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# Opportunities for ePaper in Various Verticals

With its value in transportation proven, ePaper is poised to transform communication in a host of other public settings.

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As the managers of cities, campuses, airports, and other venues seek smarter ways to communicate with the public, digital displays have emerged as a key tool in those efforts.

And with cost and sustainability an increasing part of the digital equation, solar- or AC powered ePaper signage is emerging as a transformative solution. Unlike traditional LCD or LED displays, ePaper consumes power only when content is refreshed, delivering paper-like readability in full sunlight with virtually no ongoing energy cost. A study by research firm [Mordor Intelligence](#) projects the market for ePaper signage to top \$5.9 billion by 2030, growing at a whopping 14.5% compound annual rate from \$3.0 billion in 2025.

What began as a solution for transit agencies to deliver real-time schedule updates to thousands of commuters at bus stops, train stations, and other transportation sites has matured into a versatile technology ready to serve new markets. That technology, ePaper, is now poised to deliver benefits across a variety of verticals, including parking, hospitality, airports, parks, and universities, offering low-maintenance, off-grid signage that reduces installation costs, improves accessibility, and aligns with sustainability commitments.

[Connectpoint](#), a leader in this sector, has already demonstrated the reliability and scalability of its technology through large-scale deployments in public transportation. From San Antonio to Seattle, its solar-powered ePaper displays provide schedule information at bus stops, rapid transit stations, and regional hubs.

The lessons learned from these deployments, such as rapid installation, centralized device management, and long-term durability, set the stage for the broader adoption of ePaper across industries seeking to balance digital transformation with cost concerns and sustainability initiatives.

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## What ePaper is and why it matters

At the heart of ePaper technology is a bistable, reflective display design. A bistable system is one that has two stable states and can remain in either state without continuously consuming energy. In the case of ePaper, those states appear to the viewer as either dark (for text or images) or light (for the background) on the display.

Each pixel in an ePaper display consists of microcapsules filled with charged particles that move in response to an electric field. Once arranged into the desired image or text, the particles remain in place without drawing additional power. Unlike LCD or LED displays, which must constantly refresh and backlight the screen, ePaper consumes energy only during content changes.

Because ePaper reflects ambient light rather than emitting it, the screens remain crisp and legible even under direct sunlight, with wide viewing angles and paper-like contrast. Additionally, ePaper is well-suited for environments where quiet, non-emissive signage is preferred, such as study zones, hotel gardens, or nature parks.



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From an operational perspective, these attributes translate into low-maintenance deployments. Content such as schedules, wayfinding maps, pricing information, and safety alerts can be updated at one-minute intervals without overwhelming the power budget. This combination of efficiency, durability, and clarity makes ePaper an ideal candidate for organizations that need reliable communication in outdoor or distributed environments.

## Choosing solar-powered ePaper over LCD/LED

Organizations evaluating signage must consider not only upfront costs but also the long-term operational impacts. In some situations, solar-powered ePaper offers distinct advantages over conventional digital signage technologies.

Those include:

### Energy and sustainability

Because ePaper consumes negligible power, it can run on compact solar arrays and lithium batteries. Connectpoint has demonstrated operation of up to 30 days on a single solar charge with one-minute refresh cycles, providing reliable performance even in less sunny climates.

### Installation speed and cost savings

Traditional signage often requires trenching for power and data lines; disruptive, expensive work that can delay projects and result in skyrocketing costs. Solar-powered ePaper mounts quickly to poles, shelters, or canopies without the need for AC connections, reducing both capital expenditures and time to deployment.

### Readability and accessibility

LCD and LED displays can wash out under direct sunlight, detracting from usability. On the other hand, ePaper's reflective surface remains visible at a distance in bright conditions, ensuring that critical information is always legible. When paired with text-to-speech modules and tactile buttons, ePaper systems can also support ADA requirements, extending accessibility.

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## Centralized management

Through [Connectpoint Asset Management \(CPAM\)](#), organizations can monitor the health of their signage network, push updates remotely, and receive alerts if a device goes offline. Managing hundreds or thousands of endpoints across a city, campus, or park system becomes practical and cost-effective.

## ePaper in today's transportation settings

Public transportation has served as the proving ground for solar- or AC-powered ePaper. Agencies such as [King County Metro](#) in Seattle, [TriMet](#) in Portland, Ore., and [VIA Metropolitan Transit](#) in San Antonio, Texas, have deployed hundreds of units to deliver real-time schedule information at stops and stations.

At King County Metro's RapidRide stations, for example, Connectpoint's ePaper signs integrate with the agency's real-time data feeds, refreshing every minute to provide accurate bus arrival predictions. And TriMet has embraced solar-powered ePaper to electrify previously unserved stops, extending real-time communication to more riders without incurring the costs of running power lines to signage sites, even in cloudy climates.

VIA Metropolitan Transit provides additional proof of performance. The system's installation of dozens of ePaper displays at bus stops all around San Antonio highlights the scalability of the technology. Large-format screens deliver rich, accessible information while maintaining lightweight, energy-efficient performance.

Key lessons have emerged from these projects and others Connectpoint has undertaken. Signage can be installed rapidly with minimal disruption. It offers high readability in daylight, centralized updates reduce maintenance visits, and ePaper devices remain reliable over long lifespans.

These lessons apply to verticals that share many of the same communication challenges as transit agencies.

## Vertical opportunities

Here are some of the scenarios ripe for ePaper adoption:

### Parking

Municipalities, airports, venues, and campuses all wrestle with communicating dynamic parking information. ePaper can serve as a modern, low-cost alternative to backlit rate boards and static signs.

**Use cases:** Dynamic pricing boards at garage entrances, occupancy indicators at surface lots, curbside parking rules that change by time of day, and event-specific detour or closure notices.

**Benefits:** Because ePaper can deploy where grid power is unavailable, it opens new opportunities for communication in remote lots or temporary event spaces. Drivers benefit from glare-free, easily readable rate and occupancy information. Operators can update tariffs or restrictions instantly from a central dashboard, avoiding the printing costs and delays associated with static signage and achieving a lower total cost of ownership than LCD solutions.

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**Integration:** Connectpoint's CPAM integrates with a variety of parking access systems and event management calendars, ensuring that updates are automated and consistent.

## Hospitality

Hotels, resorts, and convention centers increasingly seek digital communication tools that enhance guest experience without detracting from ambiance. ePaper fits naturally into this environment.

**Use cases:** ePaper signage can display pool, gym, or café hours; shuttle schedules; conference room wayfinding; or menus at resort cafés. Signs along garden paths or common areas can deliver venue messaging or QR codes for property information.

**Benefits:** Because ePaper requires no backlighting, it operates silently and unobtrusively in premium spaces. Typography and branding remain crisp and consistent, even under bright sun. Solar power eliminates the need for drilling in architecturally sensitive properties.

**Integration:** Through CPAM, ePaper can connect to property management systems, customer relationship management platforms, or event scheduling software. Hotels can display promotions, conference agendas, or personalized welcome messages with ease.

## Airports

Airports are complex environments that demand clear, real-time communication, and ePaper provides a flexible, sustainable option for managing information across all areas of sprawling facilities.

**Use cases:** Remote parking lot shuttles can show estimated arrival times; overflow parking areas can update pricing dynamically; and pick-up and drop-off zones can display evolving rules with clear, low-power signage.

**Benefits:** Many airport zones are difficult or costly to trench for power. Solar-powered ePaper enables rapid deployment at curbsides, car rental



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facilities, or remote lots. Because ePaper remains legible in both bright sun and shaded canopies, passengers always receive critical updates. Incident communication such as flight disruptions can propagate network-wide within seconds through CPAM.

**Integration:** By tying into flight information systems, parking management platforms, and ground transport dispatch systems, ePaper ensures that communication is synchronized and accurate.

## Parks

From city green spaces to national forests, park systems need reliable communication that blends with natural settings. ePaper addresses both functional and aesthetic requirements.

**Use cases:** Trail advisories, fire danger ratings, closure notices, entrance fee updates, program schedules, and QR links to maps or other content.

**Benefits:** Off-grid operation is essential for distributed park sites, many of which lack reliable power infrastructure. ePaper's reflective display blends visually with the environment and consumes minimal energy, while rugged, vandal-resistant enclosures provide durability.

**Integration:** Park calendars and emergency alert systems can automatically trigger updates remotely, ensuring timely and accurate information even during crises such as wildfires.

## Universities

Campuses operate like small cities, with thousands of students, faculty, and visitors moving between facilities daily. Solar-powered ePaper enables communication that is sustainable, cost-effective, and responsive to campus needs.

**Use cases:** Shuttle and campus transit schedules, garage availability, temporary closures, event wayfinding, construction detours, departmental hours, and safety alerts.



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**Benefits:** Universities are increasingly adopting “wireless-first” strategies. Solar-powered ePaper aligns with this vision by eliminating reliance on wired power infrastructure. The technology also supports climate-action commitments, while silent, non-emissive operation makes ePaper suitable for libraries, study zones, or dormitory areas where ambient light is preferred over bright displays.

**Integration:** Through CPAM, campus signage can pull from transit feeds, event calendars, and safety systems. Multi-department communications are simplified through centralized templates and permissions.

## Realizing the business case

The financial case for solar-powered ePaper signage rests on both capital and operational savings.

Avoiding trenching and electrical work significantly lowers installation costs. Assets can be easily redeployed if needs change, extending lifespan and flexibility.



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The negligible energy draw and remote management capabilities of ePaper mean utility costs and site visits are reduced. With ePaper technology resistant to burn-in and backlight degradation, its service life extends far beyond LCD alternatives.

Templates accommodate a wide range of communication needs, from rate boards and maps to emergency alerts and QR-enabled links. Accessibility features such as text-to-speech and scalable fonts accommodate virtually any user. CPAM provides dashboards that monitor device health, push firmware or content updates, and generate alerts if performance issues arise.

From city streets to campus walkways, airports to parks and hospitality venues, solar-powered ePaper signage from Connectpoint delivers a blend of sustainability, reliability, and flexibility that traditional digital displays cannot match. By eliminating the need for trenching and grid power, these solutions reduce upfront installation costs and ongoing operating expenses. At the same time, they ensure clear, accessible communication in any lighting condition.

As organizations embrace digital transformation while managing costs, maximizing revenue, and advancing sustainability agendas, solar-powered ePaper signage represents a foundational technology for new communication opportunities.



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## Connectpoint products at a glance



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- Digital Bus Stop® sizes & typical use cases (from 10" to 42").
- SmartStop® Interactive Kiosk
- LEDs
- CPAM features: asset monitoring, remote updates, multi-site control.

## Implementation Roadmap



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Here are the steps to a successful ePaper deployment:

- Site audit & power feasibility: Assess solar exposure and shading at proposed installation sites.
- Data integrations: Connect signage to relevant back-end systems, such as parking occupancy feeds or event calendars.
- Content templates & governance: Define templates for standard use cases and assign departmental responsibilities for updates.
- Pilot deployment: Install representative units to test readability, autonomy, and integration performance.
- Scale-out strategy: Expand deployment while leveraging CPAM for monitoring, management, and long-term optimization.

### ABOUT THE SPONSOR:

Connectpoint is the leading provider of ePaper digital signage to transit agencies across the United States. The Connectpoint Digital Bus Stop® was the first solar-powered signage available to transit agencies in the U.S., providing 24/7 information to passengers for the first time at the bus stop level — mounted on poles in minutes with no electrical infrastructure required. Connectpoint has won multiple awards over the past two years for the Connectpoint Digital Bus Stop®, and the company has powered thousands of ePaper digital signs for 40 transit agencies across 21 states.

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