Building a Workforce Infrastructure

Laura Wolf-Powers, University of Pennsylvania
The Networked Cities Series

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From the earliest times, people settling cities devised clever ways of moving things: the materials they needed to build shelters, the water and food they needed to survive, the tools they needed for their work, the armaments they needed for their protection – and ultimately, themselves. Twenty-first century urbanites are still moving things about, but now they employ networks to facilitate that movement – and the things they now move include electricity, capital, sounds, and images.

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Moving People, Goods, and Information in the 21st Century
The Cutting-Edge Infrastructures of Networked Cities

Edited by
Richard E Hanley
The Workforce Infrastructure: Issues and Challenges for Policy Makers

Laura Wolf-Powers

The technologies that now dominate production and distribution have irrevocably changed the demand for and return to labor. Thousands of office, factory, and retail jobs demand a facility with computers that they did not require ten years ago. Employment in specific IT occupations, such as computer programming and systems analysis, has increased at double the rate of U.S. non-farm employment overall since the mid-1990s (U.S. Department of Commerce 2000), and a recent Information Technology Association of America report demonstrates that even during a slow economy, IT skills remain in heavy demand (ITAA 2001). People's earning power—and the prosperity of the communities in which they live—have become increasingly linked to their ability to manipulate information. Nowhere is this more true than in urban areas.

Because local officials are aware that successful regions require human capital in addition to physical capital infrastructures, education and workforce development have begun to assume a prominent role in public and academic conversations about urban vitality. In an economy where knowledge-based activities lead to value creation, conventional measures to attract investment, such as tax incentives or technology parks, must be joined or even supplanted by policies designed to develop or attract a skilled workforce (Clarke and Gaile 1998, Mathur 1999, Rondinelli et al. 1998). This chapter explores empirical and analytical issues relevant to policy making for a cutting-edge workforce infrastructure. First, is today's IT workforce place-bound or placeless? Second, in an IT-driven urban economy, what are the available jobs and careers and what are their skill requirements? Finally, how do we understand and evaluate local workforce-related interventions when the goals are to make metropolitan areas attractive to firms and also to reduce poverty in cities?

Placing High-Tech Work

Since the early 1980s, growth in the U.S. economy has been powered by IT-related products such as computers, telecommunications equipment, and software, by the
production of information "content" such as entertainment, and by advanced services (legal, financial, consulting) in which information technology is a key input (Rondinelli et al. 1998). Beginning in the mid-1990s, Internet applications and content became additional growth drivers. But while technology-intensive goods and services have become high-value-added regional exports, technology and globalization have also altered industries in ways that make production and work less bound to particular places.

Communications and transport advances have enabled corporate decision makers to spatially segment the production process, conducting product development, high-skilled manufacturing, routine assembly, sales and marketing, and product support in different locations (Castells 1989, Massey 1995, Gray 1999). The "world car," whose component parts come from many nations, exemplifies this trend, as does software developed in Boston but tested and "de-bugged" by technicians in Dublin or Bangalore.

The "spatial division of labor" concept has recently risen to another level with predictions that workers and firms will soon be entirely unbounded by location. News articles profile employees halfway across the world who write code, process data, and take catalog orders for U.S. firms (Cowell 2000, Landler 2001). "Electronic migrants," it is predicted, will soon be doing factory work in real time over the Internet. A firm’s potential labor pool will be global, leaving someone who happens to live in a firm’s headquarters city no clear advantage over any other potential employee (Blakely 2001). If this is a realistic prediction, efforts to attract firms by developing a skilled workforce are misguided; cities should concentrate instead on becoming ideal platforms for the electronic importation of labor.

Critics of the "placeless economy" thesis point out that while technology may enable people to work from anywhere, many jobs remain place-bound and place-identified. Advanced services, entertainment, and Internet content firms continue to cluster in cities, employing thousands of people; Sassen’s 1991 “global city” concept—casting commercial entrepots as command posts for corporations with far-flung economic activities—remains accurate a decade later. New York, Los Angeles, and San Francisco have more commercial Internet domain names registered in them than the next twelve most domain-name-populous regions combined (Moss and Townsend 1997, Zook 2000b), indicating that the Internet content industry is spatially clustered. Although conditions are no longer the same, during the late 1990s economic boom, firms clamored for office space in “Multi-media Gulch” in San Francisco, “Silicon Alley” in New York, and “Hollywood.com” in Hollywood and Santa Monica districts of Los Angeles County—despite high land and labor costs. Metropolitan areas like Austin, Texas and Raleigh-Durham, North Carolina, whose economic base was founded originally on branch-plant manufacturing, also became magnets for high-tech services employment in recent years (Oden and Larsen 2000).

As long as innovative firms’ profit margins are enhanced by close contact among place-identified employees, by proximity to finance capital and communications infrastructure, and by identification with like enterprises in regional networks, it is likely that metropolitan areas will maintain their status as pools of specialized labor (Zook 2000a). In fact, high-tech firms’ advocacy for expansion of the H1-B Visa program, which allows skilled immigrants from other countries to fill gaps in the technology labor pool, suggests that employers would rather import workers in the flesh than virtually (Chapple 2001).1

Despite the vibrancy of cities as locations for high-tech talent, however, increasing use of remote workers for functions like call center work and software

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1 H1-B Visas are themselves, of course, controversial. While IT advances have made labor more important to local economic development, they have also helped create national and international markets for specialized workers that many argue deter U.S. employers from investing in people in their own regions (Schoenbach 2000). From fiscal year 2000 through fiscal year 2003, federal law permitted 195,000 H1-B Visa to be issued annually, but the number of people applying for such visas fell sharply in 2002; the quota was not reached.
testing does suggest the diminishing importance of locality in markets for routine service labor. Companies have seized the opportunities presented by new information technologies (for example, telephone call distribution systems and high-speed data transmission) to consolidate service work that was once performed in numerous localities and to concentrate the most routine work in low-cost places. Thus, communications, the infrastructure that is contributing so markedly to urban competitiveness, is also enabling the geographic segmentation of service labor markets, leaving high-skilled, high-"customer contact" service jobs in the center while moving routine jobs to peripheral locations.

The Hi-Modal City

In dynamic though costly urban centers, then, employers place a high premium on creativity and skill. As noted above, creative talent for electronic media is clearly a priority: graphic designers, writers, and programmers thrive in the "innovative milieus" and flexible project-oriented atmospheres that the density and diversity of older central business districts provide (see Storper 1997, Zook 2000b, Batt et al. 2001). Additionally, there is a high demand for tech-savvy workers who install and maintain complex urban communications infrastructures and provide technical support to their users.

While hiring has been slack since the so-called Internet bubble burst in late 2001, a recent survey by the Information Technology Association of America placed the size of the U.S. IT workforce at an historic high of over 10.3 million (see Table 1). Demand for new IT workers is down, but hiring managers at both IT and non-IT firms still say they will seek to fill close to a half million IT jobs in 2003 (ITAA 2003). Even jobs that are not strictly considered IT jobs—such as transit jobs, as described by Robert Paaswell in this book’s second chapter—are requiring proficiency with computer systems.

But the demand for high-skilled professionals is only part of the story of the new urban economy. Coincident with growth in openings for technicians and program-

<table>
<thead>
<tr>
<th>Net Total Job Count, January 2003</th>
<th>Expected Number of New Openings 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming/software engineering</td>
<td>2,144,377</td>
</tr>
<tr>
<td>Technical support</td>
<td>1,904,842</td>
</tr>
<tr>
<td>Enterprise systems integration</td>
<td>1,113,883</td>
</tr>
<tr>
<td>Database development &amp; administration</td>
<td>1,011,331</td>
</tr>
<tr>
<td>Web development/administration</td>
<td>885,070</td>
</tr>
<tr>
<td>Network design/administration</td>
<td>729,417</td>
</tr>
<tr>
<td>Digital media</td>
<td>694,251</td>
</tr>
<tr>
<td>Technical writing</td>
<td>538,759</td>
</tr>
<tr>
<td>Total</td>
<td>10,312,650</td>
</tr>
</tbody>
</table>

Source: Adapted from Information Technology Association of America 2003
mers is a shrinkage of jobs in the middle part of the wage scale and a profusion of
openings for low-wage workers. Advances in information technology have facilitated
this. In the service industries that are most often associated with thriving urban
economies—FIRE, banking and media—decision makers have used new technolo-
gies to change the structure of the workplace for clerical, sales, and customer-service
personnel, upgrading some jobs into autonomous, technology-based semi-profes-
sional positions while downgrading formerly mid-level clerical positions into routine
service jobs requiring few skills (Baran 1985, Noyelle 1987, Appelbaum and Albin
industry shows, the segmentation of the service workforce is in part an outgrowth of
the ability to segment customers by profitability: companies invest training resources
in and pay higher wages to the service personnel who deal with high-margin customers
while paying less, training less, and tolerating higher turnover and lower quality work
among the service representatives who deal with less profitable members of the public
(Batt 2001). Firm-provided training and internal promotion are more rare in many
industries than they were in the past, and the use of independent contractors and
temporary workers is more common. Part of what the new economy means for many
workers is diminished attachment to their workplaces and less obvious lines of
progression between steps in their careers.

Job segmentation and nontraditional employment arrangements, combined
with a long-term decline in high-paid manufacturing and construction employment,
go a long way toward explaining the bimodal trend that can be observed in data on
America’s urban labor markets—substantial growth in high-paid occupations requiring
high levels of education, substantial growth in low-paid occupations requiring
little education or preparation, and a decline in jobs paying middle class wages and
requiring moderate levels of education (Appelbaum and Albin 1990, MacDonald and
open IT positions and qualified IT workers has created the widespread perception that
workers who lack high-tech skills are at risk of unemployment. But the Bureau of
Labor Statistics expects approximately 30 million job openings nationwide between
1998 and 2008 in occupations requiring minimal education or preparation, as
opposed to 12.6 million openings in jobs requiring a bachelor’s degree or higher and
12.2 million openings for people with associates degrees, post-secondary vocational
training, or substantial on-the-job training (Braddock 1999). Demand for workers
with advanced IT skills has increased, but there is also a continuing need to fill retail,
custodial, and personal services jobs. In cities, partly because of the geographic
segmentation strategies discussed above, the trend toward an hourglass shape is even
more marked than in the nation as a whole. Studies of the New York City labor market
by Gester (2000) and The Working Group on New York City’s Low-Wage Labor
Market (2000) demonstrate exaggerated growth in low-wage and high-wage work and
declines in the middle (see Tables 2 and 3). A sampling of jobs from the BLS list
of top thirty projected growth occupations (see Table 4) hints at complementarity
between the lifestyles of highly paid “symbolic analysts” and the demand for workers
who clean their offices, care for their children, and serve them in delicatessens and
restaurants. 2

How can we understand the drift toward a bimodal city? Earnings gains for
workers with IT skills are easy enough to understand: even as companies have
tightened their belts since the beginning of the recession, hiring managers have
continued to project hundreds of thousands of openings for skilled IT workers (see

1This is the term that the Bureau of
Labor Statistics uses to refer to
people working as independent
contractors, temporary worker.
registered with staffing agencies.
and on-call workers.

2Ten of the top 30 growth
occupations place people in the
“very high” hourly earnings
quartile ($16.25/hr or more).
Eleven of the occupations are in
the “very low” earnings quartile
(less than $7.76/hr), four in the
“high” earnings quartile ($10.02
to $15.14/hr) and five in the
“low” earnings quartile ($7.88-10.01
(Braddock 1999).
Table 2
New York Metropolitan Area Employment 1979-97, by Job Quality Segment

<table>
<thead>
<tr>
<th>Quality Segment</th>
<th>Total Employment (in thousands)</th>
<th>Independent Primary (in percent)</th>
<th>Subordinate Primary (in percent)</th>
<th>Secondary (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>3,890</td>
<td>4,810</td>
<td>5,130</td>
<td>28.8</td>
</tr>
</tbody>
</table>

1New York, NY PMSA (5 boroughs), Bergen-Passaic, NJ PMSA, Newark, NJ PMSA, Nassau-Suffolk, NY PMSA, Jersey City, NJ PMSA


Source: Genter 2000

Table 3
Changes in New York City Employment by Industry Wage Interval

<table>
<thead>
<tr>
<th>Wage Interval</th>
<th>Average Annual Earnings (thousands of dollars)</th>
<th>Employment (thousands of jobs)</th>
<th>Absolute Change in Employment 1989-99 (thousands of jobs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1989</td>
<td>1999</td>
<td></td>
</tr>
<tr>
<td>&lt; 25</td>
<td>508.9</td>
<td>589.9</td>
<td>+81</td>
</tr>
<tr>
<td>25-50</td>
<td>1862.8</td>
<td>1796.5</td>
<td>-6.3</td>
</tr>
<tr>
<td>50-75</td>
<td>482.6</td>
<td>462.8</td>
<td>-19.8</td>
</tr>
<tr>
<td>&gt; 75</td>
<td>638.1</td>
<td>641.0</td>
<td>+2.9</td>
</tr>
</tbody>
</table>


Table 1). What is less transparent is why, given continuing high demand, workers in jobs requiring lower levels of education have seen their real wages decline. One argument is that skills not correlated with years of education—such as proficiency with computers—have become more important to productivity, and that workers with low levels of education have in effect become less "skilled" and less productive than before (see Freeman and Katz 1994, Bound and Johnson 1995). Other potential explanations include the decline in the real value of the minimum wage and in labor union membership, both of which used non-market means to create a "floor" under lower paid workers (see Mishel and Bernstein 1994). Still other accounts highlight employer strategies (often facilitated by technology) that disadvantage those who begin with few skills: the choice to invest different levels of resources in employees who interact with different groups of customers, the choice to outsource functions like billing or janitorial services to poorly-paying contractor firms, and the choice to de-emphasize training and internal promotion that provided a way for low-paid workers to move out of dead-end jobs (see Cappelli et al. 1997, Herzenberg et al. 1998).

External institutions and the IT Career Ladder

Career progression in the contemporary world of work (and particularly in IT) is likely to take place across many firms rather than within a single enterprise. As a result, providers of training and skill upgrading that exist outside the boundaries of individual workplaces have increased in scope and importance in the knowledge economy. Certifications—such as A+, which certifies a person's ability to diagnose and repair computer hardware, BICSI certification, which accredits people as structured cabling technicians, and Cisco certification, a manufacturer-sponsored series of accreditations that can be obtained by people with proficiency in data...
### Table 4
Selected Occupations with High Projected Absolute Growth 1998-2008

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Rank Among 30 Occupations with Highest Absolute Job Growth</th>
<th>Gain in Estimated Number of Positions 1998-2008 (000s)</th>
<th>Earnings Category</th>
<th>Education and Training Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems analyst</td>
<td>1</td>
<td>577</td>
<td>Top quartile</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Retail salesperson</td>
<td>2</td>
<td>563</td>
<td>Bottom quartile</td>
<td>Short-term on-the-job training</td>
</tr>
<tr>
<td>Computer support specialist</td>
<td>8</td>
<td>439</td>
<td>Top quartile</td>
<td>Associate's degree</td>
</tr>
<tr>
<td>Janitor/cleaner</td>
<td>11</td>
<td>365</td>
<td>Bottom quartile</td>
<td>Short-term on-the-job training</td>
</tr>
<tr>
<td>Computer engineer</td>
<td>13</td>
<td>323</td>
<td>Top quartile</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Guard</td>
<td>18</td>
<td>294</td>
<td>Bottom quartile</td>
<td>Short-term on-the-job training</td>
</tr>
<tr>
<td>Childcare worker</td>
<td>21</td>
<td>236</td>
<td>Bottom quartile</td>
<td>Short-term on-the-job training</td>
</tr>
<tr>
<td>Computer programmer</td>
<td>28</td>
<td>191</td>
<td>Top quartile</td>
<td>Bachelor's degree</td>
</tr>
</tbody>
</table>

Source: Adapted from Braddock 1999

Network configuration and administration—have become important mechanisms by which applicants convey their qualifications to employers. Community colleges, private technical schools, neighborhood-based organizations, and some labor unions have become engaged in providing IT training, either by licensing curricula such as BICSI and Cisco or by devising their own curricula or apprenticeships with substantial input from employers (Chapple and Zook 2000, Alssid 2000). From the employee’s perspective, it is crucial, if career advancement is a priority, to keep pace with changes in technology by upgrading skills at every opportunity. While such opportunities may be available in the workplace, it is more likely that an employee will need to seek them externally. Some employers provide time off and tuition reimbursement for workers who strive to gain the skills necessary for career mobility; in other cases, the onus falls on the employee.

One example of how training and skill development patterns have changed in technology-intensive occupations in recent years comes from the telecommunications industry. In the regulated Bell system, stable demand and regulated profits permitted extensive employee training, predictable career ladders, high pay, and relative employment security, all of which were reinforced by the presence of strong labor unions. In the aftermath of deregulation—a series of judicial and legislative decisions which over a quarter of a century gradually dismantled the AT&T Bell monopoly—the industry as a whole has seen downsizing, declining union coverage, falling real wages, and diminished resources devoted to training (see Keefe and Batt 1997, Batt and Strausser 1997). Meanwhile, regulatory changes and shifts in company business practices have led to greater outsourcing and subcontracting, increasing the number of telecommunications workers employed by small contractor...
firms, such as VDV or “voice-data-video” contractors hired to wire buildings for broadband access. Finally, technological change, combined with companies’ desire to hire “pre-skilled” workers instead of training them on the job, is making it increasingly difficult for people with no experience to obtain entry-level telecom jobs and work their way up through established career pathways. More now than in the past (when telecom workers routinely went to work for “the phone company” out of high school and were mentored by older workers who had done the same thing), individuals without experience or training either cannot obtain jobs or are hired for “dead-end” positions from which advancement requires additional, self-financed training.

At the same time that telecommunications employment has become less secure, however, competition, technological change, and the convergence of telecommunications systems and computer networks have created new occupational opportunities. Increasingly, to advance in the field, it is useful to have knowledge of computer hardware and software. And by supplementing baseline knowledge of telecommunications systems with skills in personal computer diagnostics and repair or local area network technology, people can position themselves on any of three interrelated career paths: telecommunications distribution and wiring, telecommunications and computer equipment support and analysis, and network design and administration. Community colleges, private technical schools, unions, and even some community-based groups have leapt into the telecom skills marketplace, offering courses that both prepare people for entry-level employment and enhance basic knowledge learned on the job. Training courses cobbled together on the initiative of individuals or integrated by institutions into more cohesive skill development systems thus combine with a succession of job positions (perhaps in one firm, perhaps in many) to create what might be termed “external career ladders” (see Figure 1).

![Figure 1](Image-url)
Policy Choices

It is against this backdrop—growing returns to individuals with high-tech skills, an increase in low-paying dead-end jobs, and the falling away of within-firm training and promotion structures at both ends of the labor market—that metropolitan workforce policy makers must build the workforce infrastructure their political and economic constituencies demand. Their task is complex, and many kinds of policies are being pursued. Municipal, county, and state economic development policy can be divided into three overall categories that are described below.

Workforce Attraction
This workforce strategy might be likened to conventional business attraction policy, and operates on the assumption that skilled workers, like companies, can be coaxed into migrating from other places by key amenities like safe streets, exciting nightlife, clean parks, and reputable schools. The attraction of desirable workers is clearly a major goal underlying urban “quality of life” initiatives from zero-tolerance crime policy to the refurbishment of older industrial areas as entertainment complexes. It is not certain whether amenities-based policies are aimed directly at workers or indirectly at the companies that employ them, but according to many experts, such policies have proven successful in countering the flight of the affluent from both central cities and older suburbs in the 1960s and 70s. While the policies’ impact on the quality of life in lower income communities is doubtful, especially in light of intensifying metropolitan residential segregation, amenities appear to be effective agents of inter-metropolitan competition for a highly valuable resource—skilled workers—and metropolitan areas that can assemble knowledge workers need have less concern that employers will abandon them or begin importing workers electronically.

Sector-Focused Workforce Retention and Nurture
Another strategy is a labor-oriented approach to nurturing and growing targeted industry sectors. This is a people-centered twist on the sector or cluster method under which local officials use regional economic analysis to identify dynamic clusters of firms and then target those clusters for investment and other assistance (see Bacheller 2000). Rather than aiming to attract skilled workers from other places, policy makers using this approach develop strategies to address the needs of key professionals already working in key industries in their cities. A recent study of new media industry workers in New York City, for example, concludes that these employees’ careers, and consequently the competitiveness of their sector, can be enhanced by training opportunities, stronger professional associations, and extra-firm structures for health insurance and other protections—all things that can be influenced by city and regional policies (Batt et al. 2001).

In the same vein, policy makers have renewed their focus on urban universities and their graduates as participants in sectors like biotechnology and photonics. If human capital developed in an urban college or university remains local, a city has, in effect, generated homegrown talent that may prove a decision factor for companies seeking skilled employees. City and state governments have also become involved in promoting technology transfer, which attempts to capture and locally retain the commercial value of academic discoveries and innovations. Efforts to convince university-based entrepreneurs to remain local when they “spin off” firms from

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1 A long-running debate in regional economics concerns the question of whether growth in employment opportunity lags population growth or the other way around (see Clark 1983, Campbell 1993).
While employers in the past sought bachelor's degree holders for computer support specialist and Web designer positions, the jobs now entail more general than firm-specific skills and as a result are more typically filled by people with associate's degrees or even short-term vocational training. This evolution demonstrates the concept of a "skill-training life cycle" and suggests that with the "standardization of some IT jobs," workforce development roles in IT are emerging for community colleges and other community-based training providers (Chapple and Zook 2000).

**Training and Career Facilitation**

A third strategy of workforce policy involves the creative combination of public and private resources to help prepare urban citizens (typically those unable to finance their own training) for productive careers in the new economy. One example of such an effort is the retraining of New York City Transit workers that Robert Paaswell discusses in Chapter Two. Another example is the San Francisco IT Careers Consortium, which fuses the expertise of community-based non-profits, community colleges, and for-profit staffing agencies in a system to prepare low-income individuals for positions as computer support specialists at Bay Area firms while enabling them to earn college credit. These types of programs combine the prioritization of employer needs and requirements (employer-driven training) with the goal of enabling people starting with little or no formal technical education to obtain relatively high-wage technical jobs.

Especially when the targeted population has minimal education and work experience, the successful application of this third strategy often entails much more than skills training (Harrison and Weiss 1998, Fitzgerald and Green Leigh 2002). Individuals who lack social networks that connect them with knowledge about occupations and with informal access to job opportunities are at a disadvantage in the labor market (see Harrison and Weiss 1998). For these reasons, successful workforce development efforts focus not simply on imparting job skills but also on building network ties between trainees and more experienced members of their chosen occupations, on facilitating career and wage progression by making ongoing training and upgrading available to people once they are working at entry-level jobs, and on helping trainees to surmount barriers that can keep them from succeeding, such as lack of access to transportation and childcare (Benner 2000, Gruber and Roberts 2000, Fitzgerald and Green Leigh 2002). For example, participants in the San Francisco IT Careers Consortium have access to extensive case management through community-based organizations, and those who have completed one level of training and are working as computer support specialists can return for training in network administration, a more complicated and higher-paying occupation (see Figure 2).

It should be re-emphasized that a competitive urban economy also depends on employees who are unlikely to use computer or communications technology—food service workers, hotel housekeepers, child care workers—and a good number who are low-paid despite their use of technologically advanced equipment, such as cashiers and data entry clerks. Here, too, skill development and attempts to build ladders out of dead-end jobs can produce positive returns for firms and employees. For example, over 1600 unionized San Francisco hotel workers have participated in the San Francisco Hotels Partnership, a joint labor-management effort to offer entry-level workers training in guest relations and technical skills and to establish job and wage progression. By becoming more skilled and more productive in their jobs, entry-level hotel employees in San Francisco boost their employers' (and their city's) competitiveness in the tourism industry and are able to move into higher wage brackets over time. Often, however, a major source of people's low earning power is not their human capital deficiencies but the structure and social dynamics of the labor market.
Laura Wolf-Powers

**RECRUITMENT/ASSESSMENT**

<table>
<thead>
<tr>
<th>Jewish Vocational Service</th>
<th>Goodwill</th>
</tr>
</thead>
<tbody>
<tr>
<td>City College - Oakland/Evans</td>
<td>San Francisco Housing Authority</td>
</tr>
<tr>
<td>San Francisco Dept of Human Services</td>
<td>Arriba Juntos</td>
</tr>
<tr>
<td><strong>CONTEXTUALIZED LITERACY/COMPUTER TRAINING</strong></td>
<td><strong>CONTEXTUALIZED ESL</strong></td>
</tr>
<tr>
<td>6 weeks (120 hours)</td>
<td>6 weeks (120 hours)</td>
</tr>
<tr>
<td><strong>PREPARATION</strong></td>
<td><strong>ENTRY LEVEL TRAINING</strong></td>
</tr>
<tr>
<td><strong>A+ CERTIFICATION</strong></td>
<td><strong>WEB DESIGN</strong></td>
</tr>
<tr>
<td>CUSTOMER SERVICE</td>
<td>BRIDGE COURSE</td>
</tr>
<tr>
<td>EMPLOYABILITY</td>
<td>CUSTOMER SERVICE</td>
</tr>
<tr>
<td>LIFE SKILLS</td>
<td>LIFE SKILLS</td>
</tr>
<tr>
<td>15 weeks (360 hours)</td>
<td>12 weeks (360 hrs)</td>
</tr>
<tr>
<td><strong>OFFICE TECHNOLOGY</strong></td>
<td><strong>WEB DESIGN</strong></td>
</tr>
<tr>
<td>(HTML, Advanced Microsoft)</td>
<td>ADVANCED</td>
</tr>
<tr>
<td><strong>WEB DESIGN</strong></td>
<td><strong>PLACEMENT</strong></td>
</tr>
<tr>
<td>BRIDGE COURSE</td>
<td></td>
</tr>
<tr>
<td>CUSTOMER SERVICE</td>
<td></td>
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<tr>
<td><strong>WEB DESIGN</strong></td>
<td></td>
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<tr>
<td>ENTRY LEVEL TRAINING</td>
<td></td>
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<tr>
<td>ENTRY LEVEL TRAINING</td>
<td></td>
</tr>
<tr>
<td>FULL-TIME EMPLOYMENT</td>
<td>FULL-TIME EMPLOYMENT</td>
</tr>
<tr>
<td>$16-$23 per hour</td>
<td>30 K + per year</td>
</tr>
<tr>
<td>Unix/Manpower/Technology</td>
<td>Unix/Unix/Lab</td>
</tr>
<tr>
<td>FULL-TIME EMPLOYMENT</td>
<td>FULL-TIME EMPLOYMENT</td>
</tr>
<tr>
<td>30 K + per year</td>
<td>30 K + per year</td>
</tr>
<tr>
<td>Unix/Jewish Vocational Services</td>
<td>Unix/Jewish Vocational Services/Korean Center</td>
</tr>
<tr>
<td><strong>CISCO NETWORK</strong></td>
<td><strong>CISCO NETWORK</strong></td>
</tr>
<tr>
<td>CCNA/CCEN/CCNP</td>
<td>CCNA/CCEN/CCNP</td>
</tr>
<tr>
<td>360 hours</td>
<td>360 hours</td>
</tr>
<tr>
<td>FULL-TIME EMPLOYMENT</td>
<td>FULL-TIME EMPLOYMENT</td>
</tr>
<tr>
<td>40 K + per year</td>
<td>30 K + per year</td>
</tr>
<tr>
<td>Unix/Jewish Vocational Services/Korean Center</td>
<td>Unix/Korean Center</td>
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<tr>
<td><strong>UNIX</strong></td>
<td><strong>UNIX</strong></td>
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<td><strong>UNIX Lab</strong></td>
<td><strong>UNIX Lab</strong></td>
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</tbody>
</table>

**Source:** Workforce Strategy Center

The market. Where this is the case, legal and institutional measures such as minimum wage increases and labor law reform are essential to helping urbanites avoid poverty (Cobble 1994, Herzenberg et al. 1998).

**Evaluating Workforce Initiatives**

Because workforce policy initiatives come in so many different forms, evaluating them is difficult. Within any given local government, policy makers are typically pursuing workforce attraction, sector-focused workforce retention, and training and career development strategies. Furthermore, they are pursuing these strategies in separate departments under separate political paradigms: staff in heavily business-oriented economic development offices are usually responsible for strategies to draw skilled workers or to understand and meet the needs of members of a prized occupation, while most government involvement in training and career facilitation is housed in social services agencies and targeted toward displaced workers or poor people (see Fitzgerald and Green Leigh 2002). Often there is little coordination between these agendas. Despite this, however, it is possible to identify four elements of a comprehensive metropolitan workforce infrastructure strategy in a best case scenario.

**First Element**

Workforce infrastructure policy would be employer-driven—that is, informed by conversations with employers about the skill requirements and career ladders in their industries—while also focused on improving the skills and earning power of potential professionals often have different educational and professional backgrounds from social workers, and are less inclined to associate themselves with anti-poverty efforts. Among workforce policies whose goal is to increase a city's economic competitiveness, helping the less skilled fill jobs is not often a priority.

*Fitzgerald and Green Leigh note that economic development professionals often have different educational and professional backgrounds from social workers, and are less inclined to associate themselves with anti-poverty efforts. Among workforce policies whose goal is to increase a city's economic competitiveness, helping the less skilled fill jobs is not often a priority.*
employees, whether professional or entry-level. One institution that bridges the usual gulf between employer-focused and worker-focused paradigms for workforce development is the community college, which has traditionally conducted training oriented toward local business development, training for incumbent workers seeking updated skills, and training aimed at the hardest to employ (Gruber and Roberts 2000). Community colleges could be the linchpin of an employer-driven yet still worker-focused workforce strategy. In some industries, initiatives involving employers, unions, and educational institutions or community-based organizations could also fulfill this role.

**Second Element**
Workforce infrastructure policy would pay attention to workforce needs and opportunities in industry sectors where a metropolitan area has place-specific comparative advantage. Rather than indiscriminately targeting skilled workers regardless of occupation, or creating training customized to a single firm, it would devote resources to attracting and preparing people to meet the needs of strategic industries as determined by regional economic analysis (see Bosworth 1998). While not all government-supported employment training can or should be sector-based, sector-based urban economic development policy (aimed at nurturing industries that depend on place-based urban advantages like proximity to transport and advanced communications) would always do well to integrate workforce development considerations for employees at all levels of skill.

**Third Element**
Workforce infrastructure policy would be truly metropolitan—that is, implemented not on the basis of political jurisdiction but from the vantage point of the regional labor market. This is a particular challenge: federal welfare reform and employment and training dollars as well as state and local economic development money are administered at the county or city level, so creating regional governance structures for workforce strategy takes a willingness on the part of politicians and departmental officials from different jurisdictions to share control. While many advocated that jurisdictional boundaries under the recent federal Workforce Investment Act (WIA) reflect the synergy between urban and suburban labor markets in metropolitan areas, most WIA governance structures (known as Workforce Investment Boards) remain defined by county or city (Teegarden and Baran 2000), so it is up to local leaders to take the initiative to work across boundaries.

**Fourth Element**
Workforce infrastructure policy would integrate economic development strategies with antipoverty strategies, not necessarily by placing them in the same city agency but by ensuring that their implementation is complementary. To some extent, it is appropriate for a growth-minded urban administration to keep its efforts to draw and cultivate a skilled workforce in the short run (say, within the current election cycle) separate from efforts to improve opportunities for disadvantaged citizens. Nevertheless, in a tight labor market, it is possible to imagine economic development-oriented and poverty reduction-oriented workforce policies harmonizing. Giloth describes a “job-centered economic development” model that combines social services, education and training, and business development with a “disciplined focus on good jobs
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as an outcome for low-income communities" (1998:2). Job-centered economic development would complement what might be called “development-oriented jobs policy”—an approach which would strive for living-wage job placements and career ladder opportunities instead of prizing job placement (in any job, at all costs) as the only significant outcome for disadvantaged or displaced workers. Advocates in several cities are pressing officials to devote WIA and surplus welfare reform (TANF) dollars to pursuing development-oriented jobs policy in the near future; Seattle has implemented such an effort, with some success, through the Seattle Jobs Initiative (Fitzgerald and Green Leigh 2002).1 The attempt to build a strong workforce infrastructure and the attempt to maintain a supportive social infrastructure here run parallel.

Conclusion

As knowledge-intensive goods production, information-rich transactions, and information itself come to form the backbone of the U.S. economy, urban competitiveness appears to rest on the ability to maintain labor infrastructure as well as communications and transport networks. And the performance of city officials as they pursue this task is under scrutiny. Publications such as Fortune and Sprint Business, which release lists of “the best cities to do business,” use workforce educational attainment as a ranking criterion (see Weinstein and Clower 2000). Clarke and Gaile claim, “a new urban hierarchy...based on the geography of human capital,” (1998:199), with cities competing for private investment based on the quality of their workforces. Meanwhile, urban governments struggle to balance workforce investments that attract firms in the near term with longer-term investments in less advantaged workers, and here they are evaluated (by voters and advocacy groups) on their progress in turning the urban citizens of today into the high-earning knowledge workers of tomorrow.

Metropolitan officials have many tools at their disposal for this multifaceted project. City and county government officials have control or influence over economic development funds, job training funds, welfare reform funds, and the funds allocated to public colleges and universities in their jurisdictions. If they can take a leadership role, coordinating agencies and perhaps making access to funding contingent on cooperation among institutions, they may succeed in implementing both job-centered economic development policies and development-oriented jobs policies.

At the same time, the backdrop created by higher levels of government will also be crucial. In future legislative cycles, states and the federal government will make choices about levels of support for nonprofit workforce development groups, community colleges, and public universities; about whether to see high-tech training for displaced or disadvantaged workers as part of the solution to high-tech labor shortages; and about whether to change the legal infrastructure around employee participation and collective bargaining to reflect the realities of today’s more flexible workplace. Perhaps more importantly, policy makers at all levels of government have the ability to influence public perceptions about the value of workforce infrastructure investment. Ultimately, the success of local workforce policy—so key to the health of the communications, transport, and amenities infrastructures that make cities competitive—will depend on support at all levels of government for knowledge institutions that concern themselves with building skills in strategic sectors and that foster not just job training and placement but career progression and mobility for urban citizens.
The Workforce Infrastructure

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