

Department of Conservation and Recreation Special Commission

Prepared by UMass Donahue Institute

December 2021

Department of Conservation and Recreation Special Commission

Prepared by the UMass Donahue Institute's Economic & Public Policy Research Group and
Nonprofit Funding & Fiscal Solutions at the University of Massachusetts Amherst.

Established in 1971, the UMass Donahue Institute is a public service, research, and economic development arm of the University of Massachusetts. Our mission is to apply theory and innovation to solve real world challenges and enable our clients to achieve their goals and aspirations. We serve clients in the public, non-profit, and private sectors in the Commonwealth and throughout the nation and the world. For more information, www.donahue.umass.edu.

Contents

List of Tables.....	vi
List of Figures.....	vii
Executive Summary.....	1
Summary of Main Findings	1
Challenges to DCR.....	1
DCR’s Response to Challenges	2
Current Strategic Planning	3
Budget, Staffing, and Return on Investment	3
Communications and Transparency	5
Resource Management Plans (RMPs) and Asset Management	6
Urban Parkways	8
Friends’ Groups and Partnerships	9
Stewardship Council.....	10
Summary of Recommendations	10
Introduction.....	18
Overview of DCR and Context for the Special Commission	18
Data Sources and Methodology.....	21
Challenges to DCR.....	23
Budget Constraints.....	23
Staffing Constraints.....	25
Environment and Climate Resiliency	26
DCR’s Response to Challenges	28
Response to the Pandemic	28
Expedited Permitting	29

Development of AMMP/CAMIS.....	29
Release of the Parkways Master Plan	30
Stewardship Council Passage of Budget Resolution.....	30
Current Strategic Planning	32
Budget, Staffing, and Return on Investment.....	34
Budget and Staffing	35
Retained Revenues	35
The Outdoor Economy	36
Return on Investment	36
Capital and Operating Expenditures Overview.....	37
Retained Revenues	44
Massachusetts State and Local Government Funding and the Recreation Economy	48
Return on Investment.....	52
Visitation and Recreation.....	52
Ecosystem Services	55
Quality of Life Impacts.....	57
Measuring and Improving Outcomes	59
Communications and Transparency	62
Communication	62
Transparency.....	63
DCR Modernization Initiatives also Promote Transparency	65
Resource Management Plans (RMPs) and Asset Management.....	66
Resource Management Plans (RMPs)	66
Resource Management Plans - Legislative Mandate	66
Resource Management Plans – Purpose and Evolution.....	67
Asset Management Modernization Program (AMMP) and Capital Asset Management Information System (CAMIS).....	69

AMMP and CAMIS - Overview.....	69
AMMP and CAMIS – History, Implementation, Resources, and Progress.....	71
Urban Parkways	75
Historical and Current Context of DCR Parkways	75
Transfer History.....	78
Transfer Considerations.....	80
2020 DCR Parkways Master Plan	82
Progress with American Disabilities Act (ADA) Compliance.....	84
Integration of Parkway Maintenance Needs with DCR’s Developing Asset Management Modernization Program (AMMP)	84
Continued and Close Coordination with MassDOT will Enhance DCR’s Longer-term Stewardship of its Parkways.....	85
Friends’ Groups and Partnerships.....	87
Stewardship Council	90
Enabling Legislation	90
Interactions with the Public.....	92
Recommendations	93
Overview	93
Planning and Execution.....	95
Formalize planning processes and develop an agency-wide strategic plan for the organization	96
Provide upfront investment and timeline to develop an agency-wide plan for DCR	97
Budget.....	98
Match DCR’s budget to a strategic planning process	98
Develop a dollar estimate of DCR infrastructure improvement needs.....	99
DCR should coordinate with the Legislature on a plan to clarify the purpose and level of retained revenue	100
Return on Investment.....	101

Align conservation actions with state’s 2030 and 2050 emissions targets	101
Evaluate recreation users and uses to target investments.....	101
Measure outcomes against appropriate metrics.....	101
Better leverage Friends’ Groups and other philanthropies in financially supporting DCR.....	103
Staffing.....	103
Limit the use of seasonal staff to truly seasonal activities.....	103
Ensure the FTE cap aligns with DCR’s budget to maintain effectiveness.....	104
Seek DCR staff input to better understand perspectives on agency operations and employee morale	104
Transparency and Accountability	104
Update DCR’s website for a lot of different sections and make it more user friendly..	105
Branding and Marketing/Communications.....	107
Develop consolidated information/fact pieces highlighting DCR activities.....	107
Update DCR website to provide more streamlined information about DCR activities and services.....	108
Expand awareness of DCR’s Universal Access Program	108
Leveraging Resources/Friends’ Groups	108
Increase leveraging of stakeholder partnerships to enhance facility infrastructure, maintenance, and operations.....	108
Increase the number of and train DCR staff who work with Friends’ Groups at ground level.....	109
Increase DCR Partnership Matching Funds.....	109
Organizational Management	110
Continue to implement digital processes for efficiency and to further modernize the agency	110
Transfer of Parkways	111
Implement improvements to asset management practices and add capacity to accelerate and remedy issues identified in the Parkways Master Plan (released in June 2021) ...	111

Retain DCR's role in parkways and explore opportunities for partnership into the future to address safety concerns.....	112
Asset Management.....	113
Continue to embrace and develop AMMP/CAMIS as a tool to monitor needs and to enhance agency performance in the future.....	113
Stewardship Council.....	114
Formalize the Stewardship Council's role and responsibilities as a governing body for DCR.....	114
The Stewardship Council chair should consider separate times other than monthly meetings for Stewardship Council subcommittees (Finance, Stakeholders, and Policy & Operations) to convene.....	115
Appendix A: Methodology and Data Sources.....	116
Appendix B: Overview of Public Comments Concerning DCR.....	119
Public Comment Timeline and Response Overview.....	119
DCR Union Stakeholder Session Themes	119
Recommendations	119
Spring 2021 Public Listening Session Themes	120
Friends' Groups Stakeholder Meeting Themes	120
Public Comments via E-Mail.....	121
Appendix C: List of Acronyms	122
Appendix D: Bibliography	123

List of Tables

Table 1. State and Local Spending on Parks and Recreation51

Table 2. The Transfer Debate.....77

Table 3. Criteria for Assessing Transfer of Parkways81

List of Figures

Figure 1. DCR Organizational Structure	19
Figure 2. Total Capital Expenditures (Real 2020 \$), FY 2009-2020.....	38
Figure 3. Year-over-Year Change in Capital Expenditures, FY 2010-2020	39
Figure 4. Share of Capital Expenditures Comprised of Infrastructure Spending, FY 2009-2020.....	39
Figure 5. Total Operating Expenditures (Real 2020 \$), FY 2009-2020	40
Figure 6. DCR Share of State Budget, FY 2009-2020	42
Figure 7: Number of Workers by Type at DCR, FY2009 – FY2020	43
Figure 8: Change Relative to 2009 of Select Funding Measures.....	46
Figure 9: Derivation of Net State Funding for DCR, Average of 2009 - 2020.....	47
Figure 10. Total Retained Revenues (Real 2020 \$), FY 2009-2020	48

Executive Summary

Summary of Main Findings

Overview

- The Massachusetts Department of Conservation and Recreation (DCR) was created in 2003 when its two predecessor agencies, the Metropolitan District Commission (MDC) and the Department of Environmental Management (DEM), merged to form a single agency.
- DCR's mission is to "protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well-being of all." DCR is an agency housed within the Massachusetts Executive Office of Energy and Environmental Affairs (EEA).
- In total, DCR's responsibilities include security at the State House, 42 ice skating rinks, five ski areas, 35 athletic fields, 178 playgrounds and athletic courts, 32 campgrounds, three 18-hole golf courses, 32 deep water pools, 20 spray decks, two wading pools, over 142 center lane miles of parkways, 3,000 miles of service trails, 11,000 streetlights (slightly less than half of which are owned by DCR), safety for 2,950 dams statewide (many of which are owned by DCR). In total, DCR oversees close to 500,000 acres of forests, beaches, parks, greenways, waterfronts, riverways, watersheds, and historic resources with national register designation.
- Questions about DCR's organizational performance and "right-sizing" its responsibilities to its resources have led to the formation of a Special Commission, which was established by Section 100 of Chapter 41 of the Acts of 2019.

Challenges to DCR

Budget Constraints

- The breadth and depth of DCR's portfolio of assets and responsibilities are vast. Nonetheless, the organization has historically faced budget constraints that limit its ability to effectively manage all of its various assets (note that a detailed budget analysis comes later in this report).

- In inflation-adjusted terms, according to the data provided to the research team by DCR, since 2009 capital and operating funding have fallen by 16 percent and have been relatively flat over the past half-decade.
- An FY2016 report estimated \$1 billion in deferred maintenance related to infrastructure, recreational facilities, waterfront facilities, dams, water supply, and conservation, which is equivalent to about 10 years of current capital funding.

Staffing Constraints

- Since 2009, there are 300 fewer full-time employees at DCR (the reduction includes a shift of 139 employees to MassDOT), a reduction of approximately 25 percent.

Environment and Climate Resiliency

- Due to its vast property holdings and oversight of land protection for forest, water supply protection, beaches, and other areas, DCR is at the forefront in natural resource protection as a strategy to mitigate further climate changes.

DCR's Response to Challenges

Response to the Pandemic

- DCR quickly introduced changes to maintain communications and manage parks during the pandemic. Throughout 2020, the importance of providing access to outdoor recreational opportunities was underscored by a surge in visitation to DCR's properties.
- The pandemic has helped DCR modernize workflow issues and expedite movement towards a paperless future.
- DCR purchased and distributed new laptops and tablets so staff could effectively work from the field, and the hardware was integral in working from home during the pandemic.

Development of Asset Management Modernization Program and Capital Asset Management Information System (AMMP/CAMIS)

- AMMP/CAMIS is central to DCR's modernization efforts, with a process that began prior to the pandemic (an "Agile Scrum" effort in 2016 led to the AMMP/CAMIS initiative) and continued to

be developed throughout the pandemic. The CAMIS system compiles the location and condition of DCR buildings and assets into a single online database which has allowed the agency to introduce much more streamlined and transparent processes to identify preventive and corrective maintenance. CAMIS will inform deferred and capital spending needs once the database is complete. The implementation of CAMIS has provided a long-term tool that can address the concerns around transparency that were an impetus for the convening of the DCR Special Commission.

Release of the Parkways Master Plan

- The DCR Parkways Master Plan was released in June 2021. This study performed an in-depth analysis that aims to provide a framework to guide capital improvement and maintenance projects that improve safety and expand accessibility for pedestrians, cyclists, and motor vehicle operators on DCR's urban parkways.

Current Strategic Planning

- At present, DCR does not have a single, cohesive, agency-wide strategic plan. Without the structure provided by such a plan, decision-making at DCR can seem opaque. The lack of clear metrics tying DCR's activities to progress towards a plan or agency goals also makes oversight of DCR more challenging.
- DCR already has individual strategic goals in place for several of its key areas of focus, including the 2020 Massachusetts State Forest Action Plan and Division of Water Supply Protection Office of Watershed Management's Fiscal Year 2020 Final Report which covers accomplishments towards detailed tasks, metrics utilized, and the timeframe in which the tasks and monitoring took place. Both examples underscore progress in formulating strategic plans and show how this momentum may be applied to the creation of an agency-wide plan.

Budget, Staffing, and Return on Investment

- In inflation-adjusted terms, capital and operational funding provided to DCR has fallen since 2009 and was largely flat over the past half-decade. Staffing levels typically follow and are a function of available resources so total FTEs have also declined since 2009.

- The budget available to DCR cannot be separated from larger macroeconomic trends affecting the state budget as a whole, such as the Great Recession and increasing health care costs.
- The Legislature sets the level of fee revenues that DCR can retain each year. The fees collected by DCR are split 80/20 between the agency and the General Fund. The retained revenue limit has increased by 76% over the past decade allowing DCR to collect, retain, and send back more fees.
- The share of DCR budget coming from retained revenue has grown from 10 percent of operating expenditure in 2009 to 20 percent in 2019 before declining to 15 percent in 2021 due to COVID-related closures.
- From our interviews, review of public meeting notes, and statements from interest groups, it appears that the increased reliance on retained revenues has also increased concern among stakeholders that the Legislature is underinvesting in DCR. These groups also note that increasing fees raises accessibility and equity concerns.
- The U.S. Department of Commerce's Bureau of Economic Analysis (BEA) collects data that estimate the size of the states' outdoor economies. This data show that outdoor recreation supports approximately \$10.5 billion of gross state product, 113,800 jobs, and \$5.5 billion of compensation, making outdoor recreation about the same size as the state's transportation and warehousing sector.
- Spending on travel and tourism and the production of apparel and accessories are the primary components of the Commonwealth's outdoor economy.
- Relative to its population, income, and total government spending, Massachusetts' local and state investments in parks and recreation are at or near the bottom of all states and are generally around half the national averages.
- The Commonwealth receives returns on its investment in conservation and recreation through visitation, ecosystem services, climate change adaptation and mitigation, improved health, workforce attraction, and higher property values. The findings suggests that these returns exceed

direct costs to the public purse, likely by many multiples, and are important to the Commonwealth's competitiveness.

- DCR's properties comprise half of the lands which are most likely to support outdoor recreation in Massachusetts and attract 26.2 million annual visitors.
- A recent study by the Trust for Public Land found that every \$1 invested in land conservation in Massachusetts returned \$4 in ecosystem services, which does not account for future climate-related benefits.
- In the future, the most promising new source of returns on conservation is from combating climate change. Conserved and restored ecosystems can help with climate change mitigation by removing CO₂ from the atmosphere and with climate adaptation by combating flooding, erosion, and urban heat islands.
- Investment in parks also creates returns through quality of life improvements. Homes near parks are valued higher and sell faster than similar homes farther away. The availability of outdoor recreation is a key attractor for retirees and young workers, linking economic development to parks. Finally, proximity to parks induces more physical activity, improving health outcomes and reducing health care costs.
- Future returns can also be improved by using funding from Friends' Groups and philanthropies to leverage public funds for projects in the collective interest.
- DCR spending can be made clearer and more effective by creating well-designed metrics that follow from an overarching strategic plan.

Communications and Transparency

- Concerns over communication, community engagement, and transparency were common themes that emerged from our stakeholder interviews. These problems obscure from the public and legislators the work that is being done by the agency and the passion brought by many of its employees.

- DCR would benefit from its constituents having a better understanding of its wide range of activities and responsibilities as a steward of Massachusetts' outdoor spaces and recreational activities.
- Focused efforts to improve public engagement highlighting core values that inform the decision making process could result in increased transparency, giving more opportunity for people to share concerns, ideas, and engage with the agency. Improving transparency would also increase accountability for the agency—a goal that legislators, constituents, and Friends' Groups would like to see.
- DCR responsiveness to questions and issues that come up in Stewardship Council meetings as well as directly by phone or email to the agency can vary. The public interacts with DCR through these channels but feel DCR is, at times, unable or unwilling to provide direct answers to their questions and concerns.
- The introduction of CAMIS (the Capital Asset Modernization Information System) is very important with regards to transparency. The expanded use of CAMIS, which is now active at park facilities statewide, has made DCR's physical assets more visible to agency leadership by raising understanding of assets' exact locations and their state of repair. On the constituent side, CAMIS will allow DCR to run detailed reports to illustrate current conditions track reoccurring issues and identify root causes, as well as longer-term needs for parks and so the public, legislators, and Friends' Groups can have a more precise understanding of the properties that concern them.

Resource Management Plans (RMPs) and Asset Management

Resource Management Plans

- Resource Management Plans (RMPs) at DCR are guided by a legislative mandate put in place at the inception of DCR. RMPs form the backbone of a process to document the natural, cultural and recreational resources and conditions at reservations, parks, and forests.
- The RMP development process in the past has had issues with DCR's capacity to produce plans in a timely manner, which led to growing backlogs of unfinished (or un-started) plans. A new process is now being introduced at DCR that is envisaged to increase the production of RMPs to 40 per year. The RMPs will also be integrated with and draw from the CAMIS system in order

to improve detail and accuracy as well as add greater efficiency to their production. CAMIS data collection, ultimately, makes the new and faster RMP process possible. Some Friends' Groups have noted the discrepancy between the old and the new RMPs and fear that the expedited production of RMPs is taking precedence over chronicling needs and developing workable plans to implement wide-ranging infrastructure, conservation, and service improvements. With the first of the new draft RMPs scheduled for public comment early in 2022, the benefits of the new RMP plans will need to be documented and assessed, including circling back to modify the process if results are not coming in as anticipated.

Asset Management Modernization Program (AMMP) and Capital Asset Management Information System (CAMIS)

- DCR is undertaking a number of initiatives that are expected to bring future benefits, notably in terms of asset management and transparency. The old platform that DCR had for monitoring its properties had become obsolete and has been replaced by the CAMIS system, including much more modernized hardware and greatly improved functionality.
- AMMP is the Asset Management Modernization Program and the AMMP team implemented a process for improving asset management practices and organization at DCR while CAMIS is the computer systems platform that maintains the data and information collected through the AMMP process.
- The implementation of CAMIS will foster accessible and quantifiable information on the relative condition of DCR facilities by location, representing a major step forward for the agency in modernizing its practices.
- With funding being a perennial issue at DCR, the agency is hopeful that CAMIS can be used as a platform to estimate and compare costs of future projects and to better address deferred maintenance needs.
- Initial CAMIS data focused on buildings (major and minor), improvements (horizontal or vertical structures that do not have major utilities or building systems, includes assets like pavilions, pools, and linear improvements including parkways), and major equipment systems (e.g., water heaters, furnaces) maintained and operated by DCR's facility maintenance and engineering division.

Urban parkways are also active in CAMIS. A number of additional datasets are now being added, including trails, dams, and forestry assets, among many others.

- As of October 2021, there have been 6,837 work orders entered in CAMIS, 5,929 corrective work orders, and 908 preventive maintenance work orders since the inception of the use of the system.

Urban Parkway

- The condition and safety of DCR's urban parkways is seen as an impetus for forming the Special Commission. Issues regarding safety (crosswalks, pedestrian, bikes, speeding), roadway geometries (e.g., sudden lane drops), American Disabilities Act (ADA) compliance, traffic light timing, snow removal, and the general responsiveness of DCR to answer inquiries on the status and planning of parkway improvements all represent concerns about DCR being able to do the work it needs to do.
- With respect to the parkways currently under DCR's purview, the agency is charged with the repair and maintenance of roads, pedestrian bridges, and traffic lights; in this context, repair and maintenance include but are not limited to operations, signage, guard rails, ramps, and drainage. The expressed concern that DCR is not able to keep up with these tasks has occasioned a discussion about the potential transfer of roadway maintenance or the roadways themselves to another entity—most likely MassDOT.
- Since 2009, the management of a number of DCR roadways have been transferred to MassDOT – a common characteristic of these transferred roadways, however, is that they are less like parkways that connect recreational assets and more like roads that connect to other highways.
- DCR and MassDOT already collaborate in a number of areas concerning roadway planning, major infrastructure improvements, maintenance, and plowing.
- The release of a new report in June 2021, the “Parkways Master Plan”, finally sets a framework for needed future improvements, emphasizing safety as well as improved infrastructure for pedestrians and bicyclists. However, the adequacy of DCR's budget and speed with which the agency can actually implement the improvements included in the master plan is a question mark

that will be under close scrutiny. The 2021 report also needs to be updated with newer safety data and the inclusion of all urban parkways (DCR indicates that these updates will take place).

- Pedestrian access, including for those with disabilities, has been a problem along DCR's urban parkways. Ramps and deficient sidewalks have made segments of DCR parkways inaccessible and/or dangerous for people with mobility issues. Recognizing the deficiency, DCR has crews in place and plans to add or fix "hundreds" of ramps per year.
- DCR is working on migrating parkways maintenance requests into CAMIS as part of the AMMP project. As with DCR's building infrastructure needs and their incorporation into CAMIS, this represents a significant improvement and modernization compared to old practices when maintenance notes and complaints were kept on paper.

Friends' Groups and Partnerships

- Private and non-profit support for parks is a long tradition in the United States (note that the report shows examples of "public-private partnerships) in New York and California). DCR "Friends' Groups" are non-profit organizations established to help support interpretive, educational, and conservation activities through fundraising, membership programs, and awareness building at DCR parks.
- DCR's Friends' Groups provide a key way for DCR to leverage and increase resources for the maintenance, programming, and conservation of its parks and parkways. Some of the larger Friends' Groups have hundreds of members and the capability to raise significant amounts of funding. However, there are challenges regarding what Friends' Groups can and cannot do within DCR properties, including the capacity of DCR staff to more fully engage with and leverage the capabilities of the Friends' Groups.
- DCR staff is involved in ongoing work to draft a new memorandum of agreement (MOA) between the Friends' Groups and DCR, to help add needed clarity and consistency for Friends to more actively engage with DCR and in compliance with DCR requirements.

Stewardship Council

- Established by the Massachusetts legislature in 2003, the Stewardship Council is an independent body that assists and oversees DCR. DCR's enabling legislation also makes the Stewardship Council responsible for developing an "oversight strategy" of park management plans, capital planning, and policy development.
- The UMDI research team found that agencies similar to DCR around the nation also had oversight entities similar to the Stewardship Council.
- The development of an updated oversight strategy now appears dormant, due in part to time limitations of Council members to develop a detailed report. In the future, the Council may be better served by responding to a DCR strategic plan (once developed and included as a main recommendation of this study), overseeing adherence to its goals and raising new issues generated from the public.
- The Stewardship Council is required to approve the Commissioner's proposed budget, annually, but until recently, they have not had the time allocated to do so. Over the past year, the Council has become more engaged in the budget process, including regular finance presentations at the Council's monthly meetings. In its July 22, 2021 meeting, the Stewardship Council passed a budget resolution a full six months before the release of the Governor's final budget for FY2022.
- In order to play a more meaningful role to guide and assist DCR, the Council members have divided into three sub-committees which work to improve the Council's efficacy in overseeing key policy areas affecting DCR. These sub-committees include a Finance Committee, a Stakeholder Engagement Committee, and a Policy and Operations Committee.

Summary of Recommendations

In reviewing the recommendations, it is very important to underscore that the issues confronting DCR are interrelated. As such, the recommendations should not be read or interpreted in isolation – they work together to build on DCR's existing strengths and modernization initiatives to bring the agency forward. The two most important recommendation areas are planning and budget – by addressing these two areas, many other items can move towards a pathway of improvement. The development of an agency-

wide strategic plan is an overarching recommendation. That said, the development of an agency-wide plan may be a time-consuming process and DCR, legislators, and the agency's supporters should not lose sight of shorter-term opportunities that could yield meaningful results for the Commonwealth's parks, conservation, and climate resiliency efforts.

Planning and Execution

Formalize planning processes and develop an agency-wide strategic plan for the organization

- A strategic plan or other agency-wide planning process for DCR would formally outline the agency's vision and goals and their accompanying objectives, strategies, and performance measures (metrics) that could be tied to putting the goals into action.
- Such a planning process would make a direct connection to DCR's RMPs, a cornerstone for improving and preparing the natural and recreational assets at DCR's parks for the future.
- Plans should note whether resources (staffing and funding) are allocated or are needed for implementation. Implementation should clearly tie to DCR's capacity in terms of funding and staffing.
- The strategic, agency-wide planning process will need to reflect that DCR has roles, responsibilities and opportunities far beyond those of a traditional parks and recreation agency. Specifically, the contribution that the agency's properties play now and will need to play going forward in mitigating climate change and helping the Commonwealth be resilient to climate change impacts must be a central component of DCR strategic planning and decision-making as they relate to capital investment, operations and programming.

Provide upfront investment and timeline to develop an agency-wide plan for DCR

- The upfront investment needed for an agency-wide planning process will need to be provided. Based on information gathered for this study, DCR does not likely have the current staff and resources to undertake such a capacity-building project. The investment would need to cover potential staffing and contracting (the staffing and budgeting for AMMP/CAMIS may serve as an example), as well as provide a realistic timeline for execution.

Budget

Match DCR's budget to a strategic planning process

A strategic plan is the cornerstone of these recommendations. Many of the detailed recommendations we provide in this report arise from issues that can be traced back to elements that an agency-wide plan could address.

Develop a dollar estimate of DCR infrastructure improvement needs

Because DCR is an infrastructure agency in many ways, a clear accounting of its capital needs is critical. A thorough assessment and monetization for bringing DCR's properties into a state of good repair and linked to CAMIS should be part of the strategic plan and builds upon the agency's previous work quantifying deferred maintenance.

DCR should coordinate with the Legislature on a plan to clarify the purpose and level of retained revenue

As user fees grow as a share of total funding, maintaining and growing sources of fee revenue becomes more important to fully funding DCR. These increases form the basis of concerns gleaned through public outreach that the Legislature is disinvesting in DCR, creating an opportunity for a conversation on what role retained revenue should play in the agency.

Return on Investment

Align conservation actions with state's 2030 and 2050 emissions targets

As the primary steward of public lands, DCR has a valuable role to play in meeting emissions targets. The ecosystem services provided by lands and waterways play a key role in mitigating climate change through carbon capture, storage, and sequestration and also in adapting to climate change by providing flood and erosion control and managing urban heat islands.

Evaluate recreation users and uses to target investments

DCR should begin to study who uses DCR properties and how they use them so that the most utilized or critical recreation channels could be maintained at the highest levels of readiness and repair. For example, DCR's urban parks provide critical access to outdoor recreation opportunities for communities that may otherwise have difficulty getting to or affording alternative options, which may differ from the users of "drive-to" parks in the western part of the state.

Measure outcomes against appropriate metrics

As part of the strategic planning process DCR should focus on clearly defining what success looks like for the department as a whole and its subunits. Effective metrics should be visible to department leaders,

measured against appropriate benchmarks, and advanced toward organization goals. Investments will likely be needed to move metrics up the visibility/measurement/improvement chain. DCR already tracks some metrics and has recently introduced new targets to focus on EJ communities.

Better leverage Friends' Groups and other philanthropies in financially supporting DCR

In many cases, the state can unlock additional money from private and non-profit sources with small initial investments in time and resources. The ability to move further into this model would require some shifts at DCR, including more staff, as well as reliable funding available for matching.

Staffing

Limit the use of seasonal staff to truly seasonal activities

The use of seasonal staff for what are essentially full-time positions breaks continuity and can reduce attachment to jobs at DCR.

Ensure the FTE cap aligns with DCR's budget to maintain effectiveness

Though largely a reflection of available budget, the FTE limit is set separately. As a result, it is important to ensure that the number of employees DCR can have matches the budget (and thus implied level of effort) assigned to it by the Legislature.

Seek DCR staff input to better understand perspectives on agency operations and employee morale

Interviews and emails suggest some level of dissatisfaction from rank-and-file staff with management decisions. To begin to understand these issues, a communications framework for regular staff input, followed by DCR management evaluation and feedback should be developed and formalized.

Transparency and Accountability

Update DCR's website for a lot of different sections and make it more user friendly

- DCR's website is front-facing and specified web improvements for transparency and accountability will require an infrastructure, both in terms of design, functionality, and upkeep. The recommendations, below, all could use the DCR website as a tool to improve transparency.
 - Share and maintain a detailed organizational chart on the DCR webpage.
 - Institute a formal tracking system to monitor status of inquiries coming into DCR.

- Communicate on website on status of expected and ongoing studies.
- Communicate decision-making processes publicly.
- Provide “report backs” on public comments received during Stewardship Council meetings.
- Greater social media and web presence to inform constituents.

Branding and Marketing/Communications

Develop consolidated information/fact pieces highlighting DCR activities.

DCR should encapsulate a range of accomplishments and facts, ideally supported by program metrics and measures (e.g., from strategic plan progress reports, if instituted), to make constituents and stakeholders more aware of DCR activities and how they benefit Massachusetts.

Update DCR website to provide more streamlined information about DCR activities and services.

DCR's website is not particularly user friendly, and information is not necessarily straightforward to access. Other states' parks and recreation agency websites often (but not always) provide clearer pathways to information about offerings.

Expand awareness of DCR's Universal Access Program.

DCR has developed innovative approaches for disabled individuals to more fully enjoy the agency's parks and recreational offerings. The word can still more effectively get out on these opportunities, including increased collaboration with the Executive Office of Health and Human Services (EOHHS) to make disabled individuals more aware of DCR's Universal Access Program.

Leveraging Resources/Friends' Groups

Increase leveraging of stakeholder partnerships to enhance facility infrastructure, maintenance, and operations.

- DCR-stakeholder partnerships have great potential to support and enhance the agency's execution of its mission and can be put to greater use. A memorandum of agreement (MOA) previously drafted between Friends of DCR and the agency would add clarity for partnerships, enabling the Friends to become more involved in park (or parkway) management and activities in alignment with DCR's plans and goals.

- On the finance side, better leveraging the fundraising capabilities of the Friends' Groups for the parks – represents a substantial opportunity to increase investments in conservation, built infrastructure, and visitor programming, when the fundraising goals are aligned with DCR's priorities.
- DCR needs the internal management and legal systems in place to support this type of leveraging, which might require increases in staffing (e.g., in DCR's External Affairs and Partnerships area) to support and better leverage the initiatives of the Friends' Groups.
- Friends' Groups should have a formal means to communicate with DCR about the areas where they see needs/concerns not being addressed that they can help with.

Increase the number of and train DCR staff who work with Friends' Groups at ground level.

- DCR could look at ways to create more capacity within its Office of External Affairs and Partnerships to help establish pathways between the Friends' Groups (and volunteers) and DCR to expedite allowing work to be performed.

Increase DCR Partnership Matching Funds.

- The DCR Partnership Matching Funds Program (\$1M/year) supports financial matching from Friends' Groups and other partners to upgrade DCR properties. Given the high level of interest in the program, an increase in the annual match could leverage significant increases in investment. On the administrative side, DCR needs the staff capacity to better support the program's execution and improve accountability.

Organizational Management

Continue to implement digital processes for efficiency and to further modernize the agency

- The management of DCR's systems is undergoing an overhaul, including asset management practices (i.e., the implementation of the Capital Asset Modernization Information System), to eliminate paper-based record keeping and provide a broad-based and cohesive foundation to understand agency needs and priorities. The new systems are enabling cross-divisional cooperation and providing a means to modernize DCR's practices. It is essential for these long-term efforts to maintain support and become fully activated as much of the agency's expected performance improvements rest on their successful implementation.

Continue to embrace and develop AMMP/CAMIS as a tool to monitor needs and to enhance agency performance in the future

- DCR's deferred maintenance backlog is substantial. In order to get its arms around chipping away at the backlog, the agency needed to first know what it has and its condition. The Capital Asset Modernization Information System being put into place, now, is providing a knowledge base as well as more organized processes to address condition and maintenance issues (including the monitoring of work orders) at DCR facilities.

Transfer of Parkways

Implement improvements to asset management practices and add capacity to accelerate and remedy issues identified in the Parkways Master Plan

- Supplement DCR management and funding resources (e.g., to manage contractors and fund work) to increase and/or expedite major projects.
- Linked to transparency, DCR should provide regular updates for completing the recommendations in the Parkways Master Plan and report publicly and annually on progress toward the plan's goals.
- The current Parkways Master Plan includes a caveat that it "is for planning purposes only and should not be used for final design of any project", indicating that there is work yet to be done in examining existing conditions before programming and construction can begin on the parkway projects. If the timelines for needed improvements are stretched and funding resources are thin, DCR should identify low-cost and quick-response safety improvements to implement in the short term as opposed to years or decades from now.

Retain DCR's role in parkways and explore opportunities for partnership into the future to address safety concerns

- The public comment collection and interview process led by UMDI, showed that there was a nearly unanimous view among stakeholders and roadway infrastructure planning professionals that DCR's parkways should remain within the agency and not be transferred. UMDI research demonstrates progress at DCR in parkway stewardship, including progress towards building new curb ramps for ADA compliance and the introduction of the DCR Parkways Master Plan.

- With regard to maintenance, DCR is suited to take care of these unique parkway assets with a staff of arborists, planners, landscapers, interpreters, rangers, and cultural experts (e.g., archaeologists).
- Into the future, DCR and MassDOT should continue to collaborate on the topic of parkways as a means of improving safety outcomes, increasing access to funding, sharing resources and expertise, increasing access to real time transportation data, and expanding operational efficiencies for improved management and stewardship of the resources.

Stewardship Council

The role and specific authorities of DCR's Stewardship Council and the benefits it provides, both internally within DCR and to external stakeholders, needs to be clarified. While the Council does have a defined role, legislatively, it is not being used that way. With greater clarity, the Stewardship Council can be an asset in oversight and vision for DCR as well as being an independent voice for DCR activities, advocating for projects, supporting stakeholders who need greater engagement, and providing a public forum for the agency.

Formalize the Stewardship Council's role and responsibilities as a governing body for DCR

- Support the recommendations of the Policy and Operational Committee on the changes to the Council's enabling legislation. The draft enabling legislation updates and clarifies roles, terms, and responsibilities of the Stewardship Council.
- The Stewardship Council can press DCR in establishing a vision and strategic plan with which the Stewardship Council can oversee, advise, and track progress at the agency. An agency-wide strategic plan would more clearly define how the annual priorities are set at DCR and improve transparency at the agency.
- Establish a clear process for Stewardship Council involvement in DCR budget setting, review, and approval, starting at the earliest stage possible. This is already a clear authority included in the existing enabling legislation.

Introduction

Overview of DCR and Context for the Special Commission

The Massachusetts Department of Conservation and Recreation (DCR) was created in 2003 under Governor Mitt Romney when its two predecessor agencies, the Metropolitan District Commission (MDC) and the Department of Environmental Management (DEM), merged to form a single agency. With the MDC focused on parks and recreational areas, urban parkways, flood control, and water supply protection, and DEM focused on state parks, forests, dam safety, cultural and natural resources protection, and land preservation throughout Massachusetts, the two agencies each brought a wide range of distinct and diverse responsibilities to the new DCR. Today, DCR's mission is to "protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well-being of all."¹ As demonstrated in Figure 1, below, DCR is the combination of six interrelated divisions that perform the basic administrative, operations, engineering, conservation, and public affairs functions of the organization. DCR is an agency housed within the Massachusetts Executive Office of Energy and Environmental Affairs (EEA). The 2003 legislation also established DCR's Stewardship Council, which is an independent body that provides oversight, assists, and approves certain functions of the agency, including approving Resource Management Plans (RMPs) and an annual operating budget.

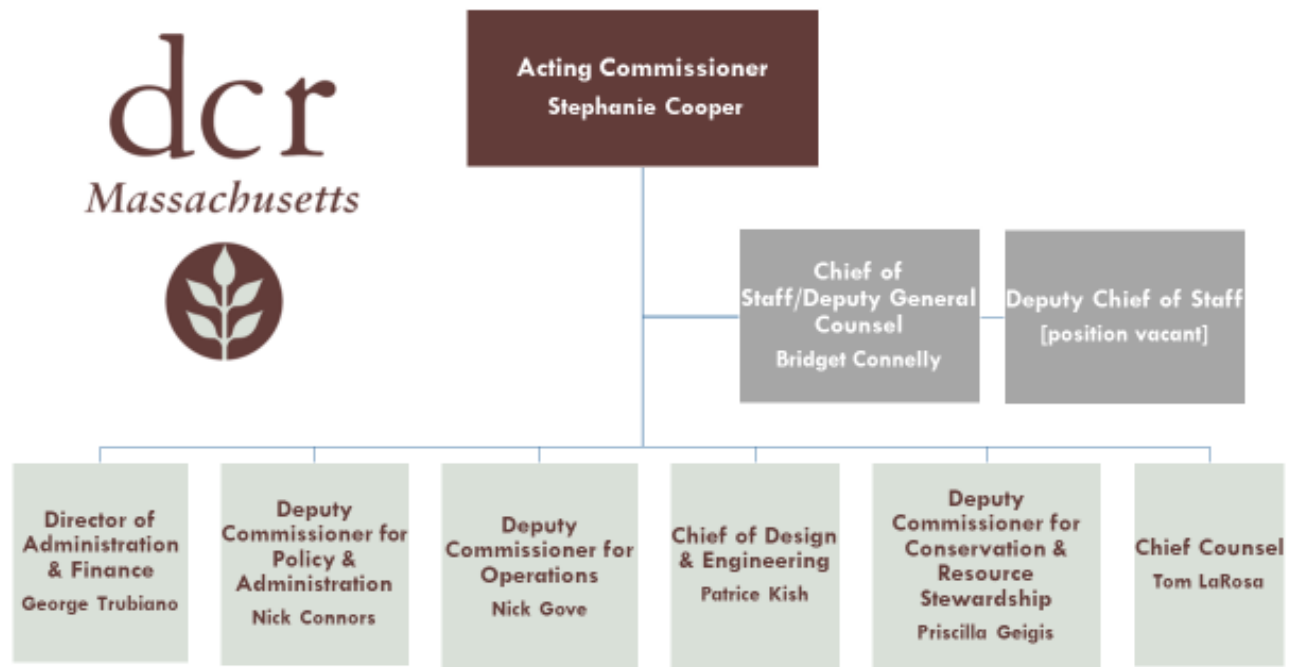
DCR is among one of the largest state park systems in the country.² Additionally, DCR is also responsible for public works and land management issues. In sum, the agency has earned the reputation of being the "Commonwealth's largest landowner". As it is structured today, DCR maintains a large portfolio of park and recreation management, waterways, roads, beaches, and conservation duties. In total, DCR's responsibilities include security at the State House, 42 ice skating rinks, five ski areas, 35 athletic fields, 178 playgrounds and athletic courts, 32 campgrounds, three 18-hole golf courses, 32 deep water pools, 20 spray decks, two wading pools, over 142 center lane miles of parkways, 3,000 miles of service trails, 11,000 streetlights (slightly less than half of which are owned by DCR), safety for 2,950 dams statewide (many of which are owned by DCR). In total, DCR oversees close to 500,000 acres of forests, beaches,

¹ <https://www.mass.gov/guides/about-dcr#-mission->

² DCR's state park cover over 4 percent of the Massachusetts land area, the 7th highest coverage (based on share of total land) in the country. <https://www.playgroundequipment.com/us-states-ranked-by-state-and-national-park-coverage/>

parks, greenways, waterfronts, riverways, watersheds, and historic resources with national register designation.³

Figure 1. DCR Organizational Structure



Source: DCR as of December 3, 2021

While the merging of two culturally different organizations was itself a significant challenge facing DCR from its inception, funding obstacles, growing complexities with properties owned or managed by other public entities, and increasing demands related to climate change have added challenges to DCR's operations throughout its existence.

³ Current estimates from DCR staff put total acreage closer to 500,000. We have chosen to use the language from the agency's website: <https://www.mass.gov/orgs/departments-of-conservation-recreation>.

Questions about DCR's organizational performance and "right-sizing" its responsibilities to its resources have led to the formation of a Special Commission, which was established by Section 100 of Chapter 41 of the Acts of 2019⁴ in order to:

- *Recommend ways DCR could improve the management, operations, and asset condition of its natural, cultural, and recreational resources.*
- *Determine whether any of DCR's departments, divisions, assets, or operations should be transferred to another agency, department, or entity, with special consideration given to urban parks and roadways.*

The legislation specified that the study should include, "a review of the capital and operating budgets of the department with an analysis at a component level of the relationship of cost to value; and recommendations on how to:

- *improve transparency and accountability for project choice*
- *maximize returns on the commonwealth's investment in the department of conservation and recreation; and*
- *improve project planning and execution, with special consideration given to the role of the stewardship council."*

The Special Commission is made up of 15 members designated by the legislation, including the designee of the Secretary of EEA; the Chairs of the Joint Committee on Environment, Natural Resources and Agriculture; the Secretary of Transportation; the DCR Commissioner; the chair of the stewardship council; designees of the minority leader of the house of representatives and the minority leader of the senate; and seven members who were appointed by the governor, including representatives of two park friends groups, the Environmental League of Massachusetts, the Appalachian Mountain Club, the Trust for Public Land, the Trustees of Reservations, and the National Association of Government Employees. The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) contracted with the University of Massachusetts Amherst Donahue Institute (UMDI) to conduct research on behalf of the commission, and to help facilitate and support the work of the DCR Special Commission. Specifically, UMDI was engaged to:⁵

⁴ <https://malegislature.gov/Laws/SessionLaws/Acts/2019/Chapter41>

⁵ Scope of Work and Request for Quotes, Coordinator for DCR Special Commission as posted in COMMBUYS.

- Develop and finalize overall work plan, in consultation with EEA.
- Scope and investigate the requested areas of study, including thorough review of relevant records, staff interviews and other relevant research.
- Make preliminary findings based on the investigation for presentation to the Commission.
- Facilitate all meetings of the Commission, including compiling agendas, meeting notices and minutes as required by the open meeting law, G.L. c. 30A, §§ 18-25, compiling and making presentations to the Commission, and facilitating votes as appropriate.
- Facilitate any public hearings as needed, including compiling agendas, meeting notices and summaries, compiling and making presentations, and facilitating public discussion and Q&A as appropriate.
- Compile final findings and recommendation, with input from EEA and the Commission, into a report for filing with the General Court.

The recommendations presented in this study provide DCR and related stakeholders potential opportunities for moving the agency forward, particularly as it related to DCR providing improved services and infrastructure for the long-term benefit of Massachusetts citizens. In keeping with legislative objectives of the Commission, the recommendations provide pathways for DCR to improve the management, operations and asset condition of the natural, cultural and recreational resources held by the department. The importance of DCR to the overall wellbeing of Massachusetts residents is perhaps clearer today than at any point in the organization's history. During the COVID-19 pandemic, the state's park system served as an outlet for people to enjoy open space and nature, safely, away from their homes. Further, DCR plays a critical role in thinking about conservation and climate resiliency in the state as the Commonwealth continues to wrestle with the risks associated with climate change in the coming years.

Data Sources and Methodology

UMDI utilized a mixed methods research approach which employed both qualitative and quantitative techniques. Quantitative methodologies included review and analysis of budgetary, staffing, and other administrative information provided by DCR, as well as other secondary data analysis of the outdoor economy. Qualitative methodologies included semi-structured interviews, focus groups, stakeholder meetings, a public listening session, and review of written and oral comments provided by stakeholders and members of the public, as well as a review of written documents, reports posted on DCR's website and provided by EEA on SharePoint, and research on the structure of other agencies with similar

responsibilities across the country. All interviewees and participants in stakeholder meetings and focus groups were assured that their comments and suggestions would be treated confidentially by the research team, and that any comments and recommendations shared would be anonymized and would not be attributed to specific individuals. In sum, from September 2020 to September 2021 UMDI conducted 44 individual initial and follow-up key informant interviews with the leadership and staff from DCR's various divisions (seen in Figure 1 above), Friends' Groups,⁶ and other external partners as well as interviews with members of the DCR Special Commission and the Stewardship Council. These, along with hundreds of documents from EEA, DCR, available parkway reports, the media, the state and federal governments, outside organizations, academia, and other sources helped to inform this study. The overall findings and recommendations identified in this study result from triangulating the summaries of emergent themes and recommendations from this analysis, with our analysis of the budgetary data and reports. Additional details on methodology are provided by topic or constituency in the Appendix.

⁶ Friends' Groups are community-based non-profit organizations that provide financial or programmatic support (e.g., volunteers) to educational and cultural institutions and governmental and quasi-governmental organizations. They often form in order to support entities such as parks, libraries, and universities.

Challenges to DCR

Based on our key informant interviews with DCR leadership, members of the Special Commission and the Stewardship Council, and other stakeholders, the research team compiled the major challenges that the agency is facing. Some of these challenges (e.g., budget and staffing constraints) have been present over the long term⁷, while other challenges are more recent. In this section, we summarize these challenges in order to contextualize DCR's successes and frame the issues and recommendations that are explained in more depth in the sections that follow.

Budget Constraints

The breadth and depth of DCR's portfolio of assets and responsibilities are vast. Nonetheless, the organization has historically faced budget constraints that limit its ability to effectively manage all of its various assets (note that a detailed budget analysis comes later in this report). The agency has also had to overcome the organizational and cultural complexity of merging DCR's predecessor agencies which have compounded the challenges of resource allocation.

In inflation-adjusted terms, according to the data provided to the research team by DCR, since 2009 capital and operating funding have fallen by 16 percent and have been relatively flat over the past half-decade. Within this change in capital funding are the effects of structural changes such as the reallocation of three state piers (Gloucester, Fall River, and New Bedford) from DCR to MassDevelopment and over a hundred vehicular bridges to MassDOT. In its strategy report from 2018, the Stewardship Council estimated (based on a DCR analysis it received) that approximately one-third of capital allocations tends to be spent on deferred maintenance annually.⁸ The deferred maintenance backlog was corroborated by DCR's FY2016 report, "Deferred Maintenance Assessment" which indicated, at that time, an estimated \$1 billion in deferred maintenance related to infrastructure, recreational facilities, waterfront facilities, dams, water supply, and conservation, which is equivalent to about 10 years of current capital funding.⁹

⁷ March 7, 2018 letter from DCR Stewardship Council to Senate and House Ways and Means Committees.

<https://www.mass.gov/files/documents/2018/03/09/FY19%20Council%20Budget%20Letter.pdf>

⁸ <https://www.mass.gov/files/documents/2018/04/27/Stewardship%20Oversight%202020.pdf>

⁹ Department of Conservation and Recreation, "Deferred Maintenance Assessment," FY2016.

These shifts in capital assets also impacted operating funds separately from other appropriations decisions. The most prominent shift in the composition of operating funding from 2009 to 2020 was the growth of retained revenues as a source of operating and maintenance funding. Fees collected from parking, camping, skating rinks, golf courses, and so on are split 80/20 between DCR and the General Fund, up to a limit set by the Legislature. The intent of this structure is to ensure that agencies are incentivized to maximize revenue collection, under the assurance that they can reinvest that funding back into agency operations, programming, and locations. The Legislature has incrementally increased the retained revenue limit such that it rose from 10 percent of total funding in 2009 to 20 percent of total funding in 2019 before falling to 15 percent in 2020 due to pandemic restrictions and closures. As a result, DCR now relies on various forms of user fees for roughly one-fifth of its operations funding rather than appropriations from the Commonwealth's General Fund. This increase has sparked concerns over impacts to accessibility and equity and possible underinvestment in DCR by the Legislature, which were conveyed to the research team through public outreach for this study.

It is this perception of inadequate funding that prompted the Legislature to seek the formation of the Special Commission.¹⁰ Among other things, the Special Commission is charged with making recommendation that maximize the Commonwealth's return, which includes suggestions on spending available funds in the most efficient and effective way. The Commonwealth primarily receives its economic benefits from DCR's properties through visitation and ecosystem services. For example, the use of state lands for recreation supports spending by residents and tourists while the conserved lands provide erosion control, climate change resiliency, water filtration, and climate change adaption and mitigation benefits that would otherwise require capital investments to obtain. Though not quantitatively measured in this study, another key source of returns from parks and recreation is the amenity value they create, i.e., the quality of life and attractiveness of open spaces and outdoor recreation opportunities. These investments provide benefits through real estate values, public health (especially in urban and low income communities), and economic development. Later in this report, we examine whether the Commonwealth's return on investment is positive and options for ensuring future spending is efficient and effective.

¹⁰ <https://willbrownsberger.com/wp-content/uploads/2019/03/FY20-Budget-Letter.pdf>

Staffing Constraints

A series of staffing changes occurred at DCR in 2009. As part of Chapter 25 of the Acts of 2009,¹¹ over 140 of the Commonwealth's vehicular bridges and underpasses and 139 positions were transferred to MassDOT (38 active Accelerated Bridge Program staff, 19 active Bridge Operations staff, and 82 posted positions).¹²

Over this same time, in another step to implement ongoing cost reductions, the Executive Branch, including DCR, has operated under a shared cap limiting the number of full-time equivalent (FTE) employees. This cap follows from budget allocations and therefore primarily reflects the level of resources available to DCR. According to many of our interviews with DCR leadership and staff, as of September 28, 2021 DCR has 891.9 employees—about 9 FTEs below that cap, and it has been challenging for the rate of hiring to keep pace with attrition, retirements, and the capacity of DCR employees. Subsequent to the interviews, the cap was increased to 904 to reflect recent increases in budget.

Since 2009, there are 300 fewer full-time employees at DCR (the reduction includes a shift of 139 employees to MassDOT), a reduction of approximately 25 percent. This decline has been partly offset by an increase of roughly 100 long-term seasonal workers (a 16% increase). The churn of seasonal workers presents challenges like the repeated hiring and termination process and enrolling and un-enrolling the seasonal staff from health care, all of which require the time and effort of permanent staff. Public comments included concerns about the condition and experience at the parks on items including rules compliance, trail maintenance, enforcement, and presence of DCR staff at parks, all indicative of staffing.¹³ The public comment process also revealed a perception that current hiring practices at DCR favor filling management positions over “bargaining unit” (union) positions, though the DCR indicates that most backfilled positions have been union positions. Recent data show that DCR hired 289 full-time employees from FY2016 to FY2020, of whom, 13.5 percent were management and 86.5 percent were in a bargaining unit. This is not far off the overall current distribution of DCR staff—9 percent management and 91 percent bargaining unit, respectively, which was more or less constant over the 2016-2020 period.¹⁴ Though there was proportionally more hiring of managers (13.5% of hires

¹¹ 2009 Act of Modernizing the Transportation System of the Commonwealth. More on the transfer of the bridges is discussed in the Urban Parkways section below.

¹² We do not have information regarding how many of the posted positions were intended to be filled prior to the transfer nor how many were subsequently filled at MassDOT.

¹³ The concern about staffing shortages and visible issues at DCR parks were expressed in letters, including from Friends' Groups involved in the care of large metropolitan parks.

¹⁴ Data provided by DCR and derived from HR/CMS (Human Resources Compensation System).

compared to 9% of employees), a constant ratio of managers to unit staff implies that turnover among the managers is higher. The current perception may be an impression created by the departmental reorganization initiated in early 2020 by then-new Commissioner Jim Montgomery. That plan led to significant changeover and reappointments among managers, which may have been some of the only high-visibility hiring during the COVID-19 remote-work period. We also heard through interviews that there are concerns about substituting seasonal staff for full-time employees¹⁵—a practice that is reported to have helped with meeting fluctuations in seasonal demand for certain recreational resources. In the nearer term, however, DCR shows that it converted 62 long-term seasonal positions to full-time positions between FY2018 and FY2019.¹⁶

Environment and Climate Resiliency

Per Governor Charlie Baker's Executive Order 569 in 2016,¹⁷ the scope of DCR's mission and operations will require the agency to engage in climate change efforts on many fronts. Recently, this has been augmented by Executive Order 594, calling for state agencies to "meet GHG (greenhouse gas) emissions targets by substantially reducing or eliminating emissions from onsite combustion of fossil fuels in buildings and vehicles".¹⁸ Traditionally, DCR has responded to storms, severe weather, and flooding in terms of impacts and threats to operations and infrastructure damage.

Due to its vast property holdings and oversight of land protection for forest, water supply protection, beaches, and other areas, DCR is in a good position to lead by example in natural resource protection as a strategy to mitigate further climate changes. For example, in order to protect water supplies, DCR's Office of Water Supply Protection is providing land protection to defend against threats to Boston's drinking water supply. DCR has seen first-hand how the climate has changed over time and is placing stress on our water resources, forests and habitats. Now DCR is using best available science on climate change (e.g., Massachusetts Coastal Flood Risk Model MC-FRM, Massachusetts Climate Change Projections from the Resilient MA Climate Change Clearinghouse) and the agency's efforts have become more focused. For instance, it has begun incorporating sea-level rise data and modeling into project design considerations. Climate vulnerability assessments which analyze exposure and impacts to DCR

¹⁵ According to unions, there is a shuffling of "seasonal" staff (essentially taking 2 weeks off every 6 months) doing full time work to keep DCR within its full time employee cap.

¹⁶ Data provided by DCR and derived from HR/CMS (Human Resources Compensation System).

¹⁷ <https://www.mass.gov/executive-orders/no-569-establishing-an-integrated-climate-change-strategy-for-the-commonwealth>

¹⁸ <https://www.mass.gov/executive-orders/no-594-leading-by-example-decarbonizing-and-minimizing-environmental-impacts-of-state-government>

properties and facilities are being integrated into the revamped Resource Management Program (RMP) process.

DCR is now working closely with EEA on the update to the State Climate Assessment and State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) for the Commonwealth. DCR and EEA have also collaborated on the Resilient MA Action Team (RMAT)¹⁹ Climate Resilience Design Standards Tool and refining its methodology for DCR's climate vulnerability assessments that were piloted in spring 2021. Initial climate projections will be incorporated into the Resource Management Plans and the climate vulnerability assessments will follow. The DCR Office of Climate Resiliency was also established in early 2020 to focus on these critical issues, and is charged with providing strategic direction and planning to operations, design and engineering at the agency.²⁰

¹⁹ <https://www.mass.gov/info-details/resilient-ma-action-team-rmat>

²⁰ The new Office of Climate Resiliency was announced by Commissioner Jim Montgomery as part of a reorganization in February 2020.

DCR's Response to Challenges

DCR has been addressing identified challenges in several ways. Since the Special Commission legislation passed in 2019 and in response to noted concerns about DCR, the agency faced the COVID-19 pandemic, continued working on modernizing processes, and released the DCR Parkways Master Plan (which was released in June 2021). More recently, DCR's Stewardship Council asserted a deeper level of oversight for the agency's budget and it continues to promote changes in staffing (by shifting two long-term seasonal planners to full time DCR employees) that would buttress the Resource Management Plan process. These areas of focus underscore that DCR is working on instituting improvements since the Special Commission was first announced.

Key initiatives of DCR's success of the recent past include the following.

Response to the Pandemic

DCR quickly introduced changes to maintain communications and manage parks during the pandemic. Throughout 2020, the importance of providing access to outdoor recreational opportunities was underscored by a surge in visitation to DCR's properties. With the exception of some recreational and indoor facilities such as campgrounds, visitor centers, playgrounds and ice skating rinks, DCR never closed parks, state forests or open space areas. Parking was restricted at some facilities to intentionally reduce capacity (i.e., to allow people to social distance). Overall, the pandemic also helped move DCR towards a more technologically advanced future.

- DCR's public meetings, including the Stewardship Council, were held over Zoom allowing constituents to easily access and attend the meetings.
- The agency also increased its utilization of social media to better explain closures and updated regulations regarding federal and state COVID-19 guidelines.
- DCR has worked on converting high traffic spaces (like bathrooms and buildings) to be contactless, making the facilities more sanitary while lowering water use.
- The pandemic has helped DCR modernize workflow issues and expedite movement towards a paperless future. Prior to the COVID-19 outbreak, DCR attorneys, paralegals and land staff used to physically deliver forms to EEA and, following approval, then brought the forms and supporting documents to Division of Capital Asset Management and Maintenance (DCAMM). They have since phased out paper forms and moved to utilization of a Microsoft SharePoint

folder system as a way to manage forms online. As the registry of deeds was closed early on in the pandemic, DCR turned to Simplifile to complete e-recordings which made it unnecessary, in most instances, for DCR staff to physically go to the registry. Similarly, DCR has adopted an online bidding platform for capital design and construction projects and electronic processes to track the associated electronic processes.

- DCR purchased and distributed new laptops and tablets so staff could effectively work from the field, and the hardware was integral in working from home during the pandemic. For staff working on DCR's Asset Management Modernization Program (AMMP), this also allowed for data to be analyzed efficiently from the field to populate the Capital Asset Management Information System (CAMIS).

Expedited Permitting

- Recently, DCR converted to electronic permitting for DCR issued permits, over using paper. The turnaround time for paper permits was previously several weeks, requiring paper to be carried from office to office for signatures. Now, the turnaround time for the electronic permits is just a few days. Permits are needed for construction access, parking, building, certain activities within a watershed, special events, short-term commercial activities (for projects lasting less than or equal to one year), athletic fields, and professional dog walking.
- Approval of applications for environmental permits for projects on DCR properties (whether DCR or third-party projects) are now expedited since the DCR project manager/liaison can follow a clear process for signature with predictable timelines. Internal permit applications are consistently reviewed and tracked through Green Docket with established timelines for approval. DCR's Green Docket is designed to streamline internal review of environmental permit applications and to track the status of permits once issued.

Development of AMMP/CAMIS

- The AMMP/CAMIS process began prior to the pandemic (an "Agile Scrum" effort in 2016 led to the AMMP/CAMIS initiative) and continued to be developed throughout the pandemic. The CAMIS system compiles the location and condition of DCR buildings and assets into a single online database which has allowed the agency to introduce much more streamlined and transparent processes to identify preventive and corrective maintenance. CAMIS will inform deferred and capital spending needs once the database is complete. The implementation of CAMIS has provided a long-term tool that can address the concerns around transparency that were an

impetus for the convening of the DCR Special Commission. The AMMP Team marks CAMIS implementation progress by providing visibility and clear records (all in a single location) concerning the condition of DCR facilities. Although DCR's AMMP team has implemented CAMIS statewide, the team continues to activate additional datasets, make improvements to the system, respond to requests for metrics, offer monthly refresher trainings, and advocate for expanded use of CAMIS. Additional datasets are being added and maintained to get to a robust and accurate capital spending list.

Release of the Parkways Master Plan

- The DCR Parkways Master Plan²¹ was released in June 2021. This study performed an in-depth analysis that aims to provide a framework to guide capital improvement and maintenance projects that improve safety and expand accessibility for pedestrians, cyclists, and motor vehicle operators on DCR's urban parkways. The principles of the plan are already being tested in new projects, including the Hammond Pond Parkway in Newton, which will see lane reductions and traffic calming measures as well as much improved bicycle and pedestrian access. These types of infrastructure improvements, once completed, will help to address the safety and infrastructure concerns that contributed to the formation of the Special Commission. Although a crucial step forward in parkway management, the current report omits a number of parkways (e.g., Soldier's Field Road, Storrow Drive, Memorial Drive, Alewife Brook Parkway and the Arborway) and safety information is out of date (the report indicates that safety data cover the 2004-2014 period). According to DCR, some parkways were excluded because other studies were being conducted concurrent with the Master Plan and the agency sought to avoid duplication. DCR plans to begin a "Phase 2" of the Master Plan in the summer of 2022 which will cover all urban parkways. Concerning safety, when DCR updates the Parkways Master Plan, the agency will use MassDOT's "IMPACT" crash portal which is updated in close to real time. The Parkways Master Plan is discussed in more detail in the Urban Parkways section of the report.

Stewardship Council Passage of Budget Resolution

The Stewardship Council has a legislative mandate to work with the DCR Commissioner on the agency's annual budget. As per the Massachusetts Legislature, "the Commissioner shall, with the approval of the

²¹ <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>

Stewardship Council, prepare an annual budget of the department, and shall file the same pursuant to section three of chapter twenty-nine. Within ninety days after the end of each fiscal year, the commissioner shall render a complete detailed report of all activities, revenue and expenditures of the department and each division thereof, to the stewardship council, the general court and the governor and council.”²² In its July 22, 2021, meeting, the Council passed a budget resolution a full six months before the release of the Governor’s final budget. The resolution discusses topics that are pertinent to this study’s recommendations regarding staffing and resources for DCR’s Resource Management Plans, DCR’s capacity to develop partnerships to support non-profits, advocacy groups, and municipalities as well as support for improved communications for state parks.

²² MA State Legislature, Chapter 21, Section 3C, <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter21/Section3C>

Current Strategic Planning

A strategic plan for any government agency formally outlines the agency's vision, goals, and accompanying objectives, approach, strategies, feedback loops, and performance measures and metrics that are linked to monitoring progress towards—and assessing—the implementation of those goals. At present, DCR does not have a single, cohesive strategic plan. Without the structure provided by such a plan, decision-making at DCR can seem opaque. The lack of clear metrics tying DCR's activities to progress towards a plan or agency goals also makes oversight of DCR more challenging.

Since DCR is such a large organization with a varied set of activities, a strategic plan (or set of plans that are linked in some way) would be critical in helping guide policy objectives and decision making across a varied portfolio of work. A strategic plan or integration of planning processes would help to strengthen DCR's accountability for its activities, improve transparency and operations, enhance the agency's ability to secure funding for capital projects—and provide guidance to broader organizational management issues. Developing metrics and elaborating on other measures of performance could also help to bring about more effective long-range planning and measure success in the long run.

DCR already has individual strategic goals in place for several of its key areas of focus. Two of these plans in particular could serve as models for the framing, structure, and content of a comprehensive plan. The 2020 Massachusetts State Forest Action Plan²³ describes specific goals and identifies priority areas for, challenges to, and strategies to achieve the goals listed in the Action Plan. It also includes DCR's approach to stakeholder engagement in order to elicit stakeholders' input in the plan and improve transparency. The DCR Division of Water Supply Protection Office of Watershed Management's Fiscal Year 2020 Final Report²⁴ similarly covers accomplishments towards detailed tasks, metrics utilized, and the timeframe in which the tasks and monitoring took place. Unlike the State Forest Action Plan, this annual report does not go into depth about metrics. However, it does include comparisons of total expenditures to the planned FY 2020 budget and the expended versus budget balance (where applicable), which is another way to help with transparency. Both examples further underscore DCR's on-

²³ <https://www.mass.gov/doc/massachusetts-forest-action-plan/download>

²⁴ <https://www.mwra.com/monthly/wscac/current%20events/2020/FY20%20DCR%20Watershed%20Final%20Report.pdf>

going progress in formulating strategic plans and show how this momentum may be applied to the creation of an agency-wide plan.

Budget, Staffing, and Return on Investment

Tied up in any evaluation of DCR's performance is the availability and effective use of financial resources. These are the topics explored in this section. Listed below are the main findings and research to support these conclusions.

A note on inflation adjustment: Government accounts typically use nominal, i.e. non-inflation adjusted, dollars. One reason for this is because taxes are collected on nominal dollars. Therefore it is the nominal value of things that determines how much governments have to spend. However, for this budget section, we have elected to adjust values for inflation because real dollars better capture the purchasing power of funding over time, which in turn determines how much staff, goods, and services DCR can afford. For example, suppose an agency receives \$100 million of funding in Year 1 and \$120 million in Year 10. In a world with two percent average inflation, \$120 million in Year 10 buys the same amount of goods and services as \$100 million in Year 1 and therefore represents constant funding in terms of purchasing power. In other words, 20 percent more money was needed over time to procure the same value of economic goods. It is this purchasing power that sets the boundaries of the possible for any given sum of funding. For all the inflation adjustments used in this section, the research team used the annual implicit price deflators for state and local government consumption expenditures and gross investment from 2010 to 2020 taken from the National Income and Product Accounts produced by the US Bureau of Economic Analysis (Table 1.1.9 of the NIPA), last revised on January 28, 2021. All real dollars used in the analysis of capital and operating budgets are in 2020 terms.²⁵

A note on budget and staffing figures: UMDI relies upon General Appropriations Act (GAA) funding levels as the basis for inflation and nominal calculations in its analysis of budgetary changes. It is to be noted that there are data limitations to this approach: GAA funding includes annual legislative earmarks, and does not include reserve draw transfers, cross-agency agreements that support DCR's operations across the Commonwealth, or supplemental funding authorized any time after publishing of the GAA. Furthermore, the operating and capital funding and staffing levels analyzed by UMDI attempt to

²⁵ This link goes to Table 1.1.9. Users will need to use the "Modify" option near the top right of the screen to bring up annual values from 2010 to 2020. Note that the latest release differs slightly from the January 28, 2021 version used in this report.
<https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=3&isuri=1&1921=survey&1903=13#reqid=19&step=3&isuri=1&1921=survey&1903=13>

acknowledge, but do not fully account for, various Administration policy changes including the statewide early retirement incentive program, reorganization of programs within DCR and transfer of DCR programs to other state agencies. Additionally, the data provides limited visibility to shifts of expenses between the operating and capital budgets. Furthermore, some impacts on DCR funding and staffing are part of larger statewide reductions in spending and staffing, particularly during periods of economic downturn, and are not unique to DCR. It is important to acknowledge these data limitations when evaluating state budget analyses contained within this report.

Budget and Staffing

- In inflation-adjusted terms, capital and operational funding provided to DCR has fallen since 2009 and was largely flat over the past half-decade.
- The flat or declining operations funding has coincided with a decline of DCR's share of the total state budget, which itself reflects an evolving mix of spending pressures and priorities.
- Contemporaneously with the budget picture above, permanent staff levels have fallen while seasonal staff levels have increased.

Retained Revenues

- DCR collects fees for the use of some properties. These fees comprise “retained revenue” for the organization.
- The Legislature sets the level of revenue that DCR can retain each year. The fees collected by DCR are split 80/20 between the agency and the General Fund. The retained revenue limit has increased over the past decade allowing DCR to collect, retain, and send back 76 percent more fees.
- Retained revenue has grown from 10 percent of operating expenditure in 2009 to 20 percent in 2019 before declining to 15 percent in 2021 due to COVID-related closures.
- From our interviews, review of public meeting notes, and statements from interest groups, it appears that the increased reliance on retained revenues has also increased concern among stakeholders that the Legislature is underinvesting in DCR. These groups also note that increasing fees raises accessibility and equity concerns.
- Using retained revenue as a source of operations and maintenance funds creates an incentive for DCR to ensure fee sources exist and can grow with increased retained revenue limits.

The Outdoor Economy

- Interviews and public comments connected the activities of DCR to the state's outdoor economy. To investigate this relationship, the study team used the best data available for the size and components of the outdoor economy, which come from the Bureau of Economic Analysis.
- BEA collects data that estimate the size of the states' outdoor economies. These data are heavily weighted toward the consumption and sales elements of the sector (e.g. purchasing of camping equipment, greens fees, fuel for boats, etc.).
- This data show that outdoor recreation supports approximately 1.8 percent of the Massachusetts' economy, 2.3 percent of jobs, and 1.6 percent of compensation, which is below the national average. These shares translate to roughly \$10.5 billion of gross state product, 113,800 jobs, and \$5.5 billion of compensation, making outdoor recreation about the same size as the state's transportation and warehousing sector.
- Spending on travel and tourism and the production of apparel and accessories are the primary components of the Commonwealth's outdoor economy.
- BEA data do not show a strong relationship between absolute levels of state and local government spending on parks and recreation and the absolute size of outdoor recreation in a state's economy.
- Comparing state and local government spending on parks and recreation to measures of states' sizes reveals the proportional strength of investments. Relative to its population, income, and total government spending, Massachusetts' local and state investments in parks and recreation are at or near the bottom of all states and are generally around half the national averages.

Return on Investment

- The various lines of evidence we examined suggest that the Commonwealth obtains a strong positive return on its investments in DCR.
- DCR properties need to account for \$208 million²⁶ or two percent of spending related to outdoor recreation to reach the economic breakeven point.

²⁶ This value is the average over FY2009 to FY2020 of real capital expenditures and operating expenditures of \$117.2 million and \$90.4 million, respectively.

- Evaluating possible returns from a spatial angle, DCR properties comprise half of the lands which are most likely to support outdoor recreation in Massachusetts, well over the required two percent share of spending.
- From the visitation angle, \$208 million of spending would require spending of \$7.94 from each of DCR's 26.2 million annual visitors, which is less than the spending estimated elsewhere.
- In addition to recreation, conservation lands provide ecosystem services. A recent study by the Trust for Public Land found that every \$1 invested in land conservation in Massachusetts returned \$4 in ecosystem services.
- In the future, the most promising source of returns on conservation is from combating climate change. At a current price of \$51, the social cost of carbon (SCC), which aims to capture the full economic, environmental, and human costs of carbon emissions, provides a value against which to measure investments. The SCC is likely to rise in coming years which would provide even greater returns to programs that capture, store, and/or sequester carbon.
- The trees in the state's forests already store carbon equivalent to five years of emissions and can store at least 36 percent more as part of a plan to reach net zero by 2050.
- In addition to climate benefits, access to outdoor spaces provide returns through improved health, workforce attraction, and property values. Though not fully quantified in this study, evidence suggests that these returns are considerable and important to the Commonwealth's competitiveness.
- Future returns can also be improved by using funding from Friends' Groups and philanthropies to leverage public funds for projects in the collective interest.
- DCR spending can be made clearer and more effective by creating well-designed metrics that follow from an overarching strategic plan.

Capital and Operating Expenditures Overview²⁷

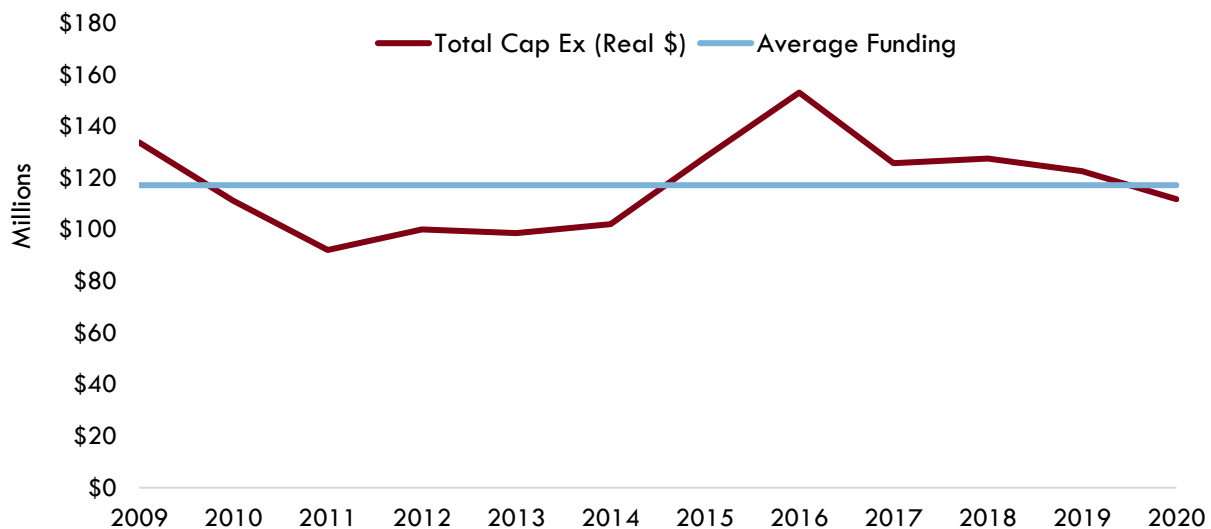
From 2009 to 2020, the state funded DCR at roughly \$208 million per year, with a budget divided between capital expenditures (generally about \$117 million per year) and operating expenditures (approximately \$90 million per year). In addition to state funding, DCR benefits from federal funding.

²⁷ The numbers contained in this section are based upon raw budget data provided to UMDI by DCR, unless otherwise indicated.

Annual federal funding has averaged just under \$14 million per year over the past ten years and also supports DCR programs and their related staff.

In very recent years, the budget has shown a small increase. In 2009 on the cusp of the Great Recession, DCR's combined capital and operating budget from the state was \$250 million in inflation-adjusted dollars, substantially higher than the combined \$209 million in FY2020. Today, both capital and operating expenditures are 16 percent less in inflation-adjusted terms than they were in 2009. The number of FTEs working at DCR has also decreased by a quarter since the late 2000s, with DCR becoming more dependent on seasonal employees, though FTEs, along with budget, have begun increasing again in the past three years.

Figure 2. Total Capital Expenditures (Real 2020 \$), FY 2009-2020

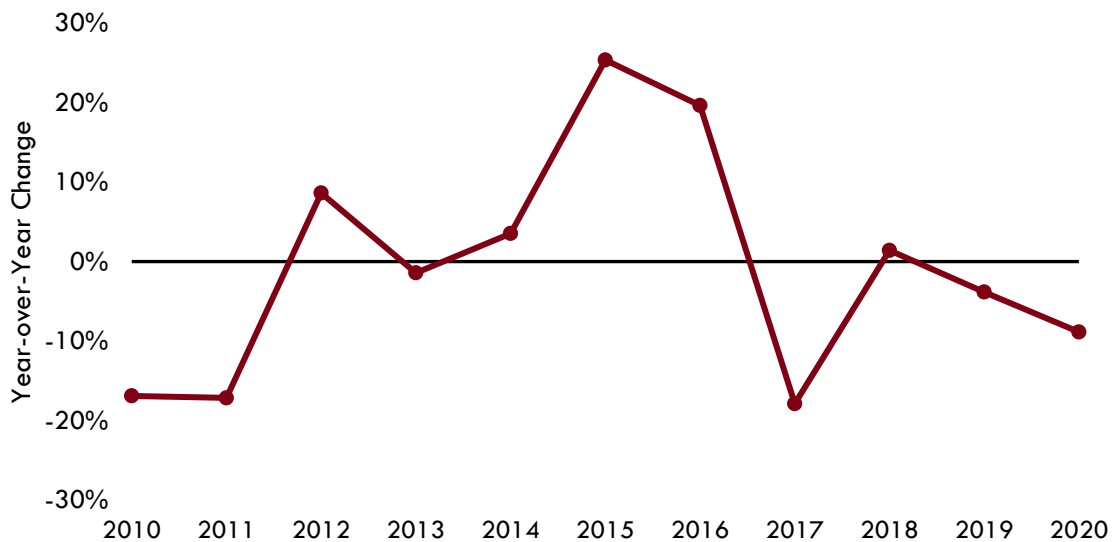


Source: DCR; UMDI analysis

While capital expenditures have averaged \$117 million per year since 2009, **Figure 2** shows that the actual annual funding is not readily predicted from the average. **Figure 3** shows that previous-year funding is also not a useful predictor of future year funding. Some of the variances are driven by one-time infrastructure projects, as annual five-year plans incorporate changing needs and projects enter and exit the pipeline. For example, in 2009 and 2010, changes to the dam regulatory office impacted the capital budget and flowed through to the operating budget. Furthermore, the five-year plans guided by A&F also try to anticipate the future availability of funding and balance the wider capital needs throughout state government. As a result, expectations of the future are an assumption built into capital

funding alongside the expectations of maintenance and new construction. As a process built on expectations of the future, capital planning can benefit from a systematic way of developing and reassessing underlying assumptions.

Figure 3. Year-over-Year Change in Capital Expenditures, FY 2010-2020

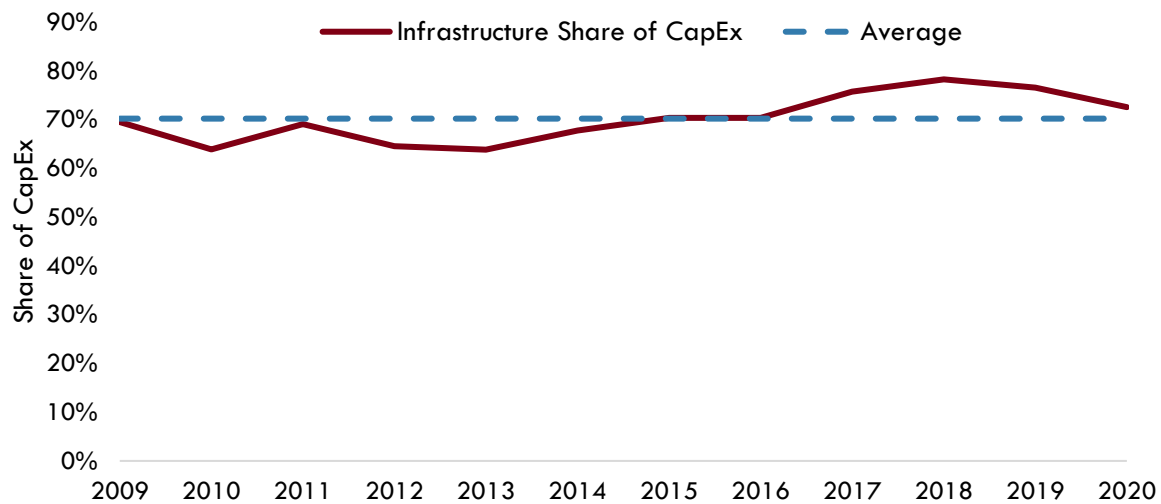


Source: DCR; UMDI analysis

Though capital expenditures (CapEx) themselves vary from year-to-year, the share of infrastructure spending within CapEx is relatively stable. Over the past ten years, with few exceptions, infrastructure has been about 70 percent of all CapEx. Insofar as there has been a trend, it has been upward, with infrastructure growing its slice of the pie slowly over time. This does indicate that, to the extent possible, DCR is prioritizing infrastructure investments, but available resources can limit the investment choices made by the organization. The next largest elements of CapEx are those that enable the projects to be managed and completed, namely employee compensation, which has averaged 11 percent of CapEx over the past ten years, followed by consultant services at three percent.²⁸

Figure 4. Share of Capital Expenditures Comprised of Infrastructure Spending, FY 2009-2020

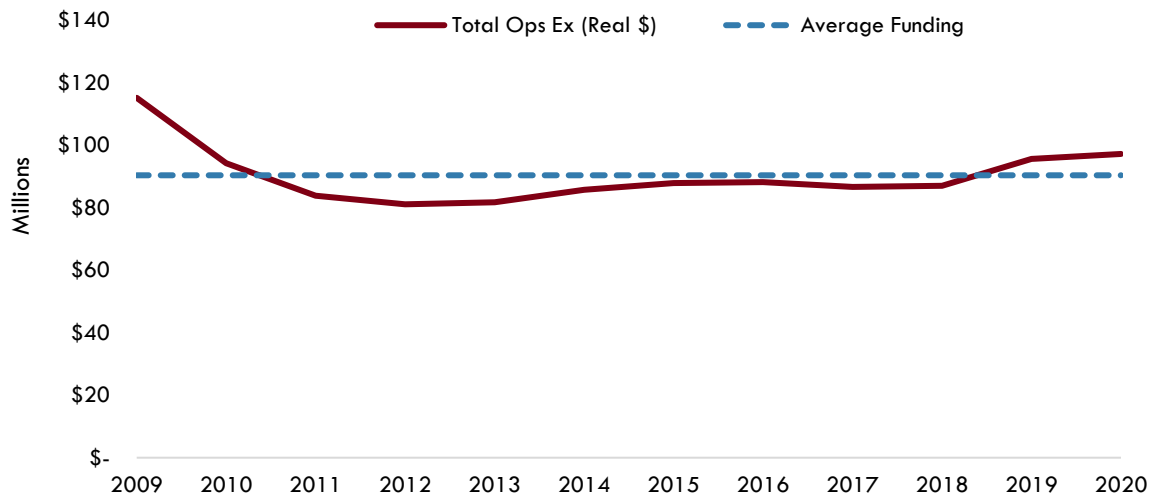
²⁸ The backlog of deferred maintenance is addressed elsewhere in this report. Summarized, the current DM backlog is roughly equivalent to 10 years of the annual capital budget.



Source: DCR; UMDI analysis

Shown in **Figure 5** below, after declining from 2009 to 2012 as a result of the fiscal challenges of the Great Recession, recent operating expenditures have remained relatively flat in real terms. While operating expenditures have increased slightly since 2016, inflation adjusted FY20 expenditures are still down nearly \$18 million, or 16 percent, relative to 2009. Though it may keep pace with general inflation, flat real funding has ramifications for DCR's mission. By accounting only for increases in the price level, flat funding essentially fixes in place the agency's buying power, which is in and of itself neither a good or bad thing. However, it is incompatible with the bulk of public comments seeking greater spending and investments in public lands and, quite possibly, the Commonwealth's growing policy focus on climate change. In a flat funding scenario, any expansion of efforts in one area will require offsets, some of which could come from efficiency gains or from leveraging private funds. Much like the amount of funding itself, how such tradeoffs are made reflects public policy priorities regarding DCR's areas of responsibility.

Figure 5. Total Operating Expenditures (Real 2020 \$), FY 2009-2020

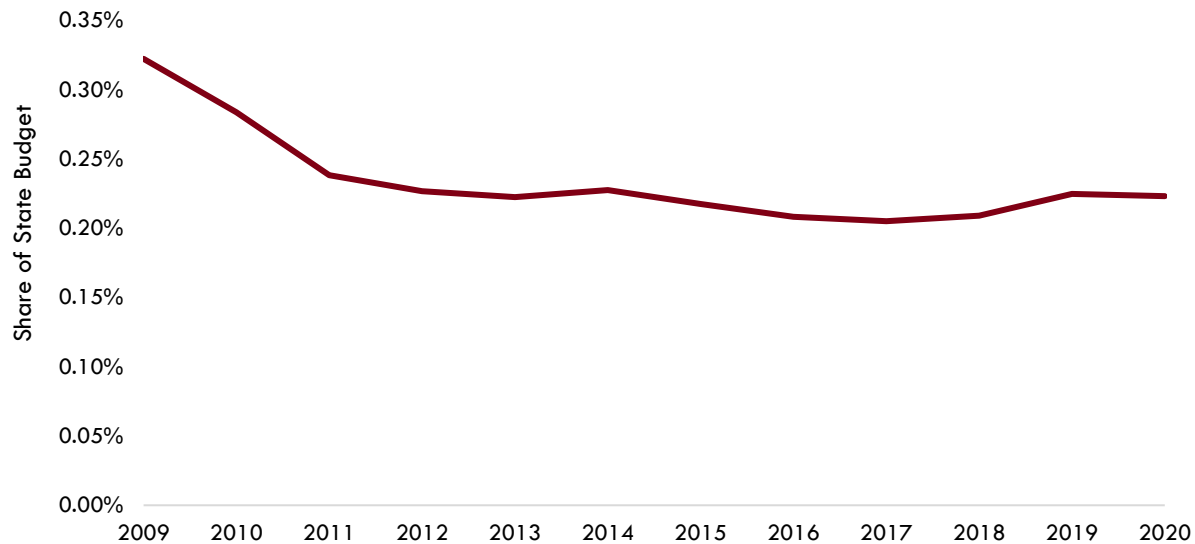


Source: DCR; UMDI analysis

The larger context for these patterns is DCR's share of the total state operating budget.

Figure 6 below shows that DCR's share of the state budget declined from 2009 through 2013 before stabilizing somewhat around 0.22 percent thereafter. This reduction in funding should be placed in its appropriate historical context. From 2009 through 2012, the state budget faced considerable challenges stemming from the recession and the prolonged recovery. Not only were overall funds limited, but additional funds were demanded by counter-cyclical programs such as unemployment payments, nutritional assistance, and health care subsidies. However, since that time DCR's share of the budget has not rebounded to its pre-recession level.

Figure 6. DCR Share of State Budget, FY 2009-2020

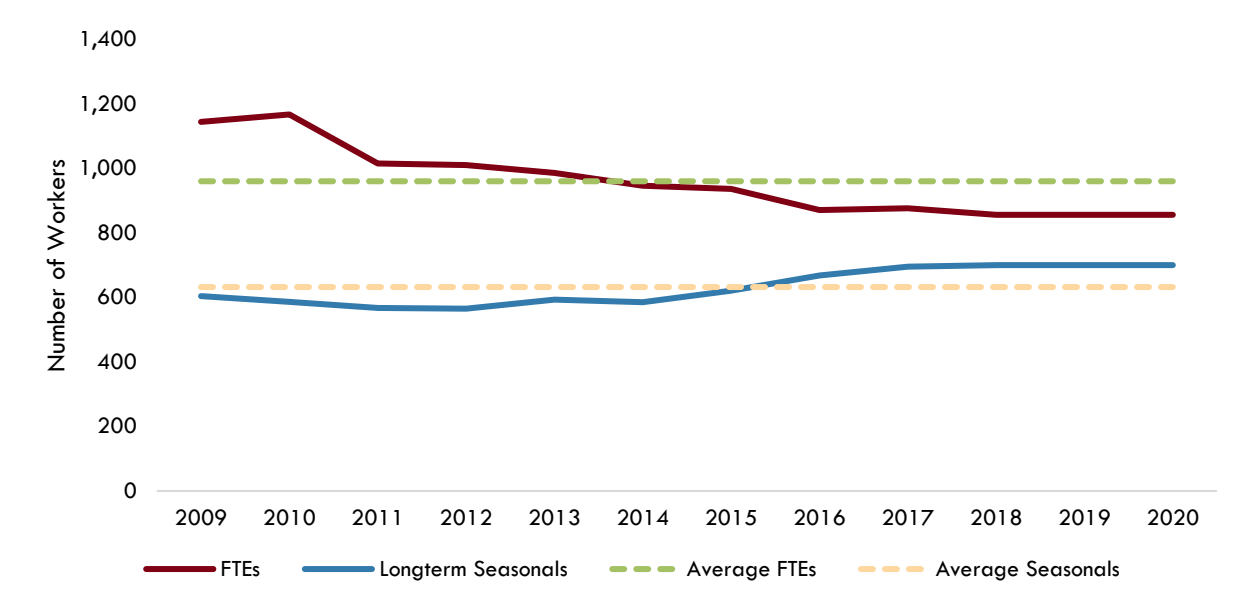


Source: DCR; GAA Budget; UMDI analysis

Monetary resources are only one part of the puzzle for DCR. The other is human resources. Like appropriations, employment levels have fallen since 2009. Full-time equivalent workers (FTEs) are down nearly 290 or 25 percent over the analysis period, from 1,144 in 2009 to 856 in 2020. Such reductions figured prominently into the public comments received by the research team questioning whether DCR has the capacity to meet the various outcomes desired by the commentators. Concern over staffing also extends to the Stewardship Council. For example, according to a Stewardship Council report, staff shortages play a part in the “glacial pace” the Council observes in the RMP process and can hamper capital investments related to climate change adaption and mitigation.²⁹

²⁹ Pages 3 and 4 of the 2018-2020 *Stewardship Council Oversight Strategy*
<https://www.mass.gov/files/documents/2018/04/27/Stewardship%20Oversight%202020.pdf>

Figure 7: Number of Workers by Type at DCR, FY2009 – FY2020



Source: DCR, UMDI analysis

The Executive Branch operates under FTE numbers set in the state budget with the intention of aligning human resources with fiscal resources, as required by MGL c.29 §6.³⁰ Early in our analysis period, the budgetary emphasis was on monitoring payroll expenses as state finances recovered from the Great Recession. Statewide efforts to protect the Commonwealth’s financial health necessarily had ramifications on the staffing levels at DCR. In recent years, the focus has shifted to the FTE cap itself, which has coincided with increased FTE levels at DCR in light of improved funding.

The loss of permanent staff is partly offset by growth in long-term seasonal workers, which have increased by nearly 100, or 16 percent, since 2009. While DCR has always had seasonal staff, e.g., lifeguards, public comments view the growth of long-term seasonal workers as coming at the expense of what had been permanent positions. According to unions, there is a shuffling of “seasonal” staff (essentially taking 2 weeks off every 6 months) doing full time work to keep DCR within its full time employee cap. Furthermore, they say that positions that become vacant (e.g., due to retirement) are not backfilled but rather replaced with a seasonal position. Examples of comments that tied back to staffing

³⁰ <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter29/Section6>

concerns included a reduction in park programming, trash and litter remaining uncollected, and lack of enforcement of park rules from a perceived lack of rangers. At least recently, there has been a counter trend to the use of long-term seasonal employees as DCR indicates a conversion of 62 long-term seasonal positions to full-time between FY2018 and FY2019.³¹

The FTE caps, though technically separate from funding, reflect the budget and resources available and are another limit on DCR's ability to undertake more initiatives or speed up current activities. As a result, a future increase in funding that is not accompanied by an evaluation of staffing needs could encounter implementation problems if misaligned with staffing levels authorized in the state budget. Progress is being made on this account as recent increases in appropriations have been accompanied by commensurate increases in FTE levels.

Retained Revenues³²

Though visiting all parks and many other DCR properties is free, the agency collects fees for some activities and facilities, such as parking. It also collects fees from contracts to use public lands for private purposes, such as for food vendors or telecommunications towers. DCR keeps most of these fees, hence the term "retained revenues". Initially, retained revenues were spread across several accounts, each dedicated to a specific revenue source. At that time, approximately 60 percent of retained revenues came from park fees, 20 percent from golf, 15 percent from skating rinks, and the remainder from ranger citations and telecommunications revenues. The money in each account was meant to be spent on the source from which it came, including on small maintenance projects or salaries for dedicated staff persons, and only amounted to a relatively small amount of supplemental support at those locations. Eventually, the Legislature consolidated retained revenues into a single account in 2013, where 75 percent of collected revenue was retained for DCR's use and 25 percent was sent to the General Fund.

In 2015, the Legislature changed the structure such that DCR keeps 80 percent of retained revenues up to the set limit, with the remaining 20 percent and all revenue above the limit going to the General Fund. Revenue is derived from sources that include camping, parking, concessions, utility leases, permits, golf courses, rinks, and other smaller sources. The language from the retained revenue line item (2810-2042) says that "funds in this item shall be expended for: (a) the operation and expenses of the department;

³¹ Data provided by DCR and derived from HR/CMS (Human Resources Compensation System).

³² As in the previous section, the numbers contained in this section are based upon raw budget data provided to UMDI by DCR, unless otherwise indicated.

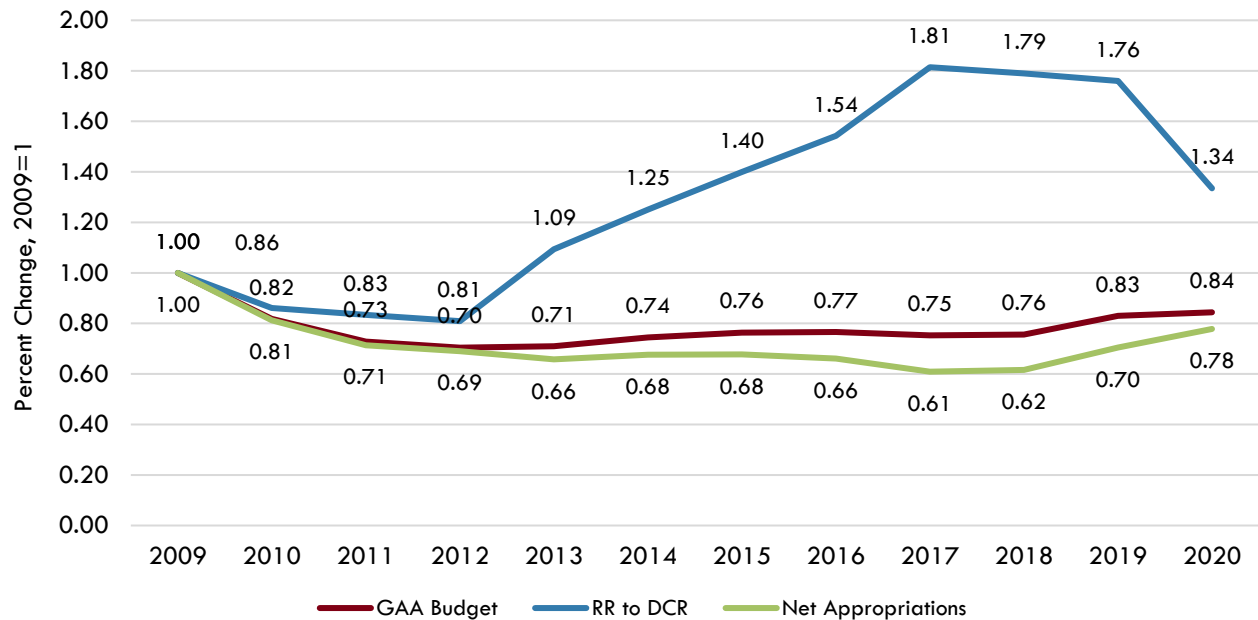
(b) expenses, upkeep and improvements to the parks and recreation system; (c) the operation and maintenance of the department's telecommunications system; (d) the operation and maintenance of the department's skating rinks...; (e) the operation and maintenance of the Ponkapoag golf course...; and (f) the operation and maintenance of the Leo J. Martin Memorial Golf Course....³³ This language is largely mirrored in the language for the line items for Conservation and Recreation Administration (2800-0100) and State Parks and Recreation (2810-0100), which implies that the Legislature envisions retained revenues functioning similarly to the funding it provides for general agency operations.³⁴

The observed trend in appropriations from the General Fund also reinforces the language from the line items. When taking retained revenues into account, appropriations directly from state coffers are even flatter and have ended lower than total operations expenditures imply, down almost \$22 million and 21 percent from 2009 to 2020 without retained revenues, compared to \$18 million and 16 percent with retained revenues. This is the result of the Legislature increasing the proportion of DCR's operating budget coming from retained revenues during this time, which then prompts DCR to seek sources for those revenues. Retained revenues averaged \$14 million per year from 2009 through 2020, though they declined considerably in FY 2020 likely due to behavior change related to COVID-19. Excluding 2020, in real terms retained revenues increased by \$8 million or 76 percent from 2009 to 2019. Retained revenue has grown from 10 percent of operating expenditures in 2009 to 20 percent in 2019 (the share dropped to 15% in 2020 due to closures).

³³ <https://budget.digital.mass.gov/summary/fy22/enacted/energy-and-environmental-affairs/conservation-and-recreation/?tab=budget-summary>

³⁴ *Ibid.*

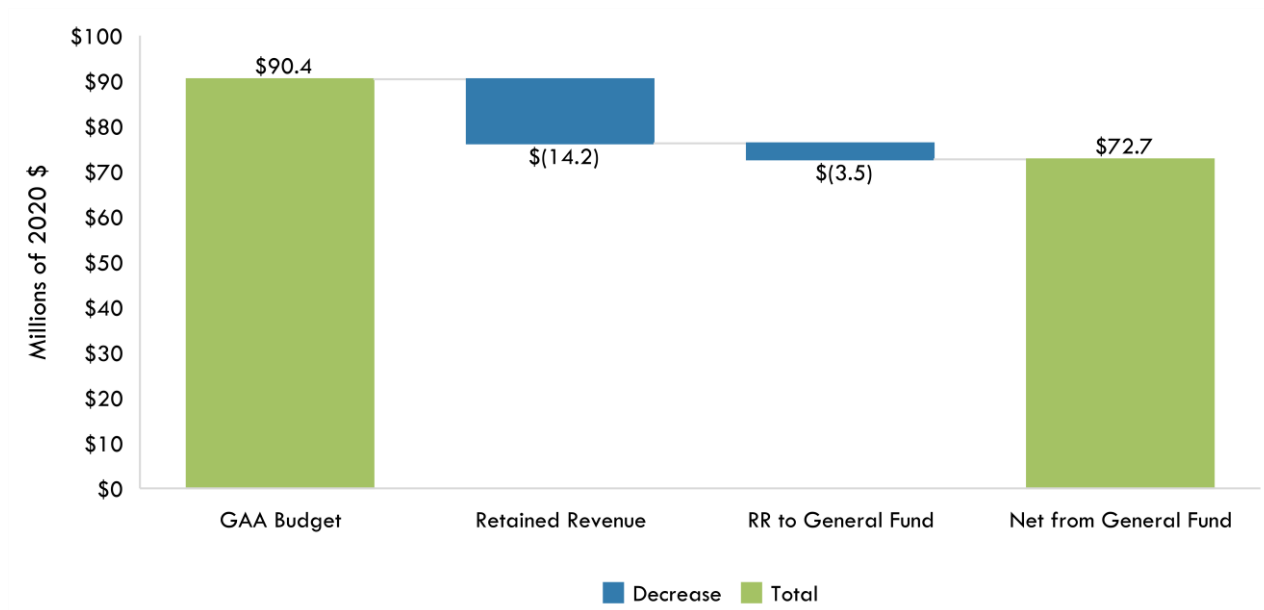
Figure 8: Change Relative to 2009 of Select Funding Measures



Source: DCR; UMDI analysis. Note: “RR to DCR” is the share of retained revenue that DCR keeps while “Net Appropriations” is money from the state legislature less the 20% of retained revenue that returns to the General Fund.

Figure 9 shows how the GAA budget disaggregates into net state funding. The total operating budget approved in the GAA includes the share of retained revenues that the Legislature expects DCR to collect and keep. Removing that amount leaves contributions before accounting for the share of retained revenues that the General Fund would receive. Removing that amount as well results in the net appropriations from the General Fund to DCR. From 2009 to 2020, DCR’s net state funding averaged \$72.7 million after accounting for average retained revenues of \$14.2 million and an average share of fees to the General Fund of \$3.5 million. This amount is \$17.7 million less than the average GAA funding amount of \$90.4 million over this same period.

Figure 9: Derivation of Net State Funding for DCR, Average of 2009 - 2020

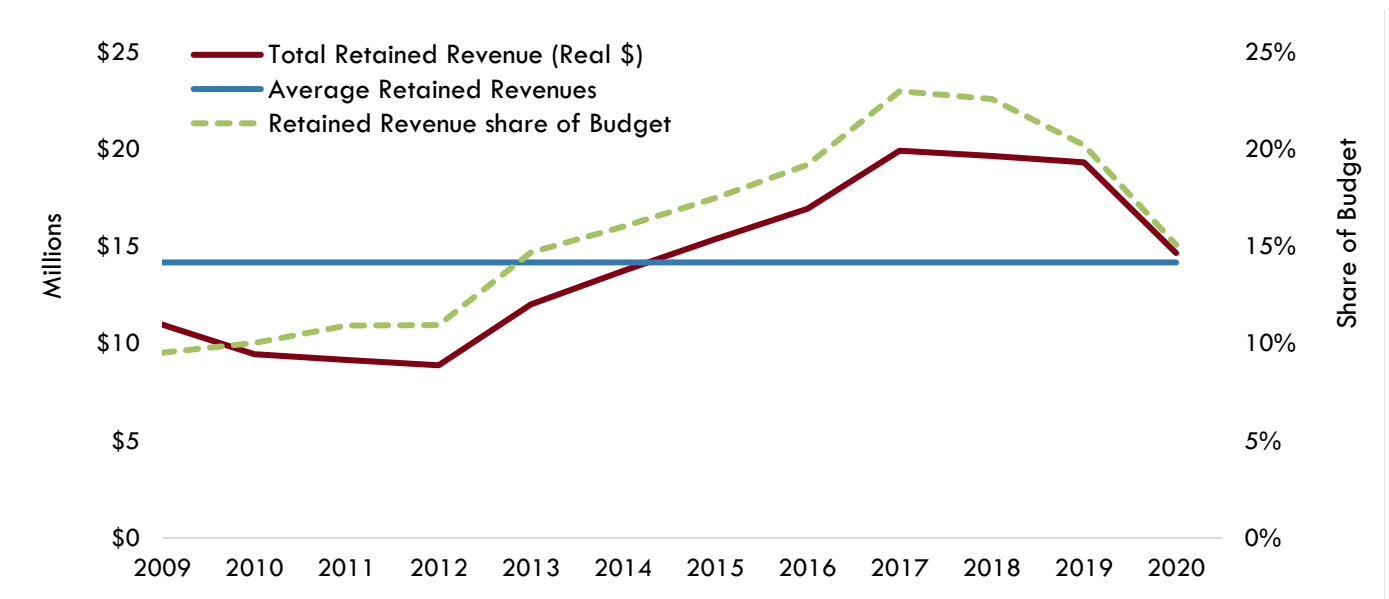


Source: DCR; UMDI analysis

From our interviews, review of public meeting notes, and statements from interest groups, mentions of retained revenues were usually made in the context of concern that increased reliance on retained revenues is a sign of underinvestment in DCR. Along similar lines, because increasing retained revenues is achieved by some combination of increasing the cost or scope of existing fees or creating new ones, it creates concerns around accessibility and equity.

Finally, using retained revenue as roughly a fifth of total operations funding creates a dynamic that seems incongruous with the mission and goals of DCR. While high historically, retained revenues are still only a fifth of operating expenditures and do not contribute to capital expenditures. Nevertheless, by budgeting retained revenues as a source of funding for core DCR functions including maintenance and operations, full funding becomes contingent on DCR collecting the entire amount of fees the Legislature set, which in turn creates an incentive to ensure sources of fee revenue exist and can grow with increasing limits from the Legislature. Set against this role for retained revenues are the public sentiments gathered by the research team that express concern over the declining role of tax dollars in supporting the agency. There is an opportunity for a renewed conversation on what role retained revenue should play, how collected fees are allocated between DCR and the General Fund, and what services should include user fees.

Figure 10. Total Retained Revenues (Real 2020 \$), FY 2009-2020



Source: DCR; UMDI analysis

Massachusetts State and Local Government Funding and the Recreation Economy

Throughout the interviews, focus groups, and public comments gathered for this study, the research team saw a common theme emerge that linked public spending on DCR to the size of the outdoor economy in Massachusetts and implied that increasing spending on DCR is necessary to increase (or even maintain) the contribution of outdoor recreation to the Massachusetts economy. Given the frequency of this sentiment in the public outreach, we evaluated the best available data on the outdoor economy to see if any causal link can be gleaned between public spending on parks and recreation as measured by this data and the size of the outdoor recreation economy.

Recent research by the U.S. Bureau of Economic Analysis (BEA) measures the outdoor recreation economy across the nation and states through the Outdoor Recreation Satellite Account (ORSA).³⁵ This effort provides estimates of the contribution of various activities and industries to value added (i.e., gross product), output (i.e., production), employment, and compensation. This analysis shows that outdoor recreation supports approximately 1.8 percent of the Commonwealth's economy, 2.3 percent of jobs,

³⁵<https://www.bea.gov/data/special-topics/outdoor-recreation>

and 1.6 percent of compensation. These shares translate to roughly \$10.5 billion of gross state product, 113,800 jobs, and \$5.5 billion of compensation, roughly equivalent in size to the transportation and warehousing sector in Massachusetts.

The ORSA data track contributions from a wide variety of activities, including “core” activities like biking, boating, and fishing and “supporting” activities like construction of recreation facilities, travel and tourism, and government expenditures. From the BEA: “Core outdoor recreation goods and services include gear, equipment, fuel, concessions, maintenance, repair, and fees related to outdoor recreation activities. Supporting goods and services includes travel and tourism, as well as local trips, construction, and government expenditures.”³⁶ The BEA states that the outdoor recreation data “illustrates the contributions of individual industries to the outdoor recreation economy.”³⁷ Furthermore, the dollars are attributed to the location of production (in the case of goods) or provision (in the case of services) and are disconnected from the place of residence of the purchaser.

With that, core outdoor recreation primarily captures manufacturing and sales activities by the location of the business selling the good or service. As a result, states with large manufacturing industries related to recreation will have large outdoor recreation economies unrelated to the amount of recreation that actually occurs in those states. For example, recreational vehicles (RVs) in Indiana and motorcycles in Wisconsin represent about 20 percent and 14 percent of their total outdoor recreation economies, respectively. These large contributions are not a result of Indiana and Wisconsin being the top destinations for RV owners or motorcyclists or even being the states with the largest retail sales of these vehicles. Rather it is because Indiana hosts the much of the manufacturing for Winnebago and Wisconsin hosts Harley-Davidson. In the case of Massachusetts, sales are important: one-quarter of core outdoor recreation is comprised of the production of apparel and accessories, which are made in the state but could be sold anywhere. Another 14 percent is maintenance and fees for game areas like golf and tennis, which are provided in the state to players from anywhere.

As a result of core outdoor recreation being primarily manufacturing and sales, it is difficult to tell whether a state’s outdoor economy is distinguished by visitation or manufacturing. Thankfully, on this last point, the data do provide some help. As noted above, among the supporting activities the BEA data include travel and tourism and local trips (trips of at least 50 miles from home or less than 50 miles from

³⁶ https://www.bea.gov/system/files/methodologies/Outdoor%20Recreation%20Satellite%20Account%20Methodology_0.pdf

³⁷ <https://apps.bea.gov/scb/2018/03-march/0318-prototype-statistics-for-the-outdoor-recreation-satellite-account.htm>

home, respectively). These data can be used to find the states where visitation related to outdoor recreation is a prominent share of total outdoor recreation. Among the top 10 states are Hawaii, Alaska, Maine, Rhode Island, Vermont, and Wyoming. At the bottom of the list is Indiana, which as shown above has a proportionally larger outdoor economy than Massachusetts but does so to a great extent by being the national center of RV manufacturing. Solidly mid pack is Massachusetts in 20th among Texas, North Carolina, Colorado, and New Jersey. By these measures, the outdoor economy in Massachusetts is just over the median among states for its reliance on visitation.

Returning to the economic contributions of outdoor recreation to the states' economies, we find that Massachusetts ranks in the bottom quarter nationally. This finding by itself is not necessarily good or bad. It only shows that outdoor recreation is a relatively small part of the state's overall economy (1.8% compared to a national average of 2.1%). States that lead these rankings are known for recreation and have less economic diversity: Hawaii, Vermont, Montana, Florida, and Maine. By contrast, the states at the bottom of the list are New York, Virginia, Ohio, Pennsylvania, and Connecticut, all states with ample recreation opportunities but also large, diverse economies. Massachusetts is 41st on this list.

These data also include state and local government spending on parks and recreation. Comparing this spending to all outdoor recreation shows that Massachusetts again ranks near the bottom of all states. Similar to the data above, this finding also seems of limited explanatory use because the bottom of the list is also occupied by many of the same states that have prominent outdoor recreation sectors. From 50 to 46 are Maine, Vermont, New Hampshire, Massachusetts, and Montana. In fact, all New England states in addition to Hawaii, Florida, and Alaska are near the bottom of these rankings. At the top of the list, from 1 to 5, are Maryland, North Dakota, New Mexico, West Virginia, and Illinois. From these data, it does not appear that by itself state and local government spending on parks and recreation relates directly to the size or prominence of outdoor recreation in a state's economy.

Part of the decoupling of public spending and the size of the outdoor economy appears to come back to the way the BEA data are defined. By measuring only purchases, the data does not tie directly into why consumers made those purchases or where or how often the goods were used. Take for example the prominence of local and nonlocal travel and tourism, which on the surface would seem like an obvious place to capture the draw of a state's natural resources and therefore reflect efforts to improve recreation opportunities. In fact, in all the states with proportionally large recreation economies, travel and tourism is the biggest contributor to the outdoor economy. Among the New England states it is nearly half the entire outdoor economy. However, the industries supported by travel are not those that will be

directly impacted by public spending on parks: retail, accommodations, food services, fuel, etc. Further, many of a state's recreational draws are not necessarily related to state spending, e.g. Hawaii and Florida's beaches, Alaska's national parks, or Vermont's skiing and foliage viewing. So, while the state parks may be one factor that draws people to a state, the BEA's ORSA does not draw a close connection between state and local parks funding and the size of a state's outdoor economy. By focusing on production and consumption concepts, the ORSA is a useful guide to the contribution of outdoor recreation to gross national product but appears of limited use as justification for a particular level of state funding.

Where we do find the ORSA useful is as a tool to benchmark proportional performance. While the BEA data do not suggest a close relationship between state and local government funding for parks and recreation and the size of a state's outdoor economy, it does suggest that Massachusetts is not necessarily far off the performance of peer states in absolute dollars values. However, the raw data are not scaled proportionally to size, namely state and local funding relative to population, income, and total government spending. The research team normalized the absolute values from the BEA to state size. Along these benchmarks, Massachusetts performs poorly. Over the past eight years for which the BEA provides data, on average Massachusetts state and local governments spent \$32.65 per 1,000 people on parks and recreation. That is the lowest in the country and only 58 percent of the national average of \$56.56 per 1,000 people. Governments in Massachusetts spent \$0.50 per \$1 million of personal income on parks and recreation. Again, this is the worst in the country and only 44 percent of the national average of \$1.14 per \$1 million. Finally, spending on parks and recreation comprises 0.26 percent of all state and local funding in Massachusetts compared to 0.52 percent nationally.³⁸ These benchmarks suggest that there is considerable room to increase funding for parks and recreation before reaching national averages and/or peer state levels.

Table 1. State and Local Spending on Parks and Recreation

STATE AND LOCAL SPENDING ON PARKS AND RECREATION	MA	U.S.	MA RELATIVE TO U.S.
PER 1,000 PEOPLE	\$32.65	\$56.56	58%
PER \$1M INCOME	\$0.50	\$1.14	44%

³⁸ Parks and recreation spending as a share of all government spending is for 2017 only as detailed government spending data are available only every five years from the Census of Governments.

SHARE OF GOVERNMENT SPENDING	0.26%	0.52%	49%
-------------------------------------	--------------	--------------	------------

Source: BEA; Census; UMDI analysis

Return on Investment

Another charge for the Special Commission is to measure the return to the Commonwealth from its investments in DCR. As public goods, land conservation and protection resist common methods of calculating return on investment (ROI). It is akin to the challenge of measuring the Commonwealth's return on maintaining a court system or a department of labor standards. These services typically cannot be supplied in sufficient quantity and/or quality by the private sector. If protecting natural landscapes for the future is a desire of the citizens of the Commonwealth, then simply achieving that goal is its own return. In a sense, part of the return on investment on public goods is that the goods are provided at all. That being said, there are of course more and less effective ways of spending finite resources.

For the ROI analysis, there is a choice between two approaches: one backward looking and the other forward looking. UMDI recommends evaluating return on investment with both approaches. In a backward-looking analysis, past spending and outcomes are compared to estimate an ROI. For example, DCR's budget would be measured against the value of visitation, recreation, and ecosystem services it enables. In a forward-looking analysis, the focus would be on examining strategies to measure and improve outcomes into the future.

In the following pages, the research team reviews the past performance and future potential of the Commonwealth's investments in DCR. Precisely quantifying the amount across every economic interaction of DCR is beyond the time and scope of this project (or perhaps any project). However, the various lines of evidence we examined all point to the economic returns from conservation and recreation exceeding the cost to the Commonwealth and there being remaining space and opportunity to continue to receive positive returns in the future. The data suggest that the state could receive a positive ROI on visitation alone while reaping even larger benefits from ecosystem services, health, and economic development. Moving into the future, DCR's role as a steward of terrestrial and coastal ecosystems provides an opportunity for the agency to combat climate change.

Visitation and Recreation

A true evaluation of the returns received from visitation and recreation related to DCR properties would require a comprehensive patron survey of visitors that would ascertain the place of residence of the

visitors, the purpose of their visit, their spending amounts, their alternate recreation options, and so forth, which is beyond the scope of this study.³⁹ However, the research team does recommend that DCR undertake a patron survey for precisely this purpose and to help optimize future spending, as discussed later in this report. As a result of the lack of precise and state-specific data for visitation and recreation directly attributable to DCR properties in Massachusetts, we need to rely on other data to provide guidelines to the potential returns from visitation to DCR properties.

As established in the previous section, the BEA data show that the outdoor economy in Massachusetts is dependent on visitation by residents and nonresidents alike. The visitation, production, and consumption associated with outdoor recreation support over \$10 billion of gross state product, 110,000 jobs, and \$5 billion of income. While this is known from the BEA data, it does not show how much of this activity is specifically attributable to public investments in conservation and recreation. While the BEA data do not provide this specific measure of ROI, it can be used to provide some bounds for this analysis. Annually, the Commonwealth spends roughly \$208 million on capital investments and operations of DCR. As a result, Massachusetts would require at least \$208 million of annual economic activity to be attributed to DCR properties to begin to see a positive economic return. The Commonwealth's annual investment in DCR is equivalent to only two percent of its outdoor economy, meaning that if \$1.00 of every \$50.00 of spending on outdoor recreation could be attributed to DCR properties then the return to Massachusetts would be positive from visitation alone.⁴⁰

Another element to establish bounds for return on investment is through the land owned by DCR. DCR's 450,000 acres comprise 6.7 percent of the total area of Massachusetts.⁴¹ According to Mass Audubon, this amounts to 12.5 percent of all the natural land in the state, which are forests, wetland, and water.⁴² However, this natural land is not necessarily open to the public. Looking only at conserved land, DCR

³⁹ UMDI conducted similar patron surveys for the Massachusetts Gaming Commission. An example of what such a survey could ask can be found in the patron surveys conducted by UMDI at the three casinos in the state, e.g. this one for MGM Springfield: https://www.umass.edu/seigma/sites/default/files/MGM%20Springfield%20Patron%20Survey%20Report_Final.pdf

⁴⁰ Outdoor recreation supports \$10.5 billion of economic activity annually. Two percent of that is just over the roughly \$208 million annual investment in DCR.

⁴¹ Total area of Massachusetts is 10,554.39 sq. miles from the U.S. Census (<https://www.census.gov/prod/cen2010/cph-2-1.pdf>) while DCR oversees at least 450,000 total acres according to DCR (<https://www.mass.gov/orgs/departments-of-conservation-recreation>).

⁴² <https://www.massaudubon.org/our-conservation-work/policy-advocacy/shaping-climate-resilient-communities/publications-community-resources/losing-ground>

owns fully a third of all conserved land in Massachusetts or over half when excluding the 15 percent owned by private individuals.⁴³

The third element for evaluating returns from visitation is through estimating the number of visitors to state lands. According to the best available data from DCR, its properties attract over 26.2 million visitors per year (both in-state and out-of-state residents), which, for context, is similar to the 26.8 million nonresidents who visit Massachusetts for any reason.⁴⁴ Due to the lack of data described at the beginning of this section, we do not know how much economic activity is associated with these visitors. However, a series of studies done on the park system of Maricopa County, Arizona offers some evidence.⁴⁵ Though a county system, Maricopa County park's cover 120,000 acres, or a quarter of DCR's holdings, while the county itself is larger than four states and about equal to New Hampshire in size. The first study found average spending per visitor of \$9.64 while the second study five years later improved data collection and found \$49.54 of spending per visitor.

The preceding discussion helps set a bar for the breakeven point from visitation and provides evidence for the likelihood of DCR crossing that bar. To summarize, the ORSA from the BEA says that outdoor recreation contributes \$10.5 billion to the Commonwealth's GDP. The state supports DCR with around \$208 million of funding annually, which is roughly equal to two percent of the outdoor economy. DCR owns over half of non-private conservation land in Massachusetts and attracts 26.2 million visits per year. In other jurisdictions, park visitors are associated with at least \$9.64 of spending per visitor. Taken together, this data supports the state receiving a positive return from visitation alone for the following reasons:

- DCR properties need to account for \$208 million or two percent of spending related to outdoor recreation to reach the economic breakeven point.
- Evaluating possible returns from a spatial angle, DCR properties comprise half of the lands which are most likely to support outdoor recreation in Massachusetts, well over the required two percent share of spending.

⁴³ *Ibid.*

⁴⁴ Visitation data comes from DCR surveys and are a few years old. Visitation to MA: https://www.visitma.com/wp-content/uploads/2020/06/2020_Annual_Report.pdf

⁴⁵ <https://www.maricopacountyparks.net/about-us/department-studies/>

- From the visitation angle, \$208 million of spending would require spending of \$7.94 from each of DCR's 26.2 million annual visitors, which is less than the spending estimated elsewhere.

Ecosystem Services

Separate from its draw for visitors, conserved land provides tangible benefits through ecosystem services. According to the National Wildlife Federation, "an ecosystem service is any positive benefit that wildlife or ecosystems provide to people."⁴⁶ These services include the provision of resources like timber, drinking water, plants, and animals; regulation of natural systems through water purification, erosion and flood control, and carbon sequestration; and foundational support services like photosynthesis, nutrient cycling, and soil creation. As more of the state's lands and waters are developed, more of the burden of providing ecosystem services will fall to conserved lands.

A study from 2013 by the Trust for Public Land found that every \$1 invested in land conservation in Massachusetts returned \$4 in ecosystem services.⁴⁷ This study compared the per-acre value of services provided by various types of ecosystems, e.g., deciduous forest, pasture, open water, etc., with the money spent by the state to preserve this acreage. Another study in Pennsylvania found \$7.00 of return for every \$1.00 invested in conservation in that state.⁴⁸ While the return found is not linear and cannot be extended infinitely into ever greater levels of spending, it does suggest that past spending has provided a strong return on investment and that finding should extend at least to near- and medium-term spending.

The most promising source of future returns on conservation is from combating climate change. As carbon sequestration grows in importance, it creates more space for Massachusetts to invest in conservation at a positive rate of return. As of February 2021, the social cost of carbon (SCC) set by the federal government is \$51, though this number is preliminary and will likely increase, possibly by multiples, over the next couple of years. The SCC aims to capture the full cost to the economy, environment, and human health of each additional ton of CO₂ released. As such, it provides a value against which to measure investments that capture, store, and/or sequester carbon. Using the SCC, carbon capture rates by ecosystem type, and costs of acquisition, DCR can make decisions that maximize the climate return on investment and help determine the appropriate level of conservation for any particular parcel. For

⁴⁶ <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Understanding-Conservation/Ecosystem-Services>

⁴⁷ <http://cloud.tpl.org/pubs/benefits-ma-roi-report.pdf>

⁴⁸ https://conservationtools.org/library_items/1210-Pennsylvania-s-Return-on-Investment-in-the-Keystone-Recreation-Park-and-Conservation-Fund

example, parcels that have the capacity to capture and sequester considerable carbon on an ongoing basis could be restricted to minimal development for recreation and resource extraction. Other parcels could tolerate greater disruption without harming climate benefits or could in fact capture greater amounts of carbon if actively managed. An existing example of a process that is already incorporating some aspects of the above are the landscape designations for DCR parks and forests, which provide for increasingly strict levels of conservation and resource management.⁴⁹

An example of how DCR's land management could be leveraged for larger returns is through the Commonwealth's climate plans. Massachusetts has a goal to reduce greenhouse gas emissions to 50 percent below 1990 levels by 2030 and to achieve net zero emissions by 2050. In some cases, preserving or restoring ecosystems may be a more cost-effective route to emissions reductions than other policies while also providing added value through recreation, amenity, and other ecosystem services. As a reinforcing benefit, there will be a chance to include ancillary ecosystem services in the project choice rubric such that, where appropriate, carbon capture projects also provide ecosystem services that will mitigate the effects of climate change such as through flood and erosion control to combat rising seas and extreme weather or the reduction of urban heat islands. DCR can provide a cost/benefit analysis that evaluates landscape preservation and restoration options for comparison to future infrastructure or construction options.

The Commonwealth has already undertaken studies that seek to define the roadmap to net zero.⁵⁰ The land sector report focuses on forests as the land use type most relevant to estimating terrestrial carbon sinks.⁵¹ The study's authors partnered with EEA and DCR to evaluate the role of forests both in removing carbon from the atmosphere and storing carbon in the plants and soil, both of which are required to meet the 2050 targets. The study estimates that the above-ground carbon stored in Massachusetts' forests is equivalent to over five years of the state's fossil fuel emissions. The soils potentially store three times as much. Removing and storing similar amounts of carbon without the forests would be technologically and financially unfeasible. Currently, direct air capture of carbon costs between \$250 and \$600 per ton, or at least five times more than estimates for reforestation projects (\$50/ton).⁵² Under all land use and development scenarios, the land sector study finds that "Massachusetts' forests continue to be a net

⁴⁹ <https://www.mass.gov/files/documents/2016/08/qq/management-guidelines.pdf>

⁵⁰ <https://www.mass.gov/info-details/ma-decarbonization-roadmap#final-reports->

⁵¹ <https://www.mass.gov/doc/land-sector-technical-report/download>

⁵² <https://www.wri.org/insights/direct-air-capture-resource-considerations-and-costs-carbon-removal>

carbon sink with between 36 to 39 [percent] more live carbon stored in forests by 2050.” A scenario with no harvesting or loss from development yields an increase of 49 percent, or 10 to 13 percent more.⁵³

Quality of Life Impacts

Though the past two sections show that the evidence strongly suggests that Massachusetts is gaining a positive return on its investments in DCR through visitation or ecosystem services alone, these two are not the only avenues through which parks investment benefit an economy. This section presents other benefits that fall under the broad umbrella of quality of life improvements.

That people will pay more money for something they enjoy or find attractive is perhaps conceptually obvious to most. However, measuring exactly how people value beauty is methodologically complex. Nevertheless, the research is generally in agreement that locating a property near a park increases its value relative to similar homes farther away, probably by an average of eight to ten percent.⁵⁴ The same Trust for Public Land study referenced earlier estimates that over \$724 million of the property value in Boston is attributable to its parks, raising \$8.26 million of property taxes. Another study cited in the same report estimates homes near the Great Meadows National Wildlife Refuge west of Boston increase in sales price by \$2,000 for every 650 feet closer they are to the refuge. Homes in Lynnfield sell for a 6.7 percent premium if located near open space while homes near the Minuteman Bikeway and Nashua River Rail Trail spend 45 percent less time on the market. Insofar as DCR properties, especially those in the more urban areas of the state, are located near homes or preserve attractive vistas, they are creating both private wealth through home value appreciation and public revenues through property taxes.

Investment in parks also plays a role in economic development through creating attractive locations for migrants, especially retirees and knowledge workers. Increasing, both retirees and workers have greater choice in where to live. That flexibility has increased focus on quality of life within location decisions. According the Federal Reserve, the Baby Boomers possess over half the nation’s household wealth.⁵⁵ They also benefit from long-running improvements in average life expectancy. Accordingly, Boomers

⁵³ <https://www.mass.gov/doc/land-sector-technical-report/download>

⁵⁴ <https://www.nrpa.org/parks-recreation-magazine/2020/april/how-much-impact-do-parks-have-on-property-values/>

⁵⁵ <https://www.federalreserve.gov/releases/z1/dataviz/dfa/distribute/chart/#quarter:127;series:Net%20worth;demographic:generation;population:all;units:levels>

increasingly value locations that provide scenic beauty and recreation opportunities.⁵⁶ Similarly, knowledge workers want to live in cities with a sense of place and diverse outdoor recreation opportunities.⁵⁷ DCR plays a role in preserving the Commonwealth's historical and cultural heritage, which play an important role in creating a sense of place, the loss of which is difficult, if not impossible to value. A series of studies on talent attraction in Massachusetts all found that high quality of life is a paramount consideration with workers and businesses when evaluating the attractiveness of a location.⁵⁸ For example, one study found that availability of outdoor activities is the second most important factor for recent college graduates when deciding to remain in Massachusetts, second only to job availability. In a MassINC survey, half of respondents said that a loss of open space posed a threat to quality of life. Investments made by the state in preserving spaces that contribute to natural beauty and outdoor recreation can provide considerable returns through attracting and/or retaining retirees and workers. In fact, if these studies and surveys are taken at face value, the availability of open spaces and outdoor recreation is a prerequisite for retaining and attracting large numbers of knowledge workers and the firms that employ them.

Lastly, access to outdoor spaces contribute to public health.⁵⁹ Proximity to parks is positively correlated with less stress, lower weight, and generally improved health metrics like blood pressure. Parks are also typically low-cost or no-cost places to visit, which contributes to equitable access. Given the growing costs of providing health care, investments in parks can provide a relatively inexpensive way to increase physical activity and connection with nature.

One study that tried to create a holistic picture of the health benefits of outdoor recreation was conducted by Oregon State University.⁶⁰ The study gathered data from Oregonians on their participation in 30 outdoor recreation activities and connected that to a model which applies monetary values to improved health outcomes stemming from physical activity. The cost of illness savings found was approximately 2 to 3.6 percent of total health care expenditures. An equivalent savings in Massachusetts would be between \$1.3 billion and \$2.3 billion year, or roughly \$180 to \$330 per person.⁶¹ The Oregon study found that close-to-home "linear/trail based activities (i.e., activities that occur on trails,

⁵⁶ https://www.brec.org/assets/General_Info/Why_R_Parks_Important/Papers/Parks-for-Economic-Development.pdf

⁵⁷ *Ibid.*

⁵⁸ http://cloud.tpl.org/pubs/benefits_HealthBenefitsReport.pdf

⁵⁹ http://cloud.tpl.org/pubs/benefits_HealthBenefitsReport.pdf

⁶⁰ <https://recvaluation.forestry.oregonstate.edu/health-benefits-outdoor-recreation-oregon>

⁶¹ See total health care expenditures for 2019: <https://www.chiamass.gov/annual-report/>

paths, roads, streets, and sidewalks) account for the largest proportion of health benefits.” In fact, use of local paths and trails account for 77 percent of all outdoor recreation occasions and 62 percent of calorie expenditures. This finding generally supports local investments in pedestrian infrastructure (which is beyond the scope of this project) but also highlights the role of DCR’s urban parks and parkways, especially, as providing a viable option for close-to-home and free-of-charge outdoor recreation.

Measuring and Improving Outcomes

While our research shows that there remains space and opportunity to spend on DCR and reap positive economic returns, it does not mean that every dollar to be spent would be a dollar well-spent. Elsewhere in this report, we suggest that DCR develop a strategic plan that will guide its priorities into the future. From a well-articulated plan would flow project lists, organizational goals, and project prioritization scoring criteria that become the basis for funding increases. Such a plan would also communicate agency priorities to legislators, Friends’ Groups, subsequent administrations, and the public, bringing an element of transparency to aspects of agency planning and project choice that public opinion feels is lacking.

The strategic vision should lead to a definition of what success looks like for each division of DCR. From there, agency management and department heads should define metrics that capture the critical elements of this success. Because metrics create incentives, care must be taken to choose metrics that push the agency toward goals rather than box-checking or undesired outcomes. An example of how metrics can create perverse incentives would be someone responding to a policy to improve the quality of services by changing a website to make it harder to lodge complaints, which would have the effect of reducing the volume of complaints but would do nothing to solve the real problem.

In addition to precise targeting, effective metrics should be visible to department leaders, measured against appropriate benchmarks, and supportive of organization goals. Investments will likely be needed to move metrics up the visibility/measurement/improvement chain. For example, the AMMP/CAMIS project took assets that were effectively invisible to management and transformed them into something that can be tracked, benchmarked, and improved. It is likely that small and large projects of this type would be needed to build up organizational capabilities and similar to AMMP/CAMIS would require support from the Legislature to fund.

The BEA data can also be used to plan future spending in ways that will maximize the Commonwealth’s investment. As mentioned in the previous section, the BEA data are divided by activity. Using these data, we can see which outdoor recreation activities attract the most spending in Massachusetts and

neighboring states. This information should allow the state to target its investments on the areas that are most in demand internally and target advertising toward those activities that can draw in visitors that were going to a bordering state.

The largest spending items across New England are not those that are directly relevant to DCR: local trips, travel and tourism, and apparel and accessories. Among those activities that are relevant to DCR properties, the BEA data suggest that the primary outdoor activities in Massachusetts and surrounding states are largely the same. Golf, tennis, and similar activities that use game areas and boating and fishing comprise the largest share of the outdoor economies of the region, signifying that residents and visitors throughout the area have common interests. These activities can provide targets for investment. To supplement its consumption bias, any prioritization done with the BEA data should be couched within an analysis or survey of who uses DCR properties and how they use them.

Finally, another way to improve return on investment is to examine strategies that produce “force multipliers” for DCR. Such strategies could include leveraging Friends’ Groups, coordination with philanthropies, and better use of volunteers. Through our public comments and focus groups, we have heard of excitement for DCR’s work and a desire to contribute to its mission. By providing a clear path for interested parties to help DCR and guiding these efforts in ways targeted by performance metrics and consistent with its strategic vision, DCR could improve the return to the Commonwealth.

Through this project’s public engagement, Friends’ Groups have expressed interest in working more with DCR. They generally spoke highly of the current process and trends toward improved communication but also noted DCR was understaffed in this area. As a result, Friends’ Groups are unable to engage to the extent they would like. For DCR, engagement with Friends’ Groups takes staff resources and has related limitations around collective bargaining agreements. Extending that work into projects in the parks also creates financial risk if the work is committed to but the partner group cannot honor its share of project costs. A recent DCR initiative is working toward a process to enable partnerships with Friends’ Groups.

Similar to engaging with Friends’ Groups in proportion to their range and capabilities, DCR can also target funding from philanthropies. These organizations typically have the added benefit of greater monetary resources and professional staff, both of which should serve to reduce the risks to DCR of creating partnerships to fund improvements to DCR properties. Insofar as DCR can leverage the time and resources of outside partners, whether Friends’ Groups or philanthropies, it can stretch each dollar of public funding further and foster a greater sense of ownership over shared lands. However, throughout

this process it is important for DCR to remain the final arbiter of which projects are consistent with the mission of the agency and the interests of the Commonwealth.

An issue related to improving outcomes for the state as a whole is improving outcomes specifically for those who have been historically disadvantaged. Over the course of the last year DCR has participated in the EEA Environmental Justice Task Force, which is developing a secretariat-wide EJ strategy to promote environmental, energy, and climate justice across the Commonwealth in ways that are tailored to each EEA agency's mission. Once final, the strategy will guide DCR to increase integration of environmental, energy, and climate justice considerations into policies, programs, and strategies. It is expected that the EJ strategy will include best practices for public participation and community engagement, diversity hiring practices, EJ training for DCR staff, and the identification of EJ metrics to keep track of progress.

In addition to development of this strategy, DCR is currently working to integrate EJ datasets and information into CAMIS to enable the agency to continue prioritization and execution of projects in EJ communities. Further, DCR will create a department-specific EJ webpage on Mass.Gov to increase accessibility to agency communication and resources. The webpage will provide useful information for the public and for staff including DCR's EJ contacts, copies of EEA's EJ policy and DCR's forthcoming EJ strategy, links to relevant federal and state laws and executive orders, links to the EJ Map Viewer which includes DCR properties⁶², information about DCR's forthcoming Language Access Plan and Community Engagement and Public Involvement Plan, and centralized information about grants and engagement opportunities that may be of specific interest to EJ populations.

⁶² <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts#interactive-map->

Communications and Transparency

Concerns over communication, community engagement, and transparency were common themes that emerged from our stakeholder interviews. These problems obscure from the public and legislators the work that is being done by the agency and the passion brought by many of its employees. This section explores these topics further and suggests strategies that DCR could employ in order to address these challenges.

Communication

Communications and transparency by DCR emerged as longstanding issues and a top priority during interviews with key stakeholders for this report as well as from letters and public comments.⁶³ These issues manifest themselves in multiple ways – uncertainties about improvement priorities, status, and timing, lack of response to questions and complaints, knowing who to ask within the agency for answers, information about closures, and public involvement in planning processes, among others. That said, while these issues were clearly brought up, DCR has made progress in addressing a number of these areas. The complexity of DCR with its many distinct function areas, as well as being the product of two agencies—the Metropolitan District Commission and the Massachusetts Department of Environmental Management—contributed to communication challenges. A clear demonstration by DCR of the alignment between its authority, responsibility, and accountability should be a top priority and would help dispel some issues constituents have with the agency. This would also help set the stage for more positive communications with the public and legislators in the future.

DCR would also benefit from its constituents having a better understanding of its wide range of activities and responsibilities as a steward of Massachusetts' outdoor spaces and recreational activities. It was mentioned several times during the interviews that there are distinct groups of legislators, municipal officials, and community leaders who each base their views of the agency on their part of the state and the DCR facilities serving their respective jurisdictions. These localized views can lead to an incomplete understanding of DCR and limit the agency's ability to earn wide-based support for specific initiatives or

⁶³ Comments from Friends Stakeholder Sessions May 18, 2021 and June 1, 2021; Comments from DCR Listening Session, May 25, 2021; DCR Union Stakeholder Meeting, June 7, 2021; Comments via email May 15 – June 21, 2021; comments via confidential interviews with DCR stakeholders, September, 2020 – September, 2021.

projects. These types of preconceptions need to change and could be addressed through efforts related to communications and branding strategies for the agency.

“They are doing great work and need to publicize the important work that is being done.” – Special Commission member

DCR’s website can be a tool for improved communication and transparency with the general public; but it tends to be inconsistent in terms of ease of use (e.g., the front page does not offer many options and information is available in layers requiring multiple clicks) and content.⁶⁴ By comparison, the website for New York Parks, Recreation, and Historic Preservation (<https://parks.ny.gov/>) provides relatively straightforward pathways to information on visitor-related sites and activities as well as to documents relating to agency planning and performance. Annual reports⁶⁵ for the agency include clear summary information about budget, staffing, and capital projects. New York Parks, Recreation, and Historic Preservation also includes its detailed five- year plans, last updated for 2020-2025,⁶⁶ on its website.

Transparency

The issue of transparency is directly related to DCR’s lack of effective and targeted engagement with the public. While DCR exhibits transparency in its budgetary information, which the Comptroller’s Office makes publicly available through their online portal CTHRU,⁶⁷ the public would like to see DCR improve its communications around its decision-making by becoming more open and transparent.⁶⁸ It should be noted that while DCR can improve efforts to inform the public on the decision making processes, the agency regularly hosts public meetings to share information and seek input regarding specific capital projects and planning processes. Materials from these meetings are catalogued and made available on the website. Focused efforts to improve public engagement highlighting core values that inform the decision making process could result in increased transparency, giving more opportunity for people to

⁶⁴ UMass Donahue Staff reviewed the DCR website for navigation ease and availability of information and compared it similar agencies in other states.

⁶⁵ <https://parks.ny.gov/documents/inside-our-agency/20202025StatewideComprehensiveOutdoorRecreationPlan.pdf>

⁶⁶ <https://parks.ny.gov/documents/state-council/2020StateCouncilAnnualReport.pdf>

⁶⁷ <https://www.macomptroller.org/cthru>

⁶⁸ For example, Friends groups assisting DCR in the management and upkeep of parks indicated that they could not get a clear picture of when and if DCR would be making needed improvements as identified in the Resource Management Plans.

share concerns, ideas, and engage with the agency. Improving transparency would also increase accountability for the agency—a goal that legislators, constituents, and Friends' Groups would like to see.

DCR responsiveness to questions and issues that come up in Stewardship Council meetings as well as directly by phone or email to the agency can vary. The public interacts with DCR through these channels but feel DCR is, at times, unable or unwilling to provide direct answers to their questions and concerns. For example, questions posed to the Stewardship Council by the public are often not addressed in that forum, however in many cases the agency has interacted with stakeholders in the past regarding the questions and issues raised at Council meetings. Similarly, calls (617-626-4973) and emails (mass.parks@mass.gov) sent to DCR do not have a formal tracking system according to DCR staff to ensure their resolution and closure. Unresolved inquiries frustrate constituents and further makes DCR appear opaque and unresponsive to real issues. Looking ahead, the broad adoption of CAMIS for tracking of constituent concerns and throughout the agency will not only allow for easier follow up but also provide data to drive future planning on resource allocation.

An initiative that supports DCR's moves toward greater transparency is its interactions with Friends' Groups. This includes bringing Friends' Groups together with the agency, in person (pre-COVID) or via Zoom (during COVID) to increase collaboration and strengthen the sense of culture. These events will continue to happen virtually and/or in-person as appropriate. There is clear value in pulling together these organizations with DCR for the benefit of the Commonwealth's properties. DCR should put more effort into its work on coordinating with and integrating the Friends' Groups where appropriate, potentially having them assist with maintenance, infrastructure, and programming of DCR parklands.

Transparency is also linked to project choice where constituents and Friends' Groups want to see greater clarity on the prioritization of DCR's duties and tasks, including when potential improvements will be programmed and implemented. This certainly represents a key challenge for DCR due to the breadth of its critical priorities. For example, DCR may wish to prioritize park and open space maintenance activities such as mowing grass, picking trash, etc., however public safety responsibilities such as parkway maintenance, State House security, flood control, etc. frequently take precedent.

Looking ahead, DCR could lay out priorities and make regular announcements about planned infrastructure improvements and maintenance, both in the short and long terms. Additional budget detail from DCR, covering longer time periods, would be useful knowledge for DCR constituents (e.g., Friends' Groups, municipalities, etc.) to better conduct their own park and conservation planning and advocacy.

DCR Modernization Initiatives also Promote Transparency

Through its recent modernization processes, DCR is creating more useful data to help prioritize, execute and monitor work, and communicate internally. The Asset Management Modernization Program (AMMP) is the cornerstone effort to get a handle on the agency's assets and their physical condition. AMMP is allowing the agency to transfer and integrate numerous databases and information into a single location creating an effective tool for tracking capital assets and projects. AMMP also helps the agency move towards the formation of a cohesive culture as DCR's Conservation and Resource Stewardship; Operations, Design and Engineering; and Policy, Public Affairs, and Administration divisions are all sharing in the development and implementation of CAMIS. While we cover the asset management and modernization process in more detail later in the report, the introduction of CAMIS is very important with regards to transparency. The expanded use of CAMIS, which is now active at park facilities statewide, has made DCR's physical assets more visible to agency leadership by raising understanding of assets' exact locations and their state of repair. On the constituent side, CAMIS will allow DCR to run detailed reports to illustrate current conditions track reoccurring issues and identify root causes, as well as longer-term needs for parks and so the public, legislators, and Friends' Groups can have a more precise understanding of the properties that concern them. This is discussed in greater detail below.

Resource Management Plans (RMPs) and Asset Management

DCR is undertaking a number of initiatives that are expected to bring future benefits, notably in terms of asset management and transparency. Much of this was in response to or reflects the Stewardship Council's 2018-2020 Oversight Strategy. As such, a number of initiatives (AMMP/CAMIS) and the redoing of the Resource Management Plan template have been making marked progress that the agency will build upon for years to come. On the management side, the AMMP/CAMIS and RMP changes have the added benefit of increasing communications and coordination between DCR's divisions of Conservation and Resources Stewardship, Operations, Design and Engineering, and Policy, Public Affairs, and Administration. This collaboration adds to a greater understanding and role of programs in the bigger picture goals of the agency.

Resource Management Plans (RMPs)

Resource Management Plans (RMPs) at DCR are guided by a legislative mandate put in place at the inception of DCR, shown below. RMPs form the backbone of a process to document the natural, cultural and recreational resources and conditions at reservations, parks, and forests. RMPs are foundational documents that document the resources and make recommendations to preserve, protect and enhance the natural, cultural and recreational resources and to address conflicts among them and sustainable forest management. New RMPs are scheduled for public comment later this year, and the benefits of these new plans will still need to be documented and assessed, including a process for modifying them as needed.

Resource Management Plans - Legislative Mandate

The Department is guided by a legislative mandate to prepare management plans for state parks, reservations and forests. M.G.L. Chapter 21: Section 2F. states that:

The Commissioner of Conservation and Recreation shall submit management plans to the DCR Stewardship Council for the Council's adoption with respect to all reservations, parks and forests under the management of the Department.

Management plans shall include guidelines for operations and land stewardship, provide for the protection of natural and cultural resources, and ensure consistency between recreation, resource protection, and sustainable forest management.

The Commissioner shall seek and consider public input in the development of management plans and shall make draft plans available for a public review and comment period through notice in the Environmental Monitor.⁶⁹

Within thirty days of the adoption of such management plans, as amended from time to time, the Commissioner shall file a copy of such plans as adopted by the Council with the State Secretary and the Joint Committee on Natural Resources and Agriculture of the General Court.

The Commissioner shall be responsible for implementing said management plans.

Resource Management Plans – Purpose and Evolution

RMPs, developed by DCR's Conservation and Resource Stewardship division, provide an inventory and assessment of DCR's resource management, planning and goals for parks, forests and reservations. Once completed by DCR staff, RMPs must be formally approved by the Stewardship Council prior to implementation. By intent, the RMP system provides a foundation of documents and information that is updatable over time to reflect changing conditions and priorities. Once the RMPs are in place, DCR,

Friends' Groups and the public can see the issues and needs identified for specific parks. DCR's new CAMIS process has a strengthening role in identifying and detailing required maintenance as well as the prioritization of projects identified by the RMPs.

In addition to providing a snapshot of DCR's expected capital projects, management plans include DCR's intentions for operations and land stewardship. They lay out how DCR will provide for the protection of natural and cultural resources and seek to ensure balance among the competing uses of public land as described in the legislative mandate. In developing the RMPs, DCR and the Stewardship Council seek and consider public input, which typically includes voices from neighbors and other residents, recreational users and conservationists.

The RMP development process in the past has had issues with DCR's capacity to produce plans in a timely manner, which led to growing backlogs of unfinished (or un-started) plans. In their past meetings and through interviews conducted for this report, Stewardship Council members, in their role as reviewers and approvers of RMPs, have highlighted that the plans were taking far too long to develop, suggesting the

⁶⁹ [Massachusetts Environmental Policy Act Office](#) | [Mass.gov](#)

need to for DCR to reevaluate its approach to find a more efficient process to address the significant backlog.⁷⁰

These concerns were duly noted in the 2018-2020 Stewardship Council Oversight Strategy report,⁷¹ “*These results hint at the enormity of the challenge facing DCR’s planning staff, a challenge exacerbated over the past 5 years by a significant diminution in planning staff on which these planning efforts rely. Clearly, the Council cannot count on ever achieving Resource Management Plans for all parks and Complexes within our lifetime.*”

While comprehensive in nature, the older RMPs were “catch all” documents that generated a long list of recommendations that, in retrospect, did not get fully initiated or completed.⁷² In response, DCR’s Conservation and Resource Stewardship team re-assessed the RMPs and the RMP process was reimaged. DCR provided resources and seasonal staffing for a RMP revamp and developed a GIS-based Stewardship Map showing infrastructure, cultural, natural, and recreational resources.⁷³ This has been a critical tool with a standard set of information for all DCR parks including layers for zoning, boundaries, and priority habitats. The Stewardship Map is also a key part of CAMIS as the land records are a critical link to DCAMM’s (Division of Capital Asset Management and Maintenance) land inventory and coordinates pinpoint the exact location of infrastructure. Through streamlining and modernizing processes, the production of RMPs is envisaged to increase to 40 per year and place an emphasis on “high priority” recommendations, which is expected to help with their implementation. The streamlining of the RMP process is apparent when comparing an older plan, the Middlesex Fells Complex plan (2012) with the sample template, the Borderland State Park RMP (2021) in the streamlined format. The Fells plan, excluding hundreds of pages of appendices, is 89 pages long with about 80 recommendations while the Borderland plan is 16 pages long with 14 priority recommendations.

The reimagining of the RMP process will also serve as a platform to better integrate DCR and its personnel to focus on the intent of the legislative language for the RMPs. In this manner, the new process will leverage the expertise of colleagues from different divisions, and keep information standardized for all park facilities. The RMPs will also be integrated with and draw from the CAMIS system in order to improve

⁷⁰ Cited in 2018-2020 Stewardship Council Oversight report. The revamp of the RMP process is now addressing this issue.

⁷¹ <https://www.mass.gov/doc/dcr-stewardship-council-oversight-strategy-2018-2020/download>

⁷² Presentation by Friends of the Fells to DCR Stewardship Council, February 11, 2021

⁷³ The Stewardship Map can be accessed at the following location:
<https://www.arcgis.com/home/item.html?id=a8b51855be16479f912f57b92a71e8c2>

detail and accuracy as well as add greater efficiency to their production. CAMIS data collection, ultimately, makes the new and faster RMP process possible. CAMIS shows the condition of infrastructure by type and location, making the detailed needs by complex and park readily visible and updatable. It also provides for a stronger feedback loop between all parks to better analyze broad-based patterns of need and emerging trends. The new RMP process should be much more efficient, and the greater detail and visibility provided through CAMIS adds transparency that will help with the prioritization of projects.

Through data, the new RMPs will be dynamic, data-supported documents supported by layers of information that is regularly updated. By comparison, the old RMPs were more static, not readily updatable, and used as reference materials. That said, there are concerns over the comprehensiveness of the new RMP process and what may be lost compared to the old reports in terms of detail, notably of identified needs. Some Friends' Groups have noted the discrepancy between the old and the new RMPs and fear that the expedited production of RMPs is taking precedence over chronicling needs and developing workable plans to implement wide-ranging infrastructure, conservation, and service improvements. With the first of the new draft RMPs scheduled for public comment early in 2022, the benefits of the new RMP plans will need to be documented and assessed, including circling back to modify the process if results are not coming in as anticipated.

Asset Management Modernization Program (AMMP) and Capital Asset Management Information System (CAMIS)

Due to the importance of AMMP and CAMIS for providing an organizing framework to bring DCR forward in its asset management practices and its ties to the budget and longer-term planning at the agency, this section of the report is divided into two parts: (1) an AMMP and CAMIS overview that conceptually describes the initiative and what it is doing for DCR; and (2) a more detailed history of the initiative, its resources, implementation, and progress.

AMMP and CAMIS - Overview

DCR is undertaking a number of initiatives that are expected to bring future benefits, notably in terms of asset management and transparency. The old platform that DCR had for monitoring its properties had become obsolete and has been replaced by the CAMIS system, including much more modernized hardware and greatly improved functionality. AMMP is the Asset Management Modernization Program and the AMMP team implemented a process for improving asset management practices and organization at DCR while CAMIS is the computer systems platform that maintains the data and information collected through the AMMP process. Unlike past systems, AMMP/CAMIS is allowing DCR to be able to visualize and

analyze asset management needs in a single location. Moving forward, CAMIS is also being integrated into the RMPs and Climate Vulnerability Assessments at DCR. CAMIS as well as the revamped RMP systems are now examples of the culture change being affected throughout the agency that will generate more tangible outcomes in the years to come. CAMIS will also benefit RMPs as it will allow individuals to be able to put critical documents into the system so they will be available to all DCR staff for viewing. The implementation of CAMIS will foster accessible and quantifiable information on the relative condition of DCR facilities by location, representing a major step forward for the agency in modernizing its practices, adding transparency, and improving its performance.

Through the implementation of CAMIS, DCR is harnessing digital technologies, and the advanced data analytics they enable, to support real improvements. In effect, AMMP is helping to modernize DCR by requiring significant upgrades in GIS, field equipment (e.g., tablets), and data analytics (e.g., Microsoft Power BI) for DCR to show the condition of infrastructure by type and exact location. CAMIS is web-based and can be accessed remotely in the field from DCR's properties. The team recognized that tablets, rather than desktop equipment, are best suited for the needs of the largely mobile workforce, which they use to log the condition of assets and service requests and to process work orders. DCR is continuing to distribute tablets to expedite the gathering of information for its properties throughout Massachusetts.

The ultimate goal of AMMP is to develop and implement a system to formally inventory DCR's assets, located on nearly a half million acres into a computer system, CAMIS, which will allow for a much more methodical monitoring of property condition and needs for maintenance. CAMIS will help DCR employees create reports for facilities and allow work to be done more efficiently by identifying a problem and its potential solutions more quickly. It will also help with visualizing repair times. Over the past couple of years, the focus for AMMP was to get into the parks and inventory and assess the buildings and other assets. It is critical is that every asset is accounted for, and staff has access to the information housed within CAMIS. With this information on hand, DCR will have a basis for gauging the relative condition of its properties and prioritizing identified maintenance issues.

With funding being a perennial issue at DCR, the agency is hopeful that CAMIS can be used as a platform to estimate and compare costs of future projects. An evaluation of the process and timeline for DCR to address critical infrastructure needs is becoming possible through the work of the AMMP team, CAMIS, the revised RMPs, and climate vulnerability assessments. A few interviewees mentioned that the CAMIS system has quickly become a very valuable tool at DCR. It is a platform that unites data and information (e.g.,

reports), and can benefit and add clarity to the entire project management lifecycle. DCR staff now feel empowered through the use of the CAMIS system to better address deferred maintenance needs.

On the management side of DCR, the change brought by the Asset Management Modernization Program and the revised RMPs have had the added benefit of increasing communications and coordination among DCR's Conservation and Resources Stewardship; Operations, Design and Engineering; and Policy, Public Affairs, and Administration divisions. The development of CAMIS stems from a coordinated effort that requires work between divisions.

The information and data that have become available provide a virtuous feedback loop, better informing the development of plans, like the RMPs, and a means to respond to maintenance needs and monitor progress. Only in its infancy, the benefits of AMMP and the implementation of CAMIS are expected to gain increased visibility in coming years.

"The AMMP/CAMIS team has done a great job bringing a lot of the silos down and it has changed the culture in a positive way." – DCR leadership

AMMP and CAMIS – History, Implementation, Resources, and Progress

The Asset Management Modernization Program (AMMP) was initiated in recent years upon identification that DCR assets were not organized or quantified in a single database. It became clear that DCR needed a modernized, centralized database to replace an outdated work order system for tracking corrective maintenance.

The AMMP was formed as a separate division with a dedicated staff in 2017 when a program manager was hired and IBM's Tririga platform was adopted as the database. DCAMM, the Division of Capital Asset Management and Maintenance, responsible for capital planning, public building construction, facilities management, and real estate services for the Commonwealth, had already been using the system, which mean that DCR's use could provide a facility maintenance communication platform between the two agencies. The program was initiated with a plan to hire a Program Manager and six full time positions: Deputy Program Manager, Senior Business Analyst, Business Process Specialist, Quality Control Compliance Analyst, GIS analyst, and a Deferred Maintenance Assessment Specialist. Skilled employees with an understanding of mechanical equipment were needed to collect facility data so ten data collectors were integrated into the program.

Although the program was initiated in 2017, it took time to make measurable progress. DCR had to configure a new system itself, overcome hurdles in hiring, and implement a major culture shift to adopt the modernized CAMIS system. Data collection was initially a manual process at four pilot sites, where the team, compared asset conditions at those locations to the existing 20-year-old survey of Commonwealth assets. The data was vetted then activated in the CAMIS system, user profiles were created, and staff were trained.

Most AMMP positions were not filled until 2019, at which point the program gained momentum. Specialized staff joined the team, hardware was purchased, data collection was modernized, and workflows were optimized. The implementation of CAMIS was prioritized at facilities with the highest volume of work orders. Initial CAMIS data focused on buildings (major and minor), improvements (horizontal or vertical structures that do not have major utilities or building systems, includes assets like pavilions, pools, and linear improvements including parkways), and major equipment systems (e.g., water heaters, furnaces) maintained and operated by DCR's facility maintenance and engineering division. This includes all buildings, pools, rinks, parking areas, picnic areas, beaches, boat ramps, piers, septic systems, security cameras, pay and display units, outdoor lighting in parks, and outdoor recreation facilities (fields, courts, playgrounds, and fitness equipment) in state parks, forests, river, and shore reservations. Historic roads and parkways that are part of the original MDC parkway system of the early 1900s are also active in CAMIS.

By the end of 2019 all rinks and pools were activated and 25 percent of DCR's 33 state park complexes had been activated. By the end of 2020, 63 percent of complexes were activated and the former work order system was retired. Through FY21, DCR added over 2,000 improvements and 275 buildings; added over 2,300 new equipment records; and updated status and condition of over 2000 records in CAMIS from the initial 2000 survey of Commonwealth assets. As of June 2021, all 33 state park complexes were activated (this milestone is referred to as "initial statewide implementation"). As of October 2021, CAMIS consists of 1,466 Buildings, 2,659 Improvements, and 2,858 pieces of major equipment.

The volume of work orders in CAMIS grew as complexes were added. As of October 2021, there have been 6,837 work orders entered in CAMIS, 5,929 corrective work orders, and 908 preventive maintenance work orders since the inception of the use of the system. There are usually about 2,000 active work orders at any given time and they comprise work assigned in-house to facility maintenance and sign shop, as well as outside maintenance contract vendors whose work is overseen by DCR engineers. The

general breakdown of percentage of work orders by assignee is: 47 percent in-house facility maintenance, 35 percent vendor contractors, and 18 percent sign shop.

Since the initial implementation, the AMMP team has continued to activate additional datasets, make improvements to the system, respond to requests for metrics, offer monthly refresher trainings, and continue to advocate for use of CAMIS. Additional datasets being added in 2021 include:

- fire control and forestry assets;
- pedestrian and road bridges;
- trails and greenways;
- park roads;
- water supply protection assets;
- watershed management assets;
- dams;
- stormwater structures;
- solar/photovoltaic systems;
- broadcast towers;
- remaining septic systems; and
- roofs and elevators as separate assets.

CAMIS does not have the ability to provide a map view of information, but the AMMP team has added accurate GIS coordinates for all assets and is in the process of embedding a map link into the CAMIS work order so users have access to spatial data. Spatial data is a key component to adding meaningful data for assets that rely on coordinates as identifiers, including parkway trees and stormwater infrastructure. Although other mapping platforms are better equipped to track the maintenance of spatially identified assets than CAMIS at this time, the assets are still on the activation list and work orders are entered for by specifying the request type (e.g., vegetation management, drainage, guardrail, light poles).

Longer-term goals for CAMIS include integrating updates from construction projects, providing comprehensive lists of deferred corrective maintenance, implementing use of modern mobile tools to create efficiencies for condition assessments, and using CAMIS to log routine maintenance assigned to field operations staff (e.g., leaf pickups) that would be used by external affairs to quickly respond to public inquiries. It is a priority of the AMMP team to provide data on preventive and corrective maintenance to

be able to create a comprehensive deferred corrective maintenance list and ultimately inform the capital improvements plan.

The AMMP team has played a key role as DCR's culture evolves from programmatic silos to collaborative, agile problem solving, and adapting the use of modern tools. DCR counts on the team's specialized skills to implement modern, efficient solutions and provide metrics to leverage requests for resources. DCR is continuing to evaluate resources needed to support this critical department.

Urban Parkway

The condition and safety of DCR's urban parkways is seen as an impetus for forming the Special Commission. Issues regarding safety (crosswalks, pedestrian, bikes, speeding), roadway geometries (e.g., sudden lane drops), American Disabilities Act (ADA) compliance, traffic light timing, snow removal, and the general responsiveness of DCR to answer inquiries on the status and planning of parkway improvements all represent concerns about DCR being able to do the work it needs to do. The release of a new report in June 2021, the "Parkways Master Plan", finally sets a framework for needed future improvements, emphasizing safety as well as improved infrastructure for pedestrians and bicyclists.

Looking into the future, the adequacy of DCR's budget and speed with which the agency can actually implement the improvements included in the master plan is a question mark that will be under close scrutiny. The master plan is a 20-year plan that is intended to become part of capital plans in years ahead. In this section, we discuss issues surrounding Massachusetts' urban parkways, the transfer debate, and how DCR can improve its management and maintenance of the parkways.

Historical and Current Context of DCR Parkway

The concept of the parkway originated over a century ago, predating the automobile. Landscape architect Charles Eliot is commonly known as the person behind the world's first land trust and the first park system in the United States.⁷⁴ Eliot designed the Charles River parkways for the Metropolitan Park Commission, which became one of the constituent parts of the Metropolitan District Commission (MDC), and, later, DCR. Metropolitan Boston boasted the first regional park system in the country, and its parkways were intended to link the downtown to green spaces like Middlesex Fells and the Blue Hills. Throughout its history, MDC started with possession over a limited number of parkways and eventually controlled all of these roadways as a part of DCR. The 2011 Joint Report to the Legislature by the MassDOT and DCR Concerning the Parkway and Boulevards under the Care, Custody and Control of DCR identified DCR had, post 2009, care, custody and control of 142 center lane miles and 471 lane miles of parkways, parkway segments, roads and boulevards in Metropolitan Boston. Most of the Metropolitan Boston parkways are listed on the National Register of Historic Places.

⁷⁴ <https://www.nps.gov/articles/000/conservation-and-landscape-planning-in-massachusetts.htm#:~:text=In%20the%201880s%20spearheaded%20by,regional%20park%20system%20in%20America.>

Today, the term "parkway" describes a varied assortment of roads across the Commonwealth. A report issued by DCR and MassDOT in 2011 lists parkway types that include:

- linear parks;
- landscaped boulevards;
- pre-existing roads incorporated into a surrounding park or reservation;
- roads built by communities that transferred care or ownership to the Commonwealth; and
- roads built or annexed as transportation links.

The report notes that "in their multiple uses, historical development, and confusing ownership, parkways continue to defy easy classification".⁷⁵ On November 1, 2009, the Executive Office of Transportation and Public Works (EOT), the Massachusetts Turnpike Authority (MTA), the Massachusetts Highway Department (MHD) and the Massachusetts Aeronautics Commission (MAC) were merged into one entity: the Massachusetts Department of Transportation (MassDOT). MassDOT also took care and control of all DCR vehicular bridges (not including Storrow Tunnel, which is technically a bridge) and eight roadway segments managed by DCR.

Prior to the issuance of this Joint Report, the Executive Office of Environmental Affairs (EEA) carried out a study in 2002 that offered additional classifications of parkways and park roads: connecting pleasure roads, ocean parkways, river parkways, internal park roads, border roads, estate roads, vernacular roads, and summit roads. For the purposes of the Special Commission study, the primary analysis regards DCR's urban parkways which are the focus of safety issues brought up by the public and are the roadways covered by the Parkway Master Plan.

With respect to the parkways currently under DCR's purview, the agency is charged with the repair and maintenance of roads, pedestrian bridges, and traffic lights; in this context, repair and maintenance include but are not limited to operations, signage, guard rails, ramps, and drainage. The expressed concern that DCR is not able to keep up with these tasks has occasioned a discussion about the potential transfer of roadway maintenance or the roadways themselves to another entity—most likely MassDOT. The debate

⁷⁵ A Joint Report to the Legislature by the Massachusetts Department of Transportation and the Department of Conservation and Recreation Concerning the Parkway and Boulevards Under the Care, Custody and Control of the Department of Conservation and Recreation; MassDOT and DCR, January 1, 2011

about such a transfer appears to be based on two primary factors: (1) the changing nature of the parkways themselves; and (2) the widespread perception that DCR is overburdened and therefore cannot stay abreast of parkway-related tasks. Common arguments in support of—and against—the transfer of parkways are summarized in Table 3 below.⁷⁶

Table 2. The Transfer Debate

Commonly named arguments in support of the transfer of parkways:	Commonly-named arguments against the transfer of parkways:
Perception that deferred maintenance of some parkways is due to poor management.	Perception that DCR's road maintenance can be improved with adequate funding and staffing
Perception that DCR is under-staffed, under-resourced, and overwhelmed by the sheer volume of its current responsibilities, so taking some or all parkways from its charge will allow the agency to focus on its core mission.	Perception that Parkway are part of DCR's core mission; their historic and aesthetic value must be maintained.
Perception that MassDOT has comparatively more road maintenance and project management expertise.	Perception that MassDOT's mission is not aligned with the vision for the Commonwealth's parkways. [note that MassDOT's vision is in line and MassDOT supported the development of and endorsed the Parkway Master Plan]

Some stakeholders interviewed claimed that some of the parkways under DCR's care and control had become "urban roadways" and so therefore should be transferred to MassDOT. Parkway were originally designed to accommodate horse-drawn carriages—rather than cars traveling at 60-miles per hour—along the Commonwealth's Park system, especially around the Emerald Necklace. Reconstruction of certain parkways from the 1950s to the 1970s allowed for higher levels of vehicle traffic on DCR's roads. However, more recently, increased transportation-related demands resulting from the growth of the Greater Boston region have outpaced the development and maintenance of the parkways. Given the region's growth, however, the same could be said for the roadways controlled by municipalities and by MassDOT. Some DCR interviewees mentioned that parkways were in dire need of modernization (e.g., the separation of cyclists and pedestrians from motor vehicles), beyond just maintenance. Safety and

⁷⁶ Views on usage of the urban parkways and DCR's ability to take care of them come from interviews with DCR staff, stakeholders, and public comments.

accessibility regulations have also evolved since the parkways were first designed and another challenge identified in many of the interviews was DCR keeping up with building ramps and repaving parkways so that they were more compliant with the 1990 ADA.

DCR is investigating ways in which the parkways can better and more safely accommodate bicycles and pedestrians. The June 2021 Parkway Master Plan,⁷⁷ which presents an in-depth assessment of the parkways, proposes different strategies for maintenance and reconstruction, and then sorts them into short-term and long-term plans. DCR is currently in the process of prioritizing needed parkway upgrades, including the parkways without ramps, deficient ramps, and ramps in need of repair or an improved incline to ensure ADA compliance. The Parkway Master Plan is discussed in more detail in a later part of this section.

Broadly speaking, it appears that those who prioritize DCR's history and mission believe that the parkways should stay under the agency's auspices, while those who are concerned primarily with issues of traffic and road safety would like to see at least some parkways in the hands of MassDOT. There have been very few examples or studies that have shown whether transferring the parkways would be efficient or if it would result in fiscal savings, improved maintenance responsiveness, or other outcomes.

Transfer History

Under the 2009 Act of Modernizing the Transportation System of the Commonwealth (Chapter 25 of the Acts of 2009), the following eight roads, along with more than 140 vehicular bridges and underpasses, were transferred from DCR to MassDOT:

- McGrath and O'Brien Highways;
- Carroll Parkway;
- Middlesex Avenue;
- William Casey Highway Overpass (since removed);
- Columbia Road;
- Morton Street;
- and Gallivan Boulevard.

⁷⁷ <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>

A common characteristic of these transferred roadways is that they are less like parkways that connected recreational assets and more like roads that connected to other highways. There were practical considerations as well: one interviewee mentioned that the transfers were also due to MassDOT projects being adjacent to or coming into contact with existing DCR property (e.g., MassDOT needing to upgrade bridges according to federal standards and it being simpler to transfer the bridges). There are no available data that reflect changes in condition and/or cost savings related to these transferred roads, so we are unable to offer examples of outcomes that correlate to the transfers.

The 2011 Joint Report⁷⁸ recommended six more roadways for transfer to MassDOT: Charles River Dam Road, Fellsway (Segment 1), Mystic Avenue, Medford Veteran's Memorial Highway, Revere Beach Parkway, and the Lynnway. These roadways, similar to the ones identified in the 2009 Act of Modernizing the Transportation System of the Commonwealth are also seen to serve purposes more akin to highways than parkways. Charles River Dam Road, Fellsway (Segment 1), Mystic Avenue, Medford Veteran's Memorial Highway, and the Revere Beach Parkway (mostly on Route 16 between the southern end of Revere Beach and Everett, and not to be confused with Revere Beach Boulevard that is adjacent to DCR-managed Revere Beach), in fact, are now taken care of by MassDOT through "care and custody" agreements while DCR retains ownership. Revere Beach Boulevard, on the other hand, serving as part of the promenade of the actual beach area is managed by DCR.

The Joint Report also named 19 roadways that required further analysis, as they no longer fit the criteria for parkways but were not considered suitable for transfer to MassDOT. The opinion that some roads once designated as parkways no longer fit the associated criteria was echoed by StreetsBlogMass, a nonprofit under the fiscal sponsorship of the Conservation Law Foundation. In response to Governor Baker's FY 2021 budget recommendation (as laid out in Section 96 of the FY 2021 proposed budget) that Storrow Drive, Soldiers Field Road, Morrissey Boulevard, and Day Boulevard (all within the city of Boston) be transferred from DCR to MassDOT, StreetsBlogMass noted that these "four roadways occupy land that had originally been set aside as parks but were transformed in the mid-20th century with the addition of highway interchanges, traffic circles, overpasses, and crash barriers. Today, the roads are chronically congested and have numerous safety and deferred maintenance problems. They also create major barriers to walking

⁷⁸ A Joint Report to the Legislature by the Massachusetts Department of Transportation and the Department of Conservation and Recreation Concerning the Parkway and Boulevards Under the Care, Custody and Control of the Department of Conservation and Recreation, 2011

and biking along Boston's waterfront."⁷⁹ Improved traffic mitigation and safety are cited needs for the parkways.

Transfer Considerations

A transfer, also called a disposition, requires the passage of legislation by a two-thirds roll-call vote, either as a stand-alone bill or as part of a larger funding bill.

In 2009, the following rights were granted to MassDOT upon transfer of the eight above-mentioned roadways:

"...enter upon any lands, waters and premises in the commonwealth, . . . for the purpose of making surveys, soundings, drillings and examinations . . . ; and provided, further, that the commonwealth hereby consents to the use of all lands owned by it, including lands lying underwater, which are deemed by the department to be necessary, convenient or desirable for the construction, operation or maintenance of the state highway system, the metropolitan highway system or the turnpike..." General Laws, Chapter 6C, Section 3.

The 2011 Joint Report included two distinct categories of criteria that were used to assess individual parkways for potential transfer from DCR to MassDOT. These criteria are illustrated in Table 4 below.

⁷⁹ <https://mass.streetsblog.org/2020/01/23/baker-budget-portends-changes-for-bostons-waterfront-parkways/>

Table 3. Criteria for Assessing Transfer of Parkways

DCR evaluated parkways for:	MassDOT assessed parkways primarily for fit with the highway network:
Historical significance	Roadway functional classification
Aesthetic qualities	Continuity with the highway network
Current and potential recreational opportunities	Route numbering as an indicator of transportation importance
Parkway integrity/parkland connector	
Management consistency, particularly for parkways whose day-to-day operations are closely connected to the surrounding park or reservation	

There are numerous other considerations and complexities regarding the potential transfer of parkways. Among those identified, include the following:

- Parkway are essentially components of the Massachusetts park system rather than another type of roadway. DCR parkways are described as “not a road but a park with a road in it”. This distinction is critical as DCR is equipped to manage and service the specific needs of the parkways (e.g., staff that includes specialized arborists, etc.). The parkways are components of park systems rather than being considered primarily as part of a transportation network. There is a perception that planning and design work for DCR’s parkways and MassDOT’s roadways built to conform to Federal highway standards is fundamentally distinct, but more work is needed to identify discrepancies, if any. MassDOT supported the planning and endorsed the DCR Parkway Vision. Cities and towns, on the other hand are responsible for smaller roads. DCR’s parkways fit in between – they do not carry freight and are designed as parks and to bring people to parks. While highways go through terrain (including blasting rocks, cutting down trees, going through farms, etc.), DCR’s parkways are built with the terrain. Although MassDOT possesses a comparatively much larger budget, our interviews with key stakeholders indicate that it may not necessarily have the right type of capacity to handle the specific responsibilities of parkways. This is corroborated by an ABC (Boston: A Better City) report demonstrating and quantifying that MassDOT already does not have sufficient funding to cover “state of good repair” and major

infrastructure expansions for its existing responsibilities.⁸⁰

- The 2009 legislation governing the transfer of the bridges and a few of the parkways from DCR to MassDOT was not clear about the engineering-specific delineations between bridges and roadways. A working group consisting of DCR and MassDOT staff was formed recently to clarify the points at which one agency's responsibility and jurisdiction ends and another's begins. Last year, this working group inventoried all of the bridges in the state in order to start determining the assets that each agency owned.

2020 DCR Parkway Master Plan

The DCR Parkway Master Plan was released publicly in the summer of 2021. This study performs an in-depth analysis that aims to provide a framework to guide capital improvement and maintenance projects that expand accessibility for a wide range of users on the agency's parkways. DCR is fully supportive of the MassDOT Separated Bike Lane Planning and Design Guide (2015) and MassDOT's Municipal Resource Guide for Bikeability (2019). The Parkway Master Plan is informed by both of those guideline documents, and DCR follows these guidelines when providing improvements to its unique urban parkways. Although a crucial step forward in parkway management, the current report omits a number of parkways (e.g., Soldier's Field Road, Storrow Drive, Memorial Drive, Alewife Brook Parkway and the Arborway) and safety information is out of date (note that the safety data included in the current Master Plan cover the 2004 to 2014 period). According to DCR, some parkways were excluded because other studies were being conducted concurrent with the Master Plan and the agency sought to avoid duplication. DCR plans to begin a "Phase 2" of the Master Plan in the summer of 2022 which will cover all urban parkways. Concerning safety, when DCR updates the Parkway Master Plan, the agency will use MassDOT's "IMPACT" crash portal which is updated in close to real time. In addition to identifying crash spots, the agency will also address high risk areas to prevent crashes and safe systems approaches.

The 2020 parkway study serves to provide examples of different ways in which DCR could modernize its parkway system. For instance, the report recommends that DCR integrate pedestrian- and bicycle-related improvements to parkways into its existing maintenance schedule in order to leverage cost-effectiveness.⁸¹ By breaking DCR's vast portfolio of parkways into smaller "focus areas", the report proposes recommendations in terms of urgency and parses out action steps into manageable tasks.

⁸⁰ See ABC's report, "An Update on Transportation Finance"; <https://www.abettercity.org/assets/images/ABC%20-%20An%20Update%20on%20Transportation%20Finance%202019%20-%20Executive%20Summary.pdf>

⁸¹ <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>, pp. 77-79.

Short-term recommendations identify improvements that can be added to repaving activities or placed in the five-year capital plan and include “modifications that are relatively low cost and can be implemented through annual maintenance contracts including striping, pavement markings, signage, vertical separation alternatives, and temporary materials. Short-term recommendations include new crosswalks and curb ramps that don’t require major changes to roadway geometry, as well as enhanced crossing features such as rapid response flashing beacons and pedestrian hybrid beacons.”⁸²

Opportunities to redesign and reconstruct parkways to meet the “Complete Streets” standards are found in long-term recommendations. Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders.⁸³ As such, long-term recommendations refer to “projects that will require capital funding to implement such as intersection or corridor reconstructions, major signal equipment upgrades, and modifications to roadway cross section” including “alterations to the current function of a parkway (speed, capacity, or safety)”; “introduction of new elements such as signage systems, traffic control measures, grade separation, incompatible landscape features, lighting systems or signals”; “change in the balance among users (bicyclists, pedestrians and vehicles)”; and “removal, rehabilitation or reconstruction of a significant historic feature, such as a bridge, lighting or landscape features”.⁸⁴

The report also highlights core and routine activities that DCR has been undertaking and of which the general public and stakeholders may not be aware. In terms of communicating with the public, the report notes that DCR engages with the public through public meetings, press releases, posting information on its website, utilizing press coverage in local media outlets, and, sometimes, through establishing an advisory committee of stakeholders. However, it clarifies that DCR usually makes use of these types of communications only with regards to large capital projects and not regular maintenance or resurfacing (i.e., filling potholes or sealing pavement cracks) activities or replacing pavement markings that are now faded. The report adds that “DCR has already made it standard practice to upgrade existing pedestrian crossings per accessibility standards through its routine repaving program. DCR is allocating the necessary resources to complete this work as part of its roadway resurfacing program when possible.”⁸⁵ It also states

⁸² <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>, pp. 87.

⁸³ <https://www.transportation.gov/mission/health/complete-streets>

⁸⁴ <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>, pp. 87.

⁸⁵ <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>, pp.75.

that DCR is already “maximiz[ing] opportunities for creating space for multimodal accommodations by applying design flexibility. Design flexibility refers to the practice of applying the full range of options available in engineering guidelines in order to maximize space for all users.”⁸⁶

Progress with American Disabilities Act (ADA) Compliance

Pedestrian access, including for those with disabilities, has been a problem along DCR’s urban parkways. Ramps and deficient sidewalks have made segments of DCR parkways inaccessible and/or dangerous for people with mobility issues. According to DCR staff, there are 1,200 ramps in their inventory. Recognizing the deficiency in ADA compliance along its parkways, DCR has contracted with two crews to add ramps and fix deficient ones, including adequate drainage (to prevent puddles at the bottom of the ramps). With this, DCR plans to add or fix “hundreds” of ramps per year and during the construction season (9 months), the agency estimates it is currently (Fall 2021) replacing about one dozen ramps per week. The recently released Parkway Master Plan also demonstrates progress towards these goals, indicating “DCR has recently repaired over 300 pedestrian curb ramps bringing them into full compliance with the ADA.”⁸⁷ Sidewalk infrastructure work needs to be done in tandem with the pedestrian ramp work, indicating that substantial sidewalk improvements will be coming online as well on DCR’s urban parkways as progress is made on the ramps. Longer-term, when the parkways maintenance is fully integrated into the CAMIS system, all wheel chair ramps and other assets will be coded and tagged for condition. That will allow DCR to get to those most in need, and more efficiently, since they will then be able to use GIS to group needed ramp improvements by region, which is more efficient for the contractor.⁸⁸

Integration of Parkway Maintenance Needs with DCR’s Developing Asset Management Modernization Program (AMMP)

DCR is working on migrating parkways maintenance requests into CAMIS as part of the AMMP project. As with DCR’s building infrastructure needs and their incorporation into CAMIS, this represents a significant improvement and modernization compared to old practices when maintenance notes and complaints were kept on paper. This platform will enable DCR to map parkway needs and share information on needs and issues with contractors to monitor progress on addressing them.

⁸⁶ *Ibid.*

⁸⁷ See page 6 of DCR Parkway Master Plan. <https://www.mass.gov/doc/dcr-parkways-master-plan-2020/download>

⁸⁸ Much of the specific information pertaining to DCR’s wheel chair ramp initiatives was provided by DCR engineering staff.

Continued and Close Coordination with MassDOT will Enhance DCR's Longer-term Stewardship of its Parkways

DCR can realize a range of benefits from continued collaboration with MassDOT on issues relating to parkway capital reconstruction and maintenance. The benefits include access to funding, sharing of resources and expertise, access to real time transportation data and expanding operational efficiencies beyond snow and ice operations, which has been a very successful collaboration

This partnership has already delivered of highly successful examples of collaboration between DCR and MassDOT including the *Governor's Trail Team*. This collaborative effort has been highly successful at integrating best practices from each agency into trail planning, design, grant administration and identification of funding for trail projects. In addition, DCR's collaboration with MassDOT on the Transportation improvement Program (TIP) has led to securing funding for major DCR capital initiatives including the Neponset Greenway, the Watertown-Bridge Greenway, Alewife Brook Parkway and Greenway and the North Bank Bridge. DCR and MassDOT are also working together on the capital delivery of the Mystic Crossing Bridge, a priority initiative of the Baker-Polito Administration. The proposed pedestrian bridge will connect DCR's Draw Seven Park in Somerville with the Harborwalk Greenway and Northern Strand Shared Use Path in Everett. This important project will advance environmental justice goals through critical public infrastructure development.

In addition:

- The 2011 Joint Report proposed a more purposeful collaboration between MassDOT and DCR, recommending that the two agencies "continue to pursue operational efficiencies and to improve their respective missions through active development of additional opportunities for joint or shared management and expertise."
- An MOA can enable MassDOT to maintain discrete segments of a roadway on DCR's behalf. In fact, Morrissey Boulevard, which has been proposed by the Governor for transfer⁸⁹, is a DCR asset in need of significant infrastructure improvements that could be supported by MassDOT. Such an agreement has been mentioned as a possibility for Storrow Drive, as well. Planning on infrastructure improvements to Morrissey Boulevard is now being coordinated between DCR and MassDOT. With estimated improvement costs in the \$100 million range,

⁸⁹ <https://commonwealthmagazine.org/transportation/shuffle-proposed-for-4-of-bostons-parkways/>

MassDOT may assist in the funding of the project, noting that it may be able to be covered by DCR's bond cap that allocates funds to several large infrastructure projects each year on an ad hoc basis depending on needs. These types of approaches would bring together the greatest expertise to care for and improve parkway assets.

DCR and MassDOT also share a snow and ice removal MOU which dates back to MassHighway in 2005. This MOU has been periodically updated over the last 16 years. For example, MassDOT now plows Morrissey Blvd. for DCR and DCR plows all of the vehicular bridges in the Charles River Basin for MassDOT.

Friends' Groups and Partnerships

Private and non-profit support for parks is a long tradition in the United States. DCR “Friends’ Groups” are non-profit organizations established to help support interpretive, educational, and conservation activities through fundraising, membership programs, and awareness building at DCR parks. DCR Friends’ Groups are usually dedicated to a specific park, such as the Friends of the Blue Hills and the Friends of the Middlesex Fells Reservation. This section examines the important role of DCR’s Friends’ Groups and suggests ways in which their assistance could be leveraged to mitigate DCR’s staffing and budgeting challenges discussed earlier in this report.

As an example of the activities performed by Friends’ Groups, to accomplish its mission to protect beauty, habitats, and recreational opportunities, the Friends of Blue Hill acts to:

1. Advocate for actions that will enhance the Reservation and serve as watchdog of activities that might adversely affect it.
2. Guide enthusiasts in exploring the nearby remoteness of the Blue Hills Reservation through educational, historical, and nature hikes.
3. Encourage involvement in the protection and preservation of the Reservation by all users.
4. Work with DCR to maintain the quality of the Reservation and provide public input for its management.⁹⁰

The Friends of Blue Hills, like Friends’ Groups elsewhere in Massachusetts, often bring together volunteers and advocate on behalf of DCR parks and property. DCR’s Friends’ Groups provide a key way for DCR to leverage and increase resources for the maintenance, programming, and conservation of its parks and parkways. Some of the larger Friends’ Groups have hundreds of members and the capability to raise significant amounts of funding.

With approximately 120 Friends’ Groups, interest in supporting DCR properties is strong. However, this interest brings with it challenges regarding what Friends’ Groups can and cannot do within DCR properties and the capacity of DCR staff to more fully engage with and leverage the capabilities of the

⁹⁰ <https://friendsofthebluehills.org/learn/about-fbh/>

Friends' Groups. Friends' Groups are willing to do more work for their parks, but sense that they are not being used by DCR to their fullest.⁹¹ DCR staff is involved in ongoing work to draft a new MOA between the Friends' Groups and DCR, to help add needed clarity and consistency for Friends to more actively engage with DCR and in compliance with DCR requirements. Guidelines are provided in regard to:

- Volunteering
- Programming
- Fundraising

The added clarity, notably for volunteering and the raising of non-state funds, will help DCR leverage its own staffing and resources for the benefit of the parks. In this manner, the leveraging of resources also helps DCR increase its returns to the Commonwealth. However, for the process to work most effectively at maximizing returns, DCR's own staffing will need to be sufficient to cover its own responsibilities as part of the agreement. DCR staffing levels at the parks may be an issue as the MOA stipulates collaboration with park staff for the planning and execution of volunteer activities and programming. DCR staffing levels will need to be adequate to support the Friends' plans for volunteering and programming.⁹²

Beyond an MOA with the Friends' Groups, other opportunities for DCR to expand partnerships can create even more demands on staff. The Partnership Matching Funds Program, for example, matches \$1 million in DCR funds annually⁹³ with funds from partners (e.g., a Friend, municipality, etc.) for capital projects and equipment. While a doubling of DCR funding to \$2 million could potentially yield \$4 million in investments (up from the current \$2 million assuming the private matching funds were also available), DCR would also need additional staff time (e.g., legal, finance, cultural resources, natural resources, interpretive services, engineering, etc.) to support the larger volume of work resulting from the increase in activity. With the addition of staff, projects need to be aligned with DCR's priorities so that the staff is spending time on the appropriate projects, intended to advance DCR's goals. It is possible to expand a popular program like the Partnership Matching Funds Program to increase investment in DCR parks but the extra work for DCR staff downstream would also need to be accommodated.

⁹¹ Friends Groups, via focus groups and letters indicated that there is more they can do and would like to do for DCR parks and parkways.

⁹² DCR staff indicate that increased activities at parks by Friends Groups, whether in programming or infrastructure initiatives, need support from DCR own staff. An increase in activity would need to match capacity.

⁹³ According to EEA, DCR provided over \$8 million in matches between FY2015 and FY2022. For FY2022, the match reached \$1.2 million.

The leveraging of public-private partnerships (e.g., with Friends and other organizations) for the betterment of parks and facilities has been documented in other states around the country.

In New York, organized groups of individuals – often called “Friends Groups” (just as in Massachusetts) – can enter into Friends Groups Agreements with the state parks agency (New York State Parks, Recreation, and Historic Preservation) to coordinate activities of the Friends Group with the goals of the agency. Once an agreement has been reached between the agency and the Friends Group, Friends Groups are allowed to raise money for capital projects and conduct supportive activities including trail clean-ups, providing interpretive programming, and maintaining buildings. Not-for-profit organizations can also enter into more formal agreements known as Cooperative Agreements, allowing them operational oversight. Both Cooperative and Friends Groups Agreements must be approved by the Commissioner of the agency. One highly successful partnership in New York is The Caumsett Foundation, which provides environmental preservation and educational services for the Caumsett State Historic Park Preserve, and has been recognized as a model Friends Group.

In California, public-private partnerships are leveraged in a similar manner to that of New York. Non-profit organizations can enter into a variety of agreements with the state parks department, most notably operation and co-management agreements, as well cooperative agreements. Operation and co-management agreements allow non-profit organizations to provide direct oversight to select parks in California, enabling them to improve, restore, maintain and administer portions or entire parks. Cooperative Associations are non-profit organizations that raise funding for educational and interpretive programs that state parks otherwise would be unable to provide. Currently, there are 39 active co-management and 89 active cooperative associations in California. California State Park’s largest partner is the California State Parks Foundation, which has provided over \$120 million in funding to support educational material and park enhancement projects all across the State Park system.

Stewardship Council

Established by the Massachusetts legislature in 2003, the Stewardship Council is an independent body that assists and oversees DCR. It first met in September 2004 and by legislation meets almost monthly. The enabling statute is MGL c.21,⁹⁴ not only created the modern-day DCR but also set up the Council as an oversight entity for the new agency. In this section, we examine the role and responsibilities of the Stewardship Council and review some ways in which the Council could help DCR improve effectiveness.

Enabling Legislation

The Stewardship Council's enabling legislation outlines several key responsibilities for the Council's members. Among those responsibilities is the Council's review and adoption of DCR's Resource Management Plans (RMPs), which must be submitted to the Council by the Commissioner of DCR. In the past, RMPs were chronically delayed or unavailable.⁹⁵ A new effort to streamline the RMP process, now being put into action by DCR and supported by the Stewardship Council, will greatly increase the production of RMPs.

The enabling legislation also makes the Stewardship Council responsible for developing an “oversight strategy” of park management plans, capital planning, and policy development. The last oversight strategy, written in 2018, included brief reports on the Council's activities over the previous two-year period and articulated the Council's priorities for DCR over the next two-year period. The development of an updated oversight strategy now appears dormant, due in part to time limitations of Council members to develop a detailed report.⁹⁶ Into the future, the Council may be better served by responding to a DCR strategic plan (once developed and included as a main recommendation of this study), overseeing adherence to its goals and raising new issues generated from the public.

⁹⁴ <https://malegislature.gov/laws/generallaws/parti/titleii/chapter21>

⁹⁵ <https://www.mass.gov/doc/dcr-stewardship-council-oversight-strategy-2018-2020/download>

⁹⁶ Based on interviews with Stewardship Council members.

Oversight Entities in Other States

A non-exhaustive scan of park, recreation, and conservations agencies in other states found that many have boards, commissions, committees, and councils with oversight or advisory roles over their respective agencies. The DCR Stewardship Council's role is not at all unique to Massachusetts. While there is variance among states, oversight boards elsewhere are also involved in budgets, strategy, public outreach, etc.

State	Agency	Oversight Entity
MA	Department of Conservation and Recreation	Stewardship Council
NY	Parks, Recreation, and Historic Preservation	State Council of Parks and Historic Preservation
WA	Washington State Parks	Washington State Parks and Recreation Commission
PA	Department of Conservation and Natural Resources	Governor's Advisory Council for Hunting, Fishing and Conservation
VA	Department of Conservation and Recreation	Board of Conservation and Recreation
MI	Department of Natural Resources	Michigan State Parks Advisory Committee
CA	Department of Parks and Recreation	California State Park and Recreation Commission
OR	Oregon Parks and Recreation	Oregon Parks and Recreation Commission

The Council is also required to approve the Commissioner's proposed budget, annually, while ensuring its efficiency. However, on the last point concerning the approval of the DCR budget, several Council members have recently raised the concern that there is no time allocated to them for approving the budget and they are not given the opportunity by DCR staff to approve of the budget even though it is the Council's responsibility to do so. The budget approval process and the Stewardship Council's historical lack of input into it, has now become a major topic of interest by the Council. Seeking higher levels of engagement in the budget process, the Stewardship Council invited DCR finance staff, on numerous occasions over the past year, to present detailed funding and expenditures spreadsheets at the monthly Council meetings. With this push, the Council has been able to take a more active and timelier stance (in time for FY2022) on the DCR budget. In its July 22, 2021 meeting, the Stewardship Council passed a budget resolution a full six months before the release of the Governor's final budget for FY2022. The

resolution includes coverages that are pertinent to this study's recommendations regarding staffing and resources for RMPs; DCR's capacity to develop partnerships to support non-profits, Friends' Groups, and municipalities; and support for improved communication for state parks.

The Stewardship Council's enabling legislation has not been updated to align with current state policy and practice in a variety of instances and other aspects of the enabling legislation are not currently enforced the Stewardship Council has evolved to paying attention to other important issues at hand (e.g., environmental justice issues brought up regarding the Edgewater Neponset Waterfront in Mattapan which were presented at the November 2020 monthly council meeting). Additionally, in order to play a more meaningful role to guide and assist DCR, the Council members have divided into three sub-committees which work to improve the Council's efficacy in overseeing key policy areas affecting DCR. These sub-committees include a Finance Committee, a Stakeholder Engagement Committee, and a Policy and Operations Committee. The Finance Committee, expectedly, is focusing its efforts on the Stewardship Council's preparedness to provide early input on the DCR budget. The Stakeholder Engagement Committee and DCR is continuing to work together to develop an MOA to be used between DCR and Friends' Groups and other partners to define clear, equitable, and consistent procedures for engagement. The Policy and Operations Committee has been looking into structural aspects of the Council's enabling legislation, including considerable number of changes to term limits, representation of skills and geography, and meeting numbers.

Interactions with the Public

Monthly council meetings have a tightly defined process for public comment, and Council members do not respond to comments in the moment. This seems appropriate as answers to public questions are likely to require a researched and reasoned response from DCR staff. Even while noting that responding to general comments is not a mandate, DCR's processes for following up publicly, reporting on outcomes, and closing the loop on steps taken to address the issues raised are not clear. Public comments and questions that remain unanswered between multiple Stewardship Council meetings may undermine confidence in DCR's accountability.⁹⁷

⁹⁷ Findings are based on interviews with Stewardship Council members and UMass Donahue Institute's observations of Stewardship Council monthly meetings in late 2020 and early 2021.

Recommendations

Overview

The Department of Conservation and Recreation is a large agency with a significant portfolio of responsibilities tied to the provision of recreational offerings and the protection and conservation of forests, land, and water. Linked to these responsibilities, DCR also maintains a range of built infrastructure, including greenways, park and beach complexes, and dams that are crucial to people's outdoor enjoyment and safety. With these responsibilities, DCR provides the Commonwealth with a combination of essential services and infrastructure.

Given its responsibilities and exposure to the public – there are thousands of trips per day⁹⁸ to DCR facilities – DCR comes under significant scrutiny. The agency's constituents, including Massachusetts residents and visitors from around the world, expect clean parks and beaches, programmed recreational activities, and safe greenways accessible to all users – all among many other expectations. Additionally, DCR has the responsibility to shepherd its assets for the benefit of the Commonwealth into the future – assuring clean drinking water, preparing for climate change, fighting invasive species, and improving on its existing recreational offerings.

The combination of responsibilities, expectations, and exposure brings DCR under a microscope, magnifying what it is doing well and what it is not. With a sense that DCR is not able to manage all that it is tasked to do with its available resources⁹⁹, the DCR Special Commission was created in 2019, prior to the pandemic, to look into ways to improve the agency.¹⁰⁰ The legislation emphasizes the responsibilities of DCR and its oversight body, the Stewardship Council; the potential transfer of assets; review of the DCR budget; the agency's transparency and accountability; and project planning and execution. In support of the Commission, the UMass Donahue Institute researched and analyzed activities and practices at DCR. Based on an extensive review of documents, interviews, and outreach, a more encompassing understanding of DCR has formed. From this process, there are a series of initial recommendations

⁹⁸ The combination of DCR parks, beaches, rinks, pools, golf courses, and users of parkways (pedestrians, cyclists, and vehicles) results in the heavy usage of DCR facilities on a daily basis.

⁹⁹ Special Commission members, key DCR staff, and the Stewardship Council were asked why they thought the commission was formed and the linkage between available resources and responsibilities is seen as an impetus for the commission's formation.

¹⁰⁰ Legislative description of the study: <https://budget.digital.mass.gov/summary/fy20/outside-section/section-100-dcr-study>

developed for consideration for DCR to better meet its crucial roles in recreation and the conservation of the environment.

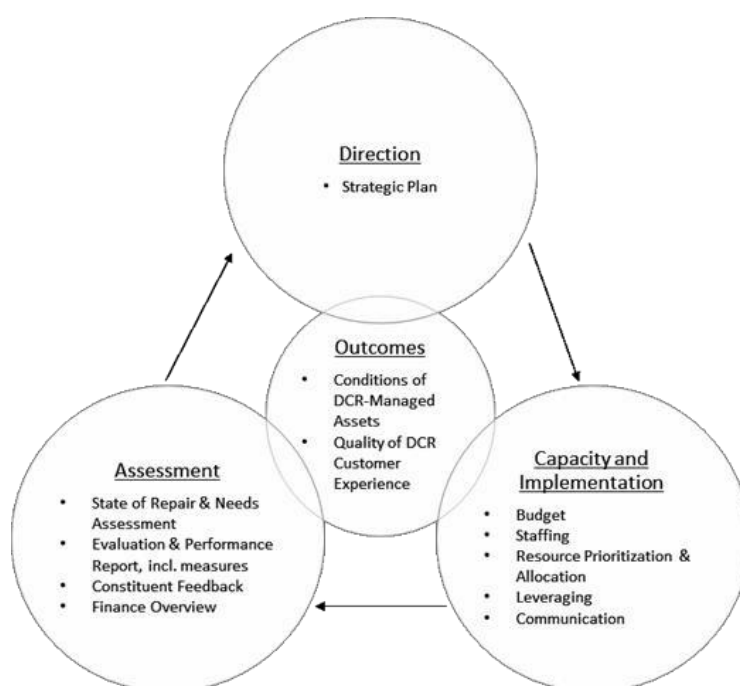
In reviewing the recommendations, it is very important to underscore that the issues confronting DCR are interrelated. As such, the recommendations should not be read or interpreted in isolation – they work together to build on DCR’s existing strengths and modernization initiatives to bring the agency forward. The two most important recommendation areas are planning and budget – by addressing these two areas, many other items can move towards a pathway of improvement. The development of an agency-wide strategic plan is an overarching recommendation. By providing an organizational framework, clear guidance about moving forward, and monitoring progress, the items specified for the Special Commission Study—transparency and accountability, project execution, the role of the Stewardship Council, clarity in budget and staffing needs, and DCR’s responsibilities to shepherd the Commonwealth’s natural, cultural, and recreational assets – all fall into place and have pathways for being understood and cohesively addressed.

The level of effort required to reach the vision, objectives, and goals specified in the strategic plan will need to be reflected in DCR’s future staffing and budget levels. The most consistent message that UMDI researchers heard across multiple forums, including the public listening session, hundreds of emailed comments, stakeholder sessions, and in interviews with former employees, and friends groups is that, staffing and budget levels at DCR are seen as inadequate for what the agency needs to do.¹⁰¹ A budget tied to a strategic action planning process would add clarity and garner support for DCR. The metrics and measures tied to objectives and goals in a strategic plan can be a basis for communicating with constituents and the legislature, providing a better understanding of what DCR does and how it is performing. A bolstering of management capacity would allow DCR to leverage and better capitalize on the willingness of Friends’ Groups to assist in the upkeep and programming of DCR properties. Adjustments in staffing can strengthen plans for land stewardship and the safety and enjoyment of DCR outdoor spaces.

¹⁰¹ Comments from Friends Stakeholder Sessions May 18, 2021 and June 1, 2021; Comments from DCR Listening Session, May 25, 2021; DCR Union Stakeholder Meeting, June 7, 2021; Comments via email May 15 – June 21, 2021; comments via confidential interviews with DCR stakeholders including former staff, current staff, DCR Special Commission members, Stewardship Council members, September, 2020 – September, 2021.

Through this grouping of recommendations for the consideration of the Special Commission, an improved apparatus would be in place for DCR to systematically move forward, with earned support, to provide improved services and infrastructure for the long-term benefit of Massachusetts citizens. In keeping with legislation's goals, the recommendations provide pathways for DCR to improve the management, operations, and asset condition of the natural, cultural and recreational resources held by the department.

Figure 7. The Direction from a Strategic Plan Sets the Framework for Improved Outcomes



Planning and Execution

Challenges: DCR is a sizeable organization providing critical services to the Commonwealth. Between its size and range of services, like other large agencies, it is naturally challenging and complex to manage effectively. Although DCR has numerous plans by area – Forestry, Watershed Protection, Resource Management Plans, etc. – there is no broader understanding about how the existing planning processes inter-relate. Better integration of and communication about the agency's planning processes and setting of priorities would help strengthen DCR's accountability for activities, improvement, and results, as well as provide guidance to broader organizational management issues.

Formalize planning processes and develop an agency-wide strategic plan for the organization

- A strategic plan or other agency-wide planning process for DCR would formally outline the agency's vision and goals and their accompanying objectives, strategies, and performance measures (metrics) that could be tied to putting the goals into action.
- A strategic or other high level planning process at DCR would also help to bring about more effective long-range planning as metrics to measure progress towards tangible goals and objectives would be spelled-out.
- Such a planning process would make a direct connection to DCR's RMPs, a cornerstone for improving and preparing the natural and recreational assets at DCR's parks for the future. By linking the implementation of RMPs to other related plans, processes and to the budget, transparencies would develop between identified needs and execution, benefiting the parks and allaying constituent concerns. Plans should note whether resources (staffing and funding) are allocated or are needed for implementation. Implementation should clearly tie to DCR's capacity in terms of funding and staffing. If resources are inadequate to address the needs, it should be communicated in the RMPs. This also includes determining whether the revised RMP process, which are shorter and less detailed than past plans, is adequately and comprehensively serving the varied needs of DCR's facilities.
- The implementation and execution of an agency-wide planning process would also improve transparency at DCR. It could be operationalized by linking it directly to the annual budget which would add clarity to budget priorities. Additionally, DCR could issue regular reports (e.g., semi-annual or annual reports) that provide updates on progress against the planning process, fostering greater visibility, accountability, and transparency.
- DCR's budget has seen little or no growth¹⁰² and is under stress to critical needs as evidenced by a substantial backlog of deferred maintenance.¹⁰³ Spelling out priorities in a clear manner would also enhance DCR's ability to earn support and secure funding in future years for building capital projects, addressing conservation needs, and improving operations.
- The planning exercise should incorporate a determination of long-term needs and an estimate of

¹⁰² In inflation adjusted dollars, DCR's budget, despite some recent improvements, has been essentially flat since FY 2009.

¹⁰³ DCR's FY 2016 Deferred Maintenance Assessment shows a backlog of over \$1 billion to bring DCR facilities into a state of good repair.

the funding and staffing levels required to meet those needs at DCR. A funding gap analysis would allow for a “reality check” within the plan, illuminating what can and cannot be done with given levels of funding and resources. For example, the 2016 Deferred Maintenance Assessment estimated \$1 billion in backlog – an amount, if still relevant, would take 10 years to clear based on about \$100 million being available annually from DCR’s capital funding to address backlog.¹⁰⁴

- The strategic, agency-wide planning process will need to reflect that DCR has roles, responsibilities and opportunities far beyond those of a traditional parks and recreation agency. Specifically, the contribution that the agency’s properties play now and will need to play going forward in mitigating climate change and helping the Commonwealth be resilient to climate change impacts must be a central component of DCR strategic planning and decision-making as they relate to capital investment, operations and programming. On the budget side, sufficient resources will need to be made available for DCR to play its crucial role in climate adaptation, mitigation and resilience. The ecosystem services DCR’s natural areas support – cleaning the Commonwealth’s air and purifying its water – would cost billions of dollars if systems needed to be built to provide these same services (for example, the water supply protection provided by DCR lands reduces the need for and costs associated with water treatment plants and chemicals to ensure clean drinking water for much of the Massachusetts population).
- With leadership changes, the agency-wide plan will help guide continuation of services. Throughout its history, DCR has experienced multiple changes in top leadership, notably at the Commissioner level. While leadership change is not unusual to other state agencies, a documented plan articulating priorities for the agency would help to maintain a consistency of vision and planning when leadership is changed, allowing for continuity, without disruption, in major DCR initiatives and programs.

Provide upfront investment and timeline to develop an agency-wide plan for DCR

The upfront investment needed for an agency-wide planning process will need to be provided. Based on information gathered for this study, DCR does not likely have the current staff and resources to undertake such a capacity-building project. The investment would need to cover potential staffing and contracting

¹⁰⁴ Data provided by DCR concerning capital funding available for deferred maintenance backlog. Note that the costs are expected to rise in the future and that investments in deferred maintenance need to be coupled with a routine program of robust preventative maintenance to eliminate the backlog.

(the staffing and budgeting for AMMP/CAMIS may serve as an example), as well as provide a realistic timeline for execution. The framework and development of the plan will need to incorporate public and stakeholder feedback loops as appropriate, and incorporate best practices (e.g., goal setting and feedback mechanisms) for its execution. This should include development of a formalized process for evaluating and tracking DCR's adoption of recommendations that emanate from the Special Commission report.

Following approval of recommendations by the Special Commission, DCR should develop a system to monitor progress towards meeting the recommendations' intent.

Budget

Challenges: The level of effort DCR is able to put into its range of responsibilities, whether in operations or capital improvements, is ultimately tied to the agency's funding and staffing levels, both of which have seen declines since the 2000s. DCR's budget requires resources for operations (e.g., the running of parks and facilities, etc.), infrastructure (e.g., maintenance of roadways, buildings, dams), and natural resources protection (forests, watersheds, coastal marshlands, etc.). The extent of DCR's portfolio, from drinking water protection to campgrounds is large and well-beyond most peoples' ready knowledge. This portfolio requires substantial resources for upkeep and the provision of services.

- "Unfortunately, DCR is not only underfunded, but also at a critical stage of a long and painful disinvestment." – Public comment
- "DCR is severely underfunded and does not have the financial resources needed to carry out its mission."—Public comment

Match DCR's budget to a strategic planning process

DCR is a \$200M+ agency. Considering the state's needs for conservation *and* recreation and its renewed focus on climate change, the adequacy of the DCR budget to address future needs has come into question. The lack of resources also has negative ramifications in terms of DCR's timeliness, responsiveness, capacity to execute projects, and ability to leverage resources. DCR should have the budget be part of a strategic planning process. This would enable the agency to request funding increases for out years that have a basis in defined needs that are linked to the goals and objectives of the agency.

However, simply providing DCR additional budget is likely an inefficient use of funds without an accompanying plan and strategy to use these funds effectively. Elsewhere in these recommendations we suggest formalizing a strategy and vision. From that plan should flow project lists, organizational goals, and project prioritization scoring criteria that become the basis for funding decisions. Recent investments by

DCR in identifying, tracking, and measuring the condition of assets via CAMIS has begun progress in this direction.

In addition to the adequacy of funding, unreliable funding is another factor harming DCR's effectiveness. Operations funding has been flat in real terms in recent years, though 16 percent lower than 2009. Given the increasing recognition of the value outdoor spaces, DCR's maintenance backlog, and the costs of climate change mitigation, it is time to make a commitment to a certain level of funding tied to DCR's initiatives to support the environment and recreation, and eliminate the deferred maintenance backlogs. The funding levels and expenditures should be reflective of and in concurrence with the strategic plan.

Develop a dollar estimate of DCR infrastructure improvement needs

In a letter to the Chair of the Senate Committee on Ways and Means, Senator William Brownsberger (D, 2nd Suffolk and Middlesex District) laid out his motivations for creating this Special Commission: "After 12 years in the legislature it is clear to me that we are not going to provide enough funding to the Department of Conservation and Recreation (DCR) to do all that we ask of them."¹⁰⁵ This same sentiment was well-represented in the comments solicited for this study. Because DCR is an infrastructure agency in many ways, a clear accounting of its capital needs is critical to any understanding of what "enough" or "sufficient" funding means in this context.

An evaluation of how much it would cost for DCR to carry out its mission from an infrastructure and conservation needs perspective is becoming possible through current DCR initiatives like AMMP/CAMIS, revised RMPs, and climate vulnerability assessments.

As an example of a cost estimation process, every three years a consultant provides MassDOT with the Triennial Inspection of the Metropolitan Highway System, which contains an independent assessment of capital assets and estimates the cost of maintaining a state of good repair.¹⁰⁶ A similar overall dollar figure, updated regularly, for DCR's infrastructure improvement needs and the costs for improved climate resiliency would provide a foundation for decision-making, budget planning, and prioritizing projects over the longer-term. DCR's FY 2016 Deferred Maintenance Assessment, showing over \$1 billion needed to bring DCR's facilities into a state of good repair represents a solid start for such a process.

¹⁰⁵ <https://willbrownsberger.com/wp-content/uploads/2019/03/FY20-Budget-Letter.pdf>

¹⁰⁶ The summary of the latest (2018) is here: <https://www.mass.gov/doc/mhs-triennial-report-021119/download>

A thorough assessment and monetization for bringing DCR's properties into a state of good repair and linked to CAMIS should be part of the strategic plan and is a logical extension of the work performed five years ago for the FY 2016 Deferred Maintenance Assessment. Estimates for the improvements specified in the RMPs, for both conservation and recreation, as well as DCR's climate resiliency needs should also be included. If needed, DCR could bring in outside assistance to develop these types of thorough and detailed cost estimates of need. In the 2000s, the Commonwealth convened a "Transportation Finance Commission", with consultant help, to estimate the needs of the state's highway system and MBTA as well as to propose mechanisms to close the funding gap to address the identified needs.¹⁰⁷ DCR may not need to go down a similar path, but a comprehensive understanding of need and how to address them should be included in the strategic plan.

DCR should coordinate with the Legislature on a plan to clarify the purpose and level of retained revenue

"The constant upward pressure to raise fees and other non-tax dollars to fund regular DCR operations is a key factor in how we arrived at the current situation." – Public comment

Over the past decade, DCR has increased reliance on revenue collections as a means of funding core agency operations and programming. DCR should analyze its retained revenues (sources, levels, and the cost burdens of the populations they fall on) and then coordinate with the Legislature to clearly define the purpose of retained revenues (as the fees collected by DCR are called).

The Legislature intends retained revenues to be used to fund core DCR functions including operations and maintenance. Total appropriations from the General Fund are down 21 percent since 2009, while retained revenue has grown from 10 percent of DCR operating expenditures to 20 percent before the pandemic. As user fees grow as a share of total funding, maintaining and growing sources of fee revenue becomes more important to fully funding DCR. These increases form the basis of concerns gleaned through public outreach that the Legislature is disinvesting in DCR. Therefore, there is opportunity for a conversation on what role retained revenue should play, how collected fees are distributed between DCR and the General Fund, and what services should include user fees.

¹⁰⁷ Transportation Finance Commission report: https://d3n8a8pro7vhmx.cloudfront.net/t4ma/legacy_url/330/TFC_Findings.pdf?1428292872

Return on Investment

Align conservation actions with state's 2030 and 2050 emissions targets

Massachusetts has a goal to reduce greenhouse gas emissions to 50 percent below 1990 levels by 2030 and to achieve net zero emissions by 2050. In some cases, preserving forests or wetlands may be a more cost-effective route to emissions reductions than other policies, while also providing added value through recreation, amenity, and other ecosystem services. It should also be possible to evaluate conservation and recreation projects against their ability to mitigate effects of climate change, such as through flood control or shading urban areas. A recommendation would be to develop an explicit cost/benefit evaluation of conserving land to capture carbon (to mitigate greenhouse gases) or for flood protection (e.g., rising sea levels and major rain events) versus an infrastructure building approach (e.g., concrete sea barriers, levees, etc.). It may be the case that it is more cost-effective to achieve climate mitigation objectives through the conservation or rehabilitation of landscapes rather than through mega-construction projects. Such an analysis could help direct DCR's conservation improvements for the benefit of the Commonwealth.

Evaluate recreation users and uses to target investments

It is not difficult to imagine a future where DCR's conservation mission (including climate change mitigation and adaptation efforts) could grow in urgency relative to its recreation mission. This scenario would force DCR to make careful choices about which recreation channels it wishes to prioritize. Data from the Bureau of Economic Analysis (BEA) can be used to glean some insights into preferred activities. It shows that residents of Massachusetts and other New England states spend much of their outdoor recreation budgets on golf, boating, and fishing however the data's consumption focus does not adequately capture frequent, low-cost activities like hiking, camping, or swimming.

To prepare for this possible future, DCR should begin to study who uses DCR properties and how they use them. With this information, DCR would know more about how funding choices would impact the recreation opportunities of residents and tourists alike. Even without the constraints imagined above, this knowledge would be useful in maximizing the return received by the Commonwealth as the most utilized or critical recreation channels could be maintained at the highest levels of readiness and repair.

Measure outcomes against appropriate metrics

As part of the strategic planning process DCR should focus on clearly defining what success looks like for the department as a whole and its subunits. From there, it should build up metrics and key performance indicators ("KPIs") that capture the elements of that success (e.g., progress towards defined goals and

objectives within the strategic plan) while being careful to choose metrics that push the agency toward desired outcomes rather than creating incentives for box checking. Effective metrics should be visible to department leaders, measured against appropriate benchmarks, and advanced toward organization goals. Investments will likely be needed to move metrics up the visibility/measurement/improvement chain.

The current AMMP project is a good example of this kind of investment. Many of DCR's assets were effectively invisible at an organizational level and therefore their state of repair was difficult to ascertain. By cataloging assets systematically in a database that can be queried, DCR's assets can now be measured and tracked against improvement criteria. The AMMP project also offers the opportunity to improve on project prioritization in addition to reporting results. Priorities could be set by adopting such tools as the U.S. Department of the Interior's Asset Priority Index (API) – a tool that helps asset managers assess the priority, or level of importance, of facilities relative to one another.¹⁰⁸

Example metrics to consider include the following (noting that a Strategic Plan's metrics will require an informed process to develop, ensuring that they accurately reflect goals and are relatively straightforward to measure regularly):

- Deferred maintenance backlog as a share of capital expenditures
- Rate at which work is completed compared to rate at which work is identified
- Age of work orders
- Turnaround time for license agreements or concession contracts
- Share of DCR dams in a state of good repair (or another classification)
- Visitation at DCR parks and facilities
- Completion of recreation and conservation recommendations included in RMPs
- Progress on 20-year timeline and budget status to complete parkway improvements included in Parkways Master Plan

DCR likely already tracks some of these metrics and has recently introduced new targets to focus on EJ communities. However, through our interviews we did not receive a picture of if and how metrics are used

¹⁰⁸https://www.doi.gov/sites/doi.gov/files/migrated/pam/programs/asset_management/upload/APIGuidance092105.pdf

to define and measure success. As a result, we recommend developing metrics through the strategic planning process and using these metrics to track progress toward organizational goals.

Better leverage Friends' Groups and other philanthropies in financially supporting DCR

In many cases, the state can unlock additional money from private and non-profit sources with small initial investments in time and resources. DCR already has a program (DCR Partnership Matching Funds) that enables private groups to raise money for park projects and receive some matching funds from DCR. The ability to move further into this model would require some shifts at DCR, including more staff (addressed below), as well as reliable funding available for matching.

Staffing

Challenges: In conjunction with funding, the levels of effort that DCR can put into its responsibilities is reflective of the number and availability of staff that DCR can dedicate to its operations. The decline in full-time staff in combination with a greater dependence on seasonal employees – some of which are not performing “seasonal” jobs has put stress on DCR’s services (e.g., staff presence in its park system to enforce compliance with rules and address conservation needs).¹⁰⁹ Ultimately, the adequacy of staffing limits the DCR’s ability to expand and improve facilities and service.

“DCR has so much responsibility – it is such a mixed bag of assets and responsibilities and so thinly staffed.” – Stewardship Council member

Limit the use of seasonal staff to truly seasonal activities

The use of seasonal staff for what are essentially full-time positions breaks continuity and can reduce attachment to jobs at DCR.¹¹⁰ An example is the classification of planners working on Resource Management Plans as “seasonals”.¹¹¹ These types of workers are *not* doing seasonal jobs, but rather long-term work needed by DCR. Long-term seasonal staff are at a disadvantage in gaining institutional knowledge and subject matter expertise and, seeing themselves as itinerant, may move onto full-time jobs, elsewhere. At parks, the use of long-term seasonals rather than full-time staff, may result in the loss of continuity in the caring for landscapes based on learned practices for their care.

¹⁰⁹ According to unions, there is a shuffling of “seasonal” staff (essentially taking 2 weeks off every 6 months) doing full time work to keep DCR within its full time employee cap.

¹¹⁰ Note that these types of positions do not include short-term seasonal staff like lifeguards.

¹¹¹ Interviews with DCR staff and Stewardship Council. The Stewardship Council is addressing this in their FY2022 budget resolution.

Ensure the FTE cap aligns with DCR's budget to maintain effectiveness

The Executive Branch operates under FTE numbers set in the state budget, as required by MGL c.29 §6.¹¹²

The number of authorized positions has been flat or decreasing over the past decade. Separate from funding, these caps limit DCR's ability to undertake more initiatives or speed up current activities.

Many obstacles identified in throughout this Special Commission process can be partly attributed to a need for additional FTEs, as they translate to the lack of adequate staffing: the delay producing resource management plans, the use of seasonal workers, too few staff to engage with external partners, insufficient upkeep and conservation of parks, and compliance with rules at parks (e.g., park rules compliance is an identified issue at DCR parks, including the use of motorized vehicles on trails, unleashed dogs, and 'rogue trails'. Large areas of land, at times, may have little or no DCR staff presence, including the presence of rangers to encourage compliance). In some instances, there is evidence of DCR staff with specialized skills shifting to other types of work to prevent bottlenecks from building up. While flexibility and nimbleness are generally considered as a positive for a workplace, DCR needs to explore instances where this is more reflective of short-staffing than a temporary condition.

Seek DCR staff input to better understand perspectives on agency operations and employee morale

DCR employees, notably in lower positions than upper management, should have a means to regularly provide their input about the operations at the agency. Interviews and emails suggest some level of dissatisfaction from rank-and-file staff with management decisions, including past policy directives and histories that add challenges to achieving higher levels of performance and more positive outcomes for DCR's key areas of responsibility. Non-management professionals have perspectives on ways to improve the overall management and operations of DCR's assets, and those should be evaluated and considered for putting into practice. A communications framework for regular staff input, followed by DCR management evaluation and feedback should be developed and formalized.

Transparency and Accountability

Challenges: There is difficulty for constituents and public officials to reach out to DCR regarding maintenance and safety requests/concerns and confirm if and how their concerns are being addressed. Comments made at the public listening sessions, during interviews, public sometimes feel inadequately

¹¹² <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter29/Section6>

informed and disconnected from DCR's plans for parks and roadways in their communities. Several recommendations arise concerning transparency and accountability at DCR. Many potential improvements can be tied to the agency's online presence and responsiveness.

Update DCR's website for a lot of different sections and make it more user friendly

DCR's website is front-facing and specified web improvements for transparency and accountability will require an infrastructure, both in terms of design, functionality, and upkeep. The recommendations, below, all could use the DCR website as a tool to improve transparency.

- **Share and maintain a detailed organizational chart on the DCR webpage.** The organizational chart should include clear lines of responsibility and highlight contacts for areas of concern to stakeholders. DCR does not have a detailed organizational chart available publicly.¹¹³ Without the chart, people do not have a clear sense of who and which positions are responsible for taking care of DCR's range of work. This was raised as a communications issue by the public and DCR staff. For people wanting to contact DCR about specific information, the web page should include a central location users can visit and find contact information for the various divisions. If sharing an organizational chart puts DCR staff on the receiving end of much more public input and thus creates capacity issues, DCR could strengthen staffing that handle its telephone (617-626-1250) and email (mass.parks@mass.gov) inquiries, including a stronger tracking system with a feedback loop (see next recommendation).
- **Institute a formal tracking system to monitor status of inquiries coming into DCR.** DCR receives approximately 19,000 inquiries per year via telephone (617-626-1250) and an additional 8,000 inquiries via email (mass.parks@mass.gov).¹¹⁴ A formal tracking system is needed to verify the status of these inquiries and complaints – identifying the staff member taking care of a particular issue and its eventual resolution. Access to information helps improve comfort among constituents and stakeholders and a formal tracking system could also be a means for improving DCR's performance and accountability (e.g., monitoring how much time it takes to address an issue and communicating back to the constituent).
- **Communicate on website on status of expected and ongoing studies.** As a large state agency

¹¹³ Note that there is an organizational chart available but it is not detailed.

<https://budget.digital.mass.gov/govbudget/fy22/appropriations/energy-and-environmental-affairs/conservation-and-recreation?tab=org-chart>

¹¹⁴ Inquiry data provided by DCR staff during interview.

with a diverse portfolio of responsibilities, DCR regularly has ongoing studies regarding different activities, issues, and initiatives. That said, constituents expressed concern that there is little information available on the status of these studies and related activities. For example, the Parkways Master Plan, a multi-year project, started in 2015 and just released, lacked clarity for interested constituents to find information on the status on the report (phase and estimated release date). The status of major studies (progress, timeline, next steps, and contacts), including Resource Management Plans, should be included on the DCR website. If necessary, the website should inform about delays in any given study.

- **Communicate decision making processes publicly.** DCR needs to demonstrate how it decides to spend resources and who is responsible for those decisions. For example, in Resource Management Plan (RMP) implementation, it is currently unclear about prioritizing identified needs and the timing for when they will be addressed.
- **Provide “report backs” on public comments received during Stewardship Council meetings.** A number of public comments requiring some level of DCR response/action are received at monthly Stewardship Council meetings. DCR should formalize a feedback loop (perhaps integrating with the “Institute a formal tracking system to monitor status of inquiries coming into DCR” recommendation) to these comments by providing “report backs” on the status of the previous month’s comments. This would include clarifying if the issue was resolved, can it be resolved, and the history of the request. This process would make constituents feel more relevant and engender greater transparency.
- **“Green Docket” DCR example of leveraging technology to track information and communicate status with staff – consider expanding access to Stakeholder groups/public.** The DCR website states, *“Green Docket is the Department of Conservation and Recreation’s internal process for review and approval of applications for various environmental permits before they are submitted to regulatory entities. This web-based application allows Project Managers to insert project information, identify environmental permits required, upload draft documents for reviewers, check review status, and provide ongoing tracking of permits. Project Managers should use the “Submit a Project” page to initiate review of permit applications; the “Review Status Checker” page to read comments from reviewers; and the “Green Tracker” page to provide ongoing information about the permit(s) when approved to file with the regulatory entity.”* By making progress on permit applications visible on the web, DCR constituents would be able to answer their own questions on status, enabling them to better plan, and time their own initiatives related to DCR properties and assets. This system cannot be used for a final approval but likely could let people know they can

track where an application is in the process.

- **Greater social media and web presence to inform constituents.** As an example, DCR should post waterfront closures in real time on its website in addition to Twitter (now activated) where communities and constituents can find the status of their local beach or park immediately. This includes partnering more closely with other agencies, including the Department of Public Health (DPH), to release public health information relating to DCR parks and beaches. A single web location where all relevant information can be easily accessed would help with informing people and complement ongoing efforts by DCR, including Twitter alerts, about the status of closures and at-capacity parking lots.

Branding and Marketing/Communications

Challenge: Also bolstering transparency, DCR needs to more effectively get the word out about what the agency does, its offerings, and making its benefits more visible and known. The lack of clarity and understanding by the public, as well as government officials, on DCR's functions, performance, and activities can undermine the agency's efforts to garner greater support. DCR is providing crucial services to Massachusetts and people do not always know or realize that.¹¹⁵ While people often think about DCR as an organization focused on parks and public spaces (and it is), it is providing essential services along a wide continuum of areas including clean drinking water, forest management, addressing climate change, and wetlands preservation, among many others. For these reasons, it is recommended for DCR to make its accomplishments clear so that people are aware of the agency's presence and purpose.

Develop consolidated information/fact pieces highlighting DCR activities.

DCR should encapsulate a range of accomplishments and facts, ideally supported by program metrics and measures (e.g., from strategic plan progress reports, if instituted), to make constituents and stakeholders more aware of DCR activities and how they benefit Massachusetts. Even without the metrics of a formal strategic plan, DCR already has wide ranging data and information concerning everything from progress on invasive insect eradication and forest fire control to the amount of storm water debris removed to prevent flooding. These facts and accomplishments need to be seen in a single, updatable document. DCR

¹¹⁵ The breadth of DCR's activities is broad and geographically dispersed. People, including legislators, do not always have an understanding of what DCR does beyond the facilities closest to their homes. A stronger understanding of key DCR roles plays statewide could yield additional support.

provides *essential services* to the Commonwealth, and it is important for the organization to be articulating and communicating that value back to constituents.

Update DCR website to provide more streamlined information about DCR activities and services.

DCR's website is not particularly user friendly, and information is not necessarily straightforward to access. Other states' parks and recreation agency websites are often (but not always) more transparent and provide clearer pathways to information about offerings as well as agency performance. For example, New York Parks, Recreation, & Historic Preservation offers an easily navigable and informative website (<https://parks.ny.gov/>), providing a wide range of information about activities (e.g., how to access recreational offerings) and agency performance, including annual reports providing clear information about the agency's budget, staffing, capital projects, vision, etc.

Expand awareness of DCR's Universal Access Program

DCR has developed innovative approaches for disabled individuals to more fully enjoy the agency's parks and recreational offerings. The word can still more effectively get out on these opportunities, including increased collaboration with the Executive Office of Health and Human Services (EOHHS) to make disabled individuals more aware of DCR's Universal Access Program.

Leveraging Resources/Friends' Groups

Challenge: Friends' Groups have the ability to invest in DCR assets and the capability to collaborate on much larger projects. Being smaller, Friends' Groups, depending on the depth of their resources, can also speed processes and decision-making for improvements at some DCR facilities. However, systems, including the easing of restrictions, need to be put in place for DCR to better capitalize on the project-implementation and fundraising abilities of these groups. DCR can leverage effort and investment by Friends' Groups and municipalities, but it will require capacity and people throughout the agency as well as resources.

Increase leveraging of stakeholder partnerships to enhance facility infrastructure, maintenance, and operations.

- DCR-stakeholder partnerships have great potential to support and enhance the agency's execution of its mission and can be put to greater use. A memorandum of agreement (MOA) previously drafted between Friends of DCR and the agency would add clarity for partnerships, enabling the Friends to become more involved in park (or parkway) management and activities in alignment

with DCR's plans and goals. The MOA would help normalize relationships and expectations related to indemnification, shared goals, volunteering, fundraising, special use permits, and short-term commercial uses of DCR properties. A new MOA would need to address permitting burdens that effectively hinder smaller Friends' Groups without paid staff to steward and program their respective parks. Additionally, there should be further discussions about the proposed length of the MOA agreement period, in order to ensure continuity for development of larger capital projects.

- On the finance side, better leveraging the fundraising capabilities of the Friends' Groups for the parks – represents a substantial opportunity to increase investments in conservation, built infrastructure, and visitor programming, when the fundraising goals are aligned with DCR's priorities. DCR needs the internal management and legal systems in place to support this type of leveraging, which might require increases in staffing (e.g., in DCR's External Affairs and Partnerships area) to support and better leverage the initiatives of the Friends' Groups.
- Friends' Groups should have a formal means to communicate with DCR about the areas where they see needs/concerns not being addressed that they can help with.

Increase the number of and train DCR staff who work with Friends' Groups at ground level.

More DCR staff are needed with the skills to provide direction and to “onboard” Friends' Groups' volunteers. This could include assistance in guiding people through to be able to get into a position to work on improvements to DCR facilities and conforming to the agency's facilities and organizational management standards. DCR could look at ways to create more capacity within its Office of External Affairs and Partnerships to help establish pathways between the Friends' Groups (and volunteers) and DCR to expedite allowing work to be performed.

Increase DCR Partnership Matching Funds.

The DCR Partnership Matching Funds Program (\$1M/year) supports financial matching from Friends' Groups and other partners to upgrade DCR properties. Given the high level of interest in the program, an increase in the annual match could leverage significant increases in investment, noting that any increase in funding on the DCR side would also need to be matched by a non-profit or municipal participant. On the administrative side, DCR needs the staff capacity to better support the program's execution and improve accountability. Partner organizations with fewer resources (e.g., than professionally staffed Friends' Groups) would also benefit from a technical assistance component for park improvement projects. This

would ensure that communities who are not as well-resourced have the opportunity to improve their parks and natural resources thus expanding equity and access.

Organizational Management

Challenges: The management of DCR's systems is undergoing an overhaul, including asset management practices, to eliminate paper-based record keeping and provide a broad-based and cohesive foundation to understand agency needs and priorities. The new systems are enabling cross-divisional cooperation and providing a means to modernize DCR's practices. These are in progress, and it is essential for them to maintain support and become fully activated as much of the agency's expected performance improvements rest on their successful implementation.

Continue to implement digital processes for efficiency and to further modernize the agency

Data management overhaul is a current DCR priority. DCR is harnessing digital technologies, and the advanced data analytics they enable, to support real improvements. Examples include:

- AMMP/CAMIS which has required significant upgrades in Geographic Information Systems (GIS), field equipment (e.g., tablets), and data analytics (e.g., Tableau) for DCR to show the condition of infrastructure by type and exact location.
- DCR quickly introduced changes to maintain communications and manage parks during the extended period of COVID.
- Enhanced public participation on monthly Stewardship Council through the use of Zoom meetings – noting that this is currently in place and its continuity is the decision of the Stewardship Council chair.
- A cumbersome paper system is being replaced by a digital process to expedite permitting.

The introduction of increased digitization should enhance DCR's productivity, customer satisfaction, and transparency.

Transfer of Parkways

Challenge: DCR's parkways have a documented need for significant safety improvements to reduce accidents and injuries, especially for cyclists and pedestrians, as well as improved accessibility for the disabled.¹¹⁶ Slow progress on these types of changes that require planning, funding, and project management to support significant changes in infrastructure as well as roadway maintenance issues have been cited by interviewees as contributing to the call for the Special Commission study on DCR. An evaluation of the maintenance, safety, and infrastructure needs of the Parkways and how they will be addressed should be included as part of the strategic plan.

Implement improvements to asset management practices and add capacity to accelerate and remedy issues identified in the Parkways Master Plan (released in June 2021)

- Supplement DCR management and funding resources (e.g., to manage contractors and fund work) to increase and/or expedite major projects. Strengthen DCR to plan, design, program, and build Hammond Pond Parkway-type projects (a test model for the Parkways Study).
- Linked to transparency, DCR should provide regular updates for completing the recommendations in the Parkways Master Plan and report publicly and annually on progress toward the plan's goals. On its release, the plan lays out that it will be backed by a budget of \$200 million and take 20 years to complete. In particular, the budget will need to be monitored to gauge the adequacy of the \$200 million to complete the work.
- The current Parkways Master Plan includes a caveat that it "is for planning purposes only and should not be used for final design of any project", indicating that there is work yet to be done in examining existing conditions before programming and construction can begin on the parkway projects. If the timelines for needed improvements are stretched and funding resources are thin, DCR should identify low-cost and quick-response safety improvements to implement in the short term as opposed to years or decades from now.
- DCR has indicated that there will be an update to the Parkways Master Plan in 2022 to include updated safety data (from MassDOT) and the addition of the parkways not included in the original plan (released in June 2021). Future parkway planning also needs to include (and

¹¹⁶ See Arborway Road Safety Audit, <https://www.mass.gov/doc/arborway-rsa-final-report-2019-0/download>

reflect) increased input from the public and abutters of the parkways regarding recommendations.

- Using the AMMP/CAMIS as a tool, incorporate asset management practices that cover the life cycle of the roadways (e.g., for monitoring current conditions of pavement and timing for major maintenance investments).
- Consider working with MassDOT to develop maintenance quality assurance guidelines concerning pavement, lighting, and debris clearance, while conforming to the unique characteristics of DCR's parkways.
- Improve or develop DCR systems to add responsiveness and transparency for minor parkway repairs (lighting, trees, potholes, drain blockage, etc.) to monitor completion of work (note that this also links to the tracking system recommendation under "Transparency").

Retain DCR's role in parkways and explore opportunities for partnership into the future to address safety concerns.

The public comment collection and interview process led by UMDI, showed that there was a nearly unanimous view among stakeholders and roadway infrastructure planning professionals¹¹⁷ that DCR's parkways should remain within the agency and not be transferred. UMDI research demonstrates progress at DCR in parkway stewardship, including progress towards building new curb ramps for ADA compliance and the introduction of the DCR Parkway Master Plan which serves to remedy DCR parkways by retrofitting the system to what it should be by providing more space to pedestrians and cyclists.

As emphasized by the comment, below, the parkways are integral to the park systems which they connect. In essence, the parkways are first and foremost parks.

"The parkways are not merely pieces of the Commonwealth's infrastructure; they are cultural and historic landmarks providing essential links within and between our great parks system. They are integrated into the communities connecting people to parks along a continuous greenway of natural beauty. You can't separate the parkways from the parks, they are the connection that holds it all together." – Public comment

¹¹⁷ Stakeholder focus groups and public comments supported retaining urban parkway stewardship within DCR. Transportation planning experts at MassDOT, in consulting, and within DCR further corroborated these findings.

With regard to maintenance, DCR is suited to take care of these unique parkway assets with a staff of arborists, planners, landscapers, interpreters, rangers, and cultural experts (e.g., archaeologists). Staff that care for the DCR parkways are also the same as those who maintain the actual parks, including mowing, trail maintenance, etc. If there is a transfer, there would be limited saving of resources as DCR is going to need staff to continue park maintenance.

Into the future, DCR and MassDOT should continue to collaborate on the topic of parkways as a means of improving safety outcomes, increasing access to funding, sharing resources and expertise, increasing access to real time transportation data, and expanding operational efficiencies for improved management and stewardship of the resources.

Asset Management

Challenge: DCR's deferred maintenance backlog is substantial. In order to get its arms around chipping away at the backlog, the agency needed to first know what it has and its condition. New systems being put into place, now, are providing a knowledge base as well as more organized processes to address condition and maintenance issues at DCR facilities.

Continue to embrace and develop AMMP/CAMIS as a tool to monitor needs and to enhance agency performance in the future

- DCR is already undertaking a number of initiatives that are expected to bring future benefits, notably in terms of asset management and transparency.
- The Asset Management Modernization Program/Capital Asset Management Information System (AMMP/CAMIS) is a “work in progress” that will generate more tangible outcomes in the years to come, if implemented successfully.
- On the management side, the AMMP/CAMIS and RMP changes have had the added benefit of increasing communications and coordination between DCR's Conservation and Resources Stewardship, Operations, Design and Engineering, and Policy, Public Affairs, and Administration areas.
- With regard to transparency/accountability, consider providing the public, Friends' Groups or even members of the Stewardship Council with regular quarterly updates on AMMP/CAMIS, notably given that direct access to this system may not be possible. Recommend plans to make

status, prioritization, and next steps with both AMMP and RMPs accessible and online. This could include an online visual tool or map to show where investments have been made or are planning to be made.

Stewardship Council

Challenges: The role and specific authorities of DCR's Stewardship Council and the benefits it provides, both internally within DCR and to external stakeholders, needs to be clarified. While the Council does have a defined role, legislatively, it is not being used that way. With greater clarity, the Stewardship Council can be an asset in oversight and vision for DCR as well as being an independent voice for DCR activities, advocating for projects, supporting stakeholders who need greater engagement, and providing a public forum for the agency. Through these activities, the Stewardship Council can also increase the transparency of the agency. Ultimately, a stronger Stewardship Council can provide oversight, public outreach, and guidance that can work in tandem with DCR for a stronger agency.

Formalize the Stewardship Council's role and responsibilities as a governing body for DCR

- **Revised enabling legislation.** Support the recommendations of the Policy and Operational Committee on the changes to the enabling legislation. The draft enabling legislation updates and clarifies roles, terms, and responsibilities, eliminating some items, like appointing an active commissioner—a job that does not make sense for the council as they already have no authority to appoint senior-level staff, including the commissioner, at DCR.
- **DCR vision and strategic plan.** A strategic plan would more clearly define how the annual priorities are set at DCR and improve transparency at the agency. The Stewardship Council can press DCR in establishing a vision and strategic plan with which the Stewardship Council can oversee, advise, and track progress at the agency.
- **Review of DCR budget.** Establish a clear process for Stewardship Council involvement in DCR budget setting, review, and approval, starting at the earliest stage possible. This is already a clear authority included in the existing enabling legislation. The Council can do more to support DCR budget priorities if involved earlier in the process. In combination with a strategic plan and a clear set of priorities, the Stewardship Council can more effectively garner constituent support for DCR.

The Stewardship Council chair should consider separate times other than monthly meetings for Stewardship Council subcommittees (Finance, Stakeholders, and Policy & Operations) to convene.

Presently, subcommittees have 20 to 30 minutes of time to discuss issues and strategies at the monthly Stewardship Council meetings. The current system only allows for limited time for substantive discussion. The subcommittee structure has introduced greater focus for the Stewardship Council and additional meeting time would allow the council to provide more constructive feedback concerning DCR's internal operations and external relations. Additional meetings between members of Stewardship Council subcommittee members would need to conform to Massachusetts public meeting laws and it would also need to be recognized that this could cause stress on the Council's volunteer model in terms of time commitments.

Appendix A: Methodology and Data Sources

The UMass Donahue Institute analyzed the activities of DCR by topic area and constituents using the following processes and methods.

Organizational Structure and Responsibilities: During the spring of 2020, UMDI began a process of background research on DCR's organizational structure, budget, and work portfolio. In the summer of 2020, UMDI began meeting regularly with Massachusetts Executive Office of Energy and Environmental Affairs (EEA) and requested information on DCR's structure and division responsibilities. UMDI was provided with several reports detailing agency finances, operations, policies, and action plans, in addition to an organizational chart (See Figure 1) and was directed to the DCR webpage for information on key division responsibilities. UMDI met with DCR members of the Asset Management Modernization Program (AMMP) team to learn about the Capital Asset Management Information System (CAMIS), and UMDI was granted access to the data set. EEA coordinated meetings for UMDI to conduct initial rounds of interviews with department heads and commissioners of DCR beginning in September of 2020. EEA staff members attended interviews to provide follow-up and support materials as needed by the research team. The UMDI research team asked interviewees a series of questions in an interview protocol which covered a wide range of topics including the challenges facing DCR, the agency's recent strengths and successes, strategic planning, budget and staffing, communications, Resource Management Plan (RMP) and asset management practices, urban parkways, Friends' Groups and partnerships, and the role of the Stewardship Council. UMDI conducted 24 interviews with DCR commissioners, directors and others in leadership from September through December of 2020.

Stewardship Council: Starting in September of 2020, UMDI staff observed monthly Stewardship Council meetings. In December of 2020, UMDI requested interviews with all members of the Stewardship Council, and conducted nine confidential interviews in January of 2021. The research team also gathered input on DCR's perceived strengths and challenges, and recommendations through two focus groups with Stewardship Council members (February 2021). Previous Stewardship Council Oversight reports, meeting minutes, the original enabling legislation, and proposed changes to the council's role and responsibilities by current stewardship council members were reviewed.

Parkways: During the fall of 2020, UMDI began researching the history and status of DCR's parkways, including a review of the history of parkways in Massachusetts, reports on previous transfers, summaries

from previous DCR hearings on parkways and transfers, and available EEA reports. UMDI also reviewed comments on the feasibility of transfer made during interviews with DCR staff, DOT staff, legislators, DCR union representatives and former DCR staff. Past and recent media coverage on parkway transfer issues, written comments and articles by advocates and legislators, and public comments were reviewed to develop an understanding of the varying perspectives regarding the potential transfer of parkways or parkway responsibilities. The research team reviewed the “DCR Parkway Master Plan” when it was released in June of 2021.

Commissioners, Friends’ Groups and Stakeholders: Once Commission members were appointed, UMDI conducted confidential interviews with all members who had not already been interviewed (nine) from March through May of 2021. EEA assisted in scheduling interviews with legislative Commission members, and UMDI contacted the remaining members for interviews. Interview and focus group protocols were shared with EEA for review. UMDI gathered input on DCR’s perceived strengths and challenges, and recommendations, through individual interviews with Special Commission, two focus groups with Stewardship Council members (February 2021), three formal stakeholder meetings. Two were held with Friends groups in May and June, 2021 with 17 attendees each. Friends’ Groups were invited to participate from a list provided by EEA in March of 2021, as well as through suggestions solicited through Commission members, and a review of the DCR Friends groups who had signed on to letters to the Commission, and online. UMDI also contacted union representatives, at the recommendation of EEA, for participation in a stakeholder meeting. Four individuals attended representing the three DCR employee unions; and each submitted written comments (June 2021).

Public Comments: UMDI held a public listening session in May of 2021, which was attended by 103 individuals, during which 33 individuals offered public comment. A public comment period in May and June 2021 yielded more than 400 email and letters for the Special Commission’s consideration. A recording of the public listening session and copies of representative emails were provided to EEA to share with Commission Members.

Capital and Operating Budgets: Twelve years of capital and operating budget data and information on DCR for the years 2009 through 2020 were provided by DCR and were found online. Data expressing dollar values were provided in nominal dollars and have been adjusted for inflation using the United States Bureau of Labor Statistics’ (BLS) Consumer Price Index (CPI) for urban consumers of all items. Inflation adjustment is useful for comparing change in dollars across time while controlling for the effects of inflation.

All qualitative data gathered through interviews, focus groups, stakeholder meetings and public comments were aggregated and coded by theme relative to the topics areas of the study (i.e., DCR structure and responsibilities, Stewardship Council roles and responsibilities, decision-making, communication and transparency; parkways, condition of assets and properties, staffing, budget and funding, and engagement with friends groups, stakeholders and the public). The overall findings and recommendations identified in this study result from triangulating the summaries of emergent themes and recommendations from this analysis, with our analysis of the budgetary data and reports.

Appendix B: Overview of Public Comments Concerning DCR

Public Comment Timeline and Response Overview

May 18, 2021: Stakeholder Session I

- 17 attendees

May 25, 2021: Public Listening Session

- 102 attendees
- 33 comments

June 1, 2021: Stakeholder Session II

- 17 attendees

June 7, 2021: Union Stakeholder Session

- 4 attendees

Timeline for Public Comments via Email extended to June 21, 2021

- 388 emails received

DCR Union Stakeholder Session Themes

- Organizational Chart for internal staff needed
- Number of people on the ground has dropped making it “impossible to keep up”
- Loss of institutional knowledge with “graying workforce” and continued use of seasonal employees
- Opposed to transfer of parkways.
- Volunteers: Proceed with caution. Should not be completing employee “work”

Recommendations

- DCR needs a long-term vision and planning for what it takes to run the agency, including appropriate staffing and appropriate capital and operating budgets.
- Convert long-term seasonal employees to full time
- Lack of adequate funding impacts the ability to adequately maintain assets/ programs
- Increase in capital budget to do projects

Spring 2021 Public Listening Session Themes

- **Transparency**
 - Retained revenue sources, use of facilities, vendors, policies around closures, decision-making, responsibilities
- **Management**
 - Need for long-term planning and adequate funding. Concerns re: RMPs not funded. Invest in AMMP.
- **Return on Investment**
 - Increase investment and funding for DCR.
 - Important for tourism, public health, climate change. DCR needs more resources.
 - Determine the resources needed for DCR to fully carry out its mission.
- **Budget**
 - Long-standing lack of adequate funding.
- **Friends and partnerships** can support management of assets.
- **Transfer**
 - All comments opposed to transfer of parkways.
- **Commission Process**
 - More time, desire for more public input, more engagement from staff at multiple levels of DCR, from multiple regions

Friends' Groups Stakeholder Meeting Themes

- Lack of understanding of DCR organizational structure, decision-making, clear lines of authority or alignment between authority, responsibility, and accountability, priorities.
- Desire for more communication and engagement with public, Friends' Groups
- Use of volunteers should not discourage adequate funding of DCR
- Perception that DCR lacks time and resources to support Friends' Groups' projects, opportunities missed to leverage funds and resources
- RMPs status and plans should be posted online with a public tracking system; and implementation of RMPs requires resources.
- Concerns regarding parkway safety. Could MassDOT lead redesign without transfer?

Suggestions:

- Create vision for DCR's role in the 21st Century - assets, climate change, let go of what falls outside the agency's mission

Public Comments via E-Mail

- **Use of Parks During COVID Underscores DCR Importance**
 - COVID brought people to the parks and made them realize the benefits they offer
- **Budget**
 - Consensus amongst public commenters that DCR is underfunded and overburdened
- **Operational Visibility of Underfunding**
 - Lack of staffing, lagged maintenance, lack of enforcement of park rules
- **Conservation Concerns**
 - Invasive plants are taking over many of our woodlands; Concern that DCR is prioritizing recreation over conservation
- **Parkways**
 - Parkway safety for cyclists and pedestrians was a common subject (over 230 form letters)
 - Emphasis on preserving parkways as green spaces and not as highways
- **Transparency**
 - Frustration regarding DCR's delay in releasing the 2015 parkways study (since released)
 - Advocacy for more public hearings in project planning
 - Frustration over difficulty contacting DCR with requests and receiving feedback

Appendix C: List of Acronyms

American Disabilities Act: ADA

Asset Management Modernization Program: AMMP

Capital Asset Management Information System: CAMIS

Department of Conservation and Recreation: DCR

Massachusetts Department of Transportation: MassDOT

Massachusetts Executive Office of Energy and Environmental Affairs: EOEa

Resource Management Plan: RMP

University of Massachusetts Donahue Institute: UMDI

Appendix D: Bibliography

- Chapter 21: Department of Environmental Management. (2021). Retrieved from The General Court of the Commonwealth of Massachusetts:
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter21>
- Commonwealth of Massachusetts; Executive Office of Environmental Affairs; Department of Environmental Management. (2002). *Memorial Drive Historic Parkway Rehabilitation*.
- Commonwealth of Massachusetts; Executive Office of Environmental Affairs; Department of Environmental Management. (n.d.). *Memorial Drive H*.
- Chapter 21: DEPARTMENT OF ENVIRONMENTAL MANAGEMENT. (2021). Retrieved from The General Court of the Commonwealth of Massachusetts:
<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter21>
- Commonwealth of Massachusetts; Executive Office of Environmental Affairs; Department of Environmental Management. (2002). *Mount Greylock Historic Parkways Rehabilitation- Re-Create the Legacy*.
- Commonwealth of Massachusetts Office of the State Auditor. (Issued June 14, 2018). *Official Audit Report*.
- Council, D. S. (2021). *Resource Management Plan*.
- Council, S. (2020). *Community Relations Year end 2019*.
- Council, S. (2020). *Finance Introduction*.
- Council, S. (2021). *Finance: Retained Revenue*.
- CR. (2017). *Revere Beach Parkway Transfer to MassDOT*.
- Crockford, J., & Salas, S. (2009). Keep Scenic Parkways, Bridges Under DCR Control. *Boston Globe*.
- DCR. (2010). *Status Update Report - Recommendations for 2010 Parkway Study*.
- DCR. (2012). *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines*.
- DCR. (2012). *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines*.
- DCR. (2015). *Scope of Study for Conditional Assessment and Improvement Analysis of DCR Parkways Located in the Metropolitan Region*.
- DCR. (2016). *Construction Contract Expenditures*.
- DCR. (2016). *DCR Construction Contract Expenditures*.
- DCR. (2018). *2018 Inventory of 1431 Dams Regulated by DCR Office of Dam Safety*.
- DCR. (2018). *2018 Inventory of 1524 Dams Not Regulated by DCR Office of Dam Safety*.
- DCR. (2018). *Blue Hills State Reservation White-Tailed Deer Management Plan*.
- DCR. (2018). *Blue Hills State Reservation White-Tailed Deer Management Plan*.

DCR. (2018-2020). *Stewardship Council Oversight Strategy*.

DCR. (2019). *AMMP Master Asset List* .

DCR. (2019). *Asset Management Modernization Program (AMMP) Update*.

DCR. (2019). *Blue Hills State Reservation White-Tailed Deer Management Plan*.

DCR. (2019). *DCR Friends Group List*.

DCR. (2019). *FY19 State Budget*.

DCR. (2019). *Stormwater Management Program*.

DCR. (2020). *Blue Hills State Reservation Deer Management Plan*.

DCR. (2020). *Bureau of Forest Fire Control and Forestry*.

DCR. (2020). *CAMIS Activation and Data Collection Status*.

DCR. (2020). *DCR Parkways Master Plan*.

DCR. (2020). *DCR Structure, Responsibilities and Assets*.

DCR. (2020). *Division of Water Supply Protection Office of Watershed Management Fiscal Year 2020 Final Report*.

DCR. (2020). *Expenditures from Retained Revenue account in Addition to Parks & Stewardship*.

DCR. (2020). *Finance- Operating Funding, Greening the Gateway Cities, Payroll, Annual Supply Cost*.

DCR. (2020). *FY20 State Budget*.

DCR. (2020). *Parkways*.

DCR. (2020). *Permit Collected Revenue Fiscal 2020*.

DCR. (2020). *Special Commission Building Improvement Equipment Report*.

DCR. (2021). *A New Approach to Resource Management Plans*.

DCR. (2021). *Asset Management Modernization Program (AMMP) News* .

DCR. (2021). *DCR Historical Capital CIP vs Actual FY15-20*.

DCR. (2021). *DCR Historical Operating Budget GAA FY09-20*.

DCR. (2021). *DCR Organizational Chart*.

DCR. (2021). *DCR Work Tasks - All Status*.

DCR. (2021). *Division of Water Supply Protection Office of Watershed Management Fiscal Year 2021 Work Plan*.

DCR. (2021). *Finance Introduction with Stewardship Council* .

DCR. (2021). *Friends Network Registration List*.

DCR. (2021). *Full-Time Employee Historical Data*.

DCR. (2021). *FY21 Asset Management Modernization Progress Report*.

DCR. (2021). *Listing of Leases*.

DCR. (2021). *MA Worcester ALB Cooperative Agreement Work plan/ Financial Plan-Worcester County Asian Longhorned Beetle Eradication Program*.

DCR. (2021). *Retained Revenue Historical FY09-20 Analysis*.

DCR. (2021). *RMP Program Update*.

DCR. (2021). *The Weekend Ahead: August 14th – August 16th*.

DCR. (2021). *The Weekend Ahead: August 21st – August 23rd*.

DCR. (2021). *The Weekend Ahead: August 28th – August 30th*.

DCR. (2021). *The Weekend in Review: September 4th – September 7th*.

(2019). *DCR and MassDOT Memorandum of Understanding, Charles River Dam Road*.

DCR Snow Removal Responsibilities and Priorities. (2021). Retrieved from <https://mass-eoea.maps.arcgis.com/>: <https://mass-eoea.maps.arcgis.com/apps/SimpleViewer/index.html?appid=7095a112850d4418b700c1888e05e5a5>

DCR Stewardship Council. (2021). *Asset Management Modernization Program (AMMP) Status Report*.

Department of Conservation & Recreation (DCR). (n.d.). Retrieved from Mass.gov: <https://www.mass.gov/orgs/departments-of-conservation-and-recreation>

Department of Conservation & Recreation (DCR). (2021). Retrieved from Mass.gov: [mass.gov/orgs/departments-of-conservation-and-recreation](https://www.mass.gov/orgs/departments-of-conservation-and-recreation)

(2019,2020,2021). *Department of Conservation and Recreation Stewardship Council Meeting Meeting Minutes (Monthly)*.

Department of Transportation; Department of Conservation and Recreation. (2011). *Parkway Study*.

Executive Office of Energy and Environmental Affairs (EEA) COVID-19 Guidance Documents. (2021). Retrieved from Executive Office of Energy and Environmental Affairs: <https://www.mass.gov/info-details/executive-office-of-energy-and-environmental-affairs-eea-covid-19-guidance-documents#youth-and-adult-amateur-sports-activities>

Executive Office of Environmental Affairs. (2002). *Historic Parkways of Massachusetts*.

(2021). *Friends of DCR Memorandum, Memorandum of Agreement By and Between the Commonwealth of Massachusetts Department Of Conservation and Recreation and Friends Group for Use of DCR Property*.

Friends of the Boston Harbor Islands. (2019). *Forty years of public service on land and sea*.

Gildesgame, M., McCaffrey, J., Goodman, N., Ryan, J., & Ryan, M. (2009). *Transportation Reform – Department of Conservation and Recreation Parkways and Bridges Transfer*.

Harvard Kennedy School John F. Kennedy School of Government. (2014). *MA Department of Conservation and Recreation Parking Revenue Generation*.

<https://www.mass.gov/>. (n.d.). Retrieved from Executive Office of Energy and Environmental Affairs (EEA) COVID-19 Guidance Documents: <https://www.mass.gov/info-details/executive-office-of-energy-and-environmental-affairs-eea-covid-19-guidance-documents#youth-and-adult-amateur-sports-activities>

- Hudson, H. S. (2019). *Road Safety Audit—Arborway – West of South Street to Eliot Street, City of Boston*.
- Karl F, Seidman Consulting Services, Urban Focus LLC. (2016). *Massachusetts State Piers: A Business and Operations Assessment*.
- LLB Architects, MassDevelopment. (2019). *New Bedford State Pier*.
- MA Dep. of Conservation and Recreation Stewardship Map. (2021). Retrieved from <https://mass-eoea.maps.arcgis.com/>.
- MassWildLife. (2017). *Outdoor Industry Association's 2017 Outdoor Recreation Economy Report*.
- Montgomery, J. (2020). *Senate Committee on Ways and Means and House Committee on Ways and Means FY20 Asset Management Modernization Program Progress Report*.
- Montgomery, J. (2020). *DCR Staffing Level Report*.
- Montgomery, J. (2020). Organizational announcements.
- Mount Auburn Associates and Yellow Wood Associates. (2006). *Parks and Beaches: Common Cents for the Common Wealth*.
- Orrall, N. J. (2016). *Deferred Maintenance Assessment*.
- Recreation, M. D. (2012). *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines*.
- Should state parks be funded with user fees or tax dollars?* (2021). Retrieved from CommonWealth Magazine: <https://commonwealthmagazine.org/state-government/should-state-parks-be-funded-with-user-fees-or-tax-dollars/>
- (2020). *Stewardship Council's Enabling Legislation*.
- Taber, D. (2009). JP delegation moves to protect parkways. *Jamaica Plain Gazette*.
- The Trust for Public Land. (2013). *The Return on Investment in Parks and Open Space in Massachusetts*.
- U.S. Forest Service and State Forestry. (2011). *Statewide Forest Resource Assessments and Strategies in the Northeast and Midwest: A Regional Summary*.