Supporting Reshoring in American Communities
Tools and strategies for economic developers
International Economic Development Council (IEDC)

IEDC is a nonprofit membership organization serving economic developers. With more than 4,600 members, IEDC is the largest organization of its kind. Economic developers promote economic well-being and quality of life for their communities, by creating, retaining and expanding jobs that facilitate growth, enhance wealth and provide a stable tax base. From public to private, rural to urban, and local to international, IEDC’s members are engaged in the full range of economic development experience. Given the breadth of economic development work, our members are employed in a wide variety of settings including local, state, provincial and federal governments, public private partnerships, chambers of commerce, universities and a variety of other institutions. When we succeed, our members create high-quality jobs, develop vibrant communities, and improve the quality of life in their regions. www.iedconline.org.

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Acknowledgements

This research project was accomplished through the U.S. Economic Development Administration (EDA)'s Economic Adjustment Assistance Project No. 99-07-13886. The statements, findings, conclusions, recommendations, and other data in this report are solely those of IEDC and do not necessarily reflect the views of the U.S. Economic Development Administration.

This report is part of a larger compendium of research and technical assistance produced by IEDC and funded by the aforementioned U.S. Economic Development Administration (EDA) grant, which focuses on reshoring opportunities for American communities. IEDC greatly appreciates input and assistance received from its members and stakeholders who participated in research and interviews for this report, and would like to acknowledge those who contributed greatly to the content of this report.
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1. Introduction to Reshoring

The scales have shifted in favor of the United States, with more jobs being reshored than offshored.1 In 2014 alone, 60,000 manufacturing jobs were reshored—previously offshored manufacturing, IT, and service jobs returning to their home soil—to the United States. Reshored jobs can be a catalyst for economic growth in local communities, as they boost employment, train the workforce, and expand the tax base. In addition, companies that reshore create a multiplier effect that reverberates throughout the region, as supply chains are developed and strengthened to support the reshored industry. Of course, these new and expanded businesses also contribute to the local economy. Once supply chains are established, it is easy for them to support similar manufacturers; thus, clusters are established. These clusters then act as a source of additional innovation.

It is no wonder that economic developers are beginning to realize the positive impact that landing a reshoring project can have on their communities. The Reshoring Initiative estimates there are between three and four million jobs still offshore, offering a significant pool of jobs to target in the coming years.2 American communities are in a unique position to benefit from the return of these jobs and the potential growth of new jobs spurred from reshoring. Yet, communities cannot afford to passively wait for local companies to make a decision to reshore nor hope that a firm will select their region. Just as the early bird gets the worm, economic developers need to be proactive in recruiting reshoring firms and recommending expansion opportunities to firms that have operations offshore. However, there are significant challenges to reshoring that economic developers must understand in order to effectively recruit these projects.

The goal of this toolkit is to teach economic developers how to address the challenges and to develop a successful strategy for attracting reshoring projects. In the next section, this paper will explore the reasons why companies are deciding to reshore. With an understanding of the what and why, the paper will shift into how communities can create a strategy to attract new reshored operations and assist existing companies to expand by returning operations from offshore. Finally, the paper will dive deeper into how communities can set the context for reshoring, generate company leads, and provide technical assistance to companies throughout the reshoring process. A list of reshoring tools and future readings, plus a bonus supply chain 101 overview, wraps up the toolkit in the appendix.

Brief History of Modern Offshoring

Offshoring—or the process of relocating jobs from one country to another—has existed in the United States since at least the 1960s, when the American semiconductor industry began moving “the labor-intensive stages of semiconductor manufacturing” to Asia “to make use of low-cost, unskilled foreign labor and to gain access to foreign markets.”3 Originally, the capital-intensive and more advanced aspects of the manufacturing processes remained in the United States, while more basic assembly operations were offshored. However, engineering and design capabilities in Asia rapidly evolved, and semiconductor firms began moving more advanced manufacturing processes to contract manufacturers there in the 1970s and 1980s.

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Offshoring continued in the 1990s, as lower communications costs resulting from the development of the Internet made it possible to move computer programming and design, call centers, medical transcription services, and other types of work to India, Ireland, and various countries in East Asia. Low wages in these countries, along with government incentives and the relatively high quality of work, left American firms satisfied with cost savings and encouraged them to offshore even more.

In 1994, the North American Free Trade Agreement (NAFTA) went into effect. The agreement between the United States, Mexico, and Canada eliminated tariffs and other trade barriers between the three countries and created opportunities for American companies to offshore manufacturing to Mexico. The number of maquiladoras—Mexican manufacturing plants located along the U.S. border that "import and assemble duty-free components for export"—grew rapidly as American companies sought to take advantage of low labor costs. In fact, maquiladora employment increased from approximately 200,000 in the mid-1980s to more than 1,000,000 in the late 1990s. As a result of NAFTA, the Economic Policy Institute estimated that 415,000 American manufacturing jobs were displaced from 1994-2010. Management professor Mauro Guillen of the University of Pennsylvania’s Wharton School suggests “A lot of jobs were created in the U.S. that wouldn’t be there without the Mexico trade... Many of the products made in Mexico are designed in the United States. So there are a lot of jobs created here.” NAFTA enabled a single manufacturing platform across North America, allowing components to be manufactured in one country and assembled in a second country while keeping logistics costs down.

Offshoring increased again in 2001 when China joined the World Trade Organization. As a result of extensive negotiations, tariffs and other trade barriers were reduced or eliminated, which resulted in a large exodus of U.S. manufacturers who sought to take advantage of lower labor costs in China. Offshoring to China increased further in 2005 when quota restrictions on goods entering the United States were phased out on certain products, including textiles and clothing. In addition to offshoring, the United States experienced a decline in manufacturing jobs due to several macro factors including an increase in the competitiveness of overseas locations, a rise in international trade, and the growth of the middle class in other countries. By some estimates, the United States lost five million manufacturing jobs in between 2000 and 2014.

Companies are Reshoring

After years of offshoring, the cost savings enjoyed by American firms operating abroad began to erode around 2010. Changing macroeconomic conditions, such as increased labor, energy, and transportation costs, absorbed much of the savings from which manufacturers had previously benefitted. Also, after experiencing offshoring firsthand, many companies found that hidden costs often outweighed the benefits of manufacturing overseas. Some of these hidden costs include factors such as increased costs of monitoring and quality control, uncertain protection of intellectual property, and lengthy supply chains.

As a result, some U.S. firms that were manufacturing overseas have decided to return production to the United States. This act of returning previously offshored manufacturing, IT, and service jobs to their company’s home soil has been termed “reshoring.” While this term is now becoming more common and has received increased

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5 Ibid.
attention in the media, there is still limited understanding of what reshoring actually is and how it can be encouraged in order to benefit local economies throughout the United States.9

2. Why Companies Reshore and Barriers to their Decisions

There are several factors that are propelling companies to consider reshoring. However, many of these factors can at the same time be seen as a barrier to reshoring. In the following section, we explore the business factors that are driving companies and acting as barriers to reshoring.

Decline in Cost Savings

“In 2005, our labor costs in China were only around 10 percent and by 2012 [labor costs] was 37 percent.” Marvin Cunningham, Long-Stanton Manufacturing10

An increase in expenses and review of all costs can factor into a company’s decision to move their operations. When conducting a complete cost comparison, the competitiveness of production offshore may have declined. For example, the United States has experienced a decline in the cost of natural gas. At the same time, companies reported experiencing an increase in the cost of shipping goods. Rising wage costs in some countries are one of the most important reasons that U.S. companies have decided to reshore production. For instance, the differential between factory wages in China and the United States is expected to disappear by about 2020.11 As the costs increased, offshored companies found it hard to pass along these costs to the consumer.

The Assess Costs Anywhere tool by the U.S. Department of Commerce (www.acetool.commerce.gov) demonstrates that the United States has competitive costs, procedures, and time savings in natural gas, electricity, and real estate.12 While wages may be higher in the United States, when a company considers all of the costs associated with operating overseas, the domestic costs may be lower.

Originally, many companies that moved operations offshore received financial incentives from the new country and tax breaks from the United States for moving jobs abroad. However, as those incentives declined, the cost savings became minimal. In fact, the 2015 JLL Global Incentives Landscape found that “the United States is one of the most liberal countries from an incentives perspective.”13 As companies experienced a decline in the tax rebates offered by other countries, low interest rates, competitive exchange rates, and domestic incentives became attractive to companies considering reshoring.

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10 Quote From Interview With Iedc. June 2015
Productive Workforce with Stronger Management

U.S. laborers are, on average, significantly more productive than those abroad.\textsuperscript{14} The United States has a skilled labor force, a significant factor in the country’s continued economic prosperity and an increasingly salient reason that companies reshore. However, the United States also has significant issues in terms of filling higher-skilled labor positions, particularly in manufacturing. Two-thirds of manufacturers report shortages of available, qualified workers; 5 percent of manufacturing jobs are unfilled due to a lack of qualified candidates, and the jobs that are hardest to fill are often those with the most significant impact on performance.\textsuperscript{15} This skills shortage has come about for a number of reasons, including an education system that does not offer students adequate STEM education; a stigma that discourages younger workers from entering manufacturing work; a large cohort of retiring workers; and the increasingly technical nature of manufacturing work itself.\textsuperscript{16} For instance, when United Technologies, maker of the Otis elevator, reshored production from Mexico to Florence, South Carolina, in 2012, the greatest hurdle the company faced was securing a well-trained, local workforce.\textsuperscript{17}

Managing a workforce can be challenging. When faced with cultural, language, and time barriers, these additional obstacles can limit business leaders’ control of operations and awareness of issues facing offshore operations. When facilities are located in the same country as the headquarters, management is able to decrease time spent traveling to visit offshore operations and can work closer with and train their employees.

Supply Chains Shifts and Interruptions

The continuous movement of goods from raw materials to end user is essential to keeping a company’s costs down. Any interruptions—both natural and manmade—can increase the cost of producing a good or providing a service, which can drive away customers. Faster speed to market is important to companies considering reshoring. By locating closer to their customers and using local suppliers, companies are able to reduce the risk of interruptions to supply chains.

Companies need to account for the distance a product travels and potential risks for interruptions when determining when to place an order. For example, some companies have to place their orders for products manufactured overseas six months in advance to ensure it is ready for the American holiday season. By manufacturing in the United States, companies have more leeway over when to place orders. This allows the company to better measure demand and deliver a more accurate number of products to retailers and customers.

Domestic manufacturing allows for more customized products and the freedom to produce in smaller quantities. Companies are able to take risks in developing new products in smaller quantities to test the market and deliver said product at faster speeds, all with a smaller upfront investment. Without the risk of excess inventory, companies can meet the prices demanded by retailers for their products.\textsuperscript{18}

\begin{thebibliography}{99}
\bibitem{18} Reasons Provided By Senior Leaders Of Reshored Companies Interviewed By IEDC.
\end{thebibliography}
Recreating domestic supply chains is a cornerstone of the long-term success of reshoring efforts.19 “If you want to keep your supply chain tight, it’s hard to do that with a 16-hour plane ride from Shanghai to Ohio,” said Cliff Waldman, an economist with the Manufacturers Alliance/MAPI.20 Equally important is the creation of a local “industrial commons,” which refers to a localized shared knowledge and capabilities ecosystem in a particular industrial sub-field, including engineering skills, research capacity, and process improvement.21

Company Insights: Michael Araten, CEO of K’nex Brands
K’NEX is a third-generation family business that is part of the Rodon Group that produces rubber and plastic components for toys. During the Great Recession, K’NEX experienced a decline in profits. In examining its business model, the company’s management determined it was cost effective to move all their production from China to the United States. The two biggest factors that influenced the company to reshore were speed to market and flexibility in inventory. President and CEO Michael Araten noted that “from a manufacturing perspective…inventory is your biggest investment as a company, and therefore you want to invest as much in the right inventory as you can. The closer you are to your selling season when you have to make the goods, the better off you are.” Between all of the different cost components, shipping charges, and increased Chinese labor rates, offshore savings largely disappeared. Araten continued, “Just from a pure apples-to-apples comparison, the math works in America’s favor in a way that it didn’t 15-20 years ago.”

To ensure the success of its move to domesticate production, the company had to create an American supply chain. “Finding suppliers in the U.S. is a learning process that takes time and energy. You might get lucky, and the first couple of people you talk to can do things the way you want things done. I would say you have to prepare yourself for some kicks in the start.” While tax and training credits would have been helpful, Araten recommended that economic developers assist businesses to identify suppliers in the region and help connect the company with potential matches. He recommended creating an online marketplace where manufacturers can place messages explaining the types of suppliers they seek, to which local suppliers can respond. In Araten’s words “I think what is still a stumbling block for people is ‘Where do I begin, and how do I find these people?’”

Intellectual Property Protection
Protecting intellectual property, such as trademarks and patents, overseas can be costly and exceedingly difficult. Foreign judicial systems may not have experience with intellectual property law and in some cases are outright predatory. Companies can stand to lose revenues, competitive-edge, and licensing opportunities from an infringement on intellectual property. The United States is one of easiest countries for small and medium-size enterprises to protect their intellectual property based on the protections set in place to support innovation.22

In 2013, a report was released by the bipartisan Commission on the Theft of American Intellectual Property of the U.S. International Trade Commission. This report found that international intellectual property theft costs the American economy hundreds of billions of dollars, millions of jobs, and a marked decrease in R&D and innovation. Focused on China in particular, the report found “National industrial policy goals in China encourage

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IP theft, and an extraordinary number of Chinese in business and government entities are engaged in this practice.”

**Monitoring and Quality Control**

Leaders of companies that reshored reported experiencing inaccuracies or lower quality in products manufactured overseas. With limited monitoring by executives, companies are left to rely on the word of the plant manager. Products that have been reshored were found to be of higher quality, meeting both company and customer expectations. This higher expectation in quality has contributed to the demand for Made in the U.S.A. labels. In call centers, back office, and research development equally find the higher quality of service.

Independence LED, which reshored in 2010, has “so much faith in the reliability of our products built on American soil, Independence LED is now able to offer an industry-leading 10 year warranty,” said CEO Charlie Szoradi.

**Solutions to Reshoring Barriers**

**Onshore Sourcing**

Rural sourcing is a relatively new form of “insourcing” in which companies benefit from the lower labor and business costs in rural states and counties while taking advantage of U.S. regulatory protections and proximity to American consumers. Locations within close proximity to major markets and educational institutions are especially attractive onshore sourcing locations. The availability of training facilities appears to be a major driver in rural sourcing locations, which are often staffed with a mix of U.S. citizens and visa holders.

Since the onset of the rural sourcing trend, others have noted that low-cost urban areas have also become more attractive locales for back-office functions. For instance, IBM has placed new facilities in Dubuque, Iowa, Lansing, Michigan, Baton Rouge, Louisiana, and Buffalo, New York.

**Temporary Workers and Manufacturing**

Since the Great Recession, full-time employment in manufacturing has remained relatively stagnant across the country. Yet, a growing army of temporary workers has taken full-time employees’ place. Manufacturers increasingly use contract workers to address fluctuating demand and general uncertainty. In fact, from 2009 to 2013, 18 percent of the new jobs in the United States were temporary, according to calculations at Economic Modeling Specialists, Inc., and a disproportionately large share of these jobs were in manufacturing. While this movement benefits the businesses in finding workers as needed, the worker struggles from a lack of permanency. Workers may see themselves “pigeonholed as temporary employee[s] with little chance of finding permanent employment.” Labor leaders contend that relying on temporary workers will cause long-term problems for manufacturers, as temporary workers have almost no attachment to a company and often do not

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24 Interviews With Company Leaders From 2015 - 2016
25Quote Provided To IEDC. May 2015.
27 Ibid
develop the on-the-job skills that drive innovation and process improvement. Tom Buffenbarger, president of the International Association of Machinists and Aerospace Workers, described the practice as follows: “What you're going to see with temp workers and people who don't receive adequate training is a decline in quality and increase in cost. It's a very short-sighted practice. It destabilizes the industry.” Only about a third of temporary jobs become permanent, though many take these jobs in the hope of securing a full-time position.  

ARE YOU READY TO MEET THE WORKFORCE NEEDS OF INDUSTRY 4.0?

“Today, another workforce transformation is on the horizon as manufacturing experiences a fourth wave of technological advancement: the rise of new digital industrial technologies that are collectively known as Industry 4.0.” This change may not be such a bad thing, if communities are prepared for it. Yes, much of the traditional highly labor intensive jobs will be lost. The upside, however, is that these jobs will be replaced with higher paying jobs.

The preplanning and economic assessment that goes into developing a strategic plan not only helps communities forecast needs in terms of building educational and workforce pipeline, it also help them address demand for additional workers.


Company Insights: Interview with Darius Mir of 9to5 Seating

Manufacturing office furniture for over 33 years, 9to5 Seating is headquartered in Hawthorne, California. In 2001, the company started losing business to companies manufacturing in Asia, which led 9to5 Seating to move some of its operations to China. In 2011, 9to5 Seating started to consider bringing its production back to the United States. In order to ensure the company could stay cost-competitive, it conducted a three-year study to see what it would entail to reshore. Five key findings emerged from the study, demonstrating how 9to5 Seating products could be competitive with merchandise being imported from China:

1) Being close to the company’s primary market, the United States, would reduce their lead times. Their customers would have the opportunity to customize their orders and receive products faster than their competitors that manufacture abroad.
2) Incorporating technology improvements to the manufacturing process would lower the impact of the higher wages paid to American workers. Additionally, the new technology would result in a higher-quality product.
3) Through virtual integration, 9to5 Seating could manufacture 80 percent of the necessary components in-house. This would ensure higher-quality components at lower costs.
4) Integrating a systems management platform in the United States facility would allow the executive team to closely monitor operations costs and make adjustments as needed in order to stay efficient.
5) The company relies on a workforce with strong engineering skills, which is readily available in the United States. A location in close proximity to universities with engineering programs would provide a pipeline of workers.

These five factors led 9to5 Seating to decide to reshore and guided them to a full manufacturing facility in Union City, Tennessee, in 2014. The company contracted with a consulting firm in Texas to assist with identifying locations that met the needs of the five factors and connected the company with economic development agencies. In the end, 9to5 Seating selected Union City, Tennessee, due to its proximity to major markets, talented workforce, and assistance provided by the State of Tennessee, Obion County, and Union City. 9to5 Seating committed to making a $39.5 million investment in Union City through the construction of a new facility that would create 510 jobs.

3. Reshoring Strategy

Successful strategic planning efforts typically entail analysis, prioritization, implementation, monitoring, and evaluation. While the activities and timeline for this planning process should be tailored to the community’s established goals, the process may generally look as follows.

**PRE-PLAN AND RAMP-UP.** When initiating the planning process, it is important to identify the key players and stakeholders that should be involved. In this stage practitioners start discussions, frame the context for a plan, determine the area or jurisdiction it affects, and determine the resources needed for the planning process. Here practitioners also begin to loosely form goals or desired end-results.

In the report *Reshoring: An Opportunity for Innovation and Economic Growth in Southern Illinois*, authors highlight convening as the first stage of developing a reshoring marketing plan for Southern Illinois. The report’s authors advise relevant stakeholders to first convene then create a task force that will establish the overall mission and vision of the Southern Illinois reshoring initiative.31

DETERMINE WHERE YOU ARE. This stage is grounded in research and analysis. Here, practitioners assess the community as well as its economic competitiveness and environment. Practitioners look at the community assets and resources, barriers to reshoring, and any potential competitive advantages. Note that much of this information should be already available from a current strategic plan and other recent assessments. The following section on assessments provides further details about the information to gather at this stage.

In a report created for the Virginia Economic Development Partnership, the Economic Development Studio @ Virginia Tech, employs research to pinpoint which industries are most likely to be affected by reshoring and identify the market issues and industry dynamics driving trade flows to the commonwealth. This information was provided to help EDOs better target their reshoring efforts.32

DEFINE WHAT YOU WANT TO (AND CAN) ACHIEVE. This stage entails identifying issues that are unique to the community and formulating feasible goals, objectives, and strategies. This stage also requires prioritization of efforts and the rough development of benchmarks that measure and define success.

Based on gaps in financing, Battelle Technology Partnership Practice advised the Department of Economic Development of the city of Dublin, Ohio, to create a Dublin Cluster Opportunity Revolving Loan Fund. The fund would be established to help address reshoring opportunities in production operations and lessen supply-chain cluster network gaps.33

DETERMINE HOW YOU WILL ACHIEVE YOUR GOALS AND OBJECTIVES. Here, practitioners establish the activity roadmap, or the sequence of events, and outline the necessary resources. Practitioners develop plans of action that establish who is accountable and how practitioners will mobilize resources and partners.

For the Make it in Appalachian Ohio project, target activities include identifying, researching, and documenting attributes of 1,000 development sites in the region. The results will then be made available online to create the base for a GIS database and maps to draw the attention of developers and site selectors.34

IMPLEMENT, MONITOR, EVALUATE, AND ADJUST. Here practitioners carry out the established action plans. This stage also involves the tracking and reviewing of efforts. To keep efforts relevant and dynamic, practitioners may also need to adapt to changing conditions and outcomes.

The Make It in America Challenge project, for example, requires grant applicants to establish evaluation criteria for their proposed projects. This criterion includes outputs; capacity outcomes such as physical, energy and communications infrastructure; and realized outcomes such as organizational start-ups, job creation, earnings improvements, business growth, and increases in exports.35

Why Create a Formal Strategy?

Developing a strategy to attract reshoring companies, and to convince companies to reshore, requires a bottom-up approach based on sound assessment of a community’s strengths, weaknesses, and opportunities. It also requires an understanding of firms’ strategic sourcing decisions as well as a thorough knowledge of building networks that support industries. This way, communities are better equipped to align reshoring opportunities with their unique competencies and capacities.

As with any economic development strategy, the reshoring strategy should be:

- **Compatible** with the community’s vision;
- **Feasible**, given the community’s strengths and weaknesses;
- **Implementable**, given the community’s leadership and resources;
- **Change-making**, for addressing the community’s most urgent challenges; and
- **Innovative**, enabling the community to move forward on its most promising opportunities. 36

It is worthwhile to state what a reshoring strategy is and is not. A reshoring strategy aims to capture reshoring opportunities by being aware of hindrances to reshoring and planning ways around these impediments. A reshoring strategy, however, is not a standalone effort. It should complement, but not duplicate, existing business attraction, retention, and expansion efforts. It builds on a baseline economic development strategy that is well thought out, informed, and strategically addresses the factors that impact location decisions. It prompts communities to assess reshoring trends beyond the media hype and develop a strategy that leverages assets and makes communities a more attractive place for reshoring. Lastly, it provides communities with a roadmap of targeted efforts that can be implemented, tracked, and monitored for efficiency.

The North Louisiana Economic Partnership has identified reshoring as a strategic goal in its economic development strategic plan. The plan identified advanced manufacturing as a targeted industry and finds the 14-parish region’s strong manufacturing history provides the right climate to attract and support reshoring companies. The four strategic considerations outlined in the plan’s reshoring initiative are to partner with the state economic development organization, collaborate with the regional port to explore reshoring opportunities with local companies that import goods, work with regional ports to identify where imported goods are going, and to host a reverse trade show to help regional businesses identify local suppliers. 37

“Have a well-integrated economic development service model. If a company has to put all these pieces together, like training assistance and help locating their facility, it’s going to be a big barrier.” Chris Wilusz, Industrial Resource Center Network statewide coordinator (PA) 38

As mentioned above, reshoring strategies complement other economic development efforts and benefit the community at large. By targeting reshoring strategically, communities can create new jobs, increase the number of businesses in targeted industries, and grow capacity of existing companies. Other benefits of developing a reshoring strategy include:

- A clear guide to capitalize on unique attraction opportunities and tackle challenges;
- A framework to increase competitiveness;

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38 Iedc Interview Conducted February 2016.
• A roadmap to develop a workforce with globally desirable skills and a globally competitive talent pool; and
• Action steps to strengthen supply chain networks and improve business support services.

Pre-Plan and Ramp-Up
Any successful reshoring effort will require the involvement of various stakeholders. A varied set of participants is desirable because it brings diverse subject-matter expertise and reduces the duplication of efforts. This team should include representatives from small businesses owners to regional planning and development commissions, local economic development agencies, and other key stakeholders. After determining the relevant stakeholders, identify the structure and the individuals that will best steer reshoring efforts.

What role should EDOs assume? Deciding how the community will proactively deal with reshoring is highly dependent on the type of organization and the resources available from those involved. State and regional agencies will be better positioned to influence policies and establish more comprehensive approaches than smaller communities. Communities with strong business attraction and retention strategies will likely find that their reshoring efforts complement and share synergy with other attraction efforts. In this case, it may just be a matter of establishing a taskforce or advisory committee to craft efforts specific to reshoring. Communities that do not have access to resources or well-established strategies may be better off planning short-term learning events or setting up working groups. Or, it may be a matter of getting the attention of companies that are interested in reshoring via online platforms that require relatively little management and oversight.

Regardless of the structure and reach of the approach, a leader will be required to guide efforts. The leadership team will guide and structure the planning process, help contribute and identify resources, create connections, and provide oversight. Ideally, the leadership team should include individuals with complementary, but distinct, roles. Bringing together with complementary strengths helps to compensate for individual shortcomings, pool knowledge, expertise, and resources as well as develop a comprehensive network.

Determine Where You Are
After economic developers familiarize themselves with the driving forces in reshoring, as shared in previous chapters, they should collect information on current and past reshoring projects as well as reshoring trends. This knowledge is valuable in two major ways. First, it allows economic developers to be aware of the lessons learned and key industries that are aggressively pursuing reshoring opportunities. Second, it helps the economic developer begin to formulate approaches that align with their jurisdiction’s economic base industries, development capacity, and larger economic development strategy. Economic developers may choose to supplement the research used for strategic planning with conversations, meetings, and surveys of community and business stakeholders in the region to identify opportunities for reshoring.

The community’s reshoring efforts will be largely based on the jurisdiction’s plans for economic growth along with an inventory of assets and liabilities. These assets and liabilities shape the competitive position versus other jurisdictions. Communities will be able to measure the success of efforts based on the assessment of how their community is positioned in the context of regional, national, and global economic conditions. Just gathering data is not enough. The accuracy, reliability, standardization, and interpretation of data are essential. Poor

assessment, whether from faulty information or lack of access to quality data, may lead to misinformed decision making and faulty strategies.  

**Take Economic Inventory**

To determine candidate companies that are most suitable for reshoring to their particular community, as well as to refine their marketing strategies, leaders of a reshoring effort should take an economic inventory. The economic inventory is a catalog of the assets, programs, regulations, services, and infrastructure that support economic activity in a particular region. The data to compile this inventory are sourced from federal and state statistical agencies; private-sector business intelligence firms; interviews and surveys; and the economic developer’s knowledge.

The first and most important task of taking the inventory consists of collecting basic economic data, including:

- Workforce size and age;
- Unemployment and labor force participation rates;
- Average and median incomes and wages by industry;
- Average home prices and rents;
- Location and proximity to major markets;
- Tax rates;
- Economic activity by major industry classification; and
- Most prominent occupations.

The basic information collected through the economic data forms the basis for subsequent deeper research. Although the most important form of data will always be the most current information available, it is usually preferable also to populate the inventory with recent historical data (ideally, time series of 10 to 20 years) and where available, credible projections.

One of the traditional roles of the economic developer is to provide site location assistance. Thus, the economic developer should maintain an inventory of available sites and buildings in the community with the following information:

- Land use and zoning maps and regulations;
- Land values and prices;
- Building age and condition;
- Vacancy and absorption rates;
- Water, sewage, electrical, natural gas, telephone, and broadband service levels and capacity; and
- Transit and highway access and parking.

Recently, workforce quality has become a more prominent concern for companies and consequently, for economic developers. Further detail on workforce analysis is provided in the next section below.

Another consideration of reshoring companies will be the nature and quality of the local operating environment, sometimes known as “business climate.” Indicators of the business climate include:

- Business age and rates of failure and opening;
- Regulatory complexity;

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• Availability of business support services (e.g. banks, law firms);
• Availability of business financing; and
• Availability of business and entrepreneurship support programs.

A final concern of the inventory is the quality of life. A high quality of life is important to attracting any firm, but it may also be a crucial deciding factor for executives and managers who have lived abroad, where the quality of life may be lower and the costs of living comfortably as an expatriate are high. Quality of life considerations include:
• Housing quality and affordability;
• School quality;
• Availability of healthcare services;
• Quality of environmental factors, such as air and water;
• Cultural, entertainment, and retail availability;
• Level of public services; and
• Crime rates and levels of social discord.

Such assessments might be conducted by in-house staff, consultants, or graduate students at a local university.

COMMUNITY ASSESSMENT IN PRACTICE: RESHORING TO VIRGINIA

In 2013, students of the Economic Development Studio @ Virginia Tech researched the potential impact of reshoring in the state for the Virginia Economic Development Partnership (VEDP). The report, Reshoring to Virginia: Understanding the Total Cost of Ownership, makes the case for emerging industries in Virginia that should be targeted for reshoring efforts.

Based on their research finding and analysis, the students identified plastics manufacturing as a prime target for reshoring attraction strategies. Why? The plastic-and-rubber industry is an economic driver in the state, employing approximately 15,000 people since 2013. Furthermore, over 100 plastics companies relocated or expanded in Virginia over the past 15 years. These companies accounted for $1.2 billion in investment and created more than 6,100 new jobs.

The students also provided other core industries that would complement the state’s current manufacturers. These targets include:
• Food processing, the state’s second-largest manufacturing sector, which accounts for over 14 percent of the state’s manufacturing jobs, consists of over 550 food-processing companies and employs more than 34,000 individuals.
• Aircraft, engine, and parts manufacturers because 190 aerospace companies operate in the state. The direct economic output of Virginia’s aerospace industry is an estimated $5.8 billion. The industry employs over 26,600 people, 77 percent of which are employed in aerospace technology and aerospace equipment manufacturing. Furthermore, the industry is supported by aerospace research and development at private, academic, and government facilities.
• Chemical and pharmaceutical manufacturers because the primary client base includes aerospace, automotive, and advanced materials production companies.

For more information, access the report at:
http://www.econdev.vt.edu/images/pdfs/reshoring%20to%20virginia.pdf
Analyzing the Workforce

As mentioned throughout this toolkit, local skills shortages can thwart reshoring efforts. Without an adequate workforce, businesses are hard-pressed to grow and remain competitive. As a result, practitioners should aim to understand better and prepare for the needs of reshoring companies or for the tipping point industries mentioned above.

To better understand the general condition of the workforce system, IEDC’s *Workforce Development Manual* offers the following key attributes of the local workforce and training system:

- **Strengths of the workforce system:**
  - Which programs are cost effective?
  - Which services are delivered by which organizations?
  - What do training and education programs cost?
  - What information informs curriculum?
  - Who leads workforce initiatives?
- **Deficiencies in existing services and areas for new service development;**
- **Skills that are in use, in demand, in short supply, or are projected to grow in importance in the future;**
- **Potential workforce partners;**
- **Avenues for dialogue with business leaders in the region;**
- **The trends of industrial change in the region; and**
- **Benchmarks that permit the evaluation of the research process and permit the re-organization of research methods, if needed.**

After getting a general sense of the condition of the workforce, move on to more detailed analyses. The skillshed analysis is one of the tools that can be used to get an in-depth understanding of the labor pool. A skillshed analysis examines a geographic area from which a region pulls its workforce and the skills, education, and experience that the workforce possesses. More specifically, skillshed analysis helps practitioners identify the current skill sets available and gaps that exist and better forecast employment growth. In-depth steps on conducting a skillshed analysis can be found in a report by the Midwest Innovation Initiative on the Institute for Work and the Economy at [http://www.workandeconomy.org/pastprojects/mwinnovationinitiative.html](http://www.workandeconomy.org/pastprojects/mwinnovationinitiative.html).

Identifying the skills of the existing local workforce helps practitioners pinpoint where skills gaps exist and where these shortcomings can be rectified. Practitioners can obtain a comprehensive view of labor-market considerations through the “analysis of published statistics, and field-based research (employer interviews with firms employing similar skills).” In addition to consulting various sources, seek to understand aspects of the labor pool such as the depth and concentration of targeted skills, evolving demographic attributes, the level of competitive labor, and the competitive wage positioning needed to attract talent. While there is a wealth of labor market information that is publicly available, it is worth noting that translating this data into useful information can be challenging. “Data collection and integration is one task; actually analyzing the data is

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42 [Http://Www.Iowafallsdevelopment.Com/Workforce_Files/Mid_Iowa_Growth_Skillshed_Exec_Summary.Pdf](http://Www.Iowafallsdevelopment.Com/Workforce_Files/Mid_Iowa_Growth_Skillshed_Exec_Summary.Pdf)


44 Ibid
another." Public data can be poorly integrated across federal sites, varied in terms of depth and breadth, excludes non-disclosed data, and dated. Translating the data presents the second major challenge for EDOs.

Many EDOs do not have the staff capacity or access to the type of information to conduct in-depth workforce research. However, practitioners can engage workforce partners, such as state workforce development agencies, to collect data for, conduct, and interpret comprehensive analyses. Simply put, collecting high-quality and relevant data takes time and effort. However, with the cooperation of workforce system administrators, representatives from community institutions, and existing businesses, practitioners can get a better idea of how to meet industry workforce needs.

**Additional Resources**

**BUREAU OF LABOR STATISTICS’ OCCUPATIONAL OUTLOOK HANDBOOK (OOH)** provides information on hundreds of occupations. Occupational profiles describe the duties required by the occupation and the job outlook into the next 10 years for that occupation. This resource can be accessed at: [http://www.bls.gov/oco](http://www.bls.gov/oco)


**OCCUPATIONAL INFORMATION NETWORK (O*NET) ONLINE** was developed for the U.S. Department of Labor by the National Center for O*NET Development. The O*NET database provides occupational information and labor market research such as information on skills, abilities, work activities, and interests associated with occupations. The database can be accessed at: [http://online.onetcenter.org/find](http://online.onetcenter.org/find)

**INTEGRATED POSTSECONDARY EDUCATION DATA SYSTEM (IPEDS)** is a system of interrelated surveys conducted annually by the U.S. Department of Education’s National Center for Education Statistics (NCES). IPEDS provides data on postsecondary institutions which allows for analysis. It can be accessed at: [http://nces.ed.gov/ipeds/](http://nces.ed.gov/ipeds/)

**GPS VISUALIZER** is an online mapping utility that can be used to convert GPS data. The tool can be found at: [http://www.gpsvisualizer.com/geocoder/](http://www.gpsvisualizer.com/geocoder/)

**Evaluating Business Climate**

There are varying definitions for the term “business climate.” For the purposes of this paper, we will use Eathington, Todd, and Swenson’s three categories for business climate “(1) an overall measure of growth or business health in a region; (2) a set of factors believed to contribute to regional economic growth; and (3) an intangible asset in the form of a regional reputation for business friendliness and receptiveness to growth.”

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46 Ibid
State government plays a significant role in influencing the business climate with policies regarding taxes, incentives, as well as environmental and labor laws. When assessing how the community promotes and supports business development, economic developers need to consider how a business would find the firm’s total cost of doing business within the community. Financial considerations such as incentive programs, corporate tax environment, and access to capital may lower business costs and encourage investment and productivity. Structural elements such as administrative and regulatory infrastructure impact the time and money companies spend to do business.

The inputs that promote and support business development can be categorized into five groups: appropriate human resources, access to and cost of capital, physical infrastructure, and scientific and technological infrastructure.49

**AREAS FOR EXAMINATION**
- What types and how many businesses are thriving or failing;
- Why businesses succeed or fail;
- What businesses are located in the area and why;
- Businesses feel that they have the support of the local community;
- Which organizations support new businesses and business development;
- What programs provide a supportive business environment;
- What local regulations impact businesses;
- Special public and private financing programs should be noted; and
- Potential mismatches in financing programs and financing needs.50

**Analyzing Quality of Life**
Quality of life (QOL) can be challenging to quantify, as its definition varies by community. It is estimated that across the United States, state and local governments use over 200 indicator systems to measure the progress of their populations in various policy areas.51 For example, the South Carolina Indicators Project uses roughly 20 statistical indicators to measure five key policy areas in the state: education, economy, public safety, public health and social welfare, and transportation and infrastructure. The city of Jacksonville, Florida, on the other hand, tracks over 60 indicators in 11 areas such as “Exemplary Government,” “Hub of Smooth Transportation,” and “Arts and Education.”

There is a correlation between quality of life and the availability of skilled labor.52 Paying attention to QOL is important because it is a top consideration for worker. As industries get more technologically advanced, the need for knowledge workers will increase and companies will follow the talent.

“They wanted their employees to have access to higher education amenities. We were not the low-cost option for them. If this came down to a math equation, we weren’t going to win, and fortunately it didn’t. Other things matter to a

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Assessments should be based on a framework that helps practitioners identify, monitor, and measure issues. With assistance from the International Institute for Sustainable Development (IISD), the City of Winnipeg provides the following criteria to construct a framework to measure quality of life—a holistic approach that describes the entire system; metrics that are compatible with existing strategic documents; and indicators that are relevant to the community and provide feedback to local administration. Furthermore, the city holds that each indicator should be vetted against the following criteria: policy relevance, simplicity, validity, data availability, and representativeness.

While the indicators that are relevant to each jurisdiction varies, below are a few examples of quality of life indicators. These factors should be analyzed as whether they are a strength, weakness, opportunity, or threat to the community’s quality of life and addressed as needed. An inventory of the community’s quality of life assets should be created to be used in marketing materials and shared with businesses considering locating within the region including:

- Quality of healthcare facilities and services
- Housing availability, conditions, cost, and choice
- University, colleges, and vocational schools
- Crime rate
- Cultural and recreational opportunities
- Infrastructure expenditures
- Diversity of public officials
- Environmental quality (air, water, percentage of green space)

**Additional Resources:**

**NEXT GENERATION CONSULTING, INC.** provides free online quality of life indexing and handprinting tools to collect quality of life measurements and compare them to other cities. The Excel spreadsheet includes a worksheet for each of seven indexes: Vitality, Earning, Learning, Social Capital, After Hours, Cost of Lifestyle, and Around Town. Worksheets include each of the specific metrics within the index Excel spreadsheet. Find out more about this tool at: [http://www.rebeccaryan.com/how-to-measure-quality-of-life/](http://www.rebeccaryan.com/how-to-measure-quality-of-life/).

**CITY OF WINNIPEG QUALITY OF LIFE INDICATORS** are presented in a detailed report which describes how the city arrived at a set of issues that stakeholders found important to the quality of life in Winnipeg. The report is a valuable reference in that it describes processes of indicator development and aggregation, provides a quality of life framework in the third section, and offers a sample implementation plan. The report can be found at: [http://www.iisd.org/pdf/wpg.qoli.pdf](http://www.iisd.org/pdf/wpg.qoli.pdf).

**Measuring and Determining Clusters**

A cluster, or industrial commons, is a collection of interrelated industries and companies located within a relatively small geography. Effective clusters benefit from deep labor pools with relevant skills, sharing of ideas,
lower logistical costs, local research capacity, ability to collaborate on major projects such as product innovation, and a productively competitive environment. Clusters are categorized as either traded or local. A traded cluster has a high concentration of companies within an industry in the region. However, the majority of the goods and services are for customers outside of the region. Examples of traded clusters include a furniture manufacturer, financial investment services, or a customer service call center. Local clusters are industry concentrations whose primary customers are within the region, such as acupuncturists, dry cleaners, or extermination services.

Communities can apply a cluster growth strategy to support the local cluster in reshoring jobs and potentially retain companies from offshoring. Training and education programs can be strengthened and new programs created to instill the skills needed for the future of the industry. An example of a position that is becoming more skilled is an industrial mechanic, who needs to be knowledgeable of the new technology that is incorporated into manufacturing operations. Infrastructure upgrades that keep up with the innovations within the industry can be considered. The community may also create a list of suppliers that service the companies within the region in the cluster and identify potential overlaps that could be used to support an attraction strategy.

While there are several ways to identify and measure industry clusters, most follow the steps provided below:

1. Define the region;
2. Determine the criteria;
3. Inventory regional assets;
4. Evaluate the economic base industries;
5. Map grouping of key exporting industries;
6. Gather firm input; and
7. Analyze the competition (comparable regions).

There are several tools that are available to measure and analyze industry or sector concentrations and specializations. They include:

- Size of the industry (number of jobs)
- Regional concentration (location quotient)
- Regional competitiveness (shift share)
- Wages and salary
- Exports
- Jobs supported by the industry
- Dollars supported by the industry
- Supply chain industries

Source: http://www.economicmodeling.com/2013/12/02/how-to-identify-driver-industries-in-your-region/

Some strategic considerations in response to the findings of the cluster analysis include:

- Encouraging entrepreneurship and research commercialization in relevant local clusters;
- Conducting a thorough inventory of existing supplier products and capabilities, including in neighboring states and regions;
- Keeping up-to-date local input-output tables and supply chain maps;
- Helping to retool existing suppliers using certifications or the creation of joint ventures to meet new demand; and
- Hosting supplier fairs to advertise the existence of local suppliers.
Additional Resources

THE U.S. CLUSTER MAPPING PROJECT (www.clustermapping.us), funded by the EDA and conducted by Harvard Business School's Institute for Strategy and Competitiveness, is researching industry clusters at the regional level. The project's website hosts a tool that allows users to investigate the strength of local industry clusters. The website also encourages users to share and discuss best practices in economic development and innovation policy.

BUREAU OF LABOR STATISTICS LOCATION QUOTIENT CALCULATOR is an online tool that creates tables of private-sector employment data by industry, as measured by the Quarterly Census of Employment and Wages (QCEW) program. The calculator allows users to compare relative employment levels in the United States, states, counties, and metropolitan statistical areas (MSAs). The calculator can be assessed at: http://data.bls.gov/location_quotient/ControllerServlet.

WILLIAM A. SCHAFFER, Professor of Economics at the Georgia Institute of Technology provides guidelines on how to manually calculate location quotients. Access these steps at: http://www.ri.wvu.edu/WebBook/Schaffer/chap02.html#Heading14.

Mapping Supply Chain

The geographical depiction of a supplier network for a product or company is a supply chain map. Supply chain maps can provide valuable information to identify a reshoring company, connect local employers with suppliers in the greater region, and detect assets and gaps in the community’s infrastructure to support suppliers and producers. Supply chain mapping is a tool used to discover the interconnection of goods and services in a particular area, or for a particular industry. The economic developer maps the timing, value, volume, characteristics, and sources of and from a location, industry, or company. This process can be continued again, mapping suppliers of suppliers and customers of customers in several steps.

There are two different ways to commence a supply chain map. The first strategy begins with a meeting with the company’s supply chain manager, plant manager, or other supply chain decision makers at the local company to learn more about the company’s suppliers, nodes in their supply chain, and the market for their product. This meeting may be replicated with several companies within the same industry cluster in the region to create a map of suppliers for the industry. The map may identify opportunities for companies to use local suppliers, attract suppliers to consider relocating or opening operations to the region to be closer to potential clients, and gaps in supply chain for potential entrepreneurs to fill. Additionally, the meetings can open discussions on potential disruptions in the company’s supply chain, their business continuity plans for disruptions, and the infrastructure they need to support the movement of raw materials in and products out. These meetings may take into consideration opportunities to explore with the business cost-savings through reshoring operations or using a local supplier.
FIGURE 1. A SUPPLY CHAIN MAP FOR WOOD FUEL SHOWS HOW VARIOUS PRODUCTION PROCESSES ARE LINKED.56

The second strategy to analyze a community’s supply chain is to look towards available data resources. Beginning with identifying the NAICS codes for the industry, the economic developer should conduct a gap analysis to see where there may be leakage in the region. Additional analysis can be conducted using import and export data to determine what goods come in and out of the region. There are several subscription services that will conduct these analyses for a community. The state office for international trade and office for revenue should be able to assist with providing data for the region to conduct the gap and import-export analyses.

Determine What you Want to (and can) Achieve

After taking stock of where practitioners are, it will be easier to develop goals and objectives that align with local capacity. The reason is that any efforts to attract reshoring companies will be based not only on the external environment but also the internal opportunities and constraints of the practitioner’s—and its partner—organizations. Keep in mind that this stage involves engaging partners and should not be done alone. Partners and stakeholders such as the chamber of commerce, elected officials, local industry leaders, and regional economic development organizations should be engaged in the process of crafting and reviewing strategic goals and objectives.

First, frame the key issues most affecting the ability to attract reshoring companies. Is it a matter of building the workforce skills in the targeted industries? Do practitioners need to increase awareness or correct

misconceptions about the location? Are local importers unaware of the benefits of sourcing locally? The appropriate goals and resulting objectives and strategies will create the framework for action.

**Goals, Objectives, and Strategies. What’s the difference?**

**GOALS:** Goals are qualitative and directional statements that specify what you would like to accomplish with reshoring efforts.

**OBJECTIVES:** Objectives are quantitative and directional statements that specify the means to accomplish reshoring goals. Objectives can be thought of as milestones that must be achieved to accomplish the overall goal.

**STRATEGIES:** Strategies are plans of action to achieve the established reshoring goals and objectives.

To illustrate, the Greater Pittsburgh Metals Manufacturing Community (GPMCC) is a regional partnership led by the Catalyst Connection with the aims to “leverage their strengths in metals manufacturing to capitalize on the confluence of advances in new materials, digital technology, and energy to re-energize metals manufacturing.” Over ten partners from workforce, finance, education, and other economic development organizations participate in the partnership. Given the collective resources of this group and funding from the EDA, they are able to craft a comprehensive strategy for capturing reshoring companies. In order to achieve its goal, GPMCC developed a strategy that:

- Targets workforce development through recruitment and training;
- Strengthens supplier networks by creating direct connections;
- Leverages university research capabilities to accelerate commercialization and innovation;
- Improve transportation access and redevelop targeted industrial sites;
- Improve the capacity of supply chain firms to access export markets and attract existing manufacturers to locate in the region; and
- Increase investment funding available for mature and startup firms.  

The table below provides an example of how to go from goals to developing objective and strategies.

<table>
<thead>
<tr>
<th>Goal: To encourage and facilitate reshoring</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote awareness of reshoring assistance resources available to 50 percent of manufacturers.</td>
<td>Organize Reshoring Cluster Summits or reshoring purchasing events.</td>
</tr>
<tr>
<td>Identify at least one locally available supply chain opportunity monthly.</td>
<td>Design an online reshoring portal for manufacturers.</td>
</tr>
<tr>
<td>Educate 50 percent of manufacturers that rely on imported goods on the total cost of ownership.</td>
<td>Provide Total Cost of Ownership consulting.</td>
</tr>
</tbody>
</table>

Once practitioners have identified the efforts to pursue, the alternatives should be assessed and prioritized. Criteria that should be used to assess the importance of efforts include:

- Relevance to current economic development goals and strategy;
- Potential impact to the community;
- Economic, social/political, and technical feasibility; and
- Cost-benefit analysis for the community.

**Determine How You Will Achieve Your Goals and Objectives**

Set out the sequence of events and resources necessary to achieve the goals, including overhead, staff, information, and financial capital. This sequence includes defining the physical steps needed to accomplish explicit goals and objectives. Action plans should be associated with the strategies and related projects identified in earlier steps. Recruit and engage community stakeholders to inform and review the plans of action.58

Action plans should lay out:

- The tasks involved, including sequence with respect to other tasks;
- Who or what organization is responsible for each task;
- A clarification of the inputs/resources that are needed;
- Realistic schedule for completion;
- Expected impacts or results of the action; and
- How success will be measured or performance benchmarks.

The chart below explains the factors a community should consider during the implementation of a goal.

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Http://Mirror.Unhabitat.Org/Content.Asp?TypeId=24&CatId=36941d=955
Additional Resources

DEVELOPING AN ACTION PLAN, COMMUNITY TOOL BOX is a service developed and managed by the University of Kansas Work Group for Community Health and Development. The toolbox includes detailed information to help practitioners develop useful action plans. This information is found at: http://ctb.ku.edu/en/table-of-contents/structure/strategic-planning/develop-action-plans/main.

Implement, Monitor, Evaluate, and Adjust

The implementation stage is when practitioners carry out the established action plans. Successful implementation requires monitoring and controlling. It is difficult to monitor progress without keeping clear and consistent documentation. The implementation lead should record and document work and any changes that impact the project scope, timeline, or costs. During implementation, it's also important to keep the lines of communication open with stakeholders. Also, keep in mind that the method, type, and frequency of communication will vary for each group of stakeholders.

Monitoring and evaluating reshoring efforts helps to track progress and provides justification for stakeholders. Monitoring and evaluation are complementary and help to ensure that reshoring goals and objectives are met. Monitoring answers, “How is our performance?” Evaluation answers, “Why are we getting these results?”
There are questions of a quantitative and qualitative nature to consider for any reshoring program or project. Following are example questions that can be applied to a training program to build a highly skilled manufacturing workforce that meets employer demand in targeted sectors.

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many individuals were offered job-specific training?</td>
<td>Did the participants learn valuable skills that satisfy employer demand?</td>
<td></td>
</tr>
<tr>
<td>How many trainees were employed in target sectors after completing the training program?</td>
<td>How many trainees are employed in the industry sectors for which the community has a competitive advantage?</td>
<td></td>
</tr>
</tbody>
</table>

After determining what to measure, establish a method to monitor and evaluate the reshoring strategy. Who will provide the data needed to measure performance? What data will be gathered? When and how often should the data be provided – e.g., monthly, quarterly, annually? Next, determine who should monitor the results.

4. Setting the Context for Reshoring

Many companies considering reshoring operations to a community often do not contact an economic development organization during the preliminary research stages, if at all. These companies will review subscription databases and public information available to them to influence their decisions. This section will review several approaches for communities to consider to make their community appealing to companies consider reshoring their operations.

**General Site Location Strategies**

Business development officials can do the following to ensure that they are ready to address the needs of reshoring companies:

- Create and maintain an inventory of available buildings and sites;
- Ensure that available building and sites are adequately served by local infrastructures such as roads, highway interchanges, high-voltage power, rail spurs, reliable water, and broadband;
- Maintain an understanding of relevant permitting processes, building regulations, tax rates, and available incentives;
- Working with local planning officials to ensure that there is an adequate supply of available land that can be easily developed (i.e., land without legal encumbrances, tax arrears, inappropriate zoning, natural hazards, or possible contamination);
- Maintaining up-to-date, relevant economic and demographic data, such as that contained in IEDC’s “Site Selection Data Standards.” Another excellent resource is IEDC’s 2012 report, *Knowledge is Power: Working Effectively with Site Selectors.*

The amount of time between selecting a location and initiating operations can be a concern for companies considering reshoring. Expedited permitting, pre-development review, and fast-tracking programs can all save a company time in development. Some communities go a step further to have an industrial site certified through an independent, third-party program run by the state, a utility, or a consulting firm. These programs inform a company that the site has met a set of requirements, such as soil testing, truck access, appropriate zoning, and has the infrastructure necessary to support industrial uses. While site certification programs can be costly, a community may be able to find a grant through the federal and state government or utility firm to off-set some of...
the costs for upgrading infrastructure, connecting utilities, and remediation of a site. This topic is discussed further in chapter six.

**Take Stock of the Community’s Building Inventory**
Planning, economic development, neighborhood development, and building inspections departments will likely have the information needed compile the community’s building inventory. After checking these sources, economic developers can also conduct a walking survey and talk with merchants and property owners. Once the data is gathered, it is advisable for the data to be entered into a database that can be searched and updated regularly. The building and business inventory will help guide the community’s strategy, but it will also be a useful and dynamic tool as the strategy is implemented.⁵⁹

**National Excess Manufacturing Capacity Catalog**
The [National Excess Manufacturing Capacity Catalog](#), funded by the U.S. Economic Development Administration and created at the University of Michigan, is an inventory of vacant manufacturing facilities accompanied by data on skilled workforce supply and community assets.

**Infrastructure Policies**
Infrastructure is an important factor in site selection. An efficient infrastructure system allows for the unhampered flow of goods and services to and from a location. High-quality transportation access ensures that companies can transport goods to and from their front door, reducing logistics and inventory costs. Transport is also crucial to making the best of the local workforce. Yet infrastructure also provides a variety of other inputs that are critical to businesses—electricity, water, telecommunications services, and waste removal. Appropriate infrastructure is a top criterion in business location decisions. For example, a food processing plant will not consider locating in a community unless the sewer and water systems are sufficient to handle plant capacity.

As discussed in the recent Economic Development Research Partners report, *Critical Condition: Infrastructure for Economic Development*, high-quality infrastructure has historically been a major source of economic growth in the United States. Yet infrastructure systems in many regions are now technologically obsolete, poorly maintained, and congested. These challenges are not only hurting incumbent businesses; they also jeopardize individual communities’ opportunities to attract new business, including reshoring companies. Traditional planning and financing mechanisms are failing to rectify these crucial challenges. Economic developers should therefore:

- Evaluate the effects of various infrastructure deficiencies on their local business;
- Raise awareness of the need for infrastructure investment to support business prosperity;
- Participate more actively in the planning and design of infrastructure assets; and
- Promote new financing mechanisms such as value capture, congestion fees, infrastructure exchanges, and public-private partnerships.⁶⁰


Broad-Based Policy for High-Quality Workforce

A highly quality workforce can be the deciding factor in a company’s location decision. In fact, officials with the California Employment Development Department cite their state’s massive high-technology workforce, as well as the state’s generous training grants and tax credits, as a reason that the state has led in IT reshoring. The following broad-based education and training policy initiatives may position a community or region as an attractive location for business:

- Encouraging research tax credits be awarded to projects that entail cooperation between private industry and education institutions;
- Creating training alliances for manufacturing that include community colleges, government, and industry;
- Increasing science, engineering, and math education at all levels, from pre-kindergarten to the postgraduate level;
- Fostering an integrated approach that advocates that students gain not only relevant skills but comprehensive skillsets appropriate for today’s industrial demands; and
- Confronting biases and stigmas by promoting manufacturing careers as high-skill, high-technology, and high-pay jobs.

Customized Training Programs

One concern companies have in setting up operations in a new community is the availability of skilled labor. A customized training program can prepare a workforce with the skills required by the reshoring company. Typically held in partnership with a community college, customized training programs benefit both the company and the community’s workers. One potential funding resource is the U.S. Department of Labor’s H-1B Technical Skills Training Grant Program, which funds projects that provide training for workers to assist them in gaining the skills needed to obtain employment in high-growth industries.

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63 Ibid
Talent Attraction

Workers, especially the most talented and educated, are increasingly mobile. As a result, economic developers are increasingly involved in creating environments that attract talented workers. Some of the policies that have been instituted to this end include:

- “Placemaking” activities, such as improving public spaces, mandating attractive architecture, rehabilitating historic structures, hosting cultural events, and re-naturalizing wildlife areas;
- Improving transportation infrastructure, especially public transit and cycling facilities;
- Advertising the quality of life of the area to mobile, young workers, especially those with existing ties to a community;
- Creating internships and cooperative education programs that lead students from outside the region to forge a sense of attachment to the place;
- Providing cultural amenities and services that appeal to recent immigrants.

These strategies take many forms. For example, the Scranton Chamber of Commerce uses its website (www.rediscoverscranton.com) to attract former residents back to their Pennsylvania hometown. In Cleveland, Ohio, local Yale alumni created the Bulldogs on the Cuyahoga to recruit Yale students to Cleveland for summer internships. The Cedar Rapids Metro Economic Alliance has created several programs to attract and retain talented workers including an internship program, a job webpage called Cedar Rapids and Iowa City Job Rush, and ImpactCR, a young professionals organization that provides opportunities and events to connect with the community and learn.

Kansas Rural Opportunity Zones

Relocation incentives are used to attract skilled workers from elsewhere. In Kansas's Rural Opportunity Zones (ROZ) program, started in 2012, people who have lived and worked outside the state for more than five years who relocate to one of Kansas’s 77 rural counties are eligible for income tax waivers for up to five years and student loan repayments up to 20 percent of their outstanding debts and $15,000 ($3,000 per year for up to five years). Counties provide half of the funds for the student loan repayments. In 2014, 330 people received income tax waivers. These income tax waivers cost $800,000 but are estimated to have generated an economic impact of $44 million in the state. Kansas legislators are now considering creating a similar “urban opportunity zone” incentive.


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66 Ibid
Sector Strategies

Sector strategies, a targeted program to meet the workforce needs of specific industries, are an increasingly common model for training and education. According to the National Governors Association, “sector strategies bring together employers within one or more industry with government, education, training, economic development, labor, and community organizations to focus on workforce needs within a regional labor market. At the state level, they are policies and investments that support the development of local sector partnerships.”

Sector strategy programs are used in industries ranging from information technology to manufacturing to hospitality. Economic developers have an essential role in executing sector approaches due to their unique position in coordinating and bringing together the public and private sector partners to identify workforce needs and training opportunities. Policymakers should strive to create workforce systems that are regionally focused; identify future business needs; and utilize available information to connect workers with jobs. It is important to look at the workforce from a regional perspective, as a percentage of a company or industry’s workforce will come from outside of the city or county borders.

The Economic Development Research Partners’ report, Shifting Workforce Development into High Gear, has an entire section with tips for practitioners to transition to a demand approach to re-balancing the workforce development system to meet industry needs. Some tactics for identifying business needs included in the report include leveraging existing business relationships to access data on future workforce needs; serving as a key point of contact between industry and training providers; and backing up survey results with big-data analysis.

Sector Strategies in Seattle

The Workforce Development Council of Seattle-King County (WDC) convenes sector panels with industry leaders to identify specific workforce issues and recommend solutions. “We start out by bringing firms that might normally be competitors to the same table, where they can then see that they all have a collective challenge,” WDC’s chief executive explains. By co-chairing sector panels with industry leaders, the WDC has been able to raise awareness of industry-wide workforce needs.

To ensure that training programs advance regional growth, the WDC's board chooses and reviews “focus sectors” every two years. Focus sectors are chosen based on economic impact and job demand characteristics. WDC most recently chose manufacturing and information technology as focus sectors. Once chosen, WDC staff conducts deeper analysis to analyze specific workforce needs, regularly publishing in-depth studies of focus sectors’ talent pipelines. Designed to be user-friendly for industry leaders and training institutions, the reports detail industry vacancies and training needs. The reports are distributed to 11 community college partners for use in their curriculum planning.

Using Workforce Investment Act funds, the WDC also funds training in the aerospace industry. The aerospace industry has been a major driver of the Puget Sound economy, supporting 84,000 jobs. The King County Aerospace Alliance brings together representatives from local government, business, and labor groups to foster the industry’s long-term growth and competitiveness. The WDC as well as the regional EDO Seattle-King County EDC are members. The alliance analyzes the aerospace industry’s labor force needs, responding by creating community college programs to prepare students and incumbent workers with appropriate skills.


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5. Leads and Marketing

Identifying Leads

Economic developers frequently ask how to identify companies that are considering reshoring. Reshoring companies use many of the same strategy as companies that are considering relocating or expanding operations. Economic developers can gain leads about companies considering reshoring by applying the following approaches to stay informed:

- Communicate with representatives of existing businesses in the community, especially those with offshore facilities or suppliers;
- Attend trade shows and expositions of the target industries;
- Network with representatives from universities, state governments, labor unions, and trade associations;
- Read trade magazines and foreign new sources to stay abreast of trends;
- Google and other news alerts about a particular industry or company;
- Track online inquiries and website visits;
- Conduct trade missions abroad or host reverse trade missions at home;
- Cold call; and
- Map supply chains.

Once a lead has been identified, it is advisable to conduct further research. The following tools may be used to gather additional information on a reshoring candidate:

- Consult newspaper and magazine archives for information about a company;
- Consult proprietary sales data companies (e.g. Dun & Bradstreet); and
- Speak discretely with customers and suppliers of the target company.

“You need to do your homework. Develop a referral network ahead of time, so you can go company to company through introductions from other companies.” David Niles, CEO of Montgomery County (PA) Development Corporation 69

The following resources can be used to conduct research:

- Federal government information resources, such as the Census, Bureau of Labor Statistics, Federal Reserve, and Bureau of Economic Analysis;
- State governments;
- Trade associations and trade magazines;
- Internet searches;
- Proprietary corporate sales and import/export databases (e.g., IBISWorld, Hoovers, WISER, Datamyne); 70
- Analyst reports and annual reports (for publicly traded companies); and
- Government data sources in the country of operation of an attraction candidate.

Using BRE to Identify Companies That Could Reshore

Business retention and expansion (BRE) programs are a means of opening channels of communication with local businesses that allow economic developers to ascertain what businesses need to grow in the community. BRE programs also help gather business intelligence on local companies, using surveys and interviews,

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69 Iedc Interview Conducted January 2016.
conducted in-person or by email or telephone. BRE surveys and visits can be used to identify companies that are likely to consider shifting production domestically.

BRE programs can also help to identify companies that are considering relocating production to the United States from abroad. Candidate companies might be incumbent companies in a community with facilities or suppliers offshore; alternatively, they could be the customers or suppliers of these incumbent companies. Questions that can be used to identify reshoring candidates include the following:

- Does your company have overseas operations?
- Do you source from American suppliers whose facilities are abroad?
- Are you the principal buyer from a foreign supplier located abroad?
- Do many local companies share a supplier located overseas?
- Are you a principal supplier for a U.S.-owned facility abroad?
- Are your American suppliers or customers facing serious challenges operating abroad?

If the answer to any of these questions is “yes,” the business developer has identified a lead for a potential reshoring candidate company. The next step would be to gather additional information to discover whether the company may be interested in reshoring. If the lead is confirmed, the economic developer may then undertake marketing and attraction efforts (described below).

“Put together a very simple, two- or three-question survey that you can distribute to your local industrial base and simply ask the questions: “Are you in international operations,” and “are those operations subject to reshoring.””

Steve Dust, CECd, president and CEO of Greater Cedar Valley Alliance (IA), on incorporating reshoring efforts with BRE programs

During these discussions, if the infrastructure challenges the company may be facing through the movement of their goods are mentioned, it is worth further exploration to identify strategies to alleviate the obstacles. A company may be willing to reshore part of their supply chain to the region if the infrastructure is in place. Federal and state grants may be available to assist the community in offering infrastructure upgrades to the company as an alternative incentive. This is further discussed in section five.

**Using Supply Chain Knowledge to Promote Reshoring**

Supply chains can provide valuable information to identify a reshoring company, connect local employers with suppliers in the greater region, and detect assets and gaps in the community’s infrastructure to support suppliers and producers.

During a business retention and expansion visit, the economic developer may meet with the owner or senior leaders but not the supply chain manager. Economic developers should schedule a meeting specifically focused on learning more about the company’s supply chain and the market for their product with the supply chain manager, plant managers, and other decision-makers. In addition to learning about their suppliers and nodes in their supply chain, the meeting can also discuss potential disruptions in their supply chain, their business continuity plans for disruptions, and the infrastructure they need to support the movement of raw materials in and products out. With the information shared in the meeting, the economic developer can search for suppliers within the greater region, open the discussion about the potential for the company to reshore to the region, and schedule an additional meeting to assist with developing a business continuity plan if necessary. A second meeting may be necessary to discuss with company leaders the total cost of ownership to explore if there may be cost savings in reshoring any offshore production or by using a local supplier, if one exists. Using the

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72 Iedc Interview Conducted January 2016.
information gained from the meetings, a map of inbound supplies and exported goods should be created to identify if any commonalities exist. One potential option is if several local firms are exporting goods to the same region, there may be the potential to develop a distribution center that allows companies to share containers to a similar region. This development not only adds an extra benefit to the firms within the community but also can be used as part of an attraction strategy. Furthermore, if a supplier does not exist within the greater region, the economic developer could explore the opportunity to recruit a supplier using the supply chain map as part of their attraction strategy.

“Be ready with answers about the supply chain. That has to be in your arsenal. It will come up, I don’t care what industry it is.” Nancy Kunkle, Chester County (PA) Economic Development Council

One of the bigger challenges economic developers have is identifying a company considering reshoring before they are approached. Economic developers should look at the ports closest to their community to explore where the containers brought into the region are from, their destination, and the product being imported. There are subscription databases that provide this information for a fee. To conduct the research locally, a meeting with the port leaders is a good place to start. The discussion should help identify the companies that are importing goods from abroad. If the product is an item that could be sourced or produced in your region, schedule a meeting with the head of the company to explore the reasons the company has offshore production and if an opportunity may exist to reshore a smaller operation after comparing the cost-differential and total cost of ownership.

Suppliers can be a key to identifying new opportunities. During a meeting with suppliers of raw materials, inquire if they have had any customers decide to use an offshore supplier instead of their company. As a follow-up, contact the firms with offshore suppliers to learn about their experience and determine if there is anything the community can offer in support of the local supplier to retain and gain new suppliers. Alternatively, a supplier expo featuring suppliers from the region can help connect them to new potential customers.

Creating Databases for Tracking Targets
Economic developers should carefully document leads as they are identified. As with other attraction efforts, when promoting reshoring economic developers should record:

- Sources and dates of leads;
- Documentation that supports the likelihood of reshoring (e.g., newspaper articles, proprietary sales database information, website inquiries);
- Internal contact persons and any communications received from the target;
- Contact people and information at the target company;
- Characteristics of the target (e.g., industry, suppliers, sales, locations, history);
- Information about likely corporate relocation needs and priorities; and
- Information resources and key external contacts that would be of use to the reshoring company.

One interesting new technique for generating leads is to use Google Alerts. This function automatically sends email reports when keywords are used in the news and social media. Economic developers could use this function to track potential leads.

Attracting Reshoring Companies through Marketing
Economic developers must persuade businesses or investors to relocate to their jurisdiction rather than in a competing location. They can use various marketing techniques to sell the competitive and comparative

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73 Iedc Interview Conducted December 2015.
advantages of reshoring to their particular community. Generally speaking, attraction strategies require the following elements:

- An understanding of target audiences (e.g., lead generation);
- An understanding of the community’s assets and liabilities;
- Reaching the target through marketing activities; and
- Improving the attractiveness of the community itself. 74

The sections above have already discussed the first bullet point. In regards to the second, because most EDOs have limited resources, economic developers usually target their attraction to industry and sub-sectors where they have a competitive advantage over other communities. This requires conducting a community self-assessment. This is discussed further in the Self-Assessments section. By matching a community’s capabilities-available sites, labor, capital--with industries that require those capabilities, practitioners can focus their efforts on those few firm leads that are mostly likely to consider the community in their search.

“Economic developers should be educating companies on what opportunities are out there. Take a more proactive approach. Economic development tends to be very reactive.” Nick Santoleri, vice president of manufacturing and strategic sourcing, Rockline Industries 75

After completing an assessment and identifying target industries, a community may then complete a reshoring marketing plan. A marketing plan for reshoring will involve the following steps.

- Identifying stakeholders;
- Elaborating objectives and goals;
- Creating plans of action to meet goals;
- Implementing the plan. 76

**Marketing Messages**

An important element of the marketing plan is deciding upon appropriate messaging, based on the competitive advantages of a community. A good example of an effective marketing message is that of Memphis, Tennessee, which markets itself as America’s distribution center. Though not a seemingly glamorous brand, the messaging accurately conveys the city’s advantageous position as a global logistics hub that is well-served by railroads, trucking companies, and the Memphis airport. 77 Marketing messages are often conveyed with taglines, slogans, and logos. Taglines are catchy phrases that embody the marketing message. Logos are designs or pictorial representations of the message and tagline. They reinforce the message or tagline and help to promote immediate recognition of the product. A logo can be a picture, design, or stylized letters used for the tagline. To attract a reshoring company, marketing messaging will often promote the benefits of United States operations--IP protections, logistical certainty, strength of the local workforce, and the size of the U.S. market--customized to both the target industry and sponsoring community.

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75 Iedc Interview Conducted March 2016.

76 Ibid

77 Ibid
### Marketing Techniques

The main techniques to reach a target audience and attract potential reshoring companies are:

- Advertising (e.g., print brochures, search engine advertising);
- Earned media;
- Personal selling (e.g., trade shows and site visits);
- Webpages; and
- Social media (e.g., Facebook, LinkedIn).

Each of these techniques has various advantages and disadvantages regarding cost and effectiveness. For instance, print advertising is relatively expensive; yet it is almost guaranteed to at least reach an audience, even if it is difficult to ascertain its effectiveness. It is likewise difficult to generate earned media, but it has high credibility with audiences. Attending trade shows is expensive and like advertising, difficult to measure; but, it is one of the best ways to generate leads and collect critical business intelligence. The economic developer must apprise themselves of the available marketing channels and tailor their marketing efforts to their budget, target industries, and overall objectives.

### Reshoring Readiness Brochures

The Northeastern Pennsylvania Industrial Resource Center has created reshoring brochures for individual industries that are shared with companies on site visits and at trade shows. The brochures highlight the resources available within the state and region to assist companies with reshoring and provide reasons why they should consider reshoring. Examples of the brochures can be found at [http://www.nepirc.com/publications-reports/](http://www.nepirc.com/publications-reports/) on the reshoring readiness for electrical equipment, hardware, mining, oil and gas machinery, plastics products, and other types of manufacturing.

### Addressing Common Corporate Concerns as Marketing Techniques

Marketing messages can encourage companies to consider the challenges they face manufacturing abroad and the benefits that they may experience in locating within a U.S. community. Think of the popular housing marketing campaign slogan “If you lived here, you would already be home” that is seen on signs along commuter routes. A similar style messages to convey the benefits of locating within a particular community or region. This section will explore some of the topics that can be considered as part of marketing messages.

Sources:

Evaluating the Costs of Overseas Production

"When we started looking at the costs and complexities of the inventory and lead times, there really wasn't any savings," said Roger Murphy, president of Block Windows, a company that has recently reshored. Messages should call companies to consider analyzing the costs of operating abroad versus domestically, especially on specific areas where the state or region considers their low costs to be a strength. The Assess Costs Everywhere (ACE) Tool (acetool.commerce.gov), as discussed in an earlier section, can provide costs to consider, including in marketing messages, such as:

- Labor wage fluctuations;
- Travel and oversight;
- Shipping time;
- Product quality;
- Costs of inputs, such as energy;
- Intellectual property protections;
- Regulatory compliance;
- Political and security risks; and
- Trade financing costs.

With local companies, a community can ask the company leadership if they have considered all of the Reshoring Initiative’s Total Cost of Ownership (TCO) Estimator 30 cost categories to compare the costs of doing business abroad with those in the United States.

Make it in America: The PA Made Again Initiative

PA Made Again is a statewide initiative to create jobs through the retention and expansion of Pennsylvania’s manufacturing economy, funded primarily with grants from the federal Make it in America Challenge. The initiative collects and disseminates demographic data and regulatory requirements; educates industry representatives on the concept of total costs of ownership; and offers free supplier identification and technical assistance to companies considering returning production to the United States. The initiative also uses EDA funds to provide site selection, deal negotiation, and financing assistance. Through the initiative, Pennsylvania’s seven Industrial Resource Centers and numerous local Workforce Investment Boards analyze industry clusters and then use DOL-ETA funds to provide training that is aligned with employers' needs.

Local Supply Chains as a Marketing Technique

In the context of reshoring, economic developers can use supply chain mapping in at least two ways. First, economic developers may use this process to identify reshoring companies. If large numbers of suppliers or customers for a particular company are located within a particular geography, a company that forms a "link" in the chain but that is located abroad may be a suitable candidate for reshoring, as local suppliers and customers would benefit from decreased logistics costs and other synergies were the company to relocate. For instance, the Kilgore Economic Development Corporation in Texas convinced a company that manufactured boat trailers to expand its manufacturing facility. KEDC used NAICS codes to develop a database of potential wholesalers, retailers, and suppliers throughout the state and region. This effort convinced the company that it would have a viable market for its new product.

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Selling Business Climate as a Reshoring Marketing Technique
What makes a community the best place to do business? Thinking like a company, one strategy is to identify the top reasons why companies choose to locate within the community and promote those as strengths to other companies. These strengths should be identified as part of creating a reshoring strategy. One approach to get the message out is to capture testimonials from local business owners.

6. Technical Assistance Part I: Assisting with Location and Establishing Operations
A company is considering reshoring to the community. What’s next? This section will explore how an economic development organization can assist a company with its location decision and set up operations locally.

Site Selection
One of economic developers’ core competencies is in assisting companies to select sites. A company is unlikely to reshore because of an attractive site, nor is it likely to select its general destination on this basis, but the quality of sites does play an important role in companies’ choice of jurisdiction. For this reason, it is imperative that those who wish to influence corporate location decisions have a strong knowledge of sites as well as corporate location requirements. Several of the general site location strategies were covered in chapter four.

Many of the same tactics would be used to assist a reshoring company as would be used to assist any other company from outside the community considering a local location. In order to assist the company (and possibly to win the company over to your community), the company’s needs must be rapidly, accurately, and thoroughly assessed and matched with available land and buildings. It is helpful to steer representatives of a reshoring firm toward land or buildings that best address its needs. For instance, an appropriate site that is near established manufacturers with similar workforce needs; education and training providers; and transportation corridors may be particularly helpful in assuaging concerns about finding qualified workers. Likewise, if there are supply chain worries, locations with excellent rail and highway access, in proximity to ports and airports, may be advantageous. Often, EDOs provide feasibility studies that compare the costs and benefits of various sites. It is often advantageous to be extremely proactive. For instance, when heavy equipment manufacturer Caterpillar announced that it would bring a significant amount of production back to the United States, numerous state-level EDOs contacted the company to present site proposals. 80

Kilgore Economic Development Corporation
The Kilgore Economic Development Corporation (KEDC) in Kilgore, Texas, regularly provides site location assistance to companies. In one case, KEDC assisted an equipment manufacturer with rezoning agricultural land for industrial use. As the company’s facility was being constructed, KEDC staff liaised regularly with the fire marshal to ensure that the building was up to code, avoiding costly delays down the road. In another case, KEDC proactively conducted land assembly for a manufacturer to ensure that it had an appropriate site.

Finance and Incentives
Moving operations to a new location can be very costly for a company. An economic development organization can assist the company in identifying resources to offset some of the relocation costs. This assistance can be in

the form of financial and alternative incentives. A financial incentive could be in the form of a tax break—either state or local, a low- to no-interest loan, or a grant directly to the business. A financial assistance package may take into consideration the size of the investment in the community and the number of jobs created. It is recommended to coordinate with municipal, county, regional, and state partners in creating a financial assistance package.

Alternative incentives can be just as attractive to a reshoring company as a financial incentive. Also known as nonfinancial incentives, non-tax incentives, or inducements, alternative incentives reduce the risk of locating and operating within a community and are fixed-assets that remain in the community should the business close or relocate. There are five types of alternative incentives—talent/workforce development, real estate and permitting, research and data, networking and promotions, and infrastructure improvements. This paper will address talent/workforce development, research and data, and networking and promotions in the next chapter.

**Infrastructure**

As in site selection, assisting a company that is reshoring with its infrastructure requirements should follow best practices in assisting any company. To do this, economic developers will need to conduct an assessment of a company’s likely requirements, and then analyze which organizations and departments and planning and financing tools will likely be involved in delivering infrastructure improvements.

Common infrastructure assistance granted by local governments include building or improving:

- Roads and highways;
- Rail spurs;
- Streetscaping;
- Traffic signals;
- Public transit facilities;
- Parking; and
- Bicycle and pedestrian amenities.

An increasingly important factor in site selection is the provision of broadband infrastructure. This service is particularly important to support service-sector companies. The County of Arlington, Virginia, has recently begun developing a fiber network in the hopes of attracting more high-technology, research, and international consulting firms.

The U.S. Economic Development Administration (EDA) is one source of funding for infrastructure for companies moving production to the United States. For instance, in 2015 the EDA granted nearly $2.2 million to the Ogden

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City Corporation in Utah to assist in reshoring a local company's manufacturing operations. The grant was used to improve water service to the Ogden Business Exchange, an industrial park that is home to ENVE Composites, an advanced materials manufacturer. With the improved water service, ENVE was anticipated to be able to reshore about 175 jobs that had been contracted to Chinese manufacturers. EDA has funds available to support reshoring projects through annual Economic Development Assistance Program appropriation, which includes both Public Works and Economic Adjustment Assistance programs. Communities are encouraged to speak with their EDA regional office to explore the availability of funding for infrastructure to support a reshoring project.

Company Insights: Interview with Arnold Kamler of Kent Bicycles
Kent Bicycles is a family owned business that was founded in 1905. Originally a retail businesses, it eventually transitioned to wholesale. In the 1990s, as the costs of raw materials continued to rise and China was offering companies incentives, Kent Bicycles decided to offshore operations. In 2013, company leaders were introduced to Nikki Haley, Governor of South Carolina, at the Walmart Year Beginning Meeting. Walmart had offered to support the company in its reshoring efforts. As of June 2015, Kent Bicycles employed 75 people in the new plant in South Carolina after relocating from China.

“The biggest challenge we had, which was solved before we even began, was that there was no natural gas within four miles of our factory,” said CEO Arnold Kamler. “When I saw the building that made sense for us, I let a representative from the commerce department know that this was an obstacle.” Five hours after the conversation, Governor Haley called him directly and asked if the state brought a natural gas connection to the factory if he would bring his company there. The answer was yes. “[Governor Haley] is very hands-on with bringing jobs back to America, and she really likes this project,” Kamler said.

Permitting
Once a company has optioned or acquired property, it must then gain local government approvals entitling them to proceed with construction of a new facility. While these processes vary substantially, they often include:

- Primary planning approval, such as land use designations and zoning code compliance;
- Subsidiary planning approval such as permits for grading, wetland removal, shoreline modification;
- Granting of site plan approval and building permits; and
- Site inspections.

The process of gaining approvals can be time-consuming. Depending on the nature of the project, it may involve multiple agencies, including environmental agencies and transportation authorities. Public approvals processes can sometimes restrict or limit land development, working at cross-purposes from efforts to encourage economic growth. For example, a company may acquire parcels for an industrial facility, only to find that the city's regulatory process effectively forbids a project of this nature. Such conflicts are most acute when different government departments do not communicate early and openly with each other and with the real estate developer.

Approval processes that are long, complex, and uncertain impose serious costs on businesses—and some businesses that are looking to ramp up production quickly will not select sites where approval processes are complex or opaque. Prolonged processing also decreases businesses’ ability to respond to changes in market conditions.

To minimize these problems, EDOs may consider:

- Publishing and promoting entitlement requirements;
- Designating a city staff person as a project manager or advocate for a particular construction application to ensure that it moves smoothly through the process;\(^8\)
- Working with the facility’s owner, engineers, planners, and building contractors to design a critical path schedule -- a timetable of permitting with allowances for contingencies;
- Maintaining a collection of pre-zoned, pre-serviced lands, sometimes known as “shovel-ready,” for which few additional permits are required;
- Maintaining an inventory of modernized, code-compliant vacant buildings that are essentially “turnkey” for most operations;
- Designing an “expedited permitting” process in which high-priority and high-value projects are processed first; and
- Offer a preliminary review process prior to the permitting application to familiarize the applicant with the city codes, policies, and processes.

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**City of San Jose’s Preliminary Review of Development Applications**

The city of San Jose, California’s Preliminary Review process is a voluntary, fee-based service in which applicants for land use and zoning code changes are offered feedback from the city on their proposals before the formal review process. Through preliminary review, applicants can avoid costly delays resulting from rejected applications. The city offers three levels of review: Focused, Enhanced, and Comprehensive. Where possible, the city endeavors to assign the same planner who reviews an application through preliminary review to the builder’s actual proposal.


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7. Technical Assistance Part II: Assisting a Company with Its Operations

With the location, infrastructure, and permits secure, the company’s focus shifts towards getting the site up and running. Whether the company commits to a small operation to test out the new location, is ramping up operations with a large relocation, or is returning jobs as part of an expansion, economic development organizations can assist a company with many of its operations. This section will explore the types of support economic development organizations can offer a company as it opens for business.

**Securing a Trained Workforce for a Particular Company**

There are several ways that EDOs can assist reshoring companies with their search for talented employees. One of the simplest approaches is to market training programs that already exist. Employers may be unaware of the free and low-cost training programs available in their community.

To ensure that a reshoring company has an adequately trained workforce, economic developers may offer customized training and hiring assistance. In fact, recent studies have found that training programs have a stronger positive effect on economic activity than do tax incentives—as much as 10 times greater. Another study

\(^8\) Ibid
found that training incentives cost about $9,000 per job—significantly less than many other incentive programs.\textsuperscript{89}

The following are ways to help companies with their workforce needs:

- **JOB TRAINING GRANTS** reimburse companies for the costs of training and upgrading employee skills in-house or through approved training providers. For example, the State of Washington’s WorkStart program makes grants of up to $200,000 for on-the-job training in the state’s targeted industry sectors: aerospace, advanced materials, life sciences, and marine technology.

- **WAGE SUBSIDIES** offset business costs during employee training. For example, the KingsWorks program in Kings County, California, provides up to 50 percent of an employee’s wages during an on-the-job training program.

- **HIRING ASSISTANCE** comprises labor market analysis, recruiting, screening, and skills assessments of job candidates. EDOs now often provide these services at low cost or complimentary as an incentive. The Kentucky Career Center offers employers assistance with recruitment and mass applications, including testing and screening applicants and reviewing resumes.

- **CUSTOMIZED TRAINING PROGRAMS** can be offered to meet specific business needs. When EDOs join with local colleges and other trainers to provide customized training for employers, it can be one of the most powerful incentives for business attraction and retention. Because customized training can be offered up-front, it can have a strong effect on business location decisions. Louisiana’s FastStart program is a highly regarded customized training program.\textsuperscript{90} One resource for training is the Employment and Training Administration’s H-1B Technical Skills Training Grant, which funds projects that provide training for workers to gain the skills and competencies needed for high-growth industries. These grants were recently used in the “\textit{Make It In America Challenge}.”

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**FastStart: Louisiana**

Louisiana Economic Development’s (LED) FastStart program provides eligible companies with a complimentary and comprehensive suite of recruiting, hiring, and training services. Companies are eligible if they commit to creating at least 15 manufacturing jobs or 50 jobs in media, headquarters, research, or logistics fields in the state.

LED begins assisting eligible companies by providing complimentary business analysis, needs assessments, and staffing plans. The organization then helps to recruit employees by running job fairs and conducting social media campaigns. Once job candidates have been identified, LED conducts screenings and interviews on behalf of the organization. Finally, LED designs and implements training for the company. New hires, including managers, are trained in technical and soft skills necessary for their positions in classroom and immersive workplace settings. FastStart has been described as “the silver bullet in Louisiana’s success in the site selection wars.”

Source: Maggie Heyn Richardson, “LED FastStart’s Jeff Lynn has helped make the training program the most successful in the country.” \textit{Greater Baton Rouge Business Report}. April 22, 2015.

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Rapidly Attracting Skilled Labor

Attracting a skilled, experienced, and reasonably priced workforce is a principal concern for almost any company and is often cited as the number one factor in site selection by corporate executives and professional site selection consultants. Although educating young people and re-training or up-skilling incumbent workers in a community often yields the highest community return, officials concerned with economic growth often must also work to attract relevantly skilled workers from other communities and increasingly, other countries.

While the strategies listed above can help to improve a community’s workforce, their timeframes can be long. A company that has announced its reshoring plans will expect a skilled workforce to be readily available. Where this workforce cannot be supplied by up-skilling local incumbent workers, workers in other regions may need to be recruited to fill positions. Usually, talent attraction to fill a corporate need takes existing public marketing efforts and targets them to high-skilled, mobile demographics. For instance, economic developers may research a particular skillset and direct their attraction efforts to particular trade magazines or to cities with universities producing qualified graduates in a particular field. With the advent of Internet marketing, advertising to narrowly focused audiences has become significantly easier.

Due to an uncertainty of the markets, some firms have chosen to shift their hiring focuses toward temporary workers to address fluctuating needs and retain them on a temporary basis for extended periods before hiring. Skilled workers may be reluctant to accept a temporary position even with the potential to lead to a permanent position. Workforce and economic development organizations can assist the company with screening workers and provide financial incentives to assist with permanent hiring decisions.

International Workers

A second strategy for attracting qualified workers is to attract international workers. The most important role for those providing services to businesses in this process will be to advise reshoring companies on laws regarding U.S. visas. Thus, economic developers should be familiar with the U.S. temporary worker and immigration system. The following are the most important visas.

- **H-1B** is a temporary visa for high-technology work.
- **The H-2 Visa** is used for technicians to perform specific tasks in the United States, such as training workers.
- **TN/TD Visas** are available for citizens of Canada or Mexico in eligible professions who have the requisite education and training, generally at least a bachelor's degree, with a job offer in the United States.
- **The L-1 Visa** allows a company’s managers and technical staff to work at its U.S operations for up to seven years.

Domestic Outsourcing in Louisiana

In 2013, IBM announced it would create 800 new back-office jobs in Baton Rouge, Louisiana. As part of a public-private partnership agreement with IBM, state officials announced a $14 million investment to triple enrollment in the computer program at Louisiana State University (LSU). IBM officials are embedded at LSU to advise on curriculum elaboration, teaching strategies, internships, and career placement. This public-private-academia partnership has served as a model in other areas of Louisiana, where other domestic outsourcing companies have established operations.

• **O-1 VISAS** apply to persons who have extraordinary ability in the sciences, arts, education, or business.\(^91\)

Operating a business can be expensive, especially following the startup and expansions costs affiliated with reshoring. The community, county, and state may offer financial incentives to the firm in the form of tax breaks, grants, and non-financial inducements to allow the company to have the needed working capital. Another approach is to offer a firm a low-interest or no-interest loan to cover the costs of new equipment for an expansion or working capital needed to start operations. The loans may come from a gap financing fund, a revolving loan fund, or a loan fund devoted to spur business and job creation in a set geography such as an industrial corridor, commercial district, or neighborhood.

### Local Supply Chain Development

As discussed in previous sections, economic developers can use the supply chain technique to assist potential reshoring companies to identify local suppliers and customers. With existing supply chain maps at the ready, the economic developer can demonstrate that a significant proportion of components could be sourced locally or that the local market is fertile for the company's products. Supply chain mapping is a valuable sales technique for attracting a reshoring company; it is also an invaluable service for a company that has already decided to relocate from overseas.

> "We underestimated the time it takes for a company to transition to a new supplier. They have to go through first-article testing, a lot of qualifications, site visits back and forth, and dialogue between them." Eric Esoda, president and CEO, Northeast Pennsylvania Industrial Resource Center\(^92\)

#### Company Insights: Mark Gams, CEO of ACCO Brands

ACCO Brands is a global office and school product company headquartered in Lake Zurich, Illinois. Between 2003 and 2004, ACCO Brands made a cost savings decision to move their manufacturing to Sonora, Mexico, and eventually, China. The company had mixed experiences with manufacturing overseas. CEO Mark Gams noted that “It is difficult to manage supply chains, and when you have a problem it is usually much more expensive to solve the problem in Asia than it is with a problem in North America.” This gave the company a push to start looking at their total cost of production on their different product lines, and they decided to reshore operations to their center in Booneville, Mississippi. The company has continued to reshore jobs including 162 call center positions in 2014 and recently announced in January 2016 the reshoring of 34 front office jobs from Manila, Philippines, to the Booneville location.


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\(^92\) Iedc Interview Conducted March 2016.
Building a Local Outlet in the Global Supply Chain
In Maine, there is strong agriculture industry that produces barley and wheat and a growing craft brewing presence. However, between harvesting the grain and adding malt, the supply chain includes a stop in Canada. Joel Alex recognized this budding opportunity and worked with local entrepreneur support organizations within Maine to open the Blue Ox Malthouse. Opened in 2014, Blue Ox Malthouse is expected to add five new jobs within the next two years. Alex received counseling and a loan from the Coastal Enterprise, Inc. and “significant support from Maine Technology Institute in grants and matching loans, participated in Maine Center for Entrepreneurial Development’s 2014 Top Gun accelerator program, and received technical assistance and direct support from the Maine Manufacturing Extension Project, Maine Grain Alliance, the Libra Foundation, and others.”


Professional Networking as a Supply Chain Development Technique
A community may consider starting an industry council for a cluster within their region for company leaders to meet on a regular basis and learn from their peers. This may establish connections between local suppliers and producers for new business as well as lead to new growth within the industry in the region. Economic developers can learn about new trends in the industry, potential issues businesses may be experiencing, and infrastructure needs that would support new growth. Using the information gathered from the industry council discussions, the community leaders can speak intelligently about the industry and offer participation in the council as a benefit for a perspective company. Furthermore, the council could be a platform to do an introduction to the total cost of ownership presentation along with discussing the tools available for reshoring.

Make it in America Challenge: Mississippi State University
With $1.9 million in funds from the U.S. Department of Labor’s “Make it in America Challenge,” Mississippi State University launched a statewide campaign to help advanced manufacturers return to the United States. The program at MSU develops regionalized supply chains by identifying sourcing opportunities for small and medium-sized manufacturing enterprises, as well as hosting reshoring summits, conducting technical assistance projects, and offering workshops that lead to industry certifications. Clay Walden, the director of MSU’s Center for Advanced Vehicular Systems Extension and principal grant investigator, comments that the program will “increase competitiveness of the state’s advanced manufacturing enterprises, which in turn, makes these companies a more attractive sourcing solution.”

Export Assistance
While a firm may consider reshoring to be closer to its customers, its products may continue to be exported to international markets. An economic development organization can assist a firm in developing exporter awareness, developing an exporting network, and facilitating information exchanges. A major part of this effort is to educate and connect a company with the federal, state, and private-sector programs available to American companies.
Foreign Trade Zones

Foreign Trade Zones (FTZs) are designated areas that are legally outside of the U.S. territory for customs purposes. In FTZs, foreign and domestic merchandise can be stored, packaged, assembled, or assembled, with U.S. duties and excise taxes deferred. Goods that are imported and the re-exported from an FTZ do not pay duties. Manufacturers can benefit from operating in an FTZ if there is a significant differential between tariffs on components and finished goods. Approximately 3,000 firms use FTZs, and $80 billion worth of goods are annually exported from U.S. FTZs. Across the U.S., there are about 250 FTZs. EDOs that wish to designate an area as an FTZ must apply to the Foreign Trade Zones Board, a federal organization. To be effective, FTZs need to be supported with adequate infrastructure, such as ports, to link the zone with the outside world.

FTZ initiatives may be linked to other incentives. For instance, in North Carolina’s southeast region, FTZ #214 offers customized training to companies in the FTZ via local community colleges.

8. Conclusion

Economic developers have a stronger role today in assisting companies in their analysis. Several strategies outlined in this paper are to encourage and support companies in their reshoring decisions. As companies are being thorough in their analysis, economic developers should demonstrate to these business leaders the types of assistance they can provide. Starting with a conversation at a business retention and expansion visit or cold call and continuing through training and hiring new workers, economic developers should use the strategies to assist companies with their reshoring experience. But the strategies don’t stop to assisting reshoring companies. Many of these strategies can also be applied to prevent companies considering from relocating offshore, attracting foreign direct investment, and expanding operations locally or elsewhere in the country.

Reshoring takes time. Companies are spending more time doing analysis before making the decisions to relocate operations again. These firms consider all impacts—financial and non-financial—in exploration studies that can take over a year. The shift of moving operations overseas occurred steadily over thirty years. While there are strong indications of a reversed trend, reshoring announcements will occur at a slow and steady pace rather than in large booms. Likewise, the recommendations in this paper encourage a continual approach to attracting and supporting companies through the reshoring process. Communities are advised to set long-term expectations instead of immediate returns when developing a program to attract reshoring firms.

Appendix A: Additional Resources by Type

Federal Reshoring Tools
Assess Costs Everywhere (ACE)
The ACE tool was developed within the Economics and Statistics Administration in partnership with the National Institute for Standards and Technology's Manufacturing Extension Partnership. This tool helps manufacturers incorporate total cost assessment in decision-making. Total cost assessments help to uncover overlooked offshoring expenses such as trade financing, shipping, inventory, and product quality. ACE provides manufacturers an analytic framework as well as links to public and private resources and case studies.

WEBSITE: http://acetool.commerce.gov/

BusinessUSA
The BusinessUSA website consolidates resources, information, and services from 10 federal agencies. Features of the website include information on rural investment; a state-level business assistance locator; a Small Business Innovation Research (SBIR) Eligibility Wizard, and a training portal for entrepreneurs and exporters.

WEBSITE: http://business.usa.gov/

Manufacturing.gov: A National Advanced Manufacturing Portal
The National Network for Manufacturing Innovation (NNMI) is a federal government effort to encourage U.S. manufacturing. NNMI convenes industry, academia, and government partners to solve problems in manufacturing, with the aim of creating long-term sustainable infrastructure for research and commercialization. Manufacturing.gov is a web portal that serves as the national advanced manufacturing resource and an information clearinghouse that supports the National Network for Manufacturing Innovation.

WEBSITE: https://www.manufacturing.gov/

National Excess Manufacturing Capacity Catalog (NEXCAP)
With funding from the U.S. EDA, the University of Michigan’s Institute for Research on Labor, Employment, and the Economy launched the NEXCAP online portal. NEXCAP is essentially a site selection tool that provides an inventory of vacant industrial plants and sites and their physical characteristics. The tool also provides information on the host community's skilled workforce supply, community assets, and other data critical to making informed business decisions.

WEBSITE: http://www.edastayusa.org/

U.S. Cluster Mapping Tool
The project is led by Harvard Business School's Institute for Strategy and Competitiveness in partnership with the U.S. Department of Commerce and U.S. Economic Development Administration. The U.S. Cluster Mapping site provides data on industry clusters and regional business environments in the United States. The tool can be used by governments, economic developers, and businesses to understand and develop industries that promote economic growth and national competitiveness.

WEBSITE: http://www.clustermapping.us/
Additional Reshoring Tools

Cost Differential Frontier Calculator

The University of Lausanne’s Cost Differential Frontier Calculator helps companies determine the cost differential between producing domestically and overseas, emphasizing logistics and inventory carrying costs and risks. This easy-to-use tool asks users to provide five data points to compare the costs of long lead times and demand volatility exposure. A short video explaining how to use the tool is provided at https://www.youtube.com/watch?v=3WQ0I2m0aHk.

**WEBSITE:** http://cdf-oplab.unil.ch/

ThomasNet®

ThomasNet® is a free searchable supplier directory that allows a company to identify suppliers based on a product or service category; the brand or company name; or the United Nations Standard Products and Services Code (UNSPSC) code. The results can be narrowed down by company type, geography, ownership, or certifications and registration.

**WEBSITE:** http://www.thomasnet.com/

Total Cost of Ownership Estimator™

The Total Cost of Ownership (TCO) Estimator is a free online tool developed by the Reshoring Initiative. This tool helps manufacturers better assess and compare the total costs and risks of offshore and onshore ownership. The estimator provides customized calculations based on unique company data, allows for direct cost comparisons, and includes a forecast for strategic planning purposes. While the estimator is designed for businesses, it is also a useful tool for economic development groups, governments, educators, and other leaders looking to enable regional reshoring and foreign direct investment.

The Reshoring Initiative’s website provides other information resources, such as case studies and articles. The initiative educates suppliers on getting orders from large customers that currently source from overseas. The initiative also works with a variety of partners, including the National Academies of Sciences and Engineering, the Manufacturing Institute/Clinton Global Initiative, the Association for Manufacturing Excellence, and EDOs to improve the skilled manufacturing workforce. The initiative also consults with EDOs, manufacturing extension partnerships, and educational institutions that are advancing reshoring.

**WEBSITE:** http://www.reshorenow.org/TCO_Estimator.cfm
Appendix B: Introduction to Supply Chains

According to Harry Moser, founder and president of the Reshoring Initiative, many companies base their decisions on where to offshore on price and profits without consideration of the logistics costs associated with offshoring. Following the recession, many manufacturers re-examined their supply chains for new cost-savings including strategies to shorten and simplify, bring previously outsourced processes in-house, and use suppliers closer to home. Supply chains have a major role in a company’s reshoring decision.

Economic developers with an understanding of supply chains will have a competitive edge during discussions with companies considering reshoring, bringing investment to a community, and may even be used in retention and expansion. Using their knowledge of supply chains, economic developers can employ strategies to assist companies in identifying opportunities to save time, money, and quality throughout their supply chain. This short section provides a quick-and-dirty introduction to supply chains for economic developers.

Defining Supply Chains

There are varying definitions of supply chains and supply chain management. APICS, the professional association for supply chain management, defines supply chains as global networks used to deliver products and services from raw materials to end customers through an engineered flow of information, physical distribution, and cash. In simple terms, a supply chain can be defined as the movement of goods and services from raw materials to the customer.

Supply chain management can be broadly defined as the integration of key business processes from end-user through original suppliers that provide products, services, and information that add value for customers and other stakeholders. The Council of Supply Chain Management Professionals (CSCMP) expands on the role of supply management in its definition. CSCMP defines supply chain management as it encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In simple terms, supply chain management can be defined as oversight of the flow of products and services from the original supplier to the customer.

Types of Supply Chains

In general, there are two types of supply chains: manufactured product and service. Depending on the complexity of the product, the supply chain can have several modules between the raw material and when the product is received by the end user. Both service and manufactured product will rely heavily on capital investments in equipment to allow employees to complete their work efficiently. Manufactured product supply chains focus more on transportation, procuring, and working with physical materials whereas service supply chains deal more with developing relationships and working with data.

A service supply chain is not as in-depth as a manufactured product’s. Service supply chains tend to be more labor-intense, with limited movement of goods. When the end user has the product, there is typically a closed

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96 Harry Moser Presented This Finding At Iedc’s 2016 Leadership Summit In New Orleans, Louisiana On January 23, 2016.
file. Optimization within service supply chains revolves around partnerships to reduce duplication and the modernization of software. Examples of service supply chains would be applications for financial services, the dictation of medical records, and reservations for travel through an agent. These supply chains rely on human capital and broadband technology. As more communities receive access to broadband technology, companies have considered reshoring these jobs to rural communities and to workers who work remotely, requiring less infrastructure.

### Teleworking Jobs for Workers in Rural and Small Towns

The Eastern Kentucky Concentrated Employment Program (EKCEP) founded TeleworksUSA as a strategy to assist workers in the rural and small towns of Eastern Kentucky to participate in the global economy without leaving their communities. As a public workforce agency, EKCEP trains citizens in Eastern Kentucky on customer service, digital literacy, and sales to prepare for teleworking positions, many of which can be found on their job board. In 2015 alone, 213 citizens found telework jobs through the EKCEP job board.¹ Many of these positions are at national companies including Apple, JP Morgan Chase, Amazon, AT&T, Comcast, eBay, DirecTV, and UHaul.²


Manufactured product supply chains involve several partners as the product moves from raw material to the consumer. The product involves significant logistics to ensure the supplies are available when ready for production and products continue to move forward without any delays through the chain. There are several ways a manufacturer may try to optimize production including negotiating lower rates for supplies and shipping, better forecasting of inventory needed, and minimizing physical barriers to production.

### Elements of Supply Chains

Supply chains for manufactured products vary from product to product and depend on the intricacy of the product. Their supply chains all start with working with suppliers to obtain raw materials and end with delivery to a customer. The raw materials may depart the supplier to go to a warehouse to await other materials or directly to the production line. A product may continue to another production line or go to a warehouse to await the next round of production. Complex products may go through several production lines, traveling distances between plants for value-added production. Finished products may be shipped to a distribution center to be sent to a retailer or – in the age of e-commerce – be shipped directly to the customer.

Advanced manufacturers, such as those in the aerospace or automotive industry, rely on a tiered supply chain. A tiered supply chain relies on sub-assembly of smaller components that are eventually added to the final product. The raw materials suppliers are typically the furthest tiered supplier, with the tier-one supplier being the one that provides the sub-assembled product to the final product. An example of a three-tiered supply chain is the cooling fan for a computer. The third-tier supplier provides the raw materials such as polyethylene pellets that are melted to form the blades or the copper ingots that are used to form the wire. A second-tier supplier will use the pellets to form the blades or the copper wire to form the motor for the cooling fan. The first-tier supplier will complete the component such as assembling the cooling fan and supply the computer manufacturer.
Transportation is an essential element of a supply chain. It is estimated that transportation is responsible for one-third to two-thirds of a supply chain costs. Transportation has a role in the efficiency and economics of a supply chain from ensuring products arrive on time to meet customer demand to keeping costs competitive within the market. As traditional transportation providers expand their service capabilities, modes of transport previously not considered may become more cost-effective. The consolidation of warehousing facilities and distribution channels, as well as companies outsourcing their transportation logistics needs to third-party firms, are offering options to reduce costs, improve efficiencies, and incorporate sustainability to their transportation strategies. Technology advances have contributed to the role of transportation within the supply chain to ensure products are arriving on-time, effectively using the space available in the container or truck, and identifying the most efficient routes and modes of transportation.

Many supply chain managers will use the terms “warehouse” and “distribution centers” interchangeably. Supply Chain Digest’s Cliff Holste states that while they are physically the same, a distribution center evolved from warehousing into rapid flow-through distribution centers. To support his claim, Holste uses Clifford F. Lynch of C.F. Lynch & Associates’ four primary functions of a distribution center. Lynch argues that true distribution centers offer value-added services and are customer-focused, technology-driven and relationship-conscious. “A well-organized and managed distribution center will provide such services as transportation, cross-docking, order-fulfillment, labeling and packaging, along with whatever services are necessary to complete the order cycle, including order processing, order preparation, shipping, receiving, transportation, returned goods processing, and performance measurement” according to Holste. A distribution center can often serve as a link between a supplier and a customer in the supply chain, relying on technology to ensure the products meet both the suppliers’ and customers’ expectations efficiently in the least-expensive manner.

The Warehousing Education and Research Center conducts an annual survey of distribution centers on the metrics and benchmarks of manufacturers, wholesale and distributors, retailers and customers. The 2014 survey results presented in January 2015 found the top-five metrics for distribution centers are:

- On Time Shipments—Customer
- Internal Order Cycle—Customer
- Total Order Cycle Time—Customer
- Dock to Stock Cycle Time in Hours—Inbound Operations
- Order Picking Accuracy—Quality

Survey results provide benchmark ranges for each metric to measure their processes among their peers.

### Evolution of Supply Chain Research and Development

Supply chain engineering can trace its roots to the early 20th Century with Fredrick Taylor’s, the father of industrial engineering, study of how to improve manual loading processes and operation research during World War II, which demonstrated the value of analytics in response to military logistics problems. Following World War II, the 1940s and 1950s focused on mechanization and the better use of space in warehouses. Intermodal containers were developed in the mid-1950s along with ships, trains, and trucks to carry these new containers. These developments would later become important as supply chains became global. The transition from rail to on-time, truck-dependent movement of goods became a trend in the 1960s. The industry became more

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101 M. Sreenivas And Dr. T. Srinivas, “The Role Of Transportation In Logistics Chain.” Alluri Institute Of Management Systems And Kakatiya University. Warangal, India.
formalized with the development of the first trade association in 1963 and the development of academic research centers in the 1970s and 1980s.

Computer technology emerged in the 1970s and 1980s as a strategy to optimize supply chain efficiencies. With the development of personal computers and new technology coming out of academic research centers, the modern discipline of supply chain management emerged. Supply chain managers were able to use new technologies including flexible spreadsheets and map-based interfaces to make educated decisions. The most important development in the 1980s was the acknowledgment by company executives of the intricacies, importance, and expenses of logistics management. The 1990s furthered the technology growth with the development of enterprise resource planning (ERP) systems. APICS defines ERP as a “framework for organizing, defining, and standardizing the business processes necessary to plan effectively and control an organization so the organization can use its internal knowledge to seek external knowledge.”

Today’s technology innovations have taken supply chains to the next level. Accenture has recently been discussing the digital supply network that not only integrates their supply chain with digital technology but reimagines a supply chain that allows people, information, and finance to travel along with the materials, products, and supplies. There is a shift from lean to agile supply chains that, through the use of technology, allow supply chain managers to make decisions quickly to cope with unforeseen circumstances. This shift allows companies the flexibility to respond to ever-changing customer demands.

Resiliency and sustainability are having a greater role in today’s supply chains. Natural and man-made disasters are gaining more attention in all aspects of business, including the impact of potential threats to the flow of goods. This has led companies to reexamine their supply chains to minimize potential interruptions to the movement of goods without additional inventory costs. As customers demand companies to consider sustainable practices, companies are not only looking for strategies to “green” their forward moving logistics but also their reverse logistics. Reverse logistics is a complete supply chain dedicated to the reverse flow of products and materials for the purpose of returns, repairs, remanufacturing, and recycling. This has led to a shift in companies focusing on a linear supply chain to a circular supply chain. The circular supply chain improves customer service and provides cost and sustainable benefits for the company as a second return on investment.

Supply Chain Philosophies

Over the last century, companies, academics, and the military have driven innovations in the field of logistics. One of the more well-known and adapted philosophies is the strategy of just in time. Developed by Toyota between the 1940s and 1970s, this philosophy is focused on the delivery of materials, parts, or goods right before they are needed to reduce storage costs and wastes. Many manufacturers and retailers use this strategy to reduce their risk of excess inventory and the associated costs. However, an interruption to the system can leave a company with too little inventory for production or consumer sales.

Another business philosophy that has found its way into supply chains is total quality management (TQM). The American Society for Quality defines TQM as “a management approach to long-term success through customer satisfaction. TQM is based on all members of an organization participating in improving processes, products,
services, and the culture in which they work.\textsuperscript{108} To understand how this philosophy is applied to a supply chain, consider an automobile, which has approximately 30,000 parts.\textsuperscript{109} Many of the sub-components are manufactured by tiered suppliers before the final part is sent to the automotive company to be assembled. In TQM, it is recommended that all suppliers hold the same quality goals for customer satisfaction as the company whose name is on the product. Through this model, the company would understand the culture and organizational environment of its suppliers and ensure its strategy is complimentary to its own.

Business processing reengineering (BPR) is a third business philosophy that is applied to supply chains. Through BPR, companies start with a blank slate and refocus their business processes towards the customers’ needs. During the review process, a functional company is reorganized into cross-functional teams and technology is used to review data for informed decision making. At the end of the process, organizational layers are flattened, and ineffective processes are eliminated. BPR assists companies in reducing time and costs in their supply chain while improving the quality of the product for customers.

The lean supply chain strategy is “a system of interconnected and interdependent partners that operate in unison to accomplish supply chain objectives.”\textsuperscript{110} Lean supply chains optimize the supply chain to eliminate waste, utilize technology, reduce lead time, collaborate throughout the supply chain, and focus on meeting customer expectations.

Factors that Can Impact a Supply Chain

Global supply chains are exposed to several risks that can cause a disruption at any time. Companies will often take into consideration some types of risks when selecting a location or a supplier. When impacted by a disruption of the supply chain, a company risks a loss of revenue, customers, shareholder support, company reputation, and increases in worker expenses and public scrutiny.

The most obvious type of risk for disruption are environmental disasters such as a tsunami, hurricane, tornado, or snow or ice storm. Many companies with a global footprint are more concerned with economic, political, and technological risks. In 2013, PwC and MIT Forum for Supply Chain Innovation conducted a survey, of which 209 companies with a global footprint replied, on global supply chain and risk management. In the survey, the companies rated the following the greatest risks to their supply chain:\textsuperscript{111}

- Raw material price fluctuations (53 percent)
- Currency fluctuations (47 percent)
- Market changes (41%)
- Energy/fuel prices volatility (38 percent)
- Environmental catastrophes (34 percent)
- Raw material scarcity (28 percent)
- Rising labor costs (26 percent)
- Geopolitical instability (22 percent)
- Supplier/partner bankruptcy (22 percent)
- Change in technology (20 percent)


\textsuperscript{110} Chuck Intrieri, “9 Steps To Establish The Lean Supply Chain: A System Of Interconnected & Interdependent Partners” Cerasis. May 6, 2015. Http://Cerasis.Com/2015/05/06/Lean-Supply-Chain/

Over 80 percent of companies globally find that protection of their supply chain is a priority to avoid disruptions. Larger companies will employ a business continuity plan to react to disruptions to their supply chain. Some firms may choose to rely on two or three suppliers in diverse markets for the same raw materials to ensure continuous service. A subcontract with logistics firms on a temporary basis may be used to bypass breaks in the movement of goods. Information technology should be backed up and have the ability to re-route connections in response to a disruption.