CHICAGO MANUFACTURING RENAISSANCE COUNCIL

PROPOSAL:
West Side Machining Center (WMC)

1,800 new and replacement machining workers will be needed in the Chicago area each year once the economy recovers.[1] Existing programs can provide training for maybe a third of these workers, but the available training is of widely divergent quality. We propose the establishment of the West Side Machining Center (WMC) at Austin Polytechnical Academy. The project would maximize the utilization of public facilities by using the school's machining lab for adult training in the evenings, on weekends and during the summer. WMC will constitute a model program with a curriculum designed by a nationally recognized expert with input from local machining leaders.[2] Graduates will be certified by the National Institute for Metalworking Skills (NIMS).[3] The center will directly employ 3.5 full time equivalents and serve up to 64 students per year. Student tuition will be covered by Workforce Investment Act Individual Training Accounts, individual self-pay, and company pay for incumbent workers. Additional subsidy programs are available for students who meet the enrollment qualifications for such programs. Tuition will not cover the full cost of training.

The future of Chicago's economy requires a vibrant advanced manufacturing sector. One limitation on the growth and sustainability of this sector is the unavailability of qualified skilled workers. Over the next ten years, the machining subsector faces retirements amounting to 40% of its workforce. Training capacity is grossly inadequate to cover this gap, both in terms of sheer numbers and also, in some cases, in terms of quality. The West Side Machining Center will meet part of this need directly while providing a reproducible local model for others to emulate.

The core machining/CNC program requires 280 hours of classroom and lab instruction. Students will gain skills in manual machining and, more importantly, in computer numerical controlled (CNC) machining. The curriculum has been completed and leans heavily on successful programs from outside of Chicago. Students will earn one or more NIMS competency-based credentials, industry-designed portable credentials that are recognized throughout the US.[4] The curriculum is modular, allowing students to take each module in varying sequences and at different times. Writing, critical thinking, and job readiness will be taught throughout the curriculum.

Successful graduates could earn a median starting wage of $16.50 per hour, plus benefits. Wages range from $12.34 to $23.87, averaging at $16.07.[5] Starting pay will depend on the company, the employee's work history and performance, and labor market conditions. Typically, new employees are hired as operators. Individuals promoted to set-up and programming positions earn more.

Some students with high potential may lack basic literacy and math skills, so contextual bridge programs will be offered as a precursor to the core course. Bridge Program 1 will accept students with reading and math skills in the fourth to sixth grade level range. Bridge Program 2 will accept students at the sixth to eighth grade levels. The program will be operated by Instituto del Progreso Latino (IPL), operator of nationally acclaimed bridge programs for manufacturing and health careers. IPL also operates Manufacturing Works, a manufacturing workforce development center, which is also a project of the Chicago Manufacturing Renaissance Council.

The WMC program will have enough capacity to train and credential 64 students per year.

By locating the program in Austin, we expect to attract a majority of African American students plus a substantial number of Latinos. At one time, Austin was a major manufacturing center, and a number of unemployed or underemployed residents in the area could easily benefit from the machining center. Typical student profiles might include:

- A low wage worker seeking to move up to a job with family sustaining wages
- A recent high school graduate seeking career training
- A recently laid-off worker who lacks the skills required for a position in advanced manufacturing[6]
- An incumbent worker requiring advanced training

The WMC program can accept students with some, but not all, employment barriers. Prison returnees, persons lacking vocational English language skills, and persons needing moderate improvement in basic skills can all be accommodated either directly or by entering through the bridge program. On the other hand, people with a poor work history, substance abuse issues, or serious mental health issues cannot be accommodated. People with multiple barriers will benefit indirectly, however. Many positions filled by graduates will be new jobs. Moreover, some WMC graduates will leave low-wage, entry-level jobs for high-wage CNC positions, vacating positions that people with multiple barriers may be able to fill if they receive the proper support. This demand pull strategy has a proven successful track record.

WMC will employ a program director-instructor; a student services manager to work on student recruitment, placement and securing of student grants and scholarships; and three part-time instructors.

Major capital equipment will be procured from a US manufacturer.

Equipment can be ordered immediately upon project approval, providing immediate employment for American workers. Staff can be hired in late spring 2009. Equipment can be installed and the program can begin operations by September 2009. This timeline depends on fairly quick funding as well as completion of the lab space buildout by Chicago Public Schools.

Budget estimates:[7]

Complete business start-up planning and implementation	$ 40,000
Complete negotiations with Chicago Public Schools.	
Submit curriculum to regulatory agencies.	
Obtain eligibility for WIA ITAs and other subsidy programs.	
Recruit and select staff.	
Design student marketing plan and materials.	
Design placement plan and materials.	
Finalize lesson plans.	
Execute student recruitment plan.	
Order and supervise installation of equipment.	
Order instructional materials.	
Equipment	$ 142,250
Pre-opening salaries and benefits- 3 months for full time staff	$ 39,063
Total pre-opening costs	**$ 211,313**
First year working capital	$ 200,000
Subsidy for 32 bridge program participants, $1600 @	$ 51,200
Total year one operating costs	**$ 251,200**

Subsequent annual subsidy in the range of $0 to $250,000 will include bridge program costs and scholarships for some students.

These budget numbers must be considered estimates. Negotiations with several government agencies will impact both revenue and expenses, and consequently the budget cannot be finalized until the next phase of the project. Equipment costs are based on quotations but are subject to change (up or down) prior to firm order placement. Operating costs are based on the experiences of other programs, but these costs vary greatly. The revenue mix and the market rate for tuition are based on recent history, but recent history is not a reliable guide in the current economy. Favorable variances are just as probable as unfavorable ones.[8]

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[1] This estimate is based on the number of Chicago area workers in occupations that are eligible for coverage by the NIMS certifications that will be earned at the West Side Machining Center. This is a subset of all of the jobs that could be covered by NIMS certifications detailed in *Omnibus Credentialing Demonstration Project and Study* (prepared for the City of Chicago by the Center for Labor and Community Research, 2008). We projected the number of needed new and replacement workers based on independent estimates from the National Association of Manufacturers and from NIMS. The hiring rate is actually substantially below the percentage of new hires in 2007 and slightly less than projected 2008 hires, based on a survey of 70 Chicago area metalworking companies. (David Pfleger, Karla Dobbeck and Sharon Osterberg, *Survey of Chicago Area Metalworking Companies Regarding Skill Standards,* Chicago: Center for Labor and Community Research, December 2007.)

[2] The primary author of the curriculum was Don Ruesch, a consultant and retired director of the College of Lake County machining program. Don has been one of the developers of NIMS tests. In the past four years Don's students won three medals, including two gold medals, in national machining competitions. His classes were regularly filled and his students had an excellent placement rate. Previously Don was a tool and die maker. The curriculum was reviewed and annotated by the rest of the WMC Design Team. These included: Jim Wall is Deputy Director of the National Institute for Metalworking Skills. In that capacity he travels throughout the country assisting metalworking educators. He worked with partners in Minnesota and the US Department of Labor to create a prerelease manufacturing education and placement program for youthful offenders. Previously he taught and was an administrator of a large vocational high school-community college and worked in industry. Ray Prendergast is Executive director of the Jane Adams Resource Corporation, a leading not-for-profit manufacturing training organization in Chicago. Previously he was an educational administrator specializing in manufacturing career education and was a machinist and trainer in private industry. Dave Morgan is Chief Learning Officer of Arthur Machinery, the leading distributor of machine tools in the region. He has a long career in machining and is a key borad member of a successful CNC training program in Rockford.

[3] NIMS standards are drafted by working committees of industry experts from around the US. The standards specify procedures, tolerances, materials, tools and method of performance assessment. A credential is proof that a person can meet a set of several standards covered by that credential. NIMS standards are competency based which means that in order to obtain a credential the candidate must both physically demonstrate the competency, e.g., make a part according to a blueprint that is inspected by a independent third party, and pass a written test measuring knowledge. The competency and knowledge

assessment vehicles used for each credential are drafted by industry experts then field evaluated and validated in each of several regions of the country before final adoption.

[4] NIMS skill standards are required by many metalworking companies around the United States but for a variety of reasons are only *required* by a minority of Chicago area firms. However, 79% of Chicago area companies told researchers that an applicant having a formal skill standard credential is more likely to be hired. 68% of local companies said that if the applicant with a formal skill standard credential is hired his/her success was more likely than someone without the credential. While credentials demonstrating attainment of a *skill standard* may not be required, the underlying specific *skills* are required by 88% of companies. By contrast only 30% of companies require specific academic degrees, either high school or college.

[5] Based on the starting wage for all CNC operators and machinists hired through Manufacturing Works from July 1, 2008 through January 31, 2009. Of course, this historical data does not guarantee job availability or wage levels.

[6] Many of the manufacturing firms that have closed or reduced their workforces are companies that have NOT adopted modern technology or provided ongoing worker training. Therefore many laid off workers with excellent work histories and soft skills are unable to find a high wage job because they lack technological skills. The truth of the labor market in this millenium is that advanced skills are essential and WMC will provide these.

[7] Budget projections have been developed for several scenarios. The maximum per student revenue is based on the maximum currently allowed for a WIA ITA account for a City of Chicago resident. For private pay students this tuition is higher than that offered by community colleges, not for profit organizations or for profit programs. Community colleges receive massive subsidies. In addition, tuition is based on seat time not cost. This means that low cost academic programs, e.g., English, subsidize high cost vocational and lab programs. There are three community college programs in the city, only one of which produces NIMS credentialed graduates as of this writing. There is one first rate not-for-profit program in the city of Chicago. It subsidizes its training with foundation and other support. None of the for-profit programs produce NIMS graduates at this writing.

[8] The number and mix of students is a major determinant of required subsidy. The underlying long-term demand for graduates on the part of employers is relatively easy to estimate, see endnote 1. Enrollment is much more difficult to predict. The number of laid off workers that could benefit will probably swell in the next few months and it is likely, but not certain, that increased government money to pay tuition will be available. On the other hand, the number of self-pay or company pay enrollees may be negatively impacted by the economy. The predominant government programs that pay for training will fund the core technical part of the training but customarily do not pay for bridge programs.

Successful training programs fill to capacity based on their track record at placing students. While WMC has been designed by people who have had such success it would be naive to expect full enrollment from the start. The speed with which WMC attains full enrollment is the major factor in determining the amount of operating subsidy required. Marginal costs of an additional student are very low. On the other hand, a fixed upper limit is placed on enrollment by the availability of equipment. Thus the cost of running a class for four students or fourteen is virtually the same.