

A woman wearing a white hard hat and safety glasses is focused on working on a large, complex industrial machine. The machine has various pipes, valves, and a large circular opening. The background is filled with industrial equipment and tools, creating a sense of a busy manufacturing environment. The lighting is somewhat dim, with a blue tint, emphasizing the industrial nature of the scene.

Advancing Equitable Innovation in Houston

Local Strategies
to Support Urban
Manufacturing and
Inclusive Growth

December 2018

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Introduction

Manufacturing is thriving in Houston. From energy-related manufacturing to small-scale production and making, Houston's manufacturers are harnessing the city's innovation, technology, and educational resources to develop new products and businesses.

Manufacturing also creates critical opportunities for inclusive economic growth. Houston's manufacturing sector provides accessible career pathways for job seekers and entrepreneurs from diverse backgrounds. Further, small, urban manufacturers (SUMs) can bring much-needed economic activity and jobs to communities. However, SUMs face unique growth challenges, including lack of affordable production space, business development incentives, and workforce development support. These issues will require creative, multi-stakeholder solutions.

In 2018, TXRX Labs and other local organizations convened the Equitable Innovation Conference to discuss potential solutions, and this white paper is a result of those discussions. It provides insight into local challenges and opportunities for SUMs, and offers potential strategies – illustrated through local assets to build upon and national best practices to learn from – to grow Houston's urban manufacturing sector.



2018 Equitable Innovation Conference: A Pivotal Moment to Address Equity

Houston's economy is robust and fast-growing. Between 2010-2015, job growth outpaced national rates.

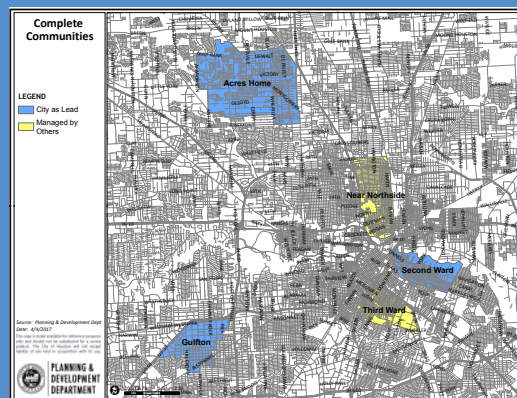
The region is the second most prosperous in the nation, reflecting indicators of productivity, standard of living, and wage growth¹. However, this prosperity is far from inclusive – Houston is ranked among the top 10 most unequal metropolitan areas², with 20 percent of its population earning more than double the median income, while another 20 percent earned half the median income or less (approximately \$22,800).³

Additionally, stark racial dimensions play into this divide. Poverty rates among people of color are 14 percent higher than their white counterparts. People of color are concentrated in low-wage occupations, and are not as prepared for increasing skill requirements. For instance, only 25 percent of Latinos have some college education as compared to 50 percent of the White population⁴.

Houston is undertaking two major efforts to address these inequities. The first is Mayor Sylvester Turner's **Complete Communities** initiative, which will partner with residents in five of the city's most under-resourced communities to co-develop strategies to bring jobs, health care, education, and other resources into their

Houston's Complete Communities

Complete Communities aim to improve neighborhoods so that all of Houston's residents and business owners can have access to quality services and amenities. By working closely with the residents of communities that haven't reached their full potential, the City of Houston will seek to understand their strengths and opportunities, and collaborate with partners across the city to strengthen them. While working to improve these communities, they will also work to ensure existing residents can stay in homes that remain affordable.



 To learn more, visit houstontx.gov/completecommunities

neighborhoods. The second is the **Innovation District Plan**, which creates a physical hub that brings academic and business partners together to drive research and job growth in technology, energy, health care, logistics, and other innovation sectors.

This is a pivotal moment to ensure that these initiatives will address the growing economic and social disparities in Houston. Local stakeholders are concerned that as currently designed, these initiatives do not focus on creating equitable and inclusive pathways for all Houstonians, especially for disadvantaged communities. These stakeholders define success as advancing inclusion and prosperity, and their participation or support of these initiatives hinges on clearer priorities and strategies to achieve equitable outcomes.

In April 2018, TXRX Labs, the Kinder Institute, Houston Exponential, and other partners decided to address this head on. With partnership, guidance, and input from the Urban Manufacturing Alliance (UMA), they hosted the Equitable Innovation Conference to give stakeholders a space to engage with these questions, and to define how the City's initiatives could better address equity. Leveraging UMA's prior research on equity, inclusion, and manufacturing innovation, the conference focused on manufacturing as an opportunity to create more equitable pathways within the Mayor's focus communities and investment areas. The event convened local and

national political, community, academic, and business leaders to:

1. share current challenges;
2. learn about national best practices to advance equity in innovation and manufacturing; and
3. discuss local assets that could be leveraged to develop similar strategies in Houston.

Conference attendees supported and reiterated the need for joint and timely action to tackle inequality and increase opportunity in Houston.

This white paper serves as a summary of these discussions, and seeks to provide a platform for continued dialogue and action. It defines key priorities for equity-focused strategies and provides recommendations from promising national practices to help inform practitioners and policymakers working to create more equitable pathways for all Houstonians.

Who Attended the 2018 Equitable Innovation Conference?

People representing...



City officials, including Mayor Turner, and Council Members Cisneros, Davis, and Edwards.



Funders, including Houston Endowment, Clinton Foundation, McNair Foundation, HoltHouse Foundation, United Way, and LISC.



Local government, including City of Houston, City of Fulshear, Houston Housing Authority, and City of Houston Economic Development.



Higher education institutions, including Lone Star Community College, Houston Community College, University of Houston, University of Houston-Downtown, and Rice University.



Industry partners, including oil & gas, manufacturing, banking, and logistics.



K-12 educators, including Houston Independent School District, KIPP, Yes Prep, and St. Michael's Preparatory Academy.



Community-based organizations, including Houston Food Bank, Texas Environmental Justice Association, SER Jobs for Progress, and Houston Area Urban League.



Community planning organizations, including Houston LINK, Buffalo Bayou Partnership, and Asakura Robinson.



Small businesses, including GRIND, Finca Tres Robles Farms, Calamine, and Leverage.

Urban Manufacturing as a Pathway to Equity

Nationally, investments in innovation economies continue to create new jobs and drive economic growth, but for cities like Houston that are experiencing rapid demographic shifts and widening economic and racial disparities, these investments have often failed to reach low-income communities and communities of color.

Cities with vibrant innovation clusters are finding that incomes are rising for top earners in sectors such as tech and media, while stagnating and even declining for low- and middle-wage workers in sectors such as health care or retail.⁵ This bifurcation in wages has disproportionately impacted workers of color: the percent of workers that are working full time but still living in poverty is increasing, and is now more than double amongst this group than amongst the white population.⁶

Addressing these inequities will require widespread access to good jobs in sectors beyond tech, media, and other high-skill professions. Manufacturing has been one such opportunity, providing good quality, middle-wage jobs to workers without higher levels of educational attainment, and paying better wages than other accessible industries, such as retail and food service.

As in other cities, small-scale manufacturing is on the rise in Houston, redefining the landscape of urban manufacturing from traditional, larger

firms to smaller, more versatile firms that can produce customized products in sectors such as food, electronics and hardware, additive manufacturing, and apparel. Broader access to technology, tools, networks, and other innovation resources are allowing people to make, invent, and develop new products that can launch viable businesses. The success of community-based makerspaces such as TXRX Labs is an illustration of this trend.

EQUITY is just and fair inclusion into a society in which all can participate, prosper, and reach their full potential.

An **EQUITABLE INNOVATION ECONOMY** leverages the productive gains of innovation to create good jobs and broaden access to these jobs for people of color and low-income communities, while expanding growth by increasing the talent pool and addressing inequality.

As the manufacturing sector shifts, there are persistent challenges that will need to be addressed in order for these jobs to remain accessible. For example, manufacturers face challenges accessing affordable production space in cities, or adequate business development incentives. Entrepreneurs, especially people of color and women, face

barriers when starting new businesses and tend to be underrepresented in higher paying occupations at the management or higher skill levels within the sector. And the well-known national labor gap is especially pronounced in Houston, where the growth of the energy sector and a shortage of graduates with middle-skills are cited as the top two reasons for the gap.⁷ A Kinder Institute's study of the four largest school districts in the region shows that over 30 percent of Houston area students are not in school or employed after high school⁸. Despite available workers, manufacturing jobs remain unfilled, damaging the local economy.

Economic development practitioners across the country are working to reinvent the status quo and implement strategies that leverage innovation and manufacturing to create more equitable outcomes.⁹ But creating good jobs and broadening access to these jobs for people of color and low-income communities will require an intentional focus and more collaborative approaches.

These approaches must lead with the beliefs that:

1. more inclusive growth is vital to building resilient communities;
2. investing in small-scale manufacturing and production is one strategy that can contribute to inclusive growth; and
3. innovation and technology can also be leveraged to create broad-based benefit rather than increasing inequality.

Historically, Houston has favored more traditional economic development practices that support large industrial developments with tax abatements and other incentives. However, Houston's manufacturing sector can also be strengthened through a range of place-based, inclusive economic development strategies that help businesses grow within their local communities.

Manufacturing in Houston at a Glance

- **230,900 jobs** and 8% of total employment.
- Fastest-growing sectors include **energy-related manufacturing, machinery, and fabricated metals.**
- **8%** of total private employment.
- Average manufacturing production wages are still higher than the local living wage, at nearly **\$20/hour**, and higher than average wages in healthcare, food service, retail, and accommodation.



Bureau of Labor Statistics OES 2015 & MIT Living Wage Calculator 2015; Dallas Federal Reserve 2016; UMA & Pratt Center analysis

What's Needed? Strategies to Advance Inclusion in Manufacturing and Innovation

This section outlines opportunities for growth to support small, urban manufacturers (SUMs) and provides real world approaches that are helping build more inclusive manufacturing and innovation ecosystems nationally. The aim of this section is to help practitioners in Houston understand potential partnerships, policies, and programs that they could implement in their own communities.

Many of the identified local assets aren't targeted at manufacturing or any specific sector. However, it's important to highlight their work because they provide a good profile of programs that engage diverse, hard-to-reach populations, cross-sector partnerships, and more. Whenever possible, we note how some of these programs in Houston could be targeted more directly towards the manufacturing sector.

- 1 Develop cross-sector partnerships to deliver STEAM-focused education and career exposure.**
- 2 Invest in committed partnerships and targeted services to prepare a diverse workforce for careers in manufacturing and innovation.**
- 3 Create an umbrella organization to meet unique needs of SUMs.**
- 4 Activate neighborhood-based hubs to engage a diverse pipeline of makers and entrepreneurs.**
- 5 Develop affordable space for manufacturing and industrial use in diverse neighborhoods.**

1 Develop cross-sector partnerships to deliver STEAM-focused education and career exposure.

Engaging young people in STEAM opportunities provides an entree in to future career pathways and educational opportunities. K-12 schools, colleges and universities, non-profits, and industry collaborators can all play a critical role in providing immersive STEAM activities for students of all ages. Through creative coalition-building, innovative leadership, and community resources, Houston can develop cross-sector partnerships to prepare students for high-tech, high-demand manufacturing and innovation jobs.

- ▶ **Collaboration is key.** Creating opportunities for students and teachers to engage in STEAM beyond the classroom often means developing new partnerships, particularly when resources are scarce. Makerspaces (and other hands-on learning labs) and education institutions can provide these diverse STEAM learning opportunities.
- ▶ **Don't forget to include industry.** Industry partners can demonstrate how these skills translate into career and business opportunities, provide internship opportunities, and help shape relevant curriculum.
- ▶ **Change the culture.** Negative perceptions of manufacturing coupled with a focus on the idea that “everyone must go to college” should be reframed, and then disseminated through trusted channels into the community.



1 Develop cross-sector partnerships to deliver STEAM-focused education and career exposure.

Local Assets to Build On



Bridge Year

BridgeYear is designed to close the gap between underserved youth and meaningful careers. Their work targets underserved high school students with a GPA of 2.5 or below: a population typically underserved by college counseling efforts during their senior year. BridgeYear's work includes two main components: (1) exploration of high-growth careers via hands-on simulations called "Career Test Drives" (CTDs) and (2) intensive near-peer advising to bridge the advising gap between high school graduation and postsecondary program enrollment. Target careers are identified by industry partners based on employment need and include those in healthcare, petrochemical, construction, and technology/service that pay living wages or above.



University of Houston-Downtown

University of Houston-Downtown serves students from minority, low-income backgrounds, many of whom are the first to attend college in their families. It has a unique role in helping to shepherd high school and college students through various educational and career options. In the future, UHD could facilitate partnerships to expose students to hands-on learning, other local resources such as makerspaces, and leverage its resources to play a role in community building activities.

1 Develop cross-sector partnerships to deliver STEAM-focused education and career exposure.

National Promising Practices



Sierra College / HackerLab - Sacramento / Rocklin, CA

Sierra College, a California Community College, partnered with HackerLab, a community-driven makerspace in Sacramento, to create a second location on their campus in Rocklin, CA. As a result, **students, faculty, staff, and the community have the opportunity to access a range of training programs and equipment sharing opportunities outside of the classroom.** With over 600 members and upwards of 6,000 individuals served every year, the HackerLab/Sierra College effort is a shining example of how maker communities can partner with educational institutions to expand the demographic of makers and impact on the community. The CCC Maker initiative, of which Sierra College is a part, will soon publish an online startup guide, documenting the first year makerspace planning process in which 34 community colleges participated.



Learn more [here](#) and [here](#).



Manufacturing Renaissance - Chicago, IL

Manufacturing Renaissance houses two programs that work to advance a “society that is economically, socially, and environmentally sustainable and restorative” through manufacturing: the Chicagoland Manufacturing Renaissance Council (CMRC) and Manufacturing Connect (MC). CMRC is an advisory board comprised of over 30 members representing all sectors, including **manufacturing companies, consultants, non-profits, labor unions, government, educators, and community and economic development leaders.** CMRC informs and supports the MC program, which has provided skills training to high school students looking for manufacturing careers, as well as job placement and college prep opportunities.



Learn more [here](#).


1 Develop cross-sector partnerships to deliver STEAM-focused education and career exposure.

National Promising Practices



WorkRoom Program Alliance - Cleveland, OH

Dan T. Moore Company, a Cleveland-based manufacturer, partnered with a local public school, Ginn Academy, to create the WorkRoom Program Alliance (WPA), which converted a public school classroom into a makerspace that provides foundational skills-training for manufacturing. This industry-led program aims to create makerspaces “as neighborhood cornerstones in order to upskill and reskill youth and adults in the skills needed by manufacturers.” They currently work with youth in the 9th-12th grades (with a central focus to include youth starting at the 5th grade level soon) to begin to show the opportunities that manufacturing can provide right in the neighborhoods where the participants live. They have served approximately 40 students since their inception in 2016, all of them African American and nearly all of them TANF (Temporary Assistance for Needy Families) eligible.

 Learn more [here](#).

2 Invest in committed partnerships and targeted services to prepare a diverse workforce for careers in manufacturing and innovation.

As sectors such as advanced manufacturing, logistics, and petrochemical engineering grow in Houston, so does the need for qualified, middle-skill workers. While these jobs may not require a four-year college degree, they demand industry-specific credentials beyond a high school diploma. Bridging the gap between Houston's low-income, underserved communities and workforce opportunities will require a targeted investment in services, programs, and partnerships.

- ▶ **Connect your service providers.** Workforce development does not happen in a silo. The most effective programs engage a multitude of stakeholders and need committed partnerships between community and vocational colleges, community development organizations, makerspaces, and workforce organizations, among many others. By working together, they can build awareness of job opportunities, provide low-cost training options in neighborhoods, and build a foundation for a workforce pipeline.
- ▶ **But ecosystem-building doesn't come for free.** The work of building these committed partnerships must be a priority for each organization; however, this is unlikely to be their primary objective. There needs to be dedicated resources to convene these groups and to advance their collective goal of creating a new pipeline of workers.
- ▶ **We'll say it again: include industry.** Industry-led partnerships are critical to ensure that vocational and technical education is aligned with real-time business needs, and that candidates are connected to actual job opportunities.
- ▶ **Keep the worker top-of-mind.** Connectivity and accessibility, both physical and virtual, is a major challenge for many in underserved communities. Wraparound services, especially accessible transportation to job or training sites, childcare, and work readiness programs are critical for jobseekers in under-resourced neighborhoods.

2 Invest in committed partnerships and targeted services to prepare a diverse workforce for careers in manufacturing and innovation.

Local Assets to Build On

United Way THRIVE Program

United Way THRIVE, a collaborative launched and led by United Way of Greater Houston, leverages more than 20 non-profit partners and partnerships with employers, community colleges, financial institutions, and city and state agencies, to provide families with the best and most comprehensive resources, wraparound support, and the services they need to reach real and lasting financial independence. United Way THRIVE helps families build stronger financial futures by acquiring skills and education, obtaining better jobs, developing good financial habits, and building savings.

Wesley Community Center

Wesley Community Center has been a United Way Agency for 40 years and has been serving Houston's Near Northside for over 110 years. Their mission "is to invest in the potential of individuals and to create opportunities that strengthen families and build neighborhoods." Wesley provides early childhood education and care for children from 18 months to five years of age, after-school and summer programs for school-aged children, job readiness training and financial coaching for adults, and professional certification programs in collaboration with TXRX Labs, Methodist Hospital, and Houston Community College.



2 Invest in committed partnerships and targeted services to prepare a diverse workforce for careers in manufacturing and innovation.

National Promising Practices



Center for Urban Families - Baltimore, MD

Center for Urban Families is a non-profit that **bridges job readiness training with wraparound services for their community to “address the needs of low-income families and workers in a holistic and effective manner.”** Through their Economic Success program, they support Baltimore’s under-served and hard-to-reach populations with access to pre-employment soft skills training. In addition, they provide gateway credentials to industry fields like OSHA-10 and CPR/First Aid/AED certifications and others. They offer work supports, transit subsidies, clothing assistance, and job placement. They collaborate with many community partners including The Foundry (a local makerspace) which offers entry-level trainings focused such as 3D printing, CNC machining, welding, millwork, and graphics among others.



Learn more [here](#).



Pittsburgh Manufacturing Assistance Center (PittMAC) - Pittsburgh, PA

Originally conceived within the University of Pittsburgh’s Swanson School of Engineering, PittMAC currently sits in Pittsburgh’s Homewood neighborhood. PittMAC offers classes, programs, and workshops in precision manufacturing — skills needed to work in manufacturing facilities across the region — to residents, near and far. PittMAC leverages relationships with community leaders, its track record of 95% job placement since 1994, and **partnerships with manufacturing businesses to create training-to-career pipelines.** They also open their facilities to other organizations (such as Prototype, an organization supporting women in innovation) throughout the community.



Learn more [here](#).

3 Create an umbrella organization to meet unique needs of SUMs.

The face of making and manufacturing in cities is shifting - many of Houston's newest manufacturers are small, nimble businesses creating value-added products at the intersection of technology, design, and production. These small urban manufacturers (SUMs) include specialty food producers, custom metal fabricators, hardware developers, and apparel manufacturers. They utilize local innovation resources, talent, and supply chain relationships to bring products and market, while creating community wealth and local jobs – yet need specific types of support to continue to grow jobs in Houston's neighborhoods.

- ▶ **Develop support services that are right-sized for SUMs.** These businesses have unique needs that are often a mismatch for current economic development incentives which are targeted at larger, well-established manufacturers. What is needed is a suite of services and programs that are designed with SUMs in mind.
- ▶ **Create an ombudsman-like entity or role.** In every city, it's tough to navigate all of the resources, programs, and organizations available to help businesses start and grow. SUMs need a go-to entity that can provide the knowledge of resources – and the order to access them – including: affordable manufacturing and industrial space, technical support for business and product development, and flexible financial resources such as microloans or bridge funding.
- ▶ **Raise the profile of SUMs.** The ombudsman could also raise the profile of these businesses, and provide a much-needed marketing and awareness-building campaign for local making and manufacturing, especially for minority-, women-, and immigrant-owned businesses.

3 Create an umbrella organization to meet unique needs of SUMs.

Local Assets to Build On

📍 Umbrella organizations are one of the most glaring holes in Houston's small urban manufacturing ecosystem. Despite an abundance of cottage crafters and small manufacturers, the industry has little support. This is especially challenging in a city dominated by large oil and gas corporations and a sprawling hospital system. For Houston to embrace its strengths and diversify, umbrella organizations need to collect synergistic companies at all points along the manufacturing spectrum to prove that a smokestack is not the defining mark of an industry.



3 Create an umbrella organization to meet unique needs of SUMs.

National Promising Practices



SFMade and Placemade - San Francisco, CA

SFMade is a pioneer in a growing movement of local branding organizations, or groups that provide a marketing platform and customized business assistance to their city's manufacturers. SFMade is a **go-to resource for the sector, with programs that help manufacturers connect to local consumers, find production space, hire talented workers, identify sources of growth capital, and access local supply chains**. To address the growing demand for affordable, stable production space in San Francisco, SFMade recently launched PlaceMade, the city's first non-profit focused solely on industrial real estate development. Its first project, the Manufacturing Foundry at 150 Hooper St., will offer over 50,000 square feet of new, affordable manufacturing space and amenities.



Learn more [here](#) and [here](#).



Made in Baltimore - Baltimore, MD

Baltimore's local branding organization is focused on supporting minority-owned business owners as a pathway for employment and wealth creation in its low-income neighborhoods, which are also often communities of color. To do this, they've **developed programs that support both these businesses and their communities, such as neighborhood-based pop-up markets hosted with alumni of historically black universities, job training programs in the apparel sector, networking events, and a product certification program**. Made in Baltimore was launched just over a year ago and already has 140 members on its site, with 26 percent owned by people of color. Sixty percent of the vendors at its last holiday market were manufacturing businesses owned by people of color, and 75 percent were women-owned.



Learn more [here](#).

4 Activate neighborhood-based hubs to engage a diverse pipeline of makers and entrepreneurs.

Houston's Complete Communities are filled with entrepreneurs and cottage businesses that serve the needs of their neighborhoods. However, many low-income, people of color, and immigrant residents living and working in Complete Communities have been overlooked by the start-up ecosystem. These community members are vibrant innovators with limited access to start-up capital, mentorship, business support, or proximity to physical hubs, such as makerspaces or incubators.

- ▶ **Create and support neighborhood-based hubs.** To engage and bolster a more diverse group of makers and product innovators, Houston will need more neighborhood-based organizations where residents feel welcome, can experiment with new ideas, receive hands-on training and business support, and connect with a mentor network.
- ▶ **Make awareness and accessibility key priorities.** These hubs should be based in target neighborhoods, easy to reach, and partnered with local schools, churches, or other community-based organizations to engage youth and a more diverse pipeline of entrepreneurs.



4 Activate neighborhood-based hubs to engage a diverse pipeline of makers and entrepreneurs.

Local Assets to Build On



TXRX Labs

TXRX Labs is a non-profit makerspace that is well-prepared to serve as this type of organization, with a strong focus on creating more equitable access to making and manufacturing, broad-based education, and employment opportunities. Its core activities include a range of classes geared towards skill-building in making and manufacturing, including welding, computer-aided design, electronics, and woodworking. TXRX is also an important community-based hub for educators, job seekers, students, and manufacturers, building bridges between these stakeholders and creating a space for community dialogue. Through a series of conferences, TXRX is focused on convening community leaders, economic development practitioners, and policymakers to discuss and address challenges for advancing more equitable innovation in Houston.



Project Flourish

Project Flourish is a social venture accelerator based within the First Presbyterian Church of Houston. This initiative seeks to leverage the resources of the church - both financial and intellectual - to grow a community of businesses committed to advancing socially beneficial outcomes in Houston. The Church hosts a business plan competition, and provides mentorship, technical assistance, and start-up capital to winning entrepreneurs.

4 Activate neighborhood-based hubs to engage a diverse pipeline of makers and entrepreneurs.


National Promising Practices



Remix: The Soul of Innovation - Atlanta, GA

Remix: the Soul of Innovation (SOI) is a social innovation firm that **connects neighborhood residents to resources (such as makerspaces) to transform the creativity of “everyday people” into sustained local innovation.**

Remix SOI builds equalizing “open innovation platforms” inside of Historically Black Colleges and Universities (HBCUs), currently in the Atlanta University Center. They identify, map, and seed innovation ecosystems that ensure access and ownership for community members to create new ideas, products, and new markets for community-based entrepreneurship and wealth creation.


 Learn more [here](#).



New Sun Rising - Pittsburgh, PA

New Sun Rising, a non-profit organization, provides administrative support, incubates businesses and non-profit projects, and accelerates proven social ventures in Pittsburgh’s most vulnerable communities.

Created after they identified a lack of support for emerging entrepreneurs in underserved neighborhoods, NSR takes a community-driven approach to developing new businesses. Through the Vibrant Communities framework, **they lead residents in discussions to determine what kinds of ventures they want to see, and then host business incubators to help them grow.** The incubators provide technical assistance workshops and mentoring; fundraising assistance and zero-interest loans; and access to other professional services -- all within a year-long period. They have supported over 150 ventures, across all industries, including manufacturing and making.

 Learn more [here](#).

5 Develop affordable space for manufacturing and industrial use in diverse neighborhoods.

Houston's historic manufacturing and industrial neighborhoods have underutilized warehouse spaces that could benefit start-ups and scaling small urban manufacturers. However, major barriers to activating these spaces include zoning mandates for industrial and manufacturing, the right mix of incentives to acquire and redevelop properties, and city-led support.

- ▶ **Without the right funding and support, this won't happen.** A city-led or -supported investment fund, or creation of a non-profit or public entity, to oversee redevelopment could help leverage public funding to unlock other sources of funding for these projects, such as federal funding or investment capital.
- ▶ **It has to be affordable.** This new structure could help ensure that these properties remain affordable and accessible for SUMs, through pathways such as non-profit management, or tax incentives designed based on specific criteria for manufacturing and industrial uses.
- ▶ **And, it has to be turn-key and right-sized.** New SUMs do not have money or time to spare. When they're ready for new space, they are looking for move-in ready options that fit their business' needs. Making sure that new developments fit the parameters SUMs need to thrive is paramount to their long-term growth and success.

5 Develop affordable space for manufacturing and industrial use in diverse neighborhoods.

Local Assets to Build On



Greater East End Management District

The Greater East End Management District manages investments to improve the economic vitality, infrastructure, public spaces, and safety in the Greater East End. The partnership includes residents, business owners, and commercial property owners that are committed to growing economic and workforce development opportunities in the neighborhood through capital projects, workforce training, and business attraction.


5 Develop affordable space for manufacturing and industrial use in diverse neighborhoods.

National Promising Practices



Brooklyn Navy Yard — Brooklyn, NY


The Brooklyn Navy Yard is an innovative model of urban industrial development that pairs mission-driven real estate development with business services tailored to the industrial and manufacturing sector. The city-supported Brooklyn Navy Yard Development Corporation (BNYDC) is a non-profit organization with authority to manage and develop a 300-acre waterfront property owned by the City of New York. Currently, there are over 400 businesses on site with over 7,000 jobs, and BNYDC aims to double that number by 2020. BNYDC has a strong equity focus, designing programming and employment services to provide career pathways for NYC residents into good manufacturing jobs and ensuring that M/WBEs have access to opportunities at the Yard. In 2018, the Navy Yard also opened its first Career and Technical Education (CTE) High School onsite, creating a direct link between local high school students, educators, and businesses.

 Learn more [here](#).



NYC Inclusive Creative Economy Fund — New York, NY

The NYC Inclusive Creative Economy Fund provides loans to non-profit and mission-driven organizations that own, lease, and manage affordable spaces for businesses in creative industries, including makers and manufacturers. They believe that by establishing and preserving affordable spaces for light manufacturing, business incubation, maker/artist studios, and cultural activities, the Fund will foster quality middle-skill job opportunities for low- and moderate-income New Yorkers. This initiative is a partnership between LISC NYC and Upstart Co-Lab, a national collaboration connecting impact investing to the creative economy.

 Learn more [here](#).

In Summary

Innovation districts are appearing across the United States. We believe that manufacturing, with support from an alliance of local partners, can connect more communities to the prosperity these districts generate.

Providing the vocational and technological skills needed to secure advanced manufacturing and customized small-scale manufacturing jobs--core components of the innovation ecosystem^{10, 11}--could have a life-long impact on Houston residents in need of better-paying careers. But without a community strategy that penetrates throughout the city and connects these residents with the innovation ecosystem, it is unlikely that they will thrive alongside an innovation district.



Houston is now assessing the community strategy around its innovation district plans, and it's not alone in this exercise. In 2015, the Urban Manufacturing Alliance began to look at equity and innovation strategies through the Equitable Innovation Economies (EIE) initiative. UMA worked closely with city agencies and community-based organizations in four cities to bring an equity lens to their approach to entrepreneurship, advanced manufacturing, and industrial economic development. The EIE Initiative provided the grounding and inspiration for much of the work that UMA and TXRX Labs started even prior to this conference.

Today we are seeing practitioners in Houston engage in a rigorous examination of equity and innovation, and integrate it into approaches to manufacturing and other economic development policies. As a result of this conference and follow-up paper, Houston formed a cross-sector delegation of practitioners who, together, have visited manufacturing hubs in other cities, and attended UMA's 2018 Pittsburgh Gathering. Their delegation includes a makerspace, the Chamber of Commerce, an industry leader, and a local CDFI. Local Houston practitioners are also becoming a part of UMA's national network of organizations who are doing this work, so that they can learn about programs and policies that support inclusive innovation and manufacturing development, and tap into the expertise of the organizations leading the charge.

It's these kinds of cross-ecosystem coalitions and approaches that will continue the great work started at the Houston conference in April 2018. This work requires looking at the assets in place and the opportunities that exist, and working to find solutions to close those gaps in an inclusive and intentional way. This paper is a starting point for that conversation; your engagement will be what carries it forward. ■

Acknowledgements

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About UMA

The Urban Manufacturing Alliance is a national coalition of over 750 organizations across 150 cities that are building manufacturing economies fit for the 21st century. Our mission is to cultivate networks, learn from each other, share and amplify what works from city to city, and support the implementation of local, regional, and national policies that encourage the development of environmentally sustainable, diverse, innovative, and equitable manufacturing in urban settings.

About TXRX

TXRX Labs is a nonprofit makerspace located in Houston's East End. Our 600 classes, education, innovation, and job training programs serve over 6000 Houstonians annually. We see out opportunities to learn, create, and innovate, and we encourage this in others. Our diverse network of creators, artists, and inventors couples with tools and knowledge, enable dream to become reality.

Photos courtesy of the Urban Manufacturing Alliance and their members.

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A black and white photograph of a man in a workshop. He is wearing a light-colored zip-up jacket, a textured knit beanie, and safety glasses. He is focused on his work, using a power tool (likely a sander or grinder) on a piece of metal. Sparks are flying from the tool. The background is slightly blurred, showing industrial equipment.

Endnotes

- 1 Brookings Institution, ["Metro Monitor Dashboard,"](#) 2017.
- 2 Equity Houston, ["Rising Together: A Roadmap to Confront Inequality in Houston,"](#) 2016.
- 3 Kinder Institute for Urban Research, ["Houston Disparity Atlas,"](#) 2016.
- 4 PolicyLink National Equity Atlas, ["Houston Area Indicators,"](#) 2018.
- 5 CityLab, ["Tech Culture and Rising Inequality: A Complex Relationship,"](#) 2014.
- 6 Urban Manufacturing Alliance, ["Prototyping Equity,"](#) 2016.
- 7 J.P. Morgan Chase New Skills at Work Initiative, ["Preparing Houston to Skill Up,"](#) 2014.
- 8 Kinder Institute for Urban Research, ["Transitioning to College and Work,"](#) 2018.
- 9 Urban Manufacturing Alliance, [Equity Community of Practice.](#)
- 10 Brookings Institution, ["Clusters and Innovation Districts: Lessons from the United States Experience,"](#) 2018.
- 11 Brookings Institution, ["An advanced manufacturing innovation district grows in Sheffield, England,"](#) 2015.

