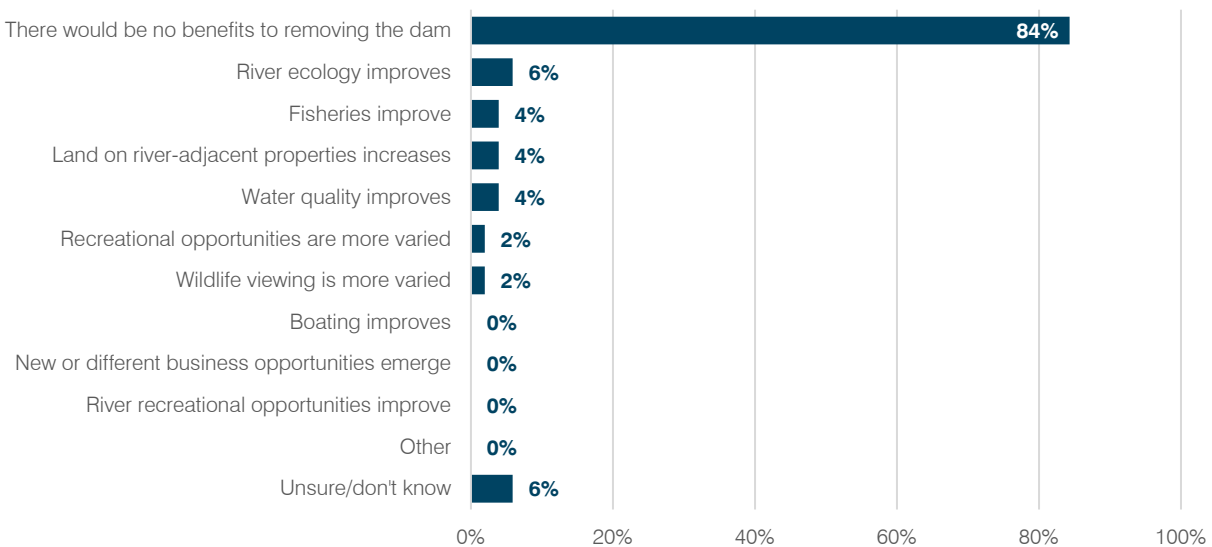


N = 53

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

While most property owners (84 percent) said there would be no benefits to removing the dam, a small percentage said that water quality, fisheries, and river ecology would improve; that land on river-adjacent properties would increase; and that recreational and wildlife viewing opportunities would be more varied (Exhibit N10).

EXHIBIT N10. Benefits to Removing the Dam



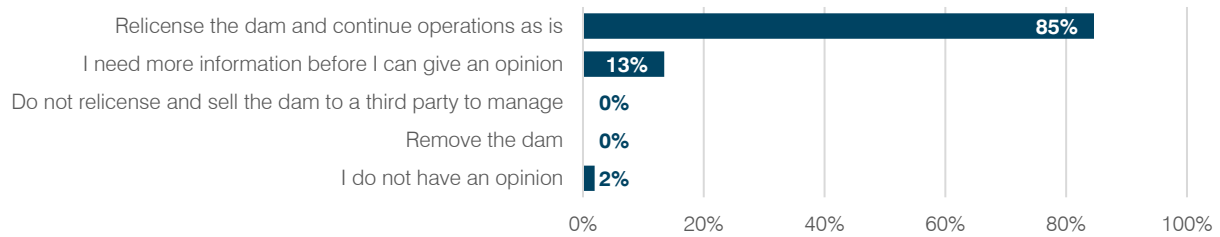
N = 51

Note: Percentages do not total 100 percent because respondents could choose more than one answer.

Future of the Dam

Most property owners near the Webber Dam (85 percent) reported they would like to see Consumers Energy relicense the dam and continue its operations as they were at the time of the survey (Exhibit N11).

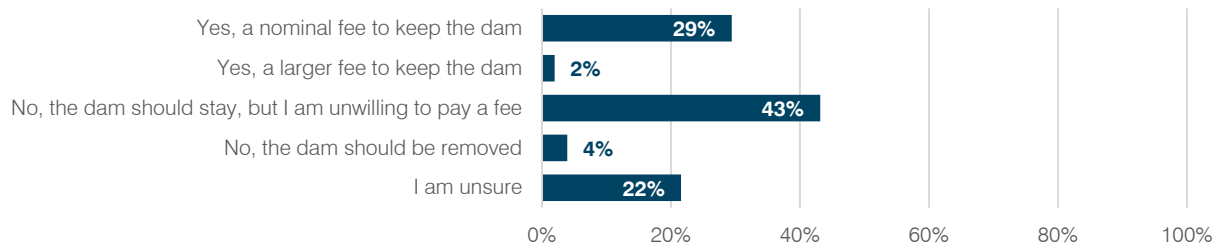
EXHIBIT N11. What Respondents Felt Consumers Should Do With the Dam



N = 52

While none said the dam should be sold to a third party, 29 percent said they would be willing to pay a fee to keep the dam if that were to happen. However, 43 percent said that the dam should stay but that they would be unwilling to pay a fee (Exhibit N12).

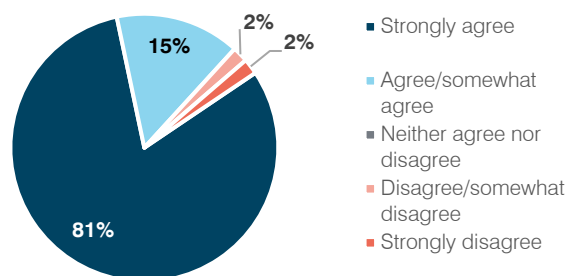
EXHIBIT N12. Respondents' Willingness to Pay an Additional Annual Fee



N = 51

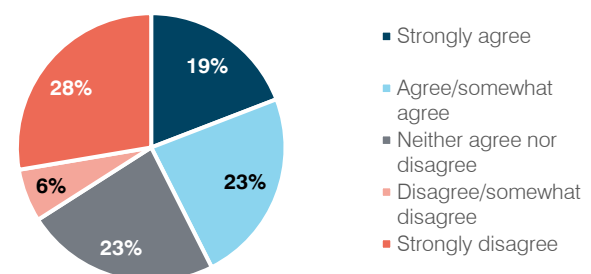
In addition to most respondents saying Consumers Energy should relicense the dam, the majority supported the use of hydroelectric dams on rivers to produce energy (Exhibit N13). Less than half (42 percent) strongly agreed or agreed that they would consider selling their property if the dam were removed (Exhibit N14).

EXHIBIT N13. Respondents' Level of Agreement for Support of Hydroelectric Energy Production



N = 53

EXHIBIT N14. Respondents' Level of Agreement That They Would Consider Selling If Dam Were Removed



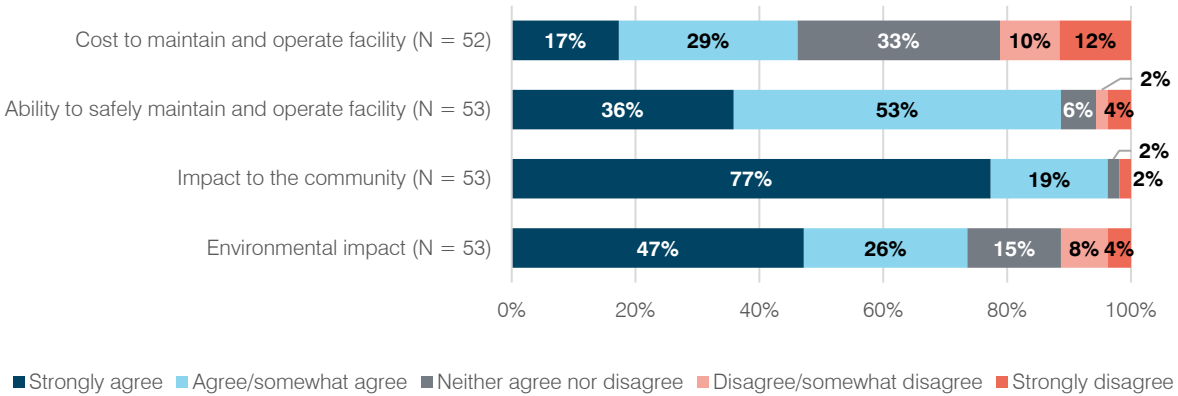
N = 47

Note: Percentages may not total 100 percent due to rounding.

Factors for Consideration

When deciding on dam relicensing or removal, nearly all respondents (96 percent) strongly agreed or agreed that the impact to the community would be an important factor to consider. Additionally, 89 percent strongly agreed or agreed that the ability to safely maintain and operate the facility would be an important consideration, and 73 percent agreed that considering the environmental impact would also be important. Fewer (46 percent) strongly agreed or agreed that the cost to maintain and operate the facility would be an important consideration (Exhibit N15).

EXHIBIT N15. Important Factors When Deciding Between Dam Relicensing and Removal



N varied by response.

Note: Percentages may not total 100 percent due to rounding.

Summary of Open-ended Comments

Consumers Energy received a total of 37 open-ended survey responses. Responses primarily reiterated information captured in other sections of the survey.

Appendix O: Property Owners Survey

Save time and a stamp by scanning the QR code to take the survey online!



Consumers Energy River Hydro Operations Property Owner Survey

This survey will assist Consumers Energy with developing their long-term river hydro operations plan that will direct the retirement timeline and future plans for their 13 river hydroelectric dams currently in operation.

You can either take this survey online at <https://tinyurl.com/Consumershysurvey> or by returning this paper copy. Please only respond once per household.

Survey Questions

Directions: Please fill in the circles for your answers completely. This is a two-sided survey—please flip each page over to fill in all questions.

Please indicate your level of awareness for the following statements:

	Very unaware	Somewhat unaware	Unsure	Somewhat aware	Very aware
1. Prior to this communication how aware were you that your property was on/near a manmade dam?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Prior to this communication about Consumers Energy's hydroelectric operations, how aware were you that your property was on/near a dam owned by Consumers Energy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Prior to this communication, how aware were you that the dam produces electricity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Prior to this communication, had you considered that your property could be altered by changes to the dam's management?	<hr/>				
	<input type="radio"/> a. Yes	<hr/>			
	<input type="radio"/> b. No	<hr/>			
5. Do you rely on the dam and the impoundment (the artificial water body behind the dam) for recreational opportunities?	<hr/>				
	<input type="radio"/> a. Yes	<hr/>			
	<input type="radio"/> b. No	<hr/>			
6. If yes , would removing the dam have an impact on how you use the river and adjacent land for recreation?	<hr/>				
	<input type="radio"/> a. I would use the area more	<hr/>			
	<input type="radio"/> b. I would not change my behavior	<hr/>			
	<input type="radio"/> c. I would use the area less	<hr/>			

7. Does your business have some reliance on the dam and/or the impoundment?
 a. Yes
 b. No
 c. Unsure
8. **If yes**, do you believe your business could continue without the dam and its impoundment?
 a. Yes
 b. No
 c. Unsure
9. What concerns, if any, do you have about the dam as it currently operates? Select all that apply.
 a. Impact on my property
 b. Impact on my business
 c. Sediment management
 d. Erosion management
 e. Impact on water quality and aquatic resources
 f. Dam breach/failure
 g. Impact on fisheries
 h. Impact on recreational opportunities
 i. Costs to maintain the dam on electric rates
 j. Current ownership's management and upkeep of the dam
 k. I have no concerns with the dam as it currently operates
 l. I am not aware of the dam and how it currently operates
 m. Other: _____
10. Consumers Energy is currently in the process of determining if each of its current 13 hydroelectric dams should be relicensed. Based on your current knowledge, do you have an opinion on what Consumers Energy should do with the dam closest to your property?
 a. Relicense the dam and continue operations as is
 b. Do not relicense and sell the dam to a third party to manage
 c. Remove the dam
 d. I do not have an opinion
 e. I need more information before I can give an opinion

11. If a third party were to take over the ownership and maintenance of the dams, property owners would potentially need to support the costs to upkeep the dams, which could be in the hundreds of millions of dollars. Would you be willing to pay an additional annual fee to maintain the dam and pay for the maintenance costs?

- a. Yes, a nominal fee to keep the dam
- b. Yes, a larger fee to keep the dam
- c. I am unsure
- d. No, the dams should be removed
- e. No, the dams should stay but I am unwilling to pay a fee

12. What concerns would you have if the dam was to be removed and the river was returned to its natural state? Select all that apply.

- a. Impact on my property
- b. Impact on my business
- c. Impact on nearby communities
- d. Sediment management
- e. Erosion management
- f. Impact on fisheries
- g. Impact on recreational opportunities
- h. Impact on water quality and aquatic resources
- i. Ability to use the river/impoundment in the same way I do today
- j. Invasive species management
- k. I have no concerns with the dam being removed
- l. Other: _____

13. What benefits do you envision if the dam was removed? Select all that apply.

- a. Water quality improves
- b. River recreational opportunities improve (e.g., paddling, swimming, fishing)
- c. Fisheries improve
- d. River ecology improves
- e. Wildlife viewing is more varied
- f. Recreational opportunities (hiking, camping) are more varied
- g. Boating improves
- h. New or different business opportunities emerge
- i. Land on river-adjacent properties increases
- j. There would be no benefits to removing the dam
- k. Unsure/I don't know
- l. Other: _____

Please indicate your level of agreement with the following statements:

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
14.	I believe my input will matter in the final decision on dam relicensing and/or removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	I would consider selling my property if the dam was removed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	I support the use of hydroelectric dams on rivers to produce electricity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	I believe that cost to maintain and operate the facility should be an important factor when deciding on dam relicensing or removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	I believe that the ability to safely maintain and operate the facility should be an important factor when deciding on dam relicensing or removal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	I believe that impact to the community should be an important factor when deciding on dam relicensing or removal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	I believe that the environmental impacts should be an important factor when deciding on dam relicensing or removal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. What river system is your property located on?

- a. Au Sable
- b. Muskegon
- c. Manistee
- d. Grand
- e. Kalamazoo
- f. None of the above
- g. I don't know

22. Which dam is closest to your property?

a. Alcona

b. Calkins Bridge (Allegan)

c. Cooke

d. Croton

e. Five Channels

f. Foote

g. Hardy

h. Hodenpyl

i. Loud

j. Mio

k. Rogers

l. Tippy

m. Weber

n. Unsure

23. What is the primary use of your property?

a. Business

b. Primary residence

c. Secondary/vacation residence

d. Rental property

e. Vacant land

f. Other

Do you have any additional comments?

Thank you for completing the survey. If you have any questions, please reach out to Public Sector Consultants at jjohnson@pscinc.com. For more information about Consumers Energy, please visit www.consumersenergy.com/hydrofuture

Appendix P: Letters from Stakeholder Groups



Great Lakes Fishery Commission

December 28, 2022

Mr. Josh Burgett
Executive Director, Community Engagement & Corporate Citizenship
CMS Energy Corporation
One Energy Plaza
Jackson, MI 49201

To Whom It May Concern:

The Great Lakes Fishery Commission (Commission) recently learned that Consumers Energy, with the assistance of Public Sector Consultants, is conducting a detailed review of 13 of its hydro plants on five Michigan rivers. The Commission appreciates the opportunity to comment, and submits the following for consideration during that review.

The 1954 *Convention on Great Lakes Fisheries*¹ (Convention) between the United States and Canada established the Commission as the binational organization responsible for control of invasive sea lamprey, facilitation of cooperative fishery management, and coordination of fisheries research in the Great Lakes. Specifically, Article V of the Convention states that the Commission may 1) conduct investigations, 2) take measures and install devices in the Convention Area and the tributaries thereof for sea lamprey control; and 3) hold public hearings in the United States and Canada. The U.S. Fish and Wildlife Service and Fisheries and Oceans Canada serve as contract agents for the Commission in the U.S. and Canada, respectively, to implement sea lamprey control. Cooperative fisheries management among two countries, eight states, one province, and several tribes is guided by *A Joint Strategic Plan for Management of Great Lakes Fisheries*, which lays out a governance structure for cooperation and decision making among the signatories. This governance includes three committees that may wish to submit comments to Consumers Energy in the future: The Council of Great Lakes Fisheries Agencies, the Council of Lake Committees, and the Sea Lamprey Control Board.

Lake Michigan and Lake Huron support robust recreational, commercial, and tribal fisheries. For example, the four states bordering Lake Michigan (Illinois, Indiana, Michigan, Wisconsin) estimate that the annual value of the fishery is at least \$2.55 billion.

¹ Potter, C. 1955. *Convention on Great Lakes Fisheries Between the United States of American and Canada*, Congressional Record 101:6 (June 1, 1955). U.S. Government Printing Office, Washington, D.C. USA (1955), p.7347

² GLFC. 1997. *A Joint Strategic Plan for Management of Great Lakes Fisheries*. Ann Arbor: Great Lakes Fishery Commission.



EST 1955 BY TREATY

Great Lakes Fishery Commission
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glfc.org

The invasive sea lamprey is the largest threat to the health and sustainability of the fishery, and sea lamprey control is essential not only to the states' and tribes' fishery management objectives, but also to the realization of the billions of dollars of annual economic benefits³. Sea lamprey are resilient and will expand their range in the absence of control. The Muskegon, Manistee, AuSable, Kalamazoo, and Grand river systems contain thousands of miles of prime sea lamprey spawning and rearing habitat.

Invasive sea lamprey are controlled in Great Lakes tributaries using two primary methods: application of lampricides to kill larval sea lamprey in their natal streams; and use of barriers and dams to block migratory sea lamprey from spawning and larval habitats (sea lamprey barriers). Around 500 Great Lakes tributaries are currently infested with sea lamprey, and most of these tributaries are treated with lampricides every 2-5 years since populations bounce back without ongoing control. About 100 tributaries are treated per year with an annual budget of \$23 million and successful treatments are estimated to kill 95% of sea lamprey larvae. Larval sea lamprey that survive treatment are termed 'residuals', and migrate into the lakes to feed on fish, where a single sea lamprey can kill up to 40 lbs of fish in its lifetime. Sea lamprey barriers serve to reduce the extent of larval sea lamprey infestation of upstream habitat and thus the need to conduct expensive lampricide treatments upstream of barriers. An effective sea lamprey barrier maintains a minimum 45 cm vertical separation between the barrier crest and tailwater elevation during springtime flows (March through June). The Commission has identified 471 important dams on tributaries to the Great Lakes that serve as effective sea lamprey barriers. Sea lamprey control success is partly measured by an index of spawning sea lamprey collected at a network of traps around the Great Lakes basin every spring. Index targets for Lake Michigan and Lake Huron were 35,000 and 31,000, respectively, in 2022. Annual spawning index estimates and other specifics describing streams treated and assessed are compiled annually into an annual report⁴. Because of the extent of the habitat they exclude from sea lamprey infestation and the need for lampricide treatment, dams on the Muskegon, Manistee, Au Sable, Kalamazoo, and Grand rivers are especially vital to continued success in controlling sea lamprey for the benefit of Great Lakes fisheries and associated recreation and tourism – an estimated \$7 billion annual economy^{5,6}.

Four of the dams under review, Croton, Foote, Tippy, and Calkins Bridge, currently serve as sea lamprey barriers and are considered critical to the Commission's ability to control sea lamprey. A fifth, Webber Dam, may be important to sea lamprey control in the future depending on the fate of the Sixth Street Dam in Grand Rapids.

³ Southwick Associates. 2012. Sportfishing in America: An Economic Force for Conservation. Produced for the American Sportfishing Association (ASA) under a U.S. Fish and Wildlife Service (USFWS) Sport Fishing Restoration grant (F12AP00137, VA M-26_R) Awarded by the Association of Fish and Wildlife.

⁴ Barber, J. and M. Steeves. 2022. Sea Lamprey Control in the Great Lakes 2021. Great Lakes Fishery Commission, Ann Arbor, MI.

⁵ Hrodey, P., S.A. Lewandoski, W.P. Sullivan, J.M Barber, K.A. Mann, B. Paudel, M.J. Symbal. 2021. Evolution of the Sea Lamprey Control Barrier Program: the importance of lowermost barriers. Journal of Great Lakes Research. 47, S285-S296.

⁶ Walter, L.M., J.M. Dettmers, and J.T. Tyson. 2021. Considering aquatic connectivity trade-offs in Great Lakes barrier removal decisions. Journal of Great Lakes Research. 47, S430-S438.



Below, watershed-specific comments are presented for consideration by Consumers Energy for the long-term future of the 13 hydropower projects under review.

Muskegon River

The Muskegon River is Michigan’s second largest river with Croton, Hardy, and Rogers dams all structures that are or could be important to sea lamprey control. Croton Dam is of significant importance given that it is the lowermost sea lamprey barrier on the river. Sea lamprey are prolific in the Muskegon River and the Commission has estimated that at maximum production, 4.5 million larvae are present in the 109 mile stretch of river downstream of Croton Dam to the river mouth. This relatively short stretch of river has the highest larval sea lamprey production of all Lake Michigan tributaries. If sea lamprey were able to bypass all Consumers dams, there is risk of over 2,000 miles of stream becoming available to sea lamprey (Table 1). While the Commission is not aware of any state or federally listed species of concern upstream of Croton Dam, lake sturgeon, a species of ecological and cultural significance, may use upstream habitat if the dam were removed. Juvenile lake sturgeon can be sensitive to lampricides. Therefore, treating streams containing lake sturgeon often requires additional effort for juvenile lake sturgeon collection before, during, and after treatment to assess and mitigate treatment impacts. Additionally, streams containing lake sturgeon are treated during narrower date windows to avoid juvenile lake sturgeon mortality. Overall, constraints associated with treating streams with lake sturgeon can negatively impact the effectiveness of sea lamprey control.

Table 1: Barriers important to sea lamprey control in the Muskegon River. The structures are listed from downstream (lowermost in the watershed) to upstream.

Dam Name	Order in Watershed	Estimate of Larval Sea Lamprey Downstream	Current Lampricide Treatment Cost	Miles of River Upstream to Next Sea Lamprey Barrier
Croton Dam	Lowermost	4.5 million	\$1.1 million	253
Hardy Dam	Secondary	--	--	173
Rogers Dam	Tertiary	--	--	1,691

The Muskegon River is treated for sea lamprey from Croton Dam to the river mouth every 2-4 years at a cost of \$1.1 million per treatment, and the Commission’s partnership with Consumers at Croton Dam is vital to those treatments. Due to the volume of water in the Muskegon River, lampricide treatment crews work closely with Consumers to establish stable flows through the turbines. Under these conditions, lampricides are applied just upstream of the turbine intakes and mix directly downstream of the hydro-facility. The mixing action created by the turbines reduces mortality of nontarget organisms below the application site where concentrated lampricide is quickly distributed throughout the water column. Continued blockage of sea lamprey at either Croton Dam or at Hardy Dam with the addition of a blocking structure at the mouth of the Little Muskegon River is necessary for the continued logistical and financial ability of the Commission to successfully control sea lampreys in Lake Michigan.



In addition, transfer of dam ownership to a party that is unwilling to work with the Commission to allow access and stable flows at a dam site is of concern. Foregoing treatment in the Muskegon River would allow millions of parasitic sea lamprey to enter Lake Michigan to feed on and subsequently kill culturally, commercially, and recreationally important fish species. Populations of whitefish, Pacific salmonids, lake trout, and lake sturgeon are most likely to feel the negative impacts of a dramatic increase in sea lamprey numbers. History has shown that the ecology of Lake Michigan dramatically changes with high rates of sea lamprey mortality on top ecosystem predators⁷.

Should blockage at Croton Dam and/or Hardy Dam and the Little Muskegon be assured, the Commission supports consideration of removal of Rogers Dam so long as such action is supported by state and federal regulatory agencies.

Manistee River

The Manistee River is Lake Michigan's second largest producer of sea lamprey and Tippy Dam serves as a critical sea lamprey barrier (Table 2). The 35 miles of stream downstream of Tippy Dam, including Bear Creek, is the area of river currently treated for sea lamprey using lampricides. Those 35 river miles can produce an estimated 3.6 million sea lamprey larvae. If sea lamprey were able to bypass all Consumers dams, there is risk of 1,356 miles of stream becoming available to sea lamprey. Between Tippy and Hodenpyl dams is 551 miles of river. Lake sturgeon could begin to use upstream habitat if Tippy Dam was removed (see concerns regarding lake sturgeon above). Additionally, the Michigan Natural Features Inventory notes that the federally-listed endangered Hungerford's crawling water beetle is present in Portage Creek, upstream of Hodenpyl Dam. Treating with lampricides in streams containing threatened and endangered species requires the Commission's control agents to work within firm criteria such as limited timing windows for treatments, reduced lampricide concentrations through known critical habitat, and requirements to collect organisms before, during, and after treatment. The necessary effort to adhere to these criteria further raises the cost and decreases the effectiveness of treatment.

The Manistee River is treated for sea lamprey from Tippy Dam to the river mouth every 2-4 years at a cost of \$920,000 per treatment (Table 2), and the Commission's partnership with Consumers at Tippy Dam is vital to those treatments. Due to the volume of water in the Manistee River, lampricide treatment crews work closely with Consumers to establish stable flows through the turbines. Under these conditions, lampricides are applied just upstream of the turbine intakes and mix directly downstream of the hydro-facility. The mixing action created by the turbines reduces mortality of nontarget organisms below the application site where concentrated lampricide is quickly distributed throughout the water column.

⁷ Tanner, H.A., and W.H. Tody. 2002. History of the Great Lakes salmon fishery: a Michigan perspective. Pages 139-153 in K.D. Lynch, M.L. Jones, W.W. Taylor, editors. Sustaining North American salmon: perspectives across regions and disciplines. American Fisheries Society, Bethesda, Maryland.



Table 2: Barriers important to sea lamprey control in the Manistee River. The structures are listed from downstream (lowermost in the watershed) to upstream.

Dam Name	Order in Watershed	Estimate of Larval Sea Lamprey Downstream	Current Lampricide Treatment Cost	Miles of River Upstream to Next Sea Lamprey Barrier
Tippy Dam	Lowermost	3.6 million	\$920,000	551
Hodenpyl Dam	Secondary	--	--	805

Continued blockage of sea lamprey at Tippy Dam is necessary for the continued logistical and financial ability of the Commission to successfully control sea lamprey in Lake Michigan. In addition, transfer of dam ownership to a party that is unwilling to work with the Commission to allow access and stable flows at a dam site is of concern. Foregoing treatment in the Manistee River would allow millions of parasitic sea lamprey to enter Lake Michigan to feed on and subsequently kill culturally, commercially, and recreationally important fish species. Populations of whitefish, lake trout, Pacific salmonids, and lake sturgeon are most likely to feel the negative impacts of a dramatic increase in sea lamprey numbers. History has taught us that the ecology of Lake Michigan dramatically changes with high rates of sea lamprey mortality on top ecosystem predators⁷.

Should blockage at Tippy Dam be assured, the Commission supports consideration of removal of Hodenpyl Dam so long as such action is supported by state and federal regulatory agencies.

Au Sable River

Foote Dam on the Au Sable River serves as a critical sea lamprey barrier (Table 3), and Cooke Dam has the potential to serve as a backup sea lamprey barrier if sea lamprey are able to bypass Foote Dam. The Commission encourages continued blockage at one of these two structures, with selection based on structure condition, ownership, partner goals, and other relevant criteria. The 15.5 miles of stream downstream of Foote Dam, including Van Etten Lake Outlet, is the area of river currently treated for sea lamprey and can produce an estimated 1.5 million sea lamprey larvae. If sea lamprey were able to bypass all six Consumers dams, 1,162 miles of stream become available to them. Between Foote and Cooke dams is 28 miles of river, which includes a few small tributaries. Lake sturgeon could begin to use upstream habitat if Foote Dam was removed (see concerns regarding lake sturgeon above). Additionally, the Michigan Natural Features Inventory notes that the federally-listed endangered Hungerford’s crawling water beetle is present in Big Creek, upstream of Mio Dam. Treating with lampricides in streams containing threatened and endangered species requires the Commission’s control agents to work within firm criteria such as limited timing windows for treatments, reduced lampricide concentrations through known critical habitat, and requirements to round up organisms before, during, and after treatment. The necessary effort to adhere to these criteria further raises the cost and decreases the effectiveness of treatment.



Table 3: Barriers important to sea lamprey control in the AuSable River. The structures are listed from downstream (lowermost in the watershed) to upstream.

Dam Name	Order in Watershed	Estimate of Larval Sea Lamprey Downstream	Current Lampricide Treatment Cost	Miles of River Upstream to Next Sea Lamprey Barrier
Foote Dam	Lowermost	1.5 million	\$443,000	28
Cooke Dam	Secondary	--	--	28
Five Channels Dam	Third	--	--	134
Loud Dam	Fourth	--	--	11
Alcona Dam	Fifth	--	--	7
Mio Dam	Sixth	--	--	777

The Au Sable River is treated for sea lamprey from Foote Dam to the river mouth every 2-4 years at a cost of \$443,000 per treatment (Table 3), and the Commission’s partnership with Consumers at Foote Dam is vital to those treatments. Due to the volume of water in the Au Sable River, lampricide treatment crews work closely with Consumers to establish stable flows through the turbines. Under these conditions, lampricides are applied just upstream of the turbine intakes and mix directly downstream of the hydro-facility. The mixing action created by the turbines reduces mortality of nontarget organisms below the application site where concentrated lampricide is quickly distributed throughout the water column.

Continued blockage of sea lamprey at Foote or Cooke Dam is necessary for the continued logistical and financial ability of the Commission to successfully control sea lamprey in Lake Huron. In addition, transfer of dam ownership to a party that is unwilling to work with the Commission to allow access and stable flows at a dam site is of concern. Foregoing treatment in the Au Sable River would allow up to 375,000 parasitic sea lampreys to enter Lake Huron to feed on and subsequently kill culturally, commercially, and recreationally important fish species. Populations of whitefish, lake trout, Pacific salmonids, and lake sturgeon are most likely to feel the negative impacts of a dramatic increase in sea lamprey numbers. History has taught us that the ecology of Lake Huron dramatically changes with high rates of sea lamprey mortality on top ecosystem predators⁷.

Should blockage at Foote and/or Cooke dams be assured, the Commission supports consideration of removal of Five Channels, Loud, Alcona, and Mio dams so long as such action is supported by state and federal regulatory agencies.

Kalamazoo River

Calkins Bridge Dam on the Kalamazoo River serves as an important sea lamprey barrier (Table 4), and protects 68 miles of river from invasive sea lamprey between it and the Allegan City Dam. A total of 56 miles of stream downstream of Calkins Bridge Dam comprised largely of Rabbit Creek but also including portions of Swan, Bear, and Mann creeks is currently treated for sea lamprey and can produce an estimated 54,000 sea lamprey larvae. These tributaries are treated every 2-4 years at a cost of \$350,000 per treatment.

Water quality in the lower Kalamazoo River due to historical industrial pollution and



contaminated sediments is thought to keep sea lamprey production relatively minimal. With the lower river listed as a federal Area of Concern, improvements in water quality are expected in the coming decades and as a general rule, improvements in water quality will result in higher numbers of sea lamprey in a river.

Continued blockage of sea lamprey at Calkins Bridge Dam is necessary for the continued logistical and financial ability of the Commission to successfully control sea lamprey in Lake Michigan. Should sea lamprey be allowed access to some or all of the 1,461 stream miles upstream of Calkins Bridge Dam, the lampricide treatment cost would increase to \$1.3 million per treatment. Lake sturgeon could begin to use upstream habitat if Calkins Bridge Dam was removed (see concerns regarding lake sturgeon above). Additionally, the Michigan Natural Features Inventory notes that the federally-listed endangered snuffbox mussels are present in Ackley Creek, upstream of Calkins Bridge Dam, so special measures must be taken to avoid mortality of logperch, their host fish. Treating with lampricides in streams containing threatened and endangered species requires the Commission's control agents to work within firm criteria such as limited timing windows for treatment, reduced lampricide concentrations through known critical habitat, and requirements to round up organisms before, during, and after treatment. The necessary effort to adhere to these criteria further raises the cost and decreases the effectiveness of treatment.

Grand River

The Commission's interest in the status of Webber Dam on the Grand River exists due to a unique set of circumstances. The Commission, operating under a Memorandum of Agreement with the City of Grand Rapids and Grand Rapids WhiteWater, is continuing conversations and planning to potentially replace the Sixth Street Dam in downtown Grand Rapids. Fourteen alternative designs are being considered for that replacement, but all are dependent on approval of the removal of four low-head beautification dams downstream of I-196. An extensive design and planning process will be required, including the drafting of an Environmental Impact Statement and approval of a selected design alternative by state and federal regulatory agencies.

Without a sea lamprey barrier on the Grand River, sea lampreys would have access to more than 1,900 miles of habitat. Treating that habitat with lampricides could cost the Commission an estimated \$6 million every 2-4 years. Webber Dam currently protects an additional 1,400 miles of habitat in the Grand River. It has served as a critical sea lamprey barrier during recent sea lamprey escapement events above Sixth Street Dam and should remain in place until an alternative sea lamprey barrier is built on the Grand River. Additionally, federally-listed endangered snuffbox mussels are present throughout the river upstream of Sixth Street Dam. Lampricide treatments in streams containing snuffbox mussel requires treatments be conducted during a narrow time window due to host species (logperch) sensitivity.

In summary, sea lamprey control success across the Great Lakes basin is directly tied to sea lamprey barriers that significantly limit the amount of available habitat to sea lamprey. Without sea lamprey barriers, the Commission, in its current capacity, does not have the resources to address the required regular treatment of the additional habitat with lampricides.



Even with significant investments in lampricides and staff to complete the additional lampricide treatments, the increase in residual sea lamprey populations would negatively impact Great Lakes fish communities and restoration goals. In other words, there is no equivalent alternative to effective sea lamprey barriers.

Thank you for your willingness to engage with the Commission and for your consideration of our comments. Consumers Energy has been a critical partner to the Commission for nearly 60 years. Due to the challenge of working through actions with landscape-level impacts, the Commission advocates for inclusive and iterative discussions with state, tribal, and federal natural resources agencies as the fate of all 13 dams is considered, but specifically for Croton, Tippy, Foote, Calkins Bridge, and Webber dams.

Fact sheets further describing the Commission's purpose, structure, and specifics about the sea lamprey life cycle and lampricide control efforts are enclosed for further reference, and we look forward to answering any questions you might have. Please direct any correspondence to the Commission's Aquatic Connectivity Coordinator Lisa Walter at lwalter@glfc.org.

Sincerely,



Dr. Michael Siefkes
Director, Sea Lamprey Control

Enclosure

Cc: Marianne Walter
Elizabeth Riggs
Lisa Walter
Pete Hrodey
Chris Freiburger
Jessica Barber
Jenna Tews
Kevin Mann
John Dettmers





GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LANSING



DANIEL EICHINGER
DIRECTOR

December 29, 2022

Mr. Adam Monroe, Executive Director
Consumers Energy
Hydro Generation
330 Chestnut Street
Cadillac, Michigan 49601

Re: Michigan Department of Natural Resources detailed comments on
Consumers Energy's long-term Hydro Power Strategy review.

Dear Mr. Monroe:

The Michigan Department of Natural Resources (Michigan DNR) appreciates the opportunity to provide comment on each of Consumers Energy's 13 Federal Energy Regulatory Commission (FERC) licensed hydropower facilities, which are currently being evaluated as part of your long-term Hydro Power Strategy. Staff from Michigan DNR Fisheries Division attended each of the 13 community meetings pertaining to specific dams and participated in the recent Muskegon, Manistee, Au Sable Committee (MMAC) meeting.

Attached are Michigan DNR's specific comments on the overall strategy, contextual comments for each impacted watershed, as well as detailed comments pertaining to each facility.

Again, the Michigan DNR prefers restoration of river systems through removal of barriers and dams when possible. It is well established that dams negatively affect water quality, block migration and interrupt reproduction of numerous native and game fish species and other aquatic organisms, prevent natural sediment transport, and eliminate conveyance of wood and other organic materials to downstream waters.

We look forward to the continued engagement with Consumers Energy on the long-term Hydro Power Strategy.

Mr. Adam Monroe
December 29, 2022

Please accept these detailed comments as our next iteration in what we expect to be extensive dialogue. If you have any questions or need clarification, please feel free to contact Patrick Ertel at (989) 370-1163, or ertelp@michigan.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "James L. Dexter". The signature is fluid and cursive, with a large, stylized initial "J" and "D".

James L. Dexter, Chief
Fisheries Division
517-284-5836

cc: Mr. Josh Burgett, Consumers Energy
Mr. David McIntosh, Consumers Energy
Ms. Maggie Pallone, Public Sector Consultants
Ms. Elizabeth Riggs, Public Sector Consultants
Mr. Todd Grischke, Michigan DNR
Mr. Patrick Ertel, Michigan DNR

Michigan DNR Comments on Consumers Energy FERC Dams

Introduction

The Michigan Department of Natural Resources (Michigan DNR) has been closely following the public input process regarding Consumers Energy's 13 hydropower facilities and is now positioned to supplement the information gleaned from the public and local government meetings. In this letter, Michigan DNR highlights natural resource management interests, focusing on fisheries and aquatic resource management, while incorporating other resource and recreational values as much as possible with respect to the limited timeline. This letter includes comments applicable to all 13 projects and their resultant impoundments, tailwaters and lands, followed by project-specific comments arranged by river system.

Fisheries Position:

The mission of Michigan DNR - Fisheries Division is: *To protect and enhance Michigan's aquatic life and habitats for the benefit of current and future generations.* As such, we most frequently accomplish this by promoting free-flowing and self-maintaining river and aquatic systems. Michigan DNR also recognizes that impoundments provide angling and recreational opportunities in their current state and that those opportunities would change in the event of dam removal. Consequently, Michigan DNR views elements of Consumers' evaluation as a matter of how best to transition as dams inevitably face retirement and decommissioning. We hope that this information helps ensure that the State of Michigan and communities affected by these dams are not unduly burdened by infrastructure that is no longer economical or by impacts and risks that are no longer justifiable.

We also recognize that these dams pose a significant, ongoing risk to life and property, and their presence on the landscape up to this point has been justified by their value in producing electricity for the public. Consumers' own data shows that the contribution of these dams to energy production and security is limited, so the continued presence of the dams may not be justified compared to their costs and risk.

Michigan DNR has important responsibilities in this process, including honoring its commitments in the 1992 Settlement Agreement for 11 of 13 licenses that are involved in this review. As part of those responsibilities, Michigan DNR carefully considers information presented by Consumers and consults on proposed actions to best evaluate long-term disruptions to fisheries and recreational values. There are many areas where Consumers' decisions will have long-lasting and significant impacts, and we will continue to work with Consumers and others to maximize benefits for natural resources and those that rely on them, under any alternative Consumers and FERC identifies for each dam.

Select Effects of Dams on Fishing:

While the negative ecological impacts of dams are well established, Michigan DNR has observed that many members of the public are not familiar with the tradeoffs that dams present with respect to fishing. For example, free-flowing conditions would provide for more self-sustaining fisheries than those typically found in impoundments. Although diverse fishing opportunities are still available in these watersheds, dams have exacerbated declines of certain fish species. Dams on the mainstem create barriers to upstream migration of potamodromous fish, and they interfere with the movement of resident fishes, including walleye and suckers. Dams have inundated higher-gradient areas that tend to have more gravel, cobble, and rock substrates. These higher-gradient areas are of critical importance to certain fish species as spawning habitat and to produce aquatic insects and other macroinvertebrates that are important fish food organisms. Fish that would especially benefit from dam removal include lake sturgeon, suckers, salmon, trout and chars, walleye, and whitefishes.

Silt-tolerant fish species have often increased in the watersheds where dams were constructed, whereas those fishes requiring clean gravel substrate or clean water with aquatic vegetation have declined. Anglers often observe fish 'piling up' below dams, but rarely think about the fact that the elimination of spawning habitat by the dams has led to declines in many of those same fish species. The Michigan DNR currently makes an annual investment into stocking fish upwards of \$1.8 million per year to provide fisheries below and above the 13 dams, including downstream of six Consumers dams which are not meeting water quality standards for temperature, preventing the coldwater fish communities from sustaining themselves.

Proactive and Transparent Management:

Michigan DNR anticipates continuing, or ideally increasing, transparency by Consumers regarding its plans for all the projects in question. We look forward to Consumers' continued inclusion of all relevant agencies, each Tribe, NGOs, and local entities in early planning stages, even if the implications of Consumers' decisions will not be realized immediately. Topics we expect will require extensive consultation and advance planning include:

- Watershed-wide considerations for lamprey control, public recreation, resource protection, infrastructure management (including impacts to existing road-stream crossings in altered systems, in terms of public safety and aquatic organism passage).
- Collaboration with the Dam Safety Unit within Michigan Department of Environment, Great Lakes, and Energy, in the event of any non-power or removal options being selected.
- Life cycle planning to prevent unnecessary costs to ratepayers for improvements at facilities that are not going to be kept.

- Incorporation of economic importance and value of fishing, hunting, and public access.¹ If incorporating present values, a defensible accounting of values of free-flowing and dam-out alternatives should be developed.
- Financial assurances requirements for any potential transferee.
- Information presented to the Public Service Commission relevant to hydropower facilities and the land water interface should be shared with MMAC.
- Advanced planning for any drawdowns that may be required for dam modifications or repairs. This would include ensuring timing, extent, duration etc., minimize harm to aquatic resources (e.g., fish and freshwater mussels), and limit disruption to recreational users.

Michigan DNR requests that the discussion of tradeoffs is as transparent and thorough as possible. If Consumers chooses to maintain dams in their current configurations, many community members would likely find themselves temporarily relieved that existing conditions will remain. However, current maintenance needs are not fully indicative or predictive of future maintenance or increases in costs. While substantial costs are already anticipated (approximately \$1 billion over 2023-2028 in dam safety investments), maintenance needs are likely to increase as the dams and facilities continue to age. Management of these dams and their impacts will require compromise and cooperation. In order to either maintain or remove dams, Consumers would likely pursue rate increases to cover their costs of maintenance and repair or dam removal. A complete picture of forecastable expenses from a new license period should be evaluated against the one-time permanent cost of removal.

Consumers' estimated cost of removing all 11 projects on the Muskegon, Manistee and Au Sable was calculated to be \$264 million in their 2007 retirement study. Projecting that cost into 2022 dollars, using the Consumers Price Index, the one-time cost of removal of the 11 studied projects on the Muskegon, Manistee and Au Sable would be approximately \$396 million. In the recent public outreach meetings held by Consumers, presentations included estimates of capital investments and operation/maintenance costs the next five years for each dam. We were unable to find removal cost estimates for Webber Dam² and Calkins Bridge Dam³, and noted that Consumers was unwilling to provide retirement studies during relicensing. The 11 projects evaluated in the 2007 retirement study are expected to incur \$55.65 million in operation and maintenance costs and \$641.81 million in capital investments. The one-time investment of removal of

¹ e.g., Michigan United Conservation Clubs, 2019. Economic impact of hunting, fishing, and trapping (HF&T) in Michigan. Accessed from: <https://mucc.org/about-us/economic-impact-study-2019/>

² Estimate for Webber Dam retirement and removal were not forthcoming. During relicensing Consumers disputed the need for these estimates. See FERC letter to Consumers Energy Company, June 20, 1997. Accession number: 19970630-0244.

³ Estimate for retirement and removal was not forthcoming. In Consumers June 27, 2008 letter to FERC regarding requests for additional studies, Consumers (page 2) cites Webber as precedent and refused to conduct a retirement study at Calkins Bridge Dam P-785. Accession number: 20080627-5126.

11 dams is \$396 million compared to \$641.81 million of investments in the next 5 years to keep the dams short term. Consumers' presented that for every \$100 million they invest in the dams, every rate payer's bill will increase by at least \$0.40 per month for 30 years. This must be considered when evaluating the expected long-term burden on Consumers' rate payers and the continued impacts on natural resources. During those five years, Michigan DNR will have expended more than \$5 million attempting to mitigate the impacts of thermal pollution on the coldwater fisheries caused by the dams in the Muskegon, Manistee and Au Sable rivers.

Michigan DNR believes that providing realistic expectations to the public is imperative. As conversations continue regarding life-cycles of dams, Consumers should be more proactive in sharing information with the public about the expected long-term maintenance costs and risks associated with its dams. Further, we urge Consumers to dissuade the public from holding onto expectations that the dams will remain in perpetuity. It is clear there are strong emotional connections among local communities to the infrastructure developed around the dams. The facilities that exist today cannot last forever and Consumers should be clear with local communities, all its ratepayers including those that are not in the local communities surrounding these projects, and the public at large effected by its dams by continuing to buffer that expectation.

License Surrender and Transfer of Ownership:

Of the possible alternatives, transfer of ownership with continued hydropower production is the most concerning to Michigan DNR. Simply put, if Consumers cannot justify the economics of future maintenance, then certainly this would also hold true for another owner/operator. Should another entity express interest in assuming ownership of a facility, Michigan DNR is concerned that safety and risk-reduction measures would be reduced in efforts to increase profit margin. Instead, Michigan DNR would prefer Consumers disable facilities it plans to decommission, potentially by removing generating equipment and other facility structures. This would make it less likely that an entity would be inclined to assume a license.

Concerns About Transfer of License and Non-Power Options:

Michigan DNR does not have the authority to interfere with the transfer of a FERC project license or dictate the fate of any of Consumers dams and lacks the resources and interest in maintaining these facilities for the benefit of those who are accustomed to current conditions. In a non-power scenario, one major concern relates to the likelihood that communities desiring to retain the impoundments would lack the technical or financial resources necessary to do so. Consumers brought up the example of the Four Lakes Task Force taking over the Tittabawassee River dams to restore and maintain the dams after license surrender (likely under a non-power alternative) and establishing a Special Assessment District to pay for future dam safety costs. Some members of the public expressed a desire to pursue this option, especially for those dams with significant private riparian home ownership. Others expressed a desire for local

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governmental entities to take over the dams should Consumers pursue the non-power option. To fund these non-power scenarios, communities may seek to establish a legal lake level. Fisheries Division does not support the establishment of legal lake levels. Irrespective of a single owner or a special assessment district funding mechanism, Michigan DNR will press for the best management of fisheries resources.

Though we believe Consumers would safely remove a dam from the landscape, thereby reducing the risk of failure or future infrastructure maintenance, it remains critical that Consumers share all water quality and dam safety information with potential power or non-power owner/transferees. This ensures that any new owner is fully aware and not absorbing hidden costs or risks. The information should fully describe the current condition of the facilities, life cycle assessments, estimates of annual and periodic dam safety maintenance costs, and an estimate of what those expenses would be if the dam were modified for a non-power condition. It is imperative that any entity considering dam ownership is aware of all foreseeable costs and responsibilities over time. In addition, we are concerned about potential liability and insurance coverage, and financial resources of a potential transferee.

For any transferee, Michigan DNR would favor requiring a long-term plan to ensure dam safety requirements and maintenance needs are met by a new owner *before* transfer occurs. Michigan DNR prefers assurances that sufficient resources are maintained by the transferee, including qualified staff. We regard the ability to obtain insurance and other financial mechanisms as critical to avoiding impacts from failures and addressing failure events that may occur. Michigan DNR recognizes the importance of minimizing the risk of dam failure, and the best way to accomplish minimizing that risk is dam removal. If complete removal is not feasible in the near-term, then top-quality, diligent, and well-funded monitoring and maintenance is crucial.

In the past FERC has indicated it would solicit interest from companies that may take over an existing license for continued power production. Michigan DNR is concerned a transferee may overlook dam safety issues or sustainable production economics and may exploit gaps in regulatory oversight and enforcement to extract the waning value of dams already deemed uneconomical by Consumers. This puts the public at a much higher risk of future dam failure or abandonment than the existing management paradigm of Consumers. A dam in need of significant capital investment for safety and maintenance is inherently limited in the value it could bring if sold. Yet, Consumers is frequently reimbursed for capital investments through rate increases approved by the Michigan Public Service Commission. Michigan DNR requests Consumers and the Public Service Commission evaluate the nature of rate increases, particularly for costly dam safety modifications especially those which will not be maintained another forty years. Decommissioning and removal costs, which are one time, must be weighed against life-cycle maintenance costs.

Shoreline Ownership and Condition:

For each dam and any alternative selected, Michigan DNR is most concerned about maintaining or enhancing meaningful public access under any alternative Consumers selects. This ensures the public can continue to use, enjoy, and benefit from access to State waters. Any change in land ownership of the shoreline or bottom lands should be protected from non-public development.

Protecting natural resources is best achieved by preventing degradation rather than solely relying on strategies to mitigate harm. Prevention is more cost effective and more efficient and is an extremely valuable alternative for a hydropower owner with substantial land ownership. The Land Management Plan requirements for Buffer Zone monitoring in the Au Sable, Muskegon, and Manistee River project licenses represents one manifestation of Consumers' efforts and responsibilities to support resource protection and planning. Generally, the objectives and Desired Future Conditions provide for natural shoreline settings, reduced adverse impacts from inappropriate uses like ORV activity and unregulated camping, and best management practices at developed sites. Appropriately managed shoreline buffers provide multiple benefits including maintaining ecological integrity of riparian corridors, protecting water quality and providing habitat for various wildlife, and reducing complications from competing demands of private riparian owners and lessees. Any alternative selected by Consumers should bring equal or more stringent protection to lands and riparian areas currently in its ownership or associated with its dams.

Michigan DNR estimated the proportion of public shoreline ownership and private holdings, which are reported for each dam below. Our information is imperfect and may have missed private parcels or leases. Consumers owned land represented in these estimates may be a mix of shoreline available to the public and unavailable (including through leasing). We request information from Consumers clarifying which lands are leased, which lands are publicly held, and which are in their ownership.

FERC Licenses and Settlement:

Eleven MMAC (Muskegon, Manistee, Au Sable) dams are subjects of a 1992 Settlement Agreement, which was developed to represent an acceptable compromise between the participating parties' interests, with the basic premise that the dams are providing benefits by producing needed power for the public. Michigan DNR is not aware of Settlement Agreement or license provisions that provide expectations and guidance for reviewing potential license surrender, transfer, or other modifications. Additionally, the implications of removing one dam from a complex license and settlement are unclear. Michigan DNR wants to ensure continued opportunities for Settlement Agreement signatories to further comment on options throughout this process. We would appreciate Consumers outlining how it intends to approach this collaboration, so we can develop a mutually agreeable approach among all parties.

The 1992 Settlement Agreement required Consumers to study retirement and decommissioning of 11 of its licensed hydropower facilities, including reviewing what steps were necessary, what options for retirement might be pursued for each dam, the likelihood of early retirement, and costs associated with retiring parts of or the entire dam and facilities. In reports published in 2007,⁴ Consumers stated that the cost of complete removal for Au Sable dams would be about \$85 million,⁵ that complete removal of Muskegon River dams would be \$99 million,⁶ and complete removal of Manistee River dams would cost about \$80 million in 2006 dollars.⁷ Instead of submitting a plan for establishing a trust fund for funding the retirement costs through its retail and wholesale general rate filings, Consumers proposed to recover its projected retirement costs through its depreciation rates. At the time, quoting FERC which found “no need to plan for, or expect, project retirement” and stating on its own behalf that “Consumers believes that the same situation still exists. Consumers does not anticipate near term decommissioning of these projects.”⁸ While the retirement reports have informative elements, some statements in that 2007 studies are likely outdated or perhaps unnecessary. Further, several large-scale hydropower dam removals have since been completed in Michigan, lending opportunities to better refine cost estimates.

The current dam fate analysis, publicized in 2022 by Consumers, appears to have been catalyzed by a longer-term agreement between the Public Service Commission and Consumers. The depreciation discussion centers on the balance of Consumers recovering costs via utility rates and the long-term economic viability and practicality of hydropower within Consumers’ portfolio. Costs to maintain licensed facilities are substantial, and some dams will soon require significant investments and modifications. Michigan DNR requests that Consumers maintain consistency between how this life-cycle fate analysis is presented to the public and how it is discussed in proceedings before the Public Service Commission.

⁴ Consumers Energy Company. 2007. Consumers Energy Company submits the Retirement Studies for the Foote, Alcona, and Mio Projects et al on the Au Sable, Manistee, and Muskegon Rivers pursuant to Articles 204 and 205 under P-2436 et al. Accession Number: 20070614-0067

⁵ Consumers Energy Company. 2007. Consumers Energy Company submits the Hydroelectric Plant Retirement Study for the Au Sable River Hydro Projects under P-2436 et al. Part 4 of 4. Accession number: 20070614-0071

⁶ Consumers Energy Company. 2007. Consumers Energy Company submits the Hydroelectric Plant Retirement Study for the Muskegon River Hydro Projects under P-2451 et al. Part 1 of 4. Accession number: 20070614-0073

⁷ Consumers Energy Company. 2007. Consumers Energy Co's Hydroelectric Plant Reservoir Study for the Manistee River, Tippy and Hodenpyl Hydroelectric Projects under P-2580 et al. Accession number: 20070614-0072

⁸ Consumers Energy Company. 2007. Consumers Energy Company submits the Retirement Studies for the Foote, Alcona, and Mio Projects et al on the Au Sable, Manistee, and Muskegon Rivers pursuant to Articles 204 and 205 under P-2436 et al. Accession Number: 20070614-0067 p. 6.

Manistee River Dams

The Manistee River is one of the largest watersheds in Michigan. The watershed encompasses sections of ten Michigan counties. Despite the current condition preventing self-sustaining fisheries, including degradation by hydropower development, the Manistee River hosts the most heavily fished stream segment in the state.

The Manistee originates from springs emanating from cedar swamps in southeastern Antrim County and flows south then southwest before turning nearly due west into Manistee Lake and then Lake Michigan. The Manistee River is generally managed in three parts, Upper, Middle, and Lower. Consumers' Tippy Dam occurs in the Lower Manistee, and Hodenpyl occurs in the Middle Manistee. These dams impact the whole system. Generally, the Upper Manistee River provides cold water temperatures and robust wild trout populations, while the Lower Manistee River (below Tippy Dam) supports world-renowned runs of Chinook Salmon and Steelhead. Both Upper and Lower reaches see much heavier fishing pressure than the Middle Manistee River, which is inaccessible to migratory fish from Lake Michigan because of the hydropower dams. The Middle Manistee River has a gradient of about 2.7 ft/mile. In contrast, other reaches of the Manistee River have higher gradients. According to Rozich (1998),⁹ the Upper Manistee River has a gradient of approximately 5.9 ft/mile, while the reach inundated by Hodenpyl Dam has a gradient of approximately 11 ft/mile. The reach inundated by Tippy Dam carries a gradient of 6.0 ft/mile. Downstream of Tippy Dam the first several miles are primarily gravel and cobble substrates with an average gradient of about 4.7 ft/mile and is heavily utilized for spawning by numerous fish species (Tonello 2004).¹⁰

Parts of the Upper Manistee River are designated as part of the Michigan Natural Rivers Program. Only 16 rivers in Michigan have received such designation. Select waters are expected to be important for efforts to reintroduce Arctic grayling.

Michigan DNR is aware that some large hydropower dams are utilized for mixing lampricide treatments, and we anticipate that cooperating in modifying that approach would be necessary if dam operations change.

Recent History of Fisheries Management:

The 2007 Manistee River Management Plan 12,¹¹ includes management options and action items aimed to accomplish long-term management goals. They were developed

⁹ Rozich, T. J. 1998. Manistee River Assessment. Michigan Department of Natural Resources, Fisheries Division, Special Report Number 21. Ann Arbor, MI. In Tonello, M. A. 2018. Status of the Fishery Resource Report 2018-250: The Manistee River (Middle), Wexford, Missaukee, and Kalkaska Counties. Michigan Department of Natural Resources, Lansing.

¹⁰ Tonello, M. A. 2004. Manistee River Below Tippy Dam. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2004-4. Ann Arbor, MI.

¹¹ Rozich, T. J. 2007. Manistee River Management Plan. Michigan Department of Natural Resources, Fisheries Division River Management Plan 12. January 2007. Ann Arbor, MI

from the Management Options section of the 1998 Manistee River Assessment.¹² Management Action 3, Channel Morphology and Dams Barriers specifically lists: “Restore high gradient areas by removing hydroelectric (Tippy and Hodenpyl) and other dams, especially those no longer being used or serving little purpose (Manton Millpond, Copemish, and Goose Creek dams). Further, justification is clearly outlined in Reasons for Selection: “Restore degraded fish habitat and improve summer water temperatures for coldwater species below the dam.”

Management Action 8 states: “The discharge from Hodenpyl Dam currently violates the 1992 Federal Energy Regulatory Commissions Settlement Agreement in terms of temperatures. Consumers Energy Company is working with a consultant and addressing the feasibility of a cold-water draw from the bottom of the reservoir. Continued department involvement is necessary to provide critical review of consultant studies and negotiate a reasonable alternative to the existing situation.” And recommends options to introduce cold water during the summer, to improve natural reproduction and salmonid recruitment and growth rates, improve water quality, and reduce reliance on hatchery stocking.

Additional Management Options include land purchase and protection for environmentally sensitive areas, to maintain access, and to improve public access, to support administration of the Natural Rivers Program designation for the Pine and Manistee Rivers, and reduce impacts from detrimental road stream crossings and other infrastructure.

Hodenpyl P-2599

Fisheries Management:

The Manistee River below Hodenpyl Dam is stocked annually with 25,000 brown trout and 25,000 rainbow trout. This costs \$77,750 annually (2022 prices). Hodenpyl Pond is also stocked with 100,000 walleye on an every-other year basis, which costs \$6,540. The Upper Manistee River, further upstream than Hodenpyl Dam, including the mainstem and many tributaries is designated as a Natural River by the state of Michigan indicating its importance to recreational users and the state as a whole. The Natural Rivers Program is designed to prevent unwise development from occurring on these rivers and thus conserving the biological, scenic, and aesthetic qualities for river users. Portions of the Manistee River, including segments both between Tippy and Hodenpyl and tributaries upstream of Hodenpyl have been evaluated for potential Arctic grayling reintroduction efforts.¹³

¹² Rozich, T.J. 1998. Manistee River assessment. Michigan Department of Natural Resources, Fisheries Special Report 21, Ann Arbor.

¹³https://www.researchgate.net/publication/354260468_Rating_the_Potential_Suitability_of_Habitat_in_Michigan_Stream_Reaches_for_Arctic_Grayling

Compliance:

The Manistee coldwater fishery is in jeopardy because Hodenpyl does not meet State Water Quality Standards of the 401 Water Quality Certificate. Fisheries impacts due to water warmed in the impoundment are currently mitigated by stocking. The current warming of cold water prevents the system from being self-sustaining. Article 405 standards for water temperature are not being met. The Hodenpyl Dam is out of compliance slightly more than half of the time during the period of June through September (53%) and is out of compliance 70% of time in July and August. An upwelling system was installed at Hodenpyl in 2007, but that has not sufficiently mitigated or prevented water temperature violations.

Shoreline:

The Hodenpyl Dam includes 34.9 miles of shoreline, of which 28.8 miles is managed as buffer zone by Consumers. Of the remainder, 1.9 miles is managed by the U.S. Forest Service, 1.4 miles is in other ownerships and 2.8 miles is Consumers' property not included in the buffer zone. This latter category includes the dam and powerhouse, and the Highway M-115 transportation corridor that crosses the upper part of the reservoir.¹⁴ Michigan DNR estimates there are 8 private ownerships in the impoundment.¹⁵ Numerous docks are present- it is unclear if permits were obtained, it is possible the structures are seasonal private structures, but some appear to be permanent, commercial structures which should be able to show a permit was obtained.

Tippy P-2580

Fisheries Management:

The Manistee River below Tippy Dam is stocked annually with 60,000 brown trout, 55,000 Michigan steelhead, 34,000 Skamania steelhead, 78,500 coho salmon, and occasionally with surplus small yearling and fall fingerling steelhead. This costs approximately \$235,920 on an annual basis (excluding the potential surplus steelhead). Tippy Pond is also stocked with 77,000 walleye on an every-other-year basis, which costs \$5,035.80. Channel catfish are also stocked into Tippy Pond.

Most of the fishing pressure on the lower Manistee River takes place in the first couple of miles below Tippy Dam, although much of this stretch of river is accessible through Manistee National Forest land. The Manistee River below Tippy Dam is the most heavily fished stream reach in the state, averaging approximately 500,000 angler hours on an annual basis.

Tippy is downstream of the former Stronach Dam site; removal of Stronach was completed in 2003. Round goby and sea lamprey have been observed downstream of

¹⁴ 2018 Buffer Zone Monitoring Report 20180405-5248.

¹⁵ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

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Tippy Dam. Zebra mussels have been observed downstream and within Tippy dam impoundment and upstream in the tailwaters of Hodenpyl Dam.

Compliance:

The coldwater fishery in the Manistee is in jeopardy because the Tippy Dam does not meet Article 405 water temperature standards (warming water outside of coldwater requirements). Ongoing fisheries impacts are currently mitigated through extensive stocking. The current warming in the impoundment prevents the coldwater fishery from being self-sustaining. The dam is out of compliance 62% of the time from June through September and 78% of the time during July and August. An upwelling system was installed at Tippy in 2012, but that has not offset the warming impacts of the impoundment nor alleviated the water temperature compliance issues.

Shoreline:

The Tippy Dam includes 42.6 miles of shoreline, of which 4.1 miles is managed as buffer zone by Consumers. Of the remainder, 37.5 miles is managed by the U.S. Forest Service, 1.4 miles is in other ownerships and 1.0 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.¹⁶ Michigan DNR is not aware of private ownerships or shoreline developments in the impoundment.¹⁷

Michigan DNR recreation facility management:

Michigan DNR operates Tippy Dam State Recreation Area. The campground part of the facility is on the reservoir and is leased by Michigan DNR. There is boating access, piers, and a northside tailwater access. The lease with Consumers has very precise conditions including for termination and is possibly running year-to-year as of the late 2010s. There are two small Commercial marinas licensed to operate: Camp Mana Pine and Loomis Landing.

Sensitive Species:

Tippy powerhouse provides a regionally important hibernacula to an estimated 10,000 bats. A small proportion of listed species are represented in the colony. Most are little brown bats (*Myotis lucifugus*), with some Northern long-eared bats (*Myotis septentrionalis*) and the only known hibernacula for Indiana bats (*Myotis sodalis*) in Michigan.¹⁸ Other sensitive species observed in or near the project license boundary include: trumpeter swan (*Cygnus buccinator*), common loon, (*Gavia immer*), Eastern pipistrelle (*Perimyotis subflavus*), lake sturgeon (*Acipenser fulvescens*), wood turtle

¹⁶ 2018 Buffer Zone Monitoring Report 20180405-5248.

¹⁷ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

¹⁸ Indiana Bat Project Review in Michigan July 2022

https://www.fws.gov/sites/default/files/documents/Michigan%20IBAT%20Project%20Review%20all%20projects%20draft%202022_1.pdf

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(*Glyptemys insculpta*), bald eagle (*Haliaeetus leucocephalus*), and Louisiana waterthrush (*Parkesia motacilla*).

Muskegon River Dams

Like many Michigan waterways, the Muskegon River has faced substantial challenges from anthropogenic degradation since the 1800s, with a history of logging impacts and fragmentation, land use change and pollution peaking in the 1950s and 1960s (O’Neal 1997).¹⁹ The impacts of post-settlement degradation were so severe, that they contributed to the extirpation of Arctic grayling. Michigan has been trying to reintroduce this native fish and improve conditions for species whose populations declined severely including lake sturgeon, walleye, river spawning lake whitefish and round whitefish, pine marten and others, while protecting other native and resident species and their habitats.

The Muskegon River provides regionally important fishing and recreation opportunities. An estimated 1,473,420 angler-hours were expended on the river during a one-year period (O’Neal 2017).²⁰ The number of angler-hours per acre was very high for the river section from Croton Dam to Newaygo, and high for the river sections from Newaygo to Muskegon Lake and Reedsburg Dam to Dolph Road.

Michigan DNR is aware that some large hydropower dams are utilized for mixing lampricide treatments, and we anticipate that cooperating in modifying that approach would be necessary if dam operations change.

Recent History of Fisheries Management:

The 2003 Muskegon River Management Plan²¹ identified problems and opportunities related to aquatic resources and fisheries within the Muskegon River Watershed. Much of the attention regarding dams and barriers focused on smaller, non-hydropower dams, likely because of the anticipated limitations and obligations for FERC-regulated facilities, and the prevalence of dams that served little purpose while causing substantial resource impacts.

Management Action 13 discusses hydropower facilities, water quality and fisheries management. It focuses on improving river and impoundment habitat by improving discharges from Rogers, Hardy and Croton hydroelectric facilities. The management options include: “Restore or rehabilitate natural flow patterns at hydroelectric dams by removal, or require operation in non-peaking mode...” and to rehabilitate or mitigate

¹⁹ O’Neal, R. P. 1997. Muskegon River Watershed Assessment. Michigan Department of Natural Resources, Fisheries Division Special Report Number 19, Ann Arbor. Accessible from: <https://wmsrdc.org/wp-content/uploads/2018/04/Muskegon-River-Fisheries-Assessment.pdf>

²⁰ O’Neal, R.P. 2017. Muskegon River Fisheries Management Summaries. Department of Natural Resources, Fisheries Division. Ann Arbor.

²¹ O’Neal, R.P. 2003. Muskegon River Management Plan. Michigan Department of Natural Resources, Fisheries Division Management Plan 04. Ann Arbor.

habitat loss resulting from water quality problems caused by the hydroelectric dams, including dissolved oxygen at Hardy and water quality in Croton impoundment and downstream.

Actions 14 and 15 reflect the expectation propagated in the Settlement discussions, that the hydroelectric facilities would be operating for the foreseeable future and thus focus on impoundment fishery protection via reducing fish entrainment, reducing erosion in the impoundments and downstream, and providing for fish passage at Rogers, Hardy, Croton, Reedsburg, Houghton Lake, and Higgins Lake dams, including providing for populations of potamodromous fish above Croton and other hydropower facilities by either dam removal or installation of fish passage devices.

The Muskegon River Management Plan noted the importance of managing for rare, indigenous species including river redhorse (a state threatened species), which had been collected in pre-licensing dam studies, lake trout which were occasionally caught in the river, and lake sturgeon.

Rogers P-2451

Fisheries Management:

There are no fish stocked into Rogers impoundment. Rogers Dam inundates one of the three highest gradient stretches of the Muskegon River, with gradients in excess of 10 ft/mile (the others are at the former Big Rapids dam and Consumers' Croton Dam).

Compliance:

It is unclear if the Rogers Dam is operating under the stipulations approved by the 2017 license amendment. The intent of the amendment was to automate Croton Dam and Rogers Dam in an effort to further minimize run-of-river fluctuations, reducing the need for the construction of a flow gage on the Muskegon River above the Rogers Dam at the Big Rapids location to assist in calculating needed discharge flows at Croton. FERC presumed in the 2017 license amendment that the system would be operational immediately after approval, but it learned through a non-compliance allegation that the automation was not complete at Croton, calling into question the current status at Rogers. (Additional detail in Croton section and, FERC December 8, 2022 letter).²²

Shoreline:

The Rogers Dam includes 21.3 miles of shoreline, of which 1.6 miles is managed as buffer zone by Consumers. Of the remainder, 19.5 miles is in other ownership and 0.6 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse. As noted above, the Rogers buffer zone managed by Consumers accounts for less than 10% of the reservoir shoreline. The lands involved

²² FERC. Allegation of Noncompliance of Croton Project Flows, Article 401. Project No. 2468-274, Consumers Energy Company. Accession number: 20221208-3011.

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are located immediately upstream of the dam on both the east and west shoreline.²³ Michigan DNR estimates more than 250 private properties with developments in the impoundment,²⁴ in addition, Mecosta Township's Ulrich Park has a license for operation within the buffer zone.

Michigan DNR recreation facilities management:

Michigan DNR operates four recreation sites in the vicinity of the Muskegon River FERC Dams. Three sites are located on state owned land immediately adjacent to the project license boundaries and one (Newaygo State Park) is located on Consumers owned land. Two Michigan DNR managed sites are located at Rogers Dam.

- MDNR Mecosta-Big Rapids Township Line Boat Launch
- MDNR Rogers Heights Boat Launch

Hardy P-2452

Fisheries Management:

Hardy Dam impoundment is the deepest of the impoundments on the Muskegon River, with depths exceeding 100 feet near the dam.²⁵

Michigan DNR has recently initiated a stocking program for Hardy impoundment of 1,000 Great Lakes strain Muskellunge. This costs \$9,170 per stocking event. Michigan DNR will likely stock three years in a row, and then every other year or every third year after that.

Compliance:

Hardy is a peaking facility, with river flows reregulated by Croton, so any decision to change operation at either of these facilities including project license retirement must involve determining an appropriate alternative for operating the remaining facilities to protect the river.

Hardy is expected to require a \$350 million investment to upgrade its spillway. Among many resource concerns with this facility, is the potential need for a sustained impoundment drawdown, installation of coffer dams to facilitate repairs, and the impacts of these activities on the recreational use of the impoundment and adjacent areas. Michigan DNR plans to recommend that at minimum, the drawdown is accompanied by installation of temporary extensions for boat launches and access points associated with the dam and impoundment recreation. In addition, we have concerns about the impacts on ratepayers of this investment given uncertainty about the fate of the dam.

²³ 2018 Buffer Zone Monitoring Report 20180405-5248.

²⁴ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

²⁵ Tonello, M.A. 2022. Hardy Dam Pond. Michigan Department of Natural Resources Status of the Fishery Resource Report Report No. 2022-327.

Recreation:

The Hardy reservoir has substantial recreation development with five major parks, fourteen commercial marinas, club and homeowner association uses, along with numerous individual and small group docking sites.²⁶ In addition, dock licenses for adjacent owners were noted, including comparisons of counts of docks with licenses Consumers was aware of and plans by Consumers to follow up. Michigan DNR manages the Highway 131 Boat Launch. The Hardy Dam and impoundment occurs within the Huron-Manistee National Forest.

Development of Dragon Trail (Michigan's Dragon) at Hardy Dam continues with approximately 21.75 miles of trail complete at the end of 2021. Michigan's Dragon at Hardy Dam is a 47-mile hiking and biking trail that will be located on Consumers' property located around Hardy Pond and within the buffer zone. This application was approved by FERC on July 15, 2019 and groundbreaking occurred on October 4, 2019.

Michigan DNR recreation facilities management:

Michigan DNR operates four recreation sites in the vicinity of the Muskegon River FERC Dams. Hardy dam includes much of the Newaygo State Park, which is operated by Michigan DNR under a lease agreement, and a Michigan DNR managed boat launch.

- MDNR Highway 131 Boat Launch

Shoreline:

The Hardy Dam includes 49.4 miles of shoreline, of which 46.1 miles is managed as a buffer zone by Consumers. Of the remainder, 1.2 miles is in other ownerships and 2.1 miles is in Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse area and the US-131 transportation corridor that crosses the upper part of the project license boundary.²⁷ Michigan DNR is not aware of private residential developments in the impoundment,²⁸ but there are boat clubs and other uses as noted. A new dock on private land is noted in addendum photo 2-56 of the 2018 report, which Michigan DNR was unable to find an EGLE permit for; it is noted as first appearing in 2017. It is not clear if this dock is permanent.

Public interest and additional topics:

Hardy Hydroelectric Plant is on the National Register of Historic Places.

Sensitive Species:

Sensitive organisms expected in the Hardy Dam project license vicinity include: black sandshell (*Ligumia recta*), round pigtoe (*Pleurobema sintoxia*) elktoe (*Alasmidonta*

²⁶ 2018 Buffer Zone Monitoring Report 20180405-5248

²⁷ 2018 Buffer Zone Monitoring Report 20180405-5248.

²⁸ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

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marginata), little brown bat (*Myotis lucifugus*), furrowed flax (*Linum sulcatum*), Alleghany or Sloe Plum (*Prunus umbellata*)

Croton P-2468

Fisheries Management:

The Muskegon River below Croton Dam is the second most heavily fished reach in the state, averaging 340,000 angler hours annually. The Muskegon River below Croton Dam is stocked annually with approximately 85,000 rainbow trout (Eagle Lake strain), 70,000 brown trout, 55,000 steelhead, and 35,000 coho salmon. The cost of these stocking activities is nearly \$370,000 on an annual basis. No fish are stocked into Croton Pond.

Compliance:

Water quality and reregulation at Croton Dam and downstream pose significant ongoing impacts. The Muskegon coldwater fishery is in jeopardy because the Croton hydroelectric facility does not meet standards for water temperature, and fisheries impacts are currently mitigated by stocking. The existing thermal pollution caused by the impoundment, and barrier to migration from the dam, prevents the coldwater fishery from being self-sustaining. Article 405 standards for water temperature were not met 67% of the time during June through September, and 90% of the time in July and August. An upwelling system was installed in 2009, which operates into September, to attempt to address water quality issues, but has not been successful in preventing violations of water temperature standards.

A December 8, 2022²⁹ letter from FERC outlines an example of Consumers failing to adhere to Article 401 reregulation requirements (attempting to restore reservoir elevations at the expense of downstream conditions, even though the reservoir elevations were in compliance and downstream flows are a priority at the dam). The letter includes discussion of Consumers failing to notify Michigan DNR, MMAC and others in a timely fashion and omitting that the automation promised in 2017 was not completed- meanwhile gages were removed that otherwise would likely have been kept.

In addition, Michigan DNR is concerned about potential loss of control of shoreline condition, and potential granting of easements for development activities that may not have been appropriately permitted.

Sensitive Species:

Downstream of Croton, sensitive populations of black redhorse (*Moxostoma duquesnei*) and lake sturgeon (*Acipenser fulvescens*) are present, and likely negatively influenced by the presence and management of Croton and other upstream dams. The fragmentation

²⁹ Federal Energy Regulatory Commission. Allegation of Noncompliance of Croton Project Flows, Article 401. Project No. 2468-274, Consumers Energy Company. Accession number: 20221208-3011.

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by Croton Dam and Hodenpyl Dam may be the reason that river-spawning stocks of lake trout, lake whitefish, and round whitefish are thought to have been extirpated from the river (O'Neal 1997).³⁰ There are also state listed freshwater mussel species occurring downstream of Croton Dam.

Public interest and additional topics:

Croton Hydroelectric Plant is on the National Register of Historic Places.

Recreation:

There are several parks and campgrounds in the dam vicinity, as well as a portage, dock, and boat launch. Croton Dam occurs within the Huron-Manistee National Forest.

Shoreline:

The Croton Dam includes 25.8 miles of shoreline, of which 3.0 miles is managed as buffer zone by Consumers. Of the remainder, 2.2 miles of the buffer zone is managed by the USDA Forest Service, 20.0 miles is in other ownerships and 0.6 miles is Consumers property not included in the buffer zone. This latter category is made up of the dam and powerhouse. Nearly 80% of the Croton reservoir shoreline is privately owned and includes significant residential development, a campground owned and operated by Croton Township and numerous small commercial recreational enterprises.³¹ Michigan DNR estimates over 600 private and residential developments are in the impoundment.³²

Grand River

Webber hydroelectric facility is Consumers only Grand River FERC dam. Other hydropower dams, including the City of Portland Municipal dam (375 kW) and Smithville Mix (702 kW) are much lower in authorized generation capacity than Webber (3250 kW, slightly above average for Michigan hydropower facilities, well below average for Consumers' fleet).

Recent History of Fisheries Management:

The 2017 Grand River Assessment³³ notes that the construction of dams in the middle river segment has inundated some of the most hydraulically diverse habitats. The gradient at Portland Dam is 3.0 ft/mile, the tailwater of Portland is the upper end of the Webber impoundment, which stretches just over 7 miles to the dam. At Webber Dam, the river channel drops 30 feet from impoundment to tailwater, and the inundated area

³⁰ O'Neal, R. P. 1997. Muskegon River Watershed Assessment. Michigan Department of Natural Resources, Fisheries Division Special Report Number 19, Ann Arbor. Accessible from: <https://wmsrdc.org/wp-content/uploads/2018/04/Muskegon-River-Fisheries-Assessment.pdf>

³¹ 2018 Buffer Zone Monitoring Report 20180405-5248.

³² DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

³³ Hanshue, S.K., and A.H. Harrington. 2017. Grand River Assessment. Michigan Department of Natural Resources, Fisheries Division, Fisheries Report 20, Lansing.

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would have a gradient of 4.24 ft/mile. Both the Portland and Webber licenses are scheduled to expire in 2041.

Webber P-2566

Fisheries Management:

One of the most popular fisheries at Webber is for coho salmon. The primary fisheries interests are riverine and tailwater fishing, though some impoundment fishing does occur, including among paddlers. Webber Dam is an important access point for anglers, especially those who use the trail that is available for riverine access downstream beyond the tailwaters. There is a fishery for channel catfish and smallmouth bass in the river, the smallmouth fishing is especially good in the tailwaters. Michigan DNR also stocks walleye upstream and downstream of Webber Dam. Migratory steelhead and coho as well as occasional Chinook (king) salmon are targeted by anglers at Webber. Local fisheries managers have been interested in getting an additional boat access site downstream of Webber Dam, but among other concerns, uncertainty relating to Webber's future with Consumers is posing an additional obstacle. The removal of Lyons dam and deterioration of Wagar Dam and plans to remove Wagar have shifted access opportunities and had implications for navigation from downstream reaches up to Webber Dam.

During licensing Michigan DNR requested a cash bond to be set aside for project retirement and removal or perpetual care.

Fish Passage:

The context of fish passage at Webber Dam has changed since the license was issued and will continue to change; Lyons Dam (downstream) has been removed, and there is momentum at Wagar Dam to address the remaining impacts from the partially failed structure there. Upstream of Webber Dam is City of Portland's municipal hydropower facility. There is a cooperative agreement with City of Portland and Consumers to shut down generating facilities to allow for downstream fish passage protection for two weeks for coho salmon smolts. There is no similar accommodation for walleye. Pacific salmonids returning from Lake Michigan can pass the 6th street dam in Grand Rapids and traverse the river past Portland Dam. Coho and steelhead provide important fishing opportunities throughout the Grand River.

Michigan DNR's Southern Lake Michigan Management Unit currently conducts repairs to the fish ladders at Webber, including concrete work. The materials cost for the 2022 Webber fish ladder repairs was \$4,256. Labor costs were not readily available, but more than 180 staff hours were required for conducting repairs.

The fish ladders have been observed to allow upstream or downstream passage of 14 species of fish (Dexter 2002, Hanshue and Harrington 2017).³⁴ The fishway design includes a viewing chamber equipped with a video monitor that is used to count and identify fish using the ladder. The most common species using the ladder from February through April in a spring 2001 study were steelhead migrating upstream. In the fall of 2001, more than 3,500 coho salmon, 312 Chinook, and 819 steelhead were recorded, along with bluegill, channel catfish, smallmouth bass, walleye and various sucker species. Studies in 2008 were similar.³⁵

Sensitive Species:

It is likely the state threatened river redhorse sucker (*Moxostoma carinatum*) is present near Webber Dam and would benefit from greater passage opportunities. Experiments for conservation and management of Snuffbox mussels have occurred in the fishway at Webber Dam. The presence of endangered unionid mussels at the dam impoundment and tailwaters has been noted at least as far back as 2000.³⁶ Organisms that are listed in Michigan and expected to occur in the project license boundary include: blanchard's cricket frog, (*Acris blanchardi*), lilliput (*Toxolasma parvum*) and black sandshell, (*Ligumia recta*). State endangered mussels were found as recently as 2020 in Webber impoundment near the David Highway Bridge. Also observed in 2019: elktoe (*Alasmidonta marginata*) fluted-shell (*Alasmidonta costata*), creek heelsplitter (*Lasmigona compressa*), round pigtoe (*Pleurobema sintoxia*), and ellipse (*Venustaconcha ellipsiformis*).

Recreation:

Webber Dam is an important element of the state designated Middle Grand River Water Trail which begins at Eaton Rapids and ends in Lyons. Community members in the area are working on federal designation as a water trail for entire river. Multiple recreational user groups including paddling, fishing and conservation groups are interested in this dam. Webber Dam is regarded as having the worst portage in the region. The desired boat launch downstream would provide additional benefits to paddlers, but the fate of that launch is uncertain.

Lyons Dam downstream of Webber Dam has been removed, and a new boat launch is desired because boaters are having trouble navigating past Wagar Dam. The boat launch at the impoundment is not very popular among anglers, though recreational boaters do use it particularly to access deeper areas of the impoundment.

³⁴ Hanshue, S.K., and A.H. Harrington. 2017. Grand River Assessment. Michigan Department of Natural Resources, Fisheries Division, Fisheries Report 20, Lansing.

³⁵ Hanshue, S.K., and A.H. Harrington. 2017. Grand River Assessment. Michigan Department of Natural Resources, Fisheries Division, Fisheries Report 20, Lansing.

³⁶ Comments of Michigan Department of Natural Resources on Webber Hydroelectric Project license application under P-2566. Accession number: 20000322-0208.

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Shoreline:

The Michigan DNR estimates over 40 private and residential developments are in the impoundment.³⁷

Michigan DNR Recreation Facilities Management:

- Boat Launch: Webber Boat Launch
- West Tailwater Access
- East Tailwater Access

Kalamazoo River

Calkins Bridge Dam (also called Lake Allegan Dam) is Consumers' lowest capacity dam (2550 kW), and possibly the most complex, with substantial shoreline development in private ownership, and history of contaminants (significant industrial sources, upstream dam operations/issues, and to a far lesser extent via petroleum spills and emergency response). Calkins Bridge Dam must also be viewed in the larger context of the Environmental Protection Agency's Area of Concern for the Kalamazoo River. Numerous ongoing projects throughout the watershed must be incorporated into site specific decisions.

Recent Watershed History:

The 2005 Kalamazoo River Assessment³⁸ notes that the construction of dams in the mainstem Kalamazoo River inundated much of the limited higher gradient habitat available (the mainstem of the Kalamazoo River is mostly low-gradient channel). Dams in Mosherville, Marshall, Ceresco, Kalamazoo, and Plainwell inundated many of the high-gradient areas. Where present, dams and their impoundments have eliminated and fragmented some of the best pool and riffle habitat. These high-gradient riverine areas are essential spawning habitat for several species of fish. While disrupting stream functions including movement of sediment and woody material, dams impede fish movements to refuge habitats, fragment populations, and block spawning migrations. Mortality or injury often results while passing through or over dams, especially those with hydroelectric turbines. Great Lakes migratory fish can move from Lake Michigan upstream 26 miles to the Calkins Bridge Dam. Impoundments can increase stream temperatures resulting in an elimination of certain aquatic species below dams. The State of Michigan procured Trowbridge Dam, like Plainwell and Otsego dams, from Consumers Power to ensure its retirement and future removal.

³⁷ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

³⁸ Wesley, J.K. 2005. Kalamazoo River Assessment. Michigan Department of Natural Resources, Fisheries Division, Special Report 35, Lansing.

Calkins Bridge Dam / Lake Allegan P-785

Overview of Fisheries Management:

Downstream of the Calkins Bridge Dam impoundment and in the tailwaters is the “mini-Tippy” of the Kalamazoo River. Angler activity is extremely high. Michigan DNR stocks walleye (fry, spring fingerlings), and lake sturgeon, steelhead, coho, and Chinook. The steelhead, coho, and Chinook are caught mostly in the tailwaters of Calkins Bridge Dam, as are lake sturgeon. The fish ladder at the dam does not function. There is a substantial smallmouth bass and pike fishery in the river which is accessed via the tailwaters, and a smaller component of bowfishing in the impoundment and river downstream. In addition, there is a flathead and channel catfish fishery in the Calkins Bridge Dam vicinity. Signage regarding fish consumption in this area is increasingly presented in both English and Spanish due to a prevalence of Spanish-only residents who are subsistence fishers. There are also Hmong fishers using the Calkins Bridge Dam area, especially downstream.)³⁹

The impoundment fishery is contaminated, but progress is being made to address it, including through NRDA responsible party-funded removals of carp. Carp are considered “bioturbators” in that they cause resuspension of lake or river bottom sediments. Therefore, an additional impact of carp removal is changes to water quality and physical habitat and their removal facilitates increased water clarity, greater occurrence of aquatic macrophytes (as compares to algae) and shifts in fisheries composition to a higher proportion of game fishes and desirable species. Carp was the highest biomass before the removal efforts and community composition is shifting toward sportfish-yellow perch, crappie, smallmouth and largemouth bass, and panfish. It is unclear how pervasive the influence of carp removals on these and other elements will be, especially if carp removals are reduced or curtailed. Due to contaminants, it is recommended fish from the impoundment not be consumed.

Fish Passage:

Calkins Bridge Dam has a high potential value for fish passage for lake sturgeon and other native and resident fishes, particularly as progress is made in addressing Superfund and natural resources restoration projects upstream. Several dams have been removed and more are likely to come out, increasing the potential habitat value of active or passive fish passage at the dam. Calkins Bridge Dam is also a lamprey barrier, meaning consultation with USFWS lamprey program would be important to any dam modification or removal decision. In addition, as described in more detail elsewhere, contaminated sediments are present in the system and must be considered in fisheries management as well as infrastructure planning.

Round goby have been observed downstream of Calkins Bridge Dam.

³⁹ Michigan Department of Environmental Quality. 2003. Human Health Risk Assessment. Allied Paper, inc./ Portage Creek/Kalamazoo River Superfund site. Accessed from <https://semspub.epa.gov/work/05/249486.pdf>

Sturgeon:

There is a constructed riffle in the tailwaters between the Calkins Bridge Dam and the boat ramp to try to enhance lake sturgeon spawning habitat (in partnership with Michigan DNR, Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians (Gun Lake Tribe), and USFWS). Streamside rearing of lake sturgeon occurs near Richmond, Michigan (downstream), using eggs collected from mats immediately below the defunct fish ladder and main gates of Calkins Bridge Dam/Lake Allegan. Michigan DNR suspects that the majority of Lake sturgeon spawning in the Kalamazoo River is happening in the section downstream of Calkins Bridge Dam. There are plans to conduct a habitat suitability analysis in the Kalamazoo River to develop priority sites for protecting or enhancing sturgeon spawning and rearing habitat, including upstream as progress is made on superfund site and dam removals. Grand Valley State University has done larval drift studies for lake sturgeon in the recent past.

Sensitive Species:

A mussel survey by Echo Point boat landing found Wabash pigtoe (*Fusconia flava*) and mapleleaf (*Quadrula quadrula*) freshwater mussels in 2019. Surveys downstream ½ mile found Wabash pigtoe and fragile papershell (*Leptodea fragilis*), and unverified reports indicated potential presence of black sandshell (*Ligumia recta*) and fawnsfoot (*Truncilla donaciformis*) in the impoundment.

There was a fish kill recently. Based on available information, Michigan DNR believes the kill event primarily effected carp.

Recreation Facility Management:

Many people use the river corridor and area lakes for fishing, canoeing, motor boating, swimming, picnicking, and hunting. Lack of assured public access is the largest deterrent to the recreational potential of upstream areas and tributaries (Wesley 2005).⁴⁰

Most of the recreational use that occurs near the Calkins Bridge Dam is at facilities owned and operated by Michigan DNR. Our understanding is the only FERC license required recreation facility managed by Consumers is the take-out portion of the canoe portage. DNR manages a tailwater fishing and boat access area located immediately downstream from the dam, on both sides of the river, and includes a paved boat launch, shoreline angling access, vault toilet restroom facilities, trash receptacles, and parking. This site also serves as the downstream end of the existing canoe portage. A recreation study conducted for the Calkins Bridge Dam indicates that the Tailwater Fishing and Boat Access is an extremely popular fishing location and provides the downstream portion of the Calkins Bridge Canoe Portage. The Echo Point boat launch, located mid-way up the impoundment on the southern bank, provides parking and a paved boat launch. Echo Point is a public boat launch used for power boating, fishing, and limited

⁴⁰ Wesley, J.K. 2005. Kalamazoo River Assessment. Michigan Department of Natural Resources, Fisheries Division, Special Report 35, Lansing.

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waterfowl hunting. As discussed above, Calkins Bridge Dam recreation facilities include the Tailwater Fishing and Boat Access, the Calkins Bridge Canoe Portage, and boating access at Echo Point, all of which are fully or partially owned and operated by the Michigan DNR.

The Calkins Bridge Dam is not as important for maintaining current methods of upstream access as some other impoundments because currently Allegan City Dam is upstream. Our understanding is that Michigan DNR-Wildlife Division owns parcels that extend far into the impoundment including to the historic channel, such that if water levels or dam configuration were to change, we believe DNR would still have access to the former impoundment, as well as operating sites upstream and downstream. There is also a greenway plan that contemplates development of a water trail, but to our knowledge these plans are unofficial.

Fishing and Boating:

The Calkins Bridge Dam is an important recreational access point: the area's "mini-Tippy Dam" in terms of pressure in the tailwater, much of it centered on the west side fishing platform. There is additional shoreline access and boating access opposite that on the east side of the river downstream of the dam. In the impoundment, there is a DNR Wildlife managed site referred to as "Allegan Dam Upper Boat Launch." The current situation in the tailwater (with a very high angler density) creates concerns for law enforcement, and angler conflicts.

Photo of west side fishing platform during salmon season:



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A Recreational Fishing Economic Assessment is available from the Kalamazoo River Area of Concern (AOC) (Stratus 2009).⁴¹ They assess a single Kalamazoo River fishing angler day at \$23.73 per forgone angler day. Creel data was used to determine river angling days on the Kalamazoo River below Calkins Bridge Dam to be 19,092 fishing days in 2004 (Jay Wesley, Michigan DNR Fisheries Division, reported in Stratus Survey).

Shoreline:

The Michigan DNR estimates over 480 private and residential developments are in the Calkins Bridge Dam impoundment.⁴²

Public Interest and Additional Topics:

Downstream of the Calkins Bridge Dam is a state designated Natural River. The Allegan State Game Area provides 48,000 acres of state-owned land in the lower river and mouth areas. The game area extends north and east, approximately paralleling the lower 2/3 of Calkins Bridge Dam impoundment, including the Echo Point boat launch on the eastern edge of Valley Township.

Water quality reports for 2022 suggest: 0% temperature violations;<1% DO violations (violations likely due to equipment failure).

Superfund and Contaminants:

Calkins Bridge Dam is the downstream Area 6 from Upper Unit 1 of the Kalamazoo River Superfund site. Calkins Bridge Dam impoundment (Lake Allegan) may be the most polluted of the remaining Kalamazoo superfund sites. Addressing the future of the dam will require consideration of contaminated sediments. Current plans may rely on natural remediation, leaving some contaminants in place. The impoundment fish community is poor due to influence of carp, there is also a Total Maximum Daily Load for phosphorus from Calkins Bridge Dam impoundment (Lake Allegan) going upstream into the City of Kalamazoo. Bioturbidity caused by carp is substantial. One of the NRDA responsible parties has funded an experimental carp removal program with a private contractor involving baited lift nets through which about 100,000 carp have been removed. The community and population of fishes in the impoundment has shifted as a result. Carp was the highest biomass and it is shifting toward sportfish; yellow perch, crappie, smallmouth and largemouth bass, and panfish.

Au Sable River Dams

The primary fisheries management objectives in the Au Sable River focus on riverine fisheries. While there have been efforts to improve the quality of fisheries in the

⁴¹ Stratus Consulting. 2009. Stage I Assessment Report, Volume 2 – Economic Assessment: Kalamazoo River Environment. Recreational Fishing Update. Prepared for: Michigan Department of Environmental Quality, Michigan Attorney General, U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration July 16, 2009.

⁴² DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

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impoundment, the impoundments fisheries do not represent regionally important fishing opportunities, and the fisheries within them tend to be marginal for warmwater fishes due to limitations of available littoral zone habitats. In addition, the warming effect of the impoundments, especially Mio tends to negatively impact the riverine fisheries and Michigan DNR has responded by attempting to mitigate for losses via costly stocking programs.

Fisheries that have been of interest to anglers due to the presence of impoundments (such as northern pike and muskellunge) would likely continue to be available for anglers if the impoundments were not present. The walleye and muskellunge fisheries that have been a management option in the present situation would continue as those fish are able to take advantage of free-flowing riverine conditions as well. In a dam-out scenario the high-gradient habitats which are currently inundated would provide valuable habitat to aquatic species that benefit from those, including walleye, and potentially lake sturgeon and other organisms. Where walleye are present, it is anticipated that the increase in natural recruitment due to available spawning would offset impacts from the dams being removed.

Because of the biological and aesthetic qualities and the desire to preserve those qualities, the Au Sable River is a state designated Natural River from its headwaters downstream to Loud Dam. One of the ten Natural Rivers Program protected values is free-flowing condition. Portions of the Au Sable mainstem are also federally designated under the Wild and Scenic Rivers Act. US Forest Service operates numerous recreation facilities along with Michigan DNR. The Au Sable River mainstem is home to AuSable River Canoe Marathon, an annual canoe race from Grayling to Oscoda. There are substantial brown and rainbow trout fisheries from Mio to Alcona. Between Alcona and Foote, many anglers target smallmouth and trout. Below Foote Dam steelhead and salmon are popular fisheries, including a recent interest in Atlantic salmon.

The 22-mile River Road Scenic Byway extends westward from Lake Huron to the inland lands of the Huron-Manistee National Forests, paralleling the historic Riviere aux Sable (River of Sand), and includes attractions and overlooks along the river.

The river corridor between Mio Dam and Alcona Dam is a very popular destination for many forms of recreational use including fishing, canoeing, kayaking, hunting, trapping, horseback riding, hiking and bird watching. At times the river can be very congested with summer watercraft use, including from several liveries.

Michigan DNR is aware that some large hydropower dams are utilized for mixing lampricide treatments, and we anticipate that cooperating in modifying that approach would be necessary if dam operations change.

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The Au Sable River is known to have areas of groundwater contaminated with polyfluoroalkyl substances (PFAS), including near Oscoda and Camp Grayling.⁴³ Oscoda's Wurtsmith Air Force Base is also a Superfund site with ongoing operation and maintenance activities and some investigations ongoing.⁴⁴

Recent History of Fisheries Management:

The 2005 Au Sable River Management Plan⁴⁵ identified problems and opportunities related to aquatic resources and fisheries within the Au Sable River Watershed. Much of the attention regarding dams and barriers focused on smaller, non-hydropower dams, likely because of the anticipated limitations and obligations for FERC-regulated facilities, and the desire for active management.

Management Action 2 discusses sediment and woody material transport and channel morphology. The management options include: "Restore natural transport of sediment and woody debris by removing all dams on the Mainstem Au Sable River..." and to rehabilitate cold water resources by "removing or physically modifying dams to reduce their thermal effects on downstream reaches." And to restoring biological communities including potential for fish migration and improve fisheries management by removing dams wherever possible.

Management Action 5 discusses water quality protection. The management options include: "Rehabilitate cold water temperature conditions downstream of Mio and Alcona dams by removing them or modifying dams to enable cold water releases." While Management Action 8 includes a variety of permit review and development comments, and Management Action 12 discusses fish passage options including for historically and recreationally important runs of potamodromous fishes.

Mio P-2448

Fisheries Management:

If the negative influence of Mio Dam on water temperatures were eliminated, Michigan DNR expects that the resident brown trout fisheries below the dam would be self-sustaining. The fishery would be substantially improved, and stocking would likely not be required in favor of natural reproduction. This would be realized in part due to an expected 3-4F decrease in water temperatures during critical summer months. Though no longer stocked, walleye are present both upstream and downstream of Mio Dam. There are substantial brown and rainbow trout fisheries from Mio Dam to Alcona Dam.

⁴³ Michigan PFAS Action Response Team, 2022. Information page: <https://www.michigan.gov/pfasresponse/investigations/sites-aoi> and map: <https://gis-egle.hub.arcgis.com/datasets/egle::michigan-pfas-sites/explore>

⁴⁴ EPA Region 5, Superfund Site information
<https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0503675>

⁴⁵ Sendek, S. P. 2005. Au Sable River Management Plan. Michigan Department of Natural Resources, Fisheries Division River Management Plan 07.

Some members of the angling public regard the persistent, often extreme ice conditions in the river near these dams to be potentially related to dam operations and alterations to river flows. Ice concerns should be incorporated into evaluation of alternatives by Consumers, to understand the current conditions as well as alleviate issues to the extent possible in the future conditions.

Stocking:

Michigan DNR has been studying the efficacy of its stocking program from Mio Dam to Alcona Dam, where about 48,000 brown trout are stocked annually between 8 sites. Rainbow trout are also stocked. Survival appears to be limited, and managers would like to move away from stocking brown trout. Prior to dam construction, trout, sucker species, northern pike, rock bass, yellow perch and an abundance of minnows were known to inhabit the reach between Mio and Alcona. Whitefish migrations were reported in the late summer.⁴⁶

Compliance:

The coldwater fishery in the Au Sable River is jeopardized by the thermal pollution caused in the Mio impoundment. Mio Dam does not meet standards, and fisheries impacts are currently mitigated by stocking. The current thermal pollution prevents the coldwater fishery from being self-sustaining. The Mio Dam has been out of compliance with water temperature standards 33% of the time in June and September, and 76% of the time in July and August. An upwelling system was installed in 2009 which operates into September. Yet, water quality violations have occurred in all but two years in July since 2009.

Recreation:

In addition to camping opportunities and fishing upstream and downstream of the dam, there are canoe rental services available for trips starting above or below the Mio Dam. Camp 10 Bridge Boat Launch operated by Michigan DNR Parks and Recreation Division provides a hard surface for launching medium watercraft and about 30 parking spaces. Nearby, Big Creek Township has fishing pavillions on either side of the Au Sable River which are accessible. The M-33 Park includes an accessible fishing dock, just below the Mio Dam with a wide gravel path leading to it. From Mio Pond to Lake Huron, the Au Sable is primarily managed by the Huron Manistee National Forest, USFS. In addition to the state designation under Michigan's Natural Rivers Program from the headwaters to Loud Dam, the Au Sable National Scenic River designation stretches 23-miles, from Mio Dam to Alcona Dam.

⁴⁶ Cwalinski, T.A. 2004. Alcona Dam Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2004-6. Lansing, MI.

Shoreline:

The Mio impoundment includes 25.5 miles of shoreline, of which 17.7 miles is managed as buffer zone by Consumers. Of the remainder, 5.8 miles is managed by the U.S. Forest Service, 1.6 miles is in other ownerships and 0.4 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.⁴⁷ Michigan DNR estimates that there are over 40 private ownerships in the impoundment.⁴⁸

Michigan DNR Recreation Facilities Management:

- Camp Ten Launch – PRD
- Mio Dam impoundment boat launch and pier
- Mio-M33 Roadside Access – PRD
- Mio Pond Forest Campground

Public Interest and Additional Topics:

Mio Dam includes a state historic site. The river in this stretch includes state and federal designations for natural and scenic values. The former Hoskins Manufacturing Plant (downstream of Mio Dam near Perry Creek) is a potential source of groundwater contamination in the form of tetrachloroethylene, chromium and nickel.⁴⁹

Alcona P-2447

Fisheries Management:

Local managers believe that walleye may overwinter in Alcona impoundment, moving up from Alcona to Mio. They also anticipate that the spawning habitat would be greatly improved if the dam was not present. Zebra mussels are known to inhabit the Alcona Dam impoundment. Panfish are often targeted by anglers, but tend to be of marginal quality, with below average growth rates.⁵⁰ Black crappie, rock bass, and yellow perch occasionally show better growth rates and year class structures. In the riverine areas between Alcona and Foote, many anglers target smallmouth and trout.

The Management Direction section of the Alcona Dam Pond status of the fishery report⁵¹ states "This Au Sable River system once provided critical spawning habitat for lake sturgeon prior to fragmentation created by the construction of hydroelectric dams. Investigations should take place to determine the potential for re-introduction of lake sturgeon into the river system near Alcona Dam Pond" at that time envisioning stocking or fish passage, but more recently in the context of dam removal.

⁴⁷ 2018 Buffer Zone Monitoring Report 20180405-5248.

⁴⁸ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

⁴⁹ Sendek, S.P. and Nuhfer, A.J. 2007. Au Sable River, Mio Dam to Alcona Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2007-22. Lansing, MI.

⁵⁰ Cwalinski, T.A. 2004. Alcona Dam Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2004-6. Lansing, MI.

⁵¹ Cwalinski, T.A. 2004. Alcona Dam Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2004-6. Lansing, MI.

Stocking:

There was a long history of stocking walleye, though occasionally survey data showed natural reproduction was responsible for strong year class recruitment. Because of variable year classes, and despite natural reproduction in the pond and upstream, stocking of walleye occasionally was conducted. In the most recent years walleye were not stocked in Alcona Dam impoundment.

There currently are very small numbers of brown trout and rainbows stocked. The Management objective is primarily to support interest in low density/large fish between Alcona and Loud. Stocking may be discontinued, for a number of reasons, including that the fishable population in the river downstream has some natural reproduction, and a popular fishery for smallmouth bass is available. A more valuable riverine fishery would likely be self-sustaining were it not for habitat fragmentation, water quality, and other issues from the dams.

Compliance:

The coldwater fishery in the Alcona reach of the Au Sable River and downstream continues to decline because the Alcona Dam does not meet water quality standards for temperature. Coldwater fisheries impacts are currently mitigated by stocking. However, that stocking input has been reduced to a very small number compared to better habitat coldwater reaches. This stocking is to satisfy a limited number of anglers seeking to catch few, but large trout that may successfully survive the thermal pollution. The current non-compliance for water temperatures (compounded by non-compliance at Mio Dam) prevents the coldwater fishery from being self-sustaining. The Alcona Dam has been out of compliance with water temperature standards 70% of the time June through September, and 89% of the time in July and August.

Shoreline:

The Alcona Dam includes 16.8 miles of shoreline, of which 7.3 miles is managed as buffer zone by Consumers. Of the remainder, 8.9 miles is managed by the U.S. Forest Service, 0.6 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.⁵² Michigan DNR is not aware of private ownerships in the impoundment.⁵³

Loud P-2449

Fisheries Management:

The primary management effort in Loud in the past focused on muskellunge and other Great Lakes fishes, but those efforts have been redirected to Cooke Dam. In the riverine areas between Alcona and Foote, many anglers target smallmouth and the occasional

⁵² 2018 Buffer Zone Monitoring Report 20180405-5248.

⁵³ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

trout. A 1999 angler survey indicated harvest was dominated by bluegill and yellow perch. Catch and release fishing was common for bluegill, smallmouth bass, yellow perch, and rock bass. The most recent general fish community survey in Loud Pond occurred in 2008⁵⁴. The 2008 survey occurred a month earlier and in colder conditions than the previous survey and showed a larger proportion of predator game fish compared to panfish. Pike were the most abundant predator with 24% legal size. The fishery includes an average to slow growing pan fishery, none of which can be considered abundant, a low abundance predator population consisting of northern pike, smallmouth and largemouth bass and walleye, with low numbers of bass and walleye, though they are reportedly targeted. Walleye are low in numbers and likely transient from upstream populations. The management direction section states: "Loud Pond offers limited value for the fishery as an impoundment. Efforts should be made to foster relationships to restore the high-quality river environment that could exist following potential dam removal."⁵⁵

Stocking:

There has been previous stocking of muskellunge, which is no longer continued.

Shoreline:

The Loud Dam includes 19.7 miles of shoreline, of which 0.8 miles is managed as buffer zone by Consumers. Of the remainder, 18.6 miles is managed by the U.S. Forest Service, 0.3 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.⁵⁶ Michigan DNR is not aware of private ownerships or shoreline developments in the impoundment.⁵⁷ A gravel surfaced boat launch suitable to medium-sized watercraft is available for anglers on the south shore adjacent to the dam, maintained by Consumers as part of the Loud Dam FERC license.

Five Channels P-2453

Fisheries Management:

The Five Channels Dam impoundment shows very little indication of thermal stratification. It has very limited fisheries survey data, and limited creel data. Recent survey efforts (2016) showed presence of twenty-four species, with about one percent being composed of large predators (largemouth and smallmouth bass, walleye, and northern pike), and 72% being non-game species such as bowfin, bullheads and suckers. Much of the balance was panfishes (low diversity and quality: pumpkinseed, rock bass,

⁵⁴ Cwalinski, T.A. 2008. Loud Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report. Lansing, MI.

⁵⁵ Cwalinski, T.A. 2008. Loud Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report. Lansing, MI.

⁵⁶ 2018 Buffer Zone Monitoring Report 20180405-5248.

⁵⁷ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

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bluegill, and yellow perch), and minnows.⁵⁸ Fisheries staff noticed zebra mussels, rusty crayfish, and round goby at the Five Channels access site. Downstream of Five Channels Dam, the smallmouth bass fishery is more prominent- there is some interest in panfishing in the impoundment, but as noted in surveys the panfish fishery tends to be of marginal quality.

Stocking:

Five Channels was previously stocked with walleye but that program was discontinued.

Shoreline:

The Five Channels Dam includes 6.3 miles of shoreline, of which 3.5 miles is managed as buffer zone by Consumers. Of the remainder, 2.5 miles is managed by the U.S. Forest Service, 0.3 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.⁵⁹ Michigan DNR is not aware of private ownerships in the impoundment.⁶⁰ There are two boat docks noted in 2018 Buffer zone report for adjacent residences (2453-09, -10 and -11). Much of the shoreline is forested. In the riverine areas between Alcona and Foote, many anglers target smallmouth and trout.

Public Interest and Additional Topics:

The Five Channels Dam "Workers Camp" is listed on the National Register of Historic Places.

Cooke P-2450

Fisheries Management:

Local fisheries managers expect that opened-up spawning opportunities in the river for walleye would likely offset stocking, and the already attractive tailwater fisheries would expand if high-gradient habitat was no longer inundated. The primary management effort in Cooke has been for walleye and muskellunge. There are substantial populations of redhorse suckers and white suckers. It is possible that stocking of muskellunge would not be continued if impoundments were managed differently. In the riverine areas between Alcona and Foote, many anglers currently target smallmouth and the rare trout.

Northern Pike were the most abundant large predator collected during the most recent (2008) survey and were stunted. Pike on average were two inches shorter at age in Cooke Dam Pond.⁶¹ The majority of the bass captured in surveys were 10-15 inches in

⁵⁸ Cwalinski, T.A. 2016. Five Channels Impoundment. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2017-230. Lansing, MI.

⁵⁹ 2018 Buffer Zone Monitoring Report 20180405-5248.

⁶⁰ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

⁶¹ Hondzinski, A. (Michigan State University), and Cwalinski, T.A. 2017. Cooke Dam Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2017-242. Lansing, MI.

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length and less than age-6. Walleye up to age-6 were collected during the survey, and most were less than the harvestable minimum size limit of 15 inches. Round goby and zebra mussels have been observed in Cooke Dam impoundment.

Stocking (Spring 2022):

Walleye are stocked in Cooke Dam impoundment, along with fall fingerling muskellunge every 2-3 years. If the impoundments were not present, Michigan DNR could choose to continue supporting the muskellunge fishery through stocking, as it does in other riverine areas.

Shoreline:

The Cooke Dam includes 26.0 miles of shoreline, of which 2.7 miles is managed as buffer zone by Consumers. Of the remainder, 23.1 miles is managed by the U.S. Forest Service, 0.1 miles is in other ownerships, and 0.1 miles is Consumers' property not included in the buffer zone. This latter category is made up of the dam and powerhouse.⁶² Michigan DNR estimates there is a single private ownership in the impoundment.⁶³

Recreation:

Recreational opportunities around the impoundment include 7 miles of hiking and skiing trails, 42 primitive campsites, and 3 recreation destination points.⁶⁴ Two public boat launches provide public access to Cooke Dam Pond.

Public Interest and Additional Topics:

Cooke Dam is on the National Register of Historic Places.

Footnote P-2436

Fisheries Management:

Fisheries managers perceive the Lake Huron side of Lower Michigan as lacking free-flowing big river reaches compared to the Lake Michigan side. Managers indicate that providing access for anadromous fish, and a free-flowing reach of the Au Sable River with Great Lakes access would provide an incredible opportunity.

The most recent fisheries survey was 2003, with the most comprehensive recent survey occurring in 2002.⁶⁵ Panfish catch was comprised of rock bass, yellow perch, bluegill, pumpkinseed, and black crappie, with most panfishes being less than 6 inches in length. The only predator game fish collected in good numbers was northern pike, which was

⁶² 2018 Buffer Zone Monitoring Report 20180405-5248.

⁶³ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

⁶⁴ Hondzinski, A. (Michigan State University), and Cwalinski, T.A. 2017. Cooke Dam Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2017-242. Lansing, MI.

⁶⁵ Cwalinski, T.A. 2020. Foote Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2020-286. Lansing, MI.

predominantly represented by sub-legal fish, but some harvestable fish were collected. Only two walleye were collected in the survey, despite stocking efforts in the previous two-decades. Largemouth and smallmouth bass were collected in very low numbers during surveys, but reportedly are targeted by anglers. The Foote Dam impoundment showed stratification with the thermocline starting at about 30 feet deep. Walleye and muskellunge stocking efforts have shown very limited returns in terms of reported catches by anglers.⁶⁶

Below Foote Dam, steelhead and salmon are popular fisheries, including a recent interest in Atlantic salmon. Round goby have been observed downstream of Foote Dam. Zebra mussels have been observed in Foote Dam impoundment and tailwaters. Michigan DNR routinely coordinates with the Great Lakes Fishery Commission and Lamprey Control programs to optimize potential fish passage opportunities. We are concerned that alternatives considered may not support lamprey objectives because a Consumers 2007 filing from the retirement study indicated Consumers may not feel any obligation to assist with management of invasive sea lamprey.⁶⁷

Stocking (Spring 2022):

In Foote impoundment there is no walleye stocking, every five to six years if there are available spring fingerling muskellunge they have been added to Foote. A few anglers catch stunted pike, panfish and walleye in the impoundment; interest from anglers seems relatively low.

Below Foote Dam: 146,917 rainbow trout, 40,000 Atlantic salmon were stocked, along with 57,400 coho salmon.

Compliance:

The coldwater fishery in the Au Sable River is in jeopardy because the Foote Dam does not meet water temperature standards, and fisheries impacts are currently mitigated by stocking. The current thermal pollution and habitat fragmentation prevents the fishery from being self-sustaining. The Foote Dam has been out of compliance with water temperature standards 91% of the time between June-September, while non-compliant 100% of the time in July and August.

Shoreline:

The Foote Dam includes 27.5 miles of shoreline, of which 12.9 miles is managed as buffer zone by Consumers. Of the remainder, 13.0 miles is managed by the U.S. Forest Service, 0.2 miles is in other ownerships and 1.4 miles is Consumers' property not included in the buffer zone. This latter category includes the dam and powerhouse, and

⁶⁶ Cwalinski, T.A. 2020. Foote Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2020-286. Lansing, MI.

⁶⁷ Consumers Energy Company submits the Hydroelectric Plant Retirement Study for the Au Sable Rier Hydro Projects under P-2436. Part 4 of 4. Accession number: 20070614-0071.

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the Foote site Village recreation area, where River Road and parking area border immediately on the reservoir.⁶⁸ Michigan DNR is not aware of private ownerships in the impoundment.⁶⁹ There are areas for boat docks for an adjacent subdivision (Bissonette), and homeowner association (Seven Mile Hill).

The south shore has a large campground and boat launch located within Old Orchard Park. This public recreation facility is part of the Foote Dam FERC license, and is directly managed by Oscoda Township. The facility has also received funds from the Settlement Agreement, administered as a grant program through Michigan DNR. The township also oversees a paved boat launch near the dam which requires a permit for launching. The site offers ample parking for boat trailers and is known as Foote Site Park. There is a small unimproved launch site at the upper reaches of Foote Pond. This site is located in the more riverine reaches of the pond below Cooke Pond Dam.⁷⁰

Michigan DNR Recreation Facilities Management:

- Access site in Foote tailrace (south), Michigan DNR-PRD
- Boat access site above Rea Road Michigan DNR-PRD

⁶⁸ 2018 Buffer Zone Monitoring Report 20180405-5248.

⁶⁹ DNR RAS Plat analysis (ideally to be supplemented with information from Consumers).

⁷⁰ Cwalinski, T.A. 2020. Foote Pond. Michigan Department of Natural Resources, Fisheries Division, Status of the Fishery Resource Report No. 2020-286. Lansing, MI.



Michigan Hydro Relicensing Coalition

1620 High Street
Traverse City, MI 49684



Telephone (231) 775-4321

December 27, 2022

Mr. Adam Monroe, Director
Consumers Energy
Hydro Generation
330 Chestnut Street
Cadillac, Michigan 49601
(via email)

Re: Michigan Hydro Relicensing Coalition comments on Consumers Energy's strategy for the long-term future of its hydropower projects.

Dear Mr. Monroe:

The Michigan Hydro Relicensing Coalition (Coalition) appreciates the opportunity to provide comments on Consumers Energy's (Consumers) long-term strategy for the future of its 13 hydropower projects. Consumers has a long-track record of addressing many natural resource concerns related to energy production and the Coalition encourages it to build upon that legacy in moving forward with its river hydropower planning.

As a general principle, the Michigan Hydro Relicensing Coalition (Coalition) prefers restoration of river systems through removal of barriers and dams whenever possible. It is well established that dams negatively affect water quality, block migration and interrupt reproduction of numerous native and game fish species and other aquatic organisms, prevent natural sediment transport, and eliminate conveyance of wood and other organic materials to downstream waters. In addition to the adverse environmental impacts from dams, there is the issue of dams as aging infrastructure. All of Consumers' hydropower dams are aging infrastructure as they are approaching 100 years in existence. As such, the Coalition refers Consumers to the summary from a 2020 "Resources for the Future" article that was published following the Tittabawassee River dam failures: "Repairing hazardous dams can help, but simply removing them can be a better, more cost-effective option with accompanying environmental benefits."¹ Therefore, the Coalition recommends that Consumers surrender the FERC license and decommission projects that are both aging infrastructure and have questionable economic viability, with a long-term goal of dam removal for these projects.

While dam removal is our ideal preference, the Coalition does recognize that the long-term strategic planning being undertaken by Consumers is complex as the hydropower projects provide many associated community recreational and other project-related benefits (e.g., sensitive species habitat), and the current long-term hydropower planning is not likely to lead to a one-size-fits-all approach. However, the Coalition remains an advocate for the license surrender - decommission - dam removal option wherever possible.

¹ Walls, M.A. and V. Gonzales. 2020. "Dismantling Dams Can Help Address US Infrastructure Problems", Resources for the Future. Resource Article, Oct 22, 2020. Washington, D.C.

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The following are the Coalition's specific comments and recommendations to Consumers' strategic planning for the long-term future of its 13 hydropower projects. These comments are in two categories: (1) applicable to all the projects; and, (2) applicable to individual projects.

I. Comments related to all the hydropower projects

- Scope of public input - Consumers and Public Sector Consultants hosted community meetings for each hydropower project, presenting history and operational details, projected future costs, environmental factors, community and recreational importance (highly emphasized), and options for long-term future of the project. Local public sentiment was overwhelmingly in favor of keeping the hydropower dams and that Consumers remain the owners. Consumers also announced via a December 19th News Release that it will be conducting a follow-up study during the first half of 2023 to determine the contribution of its 13 hydropower projects to local communities near these dams, building upon information gathered during the 2022 community engagement meetings. It is the Coalition's position that a broader engagement process must occur that targets the "non-local" public (those people who don't live near the dams but are ratepayers who will be impacted by Consumers' decision of the future of their hydropower projects).
- Tribal input - based on discussion with colleagues from the Little River Band of Odawa Indians, Grand Traverse Band of Ottawa and Chippewa Indians, and Little Traverse Bay Band of Odawa Indians there does not appear to have been much outreach to these federally recognized Tribes. Consumers' Muskegon River and Manistee River hydropower projects lie within the 1837 Treaty of Washington ceded territories. As such, they affect a number of species that are of cultural significance to these Tribes, most notably the lake sturgeon. The Coalition urges Consumers to engage with these Tribes for meaningful dialogue about the future of these hydropower projects. This is especially important given that the projects are licensed by the FERC, a federal agency with nation to nation trust responsibilities to the Tribes (the trust responsibility consists of the highest moral obligations that the United States must meet to ensure the protection of tribal and individual Indian lands, assets, resources, and treaty and similarly recognized rights; <https://www.ferc.gov/tribalrelations>).
- Economic considerations - the following information was presented by Consumers at the community meetings and is the basis for the Coalition's position in terms of economics:
 - Hydro only accounts for 1% of total generation by Consumers (50 MW per day; Wind = 640 MW per day with an additional 200MW soon coming on line).
 - Hydro KW of energy 31X more expensive to produce than Wind KW.
 - Projects are aging infrastructure and will require significant capital investment for dam safety purposes (~ \$1 billion over 2023-2028; \$165 million/year projected over the next five years).

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Given these facts, the Coalition questions the economic viability of long-term operation of Consumers' fleet of 13 hydropower projects. It also has questions regarding cost recovery for the forecast dam safety capital investments.

- Economically marginal projects - three projects (Hardy, Tippy, and Hodenpyl) comprise almost 50 % of the average annual value of energy production whereas the other ten collectively contribute the other 50 % (with a number < 5 %; please refer to the attached table for specific project data). For instance, the Mio Project on the Au Sable River only contributes 3.4 % of the to the average annual value. The Coalition questions the long-term economic viability of such projects especially when weighed against the costs of some of the adverse environmental effects (e.g., the cost of stocking fish to maintain a coldwater fishery below the Mio Project to offset downstream warming). The Coalition advocates project decommissioning and dam removal for a number of these economically marginal projects.
- Cost recovery and ratepayer fairness - the Coalition recognizes that as a publicly regulated utility, Consumers must be "made whole" by the Michigan Public Service Commission for approved costs it incurs in providing energy for the public. Based on the information presented at the community and MMAC engagement meetings, Consumers forecasts \$165 million per year in capital investments through 2028 (approximately \$1 billion over this six-year period). The Coalition wants to know how much the average ratepayer's bill will increase for cost recovery of the forecast \$1 billion capital investment (with depreciation, time, and interest factored in), both in total and by individual hydropower projects if possible. The Coalition requested information pertaining to this in a November 8, 2022 email to Consumers and has yet to receive a response. Therefore, please provide the Coalition this information so it can provide a fully informed response related to the topic of cost recovery.

Also, at the October 5, 2022 MMAC meeting, Consumers stated that it will only stay in the hydro business if it is able to get cost recovery through the Michigan Public Service Commission (comment made in reference to the Hardy Project). While the hydropower projects are economically, socially, and culturally important to local communities, is it fair to ask "non-local" ratepayers to subsidize the projected \$165 million per year in capital investments for the future operation of the hydropower projects for the benefit of local communities, especially when it comes to those projects that appear to be economically marginal?

- Options for the future of all projects
 - Relicensing - if Consumers chooses to pursue relicensing for any or all of the 13 hydropower projects, the Coalition will engage fully in the process to ensure that conservation, environmental and recreational concerns are adequately addressed by FERC and given the fullest possible consideration throughout the licensing process. The Coalition will advocate for mitigation for any unavoidable project

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impacts to public trust resources, ranging from financial compensation to dam removal, especially for those six hydropower projects that are currently out of compliance with their FERC license and State water quality temperature requirements.

- Transfer of license - the Coalition recognizes that Consumers is a responsible hydropower project owner that has an excellent track record in meeting all FERC and state dam safety requirements. However, recent history has shown that new project owners may not have the financial resources to meet their obligations should Consumers pursue the license transfer option. There is a history of the ownership of marginal projects in Michigan being transferred and these projects subsequently being “mined” for their revenue stream without substantial capital investment in safety upgrades (e.g., Boyce Hydro LTD’s hydroelectric projects on the Tittabawassee River in Michigan that led to the 2020 catastrophic dam failures). Therefore, the Coalition is generally opposed to the sale and transfer of a license as the Tittabawassee River dam failure lessons must not be forgotten.

Should Consumers pursue sale and license transfer, the Coalition recommends that Consumers only consider transferring ownership when the new owner clearly has the financial and technical expertise to operate the facility consistent with Consumers’ commitment to Michigan’s people and natural resources. This means a potential new owner having the resources and a realistic plan to maintain the dam safely in perpetuity and for operating in ways that maximize natural resource protection (i.e., including the ability to address future resource conservation needs such as fishways). Consumers created these facilities, extracted extensive economic benefits for many years, and must fulfill its commitments to a responsible future.

- Non-power option and transfer of ownership - Consumers gave the example of the Four Lakes Task Force acquiring the Tittabawassee River dams to restore and maintain the dams after license surrender (non-power) and establishing a Special Assessment District to pay for future dam safety costs. Some members of the local public expressed a desire to pursue this option, especially for those projects with significant private riparian home ownership. Others expressed a desire for local governmental entities to take over the dams should Consumers pursue the non-power option. The Coalition recommends that Consumers generate an estimate of average annual dam safety maintenance costs for any project that is converted to a non-power facility. Consumers must also identify all projected necessary future dam safety capital investments. Any local community organization or government entity that would like to acquire a dam needs to know what the true costs of such ownership are over the long-term so it would be fully aware of all the costs and responsibilities over time. The Coalition also has dam safety concerns related to the non-power option and takeover by another entity to maintain the impoundment. Is it realistic to think that a local community-based association or local unit of government would have the financial resources to take on long-term

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responsibilities for maintenance (including necessary capital investments) for dam safety? Would entities be able to get sufficient insurance (can they get insured)? Also, if stakeholders want to take over a dam, then they should be required to have a long-term plan developed to ensure they can meet dam safety requirements. While the Four Lakes Task Force has taken over ownership and responsibility for the four dams on the Tittabawassee River in a non-power mode, it has 7,000+ members in the Special Assessment District. None of Consumers' 13 hydropower projects have individual riparian project owners anywhere near this number to provide such a financial base. Given these questions, The Coalition is generally opposed to license surrender for subsequent transfer of ownership to a non-power mode.

Also, if Consumers were to surrender a license for any of its hydropower projects with intent to transfer ownership for subsequent non-power status of the dam, the Coalition recommends that Consumers also prepare a decommissioning plan to accompany the license surrender application to FERC that would include removal of all generating and transmission equipment. Decommissioning plans need to have defined endpoints and timelines.

- Dam removal option - As stated previously, the Coalition is an advocate for the restoration of river systems through removal of barriers and dams whenever possible. In addition to the well documented negative effects of dams on riverine ecosystems, As previously stated, dams have a negative effect on riverine ecosystems. And as climate change warms the world's rivers, dam removal will be key to protecting coldwater riverine ecosystems. Because northern Michigan's rivers are groundwater fed they may be poised to withstand climate change far better than western streams that rely on surface runoff (snowmelt). Thus, our rivers become even more important from a global perspective and every opportunity to improve and restore them through dam removal should be pursued. The Coalition urges Consumers to strongly consider this option, especially for those projects that are economically marginal. Riparian land ownership is another factor that can be factored in in the consideration of dam removal for economically marginal projects. Projects with predominantly public and/or Consumers' riparian ownership will not have the private homeowner conflict (loss of lakefront property amenity).

In its community presentations, Consumers and Public Sector Consultants have highlighted the importance and value of recreation related to the impoundments. The Coalition does not dispute this and acknowledges that impoundment related recreation would be gone given dam removal. However, this does not mean that recreation opportunities would be foregone. They would change to river-related opportunities as has been the case with the Boardman River dam. Significant river related recreation opportunities have emerged (e.g., kayak based industry, increased river fishing, hiking trails).

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While there are complex issues associated with decommissioning - dam removal, these issues can be worked through as demonstrated by the Boardman River dam removal and ecosystem restoration partnership. When the Boardman River Settlement Agreement and subsequent hydropower licenses were surrendered in 2006, no decision to remove the dams had been made. Rather it established the Boardman River Dams Committee which then worked through a community based process that culminated in the 2008 decision to remove the dams and restore the river. The Coalition offers its support and expertise to Consumers in such an endeavor as it was a signatory to the Boardman River dams settlement agreement and a member of the Implementation Team that oversaw the dam removal. Also, the Coalition recommends that Consumers prepare a decommissioning plan with defined endpoints and timelines as part of any license surrender application.

Finally, related to the dam removal option, the Coalition also recommends that the estimated removal costs developed by Consumers in its 2007 Hydroelectric Plant Retirement Study Plans for the Au Sable, Manistee, and Muskegon Rivers (License Article 204) be updated using current actual dam removal costs (e.g., Boardman River \$30 million costs for removal of three dams).

- Project lands - all 13 hydropower projects have associated lands owned by Consumers that are incorporated into their respective FERC licenses (part of the project boundary) with associated land management plan requirements. These lands, especially in the instance of the 11 projects on the Au Sable, Manistee, and Muskegon Rivers, provide valuable wildlife habitat and recreation opportunities for the public. The Coalition wants to know what Consumers would do with its lands for any project where the license is surrendered. It recommends that Consumers consider the land management objectives of other adjacent landowners (e.g., USFS, MDNR). The Coalition also recommends that should Consumers decide to dispose of these lands that first priority be given to state, federal, land conservancies, or Tribes (for projects located within the ceded territories) to ensure protection of these lands for future generations.
- Greenhouse gas (GHG) - in addition to the risk of an aging project failing, based on the information presented at the community meetings Consumers will be investing significant capital investments for dam safety over the next six years. The carbon impacts of these activities, including carbon emissions from cement are substantial. The GHG emissions of reservoirs may be more modest in Michigan's existing dams than some warmer regions' hydropower impoundments; however they may still offset some of the "green" benefits of hydropower. Research has demonstrated that hydropower is not carbon-free.^{2,3} Therefore, the Coalition recommends that Consumers factor GHG emissions into the analysis of all the options for the future of its hydropower projects. This is especially important given ongoing climate change trends.

²https://alabamarivers.org/reservoir_emissions/

³<https://www.hydropower.org/blog/carbon-emissions-from-hydropower-reservoirs-facts-and-myths>

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I. Comments related to specific hydropower projects

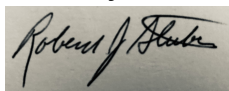
- Water Quality (Croton, Tippy, Hodenpyl, Mio, Alcona, and Foote Projects) - as previously stated, these six projects are not in compliance with State water quality standards for temperature. The Michigan DNR currently makes an annual investment into stocking fish below these projects because coldwater fish communities cannot sustain themselves due in part to these ongoing thermal impacts that impair natural fish production. Current annual fish stocking costs are upwards of \$900,000. Therefore, the ongoing inability of these six hydropower projects to meet water quality standards must be factored into each option being considered for the future of these hydropower dams. This issue is of paramount importance to the Coalition and the constituents it represents. Its stated position in relation to each of Consumers' options is given below.
 - Re-licensing - if Consumers pursues the re-licensing option for any or all of these projects, it is the position of the Coalition that these unavoidable project impacts to public trust resources will have to be mitigated, ranging from financial compensation to dam removal.
 - License transfer - as stated previously, the Coalition is generally opposed to the sale and transfer of a license, and specifically opposed to license transfer without FERC-mandated proof of financial resources (financial assurances) for dam safety from the new project owner. However, if Consumers pursues this option for any or all of these projects, the Coalition's position regarding water quality remains the same: impacts from ongoing non-compliance will have to be mitigated if the new project owner seeks future re-licensing. In addition, the Coalition would seek immediate mitigation through the FERC license transfer process.
 - Decommissioning (non-power; transfer to another entity) - if Consumers pursues the option of decommissioning any or all of these projects and transferring ownership of the dam to another entity (e.g., local NGO similar to the Tittabawassee River Four Lakes Task Force), Consumers must make any new project owner fully aware of the ongoing water quality non-compliance before transfer. In addition, the Coalition would seek mitigation through the FERC license surrender process. Subsequent to FERC no longer being the regulatory authority for the dam, the Coalition would also seek redress through enforcement of the water quality standards by the Michigan Department of Environment, Great Lakes, and Energy.
 - Decommissioning (dam removal) - if Consumers pursues the option of decommissioning and dam removal for any or all of these projects, the Coalition would strongly support this. Dam removal for long-term river restoration is a priority for the Coalition. As stated earlier, the Coalition would offer its support and expertise to Consumers based on its Boardman River experience.

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- Barriers (Calkins Bridge, Croton, Tippy, Foote, Projects) - these four lowermost dams on the Kalamazoo, Muskegon, Manistee, and Au Sable Rivers are barriers to the upstream movement of a number of migratory aquatic organisms.
 - Non-desirable species (sea lamprey) - Consumers must consider the function of these dams as barriers to the upstream movement of undesirable species such as sea lamprey in its evaluation of its options for the future of its hydropower projects. The decommissioning for dam removal option should consider installation of a new barrier device(s) to replace the barrier function of the dam.
 - Desirable fish species (fish passage) - Consumers must also consider the upstream passage of ecological desirable species such as lake sturgeon and host fish species for imperiled mussel species to improve connectivity for all the options. This is especially true for those projects that are having adverse impacts to species that have cultural significance to the Tribes and lie within the 1837 ceded territories (e.g., lake sturgeon; Croton and Tippy Projects).
- Environmental contaminants (Calkins Bridge) - special consideration must be given to contaminant issues should Consumers pursue a change in ownership and operation of this hydropower project. The Calkins Bridge dam and its impoundment are within an EPA-designated Superfund Site, largely because of hazardous substances in sediments. Any proposed changes in dam operations or dam removal that could exacerbate the impacts from the contaminants in the sediments in the impoundment (Lake Allegan) should be coordinated with the U.S. Environmental Protection Agency's Superfund Program and the Michigan Department of Environment, Great Lakes, and Energy.
- ETS Species (Tippy Project) - this project currently supports a winter hibernaculum for bats which is serving as an important refugia for a number of imperiled species (e.g., Indiana bat, northern long-eared bat). The Coalition recommends that Consumers consider this important function for all the options for the future of the Tippy Project in consultation with the U.S Fish and Wildlife Service.

Thank you for providing the Michigan Hydro Relicensing Coalition the opportunity to provide input to your long-term hydropower project planning. The Coalition looks forward to continuing to work with Consumers Energy on the development of the long-term hydropower strategy. Please contact me if you have any questions.

Sincerely,



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Enclosure (Attachment A)

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Attachment A

Consumers Hydropower Projects - Economic Information¹

Consumers Energy Hydropower Projects - Average Value (highest to lowest), Forecasted O&M and Capital Investments 2023-2027 (By Project, Total)					
Project	River	Average Annual Value	% of Total	Forecasted O&M 2023-27 (5 Years)	Forecasted Capital Investments 2023-27 (5 Years)
Hardy	Muskegon	\$3,037,000	23.5	\$6.35 Million	\$411.43 Million
Tippy	Manistee	\$1,826,000	14.1	\$6.01 Million	\$3.45 Million
Hodenpyl	Manistee	\$1,426,000	11.0	\$4.31 Million	\$37.13 Million
Croton	Muskegon	\$969,500	7.5	\$5.57 Million	\$11.69 Million
Foote	Au Sable	\$897,400	7.0	\$6.25 Million	\$10.31 Million
Alcona	Au Sable	\$841,800	6.5	\$4.20 Million	\$46.61 Million
Cooke	Au Sable	\$807,100	6.3	\$5.31 Million	\$12.83 Million
Five Channels	Au Sable	\$715,100	5.5	\$3.92 Million	\$15.27 Million
Rogers	Muskegon	\$679,800	5.3	\$5.91 Million	\$73.39 Million
Loud	Au Sable	\$531,400	4.1	\$3.96 Million	\$12.62 Million
Mio	Au Sable	\$445,800	3.4	\$3.86 Million	\$7.08 Million
Calkins Bridge	Kalamazoo	\$388,800	3.0	\$5.34 Million	\$4.59 Million
Webber	Grand	\$333,500	2.6	\$5.56 Million	\$9.6 Million
Totals		\$12.9 Million	100	\$66.55 Million	\$656.0 Million¹

¹Information taken from Consumers Energy - Public Sector Consultants community meeting packets for each project. Consumers projects \$165 million per year in capital investments thru 2027, ~\$1 billion over 2023-2028 six-year period. Data compiled by Michigan Hydro Relicensing Coalition.



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