



Participants in the Landscape Architecture Foundation's Case Study Investigation Program perform field evaluations of landscape performance for exemplary built projects (with permission from Landscape Architecture Foundation, created – top to bottom – 2021, 2023, 2022).



# Landscape performance in practice: Insights and recommendations

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Over the past decade-plus, landscape performance has gained significant traction and grown in influence and implementation within the landscape architecture discipline. However, measuring, calculating and estimating the benefits of landscapes – not to mention incorporating landscape performance throughout a design process – can be challenging, especially for practitioners and firms working to tight timelines and budgets. This paper examines the current state of landscape performance in practice, drawing on a series of roundtable conversations between eight practitioners at US-based design firms that are integrating landscape performance into their practice. As well as discussing the definition of ‘landscape performance’, it provides examples of specific landscape performance activities. In concluding, the paper identifies challenges and opportunities and offers broad recommendations for strengthening the integration of landscape performance into design practice.

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## Introduction

Landscape performance can be defined as a measure of the effectiveness with which landscape solutions fulfil their intended purpose and contribute to sustainability. It is a key tool for advocating for the value of sustainable landscape solutions and the work of landscape architects and designers of the built environment. It often involves the assessment of progress toward environmental, social and economic goals based on measurable outcomes.

Measurable landscape performance outcomes encompass a wide range of environmental, social and economic benefits of well-designed landscapes, including flood protection, habitat creation, air quality improvement, carbon sequestration and avoidance, mental wellness, increased safety, construction cost savings, increased revenues – and much more (Landscape Architecture Foundation, 2011). To evaluate and quantify the benefits of built landscapes, a landscape performance approach draws from the body of knowledge of many different disciplines – ranging from landscape architecture to horticulture, engineering, biology, social sciences, economics and others. However, measuring, calculating and estimating the benefits of landscapes – not to mention incorporating landscape performance throughout a design process – can be challenging, especially for firms working in a client-based practice model with tight timelines and budgets.

Launched in 2010, the Landscape Architecture Foundation’s (LAF’s) Landscape Performance Series (LPS) is an online portal and set of initiatives that bring together information and research about the measurable benefits of landscapes from academia, professional practice and industry. Then in 2011 LAF created its Case Study Investigation (CSI) Program to support faculty–student research teams in their work with leading practitioners to document the impacts of exemplary landscape projects, which the LPS captures as case study briefs. A major goal of CSI and the LPS is to move the landscape architecture discipline toward designing projects with specific performance objectives, documenting project goals and design intent, and routinely collecting performance data.

In 2020, at the 10-year anniversary of the Landscape Performance Series, LAF conducted a survey of email contacts to learn how practitioners were using the LPS (Landscape Architecture Foundation, 2020). While the survey showed significant progress, the mechanics of integrating landscape performance into the professional practice of landscape architecture remained somewhat unclear. So, in 2023, LAF convened a group of

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practitioners for a series of online roundtable conversations to better understand how design firms are integrating landscape performance into their work.

This paper uses the term ‘landscape performance approach’ several times. This term refers to an approach to a project, multiple projects or an entire practice based in the concept of landscape performance. It could include any of the following activities:

- using performance data to make the case for a project, a particular design approach, and/or the value of the work of a landscape architect within a project team
- identifying and documenting specific performance goals and objectives during the design phase
- collecting baseline data and conducting a post-occupancy evaluation
- applying lessons learned from a previous project’s performance to a current project
- using performance data to combat value engineering
- communicating landscape performance to clients, communities and beyond
- using performance data to inform ongoing project maintenance and incremental adjustments.

## **Approach**

LAF’s Landscape Performance in Practice Roundtables consisted of a series of LAF-facilitated, informal roundtable conversations among a small group of landscape architecture practitioners. Practitioners from eight firms were invited to participate via email based on their leadership and/or early adoption of landscape performance in practice (see ‘About the author and collaborators’ for a list of participants). Criteria for selection were based on LAF’s knowledge of people and firms in this space, which it had developed through its focus on landscape performance for over a decade. This method of selection is a limitation of this research as certainly additional firms and people that integrate landscape performance into their practice could have been included. However, this selection method allowed for highly targeted discussions, and the roundtable format is most effective with small numbers of participants to encourage deep engagement.

Roundtables involved both guided and open discussion and were held monthly online from February through August 2023. Discussions were framed around the following topic areas: participants’ understanding of the term ‘landscape performance’, perceptions of how widespread (or not) landscape performance is and its importance to professional practice, what motivates participants to incorporate it in their practice and specific mechanisms they use for this, limitations to implementing landscape performance in practice and potential solutions to them, and resources and approaches they would recommend to others. Participants read several journal articles related to landscape performance topics to guide discussion. The discussion also naturally led to larger conversations about research in professional practice, and those findings are presented in an upcoming article for the US-based *Landscape Journal* (in publication).

Online meetings were recorded, which I then reviewed to extract and summarise the findings. In this paper, key themes and takeaways from the conversations shed light on the current state of landscape performance in practice among a group of leading practitioners. While I describe general trends, this does not necessarily mean that all group members endorse all of them.

## **Findings or insights**

### *Varied definitions*

The roundtable practitioners generally felt that the term ‘landscape performance’ was not clearly defined and that its meanings for practice differed. When they were asked to define the term, their responses varied (emphasis added):

Understanding if the design is effective. **Going beyond intuition** to understand if the project is doing what the designer intended and delivering the outcome that was envisioned.

The quantified impacts within our project work ... **A tool to frame conversations** with clients, communities, stakeholders, etc ... and align project goals with metrics. We are then able to identify **project-specific metrics** to help guide the design and measurable results.

I don't have a good definition and find the term pretty **ambiguous**. I tend to relate performance to **post-occupancy evaluation**.

One key point that was discussed at length is that the concept of landscape performance may have been too closely modelled on the concept of building performance, when the two concepts are not comparable because buildings are closed systems while landscapes are open and constantly changing. As a result, before anything is even constructed, architects and engineers can estimate and understand building performance with a relatively high level of accuracy, whereas most often this is not possible for landscapes. The group suggested that perhaps landscape performance needed different grounding and theory that was more distinct from other disciplines to reflect the dynamic nature of landscape systems.

Significant discussion revolved around conflicting ideas of landscape performance that are either complementary or antithetical to ideas of aesthetics and art – which are an essential aspect of the work of landscape architects. A useful analogy explored by the group likened landscape performance to an athletic performance. Each has some key metrics that illustrate the technical aspects of the performance but do not capture the whole or take away from the artistry and skill involved. Such metrics might be respectively, for example, water savings, temperature reduction and improved health outcomes; or shoe size, batting average and number of tickets sold. But beyond those metrics, in both, the larger product – visiting a beautiful park or attending an all-star game – is greater than the sum of its parts. Landscape performance metrics could be thought of as 'stats' that support a larger artistic product.

Additionally, the benefits that well-designed landscapes provide can go far beyond what most people outside the discipline of landscape architecture would consider to be 'landscape'; the group felt that perhaps using the term limits the public's understanding of the capabilities of landscape solutions and the work of landscape architects. With clients, participants observed it was sometimes more impactful to use terms like 'value', 'impact' or 'nature-based solutions' as an alternative to landscape performance, although each of those terms has its own associations that may not be appropriate for all situations.

#### *Why landscape performance?*

According to group discussions, the motivations for taking a landscape performance approach can include:

- learning and improving practice
- creating new knowledge for the discipline
- marketing and bringing more work to landscape architects
- communicating value and return on investment to clients, communities and project teams
- speaking to those outside the discipline about the benefits of landscape solutions
- showing measurable progress on bigger issues; for example, well-designed landscapes can support climate goals, but performance metrics allow designers to convey specifically how their projects contribute to solutions.

Generally the aspect of landscape performance that resonated most with roundtable participants was its role in creating new knowledge and improving practice. However, the group also felt that some of the motivations for landscape performance reinforce inherent tensions or areas of conflict for the discipline. Table 1 outlines some of these potential tensions or conflicts.

**Table 1.** Areas of potential conflict inherent in landscape performance

| <b>Focus or aim</b>  | <b>Potentially conflicting focus or aim</b>  |
|--|--|
| ‘Selling’ work to clients  | Being curious and self-critical, with the desire to create positive environmental or social outcomes even if the client does not specifically request them |
| Implementing the values, intentions and aims of the firm and/or client                             | Focusing on the process, function and real-world outcomes of the landscape   |
| Capturing and conveying the benefits and value of an individual firm’s project work                | Understanding how landscape supports environmental and societal needs more broadly   |
| Using performance data for communication and marketing, which can make conveying nuances difficult | Using research methodologies that carry their own limitations  |
| Recognising landscape performance as integral to professional work                                 | Working within typical fee and project structures that force landscape performance to be categorised as ‘extra’  |

*Integration in practice*

Generally roundtable participants recognised that landscape performance is very important to incorporate in their practice, but they felt it was challenging to do so (see ‘Challenges and opportunities’ below). No practitioners reported integrating landscape performance into all their projects, and only one described integrating it into their firm’s practice in a methodical way. Participants pursued landscape performance activities intentionally but mostly in an ad hoc, opportunistic manner. Activities they mentioned, from the most common to least common, were:

- participating in LAF’s CSI Program to do post-occupancy evaluation for one or more projects in partnership with academics, and applying findings to future projects
- using the resources in the LPS to collect baseline data for certain projects or make the case for a specific approach or design decision
- working directly with university faculty and students to do baseline or post-occupancy evaluations
- engaging with allied disciplines to pursue research studies that yield insights on landscape performance
- engaging in activities related to landscape performance, like baseline data collection and post-occupancy evaluation, based on the interest and curiosity of individual staff
- talking to clients about goals in a specific and structured way that gives clear direction for baseline data collection and post-occupancy evaluation
- building testing and validation into their design process, including by writing it into the scope of work for proposals
- pursuing SITES certification (US Green Building Council, 2024) for a project
- engaging in performance analyses that are not site-specific to generate findings that are applicable to many sites and a broader context
- engaging in site commissioning-based projects, which require verifying performance in real time
- training new staff with landscape performance protocols for ‘blitz’ data collection.

## *Challenges and opportunities*

Often, the most impassioned dialogue around landscape performance in practice surrounds challenges, so it makes sense to describe the most common barriers that the group noted during its discussion. However, the group also discussed many ways to confront these barriers with creative approaches. Therefore, each challenge presented here is followed by the opportunity it offers.

1. **Limited resources:** As much as landscape performance should be integral to every project, it requires remuneration. Participants felt that pre- and post-occupancy evaluations in particular need a ‘runway’ of time before and after a project, which necessitates extra funding. A typical project is more likely to follow a ‘helicopter’ model, with a tight timeline and no runway. Even if it is possible to carve out some time before and after a project, the time scale needed for some types of performance evaluation is still much longer than the usual client and construction timelines.

**Opportunity:** Participants felt that instead of pursuing a landscape performance approach on all projects, it may be sufficient to employ a philanthropic and partnership-based model that relies on external funding and collaboration with academics and beyond. If the right projects are evaluated and findings captured effectively, even a limited number of evaluations can generate replicable knowledge that does not rely on convincing clients to fund it or on absorbing it within a firm’s overhead expenses.

Innovative projects where firms are testing something new may be the most important to evaluate. Other opportunities for funding may be available for specific project types: major philanthropic funders are increasingly looking to fund community-led projects; landscape architects working closely with communities may be able to access grant funding to evaluate the impacts of a project on those communities. Partnering with academics who operate outside of project cycles and have different funding sources introduces a time scale that supports more rigorous, long-term evaluation.

2. **Lack of client support:** Participants reported that some clients are not open to landscape performance approaches. For example, clients may not be supportive of a firm collecting data on their project or they may not be responsive to the use of metrics to make the case for a design. Some clients hire landscape architects for their aesthetic capabilities and artistry only.

**Opportunity:** Participants felt that institutional clients with long-term vision who are stewards of their properties (for example, university campuses and public gardens) are typically more interested in the environmental and social benefits that their properties can offer than developers, who may intend to sell a property in a shorter timeframe. Showing clients that assessing performance and adjusting for real-world conditions saves money and improves performance can be another way of gaining client support. The US General Services Administration (2017), a highly institutional government organisation, has been a leader in this approach through its promotion of site commissioning.

3. **Difficulty integrating into day-to-day practice:** Performance can only be consistently top-of-mind if it is a key feature of the tools used in the design process. Participants reported that digital landscape performance modelling and measurement tools are currently limited within the suite of tools used in professional offices (for example, AutoCAD, Rhino). Additionally, even when landscape performance evaluation is done, the knowledge gained is not always systematically applied to future projects.

**Opportunity:** I note that some products and tools are increasingly beginning to include site and landscape performance modelling capabilities, most notably for carbon and temperature (for example, Autodesk, 2024), alongside modelling originally developed just for architectural applications. The broader question of how

landscape performance knowledge might be systematically applied within a typical firm's processes and systems may be of interest to researchers, as it certainly merits further exploration.

4. **The intangible value of design:** Landscape architects have always balanced art and design with scientific principles. Roundtable participants acknowledged the discipline's discomfort with metrics, which could possibly lead designers to perceive landscape performance as reducing their work to numbers, while they overlook its experiential and intangible value. One participant noted that landscape performance is not for everyone, as it sometimes requires removing one's 'designer hat'.

**Opportunity:** Roundtable participants acknowledged that landscape performance is an addition to, rather than a replacement for, the less tangible and measurable aesthetic and experiential value generated by the work of landscape architects. The misconception of landscape performance as being in conflict with the more elevated aspects of a landscape architect's work can be addressed through education and dialogue.

5. **Questions of rigour and expertise:** Roundtable participants felt that landscape performance can be daunting to designers and other staff at firms who are not always trained in research methods. Even where funding and the will exist, as roundtable participants discussed, it can be difficult to hire staff with expertise in landscape performance. Conversely, the need to be seen as the expert can be limiting to performance evaluation: when clients hire designers, they assume the designers are the experts, so it can be difficult to explain to clients that a design firm might need to learn more.

**Opportunity:** Participants noted that the continuing education requirements often associated with professional licensing for landscape architects could be a key mechanism for training more practitioners in landscape performance basics. Designers should resist claiming to be able to measure everything and should understand that performance evaluation done in practice will not necessarily match academic standards, and nor does it need to. The group also touched on the significant value of having vetted examples, particularly through LAF's LPS case studies, which are industry-wide and cover varied geographies, firms and project types.

6. **Limitations of metrics and methods:** All methods and metrics have limitations. Roundtable participants noted that some tools are borrowed from other disciplines, and it is risky for landscape architects to use tools and methods in ways that differ greatly from how they were intended to be used.

**Opportunity:** I note that academia has an essential role to play in testing and critiquing metrics and methods, through LAF's CSI Program and beyond. As long as academics remain involved, tools will continue to be refined and new metrics and methods identified. An important aspect of this work is engaging with other disciplines to fully understand and properly use their methods in the landscape architecture context.

7. **The role of maintenance:** A lot of performance happens after a designer 'hands over the keys' to a client. Participants noted that the ongoing performance of any landscape is limited by the contractual aspect and heavily affected by ongoing maintenance and stewardship.

**Opportunity:** Participants felt that a landscape performance approach may be most appropriate for projects and clients where relationships are longer term and continue beyond a project timeline. For example, an ideal situation might be where a designer not only creates a maintenance plan but also continues to be involved in managing the site over time.

8. **The big picture:** The conversation touched on some larger issues without exploring them in detail. First, perceptions of which benefits are provided by a landscape vary based on whose perspective is represented: who determines what is 'high performing'?

for any given landscape? This is particularly relevant for questions of generating economic value that may benefit one group over another, and the complexities of gentrification. A second big-picture consideration is the idea of vulnerability: experimentation and performance evaluation inherently include the possibility of discovering that projects are not functioning as intended, which can be daunting or even deeply concerning.

**Opportunity:** I note that dialogue surrounding these issues – either within a project team, or among project evaluators for those doing a post-occupancy evaluation – can be extremely fruitful at any stage of a project that takes a landscape performance approach. A firm that is focused on improving its practice over time should look at landscape performance as an opportunity, not a hindrance.

## Implications

Landscape performance continues to evolve as it integrates across academia, practice and beyond. To date, the relatively small number of public or institutional projects undertaken by the firms participating in the roundtable conversations is not sufficient for the profession to make a significant impact in key priority areas like climate, biodiversity, equity and inclusion. Residential landscape architects and others working at scale could be even more important contributors to these larger goals with a performance-focused approach.

Academia already plays a role in the integration of landscape performance into practice by generating new knowledge, metrics and methods for evaluation; assessing real-world projects; and producing tools and methodologies that firms can use in-house. Academics are poised to play an even larger role as their reciprocal relationship with practice continues to grow and to be uniquely well-supported by landscape performance research.

Landscape performance, in both professional practice and academia, has significant room to grow at a global scale. Most participants in LAF's CSI Program come from within North America, while some come from Asia, Oceania and Africa (Landscape Architecture Foundation, 2024). More recent initiatives, like the Landscape Foundation of Australia's (2023) Landscape Performance Case Studies Program, are admirable efforts that promote a landscape performance framework in new areas of the globe.

Future research directions in landscape performance in general are limitless due to the broad nature of the concept. There is much more to learn about how our designed landscapes are performing and whether designers are achieving the outcomes that are expected and needed in a changing world. The roundtable conversations revealed several areas for further study that apply specifically to professional practice. How can landscape performance estimations and projections be better incorporated into the design tools used most commonly in professional practice? Which benefits and metrics are most important and needed in practice? How can partnerships between academia and practice be more effectively leveraged to further landscape performance in practice? How can performance findings from previous projects be more efficiently applied to future projects?

Ultimately the roundtable conversations revealed how far things have come in the decade-plus of LAF's work in landscape performance, as well as bountiful opportunities for increased integration of landscape performance in professional practice.<sup>1</sup>

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<sup>1</sup> For more on landscape performance, consult LAF's Landscape Performance Series at <https://www.landscapeperformance.org/> and the Case Study Investigation Program at <https://www.lafoundation.org/>.

## About the author and collaborators



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