



Discovery Museum Sustainability Plan

**First Annual Report
July 2022**



Plan History

- Plan development began Fall 2020
- Plan adopted by Board June 2021
- Staff Sustainability Team created September 2021
- Monthly meetings
- First report on progress July 2022



Approach

- Establish baselines of our environmental impact
- Develop concrete goals and actions
- Be transparent
- Be flexible
- Establish a learning environment within a sustainable framework



Accountability

- Review with Board and Staff
- Create a Sustainability Advisory Group to conduct an annual review
- Report on progress and recommendations for improvements/changes and post to website



Plan Goals

- Reduce greenhouse gas emissions to net zero by 2024
- Reduce consumption and waste generation
- Reduce water usage
- Educate and communicate our intentions and actions to the public
- Prioritize sustainability in portfolio analyses and decision-making



Strategies

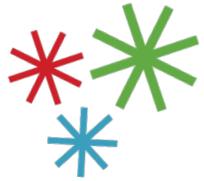
1. Install a 338kW DC solar canopy that will meet 100% of the Museum's electricity needs
 - ✓ **STATUS: Project construction completed at 327kW DC. Awaiting energizing. Will eliminate ~271 tons of CO₂ emissions.**



Aerial view of the installation



Explanatory panel mounted inside and outside Museum entrance



Strategies

2. Demolish the 183 Main Street office building

✓ **STATUS: Completed. Gas fired heating system taken offline. Eliminated ~70 tons of CO₂ emissions.**





Strategies

3. Replace the oil burning furnace in the former Children's Discovery Museum with an electric heat pump.
 - ✓ **STATUS: On hold awaiting plan for larger renovation of the building. Added elimination of gas-fired hot water in Museum building to the Action Plan.**
4. Sell solar electricity through a community solar partner
 - ✓ **STATUS: 4 of 5 partners identified. "Sales" will start when system is energized. (This carbon reduction was not part of the original inventory.)**
5. Mitigate carbon emission through visitor-supported carbon offset purchases
 - ✓ **STATUS: Member carbon offset program began 6/1, new or renewed members have a \$1 offset per year added, opt out is possible. Project supported is methane reduction at a landfill. Certification through Carbon Credit Capital. If the member program goes well, we will add visitors.**



Strategies

6. Explore the feasibility of purchasing or leasing electric vehicles for use by Traveling Science Workshops (TSW) instructors
 - ✓ **STATUS: TSW teacher carbon offset program began 6/1, same as for members. Fully paid by Museum for the next year of projected miles.**
7. Promote the use of public transportation to the Museum
 - ✓ **STATUS: Adding a bike rack, otherwise this is a complex goal. Will look at possibility of a discount approach for use of alternative transit**
8. Accommodate staff telework when possible
 - ✓ **STATUS: Remote work policy finalized and began 5/15.**



EV charging station free for staff



Strategies

9. Consider virtual delivery of lectures and events
 - ✓ **STATUS: Speaker Series 2023 will be 3-4 all virtual, 2 hybrid. Also investigating how technology can support hybrid meetings.**

10. Decrease waste generation from special events
 - ✓ **STATUS: Reusable plates, silverware, glasses, etc. purchased and in use. Need to build storage. Developing an approach to composting.**

11. Use environmentally friendly trash bags for 100% of the Museum's trash
 - ✓ **STATUS: Proving difficult to find a solution. Research ongoing.**

12. Eliminate single-use plastic water bottles
 - ✓ **STATUS: Plastic bottles no longer sold or in use. Indoor water-bottle fillers in operation. Researching best outdoor option to add bubbler/bottle refiller.**



Strategies

13. Conduct a waste audit for educational and outreach programs and exhibit operations and develop strategies to reduce waste generation

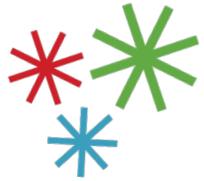
- ✓ **STATUS: Waste audit of various spaces completed but not the whole Museum. Indicated need to work on recycling. Staff have added containers that make recycling clearer. Educational signage being developed. Composting started. Researching replacing bathroom paper towels with hand dryers.**





Strategies

14. Conduct a sustainability audit of materials and supplies and explore options for purchasing more sustainably sourced products
 - ✓ **STATUS: Staff made comprehensive list of all materials and supplies for operations that we purchase and are selecting and changing to alternatives. Retail shop seeking industry standards for product packaging.**
15. Develop water use reduction goals
 - ✓ **STATUS: Not pursuing this goal this year as new landscaping will require extensive watering to establish new plants.**
16. Capture storm water and redirect it for groundwater recharge
 - ✓ **STATUS: Awaiting the data on stormwater impact of new site design from civil engineer. Very clear design goal of infiltration.**
17. Replace outdoor paved areas with pervious pavement
 - ✓ **STATUS: Replaced 2900 sq. ft. of impervious play area with 2900 sq.ft. of pervious pavers.**



Strategies

18. Enhance the Museum's nature, outdoor, and environmental education programs to inspire kids to take action on behalf of the environment





Strategies

19. Continue partnering with the Town of Acton to encourage access to the neighboring Great Hill conservation land via a trailhead on the Museum property
20. Develop partnerships with environmental organizations to provide additional educational opportunities and offer concrete ways for visitors to take action to promote sustainability
 - ✓ **STATUS on strategies 18-20: Hired new full-time Director of Outdoor and Environmental Education. Environmental and Outdoor Programs follow three deeply interconnected paths: getting more families playing together outside, helping youth and families practice advocacy skills, and helping them learn about the natural world, the threats it faces, and how to engage with those challenges. Our programs provide a spectrum of outdoor activities for families that are not familiar or confident playing outdoors to families that are comfortable taking hikes with their kids. We also engage families in age-appropriate civic skills such as articulating why a certain species is important, telling friends and families about what they have learned, or talking to a school leader about an environmental issue. We also help to provide the necessary knowledge that youth and families will need to take appropriate civic action on behalf of the natural world.**



Strategies

21. Continue to foster dialogue and discussion on environmental issues through the Discovery Museum Speaker Series and other means, particularly with older kids and adults

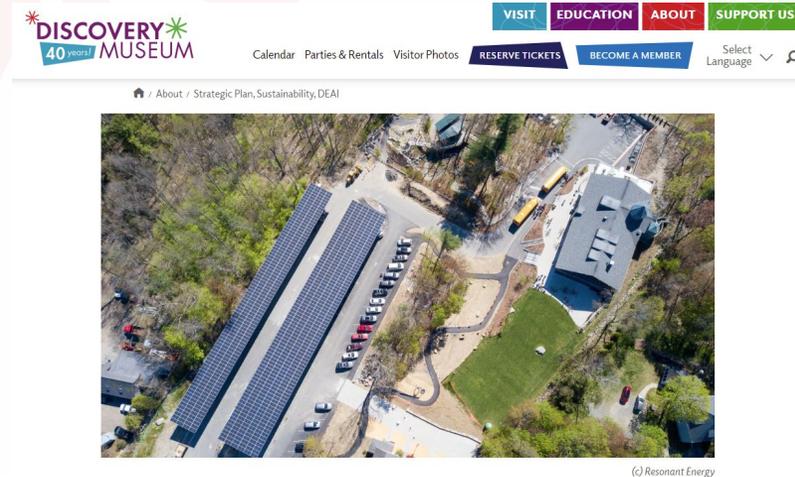
- ✓ **STATUS:** Offered two speaker series events in 2021-22 on sustainability and climate: *Youth Voices in Climate Change* with Varshini Prakash, founder of the Sunrise Movement, and *Helping Kids Understand Climate Change and How to Make a Difference* with children's book authors Stacy Clark and Christy Mihaly.





Strategies

22. Publicly report sustainability goals and progress and use our practices as examples for others
 - ✓ **STATUS: Formed Sustainability Review Advisory group to review and comment on progress.**
23. Create a page on our website dedicated to the Museum's sustainability efforts, including updates to this Sustainability Plan
 - ✓ **STATUS: [Page](#) added to museum website which incorporates the strategic plan and DEAI framework and will integrate reporting on all.**



Sustainability





Strategies

24. Include our sustainable practices in exhibits, programs, and other educational opportunities in order to model ways to better steward the environment
- ✓ **STATUS:** Incremental changes have taken place in programs regarding decreasing use of disposable materials. Photovoltaics exhibit and renewable energy activity worked well in prototype and are in discussion for how to turn them into permanent/semi-permanent exhibits. Also, real-time display of solar productivity in the works. School orientation on “sun is energy, gives us energy” is being worked on and possibly turned into a Discovery in Depth.

Prototype exhibit on how solar panels work





Strategies

Prototype exhibit on powering a town with renewable energy





Strategies

25. Advocate for our values as they pertain to sustainability

- ✓ **STATUS: Published articles on sustainability planning in all 3 major museum association publications. Received recognition from America is All In for carbon offset initiative. We signed the [We Are Still In](#) (WASI) pledge and joined the [America Is All In](#) coalition to declare our support for climate action to meet the Paris Agreement; supported the Town of Acton in formally declaring a climate emergency; and became a member of the [Acton Climate Coalition](#). We are participating in the *Culture over Carbon* initiative, a groundbreaking research project led by the New England Museum Association (NEMA) with funding from an Institute for Museum and Library Service (IMLS) National Leadership grant. Project leaders are examining data from museums, zoos, aquariums, gardens, and historic sites across the United States to establish an energy carbon footprint for the museum sector and create “roadmaps” to help these institutions use energy more efficiently. We are participating in an additional IMLS grant-funded collaboration called *Caretakers of Wonder*, which will lead to a new climate and resilience educational framework for children birth to age 8, with training for museum professionals to create culturally relevant climate change strategies, messaging, programs, and exhibits for young children and their caregivers.**



Strategies

26. Create a Museum investment policy that maximizes investments in environmentally sustainable entities
- ✓ **STATUS: New investment policy approved this year; starting to look at who the right investment partner should be for environmentally sustainable investments; on the agenda**



Appendices

- Carbon offset program for members
- Carbon Credit Capital Carbon Accounting Report
- America is All In
- Articles about our plan

New! Carbon Offset Membership Program

We are proud to announce continued steps in Discovery Museum’s journey toward carbon neutrality. Along with our conversion to 100% site-generated solar electricity and reductions in water usage and waste generation, we are launching a first-of-its-kind program to offset the impact to our climate of travel to and from the Museum by members, staff, and volunteers.

Our new Carbon Offset Membership Program will fund the purchase of carbon offsets to mitigate members’ travel to and from the Museum. Discovery Museum will make an additional purchase to offset the impact of our staff and volunteer travel to and from the Museum, and other business travel.

Beginning June 2022, new and renewed membership sales will incorporate a \$1 per year offset fee (with opt-out) that will raise funds for Discovery Museum to purchase carbon offsets for a selected carbon mitigation project.

We are proud that this work is a first among children’s museums in the country, and we are proud to lead the way in what our industry can do to fight climate change.

We appreciate the support of our members as we partner together to move ahead on a path to a more sustainable future!

Frequently Asked Questions

What is a “carbon offset”?	A carbon offset is a reduction in greenhouse gas emissions to compensate for emissions made somewhere else.
What are carbon emissions?	Carbon emissions refer specifically to carbon dioxide, or CO ₂ , which is one of a number of greenhouse gasses (nitrogen, methane, water vapor are others). Carbon emissions occur naturally in nature (breath in oxygen, breathe out CO ₂) and nature keeps things generally in balance.
Why are we concerned about carbon emissions?	Unlike nature, human activity does not keep things in balance. We release extra carbon and other greenhouse gasses into the atmosphere through fossil fuel extraction, refining, transport, and burning; agriculture and livestock; and cooling systems such as air conditioners and refrigeration. We also cut down CO ₂ -absorbing trees. Overall we create an imbalance, with excess carbon emissions in our atmosphere.
And excess carbon emissions are a problem why?	CO ₂ is one of the greenhouse gasses that absorbs radiation and prevents heat from escaping our atmosphere. This excess heat creates disrupted weather patterns, higher global temperature averages, and other climate changes.
What is a “carbon footprint”?	A carbon footprint is the total greenhouse gas emissions caused directly and indirectly by an individual, organization, event, product, or service.
What is a carbon offset project?	A carbon offset project pulls greenhouse gases out of the atmosphere OR prevents emissions from being released.



What carbon offset project will the Discovery Museum fund?	Discovery Museum will fund the Hernando County Landfill Electric Generation Project, in Florida, which collects landfill gas and turns it into electricity instead of releasing it into the atmosphere.
Why is a carbon offset in Florida good for us in MA?	The key concept is that an offset has a net climate benefit. Because greenhouse gasses mix globally in the atmosphere, it does not matter exactly where they are reduced.
What else goes into my family's overall my carbon footprint besides our visits to the Museum?	To calculate your full carbon footprint you would look at household electricity and heating, diet, waste, transportation (commute and travel), and shopping. The average carbon footprint for a person in the United States is 16 metric tons, one of the highest rates in the world. Globally, the average carbon footprint is closer to 4 metric tons. Try out an online carbon calculator such as this free one at Carbon Footprint https://www.carbonfootprint.com/calculator.aspx .
How were my trip emissions calculated?	We calculated the average of the total number of miles our member families traveled to and from the Museum in 2019. Then, our partner Carbon Credit Capital used the Greenhouse Gas Protocol (www.ghgprotocol.org) and other related carbon emissions calculation standards to estimate the amount of carbon emissions from that travel and the associated cost to purchase carbon offsets to mitigate those emissions. The \$1 annual offset fee is applied to all memberships.
What if I don't want to pay the extra \$1 fee on my year-long membership?	You can opt out of the \$1 fee when purchasing your membership. If purchasing online, enter the promo code GREEN. If purchasing in the Museum or by phone, just inform the staff member that is helping you.
How can I learn more about the Museum's Sustainability Plan?	Our 5-year plan towards carbon neutrality is available online on our website here https://www.discoveryacton.org/about/strategic-plan-sustainability-and-deai

We are excited to have the support of our membership to offset the carbon impact of visits to the Museum, and to do our part to offset the impact of our staff and volunteer travel. Thank you for your support of this important initiative for our community and our world.

If you have any questions or comments, please contact CEO Neil Gordon at ngordon@discoveryacton.org.

June 2022



Date: March 2022
From Carbon Credit Capital Team

Re: Independent Research and Carbon Accounting Report

To Discovery Museum (“the museum”),

Upon request, Carbon Credit Capital (CCC) has completed a report targeting the carbon footprint of Discovery Museum’s members’ trips to visit the museum, which is included in the accompanying Appendix A of this report. CCC used the data provided by the museum to estimate the average carbon emission of their members’ trips.

CCC followed the GHG Protocol and other related carbon emissions calculation standards to perform the carbon emission estimate. CCC relied on data provided by the museum as the sole primary data input, and has conducted its carbon accounting in good faith that the museum has submitted valid information.

GHG quantification is subject to inherent uncertainty due to variables like emission factors used in mathematical models to calculate emissions. Due to incomplete scientific knowledge, or availability of knowledge, the selection of different but acceptable measurement techniques and metrics could result in materially different reported results.

To avoid as many discrepancies as possible, secondary data is applied to the calculation when no primary data is available for the carbon emission calculations, as discussed in Appendix A. The secondary data used in CCC’s calculations are compiled from the US Environmental Protection Agency (EPA).

CCC takes great care to adhere to these quality control standards when performing original inventories. We believe our research provides a reasonable basis for our conclusions.

Appendix A

Estimates of product emission inventory and offsetting cost for:
Discovery Museum

General Information and Scope

Studied Products: Members' Trips Emissions

Type of Inventory: N/A

Reporting Period: February 1, 2021 to February 28, 2022

Inventory Date: March 28, 2022

Members Trips

Analyzed Data Provided by True Gem

- The average number of members: 3,257
- Total traveling mileage of all members' visits: 316,672.862
- Total number of all members' visits: 10,897
- The average mileage of each member's visit: 29.06

Assumptions:

- The type of vehicle used by members is small sport utility vehicle (SUV). A 2020 conventional gasoline SUV emitted an average of 420 grams of greenhouse gas (GHG) carbon dioxide equivalents per mile (g CO₂e/mi)

Calculation Results:

Unit: kgCO₂e	
Estimated Item	Result
The average visiting frequency of each member	3.345 times
Total annual average traveling mileage of each member	97.227 miles



Total annual carbon emissions of each member’s trips to the museum	40.835 kgCO ₂ e
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Total Emissions & Offset Costs

CCC’s Notes on the calculation results:

- CCC’s uses \$14 as the price per metric tonne of carbon dioxide equivalent

Metrics	Total Emissions	\$ Carbon Offset/product unit
Total annual carbon emissions of each member’s trips to the museum	0.0408 mtCO ₂ e	\$0.58
Total annual carbon emissions of all members’ trips to the museum	133.0000 mtCO ₂ e	\$1,876 (134 mt CO ₂ e)

Carbon Credit Capital provides a variety of projects to choose from. Each project is unique and has multiple social and economic benefits. To choose the right project for you, please contact pwang@carboncreditcapital.com.

Disclaimer: This document is based on the information available from various sources including but not limited to primary information and/or public sources. Due care has been taken in compilation of fact sheets from various sources. Carbon Credit Capital and any of its employees involved in preparation of this document has no financial liability whatsoever to the users of this document. Under no circumstances shall any of the information, results or recommendations provided herein be used as trading or investment advice of any kind other than related to emission offset credits associated with Carbon Credit Capital.

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Updates You Need to Know

Biden Invokes the Defense Production Act for Clean Energy.

Last week, President Biden invoked the Defense Production Act to boost solar energy and clean technology in the United States. This will authorize the Department of Energy to accelerate the production of key energy technologies such as solar, heat pumps, building insulation, materials used to make hydrogen fuel, and other critical components needed to update the nation's power grid. In a statement from Energy Secretary Jennifer Granholm, "President Biden has invoked the Defense Production Act so that the U.S. can take ownership of its clean energy independence. For too long the nation's clean energy supply chain has been over-reliant on foreign sources and adversarial nations." Read the Department of Energy's press release [here](#) to learn more.

NEW: Transportation and Benefits Paper Release!

On Tuesday, June 21, America Is All In will release new reports on the role states, cities, businesses, and civil society should play in making and promoting climate-smart transportation investments, and the benefits of doing so. Following the release of the reports and throughout the summer, we will be providing you with technical resources and information on how to act to take advantage of this historic funding opportunity. Please help us share the news! Visit www.americaisallin.com on June 21 and [sign up](#) for relevant *All In* communications to stay up to date on the latest news.

West Virginia v. EPA Decision

The Supreme Court's decision in [West Virginia v. Environmental Protection Agency \(WV v. EPA\)](#) is expected to be released sometime in June 2022. The *America is All in* team will send an action alert after the decision is out with information about the decision, suggested talking points, and a social media toolkit.

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Open Notice for Funding Opportunities

The federal government is starting to roll out billions of dollars in new competitive grants from the Bipartisan Infrastructure Law to states, cities, businesses, higher education institutions and non-profits! Applications for the following competitive grants are due this summer – take advantage of this opportunity to receive funding for your important climate, infrastructure, and transportation projects.

1. Weatherization Assistance Program

- Due date: July 1, 2022
- Eligible entities: States, Regional transportation planning organizations, Local governments, Tribal governments
- Climate-aligned eligible projects: Projects that prepare homes for retrofitting and the installation of clean energy technologies, projects that develop new methods and partnerships to shorten the timeframe for moving buildings and homeowners through the retrofit process, and workforce development initiatives

2. National Electric Vehicle Infrastructure Formula Program

- Due date: August 1, 2022 (for EV Infrastructure Deployment Plans)
- Eligible entities: States
- Climate-aligned eligible projects: EV charging infrastructure, especially on designated Alternative Fuel Corridors; upgrades to existing public charging stations; on-site renewable energy generation and storage that supports EV charging infrastructure; development and installation of charging infrastructure; data sharing about EV charging infrastructure; traffic control devices and on-premise signs to provide information about EV charging infrastructure; mapping and analysis activities

EPA's First Round of Clean School Bus Program Funding is Open

The Bipartisan Infrastructure Law created the Clean School Bus Program (CSBP), through which EPA can allocate \$5 billion over five years for cleaner school buses, including electric school buses. The CSBP's first round of funding is now open for applications, with \$500 million or more available in this round. Eligible applicants include: public school districts, public charter schools with an NCEES District ID, native nations, tribal organizations, tribally-controlled schools, nonprofit school transportation associations and certain types of eligible contractors (including school bus dealers and original equipment manufacturers). [WRI's Electric School Bus Initiative](#) points applicants to three key steps: 1) [Register](#) at SAM.gov, 2) [Plan out your application](#) with key stakeholders, and 3) [Apply with the EPA's online application](#) by August 19, 2022.

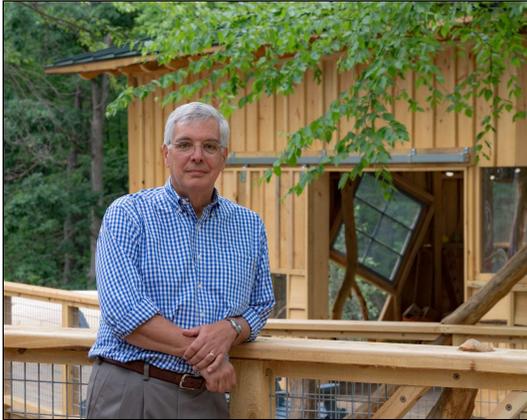
G7 Summit Business Advocacy Opportunity

[Complete this Google Form](#) to register your interest and receive more information from the We Mean Business Coalition about a Twitter storm ahead of the G7 Summit (June 26-28). Companies and business leaders will be invited to post a tweet the week prior to the summit with a message encouraging G7 Leaders and nations to set policies that will accelerate the clean energy transition. This will help show policymakers that the private

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policy asks.

In the Spotlight - *All In* Member Story



Neil Gordon, CEO of the [Discovery Museum in Acton, MA](#), is a leader in climate action of the cultural sector. In support of its [5-year sustainability plan](#) and path to carbon neutrality, the Discovery Museum became the inaugural participant of the [Environment & Culture Partners](#) and [Carbon Credit Capital-led Carbon Neutral Visiting Initiative](#) (CNVI), a program for museums to offset the greenhouse gasses emitted by staff and members driving to and from the museum.

Thank You for Reading

If you haven't done so already, please take our [All In Communications Survey](#) that will enable the All In communications team to better understand your communication preferences. The survey will also provide valuable information on how we can engage together in shared planning and activities. See you next month!

Want to change how you receive these emails?
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Seeing the Future and Taking Steps to Get There

Discovery Museum Acts on Its Commitment to Sustainability

Neil Gordon
Discovery Museum

Our actions—how we operate and what we model for the world around us—are as important and maybe even more so than what we strive to explicitly teach as a museum.

**W.E.B. Du Bois said,
“Children learn more from what you are than what you teach.”**

that embodies discovery learning and environmental stewardship.” Formal goals included becoming a “green” organization and encouraging others to take responsibility for the environment. Two years later, in 2009, a new Master Plan for Campus Expansion included a concept for building a new Environmental Discovery Museum featuring photovoltaic panels, a windmill, a composting area, and an aquifer recharge zone. Unfortunately, the 2008 recession forced the museum to focus almost exclusively on shoring up finances and building our audience. It was not until 2013 that the museum was in a place to contemplate a future campus renovation and initiate a capital campaign to fund it, this time with a focus on accessibility—by then, a pressing capital need and programmatic focus.

Over the last decade, our environmental work focused on the goal of connecting kids with nature, both to raise awareness and promote the physical and mental health benefits of outdoor play. In 2015, we hired our first Outdoor and Environmental Educator. The following year, we opened Discovery Woods, an award-winning, one-acre, fully accessible nature playscape and treehouse.

With a goal of encouraging “every kid, every day, outside to play,” we also deepened our Backyard and Beyond program series to offer a range of year-round outdoor experiences for children of all ages and levels of comfort with outdoor play. Coinciding with the opening of our expanded and renovated, accessible building in 2018, we also changed our longtime tagline, “Hands On, Minds at Play,” to “Science. Nature. Play.” This change reflected our programmatic evolution, elevating our message that getting kids outside is a first step to developing an appreciation for the natural world and a sense of responsible stewardship of its resources.

We have also taken steps to advocate publicly for these values, including signing the We Are Still In (WASI) pledge, a joint declaration of support for climate action, signed by more than 3,900 CEOs, mayors, governors, tribal leaders, college presidents, faith leaders, health care executives, and others; joining America Is All In, a coalition to develop a national climate strategy; supporting the Town of Acton in declaring a climate emergency; becoming a member of the Acton Climate Coalition; and presenting programs addressing environmental topics through our Discovery Museum Speaker Series.

Walking the Talk

We have increasingly wrestled with how to take concrete steps to be visibly and demonstrably sustainable in our own operations as a key strategy for inspiring the next generation of environmental stewards.

Our actions—how we operate and what we model for the world around us—are as

The news about climate change, the environment, and the state of our planet is frightening and discouraging. In the face of it all, how do we create hope? John Fraser, noted conservation psychologist, has stated that a focus on solutions and actions can reduce fear and increase hope. And hope, Fraser says, “is a targeted way of seeing the future and taking steps to get to that future.”

Children’s museums are all about hope for the future, but actions to fight climate change that are environmentally positive have not been a focus for many of them. I share the experience of the Discovery Museum in the hope that any insights it yields will help us all take more action and inspire our visitors to do the same.

Building on a Foundation of Environmental Focus

This year we are celebrating Discovery Museum’s fortieth year. Over the last decade, we have grown from two small museums into one large museum with pre-pandemic attendance over 200,000 and a \$2.7 million budget. The museum has a strong focus on science and nature, with 4.5 acres of accessible, outdoor exhibit space adjacent to 180 acres of town-owned, wooded trails that we program. Connecting kids and families with nature and operating sustainably have long been important goals for us.

Discovery Museum first articulated its commitment to environmental sustainability in 2007. Asserting that “we are keenly aware of the interrelationships of humans and the natural world and our obligations to be good stewards of that world,” the organization adopted a vision statement to become “a premier community museum

important and maybe even more so than what we strive to explicitly teach as a museum. W.E.B. Du Bois said, “Children learn more from what you are than what you teach.” The environment we create, and what kids and families take from that, is an influential tool. The goal is to motivate families to adopt more sustainable viewpoints and practices at home, and support environmentally sound public policy. We wanted to more visibly “walk the talk” as a critical element of our educational approach.

Recognizing this, we knew we needed a plan.

One of the first things we decided to do was look for advice and guidance. We had lots of questions about scope, level of detail, what kinds of goals we should have, and even how we should define “sustainability” for our organization. Luckily, we had some prior experience working with Sarah Sutton, who helps places like ours through her organization Environment & Culture Partners. She provided positive feedback on our goals, an invitation to join with other cultural institutions as part of We Are Still In, and some great links to useful resources.

One especially useful resource for us was the WASI list of commitments. Sarah noted that others had used this list as a framework for creating their own sustainability plans. A white paper from Museums Australia had a very similar list. Based on a review of these examples, it made sense for us to follow their approach.

Our framework was built around a set of “commitments”:

1. Commit to increased use of renewable power
2. Commit to understand and reduce

greenhouse gas emissions

3. Commit to reduce materials consumption and waste
4. Commit to reduce the impact of transportation
5. Commit to reduce water usage
6. Be publicly committed to sustainability
7. Commit to education and communication
8. Integrate climate change into portfolio analyses and decision making

The process for developing our plan was relatively simple and streamlined. Given our long commitment to environmental education, little discussion was needed about whether to formalize our goals and objectives. We moved straight to researching and producing a plan focused on action steps. Key to this was establishing the museum’s baseline environmental impact, which we did with the tremendous support of a skilled intern who self-described as a “sustainability geek.” With her help, we found answers to a range of questions. How much energy do we use, and in what ways? What level of greenhouse gas emissions do we produce? What does our water consumption look like? How many miles are we driving? How many deliveries do we get? How much waste do we generate? What are our cleaning supplies and the materials in our exhibits and programs made of? In what ways do we talk about the environment? And many more.

For some of these questions the data was readily available. Our utility company is very good about keeping track of our electricity, oil, and natural gas usage. Our water company was a bit trickier, as they do a poor job in regularly reading the meter. In

some areas, no real good data source existed. For example, the waste collector empties the dumpster on a regular schedule, whether it is full or half empty.

Turning Our Vision into Reality

There are a number of models that can estimate greenhouse gas emissions based on energy usage or miles driven; our goal was to find one that was relatively simple to use and easily available to us. The model used by our intern produced easy-to-understand visual representations of our greenhouse gas sources. This was useful for discussing our action steps with staff and the board, as it made the priorities much clearer.

One interesting data point stems from our being a suburban museum with effectively no public transportation option. Everyone (mostly) drives here, so we used visitor zip code data to come to a pretty good estimate of miles driven by our visitors. As it turns out, this is the single biggest source of greenhouse gas emissions for the museum, and as you would expect, not the easiest to address.

We recognized that our data collection efforts were not perfect, but we decided rather than devote lots of time and resources to get perfect data, we would create objectives for filling in the blanks later. Even though our measures of progress would be less than precise, we were moving forward.

Our analysis of this imperfect data became the platform for the development of concrete goals and actions, and what we hoped were reasonable timeframes for accomplishing them. We also committed early on to implementing our plan transparently

FINANCIALLY SOUND SOLAR

Once you decide that solar electricity is the right thing for your organization, the question quickly turns to: does it make financial sense? In the Discovery Museum’s case, we were pleasantly surprised by the financial sense that an investment in solar made.

We started with a very simple model in mind: we would fundraise for the cost of installation and use the annual electricity savings to support our environmental education programs. Thus, we would describe the investment in solar as an endowment of the programs. This idea made some sense pre-pandemic, but quickly looked silly in the face of needing to raise funds just to stay open. That led us to understand the economics in much more detail.

We quickly identified several companies that specialize in working with nonprofits on solar projects and chose to work with Resonant Energy, based in Boston. Resonant was able to show us a model of solar financing that involved “selling” the federal tax credits (obviously, we would not be able to use them directly), estimating our energy savings, selling excess

electricity to other nonprofits at a discount, and maximizing other incentives (in our case, solar incentives offered by the state of Massachusetts). The access to the federal credits is a bit complicated and you’ll want a lawyer for that work, but it results in a 12 to 15 percent “savings” right off the top. Resonant was able to show a 25-year financial model that accounts for decreased production over time (we were surprised to learn that panels wear out), operating costs such as maintenance, changes in electricity rates, and so forth. To support our analysis, we put together a Solar Task Force of board and non-board experts that reviewed the modeling and evaluated our options.

The Solar Task Force was able to recommend to our board that the museum finance this project. With low interest rates and a good bank, we put in place a loan that should be paid back in about eleven to twelve years. The projected cash flow is positive in year one, thus actually meeting one of our original goals to support programs using the sun!



To us, becoming more sustainable is about more than just leaving our children a planet with adequate resources. It is also about achieving greater harmony in the present between the environmental, economic, and social outcomes—both locally and globally—of our choices and actions. We are therefore committed to pursuing our sustainability objectives in ways that also promote equity.

and allowing for flexibility as we make progress and learn along the way.

The most visible part of the plan is our project, to be completed in mid-2022, to produce solar electricity onsite to meet 100 percent of our campus energy needs—and then some. The plan also outlines our approach to reducing greenhouse gas emissions and becoming carbon neutral; reducing water usage; minimizing waste generation; investing sustainably; and advocating for climate action. All of this will support an environmental education effort that will connect kids and families with nature, help them learn in partnership with the natural world, and inspire them to advocate for sustainability—all in the fun, hands-on Discovery Museum way. The final plan includes 29 action steps, spanning all areas of museum operations, to be taken over the next several years. These actions include discrete tasks such as replacing pavement with permeable surfaces and redirecting stormwater to groundwater recharge. The plan also outlines goals for ongoing action, such as investing sustainably, building community partnerships to advance our environmental work, and advocating publicly for our values.

A Commitment to Flexibility and Progress

Implementation of our plan is now underway. We have created a Sustainability Plan Team made up of staff members throughout the museum who have primary responsibilities for one or more of the action steps articulated in the plan. The team meets monthly to review progress on each of the steps, share ideas or concerns in moving steps forward, and identify new or modified actions that we might take. In this way we

have peer support and peer accountability for the plan, making sustainability more of an organizational norm.

The Sustainability Plan Team holds regular discussions on our progress, providing a good tool to address the built-in imperfections of the plan itself. For certain action steps, better ideas have emerged from the work together. The team has become comfortable with the idea that we are both implementing the plan and improving the plan at the same time.

A good example of this approach centers on our ideas about visitor vehicle emissions. The plan calls for the museum to implement a system of visitor-purchased carbon offsets as a means of mitigating the emissions, not eliminating them. The plan anticipated a mandatory approach as well as a significant visitor education component. The team realized, however, that the logistics of promoting, educating about, and collecting offsets would be challenging. We will likely need to implement the plan on a targeted basis first, such as to members, to work out the kinks. Efforts to address this biggest source of our greenhouse gas emissions continue.

Importantly, we also want to model external accountability. We engaged outside voices to review our plan drafts, adding perspective. The current version has been published on our website and shared across our audience with a request for feedback. The Board of Directors has formally approved and adopted the plan, and we have begun to recruit for an external Sustainability Advisory Group, which will conduct an annual review of our progress and report on recommendations for improvements and changes.

We recognize our vision will take time and resources and are honored that many

have stepped up to help support our work. Most notably, the Sheth Sangreal Foundation has committed \$1 million over the next five years to activate our sustainability and inclusion goals, and has challenged the community to match their investment in our plans. We will be asking everyone to join them in helping us leverage our culture of play-based learning to inspire families to help sustain our world.

It's also important to note that we are approaching our sustainability work with full knowledge we must also be engaged in its intersections with racial and social justice. We know that the impacts of climate change and environmental degradation disproportionately affect people with low incomes and people of color. And we know that access to the outdoors and nature-based learning experiences are less available to many. To us, becoming more sustainable is about more than just leaving our children a planet with adequate resources. It is also about achieving greater harmony in the present between the environmental, economic, and social outcomes—both locally and globally—of our choices and actions. We are therefore committed to pursuing our sustainability objectives in ways that also promote equity. In many ways, all of this is integral work for the museum. In other ways it is new and fresh, because we've made a renewed commitment to sustainability, made urgent by the world around us. We are energized and motivated and we hope others in our field will join with us, with combined, greater effect on both our communities and the natural world. 

Neil Gordon has served as CEO of the Discovery Museum in Acton, Massachusetts, since 2009.



Walking the Talk on Sustainability

By Neil Gordon, CEO, Discovery Museum

Our actions—how we operate and what we model for the world around us—may be even more important than what we strive to teach as a museum. W.E.B. DuBois said, “Children learn more from what you are than what you teach.” The environment we create, and what kids and families take from that, is an influential tool.

Recognizing this, the Discovery Museum is taking concrete steps to be visibly and demonstrably sustainable in our operations as a key strategy for inspiring the next generation of environmental stewards. Our goal is for these actions to motivate families to adopt more sustainable viewpoints and practices at home, and support environmentally sound public policy.

Sustainability, according to the most basic definition, entails meeting the needs of the present without compromising the ability of future generations to meet their own. Over time, the concept of sustainability has evolved to recognize that practices can be sustainable in one dimension but unsustainable in another—for example, environmentally sustainable development cannot truly be considered sustainable if its economic benefits fall only to the wealthiest nations. And so, becoming more sustainable is about more than just leaving our children a planet with adequate resources, it is also about achieving greater harmony in the present between the environmental, economic, and social outcomes—both locally and globally—of our choices and actions. As a children’s museum, we also see it as our obligation to help prepare the next generation to successfully face these complex issues.

What does this mean in practical terms? For the Discovery Museum it will be big and bold. It will be renewable energy being visibly produced on-site; systems that return rainwater to the earth; drinking water made available in ways that don’t produce waste; and waste materials that are composted back to their natural state. It will also be programs and exhibits that not only teach in and about nature, but also communicate that it is our responsibility to nurture and protect it, and how.

This is not entirely new work for the Museum. Discovery Museum first articulated its commitment to environmental sustainability in 2007. Asserting that “we are keenly aware of the interrelationships of humans and the natural world and our obligations to be good stewards of that world,” the organization adopted a vision statement to become, “a premier community museum that embodies discovery learning

and environmental stewardship.” Formal goals included becoming a “green” organization and encouraging others to take responsibility for the environment. Two years later, in 2009, a new Master Plan for Campus Expansion included a concept for building a new Environmental Discovery Museum featuring photovoltaic panels, a windmill, a composting area, and an aquifer recharge zone. Unfortunately, the recession of the late 2000s forced the Museum to focus almost exclusively on shoring up its finances and building its audience. It was not until 2013 that the Museum was in a place to contemplate a future campus renovation and initiate a capital campaign to fund it, this time with a focus on accessibility—by then, a pressing capital need and programmatic focus.



Discovery Woods

Our recent environmental work focused initially on the goal of connecting kids with nature, both to raise awareness and promote the physical and mental health benefits of outdoor play. In 2015, we hired our first Outdoor and Environmental Educator. The following year, we opened Discovery Woods, an award-winning, one-acre, fully accessible nature playscape and treehouse abutting 180 acres of town-owned conservation land. With a goal of encouraging “every kid, every day, outside to play,” we also deepened our Backyard and Beyond program series to offer a range of year-round outdoor experiences for children of all ages and levels of comfort with outdoor play. Coinciding with the opening of our expanded and renovated, accessible building in 2018, we also changed our longtime tagline, “Hands On, Minds at Play,” to “Science. Nature. Play.,” to reflect our programmatic evolution and to elevate our message that getting kids outside is the first step to developing an appreciation for the natural world and a sense of responsible stewardship of its resources.

We have also taken steps to advocate publicly for these values, including signing the We are Still In pledge declaring our support climate action to meet the Paris Agreement; joining the America is All In coalition to develop a national climate strategy; supporting the Town of Acton in declaring a climate emergency; becoming a member of the Acton Climate Coalition; and presenting programs addressing environmental topics through our Discovery Museum Speaker Series.

Now, with the Museum on solid footing and the issues of climate change and environmental justice ever more urgent, it is time to redouble our commitment. In June, our Board of Directors adopted the Museum’s five-year Sustainability Plan—steps we will take to “walk the talk.” The most visible part of the plan is our project to produce electricity onsite to meet 100% of our campus energy needs—and then some. The plan outlines our approach to reducing greenhouse gas emissions and becoming carbon neutral; reducing water usage; minimizing waste generation; investing sustainably; and advocating for climate action. All of this will support and be supported by a signature environmental education effort that will connect kids and

families with nature, help them learn in partnership with the natural world, and inspire them to advocate for sustainability—all in the fun, hands-on Discovery Museum way. The final plan includes 29 action steps, spanning all areas of Museum operations, to be taken over the next several years.

Our process for developing this plan was relatively simple and streamlined. Given our long commitment to environmental education, little discussion was needed about the need to formalize our goals and objectives. We moved straight to researching and producing a plan focused on action steps. Key to this was establishing the Museum's baseline environmental impact, which we did with the tremendous support of a skilled intern who self-described as a "sustainability geek." Her analysis became the platform for the development of concrete goals and actions, and reasonable timeframes for accomplishing them. We also committed early on to implementing our plan transparently and allowing for flexibility as we make progress and learn along the way.

Importantly, we also want to model accountability. Outside voices added perspective by reviewing our drafts, and the current final version has been published on our website and shared across our audience with a request for feedback. The Board of Directors has formally approved and adopted the plan, and we will be creating a Sustainability Advisory Group, which will conduct an annual review of our progress and a report on recommendations for improvements and changes.

We recognize our vision will take time and resources and are honored that many have stepped up to help support our work. Most notably, the Sheth Sangreal Foundation has committed \$1M over the next five years and has challenged the community to match their commitment to our plans. We will be asking everyone to join them in helping us leverage our culture of play-based learning to inspire families to help sustain our world. We are developing the details of the Sheth Sangreal Challenge and will share them soon.

It's also important to note that we are approaching our sustainability work with full knowledge we must also be engaged in its intersections with racial and social justice. We know that the impacts of climate change and environmental degradation disproportionately affect people with low incomes and people of color. And we know that access to the outdoors and nature-based learning experiences are less available to many. We are committed to pursuing our sustainability objectives in ways that also promote equity.

In many ways, all of this is integral work for the Museum, but in other ways it is new and fresh. To my mind we've made a renewed commitment, made urgent by the world around us. We are energized and motivated and we hope others in our field will join with us, with combined, greater effect on both our communities and the natural world.

You can review Discovery Museum's 2021 Sustainability Plan [here](#).

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