

Commonwealth of Massachusetts

Division of
Ecological
Restoration

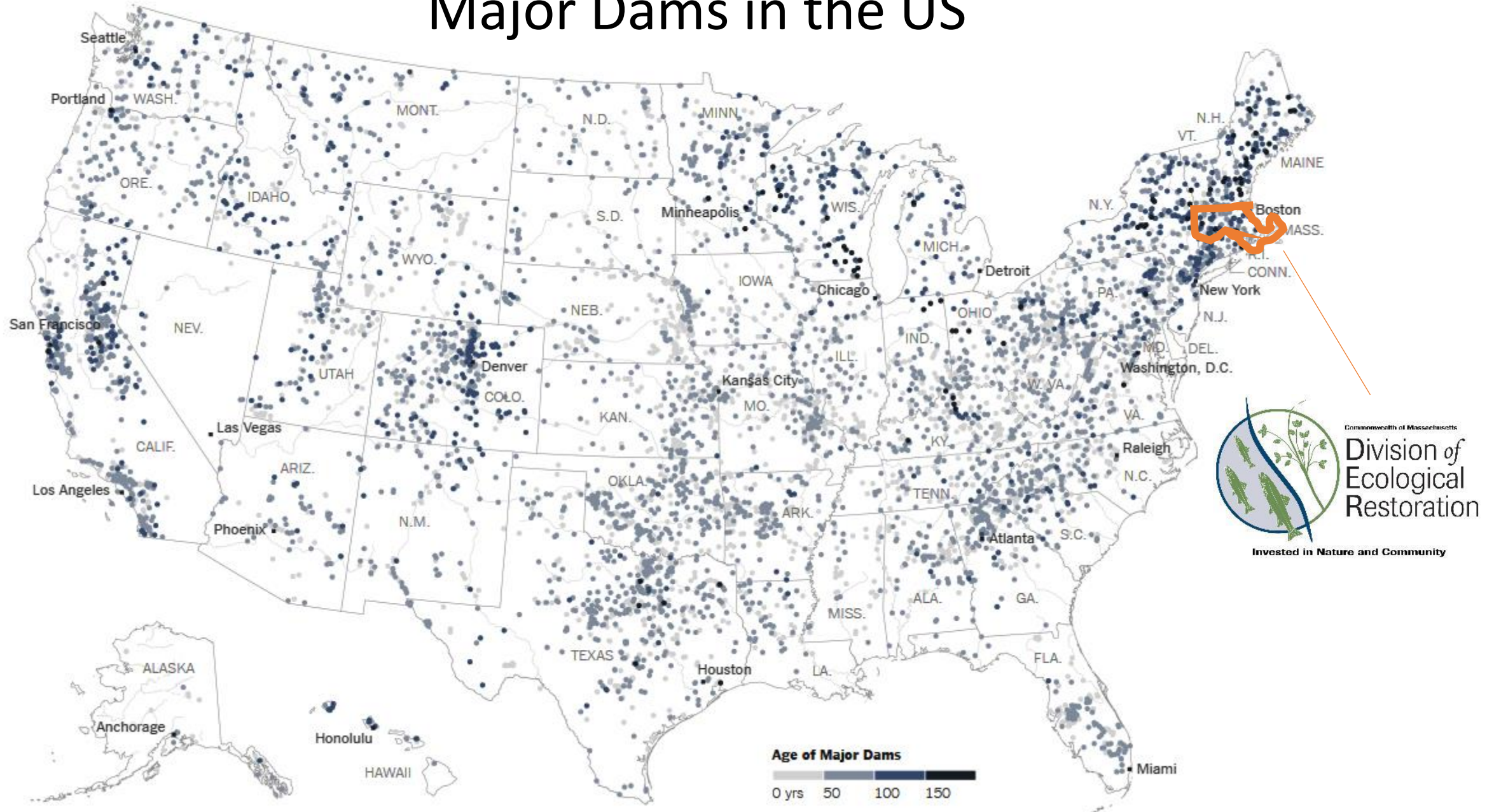
Invested in Nature and Community

Economic Impacts of Dam Removal in Massachusetts

Dam Removal Europe
May 5, 2021



Major Dams in the US



Outline

1. Background on dam removal in the Northeastern US and the Massachusetts Division of Ecological Restoration
2. The Division's restoration economy studies
 - Job creation
 - Cost comparison between dam removal and dam maintenance
3. How we use this information



Take Home Messages

Economic studies help us demonstrate benefits to during challenging times such as COVID-19

- Grant funding and help from the government are essential for dam owners to remove dams
- Gov. agencies must make a case for the value of restoration to maintain support
- Message: Dam removal supports recovery from COVID-19 by creating jobs, helping people and nature adapt to climate change, and benefiting the environment



Massachusetts Division of Ecological Restoration (DER)

- State agency
- 25 staff
- Annual capital budget \$2 million
- Leverage our capital budget for other grants ~1:7
- Leveraged \$100 million over last 12 years

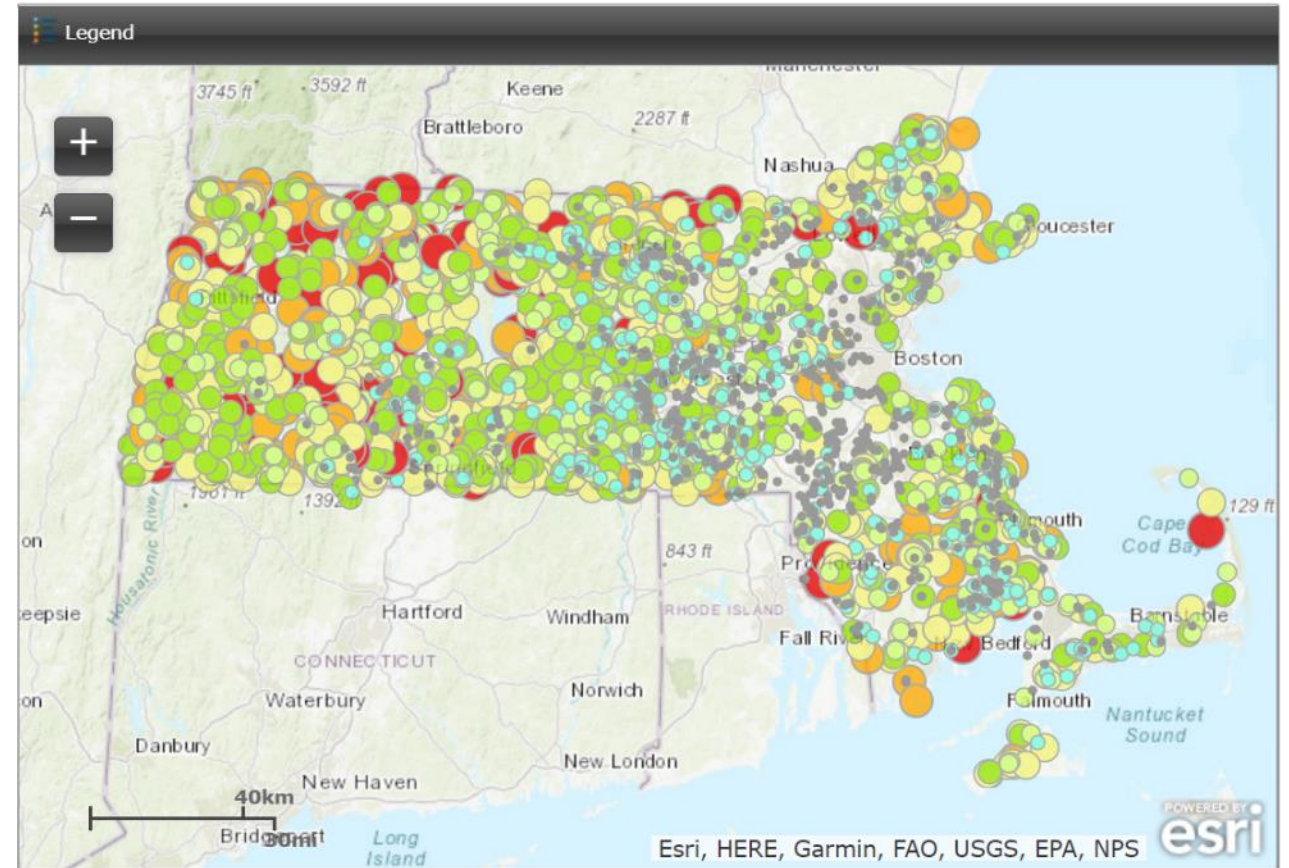


Mission: to protect and restore rivers, wetlands, and watersheds for the benefit of people and the environment



Massachusetts has more than 3000 dams

- Owned by towns, private companies, individuals, NGOs, the state...
- ~60 removed in last 12 years







DER coordinates restoration projects in partnership with dam owners; federal, state, and local agencies; NGOs; and others.

Research question:
what is the benefit
to tax-payers from
investing in the
Division of
Ecological
Restoration?

Inspired by studies in other
states

Investigated “restoration
economy” in Massachusetts

- Job creation
- Savings to dam owners from removal vs. repair
- Explored ecosystem services, but difficult to quantify

Methodology: job creation

- Contracted with IEC, a company with economic analysis expertise.
- IEc examined economic benefits associated with economic activity in MA resulting from restoration projects, including dam removal.
- IEc used IMPLAN, proprietary software: US data plus models; industry standard in the US
- In 2017, DER purchased IMPLAN and now uses it in-house for small studies
- We've examined 10 projects
- We will build this into our budget tracking for every project

Results

- Dam removal creates or maintains 12.5 jobs for every \$1 million spent
- \$1.75 million total economic output for every \$1 million spent
- Similar to road / bridge construction or water infrastructure project construction
- Caveat: these are short-term estimates based on a model



Why quantify cost-savings for dam owners?

- Most dams owned by municipalities, individuals, companies, or NGOs
- Dam removal is a big upfront cost
- Typically takes 5+ years
- Involves working with the government
- Often controversial





Methodology

- Wanted to help dam owners think about long-term financial impacts of owning a dam
- Case study approach
- Used three recently completed projects
- Compared cost of removal with cost of inspections; repair; maintenance over 30 years

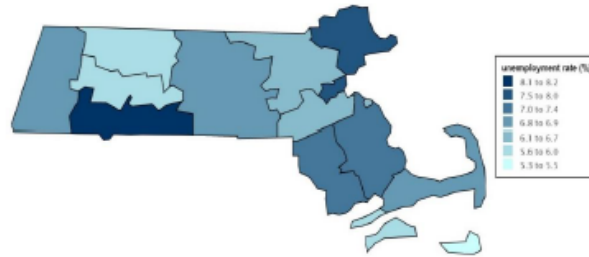
Results

- Dam removal was 60% less expensive compared with repair, maintenance over 30 years
- Case studies give useful examples, stories, quotes
- Not statistically significant, but stories are powerful



COVID-19 Economic Recession and Conservation Work Massachusetts Statewide Challenges and Opportunities

Investments focused on conservation programs and a low-carbon economy will yield immediate relief for communities throughout the country impacted due to COVID-19 and experiencing high unemployment and economic devastation. Using data from the U.S. Department of Labor, the Census Bureau and the Bureau of Labor Statistics, TNC's economic experts identified near-term opportunities for economic recovery through conservation and climate investment.



Statewide Unemployment

	Unemployment Rate
September 2019	2.7%
September 2020	10.6%

*Unemployment rates by county, not seasonally adjusted, Massachusetts, October 2020. County percentages are calculated with data from the entire county.

Statewide Unemployment Claims by Sector

Sector	September 2019	September 2020
Construction	3,996	18,948
Professional, scientific, and technical services	3,986	24,066
Agriculture, forestry, fishing and hunting	211	1,134

Examples of Job-Creating Conservation Work in Massachusetts

Improving Community Resilience with Natural Infrastructure: Funding would support existing efforts to repair ("right-size") functional or remove obsolete culverts, small bridges, and dams across the state that are deteriorating and are vulnerable to being washed out by severe storms and flooding. Communities want to address these infrastructure challenges but lack the knowledge, technical skills, and funds to do so. The Massachusetts Division of Ecological Restoration is the lead agency assisting communities, and their dam removal and culvert programs are regularly oversubscribed. For example, their Municipal Culvert Replacement Grant Program regularly receives \$6-7M/year in requests, with only \$750k/year to disburse for grant support. Preparing in advance of extreme weather provides opportunities for coordinated and more nimble participation in recovery programs. Significant federal investment would allow for state dam and culvert programs to expand.

- **Project jobs created:** For every \$1 million spent on these kinds of projects, 12.5 full time jobs are created or maintained – 7.5 of which are direct jobs in maintenance and repair construction; architectural, engineering, and related services; permitting; landscaping; and field surveying; and 5 of which are indirect jobs in materials and landscaping equipment suppliers; greenhouse/nursey staff; and food services are also created. Broader economic benefits include avoiding millions of dollars of

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We and our partners use these studies to explain the benefits of dam removal

- To the state legislature
- To the state administration
- To federal funders
- To potential partners who have interests beyond environmental benefit

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Thank you!
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Resources

- **DER's Restoration Economy work**
<https://www.mass.gov/restoration-and-the-economy>

- **NOAA (Federal agency) research – restoration and the economy (~ 15 jobs per \$1 million spent)**
<https://www.govlink.org/watersheds/8/pdf/NOAA-Tech-Memo-NMFS-OHC-1.pdf>

- **American Rivers – Rivers as Economic Engines**
<https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2020/07/09223525/ECONOMIC-ENGINES-Report-2020.pdf>