

State and Local Funding for Dam Removal in the United States

Issue Brief 20-14 by **Margaret Walls** — December 2020

1. Introduction

Removing aging and failing dams that no longer serve a useful purpose can simultaneously eliminate a hazard and provide environmental benefits from restoring rivers to their natural conditions. In some cases, removing a dam reconnects a community to its local river and brings enhanced recreation opportunities. Dam removals have been part of river redevelopment projects in several cities and towns in the midwestern United States.

In this Issue Brief, which is one of four on funding approaches for dam removal, I describe state and local government approaches. The report begins with a description of several state programs currently in use. It then describes how states might use dedicated revenue sources in general and the strengths and weaknesses of various approaches. At the local level, options are often more limited, but I describe some creative tax-financing approaches and how one option, tax-increment financing (TIF), has been used in a few communities for economic development projects, involving dam removal. This is one in a series of four RFF issue briefs on alternative funding approaches for dam removal. See Walls and Shabman (2020) for an introduction to the series.

2. State Funding Programs and Sources of Revenues

My research identified state grant programs that can be used for dam removals in Massachusetts, Ohio, Pennsylvania, Iowa, Indiana, Michigan, Minnesota, Wisconsin, California, Idaho, Montana, Oregon,

Washington, and Alaska.¹ Table 1 lists these programs along with their sources of revenues and specific focuses. In almost all cases, the programs cover a broader set of activities than dam removal. Sometimes, in fact, few dam removals have been funded. We explain in further detail later.

The programs listed in the table vary widely in the amount of money available and the extent to which they currently fund dam removals. On the high end is the Massachusetts Dam and Seawall Repair or Removal Program, which provided more than \$33 million in grant funding for dam repairs and removals in five years. In the western states, the NOAA Pacific Coast Salmon Recovery Fund grant money is typically spent on fish passage projects and culvert replacements rather than dam removals. To my knowledge, the Montana program has funded only one dam removal, the Rattlesnake Creek dam in Missoula, and many dam constructions or modifications. Pennsylvania's Growing Greener program funded more dam removals in its early years than it does now.

2.1. Program Objectives

The main objectives of the state programs can be divided into four categories: (1) addressing of aging and deficient dam infrastructure that is at risk of failure; (2) removal of drowning hazards and enhancement of river recreation; (3) general river restoration, usually to improve water quality; and (4) fish passage and habitat, most often for threatened and endangered species. A few programs have multiple objectives, but most fall mainly into one of these four categories.

¹ My research did not cover all 50 states in detail, so states may have programs not included in Table 1. However, most of the major state programs are captured in the table.

Table 1. Selected State Funding Programs for Dam Removal

	Program	Revenue source	Program focus
NORTHEAST			
Massachusetts	Dam and Seawall Repair or Removal Program	General revenues, capital bond fund	Aging dam & seawall infrastructure; repairs and removals (grants and low-interest loans)
	Mass. Environmental Trust	Specialized license plates + donations	Ecosystem restoration
Pennsylvania	Growing Greener	Surcharge on landfill tipping fees + bond issued in 2005	Conservation and restoration projects
	Marcellus Legacy Fund	Oil & gas impact fee	
MIDWEST			
Indiana	Lake & River Enhancement Program	Boat licensing fees	Lake and river restoration, aquatic habitat, ensuring viability of publicly accessible lakes and streams for multiple uses, including recreation
Iowa	Water Trails & Low-Head Dam Mitigation Program	Rebuild Iowa Infrastructure Fund (gambling, casino tax revenues)	Low-head dam mitigation and removal (drowning hazards, river recreation), enhancement of river recreation opportunities
Ohio^a	Water Resource Restoration Sponsor Program	Clean Water State Revolving Fund interest monies	Fish habitat restoration projects
Michigan	Fisheries Habitat Grant Program ^b	Game and Fish Protection Fund (oil & gas, minerals, timber revenues and donations) + general fund revenues + Game and Fish Settlement Fund	Dam repair and removal of abandoned dams
Minnesota	Dam Safety Grant Program	General fund revenues	Dam repair and removal of abandoned dams
Wisconsin	Dam Removal Grant Program & Municipal Dam Grant Program	General fund revenues	Dam removal, abandoned dams; municipal program: repair and removal
WEST			
Alaska	Alaska Sustainable Salmon Fund	Federal \$\$ only: NOAA Pacific Coast Salmon Recovery Fund	Salmon and steelhead recovery
California	Fisheries Restoration Grant Program	NOAA Pacific Coast Salmon Recovery Fund + state general fund revenues	Fish habitat restoration, fish passage projects, salmon and steelhead recovery
	Wildlife Conservation Board	Wildlife Conservation Fund (annual appropriations required by Prop 117; mostly general fund revenues)	Habitat conservation, restoration

Table 1. Selected State Funding Programs for Dam Removal (continued)

	Program	Revenue source	Program focus
WEST (continued)			
Idaho	Idaho Pacific Coastal Salmon Recovery Fund Program	Federal \$\$ only: NOAA Pacific Coast Salmon Recovery Fund	Salmon and steelhead recovery
Oregon	Oregon Department of Transportation (ODOT)-Oregon Department of Fish and Wildlife (ODFW) Fish Passage Agreement	Fish passage mitigation funds from ODOT to ODFW	Fish passage projects
	Oregon Watershed Enhancement Board	Lottery proceeds + NOAA Pacific Coast Salmon Recovery Fund	Salmon and steelhead recovery
Montana	Renewable Resource Grant and Loan Program	Resource Indemnity and Ground Water Assessment tax (paid by mining companies), oil and gas production tax, and interest earnings from the Resource Indemnity Trust	Projects to conserve, manage, develop or preserve renewable resources
Washington	Salmon Recovery and Puget Sound Acquisition and Restoration Program	State general obligation bonds + NOAA Pacific Coast Salmon Recovery Fund	Fish passage projects; salmon and steelhead recovery

^a Ohio also has used compensatory mitigation funds from its Department of Transportation to fund dam removals. Shabman and Stephenson discuss mitigation in a companion issue brief (2020).

^b This program replaced the Dam Management Grant Program, which was funded solely by general fund revenues.

The programs in Wisconsin and Minnesota, and Massachusetts’ Dam and Seawall Repair or Removal Fund, are in the first category—they are oriented around removing or repairing deficient dams. Wisconsin’s program, which began in 1989, is the longest-standing dam removal funding program in the United States and focuses exclusively on obsolete dams. The Massachusetts program, which made its first grants in 2014, is the most generous, providing about \$32 million per year in grants and low-interest loans to repair or remove dams and seawalls. Between 2014 and 2019, \$33.2 million was spent on dams, \$9.2 million of it on 30 removal projects (Walls 2020a). (Agency staff note that removals are typically much less expensive than repairs. As a result, the program has spent more money on dam repair projects but completed a larger number of removal projects.) The motivation for the Massachusetts program was the 2011 near-failure of an obsolete mill dam in Taunton, 40 miles south of Boston, which required evacuating thousands of residents.

The problem motivated the state legislature to provide funding to repair or remove the many similar old dams across the state. Staff in the Division of Ecological Restoration complement the funding program; they work exclusively on dam removals, providing information to, and working with, dam owners (Walls 2020a).

The Iowa program is focused on removing low-head dams to remove drowning hazards in the state’s rivers. Similar to the Massachusetts program, the Iowa program was spurred by a particular event—actually multiple events: six drowning deaths in one summer at low-head dams in the state (Hoogeveen 2009). Iowa keeps a separate inventory of all low-head dams in the state, one of only three states to do so. Ohio and Indiana are the others, and the Indiana funding program also focuses, to a certain extent, on low-head dam removal. The Indiana and Iowa programs are also oriented around improving river recreation opportunities. Iowa is developing a system of river trails, for example. Funding in both programs is limited, however. Iowa has issued an estimated \$4.7

million in grants since 2008.² The Indiana LARE program provides approximately \$1.2 million in grants each year but has funded only a handful of dam removal projects.³

The Ohio and Pennsylvania programs, and the Indiana program to a certain extent, are oriented around general river restoration, especially to improve water quality and aquatic habitat conditions. All three programs fund a variety of conservation and restoration activities, not just dam removal. In fact, the Pennsylvania and Indiana programs have funded very few dam removals. The Ohio Water Resource Restoration Sponsor Program, on the other hand, has funded an increasing number of dam removals over time and has recently added a new element to the program that focuses on multiple dam removals along a single river (Walls 2020a).

Five of the six western states in Table 1 receive federal funding from NOAA's Pacific Coast Salmon Recovery Fund (PCSRF), which is money for states to spend on a wide variety of activities and programs to aid with recovery of salmon and steelhead trout, many populations of which are listed as threatened or endangered under the Endangered Species Act. California, Oregon, and Washington supplement the PCSRF monies with state revenues. Spending in these PCSRF-funded programs is spread across many types of projects and only infrequently used on dam removals. Montana's Renewable Resource Grant and Loan Program funds a variety of renewable resource conservation projects, most of them water related. The program has funded some dam repairs but apparently only one dam removal project, the Rattlesnake Creek dam.

2.2. Revenue Sources

The Wisconsin and Minnesota programs are fully funded by state general fund revenues. California uses mostly

general revenues, along with the federal funding from the PCSRF. Massachusetts's program is funded by a capital bond fund and general revenues. Washington also uses bond funding, supplementing the NOAA money.

Beyond bonds and general fund revenues, several states have dedicated revenue sources for programs that fund dam removals. States often turn to dedicated revenue sources to pay for new programs and activities rather than drawing on general revenues that may already be stretched thin across existing obligations. The options in Table 1 can be grouped into the following categories:

- Resource extraction taxes
- "Sin" taxes
- User-pays systems
- Voluntary donations

Several observers have argued that resource extraction tax revenues should be used to pay for activities to improve the environment, using a logic that when natural resources are depleted, the money should, in effect, restore those resources.⁴ Pennsylvania, Michigan, and Montana use resource extraction taxes to fund restoration programs that can include dam removals. Pennsylvania's Marcellus Legacy Fund is funded by an impact fee on oil and gas wells. Michigan's Game and Fish Protection Fund receives revenues from oil and gas and mineral leasing in the state, along with revenues from timber harvests. Montana's Renewable Resource Grant and Loan Program gets its revenues from taxes paid by oil and gas and mining companies and interest earnings from the state's Resource Indemnity Trust, a \$100 million fund created from natural resource extraction tax proceeds and used for environmental and resource protection.⁵

- 2 Nate Hoogeveen, director of river programs, Iowa Department of Natural Resources, personal communication with the author, July 2, 2020. Some of the grants were for dam removals and some for conversion of dams to rock rapids, which mitigates the problems of low-head dams without fully removing them from the river.
- 3 For LARE grants award in October 2019, see https://www.in.gov/dnr/fishwild/files/fw-LARE_Watershed_Land_Treatment_Biological_and_Engineering_%20Projects_Funding_FY-2019-20.pdf. Other years are available on the program website.
- 4 This was the logic behind the longstanding Land and Water Conservation Fund, which deposits federal offshore oil and gas leasing revenues into a fund that is used for new national parks and other protected areas and grants for state and local parks and outdoor recreation (Walls 2020b). See also the recommendation in Outdoor Resources Review Group (2009).
- 5 https://leg.mt.gov/content/publications/fiscal/leg_reference/Brochures/RIT.pdf.

A “sin” tax is generally an excise, or sales, tax levied on consumption of goods and services, such as alcohol, cigarettes, and gambling, that have been determined to be detrimental to consumers. The Rebuild Iowa Infrastructure Fund, which funds the low-head dam mitigation program, gets its revenues from taxes on gambling. Although sin taxes are widely accepted as a way to generate revenue for various public programs, they also serve as a deterrent for the behavior being taxed, which can ultimately undermine their effectiveness (Pew Charitable Trusts 2018). Nonetheless, they are often acceptable to the general public and are used in many states.

Revenues from a state boat licensing fee, which is assessed on canoes and kayaks along with motorboats and sailboats, funds Indiana’s Lake and River Enhancement Program, meaning the state is using a kind of “user-pays/user-benefits” approach to pay for lake and river investments.⁶ User-pays approaches for funding public goods and services are common and have an element of fairness—that is, those who benefit from a program are the ones who pay. In the case of boat licenses, the state is essentially taxing a good that is a complement to the public good being funded (river restoration). Some studies by economists have shown this to be an efficient way of funding certain public goods (Chan and Kotchen 2020; Banzhaf and Smith 2020). California and Ohio collect annual fees from dam owners, and those fees are used to help cover costs of state dam safety program operations. (In California, the fee revenues cover the full cost of the program.) Neither state uses the revenues to operate a grant or loan program for dam removals or repairs, however.

Some programs are funded with voluntary donations rather than tax, fee, or license revenues. This includes the Massachusetts Environmental Trust program, which receives revenues from specialized license plates and direct donations, and the Oregon Watershed Enhancement Board, which relies on state lottery

proceeds. Although lottery proceeds may not seem like a voluntary contribution, they are in the sense that people choose to purchase lottery tickets. Voluntary donations risk rising and falling with the whims of donors and can be an unreliable source of revenues for public programs. Lotteries also suffer from needing to pay out approximately half the collected revenues as prize money. Nonetheless, a voluntary approach offers more political acceptability in many cases. And lotteries are popular—44 states and the District of Columbia have lotteries, using the proceeds for a wide array of government services (Harrington 2018).

In general, an efficient state revenue system decouples decisions about sources of revenues from decisions about how to spend that revenue (National Conference of State Legislatures 2007). When revenue sources and spending are linked, as they are with dedicated, or “earmarked,” revenues, the financial resources available for the government program will wax and wane as revenues do. This can cause problems for long-term program viability (Dye and McGuire 1992; Auerbach 2010). Many economists and fiscal experts recommend that states opt for a set of broad-based taxes (e.g., sales, income, and property taxes) with decisions made separately about how to allocate spending across programs.

Nonetheless, most states use dedicated revenues to some extent; many state conservation and environmental programs are funded in this way.⁷ States will have different options at their disposal, so we should expect to see a variety of approaches in use, and we do. For example, some states have mineral and energy resources and can tap those sources of revenues, but other states do not. Equity and economic efficiency both come into play in selecting an approach. In general, in my view, it is best to opt for a dedicated tax that is expected to provide a relatively consistent annual revenue stream, has a broad base (so that the tax rate can be kept low), and imposes a relatively small “deadweight loss,” or excess burden, on the economy

6 Requiring state licenses for canoes, kayaks, and other nonmotorized boats is unusual. Iowa is one of the few states besides Indiana that has such requirements, and these license holders in Iowa were strong advocates for the water trails initiatives and low-head dam removals (Hoovegeen 2020). The license revenues are not a revenue source for grants offered in the Low-Head Dam and Water Trails Program, but they do provide resources for Department of Natural Resources River Programs operations more generally.

7 See Walls (2013) for a discussion of dedicated revenue approaches for funding state parks.

(by not altering consumption and production patterns much). The user-pays approach, especially one in which complementary goods are taxed to pay for projects that benefit those taxpayers, could be appealing, as it has efficiency and equity benefits. License fees from anglers, boaters, and other recreationists might fit the bill. Likewise, annual fees paid by dam owners could be deposited into a fund the state could use to award repair and removal grants. Whether enough revenue from these kinds of user fees could be generated to provide sufficient funding for dam removal is an open question.

3. Local Government Tax Financing

Local governments often use a range of special tax-financing approaches to fund economic development and infrastructure projects. Many of them finance the necessary up-front capital dollars with the future tax revenues the project is expected to generate. This is the approach with TIF, which relies on increased property tax revenues from the project to pay for the initial investment (Dye and Merriman 2006; Johnson and Kris 2019). Special tax districts (sometimes called “special service districts”) are another approach. These are special-purpose governmental units that have administrative and fiscal independence from local governments and are usually set up to provide a limited set of services (US Census Bureau 2019). They usually have taxing authority and can issue bonds. In recent years, special districts have been used increasingly to finance infrastructure associated with new residential development (Griffith 2007). Most states have enabling legislation for TIF and special tax districts, and both have been used across the United States in some cities and counties.

3.1. TIF

TIF begins with designation of a TIF district, a geographic area within a community that is typically

vacant or underdeveloped and will be a target for infrastructure and other improvements. Once the district is set up, its “base” amount of property tax revenue is calculated using the status quo before any improvements. Local governments then typically issue TIF bonds to provide the seed capital for various public investments in the TIF district, with the bonds backed by the increment in property tax revenues expected to be collected (Merriman 2018). TIF is often an attractive option for cities because the debt does not count against the city’s debt limit and repayment does not have to come from any sources besides the tax increment from the TIF district. Also, TIF may be more politically acceptable than raising local taxes. Some cities have issued billions of dollars in TIF bonds.

TIF is a popular option in Midwest cities and towns that are redeveloping their riverfronts for enhancing community amenities, increasing tourism, and growing the local economy. Getting rid of an old dam has been part of many of these projects. Columbus, Indiana, for example, has invested in a riverfront park, trails, and redevelopment project, with removing an old low-head dam as a centerpiece.⁸ Mitchell County, Iowa, also plans to use TIF to pay for removing a dam and developing a whitewater course on the Cedar River.⁹ Development of the River District in Elkhart, Indiana, is TIF financed and includes a dam removal (which also is receiving contributions from the Army Corps of Engineers, the Indiana Lake and River Enhancement Program, and others).¹⁰

An important element of these projects is developing the river for recreational and amenity purposes, so the dam removal is only a small part of the full investment. As a means of raising money for dam removals, the TIF approach is thus feasible in some settings—in cities and small towns with a desire to improve river recreation opportunities and amenities and where significant economic development benefits in a particular geographic area are expected. It also is necessary that the added property value generates enough additional

8 More information about the riverfront project is available at <https://www.columbusriverfront.org/>. To read more about the TIF, see http://www.therepublic.com/2019/12/18/commission_agrees_to_567k_riverfront_contract/.

9 https://globegazette.com/community/mcpres/news/whitewater-course-added-to-mitchell-county-proposed-tif-projects-list/article_660f4ec5-8877-57a7-a02d-9dcb45485b98.html.

10 <https://www.elkhartriverdistrict.com/>

tax revenues to pay for the project. This is always a risk with TIF—the increment in tax revenues may not be enough to pay back the loan (Dye and Merriman 2000). Another problem is that benefits of TIF-financed projects, especially parks and other public spaces, often spill over to many people outside the TIF district; thus, one group incurs the cost yet a much larger group enjoys the benefits.¹¹ Nonetheless, TIF is a common financing approach and may be feasible for some communities that need to generate substantial funds for both dam removal and complementary restoration and economic development investments.

3.2. Special Tax Districts

Special tax districts (or special service districts) are often set up to provide a single service, or a limited set of services, such as water or sewer provision, fire or flood protection, or parks. The revenues to support the districts derive from a variety of sources, including property taxes, special assessments, and various kinds of user fees. Property taxes account for 24–81 percent of the revenues of seven park districts reviewed in Walls (2013). Illinois has more special districts than any other state, at 3,204 (US Census Bureau 2019). Special districts can be created by state legislation or voter referenda.

Given the wide set of uses for special districts, it is possible that they could be used to pay for dam removal if the removal was part of an overall park or conservation district development. In recent years, special districts have been set up to provide infrastructure for new residential developments (Griffith 2007; Billings and Thibodeau 2013). Similar to TIF, creating the special district allows for the issuance of tax-exempt bonds to finance the infrastructure investments, with special tax assessments within the district paying off the debt. Thus, as with TIF, special districts work better if dam removal is part of a larger outdoor recreation project.

The advantages of these local financing approaches are that (i) they do not rely on general local government revenues, which are often already committed to other

programs, and (ii) they link the beneficiaries of the project or service to its funding. A key factor for these approaches to work, however, is that the community that is taxed to pay for the investments receives some benefits.

Conclusions

Removing a dam can provide benefits in the form of improved river safety, enhanced recreation opportunities, and local economic development, especially if the removal is part of a larger project to restore a river and community riverfront. Because these benefits are localized, it can make sense for state and local governments to fund the projects. This Issue Brief provided some examples of state programs and the logic behind various dedicated state revenue sources and discussed tax-financing options at the local level. If and when dam removal becomes a priority for communities, state and local governments have several options at their disposal.

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¹¹ A problem with the TIF approach, in general, is that it can lead to fragmentation of the local tax base. TIF districts retain all additional revenues for their own use rather than contributing to growth citywide. This was a concern in Chicago, which as of 2002 had more than 100 TIF districts.

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Acknowledgements

I am grateful for funding from the August Heid Trust and the William and Flora Hewlett Foundation and for excellent research assistance from Vincent Gonzales.

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