

FORMAT		
1. Name of resource	Culture Over Carbon: understanding the impact of museums' energy use	
2. Location	https://newbuildings.org/wp-content/uploads/2023/09/FINAL_COC-Report_web.pdf	
3. Alternative location		
4. Author[s]	W. Bowles, M. Egolf, A. Miller, B. Seymour and L. Braciulyte	
5. Publisher/producer/host	New Buildings Institute	
6. Year	2023	
7. Suggested citation	Bowles, W. Egolf, M., Miller, A., Seymour, B. and L. Braciulyte (2023). Culture Over Carbon: understanding the impact of museums' energy use. New Buildings Institute, available at https://newbuildings.org/wp-content/uploads/2023/09/FINAL_COC-Report_web.pdf	
8. Languages in which available	English	
9. Geographic area resource relates to	US with wider relevance	
10. Does the resource relate to a specific time frame?		
11. Type	Report	Yes
	Toolkit/Framework/Roadmap	Yes
	Sign-post to other resource (database)	
	Case studies	Yes
	Other	
12. Part of an initiative?	"COC is a groundbreaking research study funded by a National Leadership grant (2021 – 2023) of nearly \$600,000 from the Institute of Museum and Library Services (IMLS). It will improve the museum field's understanding of energy use by its examination of data from five types of museums, zoos and aquariums, gardens, and historic sites..." (Background)	
COLLECTIONS AND COLLECTIONS-BASED INSTITUTIONS		
13. Explicit links to collections	Yes	
14. Explicit links to museums/libraries/archives	Yes	
	Museums	X

15. Types of institutions relevant to	Archives	X
	Libraries	X
	Other	X
16. Does the resource relate to specific disciplines?	Arts, humanities and social sciences: philosophy, psychology, religion, social sciences, law, politics, language, arts and recreation, architecture, literature, history, geography and ethnology, anthropology, archaeology	X
	Science, natural history, technology, medicine, engineering, manufacturing	X
17. If no explicit links to collections, justification for inclusion		

HOW IT CONTRIBUTES TO SUSTAINABLE DEVELOPMENT

18. Collections-related activities the resource relates to (mark all that apply)

Develop collections to protect and safeguard wider cultural and natural heritage more effectively , for example by targeting collecting to threatened forms of heritage in strategic ways	
Use collections to promote learning and educational opportunities that contribute to sustainable development more effectively , for example education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development and/or skills development relating to collections	
Use collections to promote cultural participation/social inclusion more effectively , for example by reducing barriers to participation, to ensure no-one is 'left behind'	
Use collections to promote sustainable tourism more effectively , for example by developing new products based on local cultural heritage, and/or considering the rights of stakeholder groups in relation to collections	
Use collections to support research that contributes to sustainable development (including all forms of personal and self-directed research at all levels that make use of stored collections) more effectively, for example by providing effective facilities, collections and information to meet researchers' needs	
Make decisions around collections that contribute to sustainable development more effectively	

i.	employment (recruiting, staff training, staff safety)	X
ii.	energy consumption, greenhouse gas emissions, reduction, monitoring and reporting	X
iii.	waste management and reduction of waste	
iv.	transport (forms of transport, energy use)	
v.	commercial activities including copyright and IP	
vi.	governance and management	X
vii.	security, disaster preparedness and risk reduction	
Direct external leadership, partnerships and collaborations towards sustainable development more effectively , for example by developing impactful partnerships		X
19. Does the resource relate clearly to any international conventions (mark all that apply)?		
Culture conventions:		
1952, 71 Protection of Copyright and Neighbouring Rights		
1954 Protection of Cultural Property in the Event of Armed Conflict		
1970 Fighting Against the Illicit Trafficking of Cultural Property		
1972 Protection of the World Cultural and Natural Heritage		
2001 Protection of the Underwater Cultural Heritage		
2003 Safeguarding of the Intangible Cultural Heritage		
2005 Protection and Promotion of the Diversity of Cultural Expressions		
Rio Conventions:		
Convention on Biological Diversity (CBD), Convention to Combat Desertification (UNCCD), Framework Convention on Climate Change (UNFCCC)		X
AIMS AND CONTENT		
20. What issues does the resource aim to address?	<p>“Few cultural institutions have the ability or resources to monitor and assess their energy use, despite the increasing availability of tools and software and the many awareness-raising efforts by professional groups. The need to track this information is becoming critical as more building codes and policies are enacted that will require compliance from buildings in the cultural sector.</p> <p>This project sought to conduct the [US museum] sector’s first in-depth review of the energy use patterns of cultural institutions and develop a roadmap for energy reduction at individual institutions and the sector.” (p.7)</p>	
21. Intended audience of resource	[Museums]	
22. Process of development	<p>“New Buildings Institute (NBI), Environment and Culture Partners, and the New England Museum Association were funded by the Institute of Museum and Library Services (IMLS) to study the energy consumption of cultural institutions, recommend key</p> <p>Courtesy of the La Plata</p>	

	County Historical Society, Animas Museum energy efficiency and decarbonization actions, and help cultural institutions prepare for expected building code and policy changes that may impact them.” (p.7_
23. Organisation/structure /contents	<p>Executive Summary 7</p> <p>Key Findings 8</p> <p>Recommendations 9</p> <p>Understand Your Energy Baseline 9</p> <p>Identify Support and Share Findings 10</p> <p>Reduce Carbon Emissions Through Energy Efficiency 10</p> <p>Prioritize Carbon-Reducing Strategies 11</p> <p>Consider Policy Recommendations 11</p> <p>Embrace the Opportunity 12</p> <p>Introduction 13</p> <p>Energy Data Collection Approach 15</p> <p>Key Findings and Recommendations 17</p> <p>Key Findings 17</p> <p>Recommendations 18</p> <p>Prioritizing Strategies 20</p> <p>Recommended Strategies to Reduce Carbon Through Energy Efficiency 20</p> <p>Targeted Carbon Reduction Strategies 24</p> <p>Cultural Institution Performance Analysis 27</p> <p>Individual Building Analysis 27</p> <p>How FirstView Works 27</p> <p>Using FirstView Results 28</p> <p>Participants 28</p> <p>Energy Use Intensity 29</p> <p>End Use Categories 30</p> <p>Portfolio-Level Analysis 32</p> <p>EUI and Carbon Intensity 32</p> <p>End-Use Analysis 33</p> <p>Building Occupancy 34</p> <p>Building Age and EUI 35</p> <p>Fuel Types 36</p> <p>Sector-Level Analysis: The Carbon Inventory Project 37</p> <p>Participants 38</p> <p>Results 38</p> <p>Operational Insights for Cultural Institutions 40</p> <p>A Note About the COVID-19 Pandemic 40</p> <p>Sustainability and Renewable Energy 40</p> <p>Operating Conditions And Major Mechanical Systems 41</p> <p>Interview Findings 42</p> <p>Common Challenges 43</p> <p>Recommendations from Interviews 44</p> <p>Codes & Policies Context for Cultural Institutions 46</p> <p>Operations 47</p>

	<p>Construction and Remodel 54 Federal Regulations 62 Call to Action 65 Energy Benchmarking Next Steps for the Sector 66</p>
FRAMEWORKS	
24. Framework structure	<p>The recommendations can be considered as a framework (explained in more detail in the report):</p> <p>High-level roadmap Maximizing building efficiency and planning for decarbonization starts by understanding how your facility currently uses energy, identifying improvement areas, and making short and long term plans.</p> <ul style="list-style-type: none"> • Understand your Energy Baseline • Make Plans and Identify Funding • Get Stakeholder Buy-in • Share Successes and Best Practices <p>Strategies to Prioritize These strategies offer the biggest “bang for your buck” when looking to improve energy efficiency and move toward decarbonization, while protecting collections and improving conditions for staff and visitors.</p> <ul style="list-style-type: none"> • Leverage daylight and upgrade to efficient lighting • Replace inefficient systems • Keep equipment running at peak performance • Understand your Energy Baseline <p>Long-term Investments Major building improvements require a larger upfront investment but can provide long-term benefits. These strategies can be incorporated into longer-term plans.</p> <ul style="list-style-type: none"> • Decarbonize strategically • Invest in resiliency
25. Relevant policy considerations	Yes
26. Resources for implementation identified	Yes
27. Specific assessment points/indicators/miles tones/action plan for monitoring	Yes
28. ASPECTS OF SUSTAINABILITY COVERED BY RESOURCE (mark all that apply)	
People (social sustainability)	
Planet (environmental sustainability)	X

Prosperity (economic sustainability)	
Peace	
Partnerships	X
29. CROSS-CUTTING CONSIDERATIONS COVERED BY RESOURCE (mark all that apply)	
Gender perspectives	
North and South perspectives	
HOW THE RESOURCE CONTRIBUTES TO AGENDA 2030 AND THE SDGs	
HOW AGENDA 2030 AND THE SDGs FEATURE IN THE RESOURCE	
30. SDGs and Agenda 2030 specifically mentioned?	No
31. SDGs specifically mentioned?	No
32. SDG targets specifically mentioned?	No
33. SDG indicators specifically mentioned?	No
SDGs AND SDG TARGETS AND LINKAGES	
34. Comments on SDG linkages	Implementing the resource helps address a range of SDG targets, including: 7.2 (increase the uptake of renewable energy), 7.3 (improve energy efficiency), 9.1 (develop sustainable infrastructure), 9.4 (upgrade existing infrastructure for sustainability), 11.6 (reduce the environmental impact of cities), 12.2 (sustainable use of natural resources), 12.6 (adopt sustainable practices and sustainability reporting), 12.8 (information for sustainable lifestyles in harmony with nature), 13.3 (climate education and action) and 17.17 (partnerships).
35. SDGs and SDG targets the resource helps advance	
SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Proportion of energy that comes from renewable sources. Date to achieve net zero, and milestones towards that date.
SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.3 By 2030, double the global rate of improvement in energy efficiency	Reduction in energy use. Upgrade of old equipment to more efficient equipment. Uptake of renewable sources of energy.

<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p> <p>9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all</p>	<p>Development of research-useful collections to support reliable, sustainable and resilient use by researchers and others.</p> <p>Number and proportion of collections facilities and stores that support economic development and human well-being.</p> <p>Number and proportion of collections facilities and stores that provide affordable and equitable access for all.</p> <p>Investment in collections facilities.</p> <p>Inclusion of collections information in regional and transborder initiatives, notably via digital access for discoverability.</p>
<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p> <p>9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</p>	<p>Number and proportion of collections facilities that make efficient use of resources, with an ongoing drive for efficiencies and reductions in energy use and waste of all forms.</p> <p>Number and proportion of collections facilities that use clean and environmentally sound technologies, including climate-friendly energy sources and materials, with an ongoing commitment to reduce greenhouse gas emissions and waste of all forms.</p> <p>Number and proportion of collections facilities that adopt and/or prioritise collections-related processes and practices to reduce greenhouse gas emissions and waste of all forms.</p>
<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable</p> <p>11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</p>	<p>Plans in place to reduce negative impacts on air quality, and volume and forms of waste.</p> <p>Plans in place to eliminate waste of all forms as soon as possible.</p>
<p>SDG 12 Ensure sustainable consumption and production patterns</p>	

<p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</p>	<p>Reduction of material footprint in terms of reductions in consumption of biomass, fossil fuels, metal ores and non-metal ores.</p>
<p>SDG 12 Ensure sustainable consumption and production patterns 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle</p>	<p>Clear visions, strategies and plans in place for all aspects of sustainability – environmental, social and economic (people, planet, prosperity)- across all areas of activity.</p> <p>Visions, strategies and plans relating to sustainability to be publicly available and incorporated into planning documents.</p> <p>Commitments to be in line with local, regional, national and/or international targets and ambitions.</p> <p>Incorporation of sustainability into reporting for funders and other stakeholders, including the public. Reporting to include commitments and progress towards targets.</p>
<p>SDG 12 Ensure sustainable consumption and production patterns 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature</p>	<p><i>12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment</i></p> <p>Extent to which global citizenship education and education for sustainable development (including climate change education) are mainstreamed in formal, informal and non-formal education programmes and activities drawing on and related to collections.</p>
<p>SDG 13. Take urgent action to combat climate change and its impacts 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p>	<p>Plans in place to enhance positive contributions to addressing climate change through use of collections. Plans in place to ensure collections, collections institutions and broader society can adapt effectively to climate change.</p> <p>Plans in place for effective education and awareness raising on climate change mitigation, adaptation, impact reduction and early warning.</p> <p>Plans in place to reduce negative contributions of collections-related functions, e.g. measuring greenhouse emissions with plans and targets in place to reduce them.</p>
<p>SDG 17. Partnerships for the goals</p>	

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships		17.17.1 Amount of United States dollars committed to public-private and civil society partnerships Number and/or increase in number, and diversity of local, national and regional multi-stakeholder (public, public-private and civil society) partnerships that address the SDGs drawing on collections, or that otherwise involve collections-based organisations and institutions.			
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	