

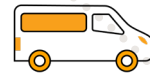
Mobile and Modular Solutions:

Five Ways to Rapidly Address Evolving
Business and Community Needs

Introduction

In our highly competitive world, timing is essential. If your business can't get products or services to your customers at the right place at the right time, your position in the market may become obsolete.¹ With supply chain issues affecting almost every industry, companies are looking for quicker ways to go from project conception to completion. At the same time, communities are suffering from the lack of skilled workers, a growing digital divide, extreme weather events and health crises. What if there was a fully customizable solution, with competitive speed to market, to meet the demands of businesses and community members?

Mobile and modular solutions are developed rapidly and in cost-effective ways to serve new community and business needs or to optimize the performance of existing operations. These solutions encompass various types of temporary infrastructure that can be broadly categorized as follows:



Mobile units, often in vehicular form such as a cargo van or box truck, are fully transportable and perfect for businesses looking to bring their products or services to multiple locations and test out new markets.



Modular units, typically prefabricated off-site, provide a semi-fixed facility without the high price of permanent infrastructure and can be utilized for longer-term operations while still providing some mobile functionality. Modular solutions feature a system of individual components that can be configured in different ways to serve unique customer needs.² These solutions are great for temporarily relocating during building remodels and supporting operations that aren't convenient to your headquarters.

Used as alternatives to more permanent infrastructure, mobile and modular solutions are quicker to deploy, less expensive, and more flexible to adapt to evolving needs. These are just a few ways mobile and modular solutions can be utilized to benefit both businesses and communities in the U.S.:

- **Workforce development.** Employment demand is projected to grow by 8.3 million jobs by 2031.³ Mobile and modular solutions can deliver much-needed skills trainings so employers can fill their open positions with qualified candidates.
- **Digital equity.** 19 million people don't have high-speed internet access at home.⁴ Mobile and modular solutions quickly bring high-speed internet access to underserved, often rural areas without constructing costly communications networks.
- **Disaster relief.** In 2022, natural disasters cost the nation \$175.2 billion in damages.⁵ Mobile and modular solutions offer quick-to-deploy, potentially life-saving services while damages to critical infrastructure are repaired. Disaster relief initiatives can also be utilized to address the lack of routine health services for vulnerable populations.
- **Nonprofit support.** The secondhand clothing market is expected to reach \$70 billion by 2027,⁶ but nonprofits are struggling to keep up with the inventory. Mobile and modular solutions give these organizations a more efficient way to collect and distribute secondhand donations.
- **Safe water supply.** Complying with new Per/Polyfluoroalkyl Substances (PFAS) regulations is estimated to cost water utilities \$3.8 billion per year.⁷ Utilities are considering mobile and modular solutions to provide immediate relief for water treatment needs to accelerate the development of more permanent infrastructure.

Mobile and modular solutions might just be the answer you are looking for to enhance your business operations and improve quality of life in your community. This ebook highlights success stories about mobile and modular infrastructure deployed around the nation. Explore how creative approaches to traditional infrastructure can solve challenges plaguing our economy and society.

1

Meet Growing Employment Demand Through Workforce Development Initiatives

Many Americans face employment barriers including low computer literacy, unreliable transportation, and lack of internet access. Simultaneously, employers are struggling to fill open positions with qualified candidates while employment demand is projected to grow by 8.3 million jobs by 2031.⁸ The good news is that addressing these workforce development challenges benefits everyone involved — job seekers, businesses, and community members.

Workforce development refers to programs that create and maintain a viable labor source to sustain current and future business demands. These initiatives aim to teach marketable skills to unemployed individuals and to train underemployed individuals into more advanced careers. Training programs usually are designed to teach specific knowledge and skills that are required to fill open positions in a local market. Successful workforce development solutions include recruitment, pre-employment training, on-the-job training, apprenticeship programs and other forms of skill development. The following summarizes the main barriers to workforce development:

- **Knowledge.** Employment obstacles such as language barriers, communication challenges, computer literacy and lack of general resources often prevent capable job seekers from pursuing career opportunities.
- **Transportation.** Public transportation is often inconvenient or nonexistent, especially in rural areas. Many unemployed and underemployed individuals may not have a reliable vehicle to get to dispersed job training centers for skills development.
- **Technology.** Online job training programs have been developed to mitigate transportation issues, but many unemployed and underemployed individuals don't have internet access at home, lack computer skills, or can't afford a personal computer. These factors prevent prospective employees from applying for jobs, even if those jobs don't require advanced computer skills to be successful.

- **Childcare.** Childcare is cost-prohibitive for those seeking training and employment (especially women), and adequate childcare services are simply unavailable in some neighborhoods and communities.
- **Cost.** Underemployed individuals may not be able to afford to lose wages from time spent pursuing additional skills training. Purchasing professional clothing for interviews may also be cost-prohibitive for some job seekers.

According to the Associated General Contractors of America, recruitment and retention are essential to the future of the construction industry.⁹ There are various strategies that companies can implement to address workforce development challenges:

- Partner with local high schools and community colleges through career placement and advancement programs
- Align training with industry needs through apprenticeship programs that mix pre-employment instruction with on-the-job training
- Make benefits and training program information publicly available in a variety of formats and languages
- Offer training for industry-recognized certifications (such as OSHA 30)
- Provide additional employment benefits including per diem for transportation to the jobsite and Flexible Spending Accounts (FSA) for childcare
- Educate local students on the career path and earning potential of skilled trades professions

Workforce development initiatives cultivate a rare “everyone wins” situation. Big companies tend to put down roots where skilled labor is available, creating higher tax revenue and job stability in these areas. Businesses and communities prosper when workers take pride in fulfilling careers that allow them to provide for their families.



2

Achieve Digital Equity by Bringing Internet to Rural Areas

To ensure true digital equity, everyone needs access to communications technologies and the knowledge to properly use them; unfortunately, 19 million people in the U.S. still don't even have high-speed internet access at home.¹⁰ To combat barriers to employment including digital equity, Goodwill Industries provides job training, employment placement services and other community-based programs.

Evergreen Goodwill of Northwest Washington needed a way to deliver high-speed internet access, computer literacy, and workforce development classes to underserved communities without relying on permanent infrastructure. In early 2022, Black & Veatch delivered Evergreen Goodwill's "Digital Equity Bus" — a state-of-the-art vehicle that reflects what's possible in furthering Diversity, Equity and Inclusion (DEI) in workforce development. The mobile classroom spans 36 feet in length and features fully equipped workstations for students and instructors. The bus integrates essential learning technology, including SMART Boards, wireless connectivity, charging stations, laptops, sound-amplifying equipment, and specialized accessibility features.

The Digital Equity Bus is being used to bring English and computer literacy classes to Ukrainian refugees in a welcoming, efficient and cost-effective way. The vehicle platform can also be adapted for the classroom portion of skilled trades education. Utilizing creative mobile solutions to extend the reach of digital literacy programs is especially critical now that so many people rely on access to technology and Wi-Fi for work and school.





3

Reduce Impact of Natural Disasters with Rapid-Deploy Relief Efforts

In 2022, natural disasters cost the nation \$175.2 billion in damages.¹¹ Floods, hurricanes, tornadoes, earthquakes, and wildfires pose dangerous threats to critical infrastructure (such as water lines, power distribution, communications networks, and medical facilities). Mobile and modular solutions offer quick-to-deploy, potentially life-saving services while damages to critical infrastructure and essential buildings are repaired.

Mobile and modular solutions offer a scalable design that can be adapted for many situations. Temporary infrastructure can quickly be optimized for distribution of food, water, and other supplies (including vaccines in a health crisis). They can provide shelter for people whose homes have been compromised or destroyed and serve as classrooms while schools are repaired. Field medical facilities can be set up to tend to the injured, and emergency response personnel can designate a temporary control center while getting community members back on their feet.

As an alternative to more permanent infrastructure, mobile and modular solutions are an appropriate response to natural disasters because they are so quick and cost-effective to deploy. Mobile and modular solutions can even be prefabricated and stored so they are ready to “plug and play” in the wake of a disaster, offering redundancy and resiliency especially when combined with other response strategies.

The impacts of natural disasters are not equal across communities; underserved and vulnerable populations, such as low-income families and racial or ethnic minorities, face obstacles that hinder their abilities to respond to and recover from disasters.¹² For example, lower-income communities are often in the older parts of cities, and aging infrastructure and buildings are more easily damaged. Data also reveals disparities in how different ethnicities are impacted: according to the U.S. Census, an average of 1.5% of people were displaced by natural disasters in the first six months of 2023. That average was higher for specific ethnicities: 1.8% for Latinos, and 2.4% for Black communities. The consequences of being displaced can be life-altering, as 21.8% of Latinos and 15.1% of Black people reported they have not been able to return to their homes.¹³

Although mobile and modular solutions are not necessarily intended to be used long-term, they allow communities to begin their recovery process as quickly as possible, minimizing suffering for those affected. While the suffering tends to be more silent than extreme weather events, disaster relief efforts can also address the lack of routine health services that affects vulnerable populations.

Case Study: Modular Health Crisis Response for Orlando-Based Cruise Line

Disaster relief solutions apply to major health crises as well. Black & Veatch worked with an international entertainment and cruise line conglomerate to develop temporary COVID-19 testing operations at a major port in Orlando, Florida. The team deployed an on-site laboratory and testing facility within just a few weeks of contract award. After a year of using this modular infrastructure solution, 350,000 portside tests were performed to protect the health of cruise passengers.

The COVID-19 pandemic challenged Black & Veatch to leverage expertise in developing distributed infrastructure, collecting and tracking data, and managing networks of project personnel to offer integrated health solutions. Post-pandemic, the company has expanded our suite of solutions to support a wider variety of community health services including mobile dental care clinics in underserved areas.



4

Extend Reach of Local Nonprofit Organizations With Mobile Infrastructure

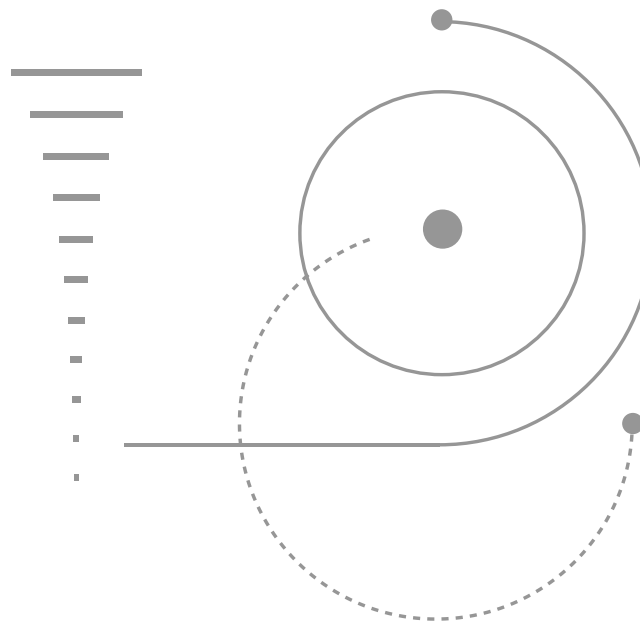
The U.S. secondhand clothing market maintains a strong trajectory, expected to reach \$70 billion by 2027.¹⁴ Goodwill Industries proves that an unassuming bag of secondhand donations has the power to change lives. Through Goodwill's retail stores, sales from donations fund pivotal workforce development initiatives.

Black & Veatch collaborated with the Goodwill of Western Missouri and Eastern Kansas (MoKan Goodwill) leadership team to bolster their business operations. MoKan Goodwill had four main objectives that sparked the addition of a mobile solution to their growth strategy:

- **Extend the reach of existing stores.** They wanted a mobile solution to bring to high-donation-potential areas, without existing retail stores, and deliver those donations directly to those in need in other parts of the community (for example, collecting coats and delivering them directly to unhoused individuals).
- **Pilot test locations for future retail stores.** MoKan Goodwill is strategic about where they open new retail locations to ensure economic viability. They needed a way to utilize temporary solutions to test out new locations without making major multi-year investments in permanent infrastructure.
- **Identify more cost-effective ways to collect donations.** Leasing retail space (or even just parking lot space for Conex boxes) is expensive. Identifying cost-effective alternatives to long-term leasing allows the nonprofit to re-invest any money saved back into their education and employment programs.
- **Increase competitive advantage in the retail space.** With many other secondhand stores entering the market, MoKan Goodwill needed mobile methods of gathering donated goods to fill their retail locations. They also were seeking more creative ways to drive brand awareness in the community.

With MoKan Goodwill's objectives in mind, Black & Veatch launched the Mobile Donation Collection Vehicle (MDCV). With capabilities to process 100 to 150 donating customers per day, the MDCV uses a drive-through orientation to collect and organize donations at remote sites and transport them to a centralized hub for processing and distribution. The vehicle features a 5.5-kW generator (with internal and external power outlets), a 13,500-BTU AC and heat pump, and a 3,000-pound lift gate. For extra space and shelter from the elements, the MCDV is also equipped with motorized awnings on both sides and two 20x20 rapid-deploy pop-up tents. Prior to MoKan Goodwill's purchase of the MDCV, Black & Veatch performed a financial analysis to prove that the additional retail revenue would offset the cost of the vehicle over time.

Learn more about the MDCV on bv.com.



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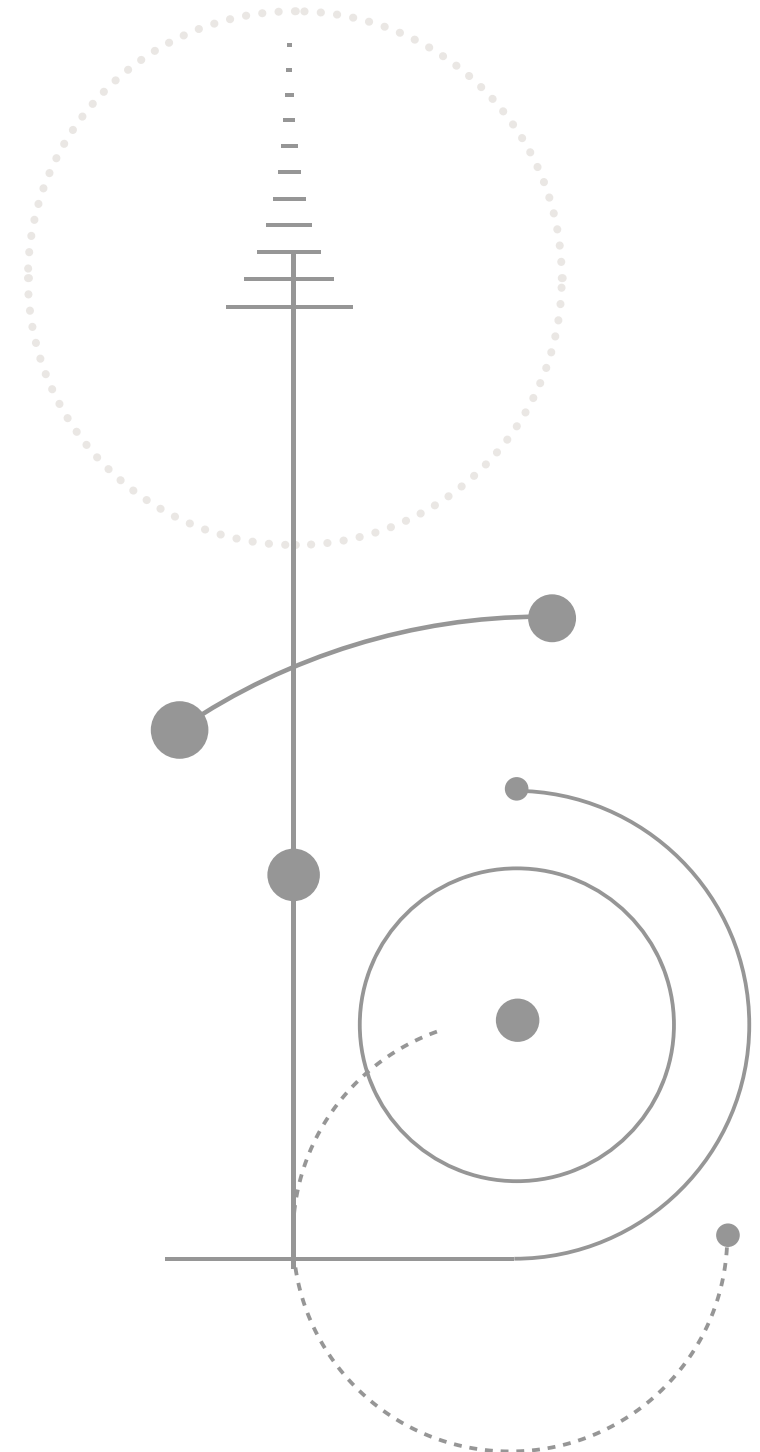
Mitigate PFAS Contamination for Safe Community Water Supply

PFAS are found in many household and industrial products and referred to as “forever chemicals” because they take decades to break down in the environment. Due to their widespread use and insidious nature, they are now present in water sources, air, and soil across the globe. PFAS mitigation has the potential to prevent tens of thousands of related illnesses caused by long-term exposure.¹⁵

In 2023, the federal government proposed the first-ever drinking water standard for PFAS. The U.S. Environmental Protection Agency (EPA) aims to protect public health from PFAS pollution through these legally enforceable PFAS levels for six contaminants known to be found in drinking water. The new regulation, impacting over 140,000 public water systems, is expected to be finalized at the beginning of 2024 with compliance mandated by 2027.¹⁶

A recent study conducted by Black & Veatch (on behalf of the American Water Works Association) revealed that the overall cost of for U.S. water utilities to install infrastructure and processes to meet the EPA’s PFAS mitigation requirements exceeds \$3.8 billion per year.¹⁷ The new PFAS policy urgently adds multiple costly steps to a water utility’s operations: addressing public concerns, expanding contaminant testing processes, and taking necessary action when PFAS are detected. Although the federal government’s Bipartisan Infrastructure Law allocates funding for PFAS mitigation, water utilities need a fast, reliable, cost-effective solution to adhere to these mandates.

Providing safe drinking water for our communities shouldn’t take 18 to 36 months. Fortunately, modular water treatment solutions are available for rapid and emergency deployment to provide immediate relief from PFAS and other contaminant concerns. Modular units can be deployed as soon as upfront testing and assessments are complete. These systems come in compact configurations that can be delivered by vehicle and utilize well-established treatment methods. Modular units able to treat up to four million gallons per day (MGD) can be deployed independently or in multiples to achieve higher treatment flows. These temporary emergency solutions enable water utilities to transition to more permanent solutions in an accelerated manner; the modular units can be moved to a new location once a permanent solution is built. These turnkey modular solutions reduce capital investments and shorten lead times when speed is critical. Being able to continue normal operations without disruptions, while complying with PFAS regulations, helps water utilities maintain public confidence and reclaim control of system performance.



Next Steps: Pioneer First-of-its-Kind Mobile and Modular Infrastructure

The world is constantly evolving, and Black & Veatch is at the forefront of that change. As a global infrastructure provider with more than 10,000 employee-owners, we're reshaping how we engage with our clients and our communities in response to societal challenges. Black & Veatch is passionate about launching first-of-its-kind solutions to drive market competition and eliminate complacency amongst other engineering and construction firms.

Black & Veatch's mobile and modular solutions are backed by over 100 years of experience designing and building major infrastructure around the world. These solutions can be leveraged for a variety of business and community use cases including (but not limited to) skills training classrooms, disaster relief operations centers, offices and conference rooms, medical and dental care clinics, testing and research labs, water treatment facilities, and electric vehicle charging stations. These capabilities expand each time we have the privilege to collaborate with a client looking to address their evolving needs in creative ways.

Can an innovative mobile or modular solution help achieve your goals?

Contact us



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