Brightly
A Siemens Company

# 5 Market Trends for Public Infrastructure in 2023

## How authorities can leverage data as the ultimate tool


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Picture this: you work in public infrastructure. Across the board, funding is strained, residents are complaining, and your local infrastructure is a bit wobbly around the edges.

A core challenge facing public infrastructure leaders is using revenue budgets as effectively as possible. To deal with everything from the cost-of-living crisis to the general reduction of revenue budgets, you need something that can help illuminate how and where to make the smartest spending choices while giving you the tools to explain and justify each decision.

That something, is data.

With tangible access to data and the ability to actionably use those insights, authorities can solve some of their biggest challenges and communicate to the public the necessary information so they can trust in the who, what, why, and when.

To understand how data is the secret sauce to solving that core challenge by unlocking better planning, decisions, and communications, we are digging into some of the top market trends facing public infrastructure leaders, including:

In this guide, we'll explore how Brightly can help bridge the disconnect between officials, operations leaders and the public they serve to tackle five of the most pressing government-specific trends affecting all types of infrastructure and facilities, including:

1. **Rising energy costs**
2. **Digital transformation and electrification of fleets**
3. **Internet of Things (IoT) and connected communities**
4. **Supply chain-driven cost increases**
5. **Sustainability**

## Trend 1: Rising energy costs

In the UK, rising energy costs are one of the top trends impacting public infrastructure leaders and asset managers—not to mention nearly everybody else.

### With rising energy prices, comes inflation

The House of Commons Library released a report linking inflation and energy prices, stating, "Household energy tariffs and road fuel costs increasing," as well as "electricity prices are linked to gas prices and have followed a similar trend."

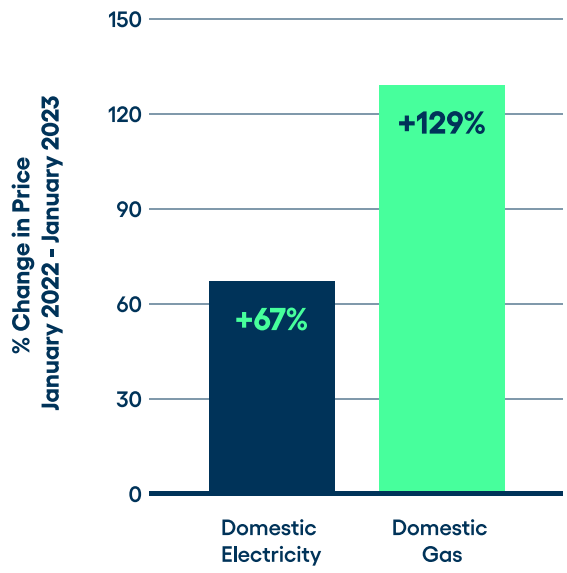
From January 2022 to January 2023:

- Domestic gas prices increased by **129%**
- Domestic electricity prices increased by **67%**

The report also highlighted how gas prices have increased to record levels and continued to rise during much of 2022.

### Keeping up with the cost of living

When the price of petrol goes up, so do the amounts for everything else. From food, which is now more expensive to transport, to the goods people use in everyday life, the expenses quickly pile on. The UK is experiencing a cost-of-living crisis, and it's relentless. According to The Guardian, food prices have increased at their fastest rate in 45 years.




### How asset managers must approach rising energy costs

For asset managers and leaders who work in public infrastructure, this can mean that funding must be reallocated for social care. And, just like everyone else, you must figure out how to do more with less.

Though the leading challenge is competing funding needs—revenue budgets decrease while public services such as education and social care are often fixed expenses—there are other obstacles for public infrastructure asset managers to overcome when energy prices are on the rise.

For starters, when funds are tight, every penny matters; investment decisions fall under increased scrutiny. Additionally, as one might expect, maintenance costs go up, too. Not to mention there often are many environmental concerns associated with rising energy costs.

### Data enables smart decisions when times are tough

Utilising data is critical for public infrastructure leaders facing rising energy cost challenges. The right tool can help:

**Identify energy inefficiencies:** Asset managers can capture data to identify areas where public infrastructure is using more energy than necessary or where waste is occurring.

**Prioritise energy-saving projects:** Once energy inefficiencies have been identified, data can be used to prioritise actions by determining which projects will have the most significant impact on reducing energy usage and saving costs. And importantly, data can help communicate why specific projects are chosen.

**Monitor energy usage:** Real-time data can reveal a lot, such as helping to identify trends and anomalies in energy usage. With an asset management tool that offers visibility into consumption, you can take strategic action to reduce usage and costs.

**Predict future energy costs:** You cannot totally predict the future, but with data analysis—historical usage patterns, weather forecasts, and more—you can plan and budget more effectively based on what has happened before.

**Optimise energy expenditure:** Work smarter, not harder. With data, you can plan workflows to cover more ground with fewer resources. For example:

- One crew can systematically fill all potholes in closely located areas to minimise travel (i.e., fuel usage).
- Leaders could adapt grass-cutting schedules to 5x a year instead of 6 to save resources.

There are many ways public infrastructure leaders can leverage data, but perhaps most importantly, data can help leaders explain the reasoning behind their actions.

### Energy is expensive, so manage it better with data

Energy management software can help public infrastructure facilities and energy managers identify utility waste, prioritise action, and make smarter operational decisions through centralised utility management.

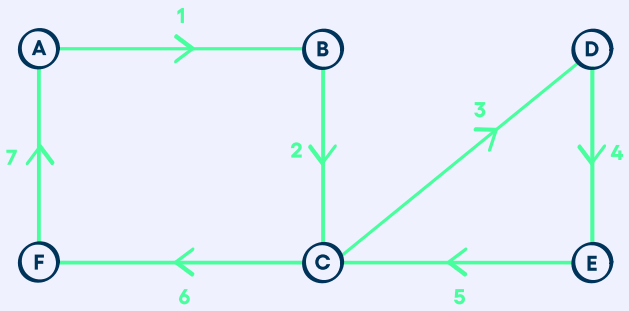
Brightly can help public infrastructure leaders make informed decisions about managing rising energy costs, prioritise energy-saving projects, and optimise resource usage.

## Use your data like Euler would

You are in charge of scheduling highway maintenance and repairs. You have a tight budget which means limited staff, limited fuel—and limited time. So, let's borrow an idea from the mathematician Leonhard Euler! (Stick with us, we promise). A Euler circuit is a path in a graph that visits every edge exactly once and returns to the starting vertex.

A practical application of Euler circuits could be the routing of maintenance vehicles. In this scenario, a graph represents the streets of a city, and the edges represent the routes that the trucks can take. By finding an Euler circuit in a graph, it is possible to design an efficient route that visits every necessary street only once and returns to the starting point, minimising the time and distance required for pothole repair, maintenance work, and other projects.

If you have the data to see where your biggest issues are, as well as what workers and machines are available, you can schedule your crews and map your route to methodically tackle projects that are near each other, so you save time, fuel, and money. No more doubling back or coming in and going out again.




**Example of a Euler circuit**

## Trend 2: Digital transformation and electrification of fleets

With rising energy costs leading the trends facing public infrastructure leaders, one might expect digital transformation or investing in electric vehicles to be the answer.

And it is, partially.

### Digital transformation: A bright idea for public infrastructure

Digital transformation is a trending buzzword, so let us first examine digital transformation in the context of public infrastructure.

Broadly speaking, digital transformation is adopting and utilising technology to fundamentally change the way an organisation or ecosystem operates and delivers value. Digital transformation can include changes to internal operations, customer-facing experiences, and even the overall culture and mindset of a given entity.

For public infrastructure, digital transformation is the use of digital technologies to improve the efficiency, effectiveness, and delivery of public infrastructure services. Or, you can consider it the integrating of digital technologies into the infrastructure systems of cities, governments, and public organisations.

### Time to transform...how you transport

Digital transformation is more than plugging in tech or placing a sensor on a light post; it is using available technology to connect already existing systems, it is capturing and analysing the existing data, and it is thinking about everything in a bigger picture to improve how it essentially all works for everyone.

A few public infrastructure digital transformation application examples include:

**Transportation systems:** By digitally transforming transportation systems, you can improve traffic flow, reduce congestion, and enhance public transit services through real-time data analytics and smart transportation systems.

**Energy grids:** When you tap into the data of your energy grid, you can improve energy efficiency, grid reliability, and renewable energy integration through advanced metering infrastructure and energy management systems.

**Water and waste management:** By leveraging strategically placed sensors and usage monitoring, you can react quicker to unexpected weather conditions or events to avoid plant failure to ensure the continuance of services for your community.

Ultimately, digital transformation can help the public infrastructure ecosystem increase operational efficiency, reduce costs, enhance safety, and, most importantly, improve the quality of life for citizens.

### How to achieve digital transformation

Asset management solutions can help collect data, make decisions (and justify those decisions), schedule preventive/proactive maintenance and workflows, and generally optimise operations to get the most bang for your buck.

Asset management tools that leverage data analytics can help public infrastructure leaders lead digital transformation initiatives by providing greater visibility into asset performance and utilisation, reducing maintenance costs, and improving operational efficiency.

### Go electric, but do so strategically

One solution to high petrol prices is switching to electric for work and maintenance vehicles as well as public transport…however, immediate electrification of fleets and vehicles is not the easy answer. For starters, most existing infrastructure is not able to support adding a charging station at every light post. Instead of directly swapping fossil fuel-burning vehicles for electric, public leaders need to instead capitalise on the opportunity to change how people use their vehicles.

### Make the most of human behavior

The promise of renewable energy is obtainable so long as full adoption happens in a transitional way. Leaders must be thoughtful; instead of switching out the entire fleet of non-electric buses, they can opt to do it in a phased approach as assets reach end of life.

Another simple example to understand why it can't just happen overnight is that of the mass-produced electric vehicle.

If everyone ditched their petrol-using car and traded it in for an electrical vehicle at the same time, the energy grid would collapse. Instead of putting a charger at every light post, put chargers at public transit stations to encourage use of public transport, which is ultimately more environmentally sustainable and cost-effective. By planning strategically, we can influence human behaviour in the right direction.

Many communities, such as Regensburg, are using the concept of sustainable transportation to reimagine how they help people get from point a to point B. By making improvements to existing infrastructure at a place where public transport confluences, Regensburg is achieving a more environmentally friendly and climate-neutral solution that also encourages people to utilise the electric bus option.

Chances are you already have a fleet of work vehicles in good working order. It just might not seem like you have enough for the jobs that need to get done, or that the exorbitant cost of fuel makes daily use expensive. Good news, using your existing fleets more strategically (hello, data) can be more cost-saving than adding new vehicles to a fleet.

Like our personal vehicle example above, an overnight switch to a fully-electric powered fleet isn't the best option. For starters, some electric vehicles cause more waste because battery technology is still evolving. Additionally, abandoning petrol-using vehicles is just as wasteful.

The smartest option is to use data to get more out of your work fleet. From scheduling better workflows to optimising routes to keeping better tabs on inventory and work orders, data can help you make better decisions to maximise your vehicular resources, electric or not.

### The key to unlocking digital transformation? It's data

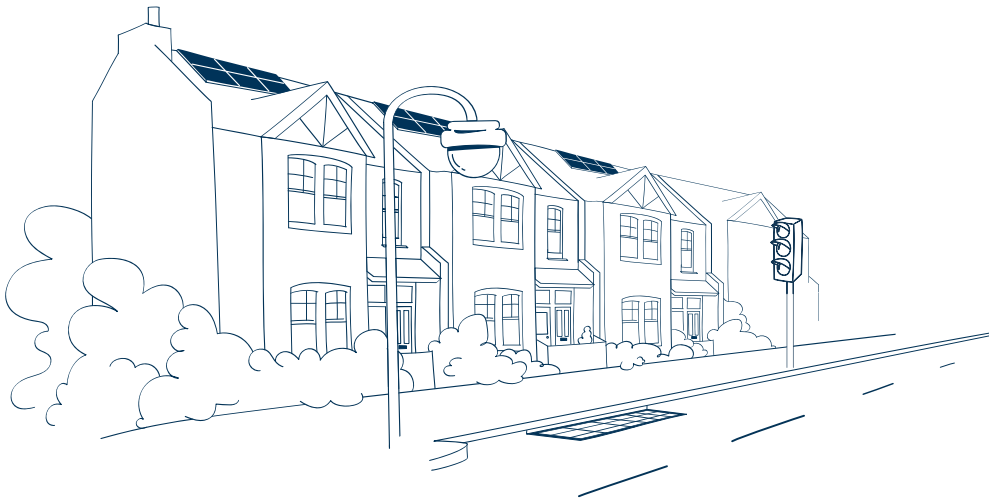
So how is data the answer to it all? Digital transformation and the (strategic) electrification of fleets are all connected by the very data each and every asset produces.

Most importantly, data shows where to implement digital initiatives to make the most impact—it enables public infrastructure leaders to justify their decisions. It also helps track just about everything: progress, results, challenges, opportunities, and more.

Data also facilitates better fleet management. Fleet managers can use data to track vehicle location, monitor driver behaviour, and optimise routing. Ultimately, data can reduce fuel consumption, improve safety, and minimise vehicle downtime.

Asset management software can help centralise data from all departments to utilise assets as effectively as possible.

Brightly understands that managing facilities, public works, public utilities, and public service needs to be simple. From automatic maintenance work orders to leveraging GIS capabilities, our asset management solutions help public infrastructure leaders make informed decisions that help reduce costs.



## Trend 3: Internet of Things (IoT) and connected communities

A few years ago, everyone was buzzing with the concept of smart, connected devices, like IoT-the Internet of Things. The possibility of using technology to connect everything was exciting! For busy public infrastructure facilities managers and operations leaders, the opportunity to gather more information from assets had promise. However, how to best go about it (and, of course, find the funds to do so) was another story.

Today, using technology to obtain data from nearly every aspect of our lives is the norm. We have smartwatches that tell us how many steps we take, access to our calendars across devices, and some of us even have home functions (like heating, lights, or a doorbell camera) we can comfortably monitor from the sofa on our phones.

It's reasonable, then, that all these functions enabled by digital technologies would extend to highways, buildings, facilities, and other public infrastructure. And it has, though at varying levels, based on the available funding, readiness of those in charge (and whether or not the public will accept), among other factors.

### The case for connected communities

Another exciting concept is the smart city. Now, evolved into "connected communities," these aren't just towns or urban centres with all the digital bells and whistles—they are places that use data to inform decision-making to impact choices on where and how to direct (generally quite limited) resources.

Leveraging a combination of vast amounts of (usable) data and planning, public infrastructure leaders can strategically deploy technology in impactful ways to improve the quality of life for residents for smart cities that are more resilient than ever before. Siemens is working with cities worldwide to look to the future beyond simply smart technologies to smart design that makes communities more flexible and adaptable to the ebb and flow of human activity.

### How leaders can make smarter decisions

Sound decision-making boils down to data and what leaders can do with it (assuming they can capture it).

Smart cities rely on the collection and analysis of large amounts of data from various sources: sensors, mobile devices, social media platforms, and others. Information is everywhere and helps to make informed decisions about urban planning, resource management, and public safety.

### Data: the bridge that connects what you are doing with why you are doing it

Leveraging data can impact connected communities in many ways. One of the most obvious applications is improved infrastructure. Imagine a community with optimised use of resources such as energy, water, and transportation! This smart city could accomplish BIG things by leveraging available information. For example, data from sensors installed in city infrastructure can help optimise traffic flow, reduce congestion, and improve the efficiency of public transportation.

Better urban planning is another key opportunity made possible with data. City planners can use data to identify trends, predict future needs, and design more effective and efficient public services. Importantly, data can help identify areas where capital planning investments will have the most impact

And, the necessary component all public infrastructure leaders must navigate: citizen engagement.

Data and digital tools can help public infrastructure leaders engage with citizens and involve them in the decision-making process. For example, cities can use mobile apps to enable citizens to report issues such as potholes or broken streetlights.

### Cheers for asset management software

The right asset management software and capital planning solutions can help public infrastructure leaders grab all that data, make better choices, and inform the public with the right information so they can support decision-making.

Brightly understands how to help public infrastructure leaders maximise their data. Explore how we helped the City of Edinburgh consolidate a disjointed approach to asset management to realise cost savings that include a **reduction in repair backlogs by 90% as well as saving a "conservative six figures" by utilising Brightly** for remote problem identification and diagnostics.

> "You can see key measures at a glance. The value of having all of our information in one place is huge for driving service improvement and for meeting our efficiency targets."
>
> **Head of Place Management**
> The City of Edinburgh Council

Read the full Case Study

## Trend 4: Supply chain-driven cost increases

No person, organisation or industry can escape the general cost of living increases. When breaks, bottlenecks or delays hit the global supply chain, public infrastructure leaders feel the backlash even more—especially in their revenue budgets.

From projects not being completed, to increased costs, to unhappy residents wondering why services and projects seem to be taking so long, here is yet another area where having the right data can help public infrastructure and asset managers get ahead of issues.

### Outsourcing is an answer, but not a solution

One method public infrastructure leaders use to try and save money is to outsource activities. This helps to control expenses or cost caps via a contract. But, when projects are outsourced, you then shift risk to your local suppliers, who may have bid for contracts when fuel, energy, and materials were less expensive.

As the global supply chain is hit with increasing expenses, contractors are feeling the same rising costs and want to renegotiate contracts or in some cases go out of business in the middle of your project. Meaning, your project is standing still, not getting completed, and therefore, your community is not pleased. This puts pressure on government agencies to solve problems.

On top of supply chain issues, you are now dealing with a data (and communication) problem.

### Leadership queries for uncertain times

There are a few key questions leaders can ask that relate to getting ahead of supply-chain challenges:

- **How can I extend the life cycle of my assets to ensure they last longer, especially amidst supply-chain uncertainties?** Yes, it is beneficial to have a plan. But without a revenue budget to accomplish projects, hire workers and contractors or upgrade infrastructure, are you just reverting to being reactive?
- **How can I drive maximum efficiency from the resources that I have, because the supply chain is historically unreliable?** Professional tip: once again, it's data. Data can help you get the 20 people you have to do 20% more work, it can enable you to reduce resources and deliver the same amount of service, and importantly, it can help you manage internal resources to drive efficiency.
- **If we utilise external providers to drive cost-saving and efficiency by outsourcing the work, what happens when outsourced work encounters supply-chain issues?** Remember how we just touched on how outsourcing is an answer, not a solution…

### Louder, for those in the back: leveraging data can help

For busy public infrastructure leaders with too much on their plates, including what to do about supply chain issues, we're throwing you a life raft; asset management software to the rescue.

The right tool can help you via smarter logistics for more informed inventory control. It can also help you communicate what's going on. An asset management solution can deliver troubleshooting, preventive maintenance, scheduling, planning, and more, all into one centralised dashboard,

Brightly understands the challenges public infrastructure leaders face amidst supply chain challenges. So we've built a suite of tools that can work together to help you effectively navigate more, from asset management all the way to contract management and capital planning.

## Trend 5: Sustainability

Sustainability can hardly be called a trend anymore as it is now a driving force to maximise existing resources, change human behaviors, and safeguard our planet for future generations.

### Sustainability for the cost-saving win

Sustainability should feel like a no-brainer—from healthier environments to better energy sources, sustainability is about all of us; future generations and current residents appreciate sustainability.

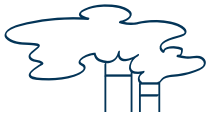
Forward-looking public infrastructure leaders with an eye on Net Zero targets know that sustainability is how we're all going to get there, together. Whether it's rising energy costs, calling for renewable energy sources and stopping energy waste, doing more with fewer resources, or even the fact that small changes, such as maximising workflows, can save considerable time and money, there is no better time than now to invest in sustainable solutions.

Not convinced? Net Zero by 2050 is possible, but you need to take action now.

### Data is the wind that turns your turbine

Data can be a powerful tool for supporting sustainability efforts by measuring and tracking progress towards sustainability goals and helping organisations identify trends and patterns, set targets, and adjust strategies to achieve their sustainability objectives.

A few trackable elements include:



**Reducing carbon emissions**

**Increasing energy efficiency**

**Reducing waste**

Leaders need solutions to help identify opportunities to reduce environmental impact and improve performance. Having visibility into the data on energy usage can reveal areas where energy-efficient technologies can be deployed. Or, insight into waste streams can highlight opportunities for recycling or reuse.

### A perfect pairing

Data, paired with the right technology, can inform decision-making and make engaging stakeholders and communities easier. For example, consider how sharing data on energy usage or carbon emissions can help everyone to understand their actions' impact and encourage them to reduce their environmental footprint.

It's no surprise that data can be powerful in supporting sustainability efforts by providing the information needed to make informed decisions, track progress, and drive innovation—so long as you have the right tools. Solutions like asset management software, energy management software and asset lifecycle prediction modeling and capital planning software can help public infrastructure leaders to maximise resources, and effectively work with their communities on sustainability initiatives.

Brightly has long been driven by sustainability, so we create solutions to help public infrastructure leaders maximise their most valuable asset—data—to make the best possible decision for their communities. With the race to Net Zero and the multiple pledges made by companies and countries globally, now is the perfect opportunity to invest in Carbon Zero in Confirm or Stream* assist with sustainability initiatives.

***Product availability based on location.**

## The Brightly side of market trends

There is no one leading issue, challenge, or opportunity that public infrastructure leaders must tackle. There are many, and they are all interwoven and threaded—with data.

Brightly is uniquely positioned to help public infrastructure leaders to address the core challenge of doing more with less. Our solutions are designed to turn your asset data into your most valuable and actionable resource. From identifying problems, such as detecting maintenance issues or predicting future energy usage trends, all the way to enabling evidence-based decision-making and the communication around it, we believe in harnessing the power of information to foster sustainable communities.

Powerful yet simple-to-use technology in the hands of leaders can help with

- Predictive maintenance enables public infrastructure managers to fix issues before they cause significant problems, reduce downtime, increase safety, and save money on repairs.
- Better public services such as transportation, roadway maintenance, utilities, etc.
- Enhancing sustainability initiatives, such as reducing carbon emissions, optimising energy consumption, and conserving natural resources.

Brightly can help public infrastructure leaders identify problems by enabling evidence-based decision-making, optimising existing workflows and infrastructure, enhancing predictive and preventive maintenance, improving public services, and, importantly, sustainability.

Connect with an expert today.

## About Brightly Software

Brightly, a Siemens company, is the global leader in intelligent asset management solutions, enables organizations to transform the performance of their assets. Brightly's sophisticated cloud-based platform leverages more than 20 years of data to deliver predictive insights that help users through the key phases of the entire asset lifecycle. More than 12,000 clients of every size worldwide depend on Brightly's complete suite of intuitive software – including CMMS, EAM, Strategic Asset Management, IoT Remote Monitoring, Sustainability and Community Engagement. Paired with award-winning training, support and consulting services, Brightly helps light the way to a bright future with smarter assets and sustainable communities.  For more information, visit brightlysoftware.com

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