

City of Brisbane
Parks and Recreation Commission
Agenda Report

To: Parks & Recreation Commission
From: Noreen Leek, Recreation Manager
Subject: Signboard Upgrades
Date: January 9th, 2019

Purpose

Promote ecological sustainability and improve fiscal prudence while preserving community values.

Recommendation

Review the proposed solution for upgrading the two City signboards located at the curve on Old County Road near the Community Park, and on the corner of Mission Blue Drive & Monarch Drive.

Background

Commissioners and residents have previously engaged in dialogue regarding updating the community signboards given the limitations and environmental impacts of the existing signboards. Currently, signs are printed on thermal transfer paper which is non-recyclable and therefore contributes over 1 ton of waste into the landfill on an annual basis. In addition, the present system for printing and posting signs is labor intensive and the cost of paper itself has grown increasingly more expensive year after year.

In 2017, a communitywide needs assessment survey posed the question to residents regarding their feelings about updating the existing signboards. The overall reaction of the 55 respondents was mixed with 34.55% in support of an update, 32.73% were unsure, and 32.73% expressing that they would not support it (*Attachment A*). Objectionable responses referenced concerns about light pollution, wasting additional electricity, and an overall desire to preserve the small-town charm of the current signboards.

Discussion

At the Parks & Recreation Commission goal-setting workshop in March 2018, Commissioners expressed an interest in exploring innovative solutions to meet City Council's goals of being ecologically sustainable and fiscally prudent. It was decided that the Recreation Facilities Subcommittee would form a joint subcommittee with Open Space and Ecology Committee members. This subcommittee first met in June 2018 to discuss replacement options. The subcommittee explored simple letter board signs, split flap signboards (similar to those seen in train stations), LCD and LED

signboards, and finally electronic ink displays. At the conclusion of this meeting, the subcommittee directed staff to conduct additional research on electronic ink displays to determine their feasibility as a replacement option. The reasoning behind this decision was that electronic ink displays were an environmentally-friendly option allowing for additional capabilities, and potentially still preserving the overall look and feel of the existing signboards.

Staff researched companies selling electronic ink signboards and met with the vendor E Ink regarding their technology (*Attachment B*). E Ink gave a presentation of their technology and outlined its potential benefits to the City. E Ink's proposal included designing a product that could be housed within the existing wooden frame of the current signboard. Their technology allows for messages to be scheduled and changed on demand from remote locations, reduces the City's overall waste and staff time required, and allows for multiple messages to be displayed within a designated time period (for example, three messages could be looped over the course of one day and changed over every 30 minutes within that time period). It also requires no power when displaying a stagnant message and would look similar to our existing signboards with black text on a white background. After receiving an initial estimate for replacement of the signboard at the Community Park (*Attachment C*), the subcommittee met again on December 6th, 2018 to review. At that time, the subcommittee determined that the E Ink proposal would provide an ideal solution for the City. They were unanimous in their decision to pursue this solution and recommend such to the full Parks & Recreation Commission.

At this time, the Commission should discuss and determine whether to make a recommendation to City Council.

Fiscal Impact

The total cost of operating the City signboards includes the following:

\$8,000/year for thermal paper (printing approximately 20-40 signs/week)

Staff time printing & preparing signs (approximately 6 hours/week @ \$25/hr x 52 weeks/yr = \$7,800)

Staff time putting up signs (2.5 hours/week @ 17.50/hr x 52 weeks/yr = \$2,275)

*Note: The thermal printer itself was replaced in 2016 for \$3,000.

The draft proposal from E Ink indicates a price of \$56,500 to install a two-sided E Ink display to replace the signboard at the Community Park. The anticipated cost for the replacement of the single-sided signboard on the Ridge would be half that expense, approximately \$28,250 for an estimated total of \$84,750. The current annual cost of operating the signboards is approximately \$18,075. If the City were to amortize the cost of the purchase over several years, the E Ink signboards would pay for themselves by the fifth year.

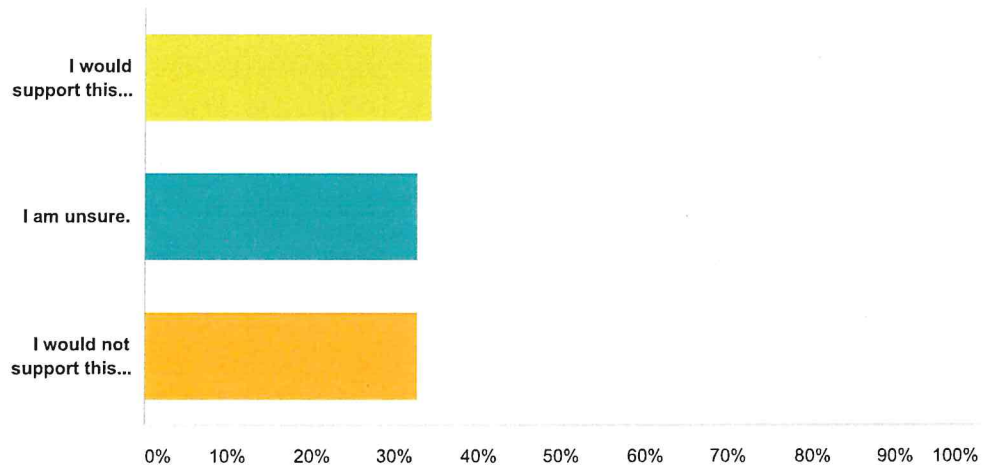
Attachments

- A. 2017 Needs Assessment Survey Results (*Question 19 only*)
- B. EInk Digital Signage White Paper
- C. Digital View & E Ink Draft Proposal


Noreen Leek
Recreation Manager

Q19 How would you feel about converting the existing signboards in town to electronic signboards?

Answered: 55 Skipped: 41



Answer Choices	Responses
I would support this decision.	34.55% 19
I am unsure.	32.73% 18
I would not support this decision.	32.73% 18
Total	55

#	Explain	Date
1	Why? Expensive...	4/28/2017 1:03 PM
2	At what cost?	4/26/2017 5:35 PM
3	Enough screen time already	4/26/2017 2:18 PM
4	Please don't destroy one of the most charming things in Brisbane.	4/26/2017 9:14 AM
5	Aside from not being a need, an electronic board is a waste of precious resources (energy to run it and materials to make it), and source of light pollution. It also can be vandalized and would need repairs which would waste valuable resources.	4/24/2017 9:09 PM
6	I love the signboards as they are. I don't think electronics are any better for the environment than the paper and ink used to make the signs. Electronic ones would be too corporate and impersonal and Brisbane is anything but corporate and impersonal.	4/19/2017 5:31 PM
7	It depends on the cost of the signboard vs. the cost of paper signs that are currently used.	4/8/2017 11:05 AM
8	Ewww, that would be an eyesore.	4/1/2017 9:16 PM
9	Ugly, ugly, ugly. We are not SSF. Please stop trying to go there. The existing signboard is part of our small town charm. And why waste electricity. Dumb idea.	4/1/2017 12:29 PM
10	Low Fi seems to work well with the town culture.	4/1/2017 9:39 AM
11	I think I could see it from my living room. When would you get the return on investment	4/1/2017 12:33 AM
12	i like the small town feel of the written signboard	3/31/2017 7:34 PM
13	electronic signboards are not in keeping with the feel of Brisbane	3/31/2017 2:28 PM

14	How much does this cost? Is it necessary?	3/30/2017 5:19 PM
15	Not too bright, somewhat muted - black or white writing with soft greens, blues for background - mountain/nature colors, no neon.	3/29/2017 2:04 PM
16	Strongly oppose electric signs for purely aesthetic reasons.	3/28/2017 11:42 AM
17	kind of like the hand made look, but open to something new.	3/26/2017 10:44 PM
18	It would draw more attention even make it look more official.k	3/26/2017 6:43 PM
19	I'm not a fan of the hand written signs but I know some people appreciate them. I think an electronic sign might be too much, but I'm open to seeing something different.	3/24/2017 9:24 PM
20	Too high tech and subject to damage	3/24/2017 9:16 PM
21	I think the existing signboard is charming and reflects our small town well.	3/24/2017 8:47 PM
22	I like the old town feel. Definitely would not want anything electronic.	3/24/2017 4:40 PM
23	Seems more flexible	3/24/2017 3:00 PM
24	Electronics can be too "loud." I for one would not want my death announced in glaring lights! Current paper signs are more "homey" in traditional Brisbane style, but may require economic and environmental consideration.	3/24/2017 2:26 PM



ePaper Creates New Opportunities for Digital Displays

The technology behind eReader devices is opening the door for new and innovative signage.

By Richard Slawsky | Contributing writer, Digital Signage Today

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It seems as if digital displays are increasingly becoming a part of our everyday lives, from bus stop signage that shows the expected arrival time of the afternoon express to wayfinding kiosks that direct us to where we need to go, and much more.

And it's all with good reason. Displays that can be updated in real time, helping us to be more efficient in our daily routines. They save on the printing, mailing and deployment costs associated with printed signage, and they've been demonstrated time and again to increase recall and retention of the content they provide.

But as those displays become increasingly prevalent, they bring with them a number of challenges. Chief among them is the power needed to drive the technology. Not only do digital displays come with increased energy costs, but their use is limited by the availability of that power. Those issues can limit the deployment of digital technology and rob communities and businesses of the convenience they provide.

On the other hand, those challenges are creating opportunities for the application of tried-and-true technologies that overcome many of the hurdles associated with standard digital displays.



Joan Board with 13.3" E Ink
Photo courtesy of Visionect

The look of paper

The issue of power consumption for developing technology isn't new. The skyrocketing energy usage associated with the widespread adoption of refrigerators, air conditioners and other home systems prompted the development of Energy Star standards that are today recognized as a symbol of superior energy efficiency.

It's the same with digital displays, with the increased energy usage prompted by the technology already creating concern around the United States. In 2015, for example, the California Energy Commission proposed a controversial set of mandates proposing to limit the power consumption of computer monitors and digital displays. It's a safe bet that both municipalities and businesses will put the energy costs of those displays at the top of the list of factors to consider when using digital signage to supplement their operations.

One solution to the issue of digital display energy costs is the electronic paper display technology commercialized by Billerica, Mass.-based E Ink Corp. (pronounced ē ing k). Variations of the technology are used in eReader devices such as Amazon's Kindle and Barnes & Noble's Nook. It goes by a number of names, including ePaper, electronic ink and electrophoretic ink.

Although the technology behind ePaper is complicated, simply put, it mimics the appearance of ink on paper.

At the core of E Ink's technology are small capsules filled with a clear fluid containing tiny particles, each about as wide as a human hair, sandwiched between a layer of electrodes. When a positive or negative electric field is applied to an individual electrode, the particles with the corresponding charge will move either to the top or bottom of a capsule, making

the surface of the ePaper display appear a certain color. In its most basic form, the particles inside the capsule will be either black or white. The white particles carry a positive charge and the black particles a negative one. If the electric charge applied is negative, the black particles will be repelled to the top of the capsule and color the surface of the display black in that spot. Vice-versa for the white particles. These particles do not require power to stay in their position; they can maintain their position indefinitely until a new charge is applied, meaning that E Ink's technology is extremely power efficient.

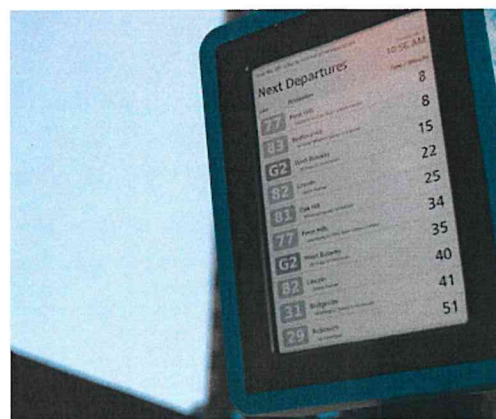
Today, ePaper is being used for applications including transportation signage, conference room displays, wayfinding and more. Its use is becoming increasingly prevalent in so-called "Smart City" deployments centered around streetside displays and "Smart Office" applications such as huddle room whiteboards and meeting room booking applications.

Driving new applications

The concept behind ePaper technology may be fascinating, but its real value lies in certain aspects of the process.

One, creating a static image on an ePaper display requires only a minimal amount of energy. Two, the display will hold a static image indefinitely, even without electricity.

What that means for displays using ePaper is that energy requirements are extremely low, significantly lower than an LED or LCD display. As such, an ePaper screen can run for weeks on a single battery charge or via electricity provided by a small solar panel, independent from the electric grid. In addition, the fact that ePaper displays can be deployed without connecting to the electrical grid can dramatically reduce installation costs. Transit agency Port Authority of Allegheny County and Connectpoint® address this successfully, see case study at the end.



Connectpoint's solar-powered Digital Bus Stop®
Photo courtesy of Connectpoint

Because the displays use reflected light rather than creating their own light, they don't contribute to light pollution. Although that may seem to be a minor point, the light from traditional digital signage can attract insects, interfere with bird migration and even disrupt a person's circadian rhythm, or internal clock. The displays are easier on the eyes and offer a wider viewing angle than most other displays. Content displayed on ePaper remains perfectly visible even in direct sunlight.

And as with traditional signage, a portion of an ePaper display can be used for local advertising, potentially creating a revenue stream that can offset installation and operating costs.

The technology behind ePaper, for example, is being used to communicate bus arrivals and city information via 42-inch displays in Las Vegas as part of a six-month pilot being conducted under a partnership between the city and Cambridge, Mass.-based Soofa Signs. The displays align perfectly with the city's goal of receiving 100 percent of the energy it needs from renewable sources.

The city will also be able to offer ad space on the signs. Soofa has developed a proprietary content management system focusing on finding local businesses to advertise. The signs are initially being placed along Las Vegas' Downtown Loop, but the company is expanding its network of signs around Las Vegas as well as across the United States later this year.

And Slovenia-US based Visionect has introduced Joan, a meeting room booking system for "Smart Offices" based on ePaper technology. The sleek displays can be placed on a door or wall next to a meeting room to show if the room is booked or not. Joan works with MS Outlook, 365, Google calendar, iCal and other most widely used calendars. Meetings can be booked directly from the device, from the company's calendar or by using Joan app on mobile phones.

The displays come with magnetic mount, meaning they literally stick to the wall. Wifi enabled Joan devices are setup in just few minutes, no drilling, no wiring needed.



*Soofa sign in downtown Las Vegas with 42" E Ink display
Photo courtesy of Soofa*

When used daily, the batteries for the 6-inch touchscreen devices usually last for up to 3 months. The 13-inch Joans can stay operational for up to 12 months on a single charge, sending an email to administrators when batteries run low.

Joan is highly customizable as she works in 20 languages, users can replace Joan's logo with their own, and can display custom text and pictures like welcome messages, company achievements or even birthday wishes.

Growth for the foreseeable future

The benefits offered by ePaper displays are expected to drive the growth of the technology for the foreseeable future. In fact, a recent study compiled by Research N Reports projects the ePaper market will grow at a compound annual rate of 36 percent over the next five years.

Another report, by Zion Market Research, predicts the ePaper market will top \$28.87 billion by 2022, up from \$6.75 billion in 2016. That's a compound annual growth rate of slightly more than 27.4 percent over the period.

Applications for ePaper technology extend far beyond transportation and wayfinding signage. Other uses include watches, shelf tags, ID badges, service station signs, traffic condition displays and more.

And the color and resolution capabilities of ePaper displays continue to expand. E Ink is developing a new type of ePaper called ACeP, or Advanced Color ePaper, that can display more than 32,000 different colors at a resolution of 1600 x 2500 pixels and 150 PPI.

With the continuing development of new technologies such as IoT and others, ePaper displays are likely to spawn new and as-yet undreamt-of applications for consumer-facing screens. Not only will that lift up the entire digital signage sector, those new applications will make our lives easier in the process.

Connectpoint® teams with E Ink to deliver smart transit, digital signage.

The challenge

The transit agency Port Authority of Allegheny County, the second largest transit agency in Pennsylvania, wanted to install real-time, digital bus stops in the downtown Pittsburgh area. Unfortunately, they didn't have electrical infrastructure to support these digital displays so they turned to their wayfinding solutions partner Connectpoint®.

Connectpoint had recently developed the first solar-powered, real-time, ePaper digital displays in North America aptly named Connectpoint® Digital Bus Stop®. Connectpoint also developed a lightweight, weatherized casing that can be deployed on existing infrastructure within 30 minutes.

Implementing solar-powered, digital signage in an urban environment is a challenge with shade considerations such as different heights of buildings and trees, to name a few. Also, in direct sunlight LED/LCD screens are hard to read so ePaper was the perfect solution. When broadcasting real-time arrivals, maps and alerts ePaper displays are perfect for outdoor environments because of its high visibility in any lighting situation.

The results

The Port Authority of Allegheny County, with a daily ridership of over 85 million a year, contracted a total of 20 solar-powered, real-time, ePaper Connectpoint® Digital Bus Stop® products to be installed. This was the largest real-time, ePaper variable messaging deployment in North America.

Broadcasting real-time arrival/departure times to riders resulted in lessening their confusion and creating a more enjoyable transportation experience. Studies show that when riders have the information available, even if there is a delay, it puts them more at ease and able to feel in control of their trip.

While installing at busy intersections, riders of all ages were intrigued and incredulous. They couldn't believe that they could see in real-time when their bus would arrive. There were smiles all around on the inaugural launch, and Port Authority of Allegheny stated that people not only use the Connectpoint® Digital Bus Stop® with real-time arrivals/departures/alerts but study it.

Source: Connectpoint

About the sponsor:

E Ink is the originator, pioneer and commercial leader in ePaper technology. The company delivers its advanced display products to the world's most influential brands and manufacturers, enabling them to install extremely durable, low power displays in previously impossible or unimaginable applications and environments.

E Ink encompasses the combined E Ink Corporation, which was spun out of the MIT Media Lab in 1997 to commercialize electronic ink and EPD technology, and Prime View International, which was established in 1992 as the first TFT LCD company in Taiwan, focusing on high quality small-to-medium-sized TFT LCDs. In 2009, Prime View acquired E Ink Corporation to further integrate and expand the EPD supply chain and the new combined companies were branded as E Ink.

E Ink's corporate philosophy centers around delivering revolutionary products, excellent user experiences, and environmental benefits through advanced technology development.



City of Brisbane

Custom E Ink Outdoor Displays

Dawn Kersey
11/15/2018 Rev 3



Custom E Ink Outdoor Displays Draft Proposal Prepared for City of Brisbane

Digital View, a specialist display electronics and systems provider, is pleased to provide the following proposal for the EInk Outdoor Public Displays installed into a current static signage location.

DV is known for ground-up development and are capable in assisting with evolving product specifications. Our experienced production management, installation and procurement teams assure that a conceptual design turns into a quality product.

Production:

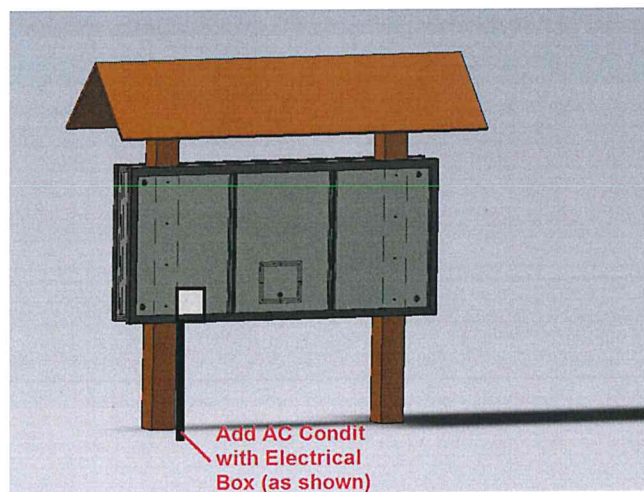
Digital View provides LCD controller boards and custom display solutions for military, commercial, point-of-sale, medical, industrial and professional video applications. All engineering, development, testing and customization of LCD controller hardware is performed in our Hong Kong facility. Large scale manufacturing of controller boards and Displays are performed in mainland China under contract at ISO 9001 certified facilities. Small to Medium scale production of custom display products are assembled in our California facility. Requests for site inspections are welcomed.

Installation:

Digital View will provide the labor for installation of the two units with all hardware associated with the panels to the structure. Any other necessary components defined at site survey will be an additional cost to the City of Brisbane.

Preparation for Installation:

Digital View will require 110V from an electrical junction box directly between the displays on one of the two posts. Please see below suggested diagram:



A site survey with the City of Brisbane’s electrician will be required to confirm placement of power before scheduling installation.

With the site survey, we will need to confirm the structure is adequate for installation. If any improvements need to be made before installation, City of Brisbane is responsible to make said improvements before scheduling installation.

Power Consumption:

42” Comparison per Display Type	E Ink Display	Standard LCD Display
Power Consumption	Idle Mode 0.8W (at 5V) *1.5W (at 5V) when updating content.	Constant 81.06W (at 24VDC)

Content Set Up and Training:

Digital View will work with EInk to provide appropriate training for initial set up and programming of the screens.

Estimated Costs:

Inclusive of 6 each 42” E Ink panels with bonded glass. Metal Chassis and bezel with protective acrylic or tempered glass (removable and replaceable in the case that the displays are vandalized). Includes installation based on the above terms: **\$56,500**

Delivery Schedule

10-12 weeks

Installation Schedule: TBD

Quality

Digital View has been in the business of making high-quality, high-reliability LCD controllers and display kits since 1995. Our expert design and production teams use superior components for our LCD controllers. Our manufacturing lines include 100% testing on each unit, which complete QA inspections.

Custom solution including the E Ink displays, installation and all Digital View components is one (1) year warranty.

Terms:

Standard terms for Custom Products:

- 50% upon order 50% upon delivery and installation.
- NCNR contract required for all custom solutions.
- All terms are subject to credit approval.



Contacts:

Please contact me when you have had a moment to look it over. Let me know if you need clarification or further questions answered.

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